
Streamline Series Vector Network Analyzers

P9370A, 300 kHz to 4.5 GHz

P9371A, 300 kHz to 6.5 GHz

P9372A, 300 kHz to 9 GHz

P9373A, 300 kHz to 14 GHz

P9374A, 300 kHz to 20 GHz

P9375A, 300 kHz to 26.5 GHz

Notices

© Keysight Technologies, Inc.
2014-2023

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Keysight Technologies, Inc. as governed by United States and international copyright laws.

Trademark Acknowledgments

Manual Part Number

P9370-90001

Edition

Edition 2, September 2023

Printed in USA/Malaysia

Published by:
Keysight Technologies
1400 Fountaingrove Parkway
Santa Rosa, CA 95403

Warranty

THE MATERIAL CONTAINED IN THIS DOCUMENT IS PROVIDED "AS IS," AND IS SUBJECT TO BEING CHANGED, WITHOUT NOTICE, IN FUTURE EDITIONS. FURTHER, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, KEYSIGHT DISCLAIMS ALL WARRANTIES, EITHER EXPRESS OR IMPLIED WITH REGARD TO THIS MANUAL AND ANY INFORMATION CONTAINED HEREIN, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. KEYSIGHT SHALL NOT BE LIABLE FOR ERRORS OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, USE, OR PERFORMANCE OF THIS DOCUMENT OR ANY INFORMATION CONTAINED HEREIN. SHOULD KEYSIGHT AND THE USER HAVE A SEPARATE WRITTEN AGREEMENT WITH WARRANTY TERMS COVERING THE MATERIAL IN THIS

DOCUMENT THAT CONFLICT WITH THESE TERMS, THE WARRANTY TERMS IN THE SEPARATE AGREEMENT WILL CONTROL.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

U.S. Government Rights

The Software is "commercial computer software," as defined by Federal Acquisition Regulation ("FAR") 2.101. Pursuant to FAR 12.212 and 27.405-3 and Department of Defense FAR Supplement ("DFARS") 227.7202, the U.S. government acquires commercial computer software under the same terms by which the software is customarily provided to the public.

Accordingly, Keysight provides the Software to U.S. government customers under its standard commercial license, which is embodied in its End User License Agreement (EULA), a copy of which can be found at

<http://www.keysight.com/find/sweula>

The license set forth in the EULA represents the exclusive authority by which the U.S. government may use, modify, distribute, or disclose the Software. The EULA and the license set forth therein, does not require or permit, among other things, that Keysight: (1) Furnish technical information related to commercial computer software or commercial computer software documentation that is not customarily provided to the public; or (2) Relinquish to, or otherwise provide, the government rights in excess of these rights customarily provided to the public to use, modify, reproduce, release, perform, display, or disclose commercial computer software or commercial computer software documentation. No additional

government requirements beyond those set forth in the EULA shall apply, except to the extent that those terms, rights, or licenses are explicitly required from all providers of commercial computer software pursuant to the FAR and the DFARS and are set forth specifically in writing elsewhere in the EULA. Keysight shall be under no obligation to update, revise or otherwise modify the Software. With respect to any technical data as defined by FAR 2.101, pursuant to FAR 12.211 and 27.404.2 and DFARS 227.7102, the U.S. government acquires no greater than Limited Rights as defined in FAR 27.401 or DFAR 227.7103-5 (c), as applicable in any technical data.

Safety Notices

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.

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 death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

1	Getting Started	
	Introduction	5
	Related Documentation	5
	STEP 1. Unpack and Inspect the P937xA Network Analyzer	5
	Inspect for Damage	6
	How to Return an Instrument for Service	6
	STEP 2. Check the Shipment	7
	STEP 3. Install the Software	8
	System Requirements	8
	Hardware Requirements	8
	About Installing the P937xA	8
	Software Installation Overview	9
	Power Up the Instrument with a PC	10
	STEP 4. Install the P937xA Network Analyzers	11
	Tools Required for the Installation Procedure	11
	Installation Procedure	12
	Front Panel Features	17
	STEP 5. Verify Operation of the Network Analyzers	20
	The Operator's Check	20
	If the Operator's Check Fails	21
2	Getting Help with Your P937xA USB-Network Analyzer	
	Help System	1
	P937xA on the Internet	1
	Contacting Keysight	2
3	 Safety and Regulatory Information	
	Maintenance	1
	Shipment for Service	1
	Safety Symbols	2
	General Safety Considerations	3
	Before Applying Power	3
	Servicing	3
	Operating Conditions	3
	Regulatory Information	4

Contents

Instructions for Use	4
EMC	4
Safety	5
Instrument Markings	5
For the AC/DC Adapter	7
Declaration of Conformity	10
Equipment Ratings	11
Environmental Conditions (Operating)	11
Space Requirements	12
P937xA VNA Weight and Dimensions	12
Component Weight and Dimensions	12
Warranty	12

1 Getting Started

Introduction

The scope of this Startup Guide is to detail the processes of receiving and installing the Keysight Streamline Series P937xA vector network analyzer (VNA) and cables that compose the P937xA VNA. Additionally, installing the required software and verifying P937xA vector network analyzer operation is documented. If you have any questions after reviewing this information, please contact your local Keysight Technologies Inc. representative or contact us through our support Website at <https://support.keysight.com/s/>.

