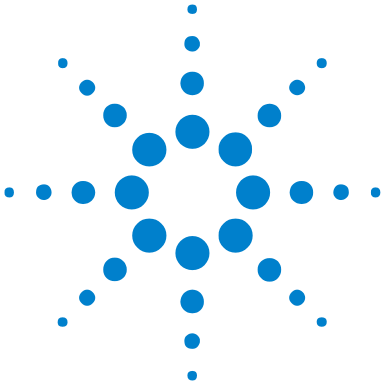


Agilent 16900 Series Logic Analysis Systems

Installation Guide

Agilent Technologies

Notices

© Agilent Technologies, Inc. 2004-2012

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 Agilent Technologies, Inc. as governed by United States and international copyright laws.

Manual Part Number

16900-97014

Edition

Twelfth edition, March 2012

Printed in Malaysia

Agilent Technologies, Inc.
1900 Garden of the Gods Road
Colorado Springs, CO 80907 USA

Trademark Acknowledgements

Windows and MS Windows are U.S. registered trademarks of Microsoft Corporation.

Windows NT is a U.S. registered trademark of Microsoft Corporation.

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, Agilent 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. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent 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 shall 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.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), 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.

Installation at a Glance

16900 Series Logic Analysis System Overview

The Agilent Technologies 16900 Series logic analysis systems are modular systems with slots for logic analyzer and other types of measurement modules.

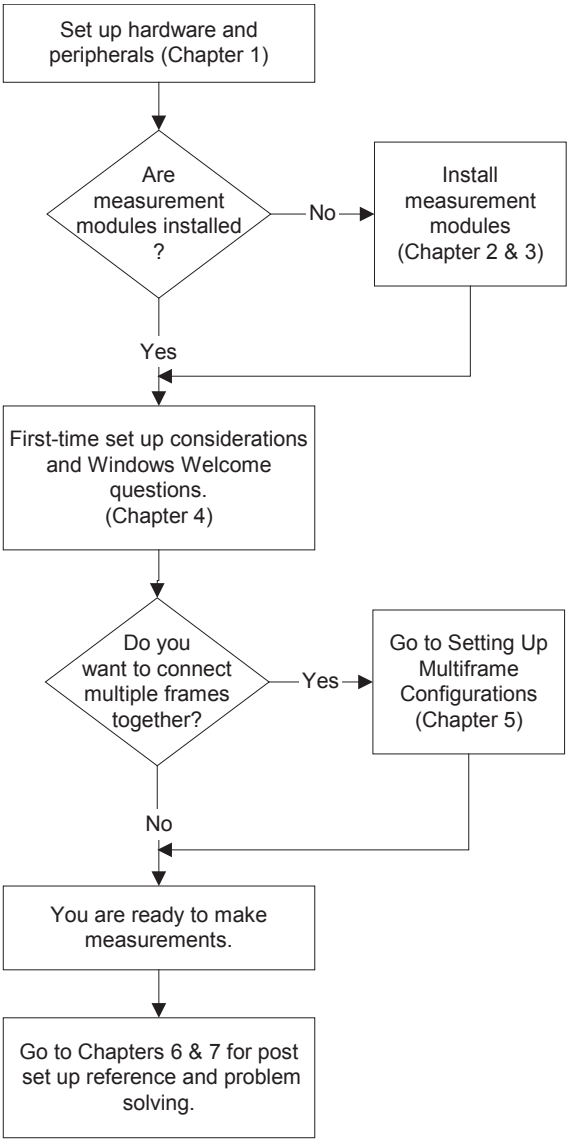
Table 1 Model comparisons

Agilent model number	Number of slots	Multiframe Pro	Display and resolution	PCI expansion slots
16900A	6	Yes	Uses external display, supports up to four external displays at up to 1600 x 1200 (with PCI video card)	2 full profile 1 low profile
16901A	2	Yes	Built-in color touch screen display, 15 inch at 1024 x 768, supports external monitor (without additional PCI video card)	1 full profile
16902A	6	Yes	Built-in color touch screen display, 12.1 inch at 800 x 600, supports up to four external monitors at up to 1600 x 1200 (with PCI video card)	2 full profile 1 low profile
16902B	6	Yes	Built-in color touch screen display, 15 inch at 1024 x 768, supports external monitor (without additional PCI video card)	1 full profile
16903A	3	No	Built-in color touch screen display, 12.1 inch at 800 x 600, supports up to four external monitors at up to 1600 x 1200 (with PCI video card)	1 full profile 1 low profile

All models have a familiar Windows-based user interface which takes the complexity out of making logic analyzer measurements. The legacy 16900 series Logic Analysis systems have the Windows XP installation. The 16900 logic analysis systems with the serial number of MY51420101 or higher have Windows 7 installed. You can perform all operations directly from one window.

- Supplied accessories:
  - PS2 mouse.
  - PS2 Mini keyboard.
  - Accessory pouch and power cord.
  - Ten-conductor flying lead cable for target control port (on 16900A, 16902A, 16902B, and 16903A models).
- Optional accessories:
  - Multiframe cable (E5861A).
  - 1 Gbit low-profile LAN card (Option 014 or E5860A for 16900A, 16902A, and 16903A models).
  - Probes.

In This Guide



Contents

Installation at a Glance 3

In This Guide 5

1 Setting Up Hardware

To connect the mouse, keyboard, and monitor 14

To connect to a LAN 17

To connect a printer 18

To make time-correlated measurements with an Agilent oscilloscope 19

2 Installing Logic Analyzer Cards and Probes

Software Requirements 23

To connect probes 24

To replace thumb screws on measurement modules 24

To install, remove, or replace measurement modules 26

16962A Logic Analyzer (1-card module) 30

16962A Logic Analyzer (2-card, 3-card, and 4-card modules) 31

16960A Logic Analyzer (1-card module) 37

16960A Logic Analyzer (2-card, 3-card, and 4-card modules) 38

16951/50B Logic Analyzer (1-card module) 43

16951/50B Logic Analyzer (2-card module) 44

16951/50B Logic Analyzer (3-card module) 45

16951/50B Logic Analyzer (4-card module) 46

16951/50B Logic Analyzer (5-card module) 47

16950A, 16756/55/54/53A Logic Analyzer (1-card module) 48
16950A, 16756/55/54/53A Logic Analyzer (2-card module) 49
16950A, 16756/55/54/53A Logic Analyzer (3-card module) 50
16950A, 16756/55/54/53A Logic Analyzer (4-card module) 51
16950A, 16756/55/54/53A Logic Analyzer (5-card module) 52
16911A/10A Logic Analyzer (1-card module) 53
16911A/10A Logic Analyzer (2-card module) 54
16911A/10A Logic Analyzer (3-card module) 55
16911A/10A Logic Analyzer (4-card module) 56
16911A/10A Logic Analyzer (5-card module) 57
16760A Logic Analyzer (1-card module) 58
16760A Logic Analyzer (2-card module) 59
16760A Logic Analyzer (3-card module) 60
16760A Logic Analyzer (4-card module) 61
16760A Logic Analyzer (5-card module) 62
16752/51/50B/A, 16742/41/40A Logic Analyzer (1-card module) 63
16752/51/50B/A, 16742/41/40A Logic Analyzer (2-card module) 64
16752/51/50B/A, 16742/41/40A Logic Analyzer (3-card module) 65
16752/51/50B/A, 16742/41/40A Logic Analyzer (4-card module) 66
16752/51/50B/A, 16742/41/40A Logic Analyzer (5-card module) 67

3 Installing Pattern Generator Cards

Software Requirements 70
16720A Pattern Generator (1-card module) 71
16720A Pattern Generator (2-card module) 72

16720A Pattern Generator (3-card module) 73

16720A Pattern Generator (4-card module) 74

16720A Pattern Generator (5-card module) 75

4 First-Time Set Up

First-Time Set Up Considerations 78

Determine Whether the Instrument will be Connected to the Network 78

Get Network Setup Information 78

First-Time Set Up On Legacy 16900 Series Systems With Windows XP Installation 79

Answering Windows Welcome Questions 79

If expected Windows Welcome questions do not appear 80

First-Time Set Up On 16900 Series Systems with Windows 7 Installation 81

Additional First Time Setup Steps 83

Establishing an Administrator Account (recommended for standalone and networked instruments) 83

Protecting the Instrument's Operating System 83

5 Setting Up Multiframe Configurations

Setting Up Simple Multiframe Configurations 86

Simple Multiframe Configuration using an Intranet 86

Simple Multiframe Configuration using an Isolated Router 87

Rules for Simple Multiframe Configurations 87

Creating Simple Multiframe Configurations 88

Remotely Controlling Simple Multiframe Systems 91

Setting Up a Performance Multiframe Configuration 92

Rules for Performance Multiframe Configurations 93

Creating a Performance Multiframe Configuration 93

Remotely Controlling a Performance Multiframe System 97

Other Multiframe Configuration Notes 98

I/O in Multiframe Configurations 98
Licenses in Multiframe Configurations 98

6 Using and Updating the Logic Analysis System

To locate information on using the logic analyzer 100
Online Help 100

To locate specifications and characteristics 101
Electrical and Operating Environment Characteristics 101
More Specifications and Characteristics 102

To perform backups 103

To install software 103
Agilent Logic Analysis System Software 103
Optional Products 104

To change network settings 104
On Windows XP 104
On Windows 7 104

To change Windows Firewall settings 106
To give other applications/ports access through the firewall 106
To restore the logic analysis system firewall defaults 109

To power off the system 112
Using the Windows Shutdown 112
Using a Short Press of the Power Button 112
Using a Long Press of the Power Button 113
Unplugging the Power Cord or Power Loss 113

To remove the hard disk drive (16902B) 114

To install interface cards (16900A, 16902A, 16902B, or 16903A) 115
1 Gbit LAN Card 120

To install interface cards (16901A) 121

To replace the CPU battery 124

7 Solving Problems

Running Self-Tests 126

If the logic analysis system powers itself down 127

16900A, 16902A, and 16902B logic analysis systems 127

All 16900 Series logic analysis systems 128

If the Power LEDs do not come on 128

If you get a registry error and the system won't boot 128

If you can't write/read CDs 129

If there are multiframe connection problems 130

If there are network connection problems 132

Using the System Recovery Software 133

On a Legacy 16900 Series Logic Analysis System with Windows XP installation 133

On a 16900 Series Logic Analysis System with Windows 7 Installation 133

Contacting Agilent Service/Support 138

A Safety Notices

Warnings 139

To clean the instrument 140

Safety Symbols 140

Index

1
Setting Up Hardware

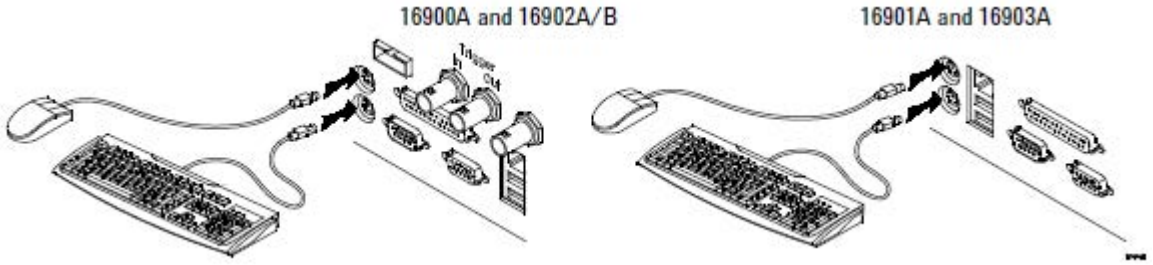
To connect the mouse, keyboard, and monitor 14
To connect to a LAN 17
To connect a printer 18
To make time-correlated measurements with an Agilent oscilloscope 19

To connect the mouse, keyboard, and monitor

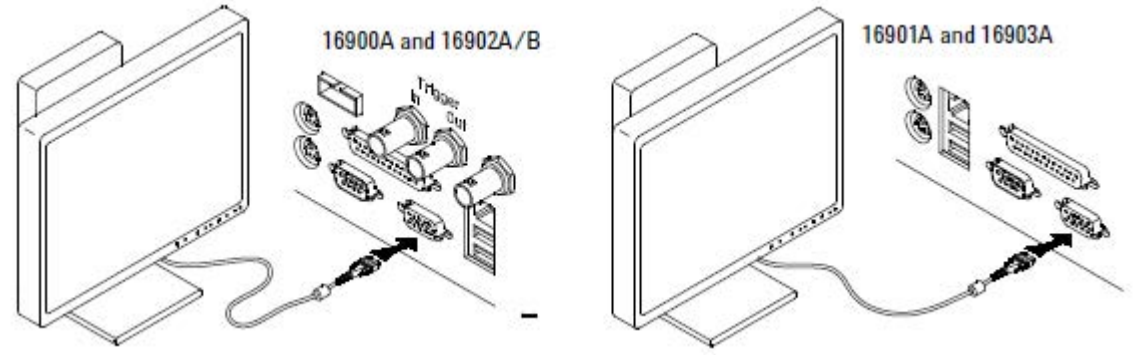
The 16900A logic analysis system must have the system mouse and keyboard connected for the system to boot up properly. Once enabled on the LAN, the system can be operated remotely without a keyboard or mouse. Use of a monitor is optional for the 16901A, 16902A, 16902B, and 16903A.

(The following rear panel figures are representative; yours may look different.)

1 Connect the provided PS/2 mouse and keyboard provided to the back of frame.



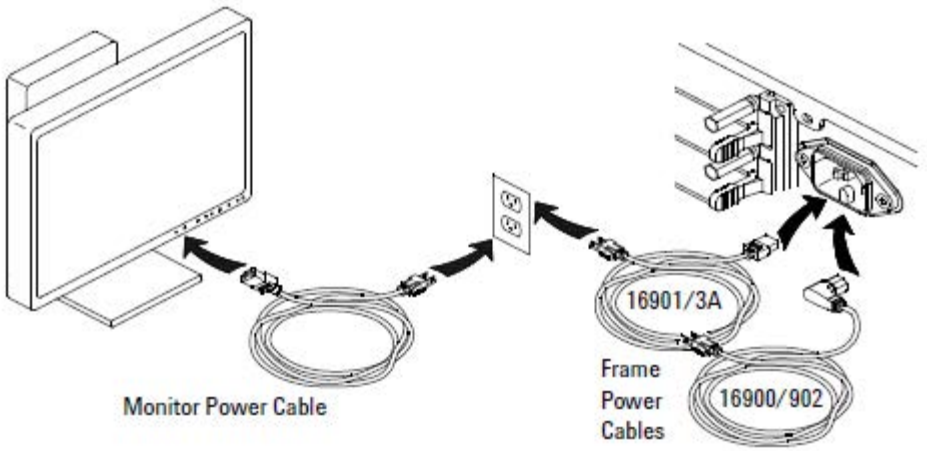
2 Connect a monitor to the back of the 16900A. A second monitor on the 16901A, 16902A, 16902B, or 16903A is optional.



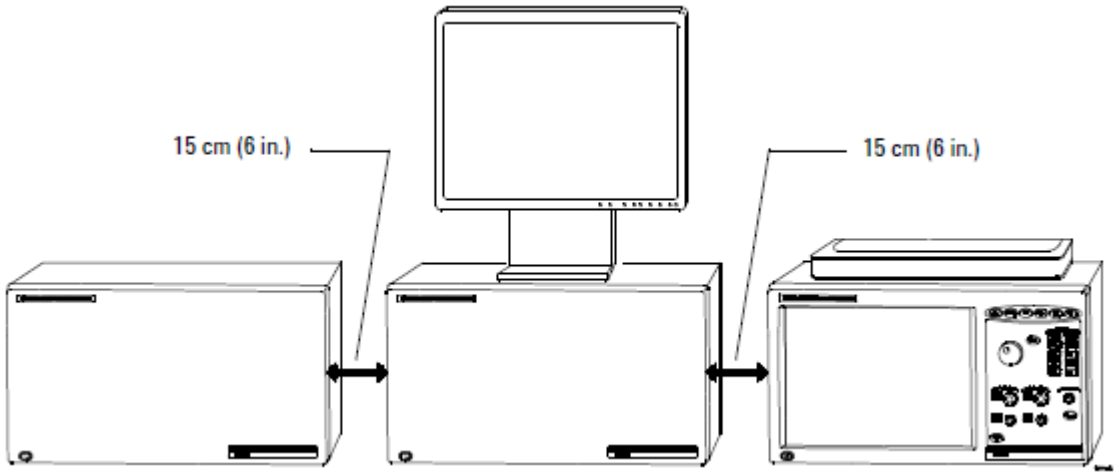
The touch off button switches the Windows desktop from one display device to another. A message will appear in one of the monitors telling you how to use this feature.

3 Connect the power cord supplied with your frame.

NOTE The 16900A, 16902A, and 16902B have a special notched power cord in order to provide 1300W to the frame.



4 Allow a minimum of 15 cm (6 in.) spacing between instruments for proper cooling.



To connect to a LAN

Local area networks (LAN) are enabled outside of the logic analyzer application using the Windows network configuration wizard.

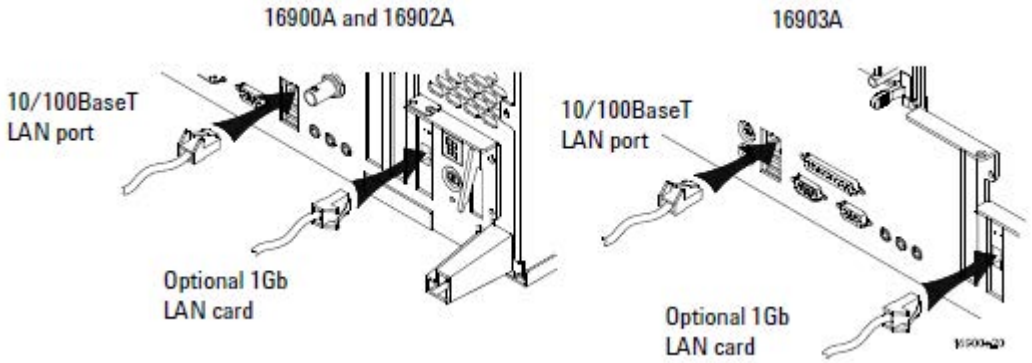
1 Connect the LAN cable(s) to the back of your logic analysis system.

- Agilent recommends using a 1 Gbit LAN card when networking multiple frames.

  The 16902B and 16901A frames have an integrated 1 Gbit LAN interface.

  For information on installing a 1 Gbit LAN card in your system, See "To install interface cards (16900A, 16902A, 16902B, or 16903A)" on page 115.

- For information on network configurations when connecting multiple frames see Chapter 5, "Setting Up Multiframe Configurations on page 85.



NOTE

Microsoft recommends the following three steps to ensure the instrument's PC is protected:

a Use an internet firewall.
b Get computer updates.
c Use up-to-date antivirus software.

2 Refer to "First-Time Set Up" on page 77 to answer the Windows Welcome when you power up the logic analyzer.

To connect a printer

Local and network printers are added outside of the logic analyzer application using the Windows add printer wizard.

1. Connect the printer cable to the back of your logic analysis system. If using a network printer ensure the LAN cable is connected.
2. On Windows XP, click **Start>Printers and Faxes>Add a Printer**. On Windows 7, click **Start>Devices and Printers>Add a Printer**.
3. Follow the Windows Add Printer wizard instructions.

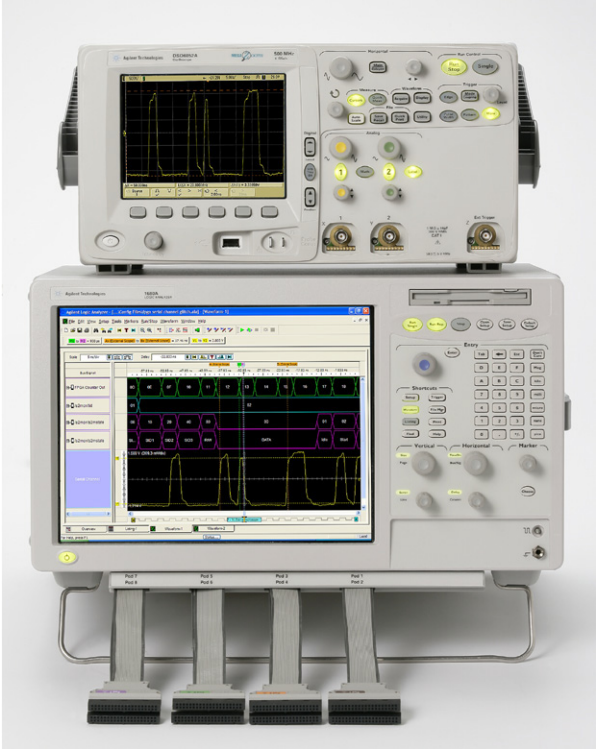
To make time-correlated measurements with an Agilent oscilloscope

You can make time-correlated measurements between an Agilent 16900 Series logic analyzer and Agilent 5000, 6000, 548xx, 8000, or 80000 Series oscilloscopes.

Measurements between the logic analyzer and Agilent oscilloscope are automatically de-skewed. The instruments communicate with one another through a LAN connection and Trigger In/Trigger Out.

The instruments connect to your device under test through separate probes, just as when they are used independently. The oscilloscope time markers and two logic analysis system global markers are time-correlated and track each other.

To set up and use the time-correlated connection, choose **Setup>Add External Scope...** in the *Agilent Logic Analyzer* application.



1 Setting Up Hardware

2 Installing Logic Analyzer Cards and Probes

Software Requirements 23
To connect probes 24
To replace thumb screws on measurement modules 24
To install, remove, or replace measurement modules 26
16962A Logic Analyzer (1-card module) 30
16962A Logic Analyzer (2-card, 3-card, and 4-card modules) 31
16960A Logic Analyzer (1-card module) 37
16960A Logic Analyzer (2-card, 3-card, and 4-card modules) 38
16951/50B Logic Analyzer (1-card module) 43
16951/50B Logic Analyzer (2-card module) 44
16951/50B Logic Analyzer (3-card module) 45
16951/50B Logic Analyzer (4-card module) 46
16951/50B Logic Analyzer (5-card module) 47
16950A, 16756/55/54/53A Logic Analyzer (1-card module) 48
16950A, 16756/55/54/53A Logic Analyzer (2-card module) 49
16950A, 16756/55/54/53A Logic Analyzer (3-card module) 50
16950A, 16756/55/54/53A Logic Analyzer (4-card module) 51
16950A, 16756/55/54/53A Logic Analyzer (5-card module) 52
16911A/10A Logic Analyzer (1-card module) 53
16911A/10A Logic Analyzer (2-card module) 54
16911A/10A Logic Analyzer (3-card module) 55
16911A/10A Logic Analyzer (4-card module) 56
16911A/10A Logic Analyzer (5-card module) 57
16760A Logic Analyzer (1-card module) 58
16760A Logic Analyzer (2-card module) 59
16760A Logic Analyzer (3-card module) 60
16760A Logic Analyzer (4-card module) 61

16760A Logic Analyzer (5-card module) 62
16752/51/50B/A, 16742/41/40A Logic Analyzer (1-card module) 63
16752/51/50B/A, 16742/41/40A Logic Analyzer (2-card module) 64
16752/51/50B/A, 16742/41/40A Logic Analyzer (3-card module) 65
16752/51/50B/A, 16742/41/40A Logic Analyzer (4-card module) 66
16752/51/50B/A, 16742/41/40A Logic Analyzer (5-card module) 67

Software Requirements

The following table gives you the Agilent Logic Analyzer software version required for logic analyzer measurement modules in the 16900A, 16902A, 16902B, or 16903A frames. For information on updating your logic analysis system software go to "To install software" on page 103.

Table 2 Software Version Required, Frames

Model Number	Software Version
16903A	02.00 or higher
16902B	03.70 or higher
16902A	02.00 or higher
16901A	03.60 or higher
16900A	02.00 or higher

Table 3 Software Version Required, Logic Analyzer Modules

Model Number	Software Version
16962A	03.82 or higher
16960A	03.70 or higher
16951B	03.65 or higher
16950B	03.55 or higher
16950A	02.00 or higher
16911A, 16910A	02.00 or higher
16760A	03.20 or higher
16756/55/54/53A	02.00 or higher
16752/51/50B/A, 16742/41/40A	02.00 or higher

NOTE The 16900 series of Logic Analysis systems with serial number of MY51420101 or higher require the Agilent Logic Analyzer software version 5.20 or later. These systems have the Windows 7 operating system installed.

To connect probes

Probing is the key to effective and efficient use of logic analyzers. Agilent Technologies offers a wide variety of probing accessories that support general-purpose and application-specific measurement needs. We provide reliable, electrically and mechanically unobtrusive probes that make it easy to connect your Agilent logic analyzer to your system under test. For more information on Agilent probes:

- See the quick reference card that came with your logic analysis system for an overview of probing solutions.
- Go to www.agilent.com/find/logic_analyzer_probes for the most up-to-date information on probe compatibility with a given logic analyzer and purchasing information.
- Go to www.agilent.com and search for Probing Solutions for Logic Analyzers (publication 5968-4632E) for a catalog of detailed probing information.

To connect and set up a probe, follow the instructions in the *User's Guide* that came with the probe.

To replace thumb screws on measurement modules

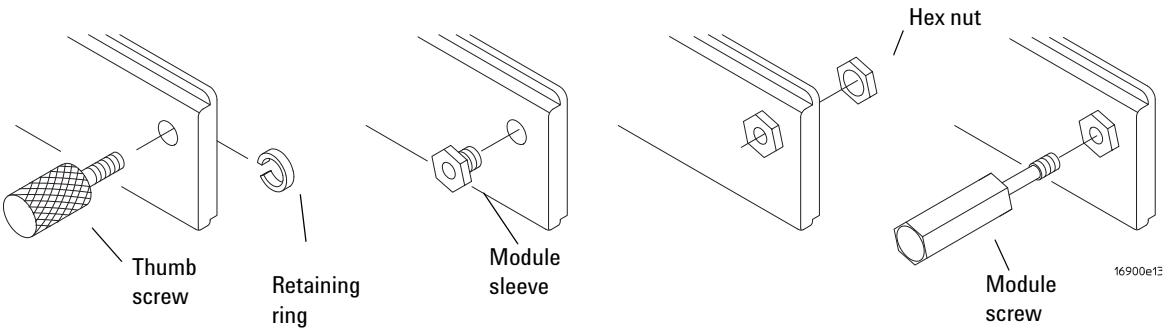
If you ordered measurement modules with your logic analysis system, they will have the proper thumb screws and you can skip this procedure.

If you are using a measurement module from a 16700 Series logic analysis system, you may need to replace the thumb screws. The rigid screws on these modules are not compatible with the new ejector levers.

1 Remove the retaining ring from the back of the panel then remove the thumb screw.

2 Insert the module sleeve into the front of the module panel and screw the nut onto it.

3 Screw the module screw into the sleeve.



The 16900A/16902A logic analysis system comes with a set of 6 replacement thumb screws (16900-68713), and the 16903A logic analysis system comes with a set of 2 replacement thumb screws (16903-68713).

To install, remove, or replace measurement modules

If you ordered your measurement modules with the frame, they will already be installed and you can skip this procedure.

