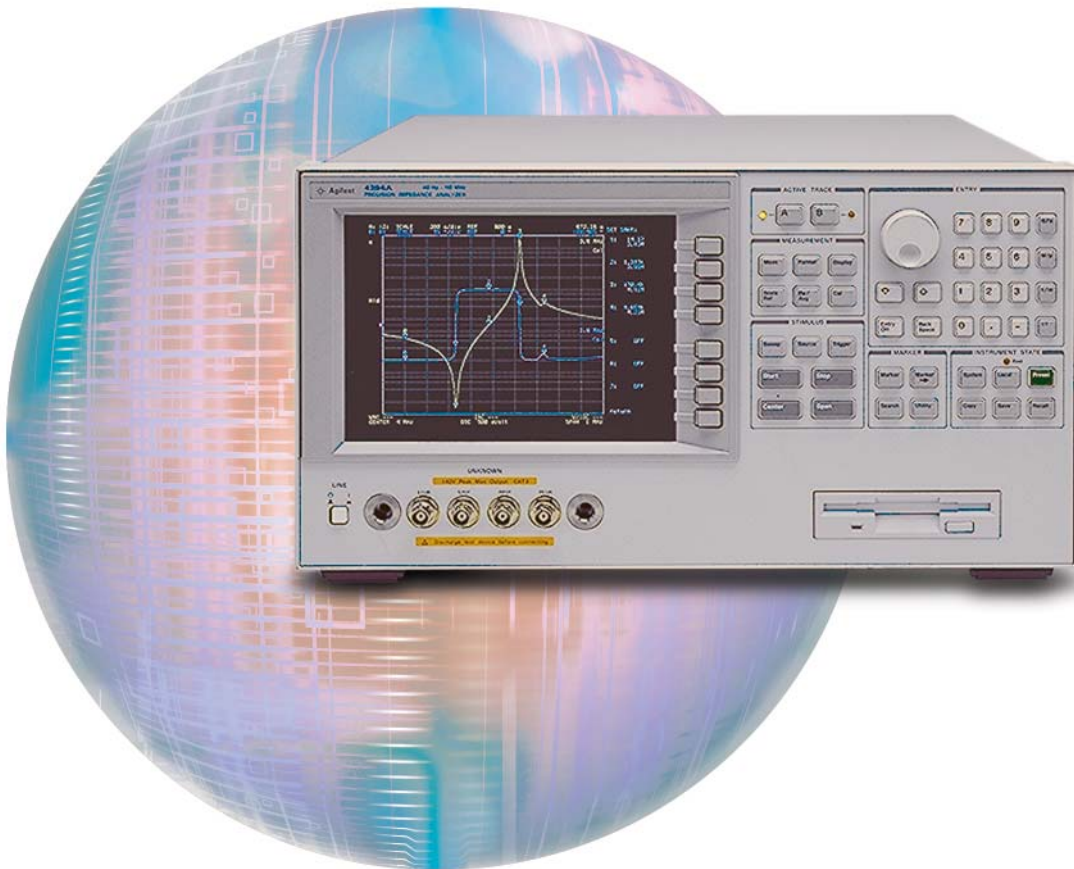


# Agilent 4294A Precision Impedance Analyzer, 40 Hz to 110 MHz

## Configuration Guide



**Agilent Technologies**

## Ordering Guide

The following steps will guide you through configuring your 4294A.

### Standard Furnished Item

Description	Additional Information
CD-ROM Manual	Contains Operation and Programming manuals in PDF. See documentation option for printed manuals.
100 ohm resistor	100 $\Omega$ load resistor module for 4-terminal pair extension. See Available Accessories (General/Miscellaneous Measurement Accessories) for additional information.
Power Cable	
Certificate of Calibration	

*Note:* The following are not furnished: Printed copies of Operation Manual, Programming Manual, I-Basic User's Handbook, Test Fixture and Keyboard. Refer to Accessory Option, Documentation Option and Available Accessories for the selection of these items.

### Step 1. Choose Hardware Option (Mandatory)

Description	Option No.	Requires	Not Compatible	Additional Information
Standard Frequency Reference	4294A-800	None	4294A-1D5	Standard Frequency Reference is installed.
High Stability Frequency Reference	4294A-1D5	None	4294A-800	This option improves the frequency accuracy and stability of the 4294A. BNC Adapter is supplied with 4294A-1D5.
Bottom Feet	4294A-801	None	4294A-802	Includes Bottom Feet
No Bottom Feet	4294A-802	None	4294A-801	No Bottom Feet

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

### Step 2. Choose Accessory Option (If not required, go to Step 3)

Description	Option No.	Requires	Not Compatible	Additional Information
Rackmount Kit	4294A-1CM	None	4294A-1CP	Adds Rackmount kit
Front Handle Kit	4294A-1CN	None	4294A-1CP	Adds Front Handle kit
Handle/Rackmount Kit	4294A-1CP	None	4294A-1CM 4294A-1CN	Adds Handle/Rackmount kit
Keyboard	4294A-810	None	None	Adds Keyboard

