



# Agilent E4991A RF Impedance/Material Analyzer

Configuration Guide



**Agilent Technologies**

## Ordering Guide

The following steps will guide you through configuring your E4991A.

### Standard Furnished Item

Description	Additional Information
CD-ROM Manual	Includes Operation and Programming manuals in PDF. See documentation option for printed manuals.
7-mm calibration kit with torque wrench	Contains Open, Short, 50 $\Omega$ Load and Low-loss Capacitor terminations and torque wrench.
Power Cable	
Certificate of Calibration	

*Note: The following are not furnished: Printed copy of Operation and Service Manual, Test Fixture, Keyboard and Mouse. Refer to Accessory Option, Documentation Option and Available Accessories for the selection of these items.*

### Step 1. Choose Hardware Option – Frequency Reference (Mandatory)

Description	Option No.	Requires	Not Compatible	Additional Information
Standard Frequency Reference	E4991A-800	None	E4991A-1D5	Standard Frequency Reference.
High Stability Frequency Reference	E4991A-1D5	None	E4991A-800	Adds High Stability Frequency Reference.

*Note: Refer to Hardware Upgrade for retrofit information on the above options.*

### Step 2. Choose Hardware Option – DC bias (If not required, go to Step 3)

Description	Option No.	Requires	Not Compatible	Additional Information
DC Bias Source	E4991A-001	None	None	Adds DC Bias Source.

*Note: Refer to Hardware Upgrade for retrofit information on the above options..*

**Step 3. Choose Software Option (If not required, go to Step 4)**

Description	Option No.	Requires	Not Compatible	Additional Information
Material Measurement Firmware	E4991A-002	None	None	Adds Material Measurement Firmware for permittivity and permeability measurements. This option is required to use the 16453A and 16454A.

*Note: Refer to Software Upgrade for retrofit information on the above options.*

**Step 4. Choose Accessory Option – Test Kit (If not required, go to step 5)**

Description	Option No.	Requires	Not Compatible	Additional Information
Temperature Characteristic Test Kit	E4991A-007	None (The 16194A and 82357B are recommended)	None	Adds Temperature Characteristic Test Kit. The kit contains heat-resistant coaxial cable, RF extension cable, heat-resistant coaxial termination set, test head stand, fixture stand, terminal adapters and VBA sample program for temperature characteristics measurement.
Probe Station Connection Kit	E4991A-010	None	None	Adds Probe Station Connection Kit. The kit contains test head with 1 m extension cable and terminal adapters, which are required to interconnect the E4991A and semiconductor probe station.

*Note: Refer to Hardware Upgrade for retrofit information on the above options.*

### Step 5. Choose Accessory Option - General/Miscellaneous Accessories (If not required, go to step 6)

Description	Option No.	Requires	Not Compatible	Additional Information
Keyboard	E4991A-810	None	None	PS/2 Keyboard for simplifying measurement setup and programming.
Mouse	E4991A-820	None	None	PS/2 Mouse for simplifying measurement setup and programming.
Rackmount Kit	E4991A-1CM	None	None	Not installable simultaneously with E4991A-1CP.
Front Handle Kit	E4991A-1CN	None	None	Not installable simultaneously with E4991A-1CP
Handle/Rack Mount Kit	E4991A-1CP	None	None	Not installable simultaneously with E4991A-1CM or 1CN.

*Note: Refer to Hardware Upgrade for retrofit information on the above options.*

### Step 6. Choose Documentation Option (If not required, go to step 7)

Description	Option No.	Additional Information
U.S. - English Localization	E4991A-ABA	Printed manuals are not furnished. Order documentation option if required.
Japan - Japanese Localization	E4991A-ABJ	
Service Manual	E4991A-0BW	

### Step 7. Choose Calibration Certificate Option (If not required, go to step 8)

Description	Option No.	Additional Information
17025 Compliant Calibration	E4991A-1A7	ISO 17025 compliant calibration with test data.
ANSI Z540 Compliant Calibration	E4991A-A6J	ANSI Z540 compliant calibration.

### Step 8. Choose Warranty Plan

1 year Return-to-Agilent warranty and service plan are standard. For extended warranty options and additional information, contact your local Agilent sales office or visit the Agilent home website.

## Hardware Upgrade

Option No.	Description	Upgrade Model No. or Equivalent Part Number	Customer Installable	Requires (Instrument must already include the following)	Not Compatible	Additional Information
E4991A-1D5	High Stability Frequency Reference	E4991U-1D5	No	None	E4991A-800	Installable at service center only
E4991A-001	DC Bias Source	E4991U-001	No	None	None	Installable at service center only
E4991A-007	Temperature Characteristic Test Kit	E4991U-007	No	None	None	Installable at service center only
E4991A-010	Probe Station Connection Kit	E4991U-010	No	None	None	Installable at service center only
E4991A-810	Keyboard	1150-7970	Yes	None	None	
E4991A-820	Mouse	1150-7799	Yes	None	None	
E4991A-1CM	Rackmount Kit	5063-9216	Yes	None	None	
E4991A-1CN	Front Handle Kit	5063-9229	Yes	None	None	
E4991A-1CP	Handle/Rack Mount Kit	5188-4430	Yes	None	None	

Note: For details of the upgrade information, refer to product homepage on the Agilent home website.