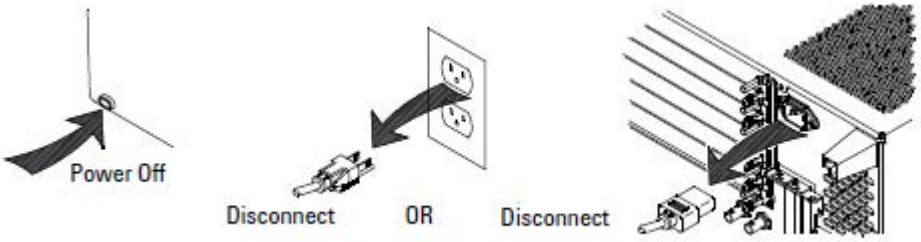
If you are using a measurement module from a 16700 Series logic analysis system you will need to replace the thumb screws. Begin with the instructions on page 24.

The following procedure guides you through installing, removing, or replacing measurement modules in the logic analysis system frame. Information on connecting specific multi-card measurement modules is in the next sections of this chapter. Measurement modules with different model numbers cannot be connected together in multi-card (Master/Expander) modules unless stated otherwise.

CAUTION Electrostatic discharge can damage electronic components. Use grounded wrist straps and mats when performing any service to measurement modules.

CAUTION When removing cards that are connected together as multiple-card modules, be sure to eject the multiple cards simultaneously, otherwise, the flex cables and/or connectors could be damaged.

1 Power down the system and disconnect the power cable before installing, removing or replacing measurement modules.

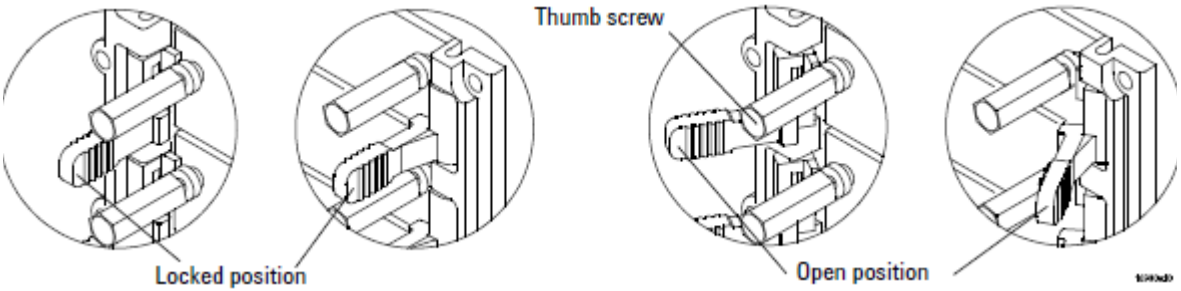


2 Remove filler panels as shown in the following figure.

   a Loosen the thumb screws on the filler panels.

   b Rotate the ejector levers from the locked position to the open position.

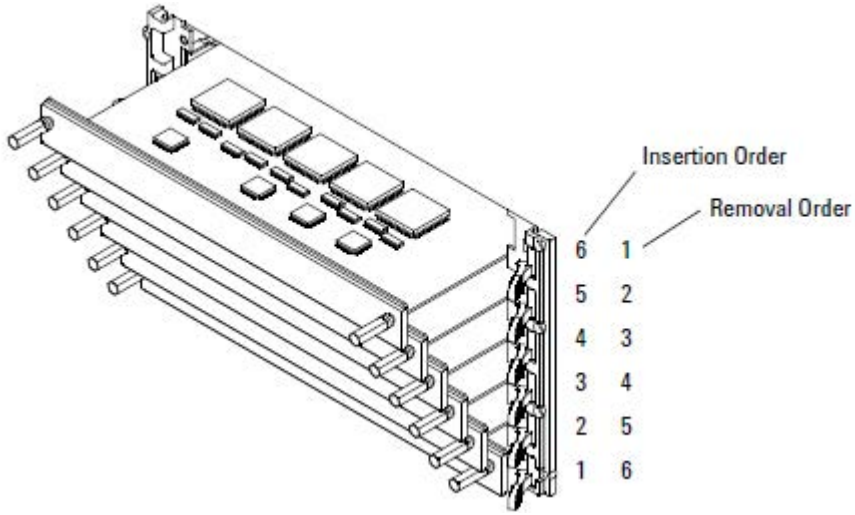
   c Remove filler panels.



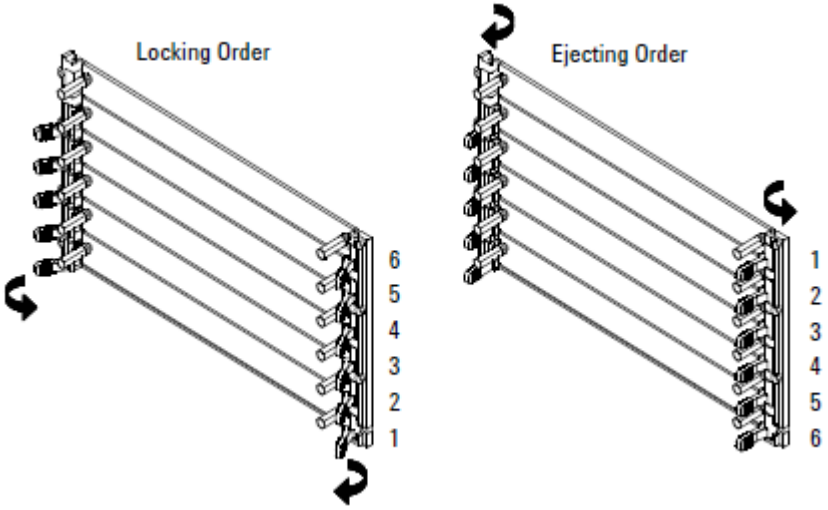
3 If you are using a measurement module from a 16700 Series logic analysis system go to "To replace thumb screws on measurement modules" on page 24. If not, skip this step.

4 Ensure all ejectors are fully open and out of the way then slide the module(s) into the logic analysis system frame.

   The following figure shows a 6-card frame. The insertion/removal order would be the same for a 3-card frame. A single-module configuration can be installed in any available slot.



5 Seat the modules then rotate the ejector tabs to the locked position. Repeat for all modules or filler panels.



6 Tighten the thumb screws until finger tight in the same order used in step 5 above.

7 For correct air circulation, install filler panels in all unused card slots. Correct air circulation keeps the instrument from overheating. Keep any extra filler panels for future use.

8 Refer to "First-Time Set Up" on page 77 to answer the Windows Welcome questions when you power up the logic analysis system for the first time.

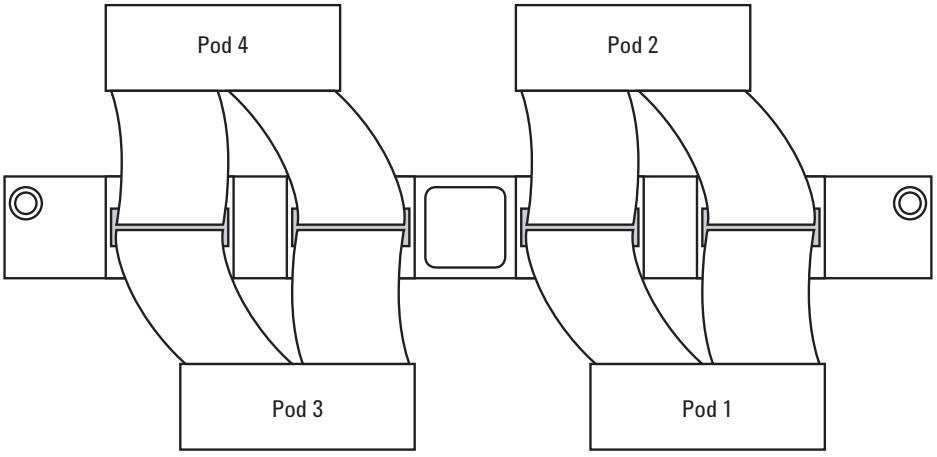
16962A Logic Analyzer (1-card module)

A single-card module can be installed in any available slot.

For a single card, the two 16960-61602 flex cables (kit 16960-60002 in the accessory pouch) are not used.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

The order of pods on the card's rear panel is:



In a multi-card set, pods are indexed from the bottom up. Because clock signals can be input to any card in the set (on pod 1 or 3), cards do not have *master* and *expander* designations.

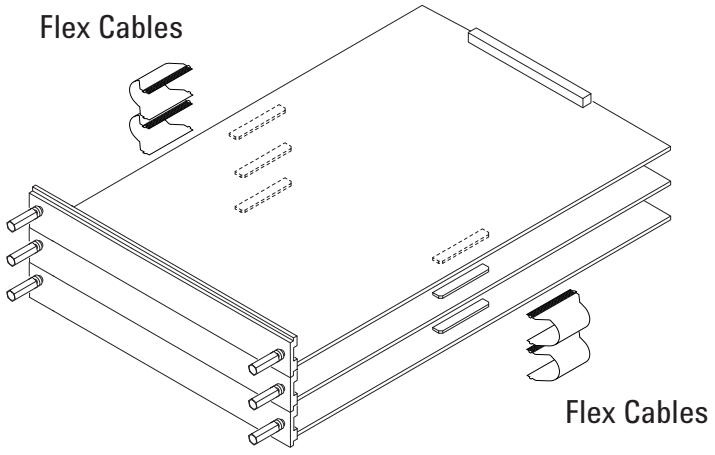
16962A Logic Analyzer (2-card, 3-card, and 4-card modules)

Between cards, use a pair of 16960-61602 flex cables (in the accessory pouch) to connect the modules.

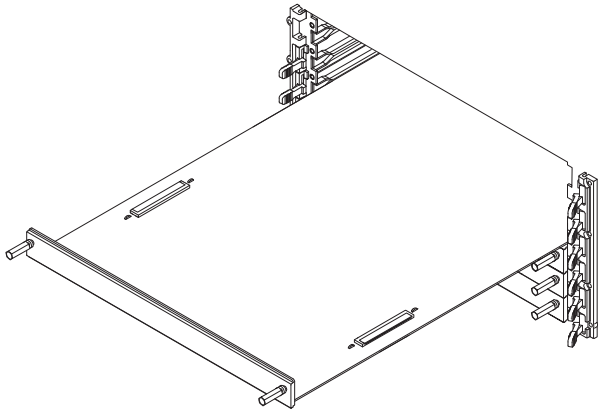
NOTE The 16962A logic analyzer module must only be combined with other 16962A modules. A 16962A combined set will default to the lowest memory depth in the set.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

CAUTION When removing cards that are connected together as multiple-card modules, be sure to eject the multiple cards simultaneously, otherwise, the flex cables and/or connectors could be damaged.

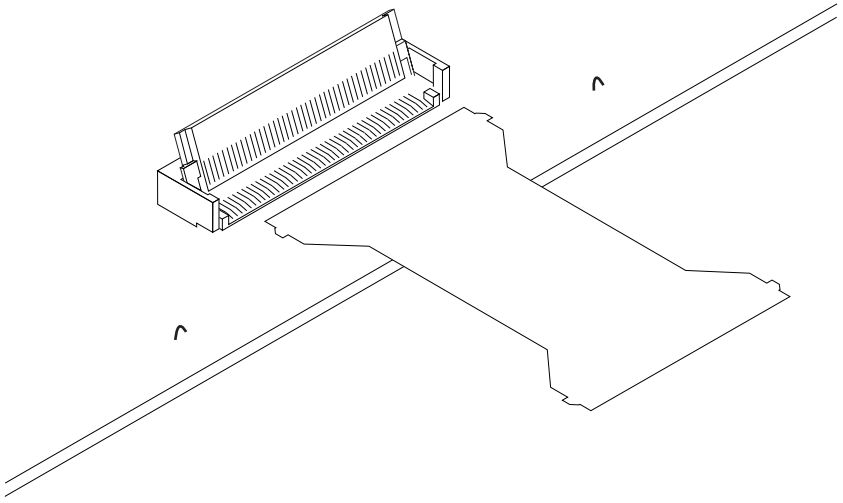


1 Insert the lowest card about 1/3 of the way into the desired logic analyzer frame slot.

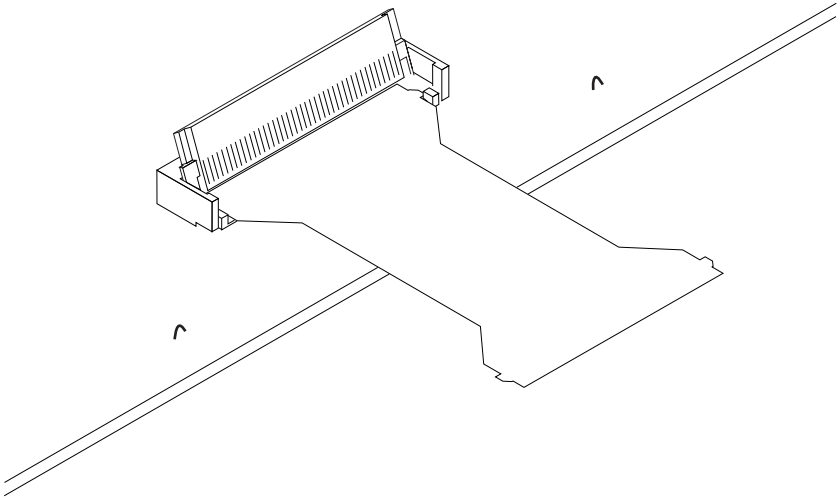


2 Before inserting the next card into the desired slot, attach the flex cables to the under side of the card:

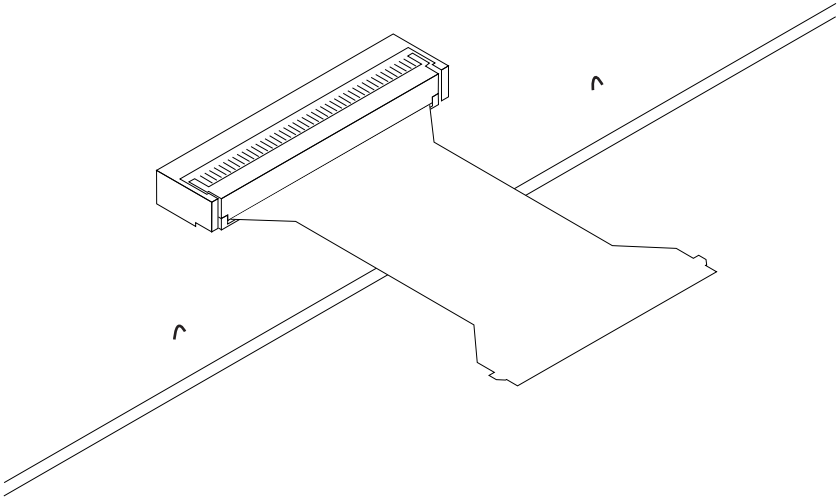
a Flip up the connector actuator with your thumb or index finder. Do not use any type of tool to open the actuator.



b Place the flex cable into the connector, exposed conductive traces towards the card, so that the flex cable ears are secured by the connector guides.

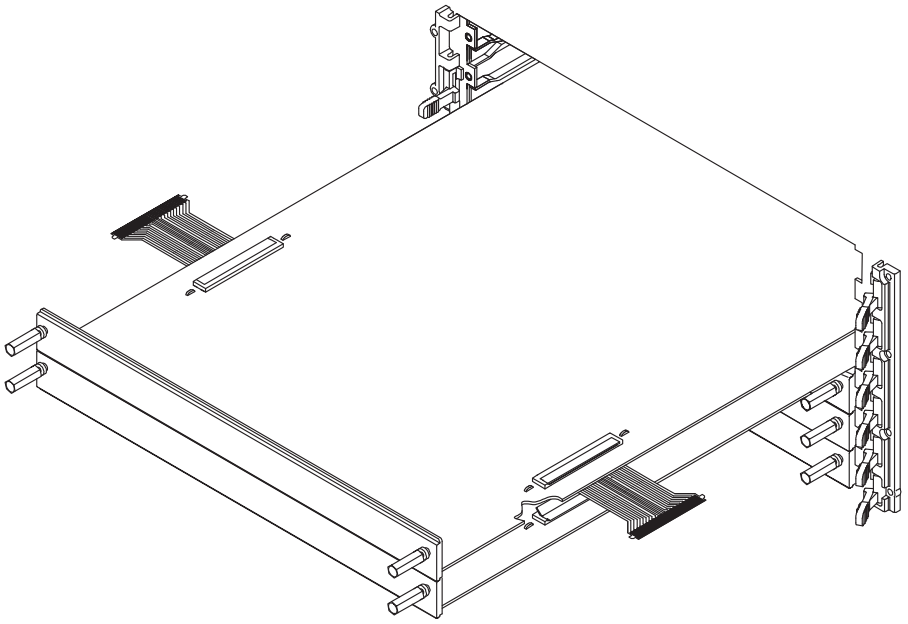


c Close the connector actuator.



d Repeat for the opposite under-side flex cable and connector.

3 Now, slide the next card about 1/3 of the way into its slot, so that it is aligned with the lower card.



4 Attach the flex cables to the top side of the lower card:

   a Flip up the connector actuator with your thumb or index finder. Do not use any type of tool to open the actuator.

   b Place the flex cable into the connector, exposed conductive traces towards the card, so that the flex cable ears are secured by the connector guides.

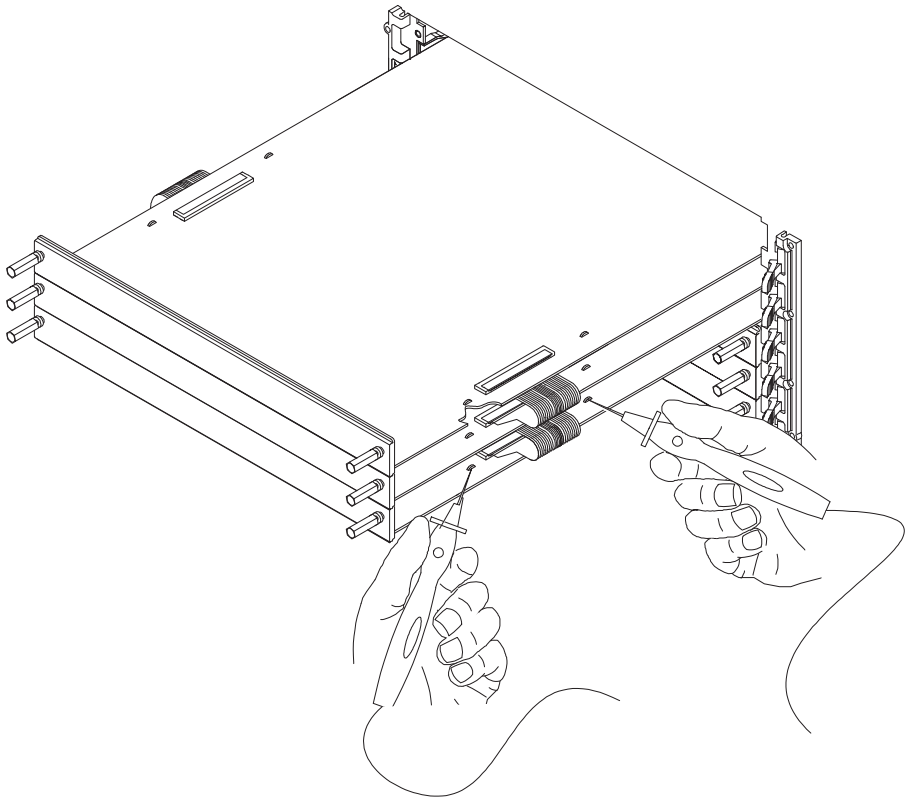
      Be careful not to bend the flex cables any more than is necessary to fit between the card connectors.

   c Close the connector actuator.

   d Repeat for the opposite top-side flex cable and connector.

5 Repeat steps 2-4 for the remaining cards.

6 To verify the flex cables are installed correctly, use an ohm meter to check continuity between the pair of test points associated with each connector used.



If there is continuity (0 ohms), the flex cable is seated correctly in the connector.

If there is no continuity (infinite ohms), the flex cable is not seated correctly. Repeat the flex cable attachment steps, and check the continuity again.

(Note that there is also a self test named “Resource Bus Connection Test” for verifying these connections when logic analyzer cards are installed.)

While maintaining alignment with the cards as a set, insert them the rest of the way into the slots, seat them, lock the ejector tabs, and tighten the thumb screws.

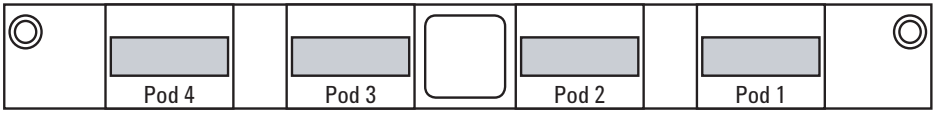
16960A Logic Analyzer (1-card module)

A single-card module can be installed in any available slot.

For a single card, the two 16960-61601 flex cables (kit 16960-60001 in the accessory pouch) are not used.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

The order of pods on the card's rear panel is:



In a multi-card set, pods are indexed from the bottom up. Because clock signals can be input to any card in the set (on pod 1 or 3), cards do not have *master* and *expander* designations.

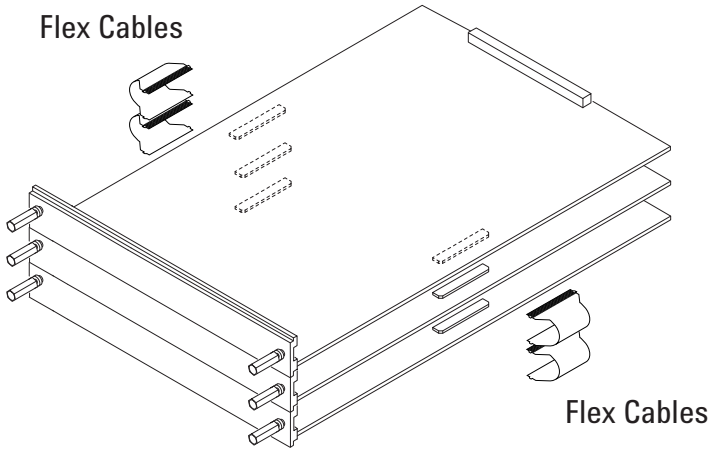
16960A Logic Analyzer (2-card, 3-card, and 4-card modules)

Between cards, use a pair of 16960-61601 flex cables (in the accessory pouch) to connect the modules.

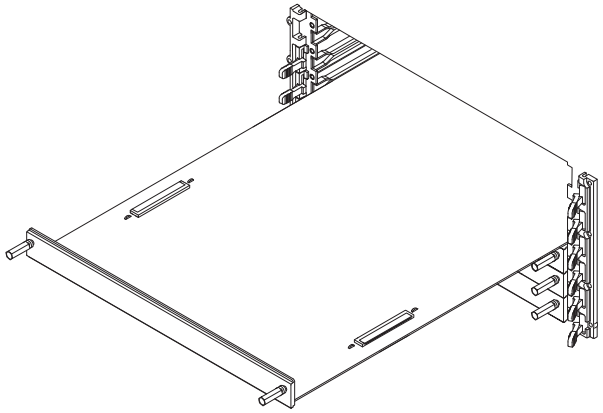
NOTE The 16960A logic analyzer module must only be combined with other 16960A modules. A 16960A combined set will default to the lowest memory depth in the set.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

CAUTION When removing cards that are connected together as multiple-card modules, be sure to eject the multiple cards simultaneously, otherwise, the flex cables and/or connectors could be damaged.

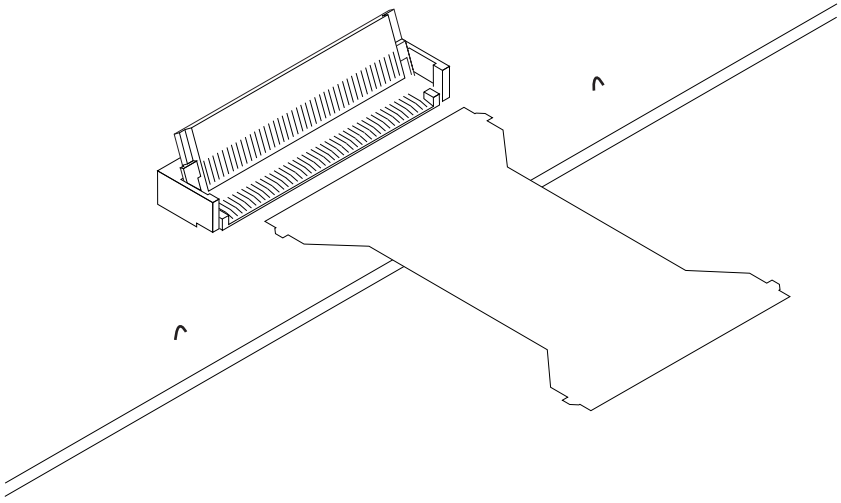


1 Insert the lowest card about 1/3 of the way into the desired logic analyzer frame slot.

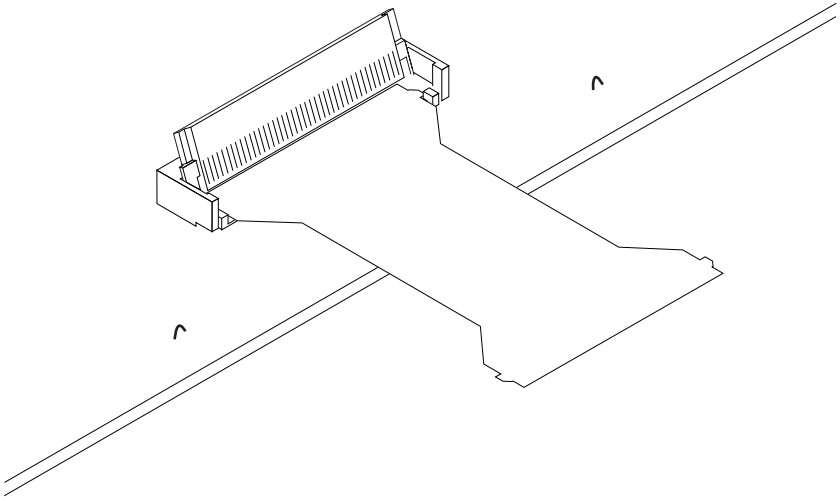


2 Before inserting the next card into the desired slot, attach the flex cables to the under side of the card:

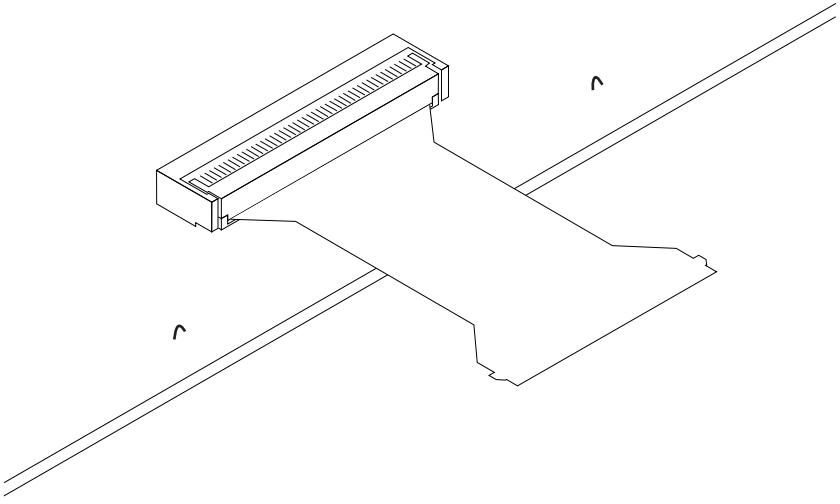
   a Flip up the connector actuator with your thumb or index finder. Do not use any type of tool to open the actuator.



b Place the flex cable into the connector, exposed conductive traces towards the card, so that the flex cable ears are secured by the connector guides.