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

### Step 3. Choose Documentation Option (If not required, go to Step 4)

Description	Option No.	Additional Information
U.S. - English Localization	4294A-ABA	Printed manuals. 4294A-ABA/ABJ contains the Operation Manual, Programming Manual, I-Basic User's Handbook and Sample Program Disk.
Japan - Japanese Localization	4294A-ABJ	
Service Manual	4294A-0BW	Printed copy of service manual

### Step 4. Choose Calibration Certificate Option (If not required, go to Step 5)

Description	Option No.	Additional Information
ISO 17025 compliant calibration	4294A-1A7	ISO 17025 compliant calibration
ANSI Z540 Compliant Calibration	4294A-A6J	ANSI Z540 compliant calibration

### Step 5. 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
4294A-1D5	High Stability Frequency Reference	4294U-1D5	No	4294A-800	None	Installable at service center only
4294A-801	Bottom Feet	5041-9167 1460-1345 5021-2840 5041-9173	Yes	4294A-802	None	Required Qty 4 Required Qty 2 Required Qty 4 Required Qty 2
4294A-1CM	Rackmount Kit	5063-9216	Yes	None	4294A-1CP	
4294A-1CN	Front Handle Kit	5063-9229	Yes	None	4294A-1CP	
4294A-1CP	Handle/ Rackmount Kit	5188-4430	Yes	None	4294A-1CM 4294A-1CN	
4294A-810	Keyboard (Mini-DIN)	1150-7970	Yes	None	None	

## Available Accessories – General/Miscellaneous Measurement Accessories

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Impedance Probe Kit	42941A	None	40 Hz-110 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	None	U.S. – English localization
	42941A-ABJ	None	Japan – Japanese localization
4-Terminal to 7 mm Terminal Adapter	42942A	None	40 Hz – 110 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	None	Adds 7 mm open/short/load terminations set
	42942A-ABA	None	U.S. – English localization
	42942A-ABJ	None	Japan – Japanese localization
	Test Leads	16048G	None
	16048G-001	None	Adds BNC Bracket
	16048G-ABA	None	U.S. – English localization
	16048G-ABJ	None	Japan – Japanese localization

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

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Test Leads	16048H	None	2 m BNC connector leads. DC – 110 MHz. Usable with the 4294A only
	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.
SMD Test Fixture	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 - 110 MHz. 100 Ω SMD resistors set is furnished.
	16034G-ABA	None	U.S. - English localization
	16034G-ABJ	None	Japan – Japanese localization
SMD Test Fixture	16034H	None	For Array-type SMD; (0.1 to 5)L x (≤ 15)W x (0.6 to 3)H mm. DC – 110 MHz. 100 Ω SMD resistors set and Operation Manual are furnished.
SMD Test Fixture	16044A	None	Kelvin contact test fixture for SMD; (1.6 to 8)L x (0.8 to 8)W x (0.8 to 3)H mm. DC – 10 MHz.
	16044A-ABA	None	U.S. – English localization
	16044A-ABJ	None	Japan – Japanese localization
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
Test Fixture	16047D	None	For axial or radial lead device. DC – 40 MHz. Operation and Service Manual is furnished.
	16047D-701	None	Adds Shorting plate
Test Fixture	16047E	None	For axial or radial lead device. DC – 110 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
Kelvin Clip Leads	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

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

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Kelvin IC Clip Leads	16089C	None	2 IC clips; cable length 1 m. 5 Hz – 100 kHz. Operation and Service Manual is furnished.
Alligator Clip Leads	16089D	None	4 medium clips; cable length 1 m. 5 Hz – 100 kHz. Operation and Service Manual is furnished.
Kelvin Clip Leads	16089E	None	2 large clips; cable length 1 m. 5 Hz – 100 kHz. Operation Note 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
3-Terminal SMD Test Fixture	16043-60011	None	Equivalent to previous 16043A. DC – 110 MHz. For related options and accessories, see Note below this table.
3-Terminal SMD Test Fixture	16043-60012	None	Equivalent to previous 16043B. DC – 110 MHz. For related options and accessories, see Note below this table.
Balanced/ Unbalanced 4-Terminal Converter	16314-60011	None	Equivalent to previous 16314A; Unbalanced 50 Ω to balanced 50 Ω converter for measuring balanced device or circuit. 100 Hz – 10 MHz. Shorting bar and 50 Ω resistor for Short/Load compensation and Operation and Service Manual are furnished.
100 Ω Resistor	04294-61001	None	100 Ω load resistor module for 4-terminal pair extension. Furnished with the 4294A.
Sample Program Disk	04294-18040	None	Contains sample programs in 3.5 inch disk. Furnished with 4294A-ABA/ABJ.
BNC Adapter	1250-1859	4294A-1D5	BNC adapter for 4294A-1D5

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

## Available Accessories – for Calibration and Maintenance

Description	Model Number	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 Number	Additional Information
<i>4294A Data Sheet</i>	5968-3809E	
<i>4294A Brochure</i>	5968-3808E	
<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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