HP E4915A Crystal Impedance Meter
HP E4916A Crystal Impedance/LCR Meter

Product Overview

Within Budget.
Without Compromise.

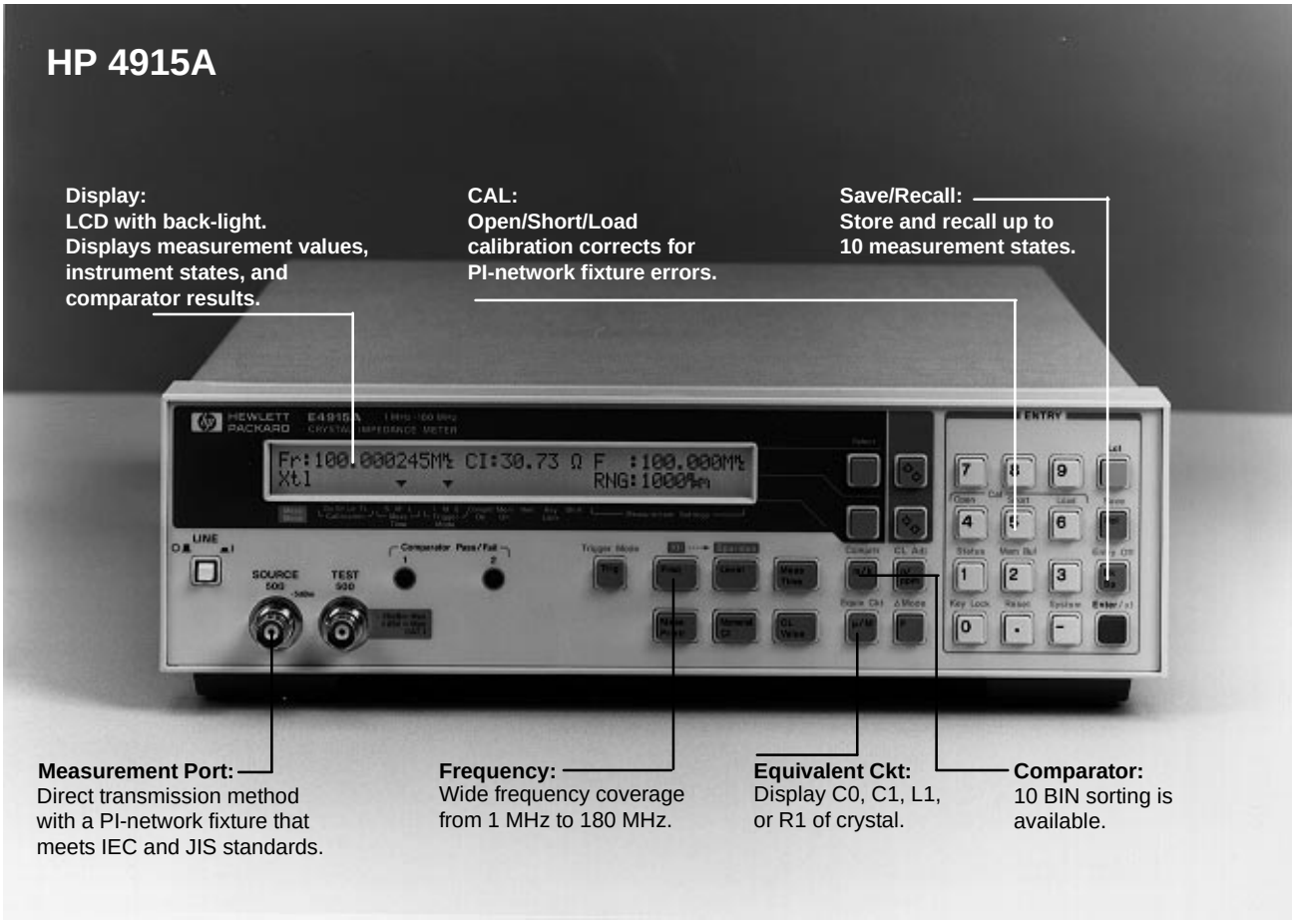
Excellent Performance and a Cost Effective Solution

The HP E4915A Crystal Impedance Meter and the HP E4916A Crystal Impedance/LCR Meter provide excellent crystal impedance (CI) and LCR measurement performance from 1 MHz to 180 MHz.