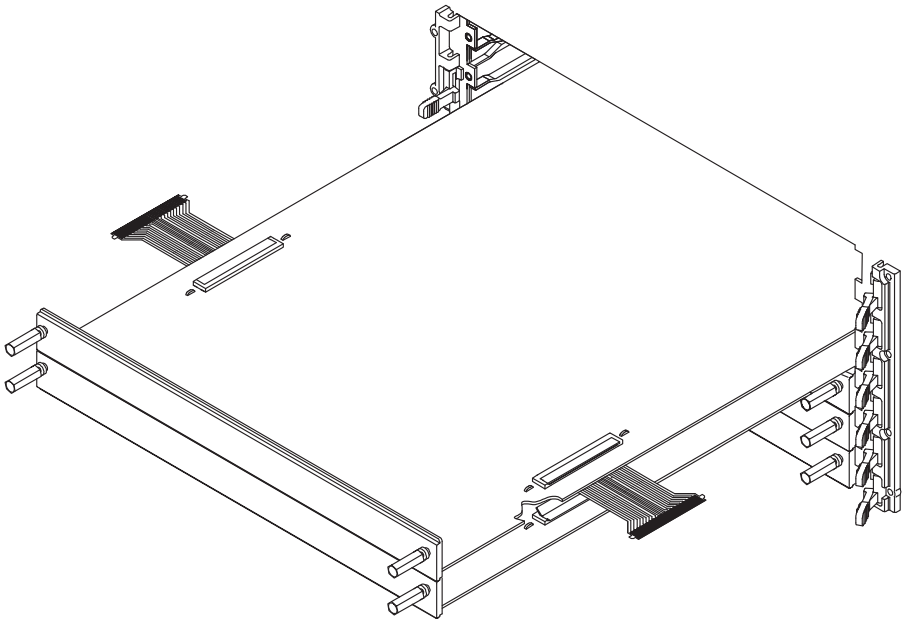


c Close the connector actuator.



d Repeat for the opposite under-side flex cable and connector.

3 Now, slide the next card about 1/3 of the way into its slot, so that it is aligned with the lower card.



4 Attach the flex cables to the top side of the lower card:

   a Flip up the connector actuator with your thumb or index finder. Do not use any type of tool to open the actuator.

   b Place the flex cable into the connector, exposed conductive traces towards the card, so that the flex cable ears are secured by the connector guides.

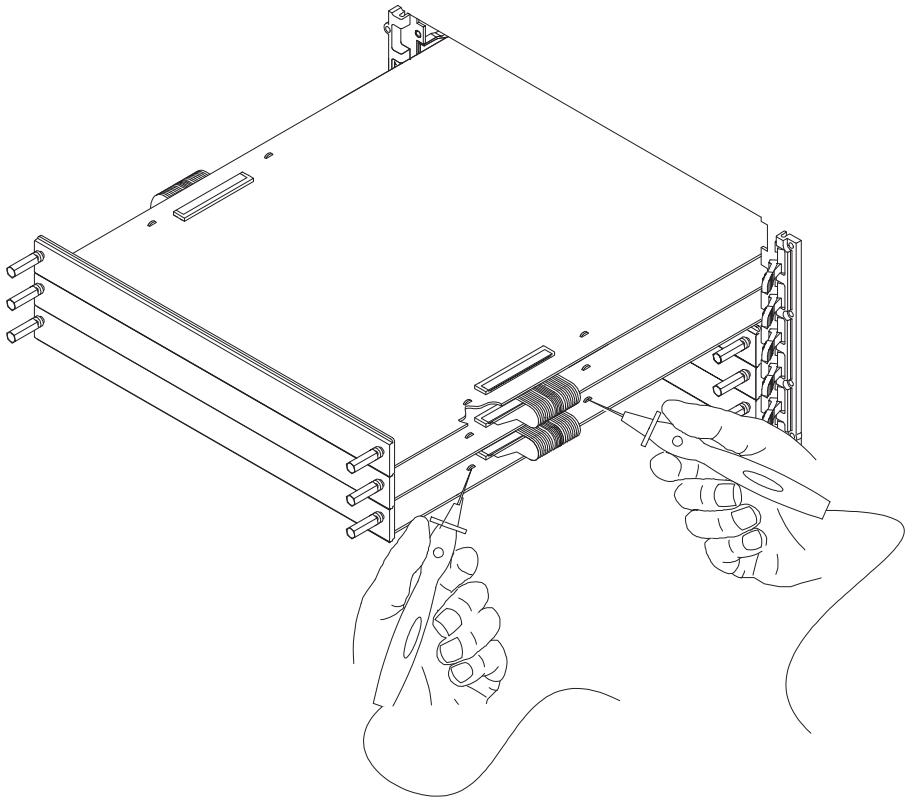
      Be careful not to bend the flex cables any more than is necessary to fit between the card connectors.

   c Close the connector actuator.

   d Repeat for the opposite top-side flex cable and connector.

5 Repeat steps 2-4 for the remaining cards.

6 To verify the flex cables are installed correctly, use an ohm meter to check continuity between the pair of test points associated with each connector used.



If there is continuity (0 ohms), the flex cable is seated correctly in the connector.

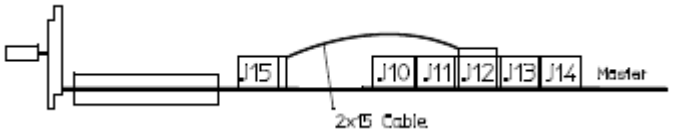
If there is no continuity (infinite ohms), the flex cable is not seated correctly. Repeat the flex cable attachment steps, and check the continuity again.

7 While maintaining alignment with the cards as a set, insert them the rest of the way into the slots, seat them, lock the ejector tabs, and tighten the thumb screws.

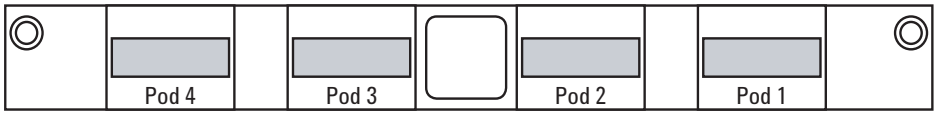
16951/50B Logic Analyzer (1-card module)

Each card shipped stand-alone has the 2 x 15 cable connected in the single-card module configuration. The 2 x 50 cables in the accessory pouch are not used. A single-card module can be installed in any available slot.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



The order of pods on the card's rear panel is:

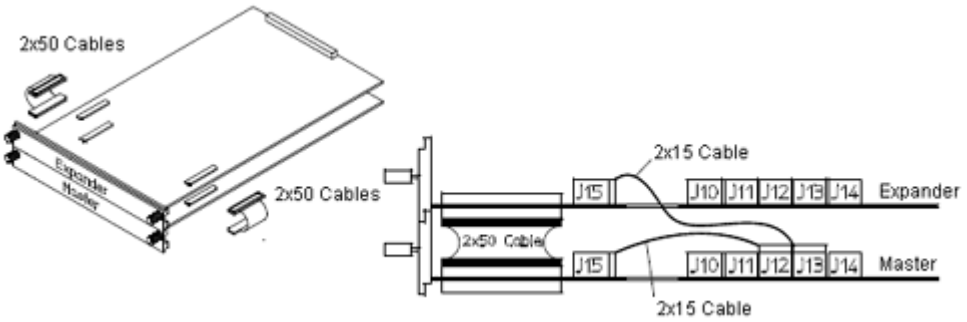


In a multi-card set, pods are indexed starting with the master card, then with the expander cards from the bottom up.

16951/50B Logic Analyzer (2-card module)

Use two 2 x 15 cables and two 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



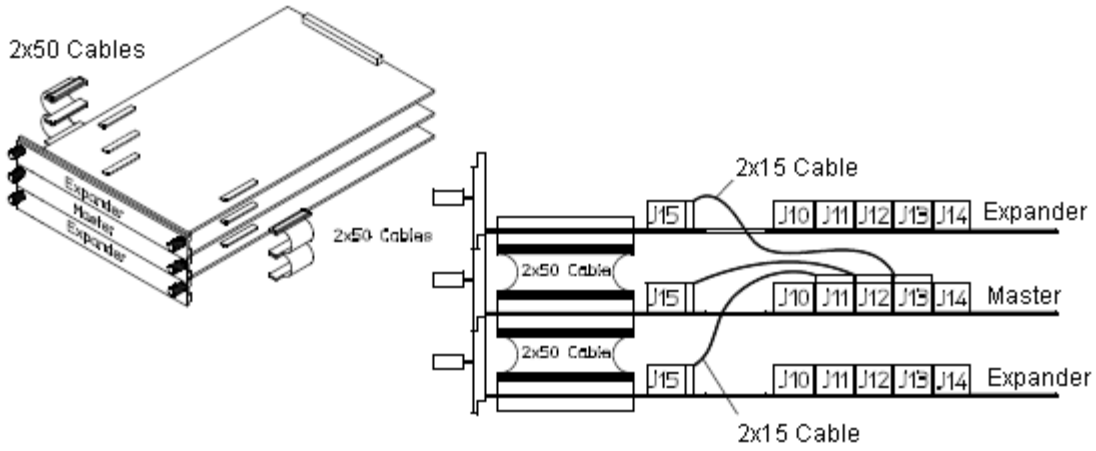
NOTE The 16950B logic analyzer module must only be combined with another 16950B module. Likewise, the 16951B logic analyzer module must only be combined with another 16951B module.

A 16950B combined set will default to the lowest memory depth in the set.

16951/50B Logic Analyzer (3-card module)

Use three 2 x 15 cables and four 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



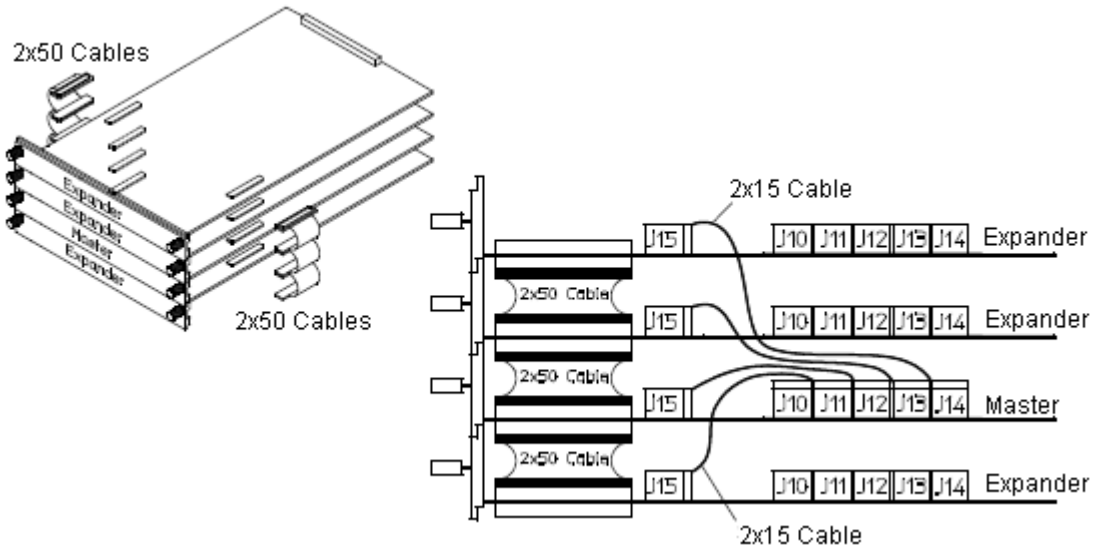
NOTE The 16950B logic analyzer module must only be combined with other 16950B modules. Likewise, the 16951B logic analyzer module must only be combined other 16951B modules.

A 16950B combined set will default to the lowest memory depth in the set.

16951/50B Logic Analyzer (4-card module)

Use four 2 x 15 cables and six 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



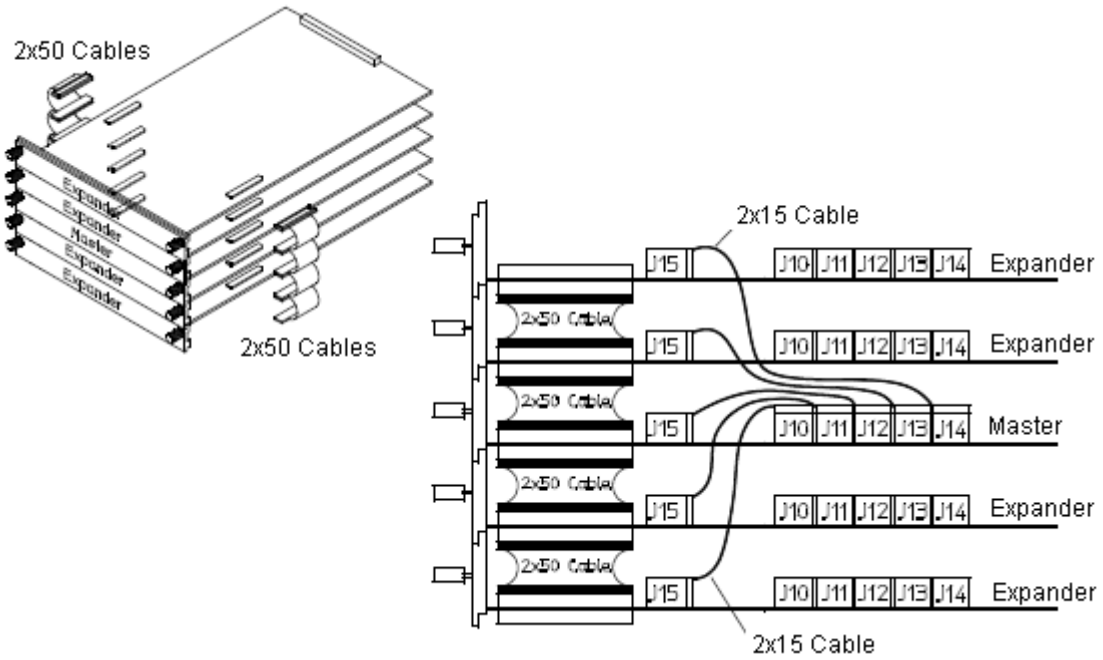
NOTE The 16950B logic analyzer module must only be combined with other 16950B modules. Likewise, the 16951B logic analyzer module must only be combined other 16951B modules.

A 16950B combined set will default to the lowest memory depth in the set.

16951/50B Logic Analyzer (5-card module)

Use five 2 x 15 cables and eight 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



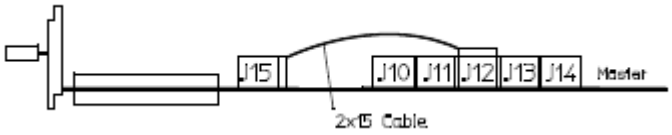
NOTE The 16950B logic analyzer module must only be combined with other 16950B modules. Likewise, the 16951B logic analyzer module must only be combined other 16951B modules.

A 16950B combined set will default to the lowest memory depth in the set.

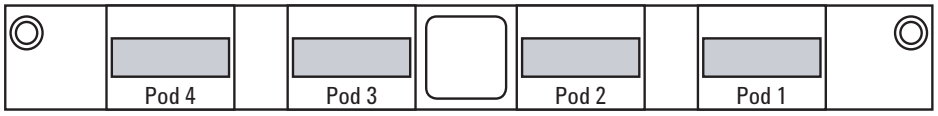
16950A, 16756/55/54/53A Logic Analyzer (1-card module)

Each card shipped stand-alone has the 2 x 15 cable connected in the single-card module configuration. The 2 x 50 cables in the accessory pouch are not used. A single-card module can be installed in any available slot.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



The order of pods on the card's rear panel is:

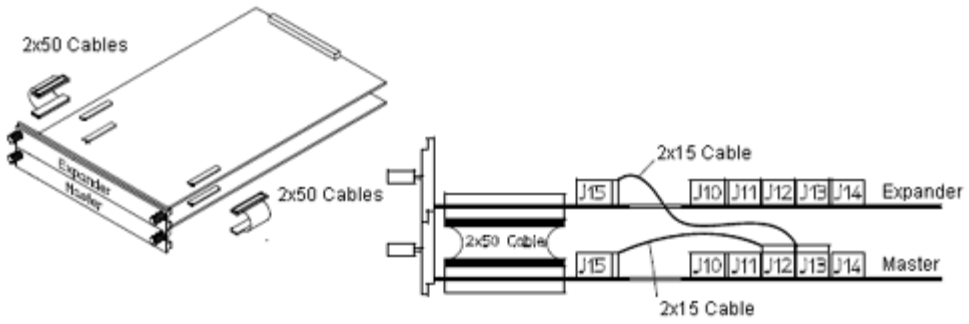


In a multi-card set, pods are indexed starting with the master card, then with the expander cards from the bottom up.

16950A, 16756/55/54/53A Logic Analyzer (2-card module)

Use two 2 x 15 cables and two 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



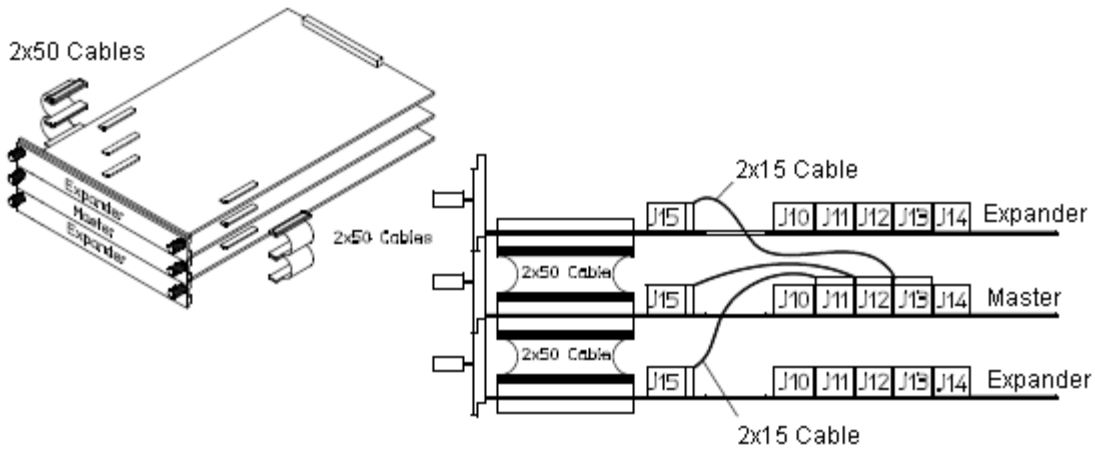
NOTE You can combine any combination of 16753A, 16754A, 16755A, 16756A, and 16950A logic analyzer modules in a 2-card set.

The combined set will default to the lowest memory depth in the set.

16950A, 16756/55/54/53A Logic Analyzer (3-card module)

Use three 2 x 15 cables and four 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



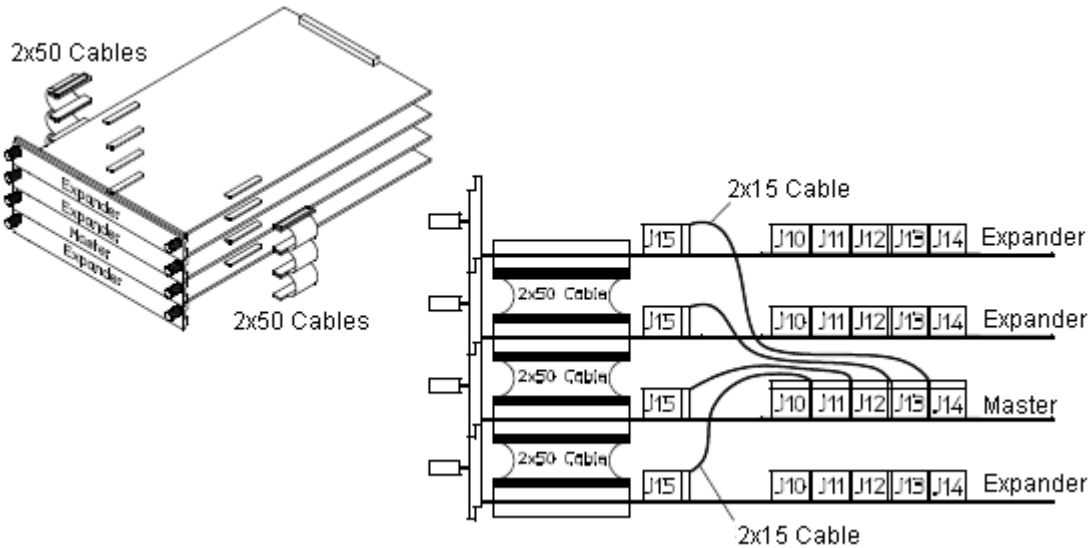
NOTE You can combine any combination of 16753A, 16754A, 16755A, 16756A, and 16950A logic analyzer modules in a 3-card set.

The combined set will default to the lowest memory depth in the set.

16950A, 16756/55/54/53A Logic Analyzer (4-card module)

Use four 2 x 15 cables and six 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



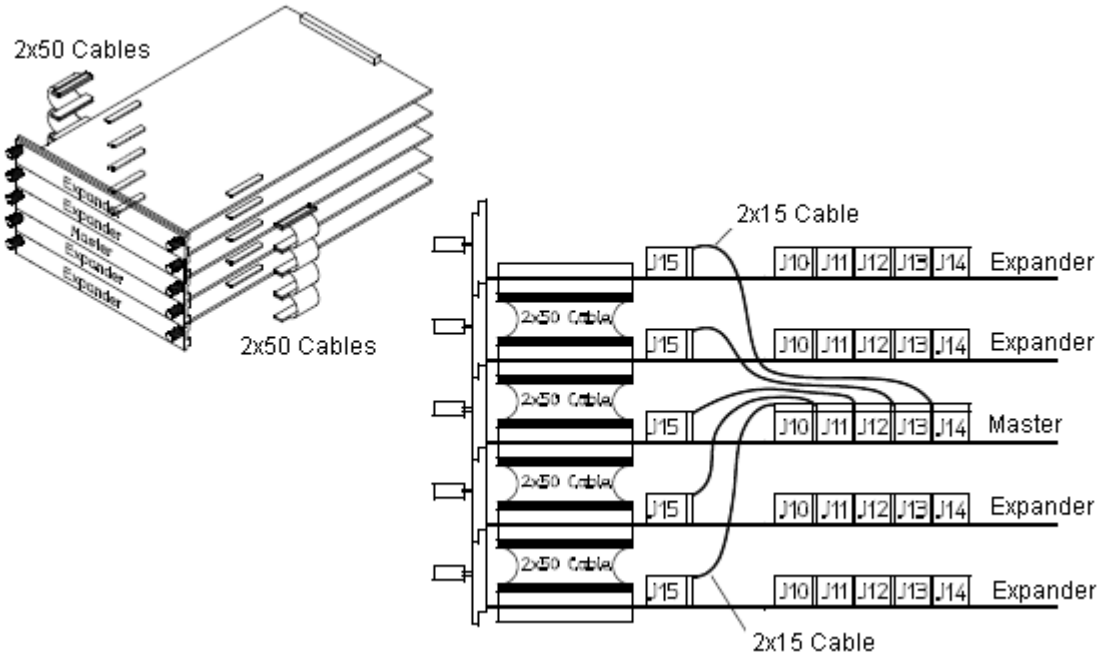
NOTE You can combine any combination of 16753A, 16754A, 16755A, 16756A, and 16950A logic analyzer modules in a 4-card set.

The combined set will default to the lowest memory depth in the set.

16950A, 16756/55/54/53A Logic Analyzer (5-card module)

Use five 2 x 15 cables and eight 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



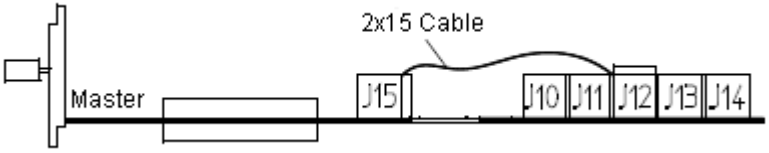
NOTE You can combine any combination of 16753A, 16754A, 16755A, 16756A, and 16950A logic analyzer modules in a 5-card set.

The combined set will default to the lowest memory depth in the set.

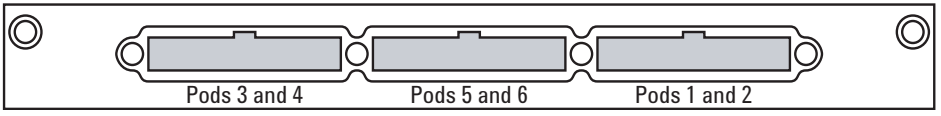
16911A/10A Logic Analyzer (1-card module)

Each card shipped stand-alone has the 2 x 15 cable connected in the single-card module configuration. The 2 x 50 cables in the accessory pouch are not used. A single-card module can be installed in any available slot.

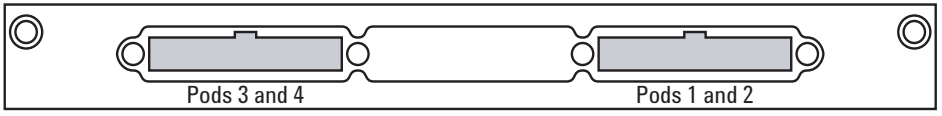
NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



The order of pods on the 16910A logic analyzer card's rear panel is:



The order of pods on the 16911A logic analyzer card's rear panel is:

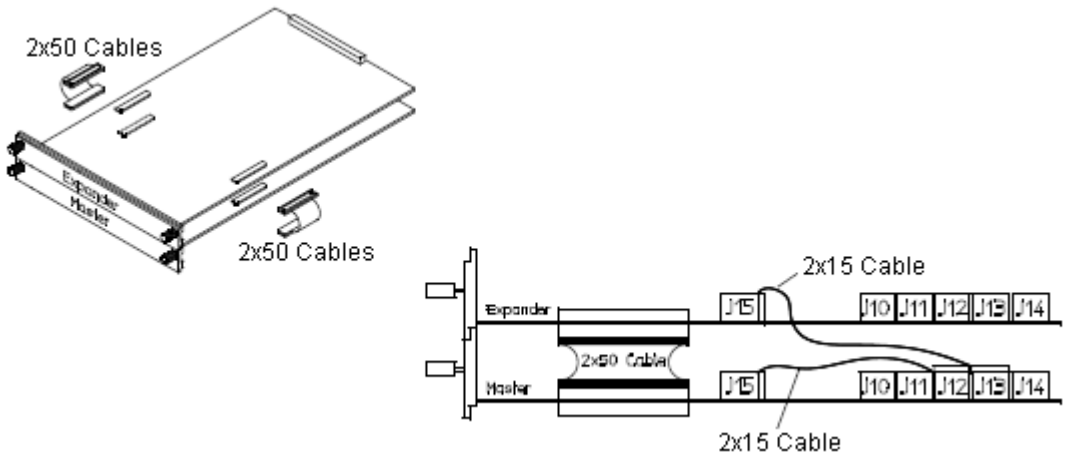


In a multi-card set, pods are indexed starting with the master card, then with the expander cards from the bottom up.

