

Keysight 8990B Peak Power Analyzer



Installation
Guide

Notices

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For warranty service or repair, this product must be returned to a service facility designated by Keysight. For products returned to Keysight for warranty service, the Buyer shall prepay shipping charges to Keysight and Keysight shall pay shipping charges to return the product to the Buyer. However, the Buyer shall pay all shipping charges, duties, and taxes for products returned to Keysight from another country.

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The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the Buyer, Buyer-supplied products or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

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Safety Summary

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements.

Safety Notices

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or loss of life. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

Safety Symbols

The following symbols on the instrument and in the documentation indicate precautions which must be taken to maintain safe operation of the instrument.

	Frame or chassis (ground) terminal		Alternating current (AC)
	Caution, risk of danger (refer to this manual for specific Warning or Caution information)		

Safety Considerations

Read the information below before using this instrument.

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards for design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements.

WARNING

- An appliance coupler (main input power cord) is a power disconnect device. Do not position the 8990B such that access to the coupler is impaired.
 - No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electric shock, do not remove the 8990B covers.
 - If the 8990B is not used as specified, the built-in safety protection features could be impaired. The 8990B must be used in normal conditions only (in which all means of protection are intact).
-

Environmental Conditions

The 8990B is designed for indoor use only.

Environmental condition	Requirement
Temperature	Operating condition – 5 °C to 40 °C
	Storage condition – -40 °C to 70 °C
Humidity	Operating condition – Up to 95% RH at 40 °C (non-condensing)
	Storage condition – Up to 90% RH at 65 °C
Altitude	Up to 4600 m (15000 ft.)

Regulatory Information

The 8990B complies with the following safety and Electromagnetic Compatibility (EMC) compliances:

Safety compliance

The 8990B conforms to the requirements of the following safety standards:

- IEC 61010- 1:2001/EN 61010- 1:2001
- CAN/CSA- C22.2 No. 61010- 1- 04
- ANSI/UL std No. 61010- 1:2004

EMC compliance

The 8990B complies with the essential requirements of the following applicable European (EC) Directives, and carries the CE marking accordingly to the Low Voltage Directive (2006/95/EC) and EMC Directive (2004/108/EC).

EMC tests conform to the IEC 61326- 1:2005/EN 61326- 1:2006 and CISPR 11:2003/EN 55011:2007 (Group 1, Class A). In order to preserve the EMC performance of the 8990B, any cable which becomes worn or damaged must be replaced with the same type and specification.

The 8990B also meets the following EMC standards:

- Canada: ICES/NMB- 001: Issue 4, June 2006
- Australia/New Zealand: AS/NZS CISPR11:2004

Degradation of some instrument specifications can occur in the presence of ambient EM fields and noise that are coupled to the power line or I/O cables of the 8990B. The 8990B will self-recover and operate to all specifications when the source of ambient EM fields and noise are removed or when the 8990B is protected from the ambient EM fields or when the 8990B cabling is shielded from the ambient EM noise.

Regulatory Markings

	<p>The CE mark is a registered trademark of the European Community. This CE mark shows that the product complies with all the relevant European Legal Directives.</p>		<p>The CSA mark is a registered trademark of the Canadian Standards Association.</p>
	<p>This symbol indicates the time period during which no hazardous or toxic substance elements are expected to leak or deteriorate during normal use. Forty years is the expected useful life of the product.</p>	<p>ICES/NMB-001</p> <p>ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada.</p>	
	<p>This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestic household waste.</p>		<p>The RCM mark is a registered trademark of the Australian Communications and Media Authority.</p>

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical or electronic product in domestic household waste.

Product category:

With reference to the equipment types in the WEEE directive Annex 1, this instrument is classified as a “Monitoring and Control Instrument” product.

The affixed product label is as shown below.



Do not dispose in domestic household waste.

To return this unwanted instrument, contact your nearest Keysight Service Center, or visit <http://about.keysight.com/en/companyinfo/environment/takeback.shtml> for more information.

Sales and Technical Support

To contact Keysight for sales and technical support, refer to the support links on the following Keysight websites:

- www.keysight.com/find/peakpoweranalyzer
(product-specific information and support, software and documentation updates)
- www.keysight.com/find/assist
(worldwide contact information for repair and service)

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This chapter guides you on how to set up the 8990B peak power analyzer.

Introduction

This guide provides the information on how to:

- physically check the 8990B for any damage.
- position the 8990B for proper airflow.
- connect power and peripherals to the 8990B.
- tilt the 8990B upward for easier viewing.
- turn on the 8990B.
- connect the 8990B to a compatible Keysight wideband power sensor and oscilloscope probe.
- use the Keysight IO Libraries Suite to configure the remote programming interfaces.
- attach the rack mount kit.
- install the stacking plate.
- install application programs on 8990B.
- change Windows® System settings.

NOTE

- Ensure that you have read and understood the preceding safety information before you proceed.
 - For more detailed operating information, refer to the *8990B User's Guide* and *Programming Guide*.
-

Documentation Information

This guide is only part of the user-related documentation provided for the 8990B.

The documentation for the 8990B consists of the following:

- *Installation Guide* (this manual)
Provides the information on how to properly set up your 8990B for operation. This manual is provided as a printed copy in English with purchase of the 8990B. You can also locate this manual on the supplied Product Reference CD-ROM as a PDF file in English only.
- *User's Guide*
Describes how to operate your 8990B from the front panel interface to make measurements using a compatible Keysight wideband power sensor and oscilloscope probe. This manual is provided as a printed copy in English with purchase of the 8990B. You can also locate this manual on the supplied Product Reference CD-ROM as a PDF file in English only.
- *Programming Guide*
Explains how to operate your 8990B over a remote interface. You can locate this manual on the supplied Product Reference CD-ROM as a PDF file in English only.
- *Service Guide*
Describes how to carry out performance verification tests and adjustments on your 8990B, as well as provides the disassembly and troubleshooting information.

Printed manuals are available by ordering the options as listed in [Optional items](#).

NOTE

There is also a *Connectivity Guide* available on the *Keysight IO Libraries Suite CD-ROM* as a PDF file. This guide helps you to configure your 8990B over LAN and USB remote interfaces.

Initial Inspection

When you receive your 8990B, inspect the unit for any obvious damage such as broken terminals or cracks, dents, and scratches on the chassis that may occur during shipment. If any damage is found, notify the nearest Keysight Sales Office immediately.

Keep the original packaging in case the 8990B has to be returned to Keysight in future. If you return the 8990B for service, attach a tag identifying the owner and model number. Also include a brief description of the problem.

