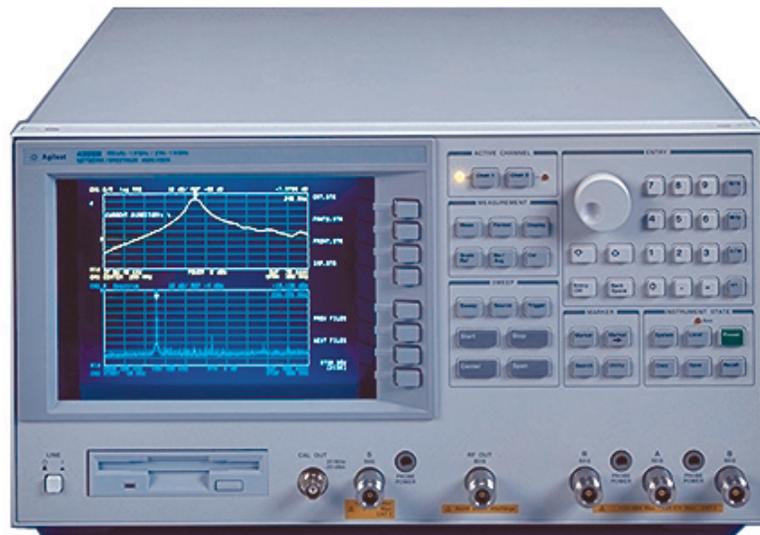


Agilent 4396B RF Network/ Spectrum/Impedance Analyzer

Configuration Guide



Ordering Guide

The following steps will guide you through configuring your 4396B.

Standard Furnished Item

Description	Additional Information
N to BNC adapter (50 ohm)	Adapter used for calibrating the reference level for spectrum analyzer mode; PN 1250-0780
BNC cable	Cable used for calibrating the reference level for spectrum analyzer mode; 24 inch long, PN 8120-1839
CD-ROM Manual	Contains Task Reference, User's Guide, Function Reference, Programming Guide, GPIB Command Reference, Performance Test Manual, Instrument BASIC User's Handbook, and Option 010 Operation Handbook in PDF. See documentation option for printed manuals.
Sample Program Disk	Contains sample programs in two disks (3.5 inch).
INTUILINK CD	Contains Intuilink software for the 4294A/4395A/4396B.
Power Cable	
Certificate of Calibration	

Note: The following are not furnished: Printed copies of manuals, keyboard and test fixture. Refer to Accessory Option, Documentation Option and Available Accessories for the selection of these items.

Important Selection Guide

When Impedance Measurement function is required, be sure to select 4396B-010 at Step 3 and 43961A from Impedance Measurement Accessories.

Step 1. Choose Hardware Option (Mandatory)

Description	Option No.	Requires	Not Compatible	Additional Information
Standard Frequency Reference	4396B-800	None	4396B-1D5	
High Stability Frequency Reference	4396B-1D5	None	4396B-800	This option improves the frequency accuracy and stability of the 4396B.

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

Step 2. Choose Hardware Option (Mandatory)

Description	Option No.	Requires	Not Compatible	Additional Information
No Time-Gated Spectrum Analysis	4396B-706	None	4396B-1D6	Time-gated spectrum analysis function is not installed.
Time-Gated Spectrum Analysis	4396B-1D6	None	4396B-706	Adds the time-gated spectrum measurement function for analyzing intermittent / burst signal spectrum.

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
Impedance Measurement Function	4396B-010	43961A	None	Adds impedance measurement function.

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

Step 4. Choose Accessory Option (If not required, go to Step 5)

Description	Option No.	Requires	Not Compatible	Additional Information
50 ohm – 75 ohm Minimum Loss Pad	4396B-1D7	None	None	Adds minimum loss pad for converting impedance of spectrum measurement input port into 75 ohms from 50 ohms.
Keyboard	4396B-810	None	None	PS/2 keyboard for using Instrument Basic
Rackmount Kit	4396B-1CM	None	None	Can not be installable simultaneously with 4396B-1CP
Front Handle Kit	4396B-1CN	None	None	Can not be installable simultaneously with 4396B-1CP
Handle/Rack Mount Kit	4396B-1CP	None	None	Can not be installable simultaneously with 4396B-1CM or 1CN

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

Step 5. Choose Documentation Option (If not required, go to Step 6)

Description	Option No.	Additional Information
U.S. - English Localization	4396B-ABA	Printed manuals are not furnished. Order documentation option if required.
Japan - Japanese Localization	4396B-ABJ	
Service Manual	4396B-0BW	

Step 6. Choose Calibration Certificate Option (If not required, go to Step 7)