Related Documentation

You can find all P937xA network analyzer documentation and other resources at <https://www.keysight.com/find/usb-vna> or at the respective product pages on www.keysight.com (go to Resource Center > Manuals).

STEP 1. Unpack and Inspect the P937xA Network Analyzer

CAUTION

Most causes of instrument failure can be avoided if you will apply the information in this section. PLEASE READ!

Electrostatic discharge (ESD) can damage or destroy electronic components. Use a static-safe work station to perform all work on electronic assemblies. **Figure 1-1 on page 6** shows a static-safe work station using two types of ESD protection: conductive table-mat and wrist-strap combination, and conductive floor-mat and heel-strap combination. Both types, when used together, provide a significant level of ESD protection. Of the two, only the table-mat and wrist-strap combination provides adequate ESD protection when used alone. To ensure user safety, the static-safe accessories must provide at least 1 meg-ohm of isolation from ground.

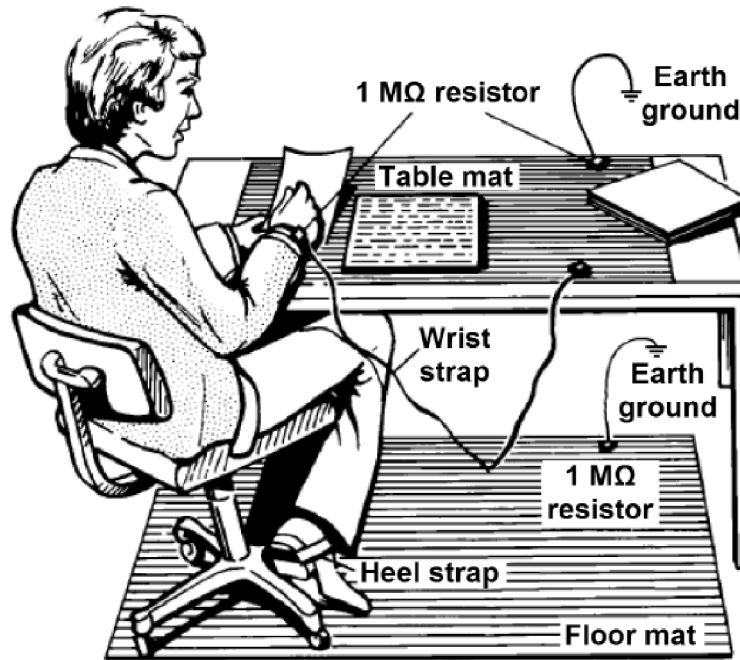
WARNING

Do NOT use these techniques for a static-safe work station when working on circuitry with a voltage potential greater than 500 volts.

Figure 1-1

ESD protection setup

ESD



M9370_001_101

Unpack the P937xA network analyzer from the shipping containers. Keep the black plastic port protectors and the shipping containers for possible reuse.

Inspect for Damage

After unpacking a network analyzer, inspect it for any shipping damage. Report any damage to the shipping agent immediately, as such damage is not covered by the warranty.

CAUTION

To avoid damage when handling the network analyzers, do not touch exposed connector pins.

How to Return an Instrument for Service

Should it become necessary to return a network analyzer for repair or service, follow the steps below:

1. Review the warranty information shipped with your product.
2. Contact Keysight to obtain a Return Material Authorization (RMA) and return address. For assistance finding Keysight contact information, go to www.keysight.com/find/assist (worldwide contact information for repair and service).

3. Write the following information on a tag and attach it to the network analyzer:
 - Name and address of owner. A P.O. box is not acceptable as a return address.
 - Network analyzer serial numbers. The serial number and host ID labels are located on the bottom of the panel of the P937xA. The serial number can also be read from the Soft Front Panel (SFP) interface, after the hardware is installed.
 - Description of the service required or the failure.
4. On the shipping label, write ATTENTION REPAIR DEPARTMENT and the RMA number.
5. Ship the analyzer using the original packaging materials. Shipping the analyzer in anything other than the original packaging may result in non-warranted damage.

NOTE

In your correspondence, refer to the network analyzer by serial number and by model number.

STEP 2. Check the Shipment

Use the Contents List in the shipping container and **Table 1-1** to verify the completeness of your shipment. If not complete, refer to **“Contacting Keysight” on page 2**.

Table 1-1 P9375A-Kit Contents

Qty	Description	Part Number
1	External Power Supply Desktop adapter 90-264AC 15VDC 6A 90W	1950-6128
1	China RoHS Addendum for Network Analyzer	9320-6674
1	Keysight safety leaflet	9320-6797
1	Quick start guide	P9370-90005
1	Cable-Assembly USB 3.0 Type-A Plug to Type-C Plug 1m-LG PVC Black	P9375-60010

STEP 3. Install the Software

System Requirements

Topic	Windows 7 and 10 Requirements ^a
Operating system	Windows 10 (64 bit)
Processor speed	Intel i5 6th Generation or newer / Intel Xeon E3 or v3 or newer
Available memory	4 GB minimum (16 GB recommended)
Available disk space	2.0 GB available drive space minimum
Display resolution	1024x768 minimum
USB	USB 3.0 panel mount connector directly to Intel chipset.

a. Must install IO Libraries (IOLS 2021 or greater). BenchVue and Connection Expert are optional downloads.