Standard shipped items

Verify that you have received the following items with your 8990B. If anything is missing or damaged, contact the nearest Keysight Sales Office.

- 8990B peak power analyzer
- Power cord
- Optical mouse
- Mini keyboard
- Stylus pen
- Two units of 50 ohm BNC cable
- Keysight 8990B Peak Power Analyzer User's Guide^[1]
- Keysight 8990B Peak Power Analyzer Installation Guide^[1]
- Keysight 8990B Peak Power Analyzer Product Reference CD-ROM
- Keysight IO Libraries Suite CD-ROM
- Certificate of Calibration

Standard 8990B options

- Standard hard drive installed (Option 800)^[2]
- Removable hard drive installed (Option 801)^[1]
- 8990B with USB host connectivity (Option U01)^[3]
- 8990B without USB host connectivity (Option U02)^[2]

[1] Only applicable when the default manual configuration, 8990B-ABA is selected.

[2] Select either Option 800 or Option 801

[3] Select either Option U01 or U02

Optional items

The following items are available for purchase separately.

- Rack mount kit (Option 1CM, 8U full rack)
- N6921A stacking kit
- N6922A BNC extension cable, male to female
- N6923A BNC adapter, right angle
- N6924A additional hard drive with image
- N6925A storage pouch
- 8990B Programming Guide, English (Option OBF, printed)
- 8990B User's Guide, English and Programming Guide, English (Option OBK, printed)
- 8990B Service Guide, English (Option OBW, printed)
- 8990B User's Guide, Japanese and Programming Guide, English (Option ABJ, printed)
- 8990B User's Guide, English (Option ABA, printed)
- N1923A User's Guide, Japanese (N1923A-ABJ, printed)
- N1923A User's Guide, English (N1923A-OB1, printed)
- N1923A Service Guide, English (N1923A-OBN, printed)
- N1924A User's Guide, Japanese (N1924A-ABJ, printed)
- N1924A User's Guide, English (N1924A-OB1, printed)
- N1924A Service Guide, English (N1924A-OBN, printed)
- Return-to-Keysight Warranty And Service Plan
- Return-to-Keysight Calibration Plan
- ISO 17025 compliant calibration test data (Option 1A7, printed)
- ANSI/NCSL Z540 Certificate of Compliance Calibration (Option A6J, printed)
- Multipulse analysis software, fixed perpetual license (8990B-1FP)
- Multipulse analysis software (N6903A)

Sensor Compatibility

The 8990B is compatible with the Keysight N1923/4A wideband power sensor. A combination of the 8990B and the N1923/4A wideband power sensor enables the RF pulse rise or fall time measurement of up to 5 ns. The following table lists the frequency range and dynamic power range for each of these sensors:

Wideband power sensor model	Frequency range	Rise/fall time	Dynamic power range
N1923A	50 MHz to 18 GHz	≤ 5.5 ns ^[1]	-35 dBm to +20 dBm
N1924A	50 MHz to 40 GHz	≤ 5.5 ns ^[1]	-35 dBm to +20 dBm

[1] Applicable for frequency of ≥ 500 MHz.

The 8990B is also compatible with the Keysight N1921/2A P-Series wideband power sensor. The following table lists the frequency range and dynamic power range for each of these sensors:

P-Series wideband power sensor model	Frequency range	Rise/fall time	Dynamic power range
N1921A	50 MHz to 18 GHz	≤ 13 ns ^[1]	- -35 dBm to +20 dBm (≥ 500 MHz) - -30 dBm to +20 dBm (50 MHz to 500 MHz)
N1922A	50 MHz to 40 GHz	≤ 13 ns ^[1]	- -35 dBm to +20 dBm (≥ 500 MHz) - -30 dBm to +20 dBm (50 MHz to 500 MHz)

[1] Specification applies only when the Off video bandwidth is selected.

NOTE

For further information on these sensors, refer to their respective manuals.

Probe Compatibility

The 8990B is compatible with the Keysight N2873A passive probe which has a DC-to-500 MHz frequency range and a 10:1 attenuation factor.

Positioning the 8990B

Position the 8990B where it will have sufficient clearance for airflow around the top, rear, and sides (refer to the following figure). Also, only place the 8990B on a hard surface to prevent blocking the airflow underneath the 8990B (for example, a piece of paper or carpet can block the fans and cause the 8990B to overheat).