The HP E4916A makes fast measurements on components. It is optimized for tests demanding precision and versatility. The instrument's use ranges from general bench-top impedance measurements to complex crystal resonator testing. The Crystal Impedance/LCR Meter offers fast, reliable, and versatile testing at a low cost.

The HP E4915A is an economical solution for production testing of crystal units. It has simple functionality and a lower cost than the HP E4916A.

HP Crystal Impedance Meter Family



The HP E4915A/E4916A Crystal Impedance Meter family provides exceptional crystal impedance measurement capability by using a PI-network method to satisfy your performance needs from 1 MHz to 180 MHz.

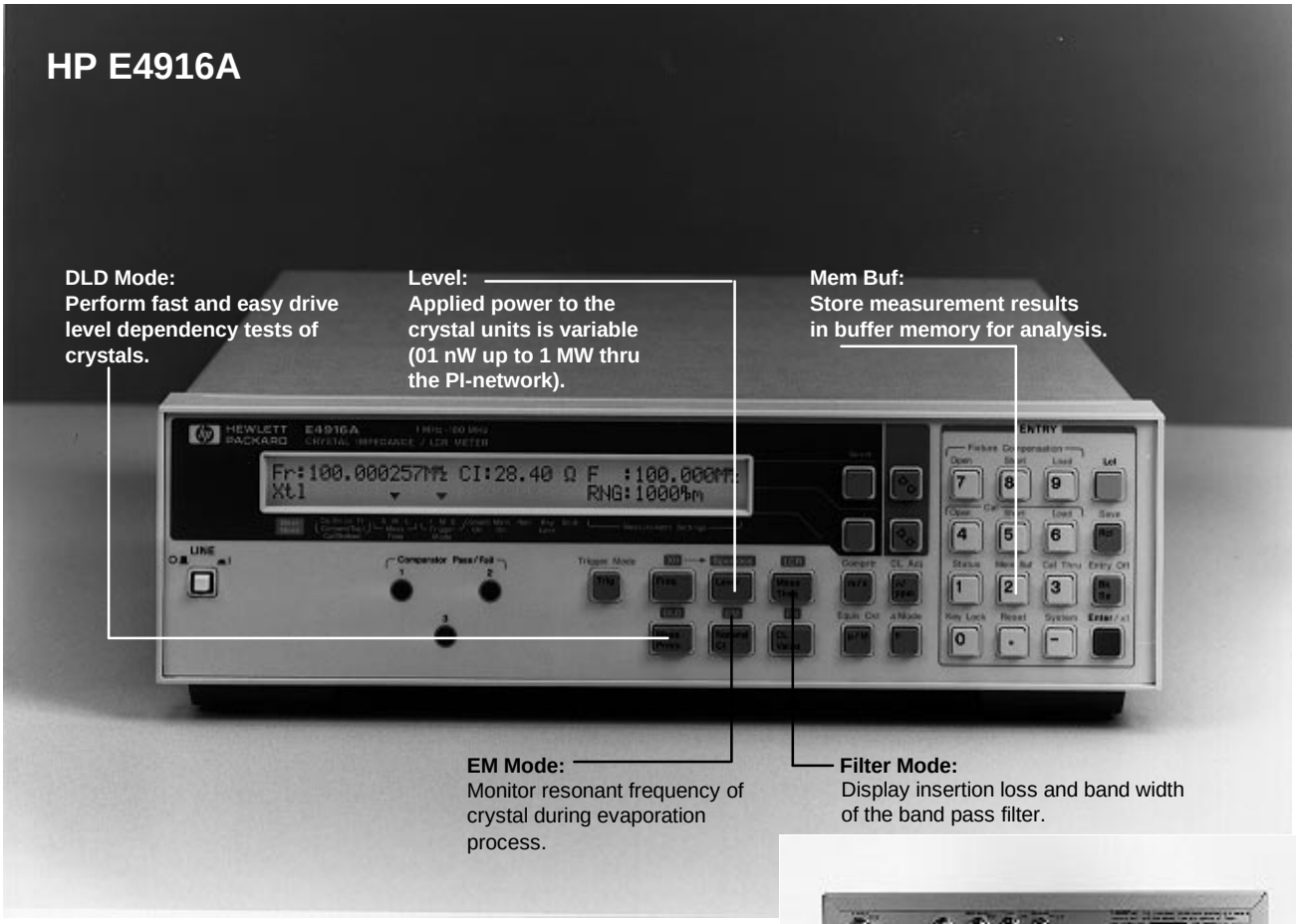
HP E4915A/E4916A Common Features

Fast test throughput

- Maximize testing with rapid, 125 msec/DUT measurements.
- Minimize user intervention with the comparator function.
- Communicate results with the display and HP-IB.
- Automate with the build-in handler interface.

Fault-free results

- PI-network method is used to cover a wide frequency range.
- Remove parasitics using the calibration function for PI-network fixtures.
- Get the best data with ± 2 ppm, 5 % basic accuracy of Fr and CI measurements.
- Store the measured result in buffer memory.
- Loaded capacitor adjustment mode.
- Applied power is defined as "Watt", "Volt", "Ampere", or "dBm."



HP E4916A rear view

Versatile measurements

- Select 2 or 6 parameters from 9 crystal parameters (Fr, CI, Fl, C1, R1, L1, Co, Q, and Ts).
- Monitor actual power applied to the crystal units.
- Save and recall up to ten measurement setups.

HP E4916A Additional Features

- Versatile measurements.
- Applied power to the crystal units from 0.1 nW to 1 mW.
- Drive level dependency (DLD) testing of the crystal units.
- Provides the evaporation monitoring function.