Hardware Requirements

Topic	Requirements
Controllers (PC)	Refer to the above table in “System Requirements” .
Latch keys (x4) and jumpers(x3)–(Optional)	Option Y1701A – For Multi-port Configuration of P937xA

About Installing the P937xA

Products affected	All P937xA vector network analyzers
Estimated installation time	2 hours

Software Installation Overview

The software installation includes the following items:

- Keysight IO Libraries Suite (IOLS 2021 or greater¹), which includes the Keysight Connection Expert. Download the latest version at www.keysight.com/find/iosuite.

NOTE

Ensure that Keysight IO Libraries Suite IOLS 2021 or greater is loaded into your PC controller, **before** you connect and power up the P937xA.

- Network analyzer instrument firmware, which includes the soft front panel (SFP) software, device drivers (IVI-C and IVI-COM, and LabVIEW G), and documentation for the P937xA Vector Network Analyzers. Download the latest version at <https://www.keysight.com/find/pxiusbvna-firmware>. Enter the model for your instrument and click **Find**.

Software Installation Procedure

NOTE

IMPORTANT! Ensure your P937xA is powered down and **not** connected to your PC and ensure that your PC is connected to the internet.

1. Install the Keysight IO Libraries Suite (IOLS 2021 or greater) by downloading it from www.keysight.com/find/iosuite. Follow the installer prompts to install the IO libraries.
2. Install the network analyzer firmware by downloading it from <https://www.keysight.com/find/pxiusbvna-firmware>. Enter the model for your instrument and click **Find**. Follow the installer prompts.
3. Complete the installation:
 - a. After the InstallShield Wizard has completed, click **Finish**.
 - b. Shut down the remote controller PC, using **Start > Shut down**.
 - c. Power down the P937xA.
 - d. Use the power button to power up the P937xA.
 - e. Power up the remote controller PC.

NOTE

Check for firmware updates at:
<https://www.keysight.com/find/pxiusbvna-firmware>. Enter the model for your instrument and click **Find**. Follow the installer prompts.

1. IO Libraries version 2021 greater. BenchVue and Connection Expert are optional downloads.

Power Up the Instrument with a PC

CAUTION

IMPORTANT! Before connecting your P937xA to your PC, ensure that your PC has the Keysight IO Libraries Suite (IOLS 2021 or greater) and the P937xA firmware loaded. If not, refer to [“Software Installation Overview” on page 9](#).

The following assumes you have previously loaded your firmware and IO Libraries (IOLS 2021 or greater¹) onto your PC. If not, refer to the [“Software Installation Overview” on page 9](#).

If you have loaded the IO Libraries (IOLS 2021 or greater) and the P937xA firmware, complete the following steps:

CAUTION

STOP! If you have not installed the firmware and the IO Libraries (IOLS 2021 or greater) into the PC controller, refer to [“Software Installation Overview” on page 9](#).

NOTE

Before powering up the P937xA, ensure that the DC power connector is securely seated.

Before powering up the P937xA, ensure the P937xA “USB 3.0 to host PC” cable interface is connected to the PC controller. After your P937xA has been initialized, you can disconnect and reconnect the USB cable per a typical USB device’s behavior.

1. Install the cable interface between the PC and the chassis.
2. Power up the P937xA instrument.
3. Power up the PC.
4. Start the P937xA application software.

NOTE

If your P937xA application software and P937xA does not behave as expected with the newly installed IO Libraries and firmware, cycle power on the P937xA.

1. IO Libraries version 2021 or greater. BenchVue and Connection Expert are optional downloads.

STEP 4. Install the P937xA Network Analyzers

NOTE

IMPORTANT!

Please review all safety information located in [Chapter 3](#) before proceeding with installing and using the network analyzer.

Figure 1-2 P937xA chassis air flow



Fan Exhaust Side



Fan Intake Side

The P937xA VNA has the right side of the instrument dedicated to air intake and the left side dedicated to air exhaust.

Tools Required for the Installation Procedure

- Socket adapter (part number 5023-1450) - not supplied.
- Torque driver (for use with socket adapter), set to 8 lbf-in (0.91 N.m) - not supplied.
- Cable removal tool (part number 5002-3361) - not supplied.
- T10 torque driver, set to 9 lbf-in (1.02 N.m) - not supplied.

Installation Procedure

CAUTION

Position the P937xA to provide ample space between the chassis fan intake and exhaust vents. Blockage by walls or obstructions affects the air flow needed for cooling. (Refer to [Figure 1-2 on page 11](#) and to the P937xA chassis “[Space Requirements](#)” on [page 12](#) for more information about cooling.)

NOTE

IMPORTANT!

If you are using a multiport (stacked) configuration ensure you have the correct primary P937xA assigned. Refer to, <https://www.keysight.com/find/usb-vna> (i.e., scroll down and click on your USB-VNA model > Resources > Featured Resources > View All Resources > Help Files > **Streamline Series USB Vector Network Analyzer P937xA Help File** and search for the “Multiport and Multisite Configuration” topic (you will need to save the file to your desktop to view the files)). See also, **USB Chassis Soft Front Panel Help File**.

This procedure assumes you have Option Y1701A latch keys and jumpers kit. Learn more, refer to, “[Hardware Requirements](#)” on [page 8](#).

