

# Keysight Technologies

## E4990A Impedance Analyzer

20 Hz to 10/20/30/50/120 MHz

### Configuration Guide



## Ordering Guide

The following steps will guide you through configuring your E4990A.

### Standard furnished item

Description	Additional information
Installation guide	Contains the information necessary to start up with the E4990A.
CD ROM IO libraries	
100 $\Omega$ resistor	100 $\Omega$ load resistor module for 4-terminal pair extension. See Available Accessories (General/Miscellaneous Measurement Accessories) for additional information.
Powercable	
Certificate of calibration	

### Step 1. Choose frequency (Mandatory)

Frequency range	Option no.	Support fixtures		
		4-terminal pair fixtures	42941A impedance probe	42942A + 7mm fixtures
20 Hz to 120 MHz	E4990A-120	Support	Support	Support
20 Hz to 50 MHz	E4990A- 050	Support	Not support	Not support
20 Hz to 30 MHz	E4990A- 030			
20 Hz to 20 MHz	E4990A- 020			
20 Hz to 10 MHz	E4990A- 010			

### Step 2. Choose frequency reference (if not required, go to Step 3)

Description	Option no.	Requires	Not compatible	Additional information
High stability frequency reference	E4990A-1E5	None		This option improves the frequency accuracy and stability of the E4990A. BNC Adapter is supplied with E4990A-1E5.

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
Enhanced measurement speed	E4990A-001	E4990A-050, 030, 020 or 010	E4990A-120	Make the measurement speed faster as the same as E4990A-120. See the measurement time data in the E4990A datasheet (5991-3890EN).

### Step 4. Choose accessory option (If not required, go to Step 5)

Description	Option no.	Requires	Not compatible	Additional information
Rackmount kit	E4990A-1CM	None	E4990A-1CP	
Front handle kit	E4990A-1CN	None	E4990A-1CP	
Handle/rackmount kit	E4990A-1CP	None	E4990A-1CM E4990A-1CN	
Keyboard	E4990A-810	None	None	
Mouse	E4990A-820	None	None	

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

## Step 5. Choose calibration certificate option (If not required, go to Step 6)

Description	Option no.	Additional information
ISO 17025 compliant calibration	E4990A-1A7	ISO 17025 compliant calibration
ANSI Z540 compliant calibration	E4990A-A6J	ANSI Z540 compliant calibration

## Step 6. Choose warranty plan

3-year Return-to-Keysight Warranty and Service Plan are standard. For extended warranty options and additional information, contact your local Keysight Technologies, Inc. sales office or visit the Keysight home website.

## Hardware Upgrade

Option no.	Description	Upgrade model no. or equivalent part no.	Customer installable	Requires (Instrument must already include the following)	Not compatible	Additional information
E4990A-1E5	High stability frequency reference	E4990AU-1E5	No		None	Installable at service center only
E4990A-020	Upgrade from 10 MHz to 20 MHz	E4990AU-020	No	E4990A-010	None	
E4990A-030	Upgrade from 10 MHz to 30 MHz	E4990AU-030	No	E4990A-010	None	
E4990A-050	Upgrade from 10 MHz to 50 MHz	E4990AU-050	No	E4990A-010	None	
E4990A-120	Upgrade from 10 MHz to 120 MHz	E4990AU-120	No	E4990A-010	None	
E4990A-030	Upgrade from 20 MHz to 30 MHz	E4990AU-031	No	E4990A-020	None	
E4990A-050	Upgrade from 20 MHz to 50 MHz	E4990AU-051	No	E4990A-020	None	
E4990A-120	Upgrade from 20 MHz to 120 MHz	E4990AU-121	No	E4990A-020	None	
E4990A-050	Upgrade from 30 MHz to 50 MHz	E4990AU-052	No	E4990A-030	None	
E4990A-120	Upgrade from 30 MHz to 120 MHz	E4990AU-122	No	E4990A-030	None	
E4990A-120	Upgrade from 50 MHz to 120 MHz	E4990AU-123	No	E4990A-050	None	
E4990A-1CM	Rackmount kit	5063-9216	Yes	None	E4990A-1CP	
E4990A-1CN	Front handle kit	5063-9229 E4990-20001	Yes	None	E4990A-1CP	
E4990A-1CP	Handle/rackmount kit	5188-4430 E4990-20001	Yes	None	E4990A-1CM E4990A-1CN	