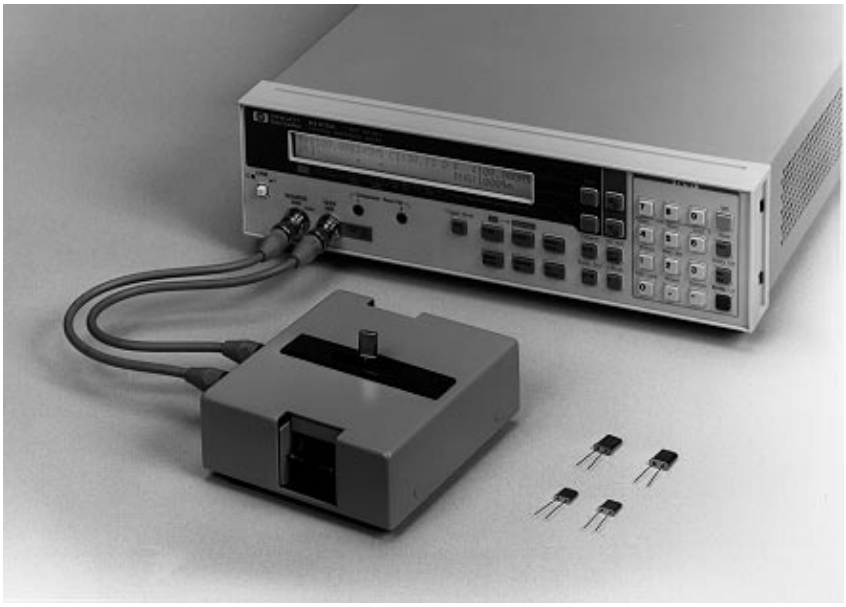
Key Specifications

Table 1. Key specification of HP E4915A/E4916A

		HP E4915A	HP E4916A
Test Frequency	Range	1 MHz to 180 MHz	1 MHz to 180 MHz
	Accuracy	± 2 ppm	± 2 ppm
Fr / Cl Accuracy (SPC[1])	Fr	± 2 ppm	± 2 ppm
	Cl	± 5 %	± 5 %
Fr / Cl Meas. Time (SPC[1])		125 msec to 10 sec	125 msec to 10 sec
Output Power	1 to 100 MHz	- 5 dBm	- 60 to + 22 dBm
	100 to 180 MHz	- 5 dBm	-60 to + 16 dBm
@DUT(25 ohm) with PI-net. T/F	Watt	about 5 uW	0.1 nW to 1 mW
DLD Meas. Function		No	Yes
EM Function		No	Yes
LCR Meas. Function (option)		No	Yes

[1] SPC: Supplemental Performance Characteristics

Best Choice For Crystal Testing



HP 41902A/HP E4915A combination enables measurements with minimum investment

Drive Level Dependency Testing

The resonant frequency (Fr) and crystal impedance (CI) have drive level dependency. The HP E4916A can easily measure the DLD characteristics. The applied power range is 0.1 nW up to 1 mW when CI is 25 ohms.

Versatile Measurement Parameters

Equivalent Circuit Analysis

The HP E4915A/E4916A can measure equivalent parameters of crystal units. Just pushing the "Equiv Ckt" key displays these parameters on the LCD.

Spurious Measurement Mode

The HP E4915A/E4916A can search for spurious response in a specific frequency range. The maximum spurious level, frequency, and number of spurious responses can be readout directly.

High Q Mode

Some crystal units take a long time before oscillation because their Q value is very high. The High Q mode adjusts the search algorithm for such crystals and provides high speed measurements.

Economy PI-network Test Fixture HP 41902A

- Resonant Frequency measurement with load capacitor

The HP 41902A includes the Capacitance Load (CL) board and SMD capacitors. Capacitance Loaded resonance frequency (FL) is easily measured using the HP 41902A.

Easy System Integration

Analog out terminal

The HP E4915A/E4916A have an analog out terminal to output dc voltage that reflects measurement results such as Fr.

Evaporation Monitoring Function

The HP E4916A provides the Evaporation Monitoring Function. This function outputs the information necessary to control the evaporation process in real-time.

Option 020 Crystal Measurement S/W for HP VEE

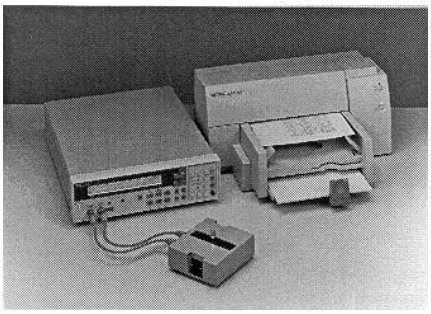
Band Width Counter Mode for Filter

The Filter measurement mode on the HP E4916A can measure the insertion loss and X dB band width of band pass filters.