1. If using only one P937xA module, leave the 50 ohm loads attached as shown in [Figure 1-3 on page 12](#).

Figure 1-3 Single P937xA Network Analyzer Module Configuration



NOTE

In the following instructions, two P937xA network analyzer modules are configured. Use these instructions as a general guide if installing a different number of modules.

2. As seen in [Figure 1-4 on page 13](#), each module is shipped with two 50 ohm loads attached to each module. To enable connections between P937xAs, some of these loads must be removed. To remove the loads, use the socket adapter, seen in [Figure 1-5 on page 13](#), attached to the 8 lbf-in (0.91 N.m) torque driver.
 - a. On the first P937xA, remove the 50 ohm load from the LO Out port. Leave the load installed on the LO In port.

- b.** On the second P937xA, remove the 50 ohm load from the LO In port. Leave the load installed on the LO Out port.
- c.** Save the 50 ohm loads that were just removed for possible reuse in another module configuration.

Figure 1-4 50 Ohm Loads Installed on the Network Analyzer Modules



Figure 1-5 Socket Adapter for 50 Ohm Loads (part number 5023-1450)



- 3.** Remove the front and rear handles off of both P937xA VNAs using a T10 Torx driver. Refer to [Figure 1-6](#) and [Figure 1-7 on page 15](#).
- 4.** Set the front and rear handles aside for reuse. The screws will not be reused.
- 5.** Stack the two P937xA VNAs and then:
Refer to [Figure 1-6](#) and [Figure 1-7 on page 15](#) for these steps.
 - a.** Attach the left front latch to the P937xAs.
 - b.** Connect one of the front handles to the bottom P937xA, loosely attach the handle with the 0515-0375 screws (x2).
 - c.** Repeat for top left P937xA VNA handle.
 - d.** Repeat steps **a** through **c** for the right side front of the P937xA VNA.
 - e.** Repeat steps **a** through **d** for the rear latches and handles using latches P9375-20018 (x2) and 0515-0664 screws (x4) and
 - f.** Use a T10 torx torque driver to tighten front and rear handle screws to 9 lb-ins.

Figure 1-6 Assemble front latches and screws (0515-0375 screws (x8) P9375-20017 (x2))

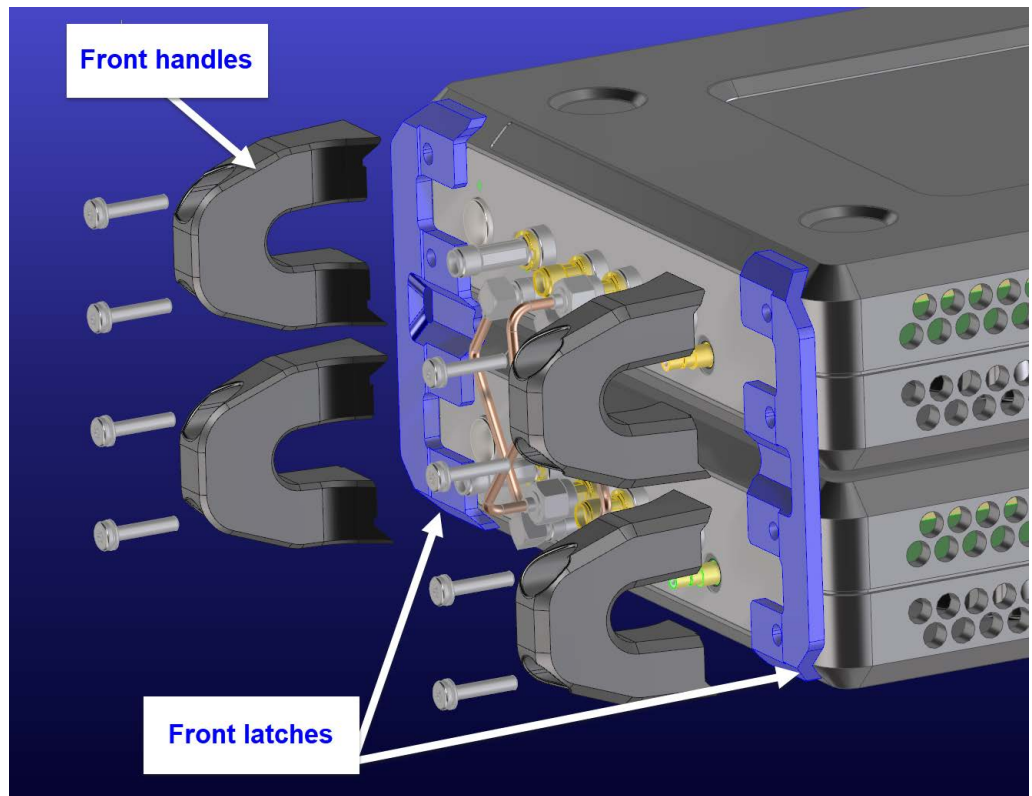


Figure 1-7 Assemble rear latches and screws (0515-0664 screws (x8) and P9375-20018 rear latches (x2)



6. Install a semi-rigid cable (P9375-20014), seen in [Figure 1-8](#), between the Trig Out port and the Trig In port on each of the P937xA pairs (1 & 2).
7. Install a semi-rigid cable (P9375-20015), seen in [Figure 1-8](#), between the Ref In port and the Ref Out port on each of the P937xA pairs (1 & 2).
8. Tighten the semi-rigid cables using the socket adapter, seen in [Figure 1-5 on page 13](#), attached to an 8 lbf-in (0.91 N.m) torque driver.
9. Install a semi-rigid cable (P9375-20013), seen in [Figure 1-8](#), between the LO In port and the LO Out port on each of the P937xA pairs (1 & 2).

