Getting Started Guide

Keysight N4980A Multi-Instrument BERT Software

KEYSIGHT TECHNOLOGIES

Notices

Manual Part Number

N4980-91011

Edition

Edition 3.0, October 2014

Printed in Germany

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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.

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 or operating instructions in the product manuals 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. Product manuals are provided with your instrument on CD-ROM and/or in printed form. Printed manuals are an option for many products. Manuals may also be available on the Web. Go to www.keysight.com and type in your product number in the Search field at the top of the page.

General

This product is a Safety Class 1 instrument (provided with a protective earth terminal). The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

All Light Emitting Diodes (LEDs) used in this product are Class 1 LEDs as per IEC 60825-1.

Environment Conditions

This instrument is intended for indoor use in an installation category II, pollution degree 2 environment. It is designed to operate at a maximum relative humidity of 95% and at altitudes of up to 2000 meters.

Refer to the specifications tables for the ac mains voltage requirements and ambient operating temperature range.

Before Applying Power

Verify that all safety precautions are taken. The power cable inlet of the instrument serves as a device to disconnect from the mains in case of hazard. The instrument must be positioned so that the operator can easily access the power cable inlet. When the instrument is rack mounted the rack must be provided with an easily accessible mains switch.

Ground the Instrument

To minimize shock hazard, the instrument chassis and cover must be connected to an electrical protective earth ground. The instrument must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the instrument in the presence of flammable gases or fumes.

Do Not Remove the Instrument Cover

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made only by qualified personnel.

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Safety Symbols

Table 1. Safety Symbol

Symbol	Description
	Indicates warning or caution. If you see this symbol on a product, you must refer to the manuals for specific Warning or Caution information to avoid personal injury or damage to the product.
	Frame or chassis ground terminal. Typically connects to the equipment's metal frame.
	Indicates hazardous voltages and potential for electrical shock.
	Indicates that antistatic precautions should be taken.
	Indicates hot surface. Please do not touch.
	CSA is the Canadian certification mark to demonstrate compliance with the Safety requirements.
	CE compliance marking to the EU Safety and EMC Directives. ISM GRP-1A classification according to the international EMC standard. ICES/NMB-001 compliance marking to the Canadian EMC standard.
	The RCM mark indicates that this product meets EMS/Product Safety Requirements and may be imported to Australia and New Zealand.
ICES/NMB-001	This mark indicates compliance with the Canadian EMC regulations.
ISM 1-A	This text denotes the instrument is an Industrial Scientific and Medical Group 1 Class A product.
	China RoHS regulations include requirements related to packaging, and require compliance to China standard GB18455-2001. This symbol indicates compliance with the China RoHS regulations for paper/fiberboard packaging.
	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.
	The South Korean Class A EMC declaration (KC) mark indicates that this product is Class A suitable for professional use and is for use in electromagnetic environments outside of the home. The KC mark includes the marking's identifier code that has up to 26 digits and follows this format: KCC-VWX-YYY-ZZZZZZZZZZZZZ.

Compliance and Environmental Information

Table 2. Compliance and Environmental Information

Safety Symbol	Description
	This product complies with WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in WEEE Directive Annex I, this product is classed as a “Monitoring and Control instrumentation” product. Do not dispose in domestic household waste. To return unwanted products, contact your local Keysight office for more information.

Contents

1 N4980A Getting Started Guide

This guide contains information on how to install the Keysight Technologies N4980A multi-instrument BERT software application, including prerequisites.

The Keysight Technologies software application is a Windows-based program that enables instrument control from a remote computer. Using the software, you can control multiple Keysight Technologies instruments, such as the N4965A multi-channel BERT 12.5 Gb/s, N4971A pattern generator 13 Gb/s, N4962A serial BERT 12.5 Gb/s, N4963A clock synthesizer 13.5 GHz, and the N4960A serial BERT 17 and 32 Gb/s. It can display the bit error ratio (BER) in a single-channel or parallel-channel fashion as well as perform more sophisticated measurements.

The software application should be installed on a personal computer (PC) running a Windows operating system (see System Requirements). This PC should be connected to the Keysight Technologies instruments via a physical bus such as USB or GPIB, as shown in Figure 1. The buses supported by N4980A multi-instrument BERT software are listed in Table 3.