Print out

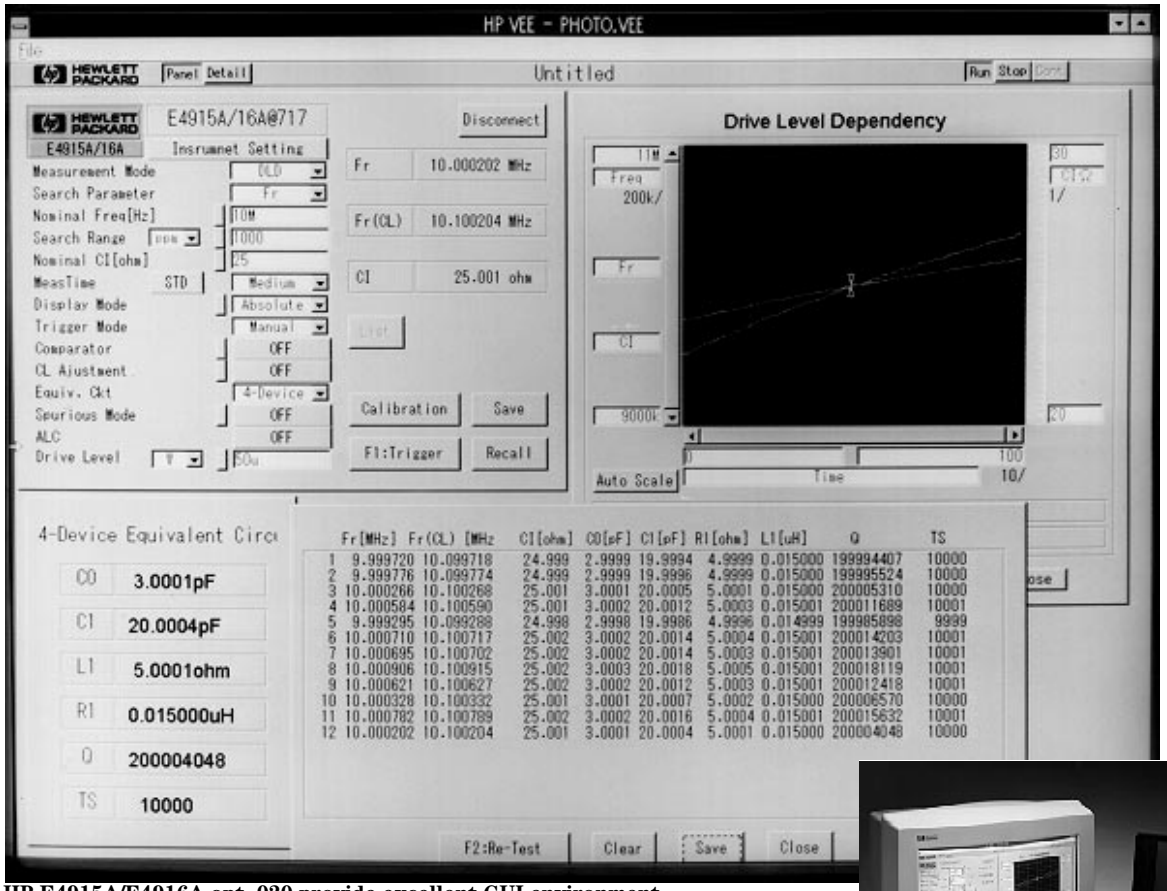
The HP E4915A/E4916A output the measurement result to the centronics printer.

To use the centronics printer, HP-IB to Centronics converter is required.



Direct print out of test data.

HP VEE S/W for Crystal Measurement



HP E4915A/E4916A opt. 020 provide excellent GUI environment .

The following programs are optional for your convenience:

- HP E4915A option 020 : Add crystal measurement S/W for HP VEE
- HP E4916A option 020 : Add crystal measurement S/W for HP VEE

Note: To use the option 020, HP E2120C or HP E2120D HP VEE for Windows is required. For more information about HP VEE, refer to the Product Overview of the HP E2120C or the HP E2120D.

Compact crystal test system using HP E4916A, HP 41902A, and Omnibook.

HP VEE S/W Features

- HP E4915A/E4916A option 020 Crystal measurement S/W for HP VEE.
- Control multiple instruments.
- Easy to setup the measurement condition and the comparator limit data.
- Graphics display of DLD measurement results.
  Data acquisition of measured data and easy data reporting.