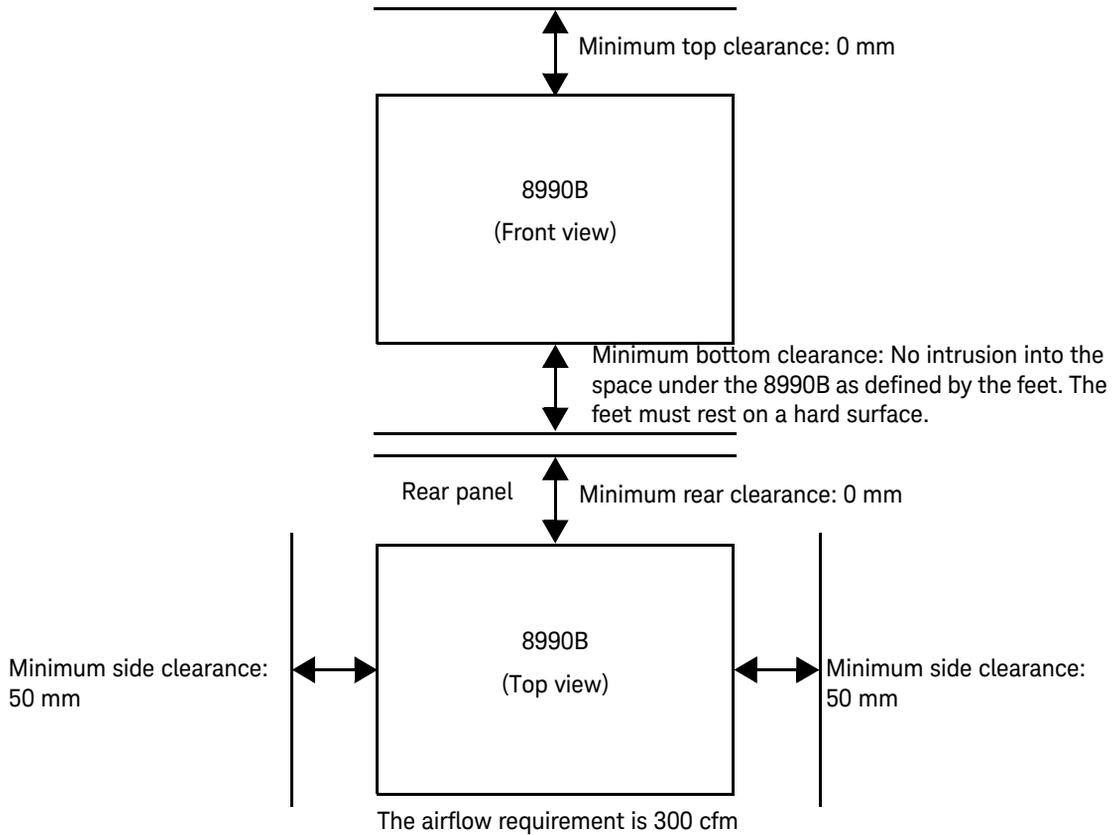


Figure 1-1 Positioning the 8990B for proper airflow

Front Panel Outlook

This topic briefly describes the functions of the front panel keys, knobs, and connectors. The user's guide provides more detailed information on how to use them.



Figure 1-2 Front panel outlook

This section is associated with the power switch, probe compensation output, measurement channels, sensor check source, and USB ports.

Item	Description	
	Power on/off	Press this key to turn on or off the 8990B
	RF input channels	Connect to the RF input using the N1921/2/3/4A wideband power sensors
	Video input channels	Connect to the video input using the N2873A oscilloscope probes or N6922A BNC cable
	Probe compensation output	Performs adjustment of the probe capacitor in order to maximize the bandwidth of the probe. NOTE: Probe compensation will only be supported in future releases.
	Sensor check source	Sensor check source for sensor that outputs an RF carrier of 1.05 GHz with a modulating pulse train signal of 1.5 kHz from a Type-N female connector. The RF level is 0 dBm at the carrier frequency.
	USB hosts	Connect to external USB devices. You can connect or disconnect the external USB devices without shutting down or restarting the 8990B.

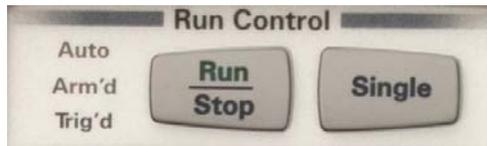


Figure 1-3 Run Control section

This section is categorized as run controls.

Item	Description
	Press this key to start or stop a continuous data acquisition
	Press this key to make a single data acquisition when the next trigger event occurs



Figure 1-4 Horizontal section

This section is associated with horizontal controls as well as zoom, autoscale, touch screen, clear display, and default setup functions.

Item	Description
	Turn this knob to configure the horizontal scale of the display. NOTE: Vernier function (fine scaling) will only be supported in future releases.
	Press this key to view a magnified section of the waveform
	Turn this knob to configure the horizontal position of the waveform. Push this knob to set the horizontal position to zero.
	Press this key to automatically scale the waveform to the optimized display
	Press this key to enable or disable the touch screen

Item	Description
	<p>Press this key to clear the waveform display. When the 8990B is running in the continuous acquisition mode, this function will clear the current waveform and redraw it.</p> <p>Other than the waveform, this function also clears the data for measurements, markers, droop, and averaging.</p>
	<p>Press this key to return the 8990B to the factory default settings</p>



Figure 1-5 Trigger section

This section is categorized as trigger controls.

Item	Description
	Press this key to set the trigger source to any of the channels or auxiliary. The selected trigger source LED above this key will be illuminated.
	Press this key to trigger on a rising or falling edge. The selected slope LED above this key will be illuminated.
	Press this key to set the trigger sweep mode to either automatic or triggered. The selected sweep mode LED above this key will be illuminated.
	Press this key to access the trigger menu
	Turn this knob to configure the trigger level. Push this knob to set the trigger level to 50%.

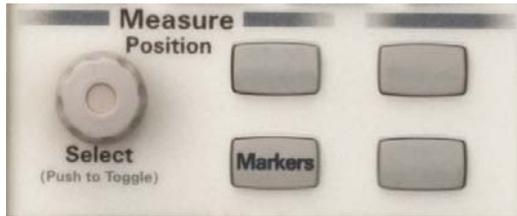


Figure 1-6 Measure section

This section is categorized as measurement and marker controls.

Item	Description
	Turn this knob to change the position of the marker. Push this knob to select a marker or toggle between two markers.
	Press this key to access the marker selection dialog

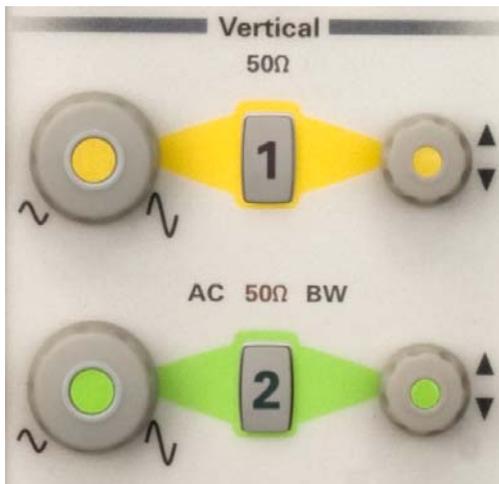


Figure 1-7 Vertical section

This section is categorized as vertical controls.

This section has a set of LEDs per channel that indicate the input impedance, coupling, and whether or not bandwidth limit is enabled for the channel.

Item	Description
	Turn the knob for a particular channel to configure the vertical scale of the display. NOTE: Vernier function (fine scaling) will only be supported in future releases.
	Press this key to turn the display on or off for a particular channel
	Turn the knob for a particular channel to configure the vertical offset of the waveform

Side Panel Outlook

The following connectors and hard drive are available on the side panel. To set up the remote interfaces, refer to “[Remote Interface Connections](#)” on page 43.