Getting Started
STEP 4. Install the P937xA Network Analyzers

Figure 1-8 Installing Semi-Rigid Cables from Option Y1701A—P9375-20013, P9375-20014, and P9375-20015



NOTE

If applicable, use the socket adapter tool (5023-1450) to remove the SMA jumper cable P9375-20013. And, use the (5002-3361) tool for P9375-20014, and NP9375-20015 SMB jumper cables. See [Figure 1-9 on page 16](#).

Figure 1-9 Cable Removal Tool (part number 5002-3361)



You have now completed the hardware installation procedure.

Getting Started
STEP 4. Install the P937xA Network Analyzers

Front Panel Features

Figure 1-10 P937xA Front Panel



Feature	Description Refer to Figure 1-10 on page 17.
Power LED	OFF: Power supply is disconnected Amber: Power supply is on, but the power button is off. Green: Power is on.
Status LED	OFF: Power supply off. AMBER: Power supply on, but no firmware is not running. GREEN: Power switch is on; Firmware is running; instrument is probably idle (not sweeping/trigger is in Hold). FLASHING GREEN: A sweep or measurement has been triggered. RED: Last sweep had an error.
Port 1 Port 2	APC 3.5 mm female connector. Sources stimulus signals for the DUT and receives response signals from the DUT. Frequency range is determined by the network analyzer model.
LO In	SMA female connector. If the network analyzer is not configured with another P937xA, the connector is terminated with a 50 ohm load. If the P937xA network analyzer is configured with another P937xA, the connector receives the LO signal from the configured P937xA network analyzer.
LO Out	SMA female connector. If the network analyzer is not configured with another P937xA, the connector is terminated with a 50 ohm load. If the P937xA network analyzer is configured with another P937xA, the connector provides the LO signal to the configured P937xA network analyzer.
Ref In	SMB male connector. A 10 MHz external reference signal supplied to this port can be used as the instrument frequency reference instead of the internal frequency reference. To activate this feature on the soft front panel, select Utility > System > Configure > External Reference.
Ref Out	SMB male connector. Outputs a 10 MHz frequency reference signal for use by other test equipment.
Trig In	SMB male connector. Inputs a signal to trigger the network analyzer P937xA.

Getting Started
STEP 4. Install the P937xA Network Analyzers

Trig Out	SMB male connector. Outputs a signal either before or after a measurement.
Trig Ready	SMB male connector. Outputs a "READY" signal to other devices.

Getting Started
STEP 4. Install the P937xA Network Analyzers

Figure 1-11 P937xA Rear Panel



Feature	Description Refer to Figure 1-11 on page 19.
ESD	ESD strap connect
2.0 USB Type A Slots (x2)	USB 2.0 Type A slot. These slots can be used to connect USB 2.0 compatible PC accessories: (USB memory, keyboard, and mouse)
USB 3.0 To Host PC	USB 3.0 Type C connector. This slot is used to connect your host PC to your P937xA. Optional ability to mount your USB 3.0 Type C cable using mountable connector.
10 MHz In	SMB male connector. A 10 MHz external reference signal supplied to this port will only allow cascading reference signals to the 10MHz Out on the rear panel. The instrument will not lock to this signal.
10 MHz Out	SMB male connector. This port will supply a 10 MHz (+/-25 ppm) reference signal for a cascading reference signal. It is independent of the instrument's reference signal. Use the front panel Reference Out for an instrument reference.
Power 15 VDC, 6A Max	Mini-DIN connector. Connect the P937xA power supply to this port.
Trig 1 and Trig 2	SMB male connector(s). A trigger is a signal that causes the analyzer to make a measurement sweep. The analyzer offers great flexibility in configuring the trigger function. P937xA has Trigger 1 and Trigger 2 connectors. See also, the VNA Online Help (http://www.keysight.com/find/usb-vna).
Lock	Kensington security lock

STEP 5. Verify Operation of the Network Analyzers

The Operator's Check

NOTE

Allow the P937xA network analyzer to warm up for at least one hour before performing the Operator's Check.

The operator's check is a software driven test that checks the basic operation of the assemblies in all of the measurement port signal paths. By performing the operator's check, the following are determined:

- attenuation ranges of all installed attenuators
- calibration of the receivers
- frequency response of the receivers
- phase lock
- noise floor and trace noise
- various voltages throughout the network analyzer

Accessories Used in the Operator's Check

Male short(s) or open(s) from a 3.5 mm calibration kit.