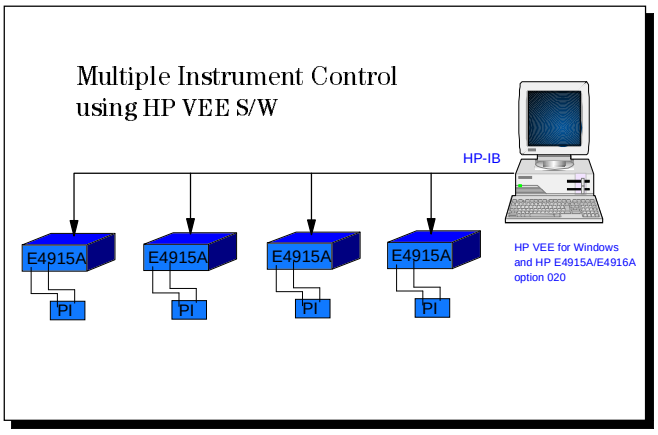


Figure 1. Multiple instrument control center shows the production data in real time

HP E4916A 1 MHz to 180 MHz LCR Meter

The HP E4916A with option 001 and 010 provides LCR measurement capability from 1 MHz to 180 MHz.

HP E4916A with Opt. 001 and 010 Features

- Complete impedance analysis for circuit s and components.
- Basic accuracy of 3 % and wide impedance range with I-V technique.
- Variable test frequency from 1 MHz to 180 MHz. Frequency resolution is 1 mHz.
- Monitor ac voltage/current level applied to DUT.
- Remove parasitics using calibration and fixture compensation functions.
- Reliable in-circuit testing using the impedance probe.
- Test components of various sizes and shapes using other available fixtures.

Easy system integration

- HP-IB and Handler interface.
- 1.5 m impedance probe cable.
- Binning/comparator test function.

HP E4916 w/option 001, 010 provides low cost solution for LCR measurement

[Note: The electric components and PC assembly shown are not part of the HP E4916A accessory.]

Key specifications

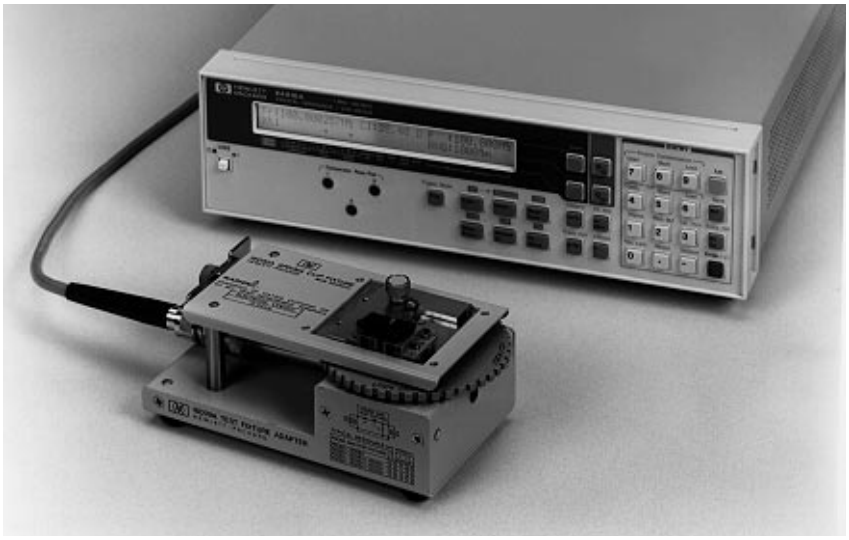
Table 2: Key specifications of LCR Meter HP E4916A with option 001 and 010

		HP E4916A with option 001 and 010
Test Frequency	Range	1 MHz to 180 MHz
	Resolution	1 mHz
Impedance Range (SPC[1])		0.2 Ω to 10 kΩ
Basic Accuracy (SPC[1])		3 %
Test Signal Level	V:	0.2 mV to 0.2 V
Meas. Tlme (SPC[1])		20 msec
Measurement Parameters		|Z|, |Y|, phase, R, X, G, B, L, C, D and Q