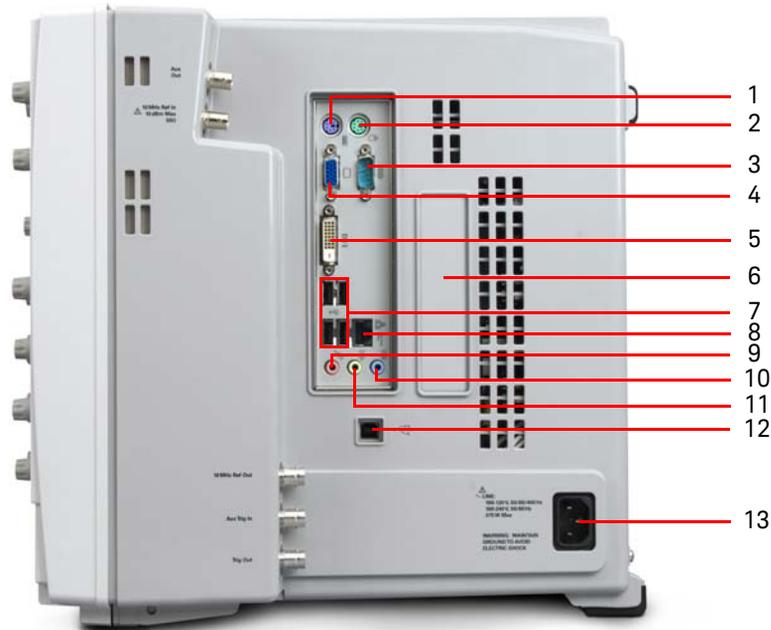


Figure 1-8 Side panel outlook

No.	Item	Description
1	Keyboard PS/2 port	Allows a keyboard to be plugged in to control the 8990B graphical interface. The keyboard must be plugged in prior to turning on the 8990B.
2	Mouse PS/2 port	Allows a mouse to be plugged in to control the 8990B graphical interface. The mouse must be plugged in prior to turning on the 8990B.
3	Serial printer port	Allows a serial printer to be connected to the 8990B
4	XGA video output	Allows an external monitor to be connected to the 8990B

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No.	Item	Description
5	DVI video output	Allows an external monitor to be connected to the 8990B
6	Removable hard drive	Allows the 8990B hard drive to be swapped with another hard drive
7	USB ports	Allows external USB devices to be connected to the 8990B. You can connect or disconnect the external USB devices without shutting down or restarting the 8990B.
8	LAN port	Allows the 8990B to be controlled remotely over the LAN interface
9	Microphone port	Allows a microphone to be connected to the 8990B
10	Audio line-in port	Allows an external audio device to be connected to the 8990B
11	Headphone sound output port	Allows a headphone to be connected to the 8990B
12	USB Type-B port	Allows the 8990B to be controlled remotely over the USB interface
13	AC power inlet	Allows the 8990B to be connected to an AC line voltage

Rear Panel Outlook

The following connectors are available on the rear panel.



Figure 1-9 Rear panel outlook

No.	Item	Description
1	Auxiliary trigger out	Used to provide internal 8990B waveforms for calibration and external triggering
2	10 MHz reference in	Used to synchronize the 8990B horizontal timebase system to a reference clock that you provide. The clock that you provide must meet the following specifications: Level: -2 dBm to 10 dBm Impedance: 50 Ω

1 Getting Started

No.	Item	Description
3	10 MHz reference out	Used to track the external reference input level. The output specifications are as follows: Level: 4 dBm \pm 2 dB Impedance: 50 Ω
4	Auxiliary trigger in	Used as a trigger source for rising edge TTL level triggering only. The input specifications are as follows: Level: \pm 5 V Impedance: 50 Ω
5	Trigger out	Used to provide TTL compatible logic levels with an output impedance of 50 Ω for external triggering

Connecting Power

- 1 Position the 8990B so that it is not difficult to unplug the power cord.
- 2 Connect the power cord to the AC power inlet at the side panel of the 8990B and then to a suitable AC voltage source (100 V to 120 V at 50 Hz, 60 Hz, or 400 Hz, and 100 V to 240 V at 50 Hz or 60 Hz). The power cord serves as the main disconnecting device.

NOTE

- The 8990B power supply automatically adjusts for line input voltages in the range of 100 to 240 Vac.
- The line cord provided is matched by Keysight to the country of origin of the order.

Connecting Peripherals

You can connect peripherals such as a mouse, a keyboard, a LAN cable, a USB device, an XGA cable, and a printer to the 8990B. Refer to [Front Panel Outlook](#) and [Side Panel Outlook](#) for the location of the front and side panel ports to plug in the peripherals.

Tilting the 8990B

To tilt the 8990B upward for easier viewing, perform the following steps:

- 1 Lift the front of the 8990B, grasp one of the plastic feet on either side, and pull it down and forward until it latches into place.
- 2 Repeat for the plastic feet on the other side.

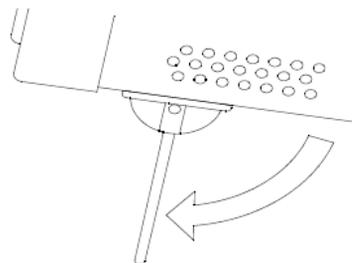


Figure 1-10 Latching the 8990B front feet

Turning On the 8990B

You can turn on the 8990B without connecting a wideband power sensor or an oscilloscope probe.

- 1** Press  at the lower left corner of the 8990B front panel.
- 2** After a short initialization period, the 8990B display appears.
- 3** The 8990B is now ready for use.

You can connect and disconnect sensors and probes while the 8990B is turned on.

Connecting a Wideband Power Sensor

Connect the sensor cable to the 8990B RF input channel as shown in the following figure. Ensure that you align the red dots on the sensor cable and the 8990B connector.



Figure 1-11 Connecting the sensor cable to the 8990B

Allow a few seconds for the 8990B to read the data contained in the sensor EEPROM and perform automatic zeroing of the sensor.

NOTE

- Ensure that the sensor cable is attached and removed in an indoor environment.
- The 8990B performs internal zeroing and calibration routines on the sensor. The process used for this internal zeroing and calibration is explained in the *N1921/2A Operating and Service Guide* and *N1923/4A User's Guide*.
- The *8990B User's Guide* explains in more detail the methods used to perform the zeroing and calibration of the sensor.

Connecting a Probe

- 1 Attach the probe connector to the 8990B video input channel as shown in the following figure. Push it straight on until it latches into place. Turn the connector head slowly to the right until you hear it click firmly in place.



Figure 1-12 Connecting the probe to the 8990B

- 2 To disconnect the probe, turn the connector head slowly to the left, then pull the connector body away from the front panel of the 8990B without twisting it.

Remote Interface Connections

The 8990B can be communicated from the PC via LAN and USB interfaces. This section describes how to establish and verify the connections of these interfaces.

Only one interface should be used at any one time.

To connect the 8990B to your PC, and configure and verify the connection, you can use the Keysight IO Libraries Suite or an equivalent.

- To install the Keysight IO Libraries Suite, follow the instructions in the *Keysight IO Libraries Suite CD-ROM* provided with the standard purchase of the 8990B.
- You can also access other information on Keysight IO Libraries at www.keysight.com/find/iolib.