Performing the Operator's Check

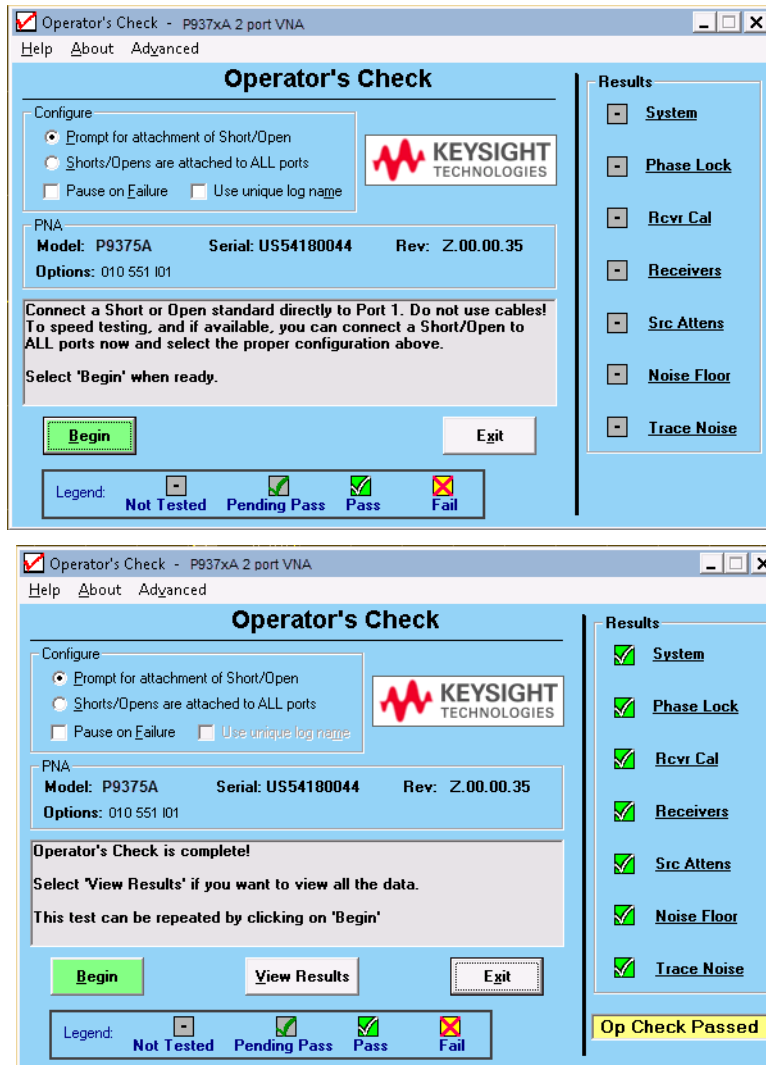
NOTE

Perform the Operator's Check on each P937xA network analyzer in your configuration.

1. On your PC screen, click the Network Analyzer icon.
2. Select a P937xA network analyzer in your configuration.
3. On the soft front panel, select **Utility** > **System** > **Service** > **Verification** > **Operator's Check**.
4. In the P937xA Operator's Check dialog box (refer to [Figure 1-12 on page 21](#)), under Configure, select either Prompt for attachment of Short/Open, to pause at each step in the process to allow moving the short/open to the appropriate port, or Shorts/Opens are attached to ALL ports, to run through the test without stopping. Shorts and opens can be mixed on the test ports.
5. Select Begin.
6. If shorts and opens are not connected to all ports, you will be prompted to connect them as they are needed.
7. The result of the operator's check will be shown as a PASS or FAIL next to each test (refer to [Figure 1-12 on page 21](#)).

Getting Started
STEP 5. Verify Operation of the Network Analyzers

Figure 1-12 Operator's Check Dialog Box



If the Operator's Check Fails

1. Clean the test ports, and the open(s) or short(s). Torque to specification. Repeat the check.
2. If the check still fails, return the network analyzer to Keysight. See [“How to Return an Instrument for Service”](#) on page 6.

Getting Started

STEP 5. Verify Operation of the Network Analyzers

2 Getting Help with Your P937xA USB-Network Analyzer

Help System

Use the Help System to quickly reference programming and user documentation

To access Help:

- From the analyzer P937xA software
 - On your PC screen, click the Network Analyzer icon.
 - After making your analyzer P937xA configuration settings, click Help.
- Online go to <http://www.keysight.com/find/usb-vna>.

P937xA on the Internet

The P937xA Network Analyzer System Web page is another resource for help with the analyzer P937xA. You can find all P937xA network analyzer documentation and other resources at:

<http://www.keysight.com/find/usb-vna>

Check for firmware updates at

<https://www.keysight.com/find/pxiusbvna-firmware>. Enter the model for your instrument and click **Find**.

Contacting Keysight

Assistance with test and measurements needs and information on finding a local Keysight office are available on the Web at:

www.keysight.com/find/assist.

If you do not have access to the Internet, please contact your Keysight field engineer.

NOTE

In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine whether your product is still within its warranty period.

3 Safety and Regulatory Information

NOTE

IMPORTANT! The safety of any system incorporating the equipment is the responsibility of the assembler of the system.

Maintenance

To remove dirt or dust from the external case of the network analyzer P937xA, clean the case using a dry or slightly-dampened cloth only.

WARNING

To prevent electrical shock, disconnect the AC/DC adapter from the mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.

Shipment for Service

Contact Keysight Technologies for instructions on where to ship the analyzer P937xA for service. Refer to **“Contacting Keysight” on page 2**.

Ship the analyzer P937xA using the original packaging materials. Shipping the analyzer P937xA in anything other than the original packaging may result in non-warranted damage.