16911A/10A Logic Analyzer (2-card module)

Use two 2 x 15 cables and two 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

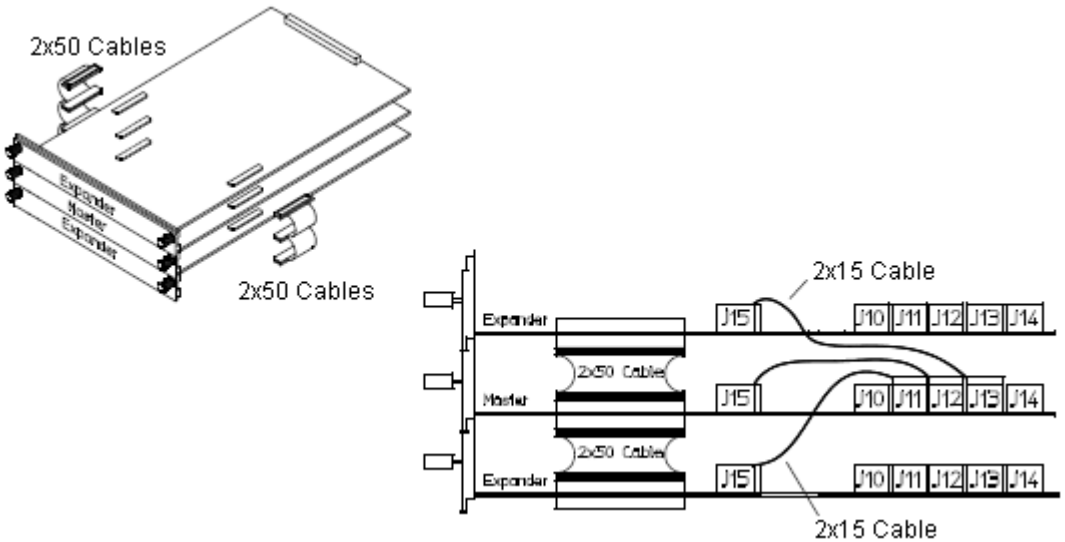


NOTE You can combine the same model numbers only (16910A in a 2-card set or 16911A in a 2-card set). The combined set will default to the lowest state speed and memory depth in the set.

16911A/10A Logic Analyzer (3-card module)

Use three 2 x 15 cables and four 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

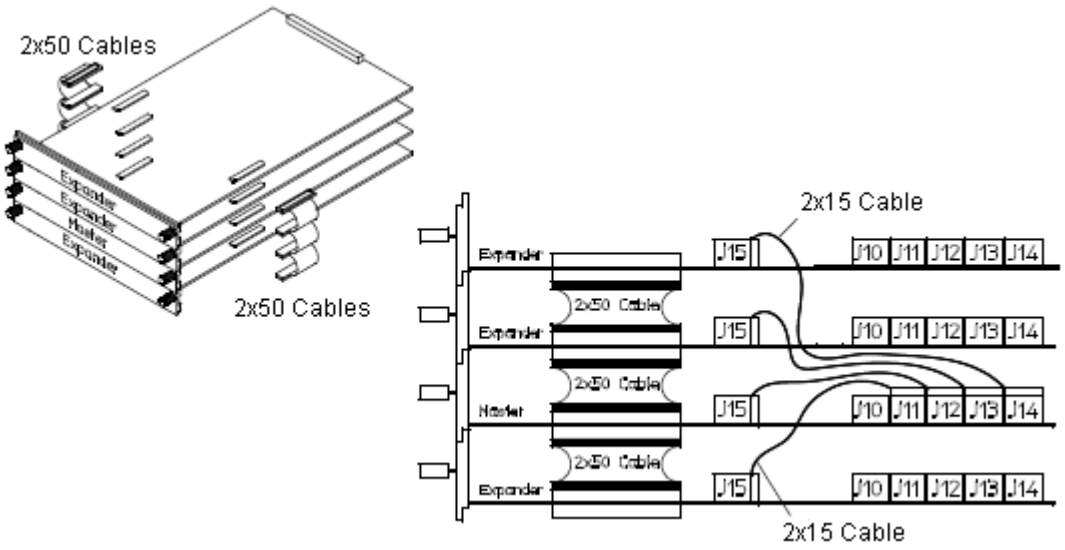


NOTE You can combine the same model numbers only (16910A in a 3-card set or 16911A in a 3-card set). The combined set will default to the lowest state speed and memory depth in the set.

16911A/10A Logic Analyzer (4-card module)

Use four 2 x 15 cables and six 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

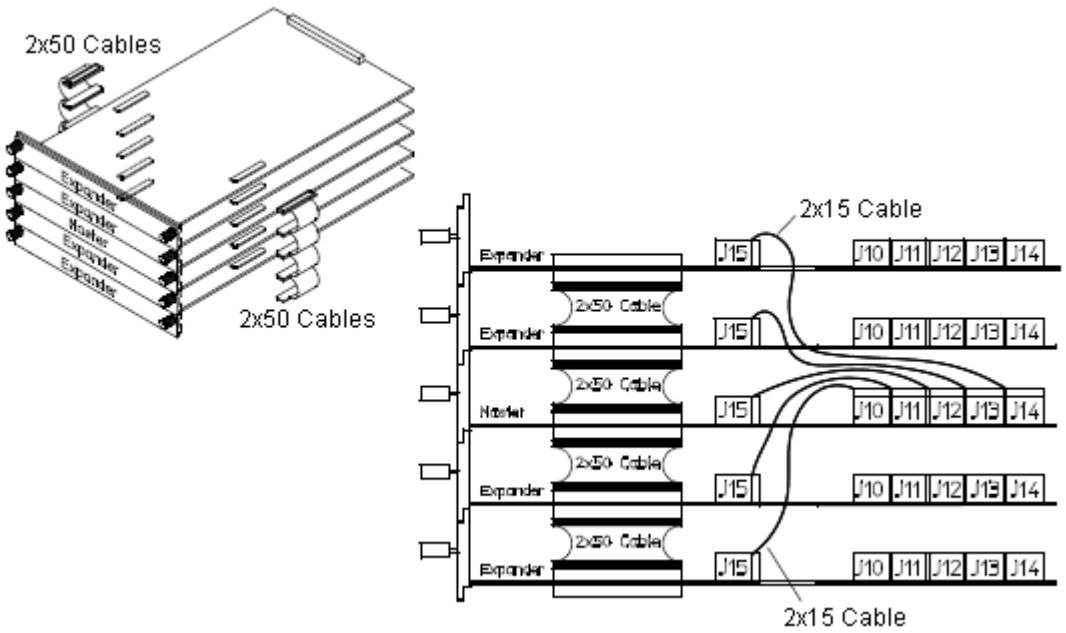


NOTE You can combine the same model numbers only (16910A in a 4-card set or 16911A in a 4-card set). The combined set will default to the lowest state speed and memory depth in the set.

16911A/10A Logic Analyzer (5-card module)

Use five 2 x 15 cables and eight 2 x 50 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

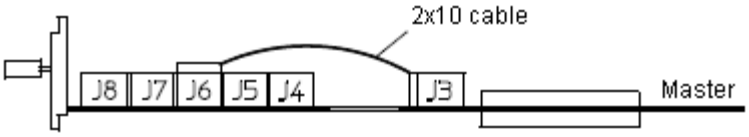


NOTE You can combine the same model numbers only (16910A in a 5-card set or 16911A in a 5-card set). The combined set will default to the lowest state speed and memory depth in the set.

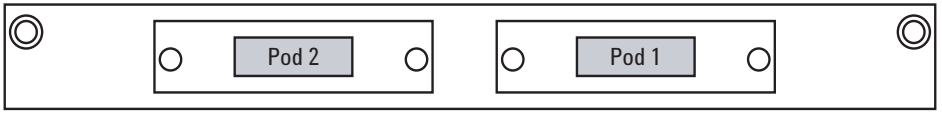
16760A Logic Analyzer (1-card module)

A single 16760A logic analyzer module will have the 2 x 10 cable connected in the single-card configuration.

NOTE Turn off the mainframe power before removing, replacing, or installing modules following the procedures on page 26.



The order of pods on the card's rear panel is:

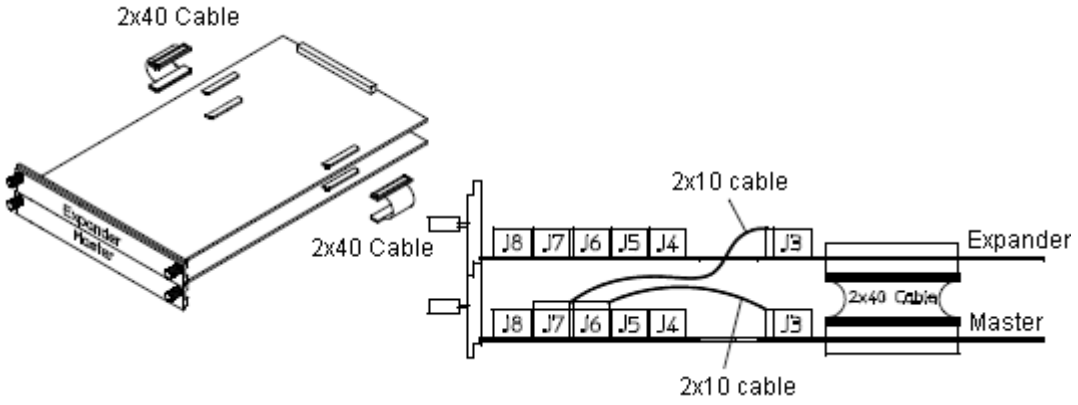


In a multi-card set, pods are indexed starting with the master card, then with the expander cards from the bottom up.

16760A Logic Analyzer (2-card module)

Use two 2 x 10 cables and two 2 x 40 cables (in the accessory pouch) to connect the modules.

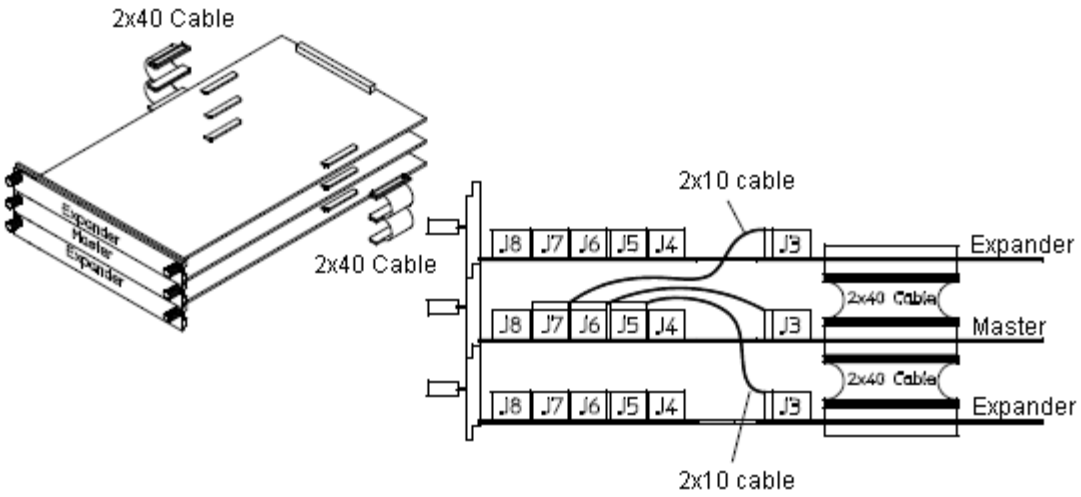
NOTE Turn off the mainframe power before removing, replacing, or installing modules following the procedures on page 26.



16760A Logic Analyzer (3-card module)

Use three 2 x 10 cables and four 2 x 40 cables (in the accessory pouch) to connect the modules.

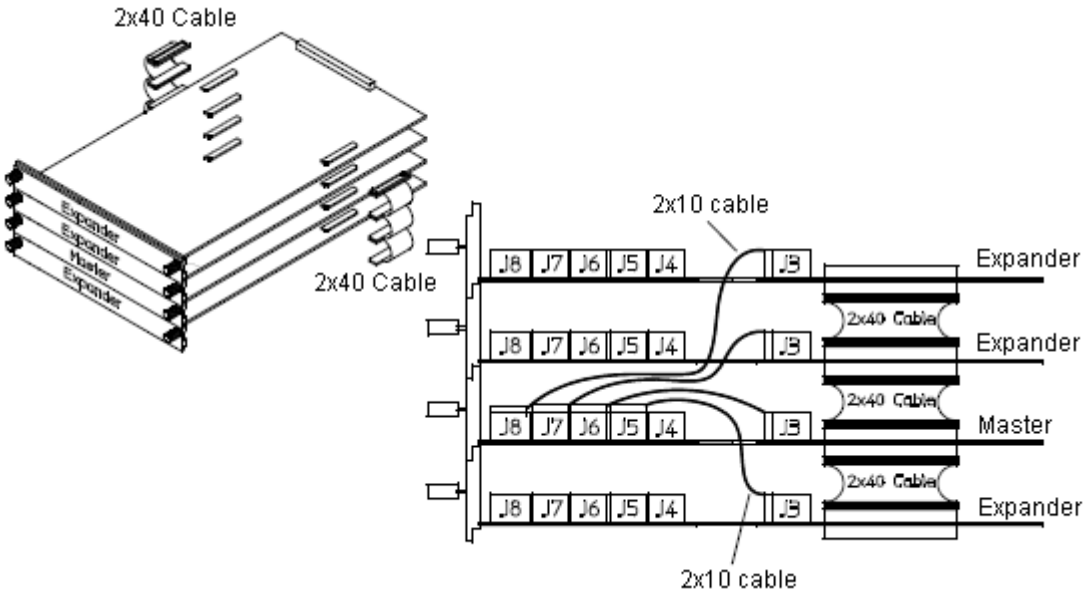
NOTE Turn off the mainframe power before removing, replacing, or installing modules following the procedures on page 26.



16760A Logic Analyzer (4-card module)

Use four 2 x 10 cables and six 2 x 40 cables (in the accessory pouch) to connect the modules.

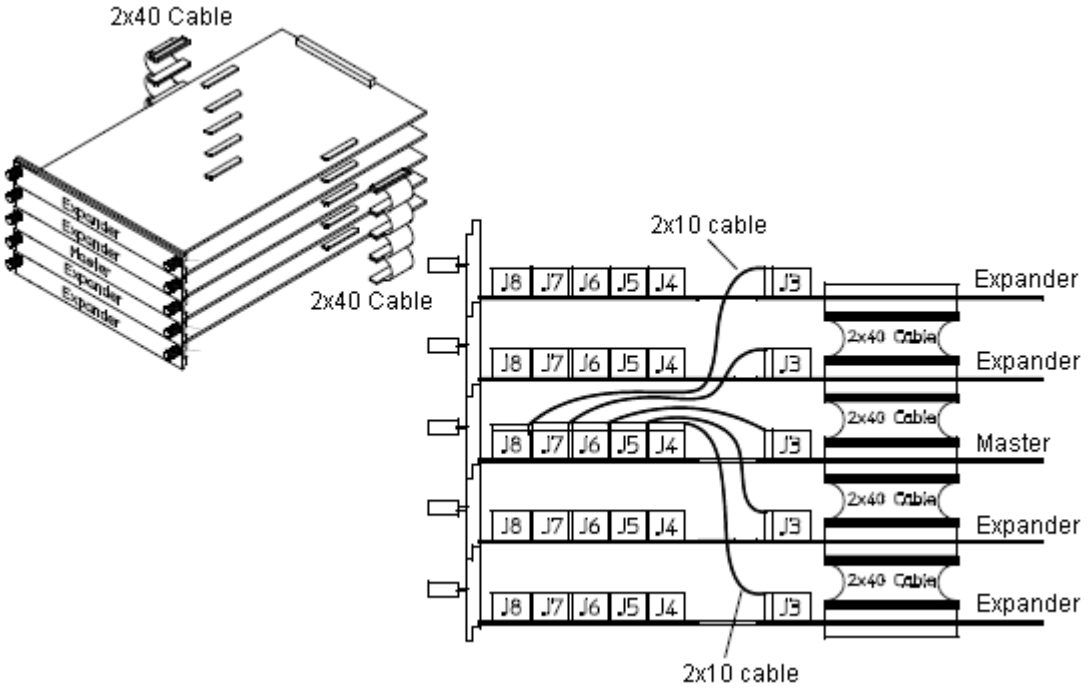
NOTE Turn off the mainframe power before removing, replacing, or installing modules following the procedures on page 26.



16760A Logic Analyzer (5-card module)

Use five 2 x 10 cables and eight 2 x 40 cables (in the accessory pouch) to connect the modules.

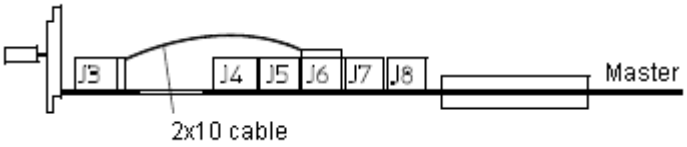
NOTE Turn off the mainframe power before removing, replacing, or installing modules following the procedures on page 26.



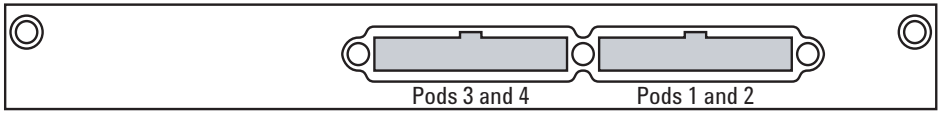
16752/51/50B/A, 16742/41/40A Logic Analyzer (1-card module)

Each card shipped stand-alone has the 2 x 10 cable connected in the single-card module configuration. A single-card module can be installed in any available slot.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



The order of pods on the card's rear panel is:

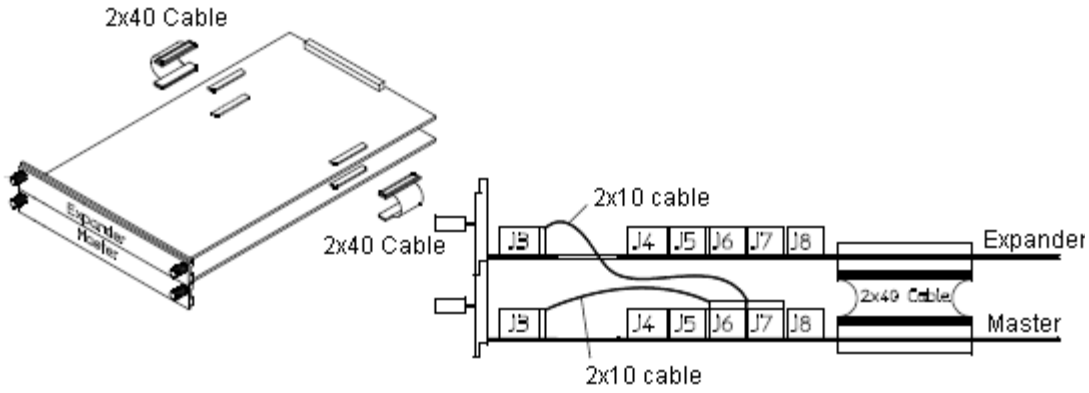


In a multi-card set, pods are indexed starting with the master card, then with the expander cards from the bottom up.

16752/51/50B/A, 16742/41/40A Logic Analyzer (2-card module)

Use two 2 x 10 cables and two 2 x 40 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

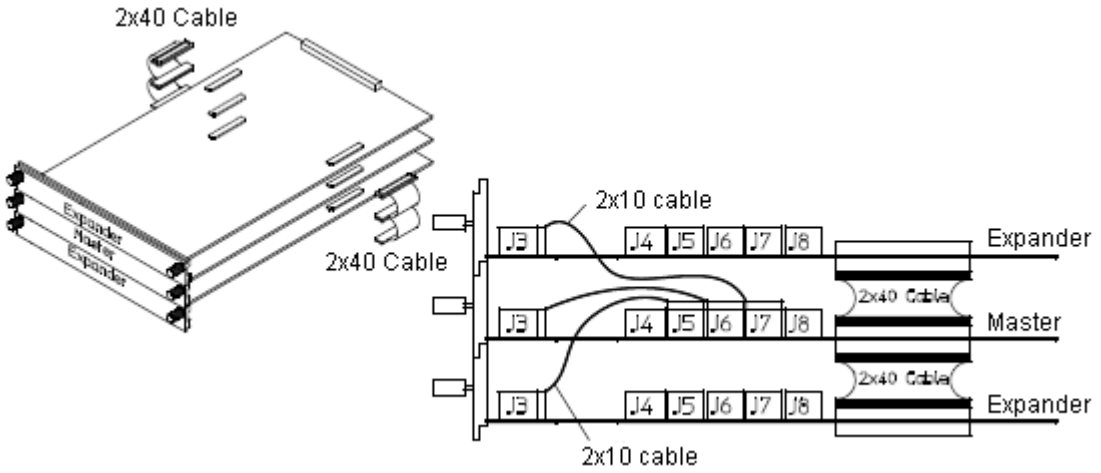


NOTE Measurement modules with different model numbers cannot be connected together in multi-card modules. However, the 16750A may be connected to a 16750B; the 16751A may be connected to a 16751B; the 16752A may be connected to a 16752B.

16752/51/50B/A, 16742/41/40A Logic Analyzer (3-card module)

Use three 2 x 10 cables and four 2 x 40 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

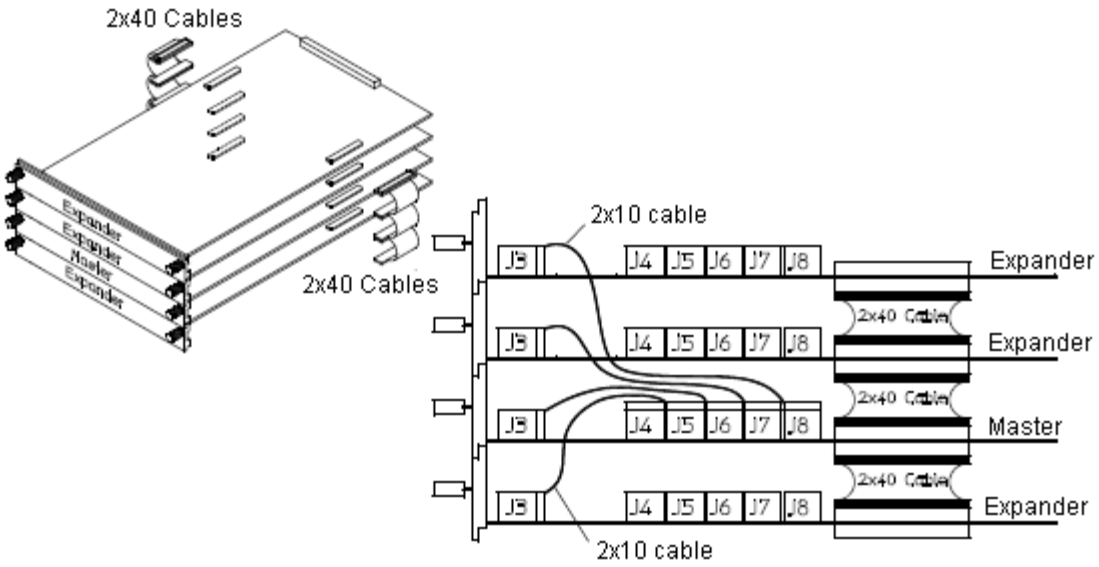


NOTE Measurement modules with different model numbers cannot be connected together in multi-card modules. However, the 16750A may be connected to a 16750B; the 16751A may be connected to a 16751B; the 16752A may be connected to a 16752B.

16752/51/50B/A, 16742/41/40A Logic Analyzer (4-card module)

Use four 2 x 10 cables and six 2 x 40 cables (in the accessory pouch) to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

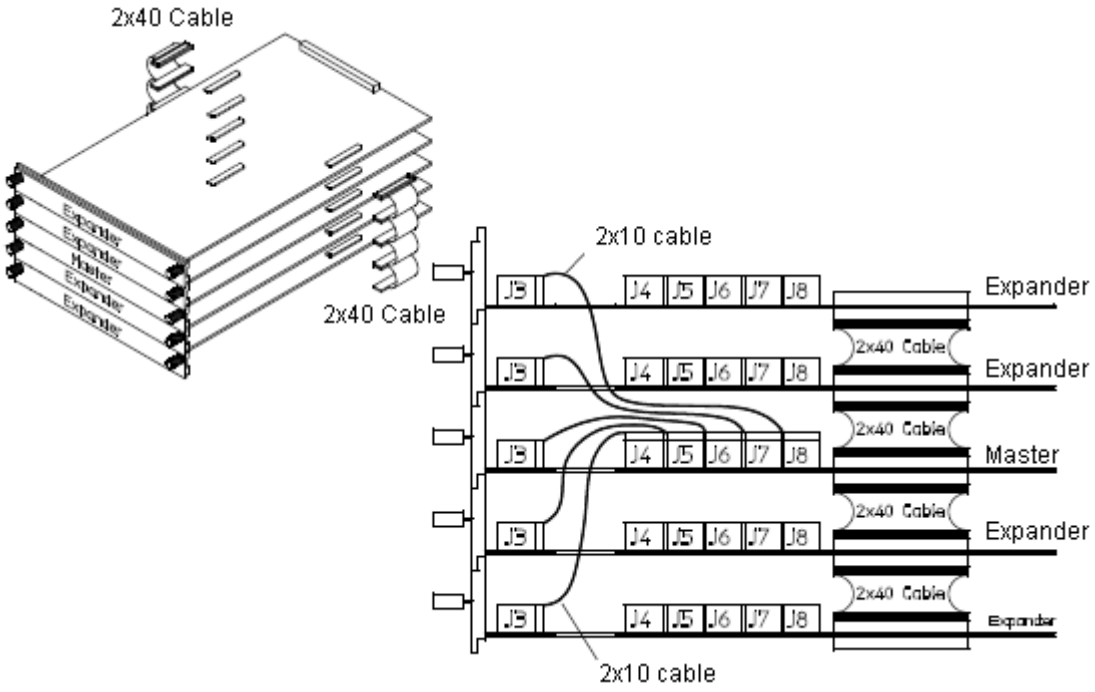


NOTE Measurement modules with different model numbers cannot be connected together in multi-card modules. However, the 16750A may be connected to a 16750B; the 16751A may be connected to a 16751B; the 16752A may be connected to a 16752B.

16752/51/50B/A, 16742/41/40A Logic Analyzer (5-card module)

Use five 2 x 10 cables and eight 2 x 40 cables (in the accessory pouch) to connect the modules

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



NOTE Measurement modules with different model numbers cannot be connected together in multi-card modules. However, the 16750A may be connected to a 16750B; the 16751A may be connected to a 16751B; the 16752A may be connected to a 16752B.

3
Installing Pattern Generator Cards

Software Requirements 70
16720A Pattern Generator (1-card module) 71
16720A Pattern Generator (2-card module) 72
16720A Pattern Generator (3-card module) 73
16720A Pattern Generator (4-card module) 74
16720A Pattern Generator (5-card module) 75

Software Requirements

The following table gives you the Agilent Logic Analyzer software version required for pattern generator measurement modules in the 16900A, 16902A, 16902B, or 16903A frames. For the software version required by frames, see Table 2 on page 23. For information on updating your logic analysis system software go to "To install software" on page 103.