For more information on configuring the remote interface connectivity, refer to the *Keysight IO Libraries Suite Connectivity Guide*. If you have installed the IO Libraries Suite, you can access the connectivity guide from the IO Libraries Control icon. Alternatively, you can access the connectivity guide via the Web at www.keysight.com/find/connectivity.

USB

The USB interface requires no front panel configuration. The USB operation and configuration is supported by the version of VISA and SICL IO libraries on your PC.

NOTE

- Before connecting the USB cable, ensure that the I/O software has been installed on your PC.
- Before attempting to detect the USB connection using the I/O software, ensure that the 8990B software application is running.
- Refer to “**Remote Interface Connections**” on page 43 for information on the Keysight IO Libraries Suite software. If you have installed other I/O software, refer to the documentation that accompanies the software.

- 1 After the I/O software has been installed on your PC, connect the 8990B to your PC using a Type A-to-Type B USB cable.
- 2 The PC will confirm the hardware connection.
- 3 The Found New Hardware Wizard will automatically start and guide you through the configuration of the 8990B as a USB device. Click **Next** to install the software automatically and accept all defaults to complete the installation.

NOTE

If you have installed the Keysight IO Libraries Suite software, you have also installed low-level drivers. Therefore, you do not need to insert the CD when requested by the Found New Hardware Wizard.

- 4 When the Wizard has completed configuring the 8990B, an Assign USB device alias window will appear on your PC. If required, enter an **Alias** name to easily identify the 8990B.
- 5 You can use the Connection Expert in the IO Libraries Suite to check the instrument identification.
- 6 Now, you can use various programming environments to control the 8990B. For an overview on programming the 8990B via USB, refer to the connectivity guide and the programming guide.

LAN

NOTE

- Before connecting the LAN cable, ensure that the I/O software has been installed on the PC.
- Before attempting to detect the LAN connection using the I/O software, ensure that the 8990B software application is running.
- Refer to “**Remote Interface Connections**” on page 43 for information on the Keysight IO Libraries Suite software. If you have installed other I/O software, refer to the documentation that accompanies the software.

- 1 Using a standard LAN patch cable, connect both the PC and the 8990B to LAN outlets.
- 2 Disable the 8990B Windows Firewall from **Control Panel > System and Security > Windows Firewall > Turn Windows Firewall on or off**.

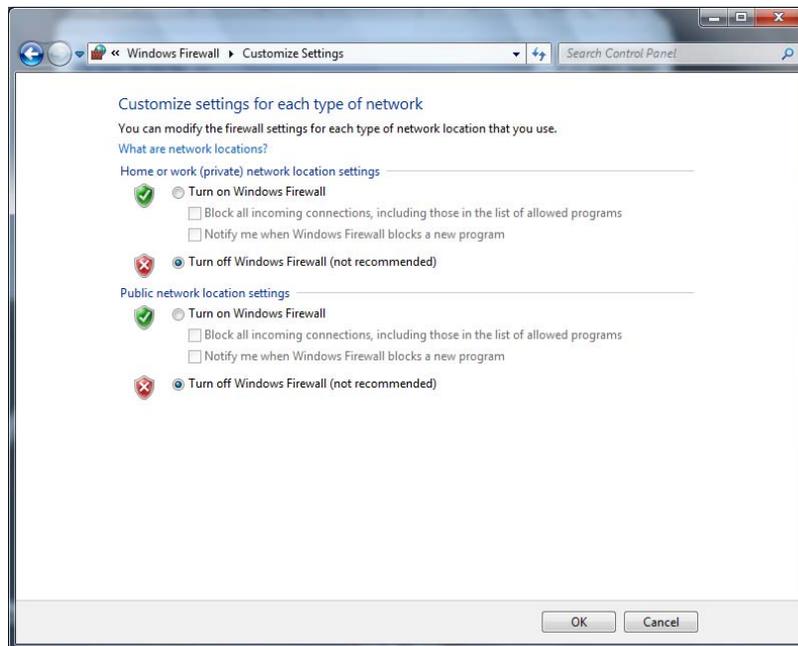


Figure 1-13 Turn off Windows Firewall

1 Getting Started

- 3 Use the Connection Expert utility of the IO Libraries Suite to add the 8990B LAN instrument. Change the instrument identification type to ***IDN query** and verify the connection.

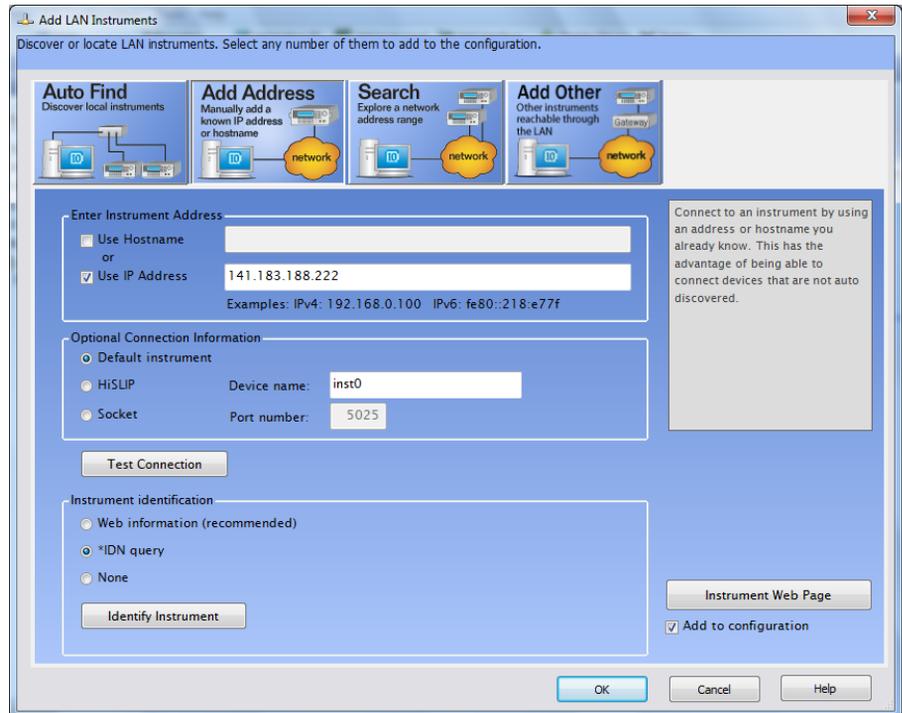


Figure 1-14 Add the 8990B LAN instrument

- 4 You can use various programming environments to control the 8990B. For an overview on programming the 8990B via LAN, refer to the connectivity guide and the programming guide.