## Software Upgrade

Option No.	Description	Upgrade Model No. or Equivalent Part Number	Customer Installable	Requires (Instrument must already include the following)	Not Compatible	Additional Information
E4991A-002	Material Measurement Firmware	E4991U-002	No	None (The 16453A or 16454A is required for measurement)	None	Installable at service center only

Note: For firmware update and upgrade information, refer to product homepage on the Agilent home website.

## Available Accessories - Measurement Accessories

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Parallel Electrode SMD Test Fixture	16196A	—	For 1608 (mm) / 0603 (inch) SMD up to 3 GHz
	16196A-710	—	Add Magnifying lens and tweezers
	16196A-ABA	—	U.S. - English localization
	16196A-ABJ	—	Japan - Japanese localization
Parallel Electrode SMD Test Fixture	16196B	—	For 1005 (mm) / 0402 (inch) SMD up to 3 GHz
	16196B-710	—	Add Magnifying lens and tweezers
	16196B-ABA	—	U.S. - English localization
	16196B-ABJ	—	Japan - Japanese localization
Parallel Electrode SMD Test Fixture	16196C	—	For 0603 (mm) / 0201 (inch) SMD up to 3 GHz
	16196C-710	—	Add Magnifying lens and tweezers
	16196C-ABA	—	U.S. - English localization
	16196C-ABJ	—	Japan - Japanese localization
Parallel Electrode SMD Test Fixture	16196D	—	For 0402 (mm) / 01005 (inch) SMD up to 3 GHz
	16196D-710	—	Add Magnifying lens and tweezers
	16196D-ABA	—	U.S. - English localization
	16196D-ABJ	—	Japan - Japanese localization
Bottom Electrode SMD Test Fixture	16197A	—	For SMD from 1005 (mm) / 0402 (inch) to 3225 (mm) / 1210 (inch); up to 3 GHz. Device guides, EIA/EIAJ size shorting bar set, tweezers, wrench, magnifying lens, carrying case and Operation and Service Manual are furnished.
	16197A-001	—	Add 0603 (mm) / 0201 (inch) device guide
	16197A-ABA	—	U.S. - English localization
	16197A-ABJ	—	Japan - Japanese localization
High Temperature Test Fixture	16194A	—	For SMD and leaded device up to 2 GHz, Temperature range: -55 °C to +200 °C. 50 Ω working standard resistors, wrench, tweezers and Operation and Service Manual are furnished.
	16194A-010	—	Add EIA/EIAJ size shorting bar set
	16194A-701	—	Add Shorting bar set; (1 x 1 x 2.4, 1.6 x 2.4 x 2, 3.2 x 2.4 x 2.4, 4.5 x 2.4 x 2.4) mm
SMD Test Fixture	16092A	—	For SMD and leaded device up to 500 MHz. Operation Note is furnished.

## Available Accessories - Measurement Accessories (continued)

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Parallel Electrode SMD Test Fixture	16192A	—	For SMD up to 2 GHz. Operation and Service Manual is furnished.
	16192A-010	—	Add EIA/EIAJ size shorting bar set
	16192A-701	—	Add Shorting bar set; (1 x 1 x 2.4, 1.6 x 2.4 x 2, 3.2 x 2.4 x 2.4, 4.5 x 2.4 x 2.4) mm
	16192A-710	—	Add Magnifying lens and tweezers
DC Bias Adapter	16200B	—	External DC bias adapter; 5A max or 40V max, 1 MHz to 1 GHz. Operation and Service Manual is furnished.
	16200B-001	—	Add shorting bars and 51 $\Omega$ working standard resistors set; from 0603 (mm) / 0201 (inch) to 3216 (mm) / 1206 (inch)
Dielectric Material Test Fixture	16453A	E4991A-002	For permittivity measurement of dielectric materials up to 1 GHz
Magnetic Material Test Fixture	16454A	E4991A-002	For permeability measurement of magnetic materials up to 1 GHz
Test Fixture	16093-65003	—	Equivalent to previous 16093A; For leaded device up to 250 MHz
Test Fixture	16093-65004	—	Equivalent to previous 16093B; For leaded device up to 125 MHz
Probe Test Fixture	16094-65000	—	Equivalent to previous 16094A; For in-circuit measurement up to 125 MHz. Recommended test cable is 8120-4779.
Test Cable	8120-4779	—	7-mm connector cable recommended for using 16094-65000; Cable length 60 cm.
USB/GPIB Interface for Windows	82357B	E4991A-007	USB / GPIB interface required for controlling ESPEC chamber (SU-261) by E4991A-007.

*Note: For more detailed information, refer to Accessories Selection Guide for Impedance Measurements.*

## Available Accessories – for Performance Test and Maintenance

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Performance Test Kit	16190B	—	7 mm performance test kit; includes Open, Short, 50 $\Omega$ Load, Air-line, calibration data, wrench and carrying case.

*Note: For details of the performance test kit, refer to product page on the Agilent home website.*

## Literature Resource

Title	Publication Number
<i>E4991A Data Sheet</i>	5980-1233E
<i>E4991A Technical Overview</i>	5980-1234E
<i>LCR Meters, Impedance Analyzers and Test Fixtures Selection Guide</i>	5952-1430E
<i>Accessories Selection Guide For Impedance Measurements</i>	5965-4792E
<i>Impedance Measurement Handbook</i>	5950-3000

Note: More literature is available on the Agilent home website.

## Web Resource

Have Access to the following website to acquire the latest news, product and support information, application literature and more.

[www.agilent.com/find/impedance](http://www.agilent.com/find/impedance)

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Revised: October 29, 2008

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Printed in USA, April 17, 2009

5989-8521EN



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