Description	Option No.	Additional Information
17025 Compliant Calibration	4396B-1A7	ISO 17025 compliant calibration
	–	ANSI Z540 compliant calibration option is unavailable

Step 7. 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
4396B-1D5	High Stability Frequency Reference	4396V-1D5	No	None	None	Installable at service center only
4396B-1D6	Time-Gated Spectrum Analysis	4396V-1D6	No	None	None	Installable at service center only
4396B-1D7	50 ohm – 75 ohm Minimum Loss Pad	11852B-004	Yes	None	None	
4396B-810	Keyboard	1150-7970	Yes	None	None	
4396B-1CM	Rackmount Kit	5063-9216	Yes	None	4396B-1CP	
4396B-1CN	Front Handle Kit	5063-9229	Yes	None	4396B-1CP	
4396B-1CP	Handle/Rack Mount Kit	5188-4430	Yes	None	4396B-1CM 4396B-1CN	

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
4396B-010	Impedance Measurement Function	4396V-010	Yes	None (The 43961A Impedance Test Kit is required)	None	See Available Accessories for additional information on the 43961A Impedance Test Kit.
	U.S. - English Localization	4396V-ABA	Yes	None	None	Adds printed copy of English manual for 4396B-010
	Japan - Japanese Localization	4396V-ABJ	Yes	None	None	Adds printed copy of Japanese manual for 4396B-010

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

Available Accessories - Network Measurement Accessories

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
50 ohm S-Parameter Test Set	87511A	None	100 kHz to 500 MHz. Interconnect cable, RF connection cables and Operation and Service Manual are furnished. Choose mandatory option 800 or 001.
	87511A-800	None	7 mm test port
	87511A-001	None	Type-N test port
	87511A-1A7	None	ISO 17025 compliant calibration
	87511A-907	None	Front handle kit
	87511A-908	None	Rackmount kit
	87511A-909	None	Handle and Rackmount kit
	87511A-910	None	Extra operation manual
75 ohm S-Parameter Test Set	87511B	None	100 kHz to 500 MHz; Type-N test port. Interconnect cable, RF connection cables and Operation and Service Manual are furnished.
	87511B-1A7	None	ISO 17025 compliant calibration
	87511B-907	None	Front handle kit
	87511B-908	None	Rackmount kit
	87511B-909	None	Handle and Rackmount kit
	87511B-910	None	Extra operation manual
50 ohm S-Parameter Test Set	85046A	None	300 kHz to 3 GHz; 7 mm test port. Interconnect cable, type-N connection cables and Operation and Service Manual are furnished. Choose mandatory option 001 or 009.
	85046A-001	None	Solid state switch
	85046A-009	None	Mechanical test port transfer switch
	85046A-UK6	None	Commercial Cal Certificate with test data
	85046A-908	None	Rackmount kit
	85046A-910	None	Additional copy of manual, English
	85046A-913	None	Handle and Rackmount kit
	85046A-ABJ	None	Japan – Japanese localization
75 ohm S-Parameter Test Set	85046B	None	300 kHz to 2 GHz; Type-N test port. Interconnect cable, type-N connection cables and Operation and Service Manual are furnished. Choose mandatory option 001 or 009.
	85046B-001	None	Solid state switch
	85046B-009	None	Mechanical test port transfer switch
	85046B-UK6	None	Commercial Cal Certificate with test data
	85046B-908	None	Rackmount kit
	85046B-913	None	Handle and Rackmount kit
	85046B-ABJ	None	Japan – Japanese localization

Available Accessories – Network Measurement Accessories (continued)

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
50 ohm Transmission/Reflection Test Kit	87512A	None	50 ohm (DC to 2 GHz), type-N connectors, Operation and Service Manual is furnished.
75 ohm Transmission/Reflection Test Kit	87512B	None	75 ohm (DC to 2 GHz), type-N connectors, Operation and Service Manual is furnished.
50 ohm 2-Way Power Splitter	11667A	None	DC to 18 GHz; type-N connectors. Operation and Service Manual is furnished.
50 ohm RF Bridge	86205A	None	300 kHz to 6 GHz; type-N connectors. Operation and Service Manual is furnished
75 ohm RF Bridge	86207A	None	300 kHz to 3 GHz; type-N connectors. Operation and Service Manual is furnished.

Note: For more detailed information, refer to RF and Microwave Test Accessories Catalog.