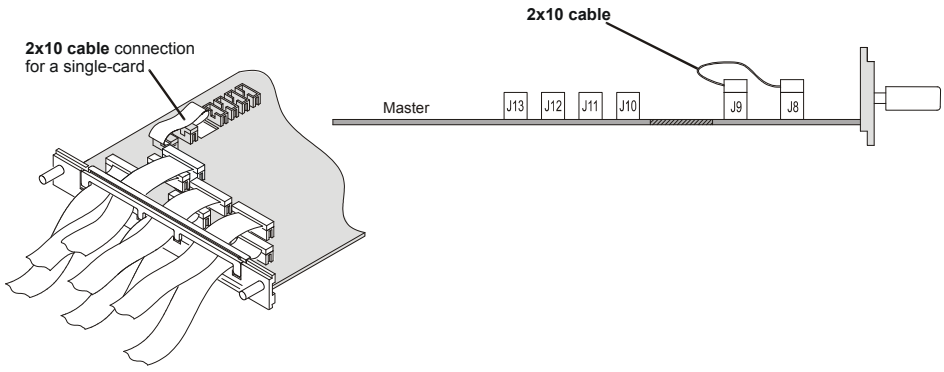
Table 4 Software Version Required, Pattern Generator Modules

Model Number	Software Version
16720A	03.00 or higher

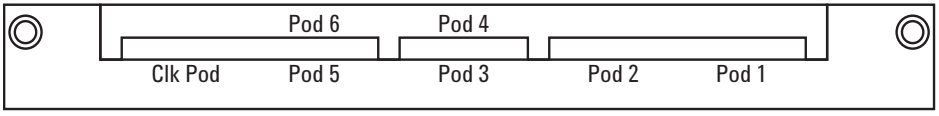
16720A Pattern Generator (1-card module)

Each card shipped stand-alone has the 2 x 10 cable connected in the single-card module configuration. A single-card module can be installed in any available slot.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.



The order of pods on the card's rear panel is:

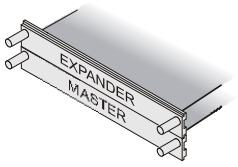


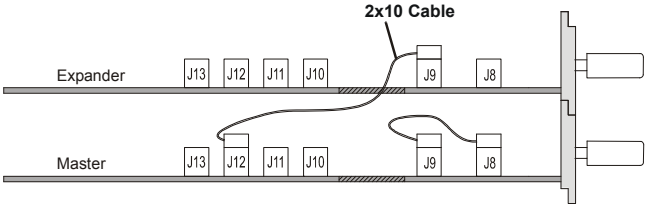
In a multi-card set, pods are indexed from the bottom up.

16720A Pattern Generator (2-card module)

Use two 2 x 10 cables to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

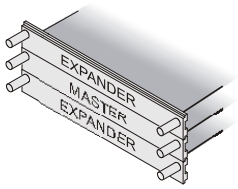


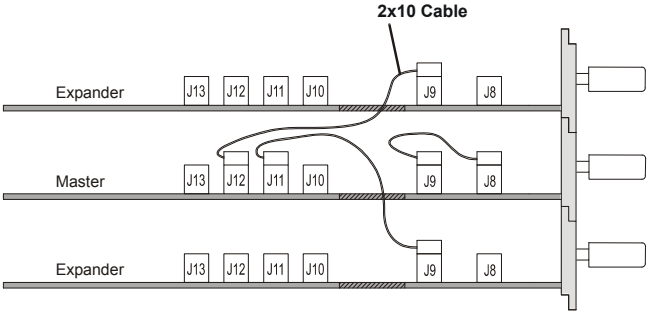


16720A Pattern Generator (3-card module)

Use three 2 x 10 cables to connect the modules.

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

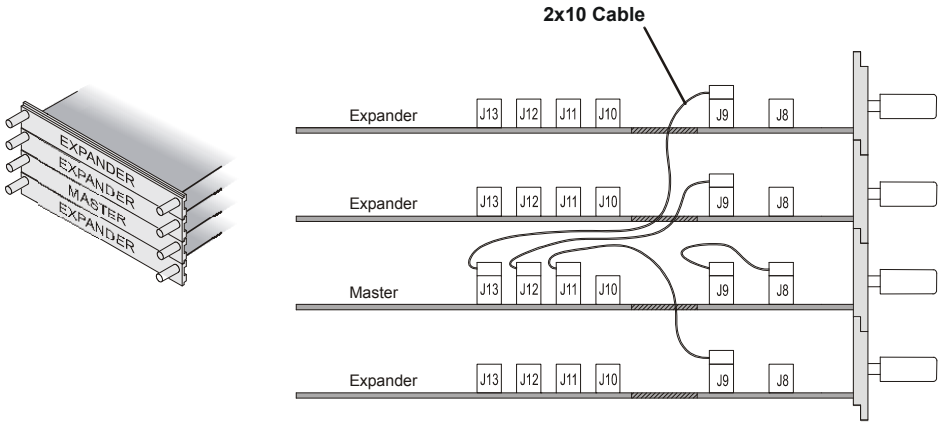




16720A Pattern Generator (4-card module)

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

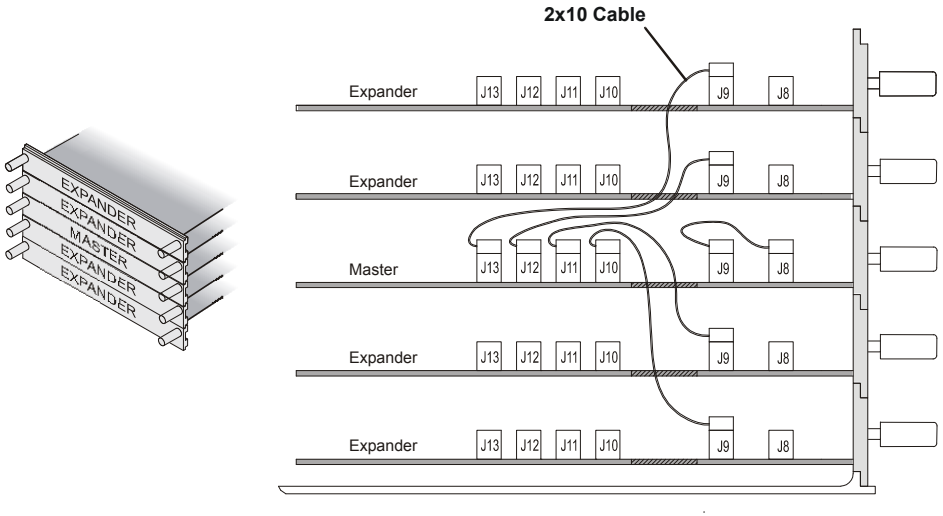
1. Carefully slide the 4 cards half way into the mainframe slots.
2. Use four 2 x 10 cables to connect the modules. Cable the bottom Expander Card to the Master Card first. Then cable the upper two Expander Cards to the Master Card.
3. Gently slide the cabled assembly fully into the frame and tighten the thumb screws.

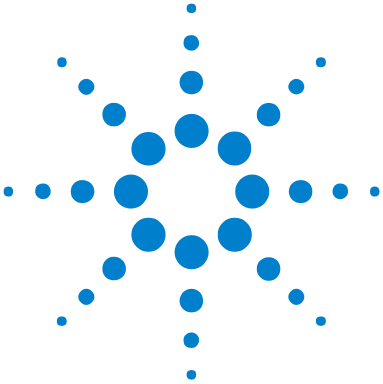


16720A Pattern Generator (5-card module)

NOTE Turn off the mainframe power before removing, replacing, or installing modules. For instructions on installing modules into the logic analysis system frame, refer to page 26.

1. Carefully slide the 4 cards half way into the mainframe slots.
2. Use five 2 x 10 cables to connect the modules. Cable the bottom two Expander Cards to the Master Card first. Then cable the upper two Expanders to the Master Card.
3. Gently slide the cabled assembly fully into the frame and tighten the thumb screws.





4
First-Time Set Up

First-Time Set Up Considerations 78
First-Time Set Up On Legacy 16900 Series Systems With Windows XP Installation 79
First-Time Set Up On 16900 Series Systems with Windows 7 Installation 81
Additional First Time Setup Steps 83

First-Time Set Up Considerations

Determine Whether the Instrument will be Connected to the Network

NOTE If you plan to use COM automation to programmatically control a logic analysis system from a remote computer, be aware that the remote computer and the logic analysis system must both have the same kind of network membership; that is, they must both be members of a "Workgroup", or they must both be members of a "Domain". This is due to the security requirements of Distributed COM.

Standalone

You are going to use the logic analysis system as a standalone instrument (no LAN connection). Printing requires a printer attached to the logic analyzer, sharing files is done via CD, USB flash drive, etc.

Connected to a Network

If you require the ability to print, share files, remotely control the logic analyzer, etc. over the network, you need to either join a workgroup or domain.

Get Network Setup Information

For networking, find out whether the network that your instrument will be connected to uses the Microsoft Workgroup model or Microsoft Domain model. In order for your instrument to perform tasks over the network (print, transfer files, etc.) your instrument must be configured appropriately for the networking model in use at your site.

Information you may require to complete your network configuration may include, but is not limited to,

- The Workgroup or Domain name.
- Methodology for assigning IP addresses at your site (for example, DHCP).
- Domain Name Service (DNS). This can also be obtained automatically.
- Other network information that may be readily available from your network administrator.

First-Time Set Up On Legacy 16900 Series Systems With Windows XP Installation

The legacy 16900 series logic analysis systems are shipped with Windows XP installation. The first time you turn on these systems, the Windows® Welcome session starts. Your logic analyzer configuration and the answers to the Windows Welcome questions are affected by how you choose to use the logic analyzer.

Answering Windows Welcome Questions

Once you have determined how you want to use your logic analyzer and your network configuration, power up your logic analyzer and answer the Windows Welcome questions.

Table 5 Answering Windows Welcome Questions

	Standalone (No LAN)	Workgroup	Domain
Help protect your PC	N/A	Choose "Help protect my PC by turning on Automatic Updates now".	Choose "Help protect my PC by turning on Automatic Updates now".
What's your computer's name? (After answering, wait several minutes for next question to appear)	If your organization has a standard naming scheme, use that scheme. Otherwise, choose a descriptive name that follows the suggestions on the screen (less than 15 characters, etc.)		
What's your administrator password?	Agilent recommends entering an administrator password for administrator accounts. See page 83 for actions that require administrator accounts.		
Is this computer in a domain?	No (Is given WORKGROUP membership)	No (Is given WORKGROUP membership)	Yes Enter the domain name the logic analysis system will log onto.
Enter your domain settings.	N/A	N/A	Enter the name/password of a user who can add the logic analysis system to the domain.
Checking your Internet connectivity	Press 'Skip'	Wait for this to finish.	Wait for this to finish.

Table 5 Answering Windows Welcome Questions (continued)

	Standalone (No LAN)	Workgroup	Domain
How will this computer connect to the Internet?	N/A	N/A	Choose the appropriate answer.
Setting up a high-speed connection?	N/A	N/A	Enter either the fixed IP/DNS assigned by your network administrator or select "Obtain Automatically".
(If LAN connected) Will this computer connect to the Internet directly, or through a network?	N/A	Choose "Yes, through a network" (Agilent does not support connecting to the internet through a modem directly connected to the logic analyzer.)	N/A
(If LAN is not connected) Windows unable to determine LAN connectivity.	N/A	You are told to set up LAN later.	N/A
Ready to register with Microsoft	The legacy 16900 series of Logic Analysis systems have Windows XP already enabled to run. This registration is to allow Microsoft to contact you.		
Who will use this computer?	For All: Entering names here lets multiple users use the logic analyzer with administrator permissions. By default their passwords will be blank.		

If expected Windows Welcome questions do not appear

During first-time power-up, depending on the configuration of your network, some of the Windows Welcome questions that should appear, like “Is this computer in a domain?”, may not appear.

If this occurs, you need to change the logic analysis system’s network setup (after the first-time power up) using the normal Windows XP specific procedures (see “To change network settings” on page 104).

First-Time Set Up On 16900 Series Systems with Windows 7 Installation

The first time you turn on a 16900 series logic analysis system that is shipped with Windows 7 installation, you are automatically logged on to the system using the Administrator account and the Windows 7 desktop is displayed.

Unlike legacy 16900 series logic analysis systems, the Windows Welcome questions are not displayed for setting logic analyzer configurations on these new 16900 systems the first time you turn these on. However, once you are logged on to the system, you must set the following logic analyzer configurations based on how you want to use your logic analysis system. You use the standard Windows 7 procedures to set these configurations.

Table 6 Logic Analyzer Configurations on a 16900 Series Logic Analysis system with Windows 7 Installation

Configuration Task		Logic Analyzer Usage	
	Standalone (No LAN)	**Workgroup**	**Domain**
Protect your instrument's PC	N/A	Turn on Automatic Updates	Turn on Automatic Updates
Specify computer name	If your organization has a standard naming scheme, use that scheme. Otherwise, choose a descriptive name (less than 15 characters)		
Specify the administrator password	Agilent recommends entering an administrator password for administrator accounts. See page 83 for actions that require administrator accounts.		
Specify the domain name (if applicable)	No (Is given WORKGROUP membership)	No (Is given WORKGROUP membership)	Yes Enter the domain name the logic analyzer will log onto.
Enter your domain settings.	N/A	N/A	Enter the name/password of the user who can add the logic analyzer to the domain.
Configure connectivity to the Internet	N/A	N/A	Choose the appropriate Internet connectivity.

Configuration Task		Logic Analyzer Usage	
	Standalone (No LAN)	**Workgroup**	**Domain**
Set up a high-speed connection	N/A	N/A	Enter either the fixed IP/DNS assigned by your network administrator or select "Obtain Automatically".
Determine if you want to connect the instrument's PC to the Internet directly or through a network.	N/A	Agilent does not support connecting to the Internet through a modem directly connected to the logic analyzer.	N/A
Register with Microsoft	The 16900 series of Logic Analysis systems with serial number of MY51420101 or higher have the Windows 7 operating system already enabled to run. This registration is to allow Microsoft to contact you.		
Specify users for the instrument's PC	You can add multiple users with administrator permissions to allow these users to use the logic analyzer.		

Additional First Time Setup Steps

Establishing an Administrator Account (recommended for standalone and networked instruments)

Agilent recommends that you set up an Administrator account for your logic analysis system. You have to be logged in to the Administrator account to do the following:

- Install most software (applies whether the instrument is networked or standalone).
- Change the workgroup.
- Perform "Windows Updates".
- Change firewall settings.

Protecting the Instrument's Operating System

Microsoft recommends the following three steps to ensure the instrument's PC is protected.

1. Use an internet firewall.
2. Get operating system updates.
3. Use up-to-date antivirus software.

5 Setting Up Multiframe Configurations

Setting Up Simple Multiframe Configurations 86
Setting Up a Performance Multiframe Configuration 92
Other Multiframe Configuration Notes 98

If you need to make time-correlated measurements with more logic analysis channels than can be installed into a single logic analysis system frame, you can connect multiple 16900A, 16901A, 16902A, 16902B, 16800 series, U4002A or M950xA frames together in a multiframe logic analysis system.

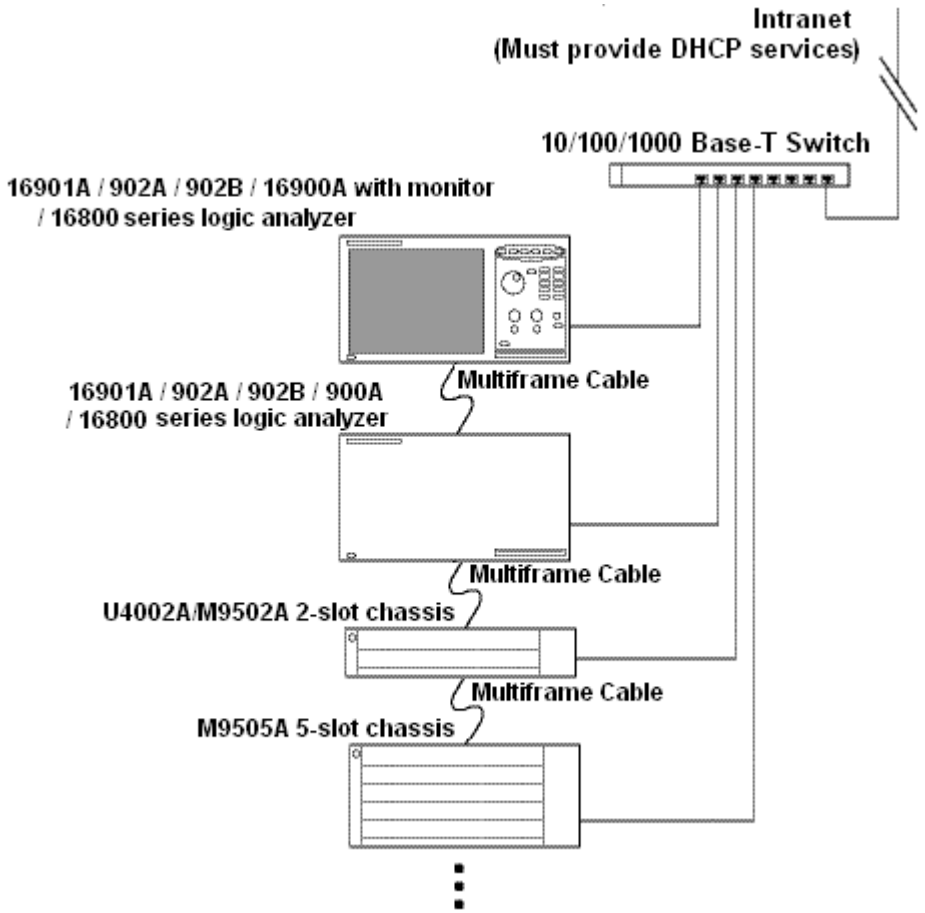
Guidelines for Configuring a Multiframe System

- If a system has two LAN ports, Agilent recommends only one be used.
- Use the highest speed network and adapters available.
- If possible, use a switch (as opposed to a hub) to isolate traffic between frames from the rest of the network.
- Connect all the systems participating in the multiframe configuration to a common network that provides IP configuration services (DHCP), and configure all individual systems for DHCP managed IP addressing. Doing so can improve the connection reliability substantially in a multiframe scenario.
- Make sure that the same version of the Agilent logic Analyzer application is installed on all logic analysis systems.

Setting Up Simple Multiframe Configurations

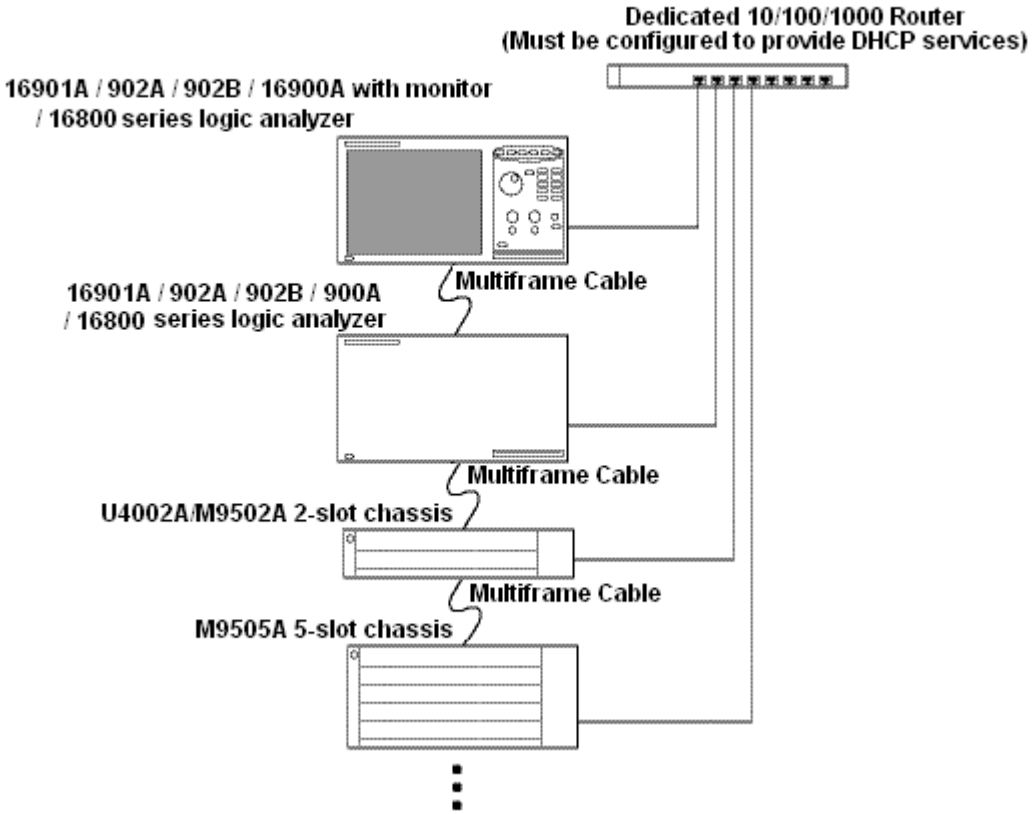
Simple multiframe configurations are useful when you are using one or more logic analysis systems in a variety of configurations where sometimes you are using them as distinct analyzers and sometimes you need to use them as a multiframe system to correlate a variety of buses.

Simple Multiframe Configuration using an Intranet



In the simple multiframe configuration using an Intranet, all of the systems are connected to the common network using their LAN port.

Simple Multiframe Configuration using an Isolated Router



In the simple multiframe configuration using an isolated router, all the systems are connected to the common network using their LAN port.

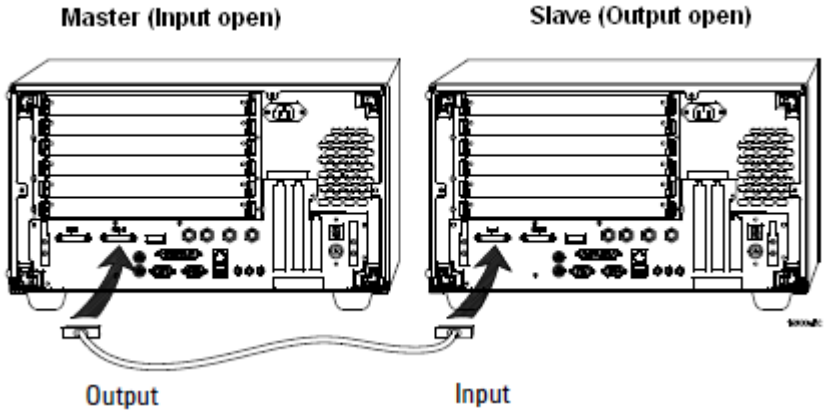
Rules for Simple Multiframe Configurations

In addition to the earlier guidelines on page 85:

- Choose one of the frames to run the *Agilent Logic Analyzer* application on. If you only run the application on one frame, all your configurations will be there (and will be easier to find). Also, there are I/O and node-locked license file advantages when the application is run on one frame (see "Other Multiframe Configuration Notes" on page 98). There will also be fewer popup warning messages when the Agilent Logic Analyzer application on the slave systems are forced offline by the multiframe connections.
- A network switch (as opposed to a hub) can be used to isolate traffic between frames and improve performance, but it is not required.

Creating Simple Multiframe Configurations

1. Make sure all systems are connected to a common LAN in the same way:
   - All systems should be members of the same Domain, or they should all be members of the same Workgroup. To get the systems properly connected to the LAN, see Chapter 4, "First-Time Set Up," starting on page 77 or "To change network settings" on page 104.
   - It is highly recommended that the network and all systems be configured to allow DHCP services to manage IP addressing.
2. Power off all logic analysis system frames.
3. Connect multiframe cable(s) between the chassis as shown.



One frame's output is connected to the next frame's input, and so on.

4 Power up the individual frames.

- Start with the master frame and wait for the system to boot to the desktop (a login might be required) and the Agilent Notification Center Icon in the system tray to go green, indicating that the system is ready.
- As the operating system loads, it will:
  - Configure the LAN connection.
  - Start various services.
  - Start the logic analyzer service and the Agilent Notification Center.
- Proceed to the next slave frame in sequence and boot it to the ready state.
- Continue until all the multiframed systems are started and ready.

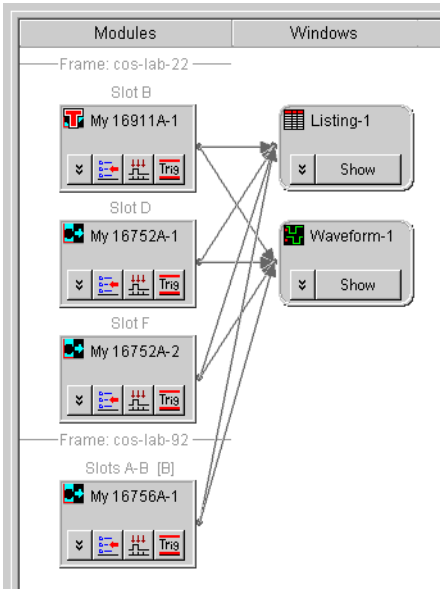
NOTE If your Operating Systems are set up to require a login and a password, you do not need to fully login. The logic analyzer service will start automatically when the system starts and the multiframe connection will succeed, but you will have no visual indication via the Agilent Notification Center tray icon of when the system is ready. So an appropriate delay will be required before proceeding with the next system.

5 Log into the frame you chose to run the Agilent Logic Analyzer application and start the application.

NOTE To ensure a smooth multiframe startup sequence, it is highly recommended to configure all systems so that the Agilent Logic Analyzer application does not automatically start at login. To configure this, remove any shortcuts to the application from the Windows Start > All Programs > startup menu.

NOTE Depending on your multiframe connection topology, it may take several seconds for the Agilent Logic Analyzer application to start.

If the application starts without errors, and you see the multiframe system in the Overview window, you are ready to use the multiframe system.



6 If you are not able to see the multiframe system in the Overview window, do the following:

a Exit the *Agilent Logic Analyzer* application.

b Power down all systems.

c Disconnect and reconnect all multiframe cables to all chassis. Re-verify the connection order. It should be Master (Output) -> Slave1 (Input); Slave1 (Output) -> Slave2 (Input) and so one.

d Power up the systems as per the startup sequence described in Step 4.

e When all systems are ready, start the Agilent Logic Analyzer application on the system from which you want to control the multiframe setup. Wait for the application to stabilize.

7 If the multiframe system still does not appear in the Overview window, check these potential problems:

   a Validate that you have properly configured the network setup on each of the systems. All systems must be able to communicate with each other over the multiframe cable and over the LAN.

   b If the network is configured to use a corporate intranet, validate that all systems can communicate with the local intranet.

   c If the network is configured using an isolated standalone router for security reasons, ensure that DHCP is turned on and that all systems can communicate with the router.

   d Validate that the firewalls on the individual systems have the appropriate firewall exceptions (see "To restore the logic analysis system firewall defaults" on page 109). To test for firewall problems you could temporarily disable the firewall in the analyzers and repeat step 6.