NOTE

- If the 8990B is not detected automatically on the Connection Expert, you can manually insert a known IP address of the 8990B to detect it. To obtain this IP address, go to the 8990B front panel display and select **Tools > Remote Setup**. Then, on the Connection Expert, go to the Add Address page on the Add LAN Instruments dialog and insert the IP address. You should now be able to detect the 8990B and verify the connection.
 - If you configure an invalid IP address or an IP address that is used by another device or host, an error message is generated. This error can be read in the Log view of the Multi-Purpose pane at the bottom of the display or by sending the `SYSTEM:ERRor?` query.
-

Once connection has been established, you can configure the 8990B LAN settings remotely through SCPI (refer to the programming guide).

Rack Mounting the 8990B

This section explains how to rack mount the 8990B using the Option 1CM rack mount kit.

Included parts

The rack mount kit includes the following parts (additional quantities of some of these items are included for your convenience):

- Support tray
- Trim plate (consists of a bottom piece, top piece, and two side pieces)
- BNC connectors to be inserted into the bottom trim plate
- Black rubber stoppers to plug holes in the bottom trim plate if the hole is not being used for a BNC connection
- Two track rails
- Two feet brackets
- Sheet metal nuts
- Three sets of screws (cream-colored pan head screws for attaching the trim plate pieces, 10-32 pan head screws for attaching the side rails to the rack, and metallic T-20 TORX screws for attaching the feet brackets to the support tray)

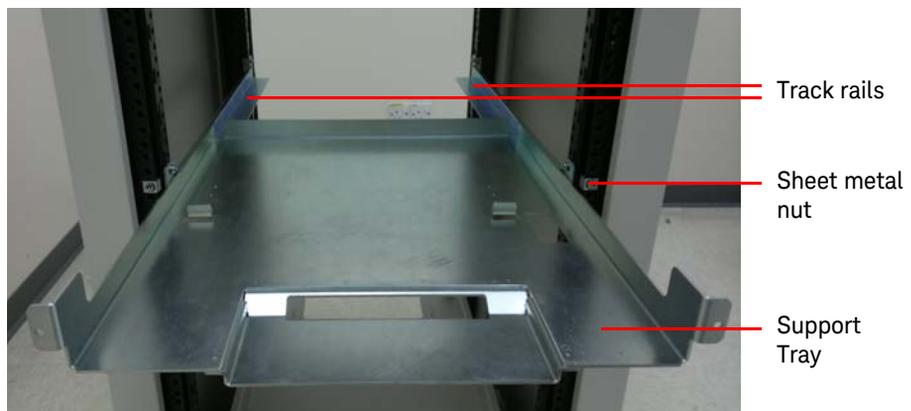


Figure 1-15 Track rails, sheet metal nut, and support tray

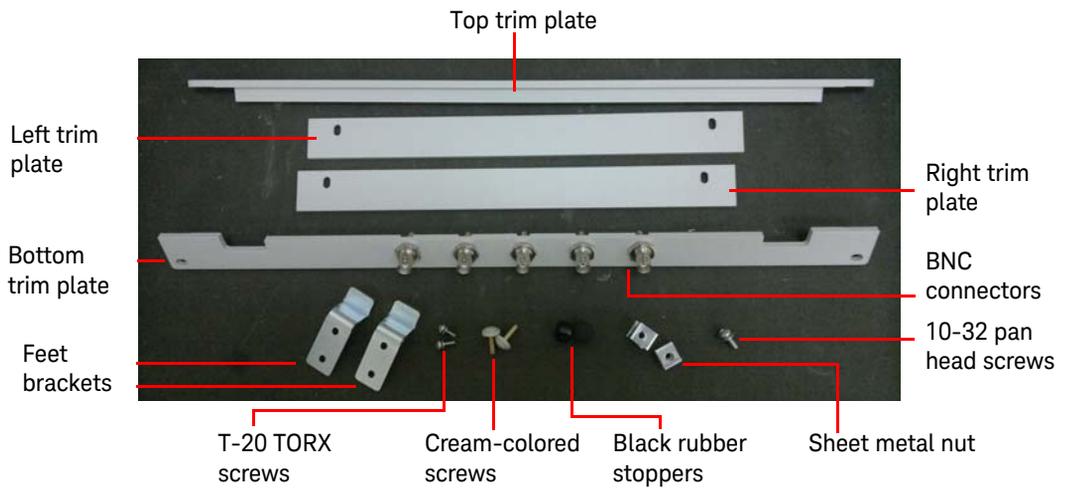


Figure 1-16 Trim plates, foot brackets, T-20 TORX screws, cream-colored screws, black rubber stoppers, sheet metal nut, and 10-32 pan head screws

Installation

NOTE

You will need a T-20 TORX driver and a #2 Phillips screwdriver to install the rack mount kit.

Preparing the rack

- 1 To prepare the rack for sheet metal nut installation, eight rack mount units must be designated for use. [Figure 1-17](#) shows how to determine a rack unit.