Available Accessories – Network/Spectrum Measurement Accessories

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
50 ohm Accessory Kit	11853A	None	Accessory kit 50 ohm; contains type-N Short terminations and barrels required for test setups. Operation and Service manual is furnished
50 ohm Accessory Kit	11854A	None	Accessory kit 50 ohm; Contains type-N to BNC adapters and type-N Short termination required for test setups. Operation and Service manual is furnished.
75 ohm Cable Set	11857B	None	Cable set 75 ohm, type-N, 61 cm long. Operation and Service manual is furnished.
	11857B-201	None	Phase matched.
	11857B-B24	None	Delete phase match requirement
50 ohm Cable Set	11857D	None	Cable set 50 ohm, 7mm, 61 cm long. Operation and Service manual is furnished.
	11857D-201	None	Phase matched.
	11857D-B24	None	Delete phase match requirement
50 ohm Cable	N6314A	None	Cable 50 ohm, type-N (male) to type-N (male), 61 cm. User's Guide is furnished.
50 ohm Cable	N6315A	None	Cable 50 ohm, type-N (male) to type-N (female), 61 cm. User's Guide is furnished.

Note: For more detailed information, refer to RF and Microwave Test Accessories Catalog.

Available Accessories – Network/Spectrum Measurement Accessories (cont'd.)

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Active Probe	41800A	None	5 Hz to 500 MHz active probe, 100 kilo-ohms (probe alone) / 1 mega-ohm (with 10:1 or 100:1 divider). Probe to BNC adapter, hook tip adapter, slip-on tip adapter, 10:1 and 100:1 dividers and Operation Note are furnished.
	41800A-UK6	None	Commercial Cal Certificate with test data
1 Mega-ohm Input Adapter	41802A	None	5 Hz to 100 MHz 1 Mega-ohm input adapter; Compatible with oscilloscope probes (designated).
	41802A-ABA	None	U.S. - English Localization
	41802A-UK6	None	Commercial Cal Certificate with test data
Probe	85024A	None	300 kHz to 3 GHz high frequency probe for in-circuit measurement. Probe tip to type-N Adapter, 10:1 divider, hook tip adapter, slip-on tip adapter, leads and User's and Service Guide are furnished.
Differential Probe	1141A	None (1142A is required)	DC to 200 MHz differential probe; 1 mega-ohm. 10x/100x attenuator adapters, AC coupling adapter, mini-grabbers, leads and User and Service Guide are furnished. The 1142A is required.
Probe Control and Power Module	1142A	None	Probe control and power module for the 1141A Active Differential Probe. User and Service Guide is common to the 1141A.
Close Field Probe	11940A	None	30 MHz to 1 GHz close field probe, hand held, Operation Note is furnished
	11941A-001	None	Rotary joint attachment
	11940A-003	None	Do not include RG223 dbl-shielded cable/adapters
Close Field Probe	11941A	None	9 kHz to 30 MHz close field probe, hand held, Operation Note is furnished.
	11941A-001	None	Rotary joint attachment
	11941A-003	None	Do not include RG223 dbl-shielded cable/adapters
Close Field Probe Set	11945A	None	Close field probe set. Operation Note is furnished.
	11945A-001	None	Rotary joint attachment
	11945A-003	None	Do not include RG223 dbl-shielded cable/adapters
	11945A-E51	None	11909A Preamplifier with carrying case

Note: For more detailed information, refer to RF and Microwave Test Accessories Catalog.

Available Accessories – Impedance Measurement Accessories

(4396B Option 010 and 43961A are minimum requirements for impedance measurements)

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Impedance Test Kit	43961A	4396B-010	Impedance test kit; contains impedance test adapter, N (m)-N (m) cable, Open/Short/Load terminations, carrying case and Notice.
Parallel Electrode SMD Test Fixture	16196A	4396B-010, 43961A	For 1608 (mm) / 0603 (inch) SMD up to 3 GHz
	16196A-710	None	Adds magnifying lens and tweezers
	16196A-ABA	None	U.S. – English localization
	16196A-ABJ	None	Japan – Japanese localization
Parallel Electrode SMD Test Fixture	16196B	4396B-010, 43961A	For 1005 (mm) / 0402 (inch) SMD up to 3 GHz
	16196B-710	None	Adds magnifying lens and tweezers
	16196B-ABA	None	U.S – English localization
	16196B-ABJ	None	Japan – Japanese localization
Parallel Electrode SMD Test Fixture	16196C	4396B-010, 43961A	For 0603 (mm) / 0201 (inch) SMD up to 3 GHz
	16196C-710	None	Adds magnifying lens and tweezers
	16196C-ABA	None	U.S. – English localization
	16196C-ABJ	None	Japan – Japanese localization
Parallel Electrode SMD Test Fixture	16196D	4396B-010, 43961A	For 0402 (mm) / 01005 (inch) SMD up to 3 GHz
	16196D	None	Adds magnifying lens and tweezers
	16196D	None	U.S – English localization
	16196D	None	Japan – Japanese localization
High Temperature Test Fixture	16194A	4396B-010, 43961A	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	None	Adds EIA/EIAJ size shorting bar set
	16194A-701	None	Adds 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

Note: For more detailed information, refer to RF and Microwave Test Accessories Catalog.