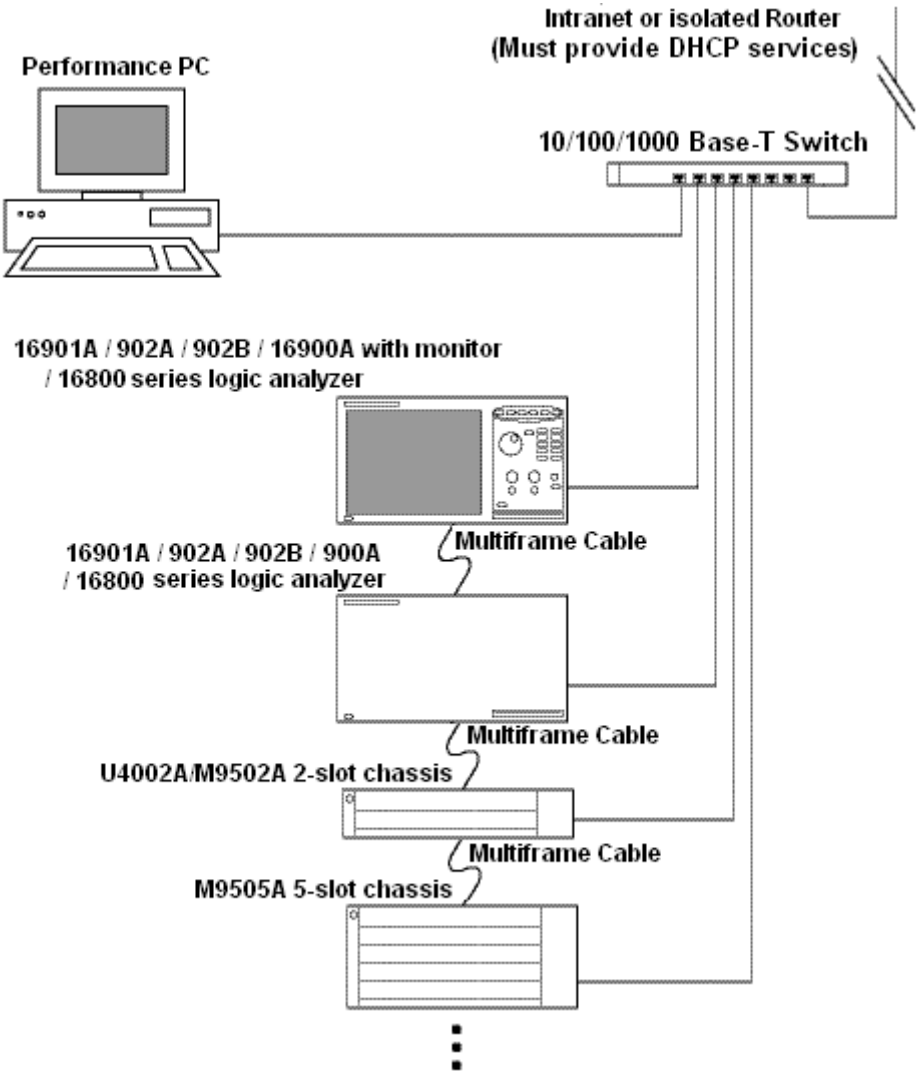
Remotely Controlling Simple Multiframe Systems

If you want to control the multiframe logic analysis system remotely, there are two options:

- Use one of the remote window utilities to remotely control the system that runs the *Agilent Logic Analyzer* application. Choose from Remote Desktop, RealVNC, or NetOp. With this option:
  - You are not sending as much LAN traffic between the multiframe logic analysis system and your local PC.
  - Set up the remote options on your local PC to properly control the logic analysis system.

  If you are not in the same building as the multiframe logic analysis system, you will typically want to use this option.
- Run the *Agilent Logic Analyzer* application on your remote PC and connect to the multiframe system by going online and connecting to the frame. With this option:
  - Your performance may vary because analyzer data from all logic analysis systems must be sent over LAN to your locally running application.

Setting Up a Performance Multiframe Configuration



In the performance multiframe configuration, you run the *Agilent Logic Analyzer* application on a high-performance PC or server. This is useful if you are trying to maximize multiframe logic analysis system performance.

Rules for Performance Multiframe Configurations

In addition to the earlier guidelines on page 85:

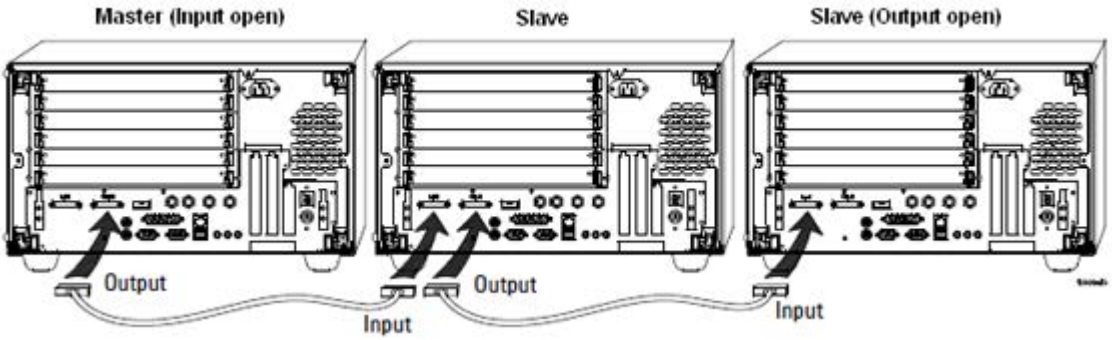
- All systems should use the fastest networking equipment available. Gigabit LAN is the recommended speed.
- If a corporate Intranet is used, a switch (as opposed to a hub) supporting the fastest network speeds available is recommended to isolate multiframe system traffic.
- Systems can be a mix of 16900A, 16901A, 16902A, 16902B or 16800 Series frames or any U4002A, M9502A or M9505A hosted instrument or all of one type.
- The Agilent Logic Analyzer application runs on the performance PC.

Creating a Performance Multiframe Configuration

1. Use a performance PC that can be dedicated to the multiframe setup.
2. Install the *Agilent Logic Analyzer* application on the performance PC. Make sure that the version you install on the performance PC is the same version as on all logic analysis system frames.
3. To ensure the smoothest multiframe startup, ensure that none of the logic analysis systems are configured to have the Agilent Logic Analyzer application auto-start when the system starts the user's desktop.
   - To prevent auto-start, remove any shortcuts to the application from the Windows Start > All Programs > startup menu.
4. Connect the performance PC and all instrument systems to a common network. To get the frames properly connected to the LAN, see Chapter 4, “First-Time Set Up,” starting on page 77 or “To change network settings” on page 104.
   - Make sure all frames are connected to the common network and are recognized before continuing.
   - Because the Agilent Logic Analyzer application runs on the performance PC connected remotely to any frames, the frames' front panel knobs and buttons are not functional.

5 Power down all of the frames and the performance PC.

6 Connect multiframe cables between the frames as shown.



One frame's output is connected to the next frame's input. Connect multiple frames in sequence with the final frame having no output connected.

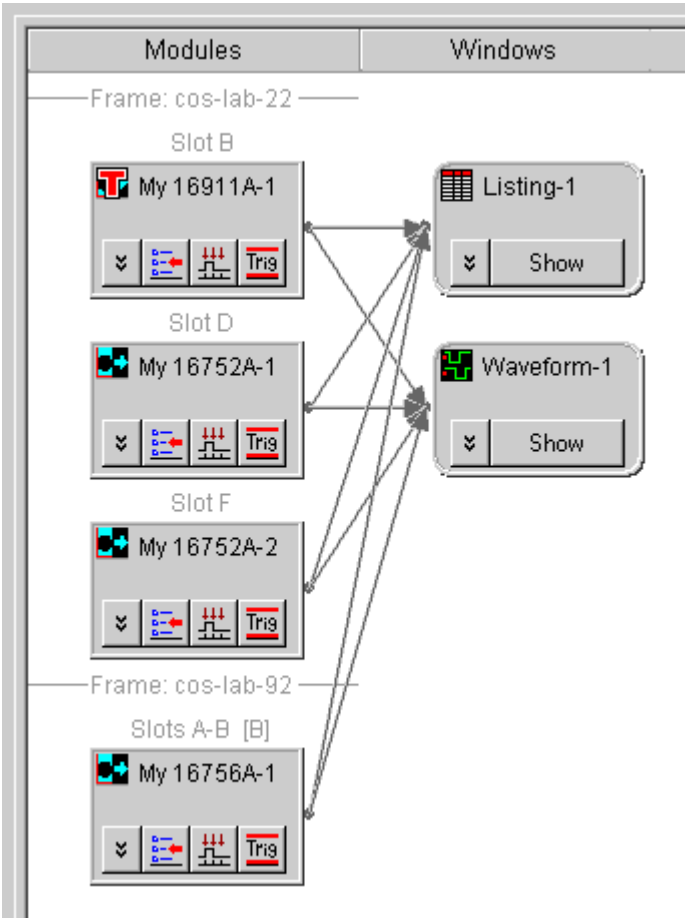
7 Power up the individual frames.

- Start with the master frame and wait for the system to boot to the desktop (a login might be required) and the Agilent Notification Center Icon in the system tray to go green, indicating that the system is ready.
- As the operating system loads, it will:
  - Configure the LAN connection.
  - Start various services.
  - Start the logic analyzer service and the Agilent Notification Center.
- Proceed to the next slave frame in sequence and boot it to the ready state.
- Continue until all the multiframed systems are started and ready.

NOTE If your Operating Systems are set up to require a login and a password, you do not need to fully login. The logic analyzer service will start automatically when the system starts and the multiframe connection will succeed, but you will have no visual indication via the Agilent Notification Center tray icon of when the system is ready. So an appropriate delay will be required before proceeding with the next system.

8 Log in to one of the systems, and wait for the Agilent Logic Analyzer application to start.

If the application starts without errors, and the multiframe system appears in the Overview window, you are almost ready to use the multiframe system.



Exit the application, and continue on step 10.

9 If you are not able to see the multiframe system in the Overview window on the system, do the following:

   a Exit the Agilent Logic Analyzer application.

   b Power down all systems.

   c Disconnect and reconnect all cables between all systems.

   d Following the startup sequence described in Step 7 above, power up all systems.

   e Log in to one of the systems to again pretest the multiframe setup, wait for the Agilent Logic Analyzer application to start again. If it starts properly, then exit the application.

10 Power up the performance PC, log in, start the Agilent Logic Analyzer application, and connect to one of the systems remotely:

   a When the application is starting and the Offline Startup Options dialog appears, click “Go Online...”.

   b In the Select System to Use dialog, click “Add System”.

   c In the Frame Host Name or IP Address dialog, enter the name of the frame, and click “OK”.

   d Select the system that was just added and click “Details...”.

   e In the Frame/Module Information dialog, click “Set as Auto-Connect”; then, click ”OK”.

   Now, each time you start the application on the performance PC, it will auto-connect to that frame of the multiframe logic analysis system.

11 If you have trouble connecting to the frame, check these potential problems:

   a Verify that the multiframe logic analysis system appears in the Overview window when running the Agilent Logic Analyzer

application on one of the frames. If it does, then simply exit the application. If it does not, then fix the problem on that frame first.

b Verify that the firewalls on all frames are set up properly with the proper exceptions (see "To restore the logic analysis system firewall defaults" on page 109).

c On the performance PC, do not block outbound traffic to port 16900.

d The Refresh button in the Select System to Use dialog should show the status of the multiframe logic analysis system as "Available".

e Validate that you have properly configured the network setup on each of the systems. All systems must be able to communicate with each other over the multiframe cable and over the LAN.

Remotely Controlling a Performance Multiframe System

If you want to control the performance multiframe system remotely, there is only one option:

- Use one of the remote window utilities to remotely control the performance PC. Choose from Remote Desktop, RealVNC, or NetOp. You will need to set up this service on your performance PC and your local PC.

Other Multiframe Configuration Notes

Some other things to be aware of when using multiframe configurations:

- The multiframe cable is used for time correlation, cross-triggering, and multiframe setup; all other inter-frame communication takes place over LAN.
- Network interfaces need to see a direct path to the DHCP server. Otherwise, Windows network configuration times will be slow, the networks will be listed in Windows as having "limited or no network connectivity" and the logic analysis service may fail to start properly on individual systems. Use of static IP addressing on all systems can work if a direct path to the DHCP server is not available, but this method is complex and requires careful configuration.
- If you are using two or more Network Interface Cards (NICs) in a frame, each NIC must be wired to a separate subnet so that the NICs do not directly see each other (as suggested by the multiframe configuration diagrams in this chapter). If the NICs do directly see each other, networking will not work well.

I/O in Multiframe Configurations

- Trigger In/Trigger Out must be connected to whichever frame the *Agilent Logic Analyzer* application connects to.

Licenses in Multiframe Configurations

If you are using probes, tools, or other application software that requires a license, and you are using node-locked licenses, install the node-locked licenses where the *Agilent Logic Analyzer* application runs:

- In the simple multiframe configurations, install node-locked licenses on the frame from which you run the *Agilent Logic Analyzer* application.
- In the performance multiframe configuration, install node-locked licenses on the performance PC.

If you are using floating licenses, the license server needs to be accessible from the frame or performance PC on which the *Agilent Logic Analyzer* application runs.

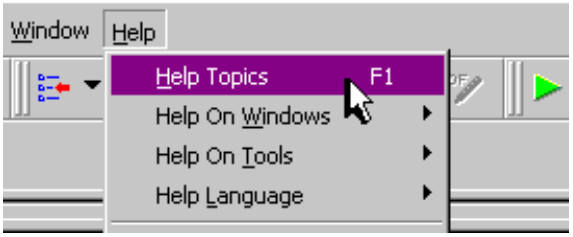
6 Using and Updating the Logic Analysis System

To locate information on using the logic analyzer 100
To locate specifications and characteristics 101
To perform backups 103
To install software 103
To change network settings 104
To change Windows Firewall settings 106
To power off the system 112
To remove the hard disk drive (16902B) 114
To install interface cards (16900A, 16902A, 16902B, or 16903A) 115
To install interface cards (16901A) 121
To replace the CPU battery 124

To locate information on using the logic analyzer

Online Help

Go to online help for information on using your logic analyzer.

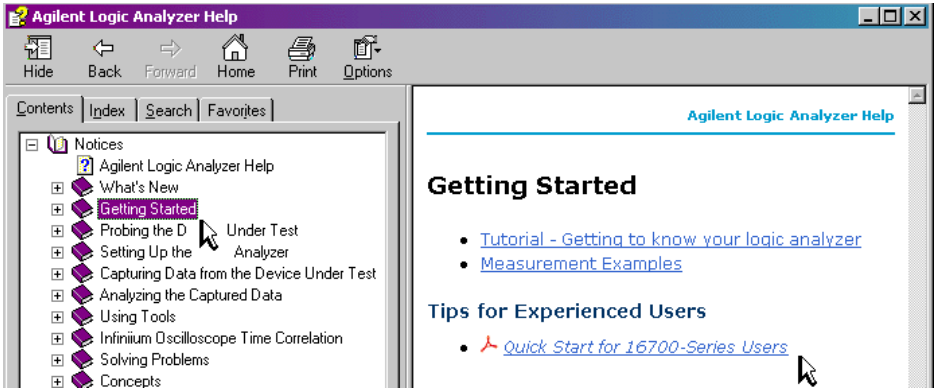


Getting Started

Use the tutorial in on-line help to get an overview of logic analyzer basics. The measurement examples show you the typical order of steps to set up and run a measurement.

Tips for Experienced Users

The *Quick Start for 16700 Series Users* provides experienced users of the 16700 Series logic analysis system with tips on how to quickly become productive with the new 16900 Series logic analysis system.



To locate specifications and characteristics

Electrical and Operating Environment Characteristics

The following operating characteristics are not specifications, but are typical operating characteristics for the Agilent 16900 Series logic analysis systems.

Electrical Characteristics	
Power Requirements	Frame(16900/902A): 115/230 Vac +/- 20%, 48-66Hz, 1300W Max Frame(16902B): 100/240 Vac, 47-63Hz, 1300W Max Frame(16903A): 115/230 Vac +/- 20%, 48-66Hz, 900W Max Frame(16901A): 115/230 Vac +/- 20%, 48-66Hz, 775W Max CAT II (Line voltage in appliance and to wall outlet) Pollution degree 2

Environmental Characteristics (Operating)	
Temperature	Instrument (16900A, 16902A, 16902B): 0° to + 40° C (+32° to +104° F) Instrument (16903A): 0° to + 50° C (+32° to +122° F) Instrument (16901A): 0° to + 45° C (+32° to +113° F) Disk Media: 10° to + 40° C (+50° to +104° F) Probes/cables: 0° to + 65° C (+32° to +149° F)
Altitude	3,000 m (10,000 ft)
Humidity	Relative humidity 8 to 80% at 40° C (104° F). Avoid sudden, extreme temperature changes which could cause condensation on the circuit board. For indoor use only.

Trigger In

The Trigger In connector is 5.5V Max pk and DC, CAT I (line isolated).

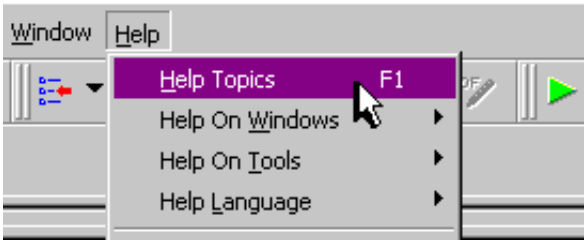
Clock In

The Clock In connector is 5.5V Max pk and DC, CAT I (line isolated).

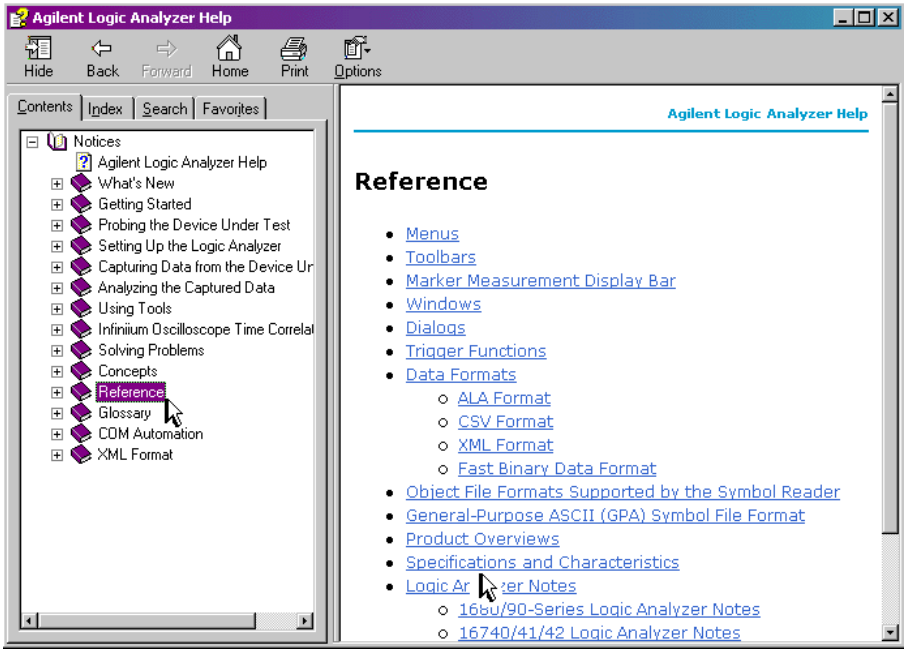
More Specifications and Characteristics

More specifications and characteristics for your instrument and measurement modules are in the online help. To find them go to:

1 Click **Help>Help Topics**.



2 Click **Reference>Specifications and Characteristics**.



To perform backups

Back up your information regularly to keep your archived data and files up-to-date. Use the Backup utility in Windows operating system and back up to CD-Rs or to another machine.

To install software

Agilent Logic Analysis System Software

The Agilent 16900 Series logic analysis systems are shipped with Logic Analysis system software already installed, including any licensed optional products that you may have purchased. The licensing process (described below) has been performed and the (*.lic) license file is in place.

To upgrade/reinstall the logic analyzer software or to install the logic analyzer software onto your PC for offline processing:

- On legacy 16900 Series logic analysis systems that were shipped with an application CD, insert the application CD and click INSTALL PRODUCTS>Install Logic Analyzer. To install the logic analyzer software onto your PC for offline processing, insert the application CD into your PC's CD-ROM drive, click INSTALL PRODUCTS>Install Logic Analyzer. Alternatively, you can also download and install the Logic analyzer software from www.agilent.com/find/la-sw-download.
- On 16900 Series logic analysis systems with serial number of MY51420101 or higher and Windows 7 operating system, download the Logic analysis system software from http://www.agilent.com/find/la-sw-download and then install the software using the downloaded file. These systems are not shipped with an application CD. You need the Agilent Logic Analyzer software version 5.20 or later for these systems.

Note that newer versions of the Logic Analyzer software will automatically uninstall the previous version as a step in the upgrade. (User files in the "Documents and Settings" folder are not affected.)

Logic analyzer product software can be downloaded from the Web at: http://www.agilent.com/find/la-sw-download.

To be notified when software upgrades are available for downloading from the Web, sign up for e-mail notifications at:
http://www.agilent.com/find/emailupdates

Optional Products

If applicable, follow the instructions on the entitlement certificate that came with your purchase to enable the optional tool.

To change network settings

To make network changes after the first-time power up:

On Windows XP

The following steps are applicable for a logic analysis system with Windows XP operating system:

- To change from a workgroup to a domain or vice versa, right-click **My Computer** and select **Properties**. Select the **Computer Name** tab and click **Change**.
- To change network connection properties, click **Start>Control Panel>Network Connections**. Select the connection you want to change and click **Change settings of this connection**.

For more information on changing network settings, refer to the Windows XP online help.

On Windows 7

The following steps are applicable for a logic analysis system with Windows 7 operating system:

- To change from a workgroup to a domain or vice versa, click **Computer** and select **Properties**. Click the **Change Settings** link in the **Computer name, domain and Workgroup settings** section. Then select the **Computer Name** tab and click **Change**.
- To change network connection properties, click **Start>Control Panel>Network and Sharing Center**. Select the connection you want to change and then set the properties of this connection.

For more information on changing network settings, refer to the Windows 7 online help.

To change Windows Firewall settings

When 16900 Series logic analysis systems are shipped from the factory, the Windows Firewall is enabled and set up with the exceptions required by the logic analysis system.

To give other applications/ports access through the firewall

For example, you may need to change firewall settings in order to:

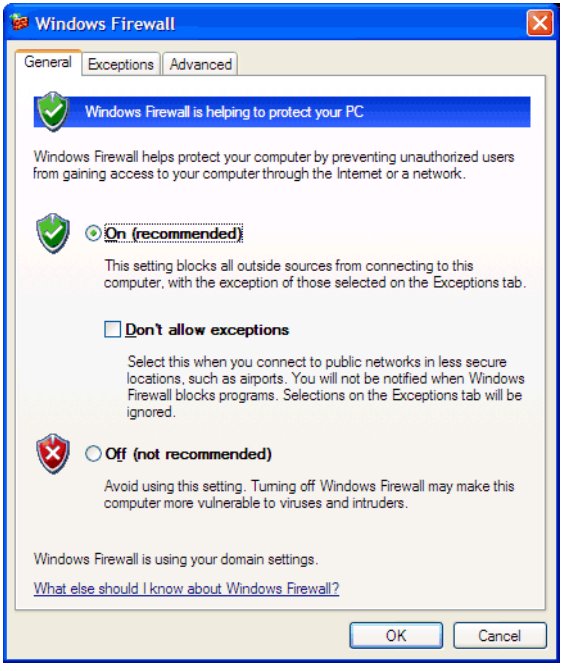
- Use NetOp to remotely control the logic analysis system.
- Use RealVNC to remotely control the logic analysis system.

On Windows XP

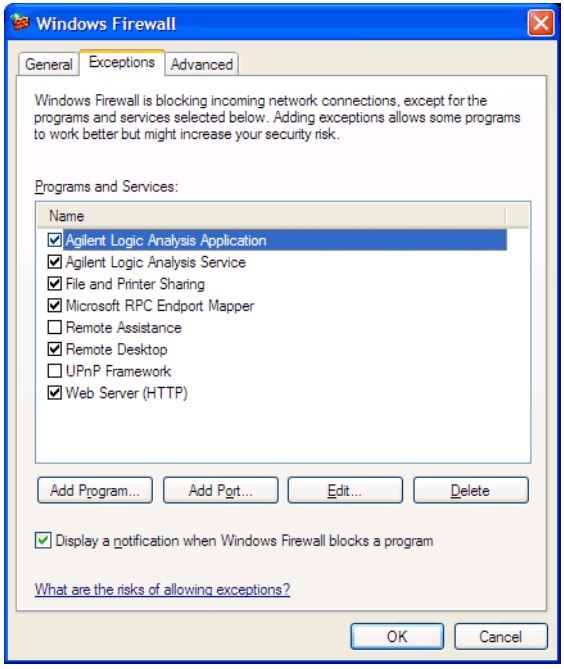
To change firewall settings to give other applications/ports access:

1 From the Windows Start menu, choose **Start>Control Panel**.

2 In the Control Panel window, open **Windows Firewall**.



3 In the Windows Firewall dialog, click the **Exceptions** tab.



4 In the Exceptions tab, if the required program or service is listed, check its box to enable it; otherwise, click **Add Program...** to give unlisted applications permission to penetrate the firewall, or click **Add Port...** to give unlisted ports access through the firewall.

Refer to the application's documentation for information on port numbers or other firewall setup information.

On Windows 7

To change firewall settings on Windows 7 to give other applications/ports access:

1 From the **Windows** Start menu, choose **Start>Control Panel**.

2 In the Control Panel window, click **Windows Firewall**.

3 Click the **Allow a program or a feature through Windows firewall** link.

4 The list of allowed programs and features is displayed. If the required program or service is listed, check its box to enable it; otherwise, click **Allow another program...** to give unlisted programs permission to penetrate the firewall,

Refer to the application's documentation for more information on port numbers or other firewall setup information.

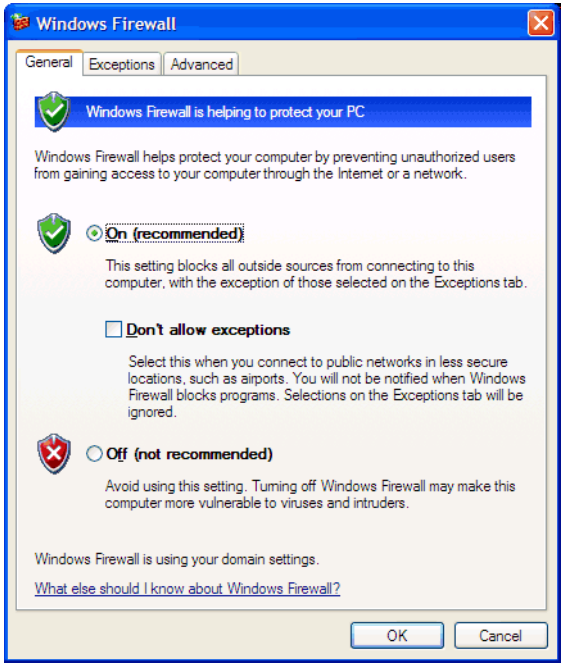
NOTE Note that there are separate Windows Firewall profiles: Domain for when the computer has domain membership, and Standard for when the computer has workgroup membership. If you change the type of membership, any changes you made to the Windows Firewall settings will have to be made again.

To restore the logic analysis system firewall defaults

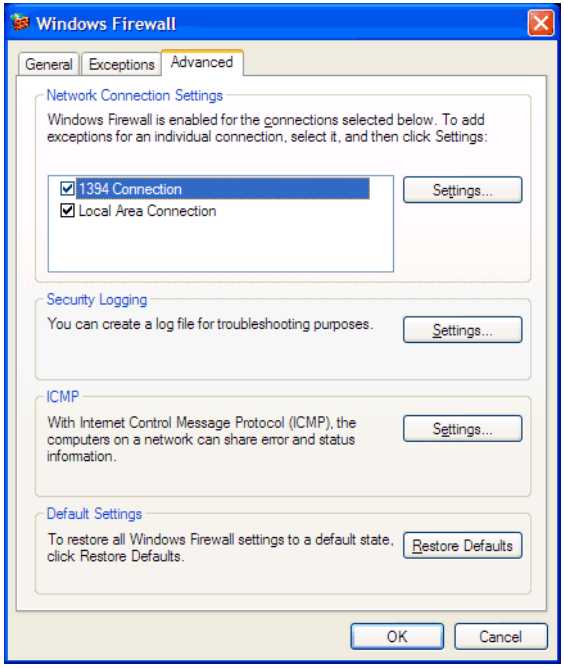
On legacy 16900 logic analysis systems

1 From the Windows Start menu, choose **Start>Control Panel**.

2 In the Control Panel window, open **Windows Firewall**.



3 In the Windows Firewall dialog, click the **Advanced** tab.



4 In the Advanced tab, click **Restore Defaults** to restore the default Windows Firewall settings.

5 In the confirmation dialog, Click **Yes**.

6 Click **OK** to close the Windows Firewall dialog.

7 From the Windows Start menu, choose **Start>Run**; then enter or select the file "C:\Program Files\Agilent Technologies\Logic Analyzer\ agFirewSP2.wsf" and click **OK**.