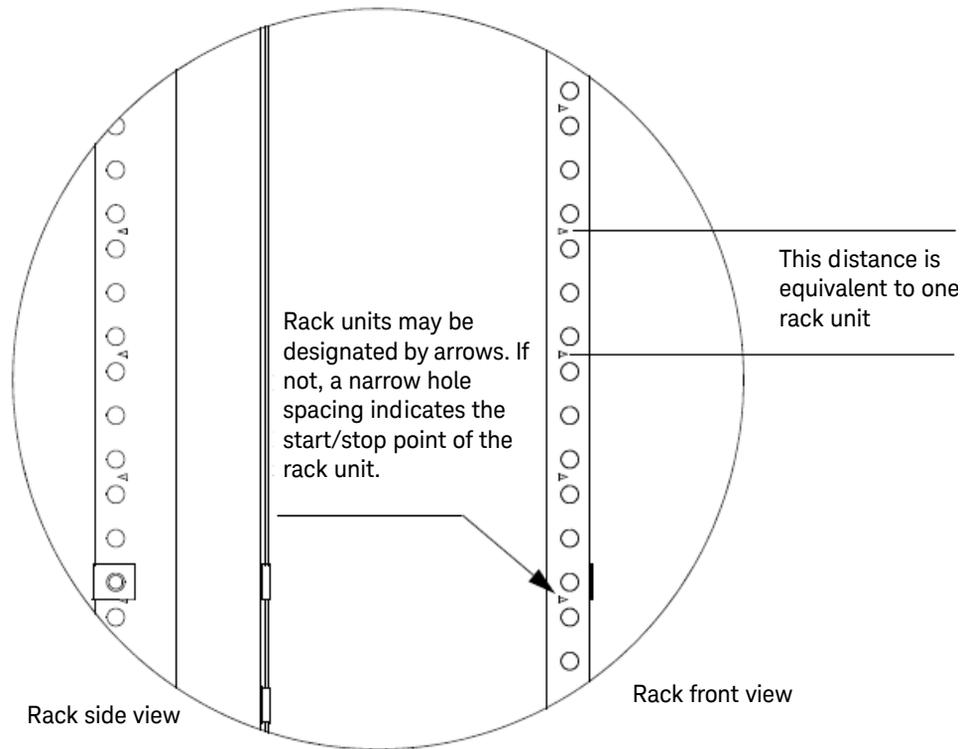


Figure 1-17 Rack unit

2 Figure 1-18 indicates the proper locations for the sheet metal nut locations.

NOTE

- To ensure a level installation, the same eight rack unit locations are used on each vertical rack piece.
- The following diagram only shows seven rack units.

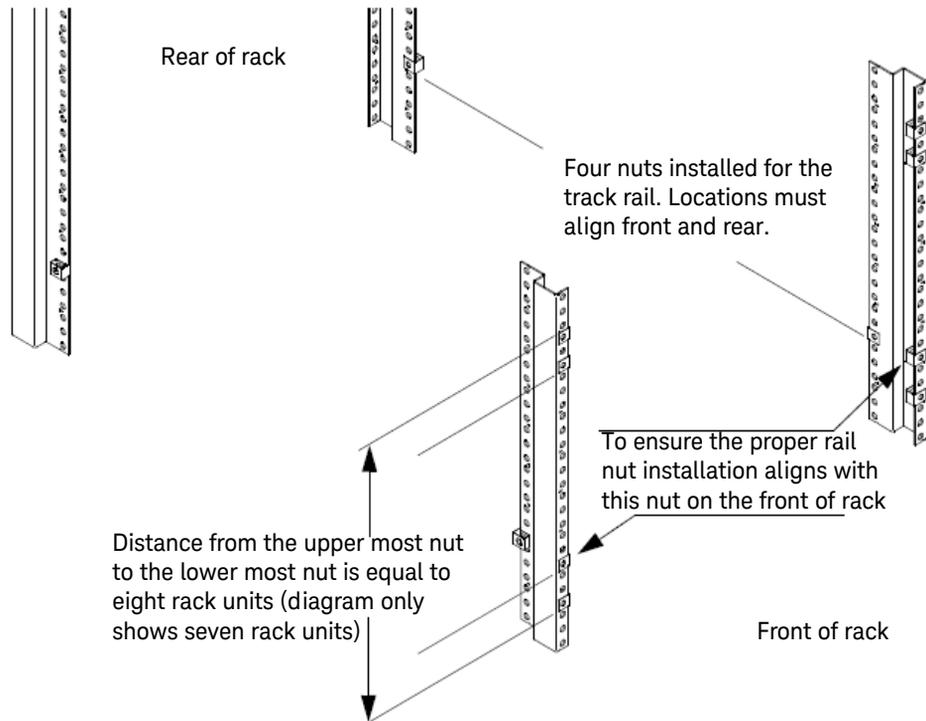


Figure 1-18 Proper locations for the sheet metal nut locations

- 3** Install track rails to the rack using the four 10-32 pan head screws provided as shown in [Figure 1-19](#).

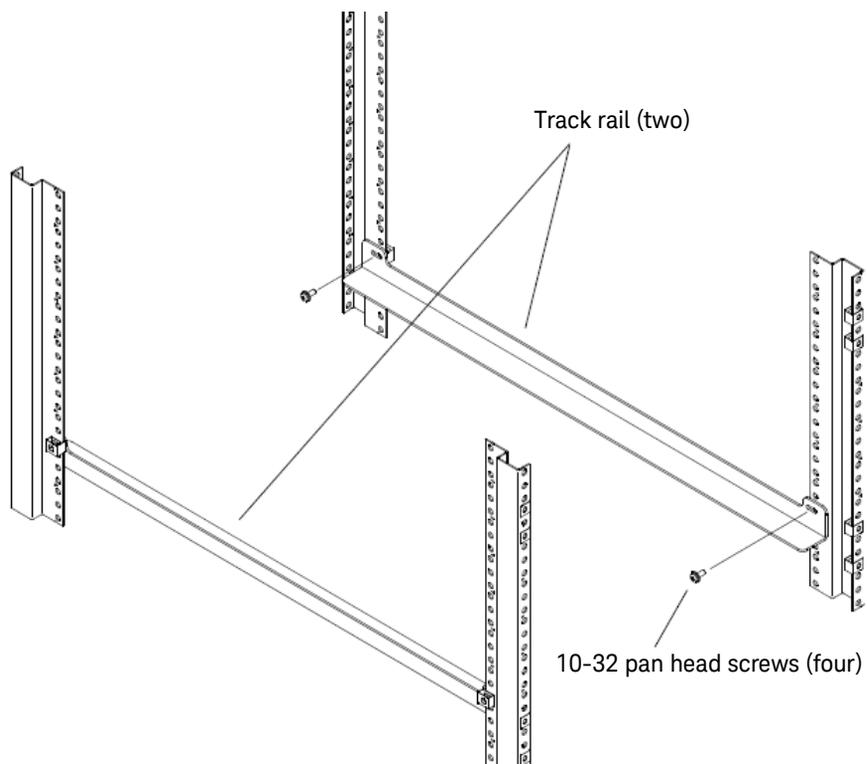


Figure 1-19 Install the track rails to the rack

Installing the 8990B into the rack

- 1 Slide the support tray onto the rails, but do not slide completely into the rack. Instead, leave it slightly extended so you can place the 8990B on top of it as shown in [Figure 1-20](#).

NOTE

Do not leave the support tray extended too much or else it may not support the 8990B when you place it on top.



Figure 1-20 Support tray

- 2 Place the 8990B on the support tray. There are raised tabs in the support tray. The front side of the 8990B rear feet should rest against these tabs as shown below.



The front of the 8990B rear feet should rest against these tabs

Figure 1-21 Raised tabs in the support tray

1 Getting Started

- 3** Now, attach cables to the rear panel BNC connectors of the 8990B and route them through the openings at the support tray and under the 8990B as shown below (later, these cables will be connected to the bottom trim plate BNC connectors so you can have access to these BNCs once the 8990B is installed in the rack).