[1] SPC: Supplemental Performance Characteristics

Best Choice for Circuits and Components Testing

[HP E4916A with option 001 and 010]



HP E4916A with opt. 001 and 010, HP 16099A and HP 16092A for LCR component measurement

Improve Quality with Accurate Impedance Measurements up to 180 MHz

The HP E4916A's automatic calibration capability combined with three calibration standards (0Ω, 0 S and 50 Ω) can virtually eliminate errors due to the residual impedance and stray admittance surrounding the DUT. This makes it possible for you to make highly accurate impedance measurements at the tip of the impedance probe.

Evaluate Components with ±30V/0.5A DC Bias

The option 001 Impedance Probe has an input terminal for applying dc voltage to a device from an external source.

Perform In-Circuit Impedance Measurement

Applications include in-circuit testing of board-mounted components as well as the testing of printed circuit board patterns.

Simplified Handler Integration

The HP E4916A has a handler interface to output the result of BIN sorting. The I/F is negative logic and isolated. Signals are BIN sorting results, EOM, Index, Alarm, Keylock, and Ext. trigger.

Ease of Use, Available Test Fixtures

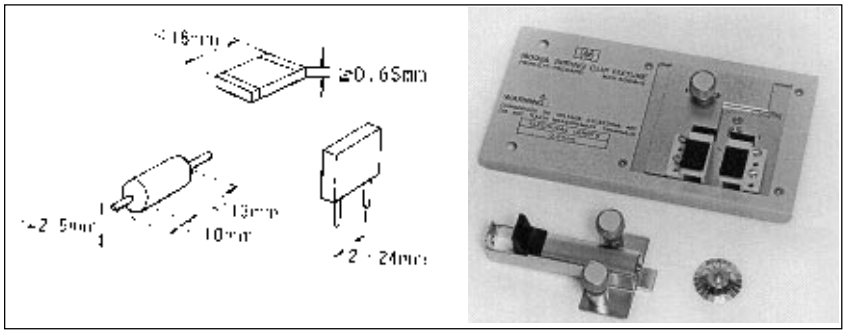
The HP 16099A Test Fixture Adapter is designed for use with the impedance probe when testing out-of circuit components. Depending on the size, shape, and type of DUT, the HP 16092A or HP 16093A test fixtures can be connected to the HP 16099A.

HP 16099A Test Fixture Adapter (used with the HP 16092A and the HP 16093A)

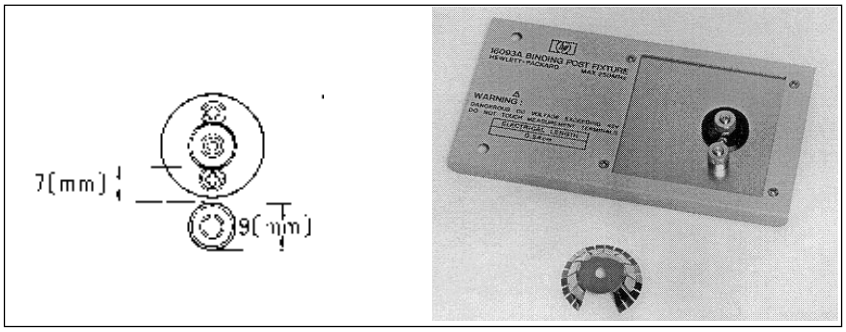
The HP E4916A option 001 Impedance Probe plugs into the HP 16099A Test Fixture Adapter. The HP 16099A also must be used in conjunction with the HP 16092A Test Fixture or the HP 16093A Test Fixture.

HP 16092A, HP 16093A Test Fixtures

These are direct coupled test fixtures for measuring axial lead, radial lead, or chip components. Maximum dc bias voltage: ± 40 V. Must be used with the HP 16099A.