On newer/current 16900 logic analysis systems with 5.10 or later version of Logic Analyzer software

If your 16900 Logic Analysis system has 5.10 or later version of Logic Analyzer software and Windows XP installation, then restore the firewall defaults by following the steps 1 to 6 in the procedure described in previous section. After that, uninstall and then reinstall the Logic Analyzer software from www.agilent.com/find/la-sw-download.

If your 16900 Logic Analysis system has 5.20 or later version of Logic Analyzer software and Windows 7 installation, then restore the firewall defaults by performing the following steps:

1 From the Windows Start menu, choose **Start>Control Panel**.

2 Click the **Windows Firewall** link.

3 Click **Restore defaults** in the left pane of the window.

4 Again click **Restore defaults**.

5 Uninstall and then reinstall the Logic Analyzer software from www.agilent.com/find/la-sw-download.

The logic analysis system firewall defaults enable the following exceptions:

- Agilent Logic Analysis Application program.
- Agilent Logic Analysis Service program.
- File and Printer Sharing.
- Microsoft RPC Endport Mapper TCP port.
- Remote Desktop service.
- Web Server (HTTP) port.

The logic analysis system firewall defaults also enable the following ICMP (Internet Control Message Protocol) settings:

- Allow incoming echo request.
- Allow outgoing destination unreachable.
- Allow outgoing time exceeded.

NOTE Note that there are separate Windows Firewall profiles: Domain for when the computer has domain membership, and Standard for when the computer has workgroup membership. When you restore the logic analysis system firewall defaults, the defaults for both profiles are restored.

To power off the system

You can power off the logic analysis system using Windows Shutdown or a short press of the power button.

NOTE When powering off the logic analysis system, wait until the fans stop turning (about 15 seconds) before turning the logic analysis system back on. This ensures that internal circuitry restarts in a known state.

Using the Windows Shutdown

On the logic analysis system desktop, click **Start> Shut Down** or if you are running remote desktop, click **Start> Windows Security> Shut Down**. This:

- Closes all programs that are running.
- Writes all data to the disk.
- Turns off the power supply.
- If the system is unplugged while it is off and then plugged back in, the system will not power on until the power button is pressed.

Using a Short Press of the Power Button

Pressing the power button on the logic analysis system for a short time (less than 2 seconds):

- Closes all programs that are running.
- Writes all data to the disk.
- Turns off the power supply.

If the power button on the Remote Desktop is depressed for a short time (less than 2 seconds or so), a message on the logic analysis system screen (not on the remote desktop) will pop up asking if you really want to power down. Clicking the 'yes' button results in the above events. Clicking 'no' will prevent the shutdown and not answering the dialog box (neither clicking "Yes" or "No") will have no effect. Further short presses on the power button will have no effect.

Using a Long Press of the Power Button

CAUTION Only use a long press of the power button when the logic analysis system is unresponsive to Windows Shutdown or a short press of the power button.

Pressing the power button for more than 4 seconds will power the system down abruptly:

- Programs that are running will not be shut down. Any data that has not been written to the disk will be lost.
- Turns off the power supply.
- If the system is unplugged while it is off and then plugged back in, the system will not power on until the power button is pressed

Unplugging the Power Cord or Power Loss

CAUTION Only unplug the power cord when the logic analysis system is unresponsive to all other methods for powering off the system.

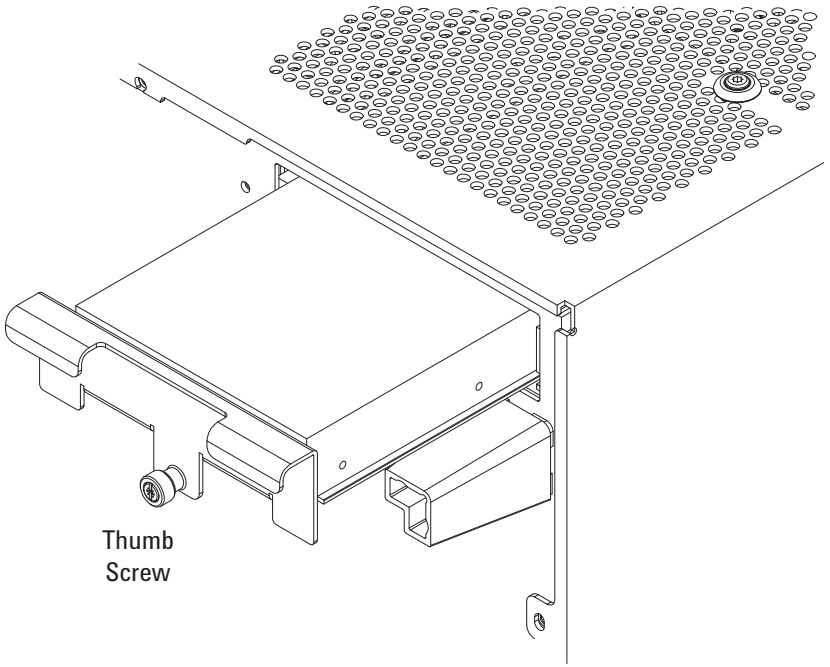
Unplugging power or a power loss is similar to the long press of the power button with one exception:

- When the system is plugged back in, it will power up and boot into Windows.

To remove the hard disk drive (16902B)

The 16902B logic analysis system has a removable hard disk drive. It can be removed and replaced without disassembling the instrument.

1. Power down the system (see page 112) and disconnect the power cable before removing the hard disk drive.
2. Loosen the thumb screw that holds the hard disk drive in place.
3. Pull the drive tray out to remove the disk drive.

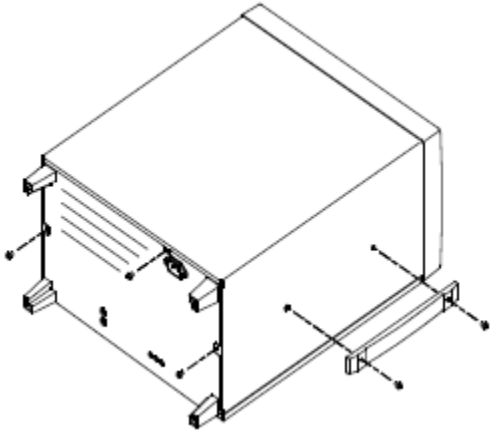


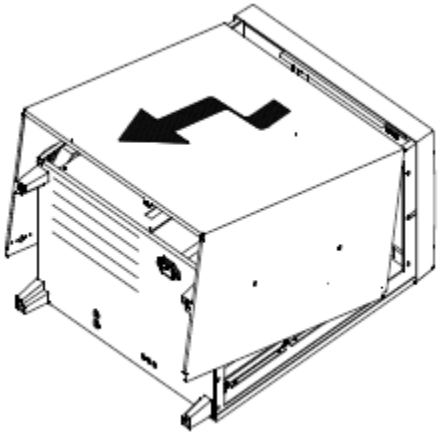
To install interface cards (16900A, 16902A, 16902B, or 16903A)

CAUTION Electrostatic discharge can damage electronic components. Use grounded wrist straps and mats when performing this procedure.

⚠ The following instructions show you how to properly remove/replace the CPU tray and install PCI cards.

1. Power down the system and disconnect the power cable before installing interface cards.
2. Remove the cover.
   a. Remove 3 screws from the back panel using a T-10 screwdriver.
   b. Remove the handle using a T-15 screwdriver to remove the 2 screws.
   c. Slide the cover back and up to remove.

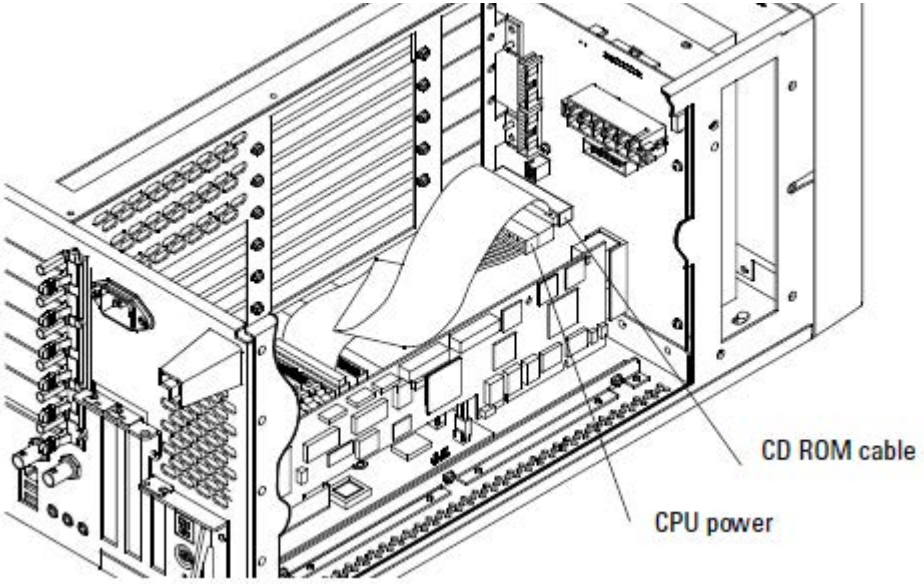




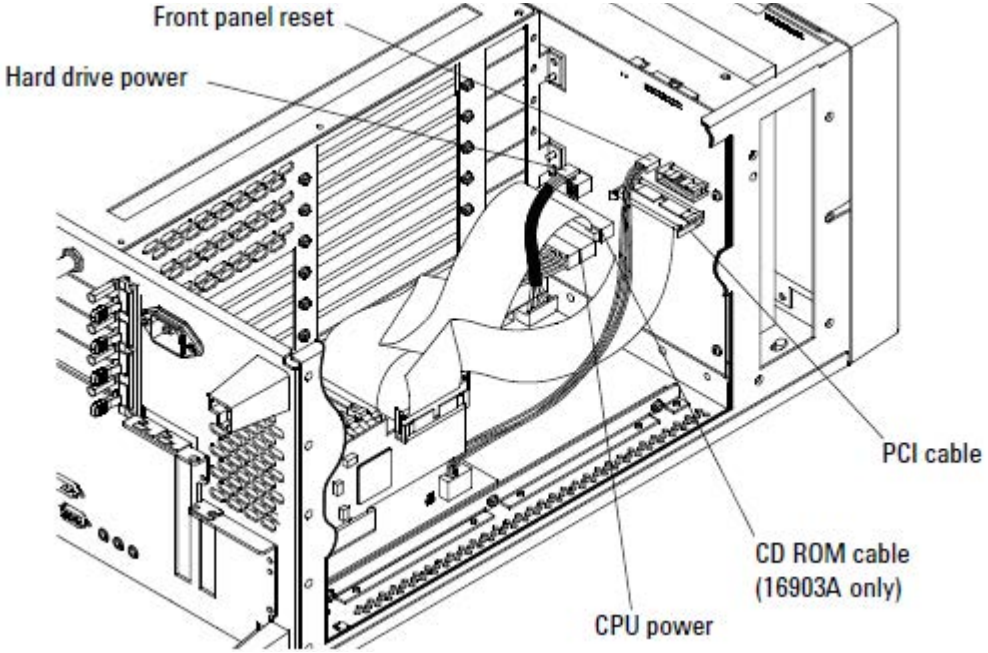
CAUTION When reinstalling the handle assembly, ensure that the screws are torqued to 2.372 Newton meters (21 inch pounds) so that they do not work themselves loose.

3 Disconnect cables from the module interface board.

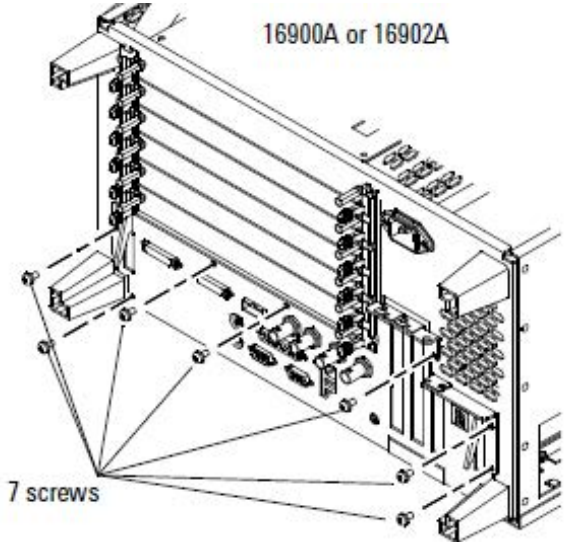
a If you have a 16900A, 16902A:

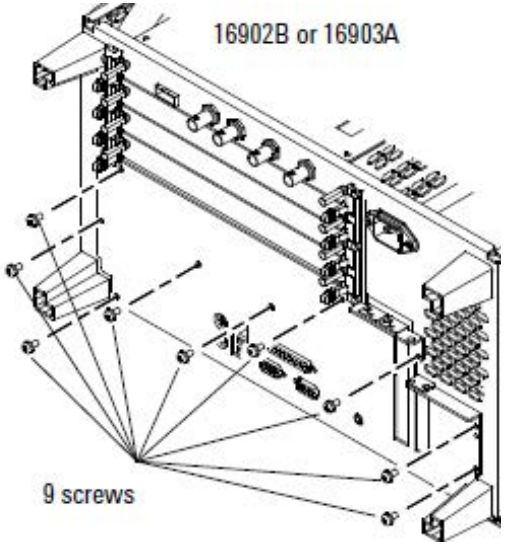


b If you have a 16903A or 16902B:



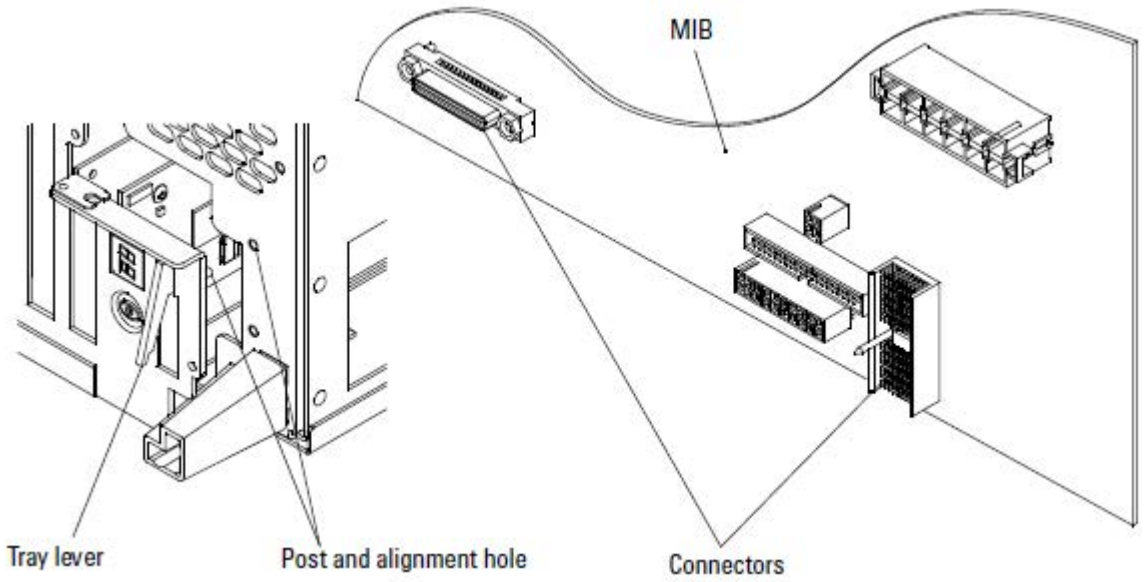
4 Remove screws from the back of the CPU tray using a Torx T-10 screwdriver.





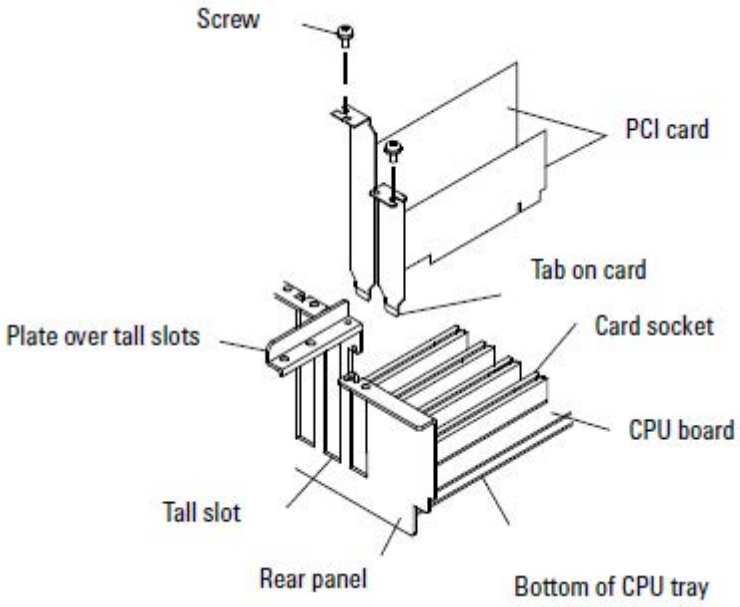
5 Remove the CPU tray.

a If you have a 16900A or 16902A, use the tray lever to disconnect the CPU board from the module interface board then slide the tray out being careful not to catch the loose cables on anything.



b If you have a 16902B or 16903A, slide the tray out being careful not to catch the loose cables on anything.

6 For the PCI card location you will be using, remove the screw securing the filler panel, swing the tall-slot plate out of the way if necessary, and remove the filler panel.



7 Insert the PCI card into the appropriate slot:

- **a** Ensure that the tab at the bottom of the card is aligned with the slot in the bottom of the CPU tray between the CPU board and the rear panel.
- **b** Press the card securely into the socket on the CPU board.
- **c** For cards in a tall slot, swing the plate back into place.
- **d** Secure the PCI card with the screw.

8 Slide the CPU tray back into the frame.

- **a** If you have a 16900A, 16902A, or 16902B ensure that the connectors between the CPU tray assembly and module interface board are properly seated. First align the posts and holes then use the tray levers to push the tray fully into place (see the figure in step 5a).
- **b** If you have a 16903A, slide the CPU tray into the frame.

9 Insert and tighten the screws shown in step 4.

10 Reconnect the CPU cables shown in step 3.

1 Gbit LAN Card

If you ordered a 1 Gbit LAN card with your 16900A, 16902A, or 16903A frame (Option 014) it will already be installed. If you order the 1 Gbit LAN card separately (as model E5860A), you need to install the card following the instructions beginning on page 115. To order a 1 Gbit LAN card go to: http://www.agilent.com/find/contactus

To install interface cards (16901A)

CAUTION Electrostatic discharge can damage electronic components. Use grounded wrist straps and mats when performing this procedure.

⚠ The following instructions show you how to properly remove the 16901A logic analysis system cover, install interface cards, and replace the cover.

1 Power down the system and disconnect the power cable before installing interface cards.

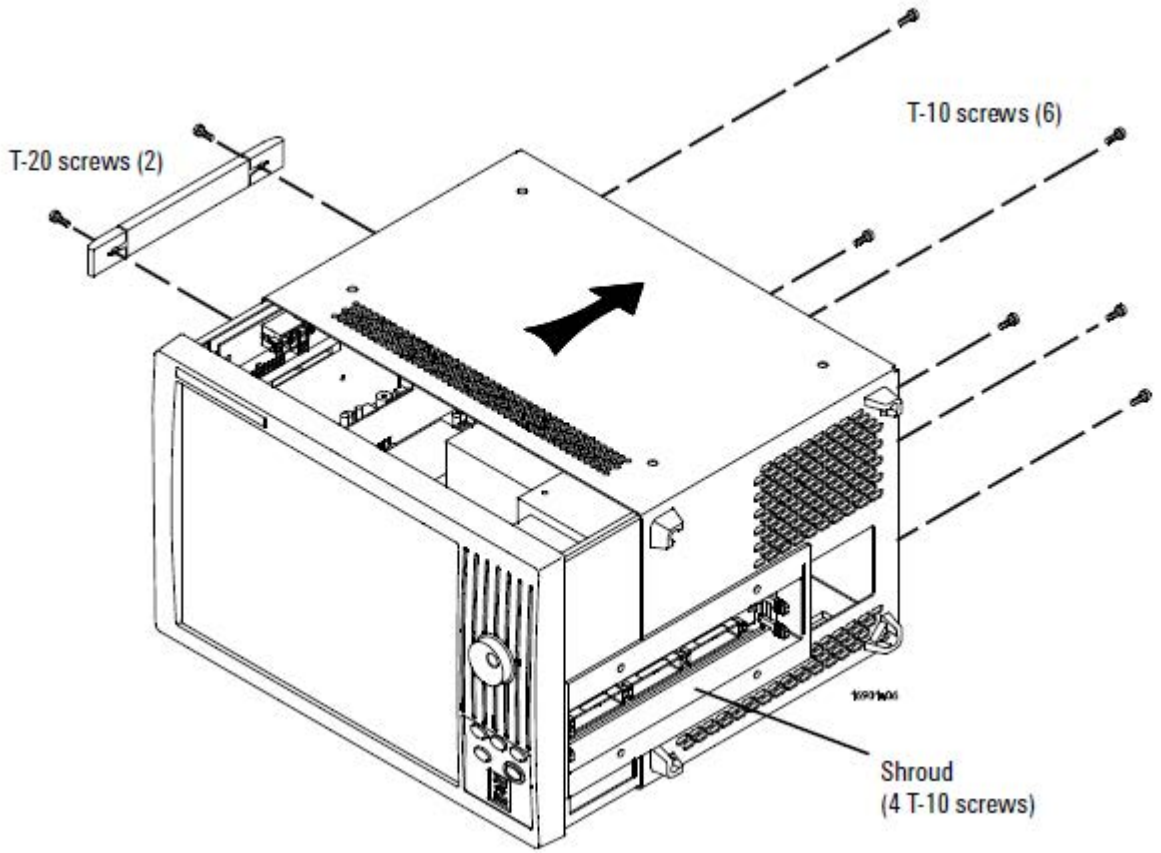
2 Remove the cover:

a Using a Torx T20 screwdriver, remove the handle assembly.

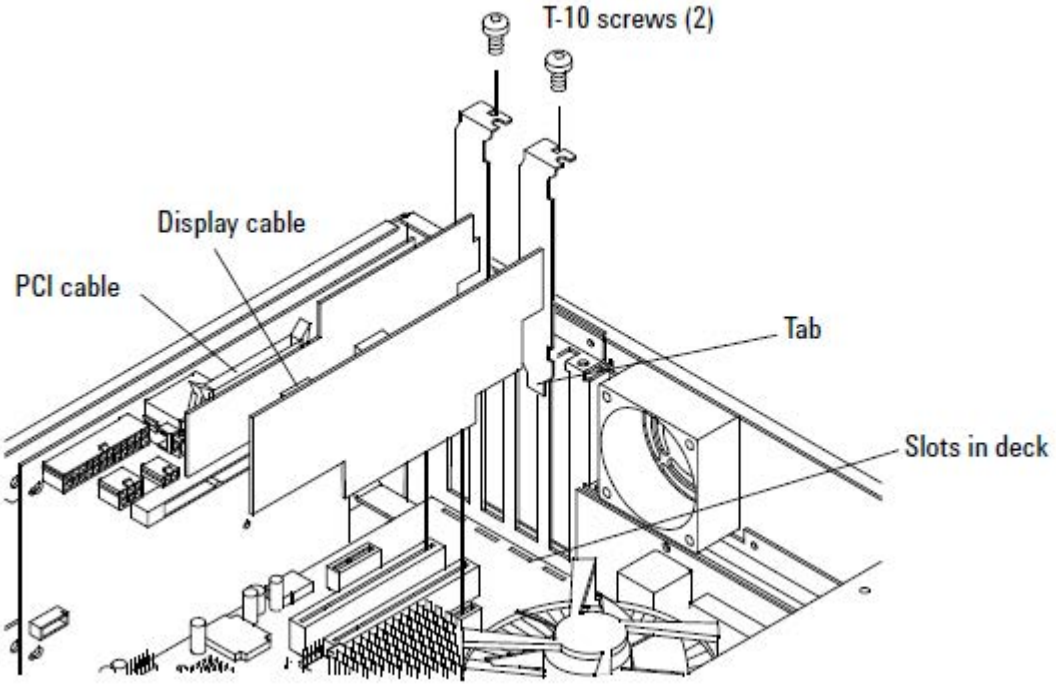
b Using a Torx T10 screwdriver, remove 6 screws that secure the cover to the chassis.

Optional: Removing the shroud may make it easier to remove and replace the cover. In this case, remove 4 T10 screws; then, remove the shroud.

c Slide the cover back to remove.



3 For the interface card location you will be using, using a Torx T10 screwdriver, remove the screw securing the slot cover; then, remove the slot cover.



4 Insert the interface card into the appropriate slot:

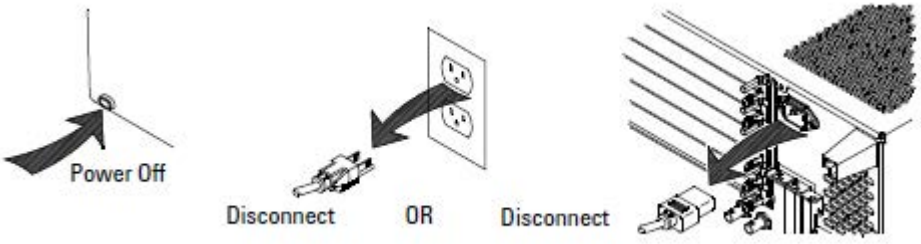
- **a** Ensure that the tab on the board's rear panel is aligned with the slot in the deck.
- **b** Press the board securely into the socket on the motherboard.
- **c** Replace the screw.

5 Replace the cover.

CAUTION When reinstalling the handle assembly, ensure that the screws are torqued to 2.372 Newton meters (21 inch pounds) so that they do not work themselves loose.

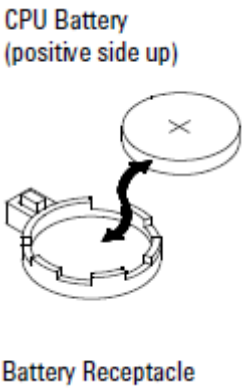
To replace the CPU battery

1 Power down the system and disconnect the power cable before replacing the CPU battery.



2 Access the motherboard using the steps described in "To install interface cards (16900A, 16902A, 16902B, or 16903A)" on page 115 or "To install interface cards (16901A)" on page 121.

3 Using a 1/8 inch flat-blade screwdriver, gently pry the battery from the battery receptacle.



4 Insert a new battery (CR2032 3V lithium) into the battery receptacle.

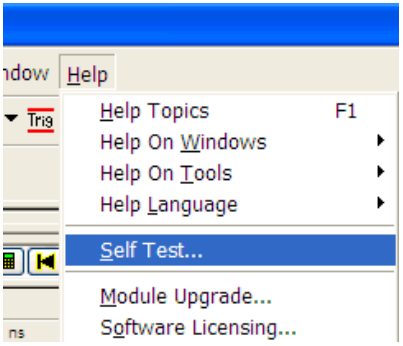
5 Put the frame back together by reversing the "access the motherboard" steps used earlier.