Safety Symbols

The following safety symbols are used throughout this manual. Familiarize yourself with each of the symbols and its meaning before operating this instrument.

CAUTION

Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, would result in damage to or destruction of the product. Do not proceed beyond a caution note until the indicated conditions are fully understood and met.

WARNING

Denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.

General Safety Considerations

Before Applying Power

WARNING

If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.

CAUTION

The measuring terminals on this instrument are designed to be used with external signals described in Measurement Category I, but NOT with external signals described in Categories II, III, and IV. The input of this instrument cannot be connected to the mains.

CAUTION

The Mains wiring and connectors shall be compatible with the connector used in the premise electrical system. Failure to ensure adequate earth grounding by not using the correct components may cause product damage, and serious injury.

Servicing

WARNING

These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.

Operating Conditions

WARNING

Operator is responsible for maintaining safe operating conditions. To ensure safe operating conditions, P937xAs should not be operated beyond the full temperature range documented in the P937xA Data Sheet (<https://www.keysight.com/us/en/assets/7018-06033/data-sheets/5992-2765.pdf>). Not maintaining safe operating conditions can result in shorter P937xA lifespans, improper P937xA performance, and user safety issues. If P937xAs are allowed to exceed the specified full temperature range, P937xA surface temperatures can cause discomfort or burns if touched. If a P937xA exceeds the full temperature range, always allow it to cool before touching it or removing it from the chassis.

CAUTION

This product is designed for use in Installation Category II and Pollution Degree 2 environment.

Regulatory Information

This section contains information that is required by various government regulatory agencies.

Instructions for Use

This product has been designed and tested in accordance with accepted industry standards, and has been supplied in a safe condition. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

EMC

Complies with the essential requirements of the European EMC Directive as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity):

- IEC/EN 61326-1
- CISPR Pub 11 Group 1, class A
- AS/NZS CISPR 11
- ICES/NMB-001

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme NMB-001 du Canada.

South Korean Class A EMC declaration: This equipment has been confirmed as assessed for use in business environments. In a residential environment it may cause radio interference.

※ This EMC statement applies to the equipment only for use in business

사 용 자 안 내 문
이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

※ 사용자 안내문은 "업무용 방송통신기자재"에만 적용한다.

Safety

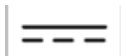
Acoustic statement (European Machinery Directive)

- Acoustic noise emission
- $L_{pA} < 70$ dB
- Operator position
- Normal operation mode per ISO 7779

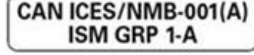
Complies with the following standard (dates and editions are cited in the Declaration of Conformity): IEC/EN 61010-1.

Instrument Markings

The table below lists the definitions of markings that may be on or with the product. Familiarize yourself with each marking and its meaning before operating the instrument.

	This symbol marks the standby position of the power line switch.
	This symbol marks the ON position of the power line switch.
	This symbol marks the OFF position of the power line switch.
	This symbol indicates that the input power required is AC.
	This symbol indicates DC voltage
	This symbol indicates a three-phase alternating current.
	This symbol indicates Frame or chassis Terminal.
	The instruction documentation symbol. The product is marked with this symbol when it is necessary for the user to refer to the instruction in the documentation.
	This symbol indicate the presence of a Laser device.
	This symbol indicates the surface can be hot.

Safety and Regulatory Information
Regulatory Information

	This symbol indicated the product is sensitive to electrostatic discharge.
	This symbol identifies the Protective Conductor terminal.
	This symbol indicates the equipment is protected throughout by double or reinforced insulation.
	The CE mark is a registered trademark of the European Community (if accompanied by a year, it is the year when the design was proven). It indicates that the product complies with all the relevant directives.
	The UK conformity mark is a UK government owned mark. Products showing this mark comply with all applicable UK regulations.
	The Keysight email address is required by EU directives applicable to our product.
	The CSA mark is a registered trademark of the CSA International.
	Two person lift required.
CAN ICES/NMB-001(A)	Canada EMC label. Interference-Causing Equipment Standard for industrial, scientific and medical (ISM) equipment. Matériel industriel, scientifique et médical (ISM).
	CE/ICES/ISM label. (Old mark for reference only.) This is a space saver label that combines three markings - CE with CAN ICES and ISM (see above) and ISM (see below).
	This is a space saver label that combines three markings - CE with CAN ICES and ISM (see above) and ISM (see below).
	The RCM mark is a registered trademark of the Australian Communications and Media Authority.
	This is a space saver label that combines two markings - CAN ICES and ISM.
ISM 1-A	This is a symbol of an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 5).

	South Korean Certification (KC) mark. It includes the marking's identifier code.
	The crossed-out wheeled bin symbol indicates that separate collection for waste electric and electronic equipment (WEEE) is required, as obligated by the EU DIRECTIVE and other National legislation. Please refer to www.keysight.com/go/takeback to understand your trade-in options with Keysight, in addition to product takeback instructions.
	China Restricted Substance Product Label. The EPUP (environmental protection use period) number in the center indicates the time period during which no hazardous or toxic substances or elements are expected to leak or deteriorate during normal use and generally reflects the expected useful life of the product.
	Universal recycling symbol. This symbol indicates compliance with the China standard GB 18455-2001 as required by the China RoHS regulations for paper/fiberboard packaging.
IP x y	This mark indicates product has been designed to meet the requirements of "IP x y", where "x" is the solid particle protection and "y" is the liquid ingress protection.