HP 16092A Test fixture



HP 16093A Test fixture

Ordering Information

HP E4915A Crystal Impedance Meter

Furnished accessories: Operation manual, BNC Cable (2 ea.), and power cable.

Instrument Options:
020 Add crystal measurement S/W for HP VEE
Manual Options:
0B0 Delete manual set
0B1 Add manual set
ABA U.S.–English localization
ABJ Japan–Japanese localization
AB2 China–Chinese localization
Service Options:
UK6 Commercial cal. certificate w/ test data
W30 3 Yrs of Customer Return Repair Service
W32 3 Yrs Customer Return Calibration Service
W34 3 Yrs Customer Return Stds Comp Cal Service
Cabinet Options:
1CM Rack mount kit
1CN Handle kit
1CP Rack mount and handle kit

HP E4916A Crystal Impedance/LCR Meter
Furnished accessories: Operation manual, BNC Cable (2 ea.), and power cable.
Instrument Options:
001 Add impedance probe kit
010 Add LCR measurement function
020 Add crystal measurement S/W for HP VEE
Manual Options:
0B0 Delete manual set
0B1 Add manual set
ABA U.S. - English localization
ABJ Japan - Japanese localization
AB2 China - Chinese localization
Service Options:
UK6 Commercial cal. certificate w/test data
W30 3 Yrs of Customer Return Repair Service
W32 3 Yrs Customer Return Calibration Service
W34 3 Yrs Customer Return Stds Comp Cal Service
Cabinet Options:
1CM Rack mount kit
1CN Handle kit
1CP Rack mount and handle kit

Test Fixtures and Accessories

HP 41902A Economy PI-network test fixture

HP 41900A PI-network test fixture
Option:
001 CL adapter kit

HP 41901A SMD PI-network test fixture
Options:
001 Attachment kit: QIAJ-QS06, 4 terminals
002 Attachment kit: QIAJ-QS06, 2 terminals
003 Attachment kit: QIAJ-QS07, 4 terminals
004 Attachment kit: QIAJ-QS07, 2 terminals
005 Attachment kit: QIAJ-QS08, 4 terminals
006 Attachment kit: QIAJ-QS08, 2 terminals

HP 16092A Test fixture
HP 16093A Test fixture
HP 16099A Test fixture adapter
HP 16191A Side electrode SMD test fixture
HP 16192A Parallel electrode SMD test fixture
HP 16193A Small side electrode SMD test fixture
HP 16194A High temperature component fixture

Note: For more information about HP 16xxxA test fixtures, refer to the *Accessories Selection Guide for Impedance Measurement*, HP P/N 5963-6834E.

For more information on Hewlett-Packard Test and Measurement products, applications, or services please call your local Hewlett-Packard sales office. A current listing is available via the Web through AccessHP at http://www.hp.com. If you do not have access to the internet, please contact one of the HP centers listed below and they will direct you to your nearest HP representative.

United States:
Hewlett-Packard Company
Test and Measurement Organization
5301 Stevens Creek Blvd.
Bldg. 51L-SC
Santa Clara, CA 95052-8059
1 800 452 4844

Canada:
Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
(905) 206 4725

Europe:
Hewlett-Packard
European Marketing Centre
P.O. Box 999
1180 AZ Amstelveen
The Netherlands

Japan:
Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-cho, Hachioji-shi,
Tokyo 192, Japan
Tel: (81) 426 48 3860
Fax: (81) 426 48 1073

Latin America:
Hewlett-Packard
Latin American Region Headquarters
5200 Blue Lagoon Drive
9th Floor
Miami, Florida 33126
U.S.A.
(305) 267 4245/4220

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Australia
131 347 ext. 2902

Asia Pacific:
Hewlett-Packard Asia Pacific Ltd
17-21/F Shell Tower, Times Square,
1 Matheson Street, Causeway Bay,
Hong Kong
(852) 2599 7070

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