## Software Upgrade

Option no.	Description	Upgrade model no.	Customer installable	Requires (Instrument must already include the following)	Additional information
E4990A-001	Enhanced measurement speed	E4990AU-001	Yes	E4990A-050, 030, 020 or 010	Make the measurement speed faster as the same as E4990A-120. See the measurement time data in the E4990A datasheet (5991-3890EN).

## Available Accessories – General/Miscellaneous Measurement Accessories

Description	Model no.	Requires (Instrument must already include the following)	Additional information
Impedance probe kit	42941A	E4990A-120	20 Hz – 120 MHz impedance probe kit. Contains pin probe, spare pin set, BNC-SMB Adapter, 3.5 mm short and load terminations, clip lead, grounding lead, carrying case and operation and service manual.
	42941A-ABA	E4990A-120	U.S. – English localization
	42941A-ABJ	E4990A-120	Japan – Japanese localization
4-terminal to 7 mm terminal adapter	42942A	E4990A-120	20 Hz – 120 MHz terminal adapter for using RF component test fixtures such as the 16092A, 16192A, 16194A, 16196A/B/C/D and 16197A. Operation note is furnished.
	42942A-700	E4990A-120	Adds 7 mm open/short/load terminations set
	42942A-ABA	E4990A-120	U.S. – English localization
	42942A-ABJ	E4990A-120	Japan – Japanese localization
Test leads	16048G	None	1 m BNC connector leads. DC – 120 MHz. Usable with the 4294A and E4990A.
	16048G-001	None	Adds BNC Bracket
	16048G-ABA	None	U.S. – English localization
	16048G-ABJ	None	Japan – Japanese localization
	16048H	None	2 m BNC connector leads. DC – 120 MHz. Usable with the 4294A and E4990A.
	16048H-001	None	Adds BNC Bracket
	16048H-ABA	None	U.S. – English localization
	16048H-ABJ	None	Japan – Japanese localization
SMD test fixture	16034E	None	For SMD; (0.1 to 8)L x (0.5 to 10)W x (0.5 to 10)H mm. DC – 40 MHz. Operation and service manual is furnished.
	16034G	None	For SMD; (0.1 to 5)L x (0.3 to 1.6)W x (0.3 to 1.6)H mm. DC – 120 MHz. 100 Ω SMD resistors set is furnished.
	16034G-ABA	None	U.S. – English localization
	16034G-ABJ	None	Japan – Japanese localization
	16034H	None	For array-type SMD; (0.1 to 5)L x ( $\leq 15$ )W x (0.6 to 3)H mm. DC – 120 MHz. 100 Ω SMD resistors set and operation manual are furnished.