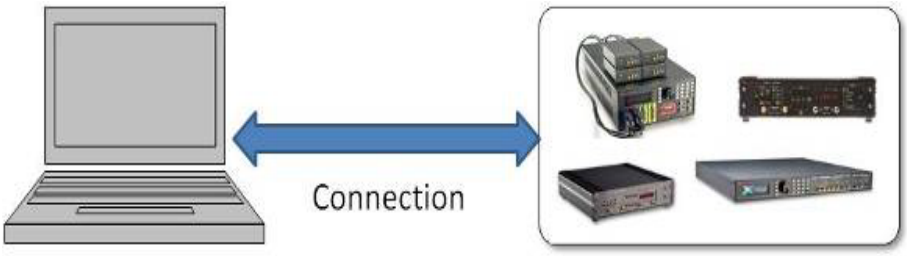

Figure 1. Relationship between software application (installed on the PC) and Keysight Technologies instruments

Table 3. Table of possible connection types, I/O library or driver needed, and Keysight Technologies instruments supported by each connection type.

Connection Type	I/O Library or Driver Needed	Keysight Technologies Instruments Supported
National Instruments GPIB-USB-B or GPIB-USB-HS 	National Instruments NI-488.2 (www.ni.com)	N4960A N4962A N4963A N4965A N4971A N4972A
Keysight 82357BUSB/GPIB Interface 	Keysight IO Libraries Suite (www.Keysight.com)	N4960A N4962A N4963A N4965A N4971A N4972A
USB 2.0 cable A male to B male 	FTDI VCP Driver (www.ftdichip.com)	N4960A N4965A N4971A N4972A

An I/O library or driver is required for the connections in Table 3. The I/O library or driver needed to support a particular connection should be installed prior to installing the software application. The installation of each of the possible libraries/drivers shown in Table 3 will be detailed in the following sections of this guide.

1.1 System Requirements

- PC: Intel Pentium processor or equivalent
- OS: Windows 7 32-bit and 64-bit operating system
- Screen resolution: XGA+ (1152 x 864) min
- RAM: 500 MB (minimum); 4 GB (minimum for Windows 7 64-bit)
- Disk space for installation: 100 MB
- .NET framework version 3.5
- I/O libraries (for GPIB, not required for USB)

Systems that do not meet these requirements may not operate correctly.

NOTE

N4980A multi-instrument BERT software operation may be adversely affected by Windows standby, sleep, or hibernation. Long measurements may be aborted, and in some cases the program may need to be restarted. For computers running N4980A multi-instrument BERT software, the sleep/standby/hibernate settings should be set to "never".

1.2 Installation Instructions -Prerequisites

1.2.1 I/O Libraries

The N4980A requires I/O libraries for control of instruments using a GPIB connection. Both Keysight and National Instruments I/O libraries are supported.

1.2.2 Keysight Technologies IO Libraries Suite

The Keysight Technologies I/P Library Suite is available at www.keysight.com.

Skip this step if you already have the Keysight or National Instruments I/O Libraries installed on your computer. You may have this installed if you are controlling Keysight instrumentation from the PC.

1.2.3 National Instruments VISA Library for Low Level Hardware I/O

The National Instruments I/O library, N-488.2, is available from www.ni.com.

Skip this step if you already have an NI VISA library installed on your computer. You probably have VISA installed if you have installed software from National Instruments to connect to an instrument (including non-Keysight Technologies instruments) using a LAN (Ethernet), USB, GPIB, or VXI bus.

1.2.4 FTDI VCP Driver

The FTDI VCP driver must be installed for use when communicating with Keysight Technologies instruments via USB. This driver can be found at the following website:
http://www.ftdichip.com/Drivers/VCP.htm.

Be sure to select the appropriate driver for your operating system. Follow the installation instructions at the top of the page.

Note that this step may be skipped if the driver can be found automatically by the Windows OS or if you are not using USB.

1.3 Installation Instructions – N4980A Application

The following steps describe how to install and configure the N4980A multi-instrument BERT software on a Windows-based system.

1. To download the software from the Web, go to the Keysight Technologies web site http://www.Keysight.com/find/N4980A and download the latest version of the N4980A software. Save the file to a temporary location (for example, C:\temp).
2. In Windows Explorer, right-click on the following file and select **Extract All** to unzip the files.

   C:\temp\N4980A_xx.xx.xxxx.zip
   (where xx.xx.xxxx is the version number)

3. Run the setup.exe file.
4. Follow the on-screen installation instructions.
5. When installation is complete, the software will be loaded in the directory specified during the installation. The default directory is C:\Program Files\Keysight\N4980A. The start menus and desktop icons reflect the application.

1.4 Troubleshooting

If you run into problems, or if you have any questions not answered in this document, contact an Keysight Technologies application engineer.

Edition 3.0, October 2014

N4980-91011

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