Available Accessories – Impedance Measurement Accessories (cont'd.)

(4396B Option 010 and 43961A are minimum requirements for impedance measurements)

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
Bottom Electrode SMD Test Fixture	16197A	4396B-010, 43961A	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	None	Adds 0603 (mm) / 0201 (inch) device guide
	16197A-ABA	None	U.S. – English localization
	16197A-ABJ	None	Japan – Japanese localization
SMD Test Fixture	16092A	4396B-010, 43961A	For SMD and leaded device up to 500 MHz. Operation Note is furnished.
Parallel Electrode SMD Test Fixture	16192A	4396B-010, 43961A	For SMD up to 2 GHz. Operation and Service Manual is furnished.
	16192A-010	None	Adds EIA/EIAJ size shorting bar set
	16192A-701	None	Adds 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	None	Adds magnifying lens and tweezers
DC Bias Adapter	16200B	4396B-010, 43961A	External DC bias adapter; 5 A max or 40 V max, 1 MHz to 1 GHz. Operation and Service Manual is furnished.
	16200B-001	None	Adds shorting bars and 51 Ω working standard resistors set; from 0603 (mm) / 0201 (inch) to 3216 (mm) / 1206 (inch)
Test Fixture	16093-65003	4396B-010, 43961A	Equivalent to previous 16093A; for leaded device up to 250 MHz
Test Fixture	16093-65004	4396B-010, 43961A	Equivalent to previous 16093B; for leaded device up to 125 MHz
Probe Test Fixture	16094-65000	4396B-010, 43961A	Equivalent to previous 16094A; for in-circuit measurement up to 125 MHz. Recommended test cable is 8120-4779.
Test Cable	8120-4779	4396B-010, 43961A	7-mm connector cable recommended for using 16094-65000; Cable length 60 cm.

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

Available Accessories – Calibration kit

Description	Model Number	Requires (Instrument must already include the following)	Additional Information
50 ohm Calibration kit	85031B	None	Calibration kit 50 ohm; Contains 7mm Open/Short, 50 ohm Load terminations, Operation and Service Manual.
	85031B-1A7	None	ISO 17025 compliant calibration
	85031B-A6J	None	ANSI Z540 compliant calibration
	85031B-UK6	None	Commercial Cal Certificate with test data
50 ohm Calibration kit	85032F	None	Calibration kit 50 ohm; Contains type-N Open, Short, 50 ohm Load terminations, Operation and Service Manual.
	85032F-100	None	Adds Type-N 50 ohm female to female adapter
	85032F-200	None	Adds Type-N 50 ohm male to male adapter
	85032F-300	None	Adds Type-N 50 ohm female to male adapter
	85032F-500	None	Adds four 7mm to type-N 50 ohm adapter
	85032F-1A7	None	ISO 17025 compliant calibration
	85032F-A6J	None	ANSI Z540 compliant calibration
	85032F-UK6	None	Commercial Cal Certificate with test data
50 ohm Calibration kit	85033E	None	Calibration kit 50 ohm; Contains 3.5mm Open, Short and 50 ohm Load terminations, OSL holder, Operation and Service Manual.
	85033E-100	None	Adds 3.5mm female to female adapter
	85033E-200	None	Adds 3.5mm male to male adapter
	85033E-300	None	Adds 3.5mm female to male adapter
	85033E-400	None	Adds four 3.5mm to type-N adapters
	85033E-500	None	Adds four 3.5mm to 7mm adapters
	85033E-1A7	None	ISO 17025 compliant calibration
	85033E-A6J	None	ANSI Z540 compliant calibration
	85033E-UK6	None	Commercial cal. Certificate with test data
75 ohm Calibration kit	85036B	None	Calibration kit 75 ohm; Contains type-N Open, Short, 50 ohm Load terminations, type-N adapters, Operation and Service Manual.
	85036B-1A7	None	ISO 17025 compliant calibration
	85036B-A6J	None	ANSI Z540 compliant calibration
	85036B-UK6	None	Commercial Cal Certificate with test data

Note: For more detailed information, refer to RF and Microwave Test Accessories Catalog.

Literature Resource

Title	Publication Number
<i>4396B Data Sheet</i>	5965-6311E
<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
<i>RF and Microwave Test Accessories Catalog</i>	5968-4314EN

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

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