For the AC/DC Adapter

WARNING	For safety reasons, only equipment Keysight approved accessories should be used with the instrument.
WARNING	No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock do not remove covers.
WARNING	Use only the designated AC/DC adapter supplied with the instrument.
WARNING	Use a Keysight supplied power cord that is the same or better electrical rating.
WARNING	Operated at an ambient temperature: 0 to 40°C. (Linearly derate, at rate of 3 watts per degree C, from 90W at 40°C to 45 W at 55°C, 30W at -20°C). Maximum output rating: +15V/6.0 A. Input rating: AC 100–240 V, 50–60Hz
WARNING	To prevent electrical shock, disconnect the AC to DC adapter from the mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.

WARNING

When the instrument is connected to the AC/DC adapter, position the adapter so the power cord is readily accessible. The power cord is the disconnecting device. It removes main power to the AC/DC adapter. The instrument front panel switch is only for the DC power within the instrument, and not for the AC/DC adapter. Alternately, an AC switch or circuit breaker (which is readily identifiable and is easily reached by the operator) may be installed and used as a disconnecting device to remove mains power from the AC/DC adapter.

CAUTION

The AC/DC adapter has an auto-ranging line voltage input – make sure the supply voltage is within the specified range.

CAUTION

The AC/DC adapter is for indoor use only.

CAUTION

Never use a modified or damaged charger. Use the original AC-DC adapter ONLY.

CAUTION

The AC/DC adapter is designed for use in Installation Category II and Pollution Degree 2 per IEC 61010-1.

Equipment Installation (AC/DC Adapter)

WARNING

Use a Keysight supplied power cord that is the same or better electrical rating.

CAUTION

This instrument has auto-ranging line voltage input; be sure the supply voltage is within the specified range and that voltage fluctuations do not to exceed 10 percent of the nominal supply voltage.

NOTE

Install the instrument so that the detachable power cord is readily identifiable and is easily reached by the operator. The detachable power cord is the instrument disconnecting device. It disconnects the mains circuits from the mains supply before other parts of the instrument. The front panel switch is only a standby switch and is not a LINE switch. Alternatively, an externally installed switch or circuit breaker (which is readily identifiable and is easily reached by the operator) may be used as a disconnecting device.

Equipment Operation (AC/DC Adapter)

WARNING

To prevent electrical shock, disconnect the Keysight Technologies P937xA from mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.

NOTE

Position equipment to ensure easy access to disconnecting device.

Operator Equipment Maintenance and Service (AC/DC Adapter)

WARNING

Use Keysight supplied power cord or one with same or better electrical rating.

Declaration of Conformity

A declaration of conformity is available upon request, or a copy is available on the Keysight Technologies Web site at <http://www.keysight.com/go/conformity> or by contacting Keysight – see **“Contacting Keysight” on page 2**.

Equipment Ratings

The instruments can operate with mains supply voltage fluctuations up to $\pm 10\%$ of the nominal voltage.

Instrument	15 to 24 VDC
DC input	
External AC power adapter	VI
Efficiency Level	
Input	100 to 240 VAC, 50 to 60 Hz, 1.5 A to 0.75 A
Output	15 VDC $\pm 5\%$, 6A max (90W max @40°C, linearly derate to 45W at 55°C)
Power consumption (from the mains)	120V, 52 watts max 240V, 62 watts max

Environmental Conditions (Operating)

The instruments can operate with mains supply voltage fluctuations up to $\pm 10\%$ of the nominal voltage.

Environmental Conditions (Operating)

For indoor use only

Altitude up to: 3000m (9,842.2 ft)

Temperature: 0 to 55°C

Humidity:

Type tested at 95% RH, +40°C

Space Requirements

P937xA VNA Weight and Dimensions

Table 3-1 P937xA Weight and Clearance Requirements for Proper Cooling

Model	Weight	Required Benchtop Dimensions for the System		
		Clearance	Width	Depth
2-Port	1.9 kg (4.2 lbs)	5.0 cm (2.00 in)	27.94 cm (11.00 in)	40.64 cm (16.00 in)

Component Weight and Dimensions

Table 3-1 shows the maximum weight and dimensions of the P937xA system components. Refer also to **Table 3-2 on page 12** for P937xA VNA dimensions.

Table 3-2 P937xA VNA Weights and Dimensions – With Front and Rear Handles

Model	Weight	Height	Width	Depth
P937xA, 2-Port VNA	1.9 kg (4.2 lb) nominal	4.79 cm (1.89 in)	17.60 cm (6.93 in)	33.27 cm (13.10)

Warranty

The actual warranty on your instrument depends on the date it was ordered as well as whether or not any warranty options were purchased at that time. To determine the exact warranty on your instrument, contact Keysight Technologies with the model and serial number of your instrument. Refer to **“Contacting Keysight” on page 2**.

Keysight Technologies does not warrant third-party system-level (combination of chassis, controllers, P937xAs, etc.) performance, safety, or regulatory compliance, unless specifically stated.

This information is subject to change without notice.
© Keysight Technologies 2014 – 2023
Edition 2, September 2023
Printed in USA/Malaysia



P9370-90001