## Available Accessories – General/Miscellaneous Measurement Accessories (continued)

Description	Model no.	Requires (Instrument must already include the following)	Additional information
SMD test fixture	16047A	None	For axial or radial lead device. DC – 13 MHz. Operation and service manual is furnished.
	16047A-701	None	Adds Shorting plate
	16047E	None	For axial or radial lead device. DC – 120 MHz.
	16047E-ABA	None	U.S. – English localization
	16047E-ABJ	None	Japan – Japanese localization
Tweezers test fixture	16334A	None	For SMD; ≤ 10 mm L. Tweezers type; cable length 1 m. DC – 15 MHz. Shorting block and Operation and Service Manual are furnished.
Kelvin clip leads	16089A	None	2 large clips. 5 Hz – 100 kHz. Choose mandatory option 16089A-800 or C20. Operation and service manual is furnished.
	16089A-800	None	Cable length: 1 m (standard)
	16089A-C20	None	Cable length: 2 m
	16089B	None	2 medium clips. 5 Hz – 100 kHz. Choose mandatory option 16089B-800 or C20. Operation and service manual is furnished.
	16089B-800	None	Cable length: 1 m (standard)
	16089B-C20	None	Cable length: 2 m
Kelvin IC clip leads	16089C	None	2 IC clips; cable length 1 m. 5 Hz – 100 kHz. Operation and service manual is furnished.
External voltage bias fixture	16065A	None	± 200 V dc max., for axial or radial lead device. 50 Hz – 2 MHz. Shorting plate and Operation and Service Manual are furnished.
Dielectric test fixture	16451B	None	Test fixture for measuring permittivity of dry solid sheet material; Cable length 1 m. DC – 30 MHz. 38 mm and 5 mm diameter electrodes for measuring bare material and two types of electrodes for measuring material with pre-formed electrodes are furnished.
	16451B-ABA	None	U.S. – English localization
	16451B-ABJ	None	Japan – Japanese localization
Liquid test fixture	16452A	None (16048G and four of 1250-0216 BNC(m) to BNC(m) adapters)	Test fixture for measuring permittivity of liquid material. 20 Hz – 30 MHz. Required volume of material; 3.4, 3.8, 4.8 or 6.8 ml. Temperature range: –20 ° to +125 °C. Shorting plate, spacers, SMA-BNC adapters, fixture stand, carrying case and operation and service manual are furnished.
Test leads	16452-61601	None	Heat-proof test leads for use with the 16452A. Temperature range: –20 ° to +125 °C
100 Ω resistor	E4990-61001	None	100 Ω load resistor module for 4-terminal pair extension. Furnished with the E4990A.

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

## Available Accessories – for Calibration and Maintenance

Description	Model no.	Requires (Instrument must already include the following)	Additional information
Open termination	42090A	None	4-terminal pair open termination. Required for performing calibration.
Short termination	42091A	None	4-terminal pair short termination. Required for performing calibration.
4-terminal pair standard capacitor set	16380A	None	1 pF, 10 pF, 100 pF and 1000 pF standard capacitor set with carrying case. Calibration report and operation note are furnished.
4-terminal pair standard capacitor set	16380C	None	0.01 $\mu$ F, 0.1 $\mu$ F and 1 $\mu$ F standard capacitor set with carrying case. Calibration report and operation note are furnished.
	16380C-001	None	Adds 10 $\mu$ F standard capacitor.
4-terminal pair standard resistor set	42030A	None	9 standard resistors from 1 m $\Omega$ to 100 k $\Omega$ in decade steps; Carrying case, calibration report and operation and service manual are furnished.
Performance test kit	16190A	None	Contains 7 mm open, short, 50 $\Omega$ load terminations, calibrated air-line, wrench, calibration data diskette, carrying case and operation note.
4 Terminal pair to BNC interface box	04294-61002	None	Terminal adapter for test signal and DC bias performance tests

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

## Literature Resource

Title	Publication no.	Additional information
E4990A Data Sheet	5991-3890EN	
E4990A Brochure	5991-3888EN	
LCR Meters, Impedance Analyzers and Test Fixtures Selection Guide	5952-1430E	
Accessories Selection Guide for Impedance Measurements	5965-4792E	
Impedance Measurement Handbook	5950-3000	
Power of Impedance Analyzer – Comparison to Network Analyzer	5992-0338EN	

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

## Web Resource

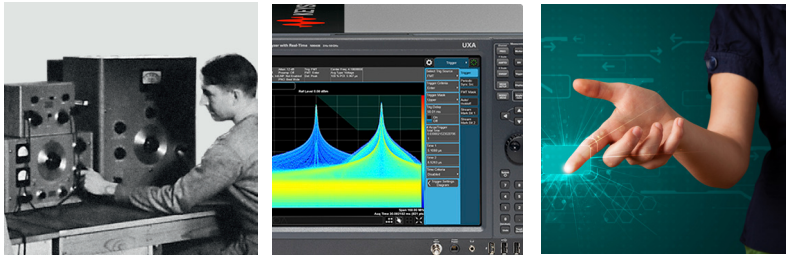
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[www.keysight.com/find/impedance](http://www.keysight.com/find/impedance)

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