Figure 1-22 BNC connectors

- 4** Let the end of the cable(s) that passes under the 8990B just dangle for now. **Step 8** will have you attach the cable(s) to the bottom trim plate BNCs. Also plug the power cord into the 8990B and route it through the back so you can plug it into a power outlet after installation.



Figure 1-23 BNC connectors to the rear of the 8990B

- 5 Secure the rear of the 8990B to the support tray with the feet brackets as shown below. There is a notch on the upper back edge of each 8990B rear foot. Place the bracket in this indentation and then line up the holes with the holes in the support tray.



Figure 1-24 Feet brackets

- 6 Use two T-20 TORX screws to secure and then repeat for the other 8990B rear foot.



Figure 1-25 T-20 TORX screws

- 7 The 8990B and support tray should now look like the following figure except that you may have cables connected to the rear panel BNCs if you chose to attach them.



Figure 1-26 8990B and support tray

- 8 Next, push the 8990B support tray into the rack so it is no longer extended. Then connect the other end of each of the cables you routed under the 8990B to one of the BNC connectors on the bottom trim plate piece as shown in [Figure 1-27](#). If you do not want to install all five BNC connectors into the openings in the bottom trim plate, then you can fill the hole(s) with the supplied rubber stoppers.



Figure 1-27 Connect the BNC connector to the bottom trim plate

- 9 Attach the bottom trim plate piece to the rack using two cream-colored pan head screws. Then, attach the side trim plate pieces using two cream-colored pan head screws each.

NOTE

When attaching the side trim plate pieces, ensure that the screw holes are located towards the outside).

- 10 Attach the top trim plate piece to the rack with two cream-colored pan head screws (ensure that it slides into the notch on the top of the 8990B) as shown in [Figure 1-28](#).

This is the notch that the top trim plate fits into



Figure 1-28 Notch at the 8990B to fit the top trim plate

11 The 8990B is now fully installed and should look like the following figure.

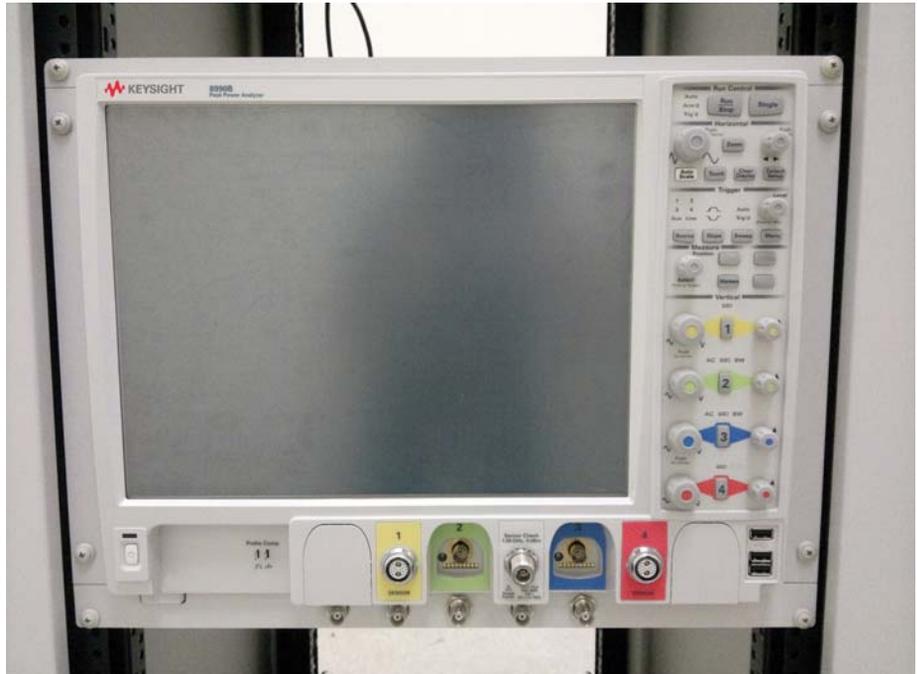


Figure 1-29 8990B with the trim plates

Stacking the 8990B

This section explains how to install the stacking plate onto the 8990B using the N6921A stacking kit.

Installing the stacking plate

- 1 Attach the stacking plate on top of the 8990B as shown in [Figure 1-30](#).



Figure 1-30 Stacking plate

1 Getting Started

- 2 The stacking plate is now installed onto the 8990B and should look like the following figure.



Figure 1-31 8990B with the stacking plate

Installing Application Programs on 8990B

The 8990B is an open Windows system. This allows you to install your own application software. Keysight has verified that the following applications are compatible with the 8990B application.

- Keysight Vector Signal Analysis
- Keysight VEE Pro
- Microsoft Office 2000, 2003, 2007
- MathWorks MATLAB
- Mathsoft Mathcad 2001i
- McAfee VirusScan
- Symantec Norton AntiVirus

NOTE

Before installing any software, you should exit the 8990B application.

CAUTION

If you install an application other than those which Keysight has tested, it is possible that it could break the 8990B application. This would potentially require you to recover the 8990B hard drive using the hidden recovery partition in the hard drive.

Changing Windows System Settings

NOTE

Before changing any Windows System settings outside of the 8990B application, you should exit the 8990B application.

There are several Windows System settings that can be changed to suit your personal preferences. However, there are some System settings that you should avoid changing because it will interfere with the proper operation of the 8990B.

- Do not change the Power Options.
- Do not change the System Properties Hardware tab settings.
- Do not change the Regional and Language Options Advanced tab settings.
- Do not remove Fonts.
- For Display Properties:
 - Do not change the screen resolution or the color quality from Highest (32 bit).
 - Do not change the Font size to Extra Large.
 - Do not use a Menu font size greater than 14 points.
- Do not use the Administrative Tools to enable or disable Internet Information Services (Web Server).

2 Characteristics and Specifications

General Specifications [64](#)

This chapter provides the characteristics and specifications of the 8990B.

General Specifications

The 8990B complies with the requirements of the EMC Directive 89/336/EEC.

Physical characteristics

Table 2-1 Physical characteristics

Dimension	
Dimensions (width × depth × height)	430 mm (16.9 in) × 347 mm (13.7 in) × 330 mm (13.0 in)
Weight	
Weight	- <16 kg (net) - <23.5 kg (shipping)

Power requirements

Table 2-2 Power requirements

Line power	- 100 Vac to 120 Vac (50 Hz/60 Hz/400 Hz) - 100 Vac to 240 Vac (50 Hz/60 Hz) - Maximum power dissipated at 375 W
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This information is subject to change without notice. Always refer to the Keysight website for the latest revision.

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