7
Solving Problems

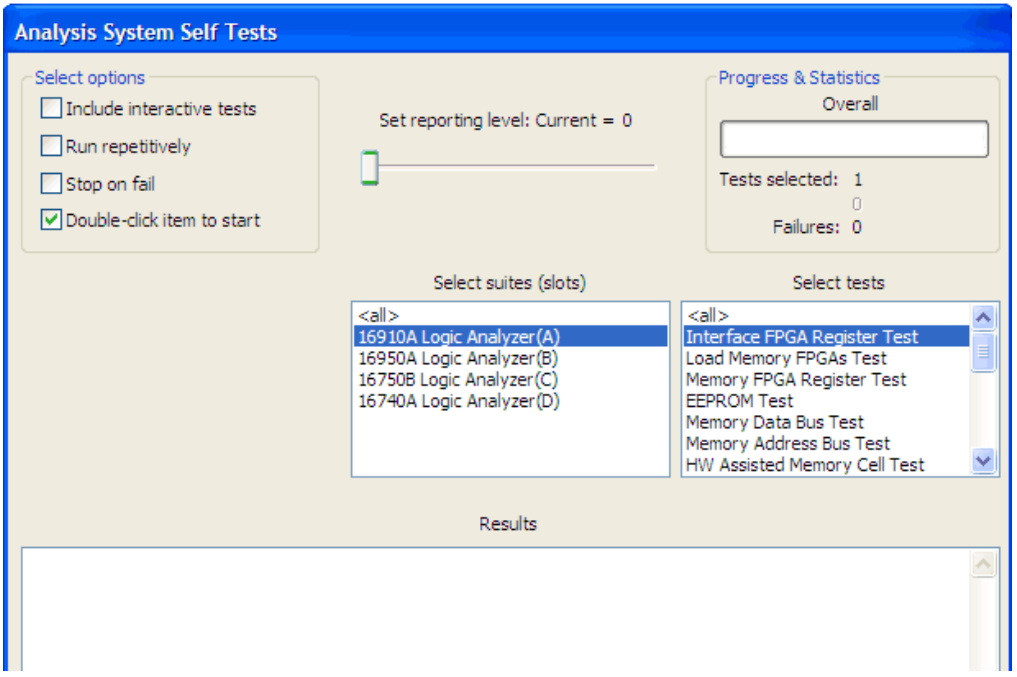
Running Self-Tests 126
If the logic analysis system powers itself down 127
If the Power LEDs do not come on 128
If you get a registry error and the system won't boot 128
If you can't write/read CDs 129
If there are multiframe connection problems 130
If there are network connection problems 132
Using the System Recovery Software 133
Contacting Agilent Service/Support 138

Running Self-Tests

1 In the Agilent logic analyzer application, click **Help>Self Test**.



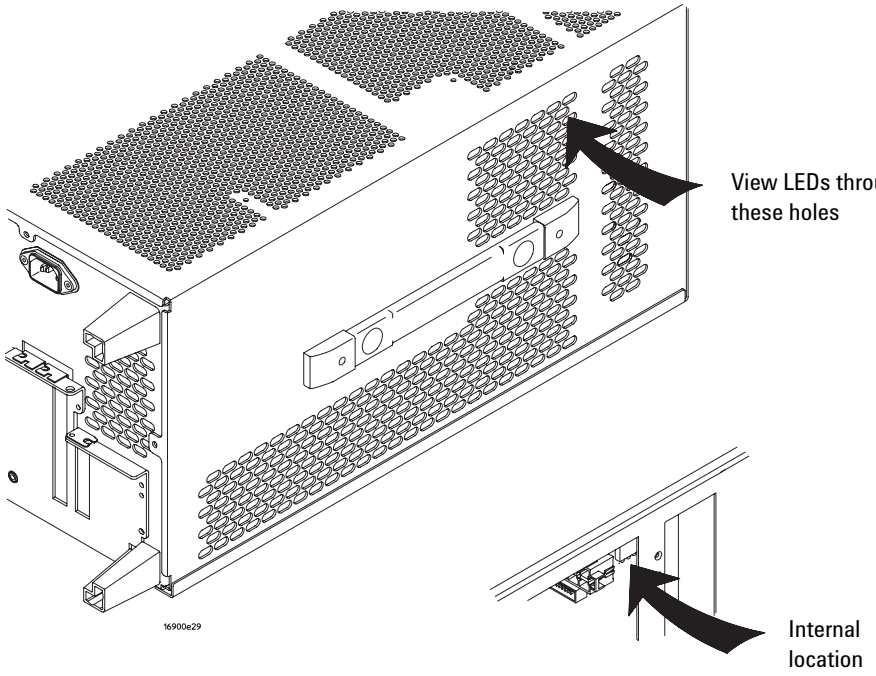
2 In the analysis system Self Test dialog, double click on the test you want to run.



If the logic analysis system powers itself down

16900A, 16902A, and 16902B logic analysis systems

The power LEDs on the frame help to figure out why a frame has powered itself down. For safety purposes, when any of these LEDs are lit the frame will not power back up until the power cord has been disconnected and then reconnected.



The colors indicate:

- Green – front power supply failure.
- Yellow – side power supply failure.
- Red – fan failure or 'overtemp'.

For any of the above conditions, go to http://www.agilent.com/find/contactus to contact your local service representative.

All 16900 Series logic analysis systems

If the system warns you it is powering down before it powers down, the dialog will describe the problem (such as a fan/overtemp problem). If the logic analysis system just powers down, it is likely a power supply problem.

If the Power LEDs do not come on

On the 16900A, 16902A, and 16902B frames, if the lights do not come on and if the system powers up momentarily when you plug it in, make sure the power buttons haven't become jammed or stuck in the pushed in position.

If you get a registry error and the system won't boot

When powered off unexpectedly (for example, with a long press of the power button or a power loss), Windows may not flush all system information to disk and is vulnerable to problems. When you power back on, you may get a "Registry Error" and the system won't boot. If this happens you will need to restore from the system CD-ROM. In the Logic Analysis systems with Windows 7 installation, you can restore the system software using the recovery process. This process overwrites all the user data and restores the system back to the original condition in which it was shipped. Refer to the topic "On a 16900 Series Logic Analysis System with Windows 7 Installation" on page 133 to know more about this process.

It is best to keep regular backups of your data and use proper power down procedures. If you have data that was not backed up that you need to try to save:

1. Physically remove the disk drive.
2. Mount it under another Windows XP/7 system based on which operating system is installed on the Logic Analysis system.
3. Move the data to the boot disk until you can restore the operating system.

If you can't write/read CDs

On 16900A, 16902A, and 16903A logic analysis systems:

- ✔ Ensure that Windows recognizes the drive. Click the **Start** button and then click **My Computer**. If the drive is not listed, perform a full scan with your antivirus software to check for and remove viruses. Viruses can sometimes prevent Windows from recognizing the drive.
- ✔ The CD drive must be parallel to the ground when writing to disk. CDs may not be readable in any CD-ROM drive if it was not.
- ✔ If a CD fails, clean it by wiping it off with a clean dry rag and then try again. If it continues to fail, insert another CD to eliminate the possibility that the original CD is defective.

The 16900A, 16902A, and 16903A logic analysis systems have a DVD-ROM & CD-R/RW combination drive with the following features:

- 24X Speed CD-R Writing.
- 24X Speed CD-RW Writing.
- 24X Speed CD-ROM Reading.
- 8X Speed DVD-ROM Reading.
- Can read DVD-RAM, DVD-R and DVD-RW.
- Buffer Under Run Protection.
- Writing Method:
  - Disc at Once.
  - Session at Once.
  - Track at Once.
  - Multi-Session.
  - Fixed/Variable Packet Writing.

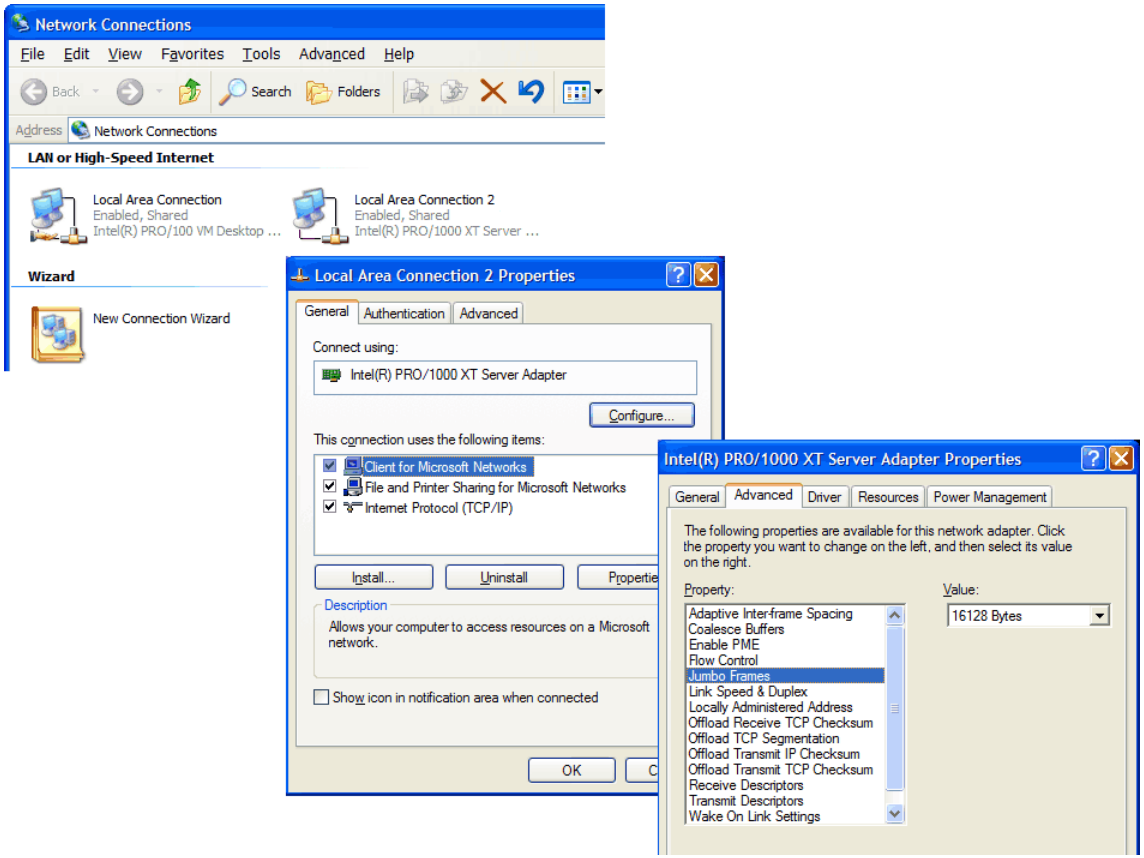
If there are multiframe connection problems

All 1 Gbit LAN cards in a multiframe set up must be set with the same Jumbo Frames setting. Also, if a switch/hub is used, you must ensure that it supports the same size Jumbo Frame setting. If all 1 Gbit LAN cards are not set with the same Jumbo Frames setting, you might get error messages indicating so.

- One or more of the frames is not completely initialized yet... Please wait a few seconds.

To check the Jumbo Frames setting:

1 Choose **Start>Control Panel**. In the Control Panel window, open **Network Connections**.



2 Right-click on the LAN connection and select **Properties**.

3 Click on **Configure** and then select the **Advanced** tab.

4 Select **Jumbo Frames** and the **Value**.

If there are network connection problems

See the "Network Troubleshooting Guide" topic in the *Agilent Logic Analyzer* application's online help. Briefly:

- The Windows Firewall must be set to allow access to the "Agilent Logic Analysis" service in order to use remote and multiframe connections (see "To restore the logic analysis system firewall defaults" on page 109).
- The Windows Firewall must be set to respond to the following ICMP (Internet Control Message Protocol) requests in order to use remote and multiframe connections:
  - Allow incoming echo requests.
  - Allow outgoing destination unreachable.
  - Allow outgoing time exceeded.

  (See "To restore the logic analysis system firewall defaults" on page 109.)
- The link activity light must be on; If these LEDs are not on, the LAN segment may be dead.
- If connecting two logic analysis systems directly together (that is, no hub or switch between them), make sure you are using a special cross-over cable.

If your IP address is in the same subnet as a working computer's (use "ipconfig /all | more" to view IP addresses on machine in question), it is possible that your network administrators have denied access to any resources if the computer is not in the domain. In this case, you need to add the computer (logic analysis system) to the domain.

Using the System Recovery Software

Restoring your system software might be necessary for the following reasons:

- Hard drive failure.
- Virus in the system or unstable system.
- Intentional disk clean - for example if you are passing the system to another team or returning it to a rental company and you do not want any data left on it.

On a Legacy 16900 Series Logic Analysis System with Windows XP installation

The legacy 16900 series of Logic Analysis systems have the Windows XP operating system installed. These systems also have the Agilent Logic Analyzer software preinstalled.

You will need to have a keyboard and a mouse connected.

Follow the instructions provided with the recovery CD or DVD that accompanies your Logic Analysis system to restore your system software.

CAUTION Running the recovery disks will reformat your hard drive. All data files and programs will be overwritten. Save your data to a CD or to another machine before performing this procedure.

On a 16900 Series Logic Analysis System with Windows 7 Installation

The 16900 series of Logic Analysis systems with serial number of MY51420101 or higher have the Windows 7 operating system installed. These systems also have the Agilent Logic Analyzer software version 5.20 or later preinstalled. These systems do not have any recovery CD or DVD in their shipment.

If you need to restore the logic analysis system software, you run the recovery process on the hard drive of the system. This recovery process uses the hidden partition on the hard drive to restore the hard disk drive back to its original state in which it was shipped. When you run this process, the recovered hard disk drive contains:

- the Windows 7 operating system
- the version of the Logic Analyzer software which was installed when the system was originally shipped and not the latest or upgraded version of the software that might be available at the time of system recovery.
- the license files of any licensed optional products that you had purchased with the Logic Analysis system and that were installed when the system was originally shipped.

NOTE When you run the recovery process, the software licensing Host ID of your logic analysis system may change. If this happens, the restored license files will not work with the new host ID and you will need rehosted license files. To get these files, you can contact your nearest Agilent sales/service office. To locate a sales or service office, go to www.agilent.com/find/contactus.

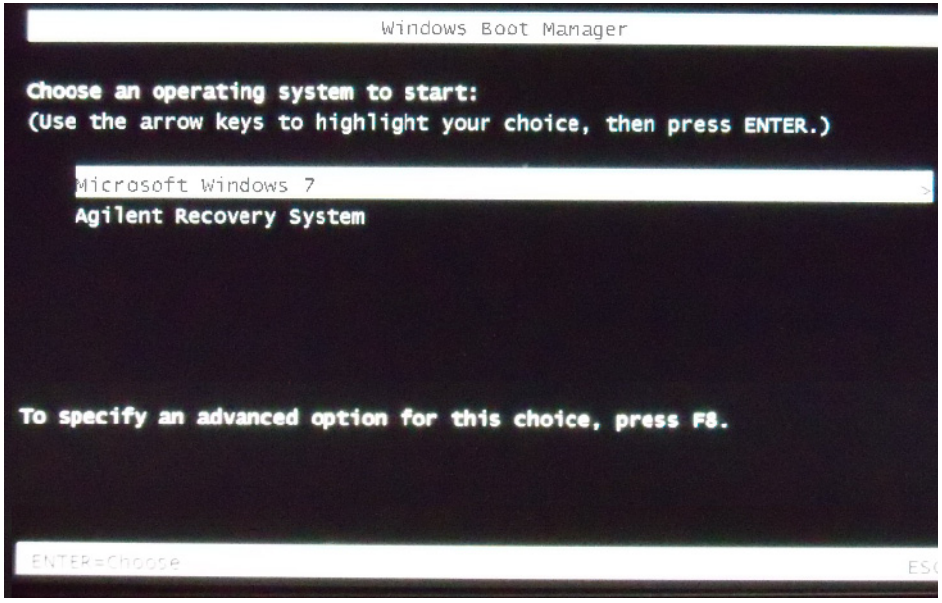
CAUTION Running the recovery process reformats your logic analyzer's hard disk drive to the state in which it was originally shipped to you. All user data files and programs are overwritten when the recovery process runs. Therefore, save your data to a CD or to another machine before you start recovering the system software.

To run the recovery process

1 Shut down and then restart your Logic Analysis system.

While booting up, the Logic Analysis system displays the Windows Boot Manager screen. This screen provides you the following options:

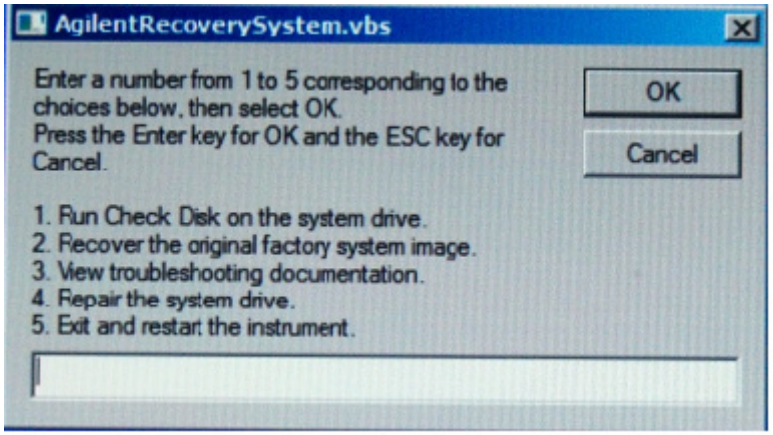
- **Microsoft Windows 7** - This is the default selected option. This option starts the Logic Analysis system with the Windows 7 operating system. This is the normal startup of the system.
- **Agilent Recovery system** - You should select this option when you want to restore/repair your Logic Analysis system software by running the Agilent recovery process.



2 After a few seconds, the Logic Analysis system automatically starts with the option selected in the Windows Boot Manager. Select the **Agilent Recovery system** option in the Windows Boot Manager screen using the arrow keys and then press Enter.

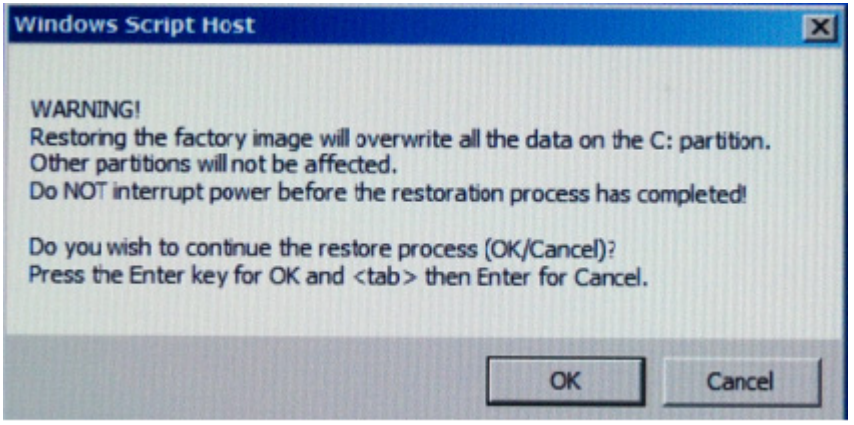
The recovery process starts preparing the system for recovery and displays the following screen with options to choose. You can enter:

- **1** to run Check Disk on the Logic Analysis system's hard disk drive. If the recovery process encounters any problems while running Check Disk, it reports these problems else it returns to the Agilent Recovery system prompt on completion of Check Disk.
- **2** to restore your Logic Analysis system software back to its original state in which it was shipped.
- **3** to view a document that provides information on the recovery process.
- **4** to repair the Logic Analysis system hard disk drive.
- **5** to exit the recovery process and restart the Logic Analysis system in the normal mode.



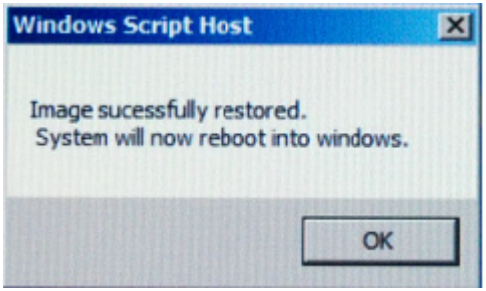
3 Select the second option in the above screen by entering **2** in the text box and clicking **OK**.

4 A warning message is displayed stating that the recovery process overwrites the data on C: drive. If you want to save your data to a CD or to another machine before you proceed further, then exit the recovery process and save your data. Else, click **OK** to proceed with the recovery process.



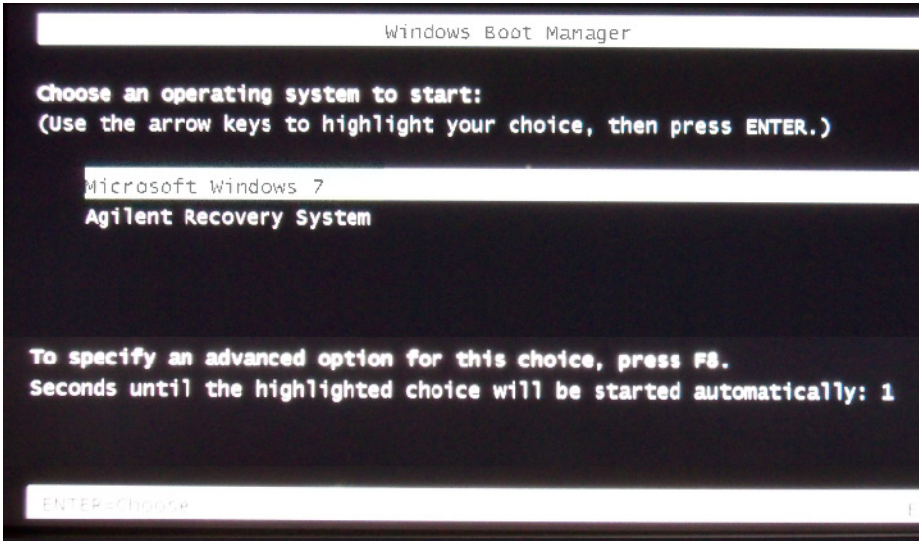
The recovery process starts.

If the recovery process is able to restore the system software successfully, then the following screen is displayed.



5 Click **OK** to proceed. You Logic Analysis system now reboots to Windows 7.

6 The Windows Boot Manager screen is displayed with **Microsoft Windows 7** as the default selection. The system automatically starts with this default selection. Alternatively, you can press Enter to proceed with the default selection.



NOTE There are situations when you are not able to run the recovery process, (for instance, when the hard disk drive of your system fails) or when running the recovery process does not recover your system software. In such situations, you can send your Logic Analysis system for hard disk repair/replacement to Agilent. Alternatively, you can contact your nearest Agilent sales/service office. To locate a sales or service office, go to www.agilent.com/find/contactus.

Contacting Agilent Service/Support

To locate a sales or service office near you, go to: http://www.agilent.com/find/contactus

A
Safety Notices

This apparatus has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Measuring Apparatus, and has been supplied in a safe condition. This is a Safety Class I instrument (provided with terminal for protective earthing). Before applying power, verify that the correct safety precautions are taken (see the following warnings). In addition, note the external markings on the instrument that are described under "Safety Symbols."

Warnings

- Before turning on the instrument, you must connect the protective earth terminal of the instrument to the protective conductor of the (mains) power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. You must not negate the protective action by using an extension cord (power cable) without a protective conductor (grounding). Grounding one conductor of a two-conductor outlet is not sufficient protection.
- Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.
- If you energize this instrument by an auto transformer (for voltage reduction or mains isolation), the common terminal must be connected to the earth terminal of the power source.
- Whenever it is likely that the ground protection is impaired, you must make the instrument inoperative and secure it against any unintended operation.

- Service instructions are for trained service personnel. To avoid dangerous electric shock, do not perform any service unless qualified to do so. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
- Do not install substitute parts or perform any unauthorized modification to the instrument.
- Capacitors inside the instrument may retain a charge even if the instrument is disconnected from its source of supply.
- Do not operate the instrument in the presence of flammable gasses or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.
- Do not use the instrument in a manner not specified by the manufacturer.
- To optimize your comfort and productivity, it is important that you set up your work area correctly and use your equipment properly. Refer to http://www.agilent.com/quality/Working_In_Comfort.pdf for set-up and use recommendations.
- Position equipment so that it is not difficult to disconnect the power cord.

To clean the instrument

If the instrument requires cleaning:

1. Remove power from the instrument.
2. Clean the external surfaces of the instrument with a soft cloth dampened with a mixture of mild detergent and water.
3. Make sure that the instrument is completely dry before reconnecting it to a power source.

Safety Symbols

Instruction manual symbol: the product is marked with this symbol when it is necessary for you to refer to the instruction manual in order to protect against damage to the product.

Hazardous voltage symbol.

Earth terminal symbol: Used to indicate a circuit common connected to grounded chassis.

A Safety Notices

Index

Numerics

16720A, installation, 71
16742/41/40A, installation, 63
16752/51/50A/B, installation, 63
16756/55/54/53A installation, 48
16760A, installation, 58
16900A, 4
16901A, 4
16902A, 4
16902B, 4
16903A, 4
16911/10A installation, 53
16950A installation, 48
16951/50B, installation, 43
16960A, installation, 37
16962A, installation, 30

A

accessories
  included, 4
  optional, 4
administrator, 78
administrator account, 83
Agilent web
  probes, 24
  service/support, 127, 138
air circulation, 15, 28
altitude, 101
antivirus, 17, 83

B

backup, 103

C

cable
  flying lead, 4
  multiframe, 4
cards, measurement, 4
caution
  electrostatic discharge, 26, 113, 115, 121
CD
  features, 129
  product software, 103
  write/read problems, 129
change network settings, 104
characteristics, 101, 102
Check Disk, 135
cleaning the instrument, 139
comparison of models, 4
computer name, 79
connect
  keyboard, 14
  LAN, 17
  logic analyzer probes, 24
  monitor, 14
  mouse, 14
  power, 15
  printer, 18
  time correlation fixture, 19
connection
  problems, 130
connection, high speed, 79
contact information, 138
cooling, 15, 28
cover removal, 122
CPU
  tray removal, 115, 121
CPU battery replacement, 124
cross-triggering, 98

D

debugging network, 132
disk
  clean/reformat, 133
  read error, 129
display resolution, 4
domain, 78, 79
DVD-ROM, 129

E

ejector levers, 27
electrical characteristics, 101
electrostatic discharge, 26, 113, 115, 121
environmental characteristics, 101

F

filler panel removal, 27
firewall, 17, 83
  changing settings, 83, 106
flowchart, installation, 5
flying lead cable, 4
frames, multiple, 4

G

getting started, 5, 100
grounding, 26, 113, 115, 121

H

hard drive, 133
hardware, setup, 13
help, 100
high-speed connection, 79
humidity, 101

I

ICMP settings, 111
install
  interface cards, 115, 121
  measurement modules, 26
  software, 103
interface cards, 115, 121
internet, 79
inverse assemblers, 104

J

jumbo frames setting, 130

K

keyboard, 4, 14

L

LAN, 14, 79
  connect, 17
LAN card, 4, 120
LEDs, 127, 128

M

measurement modules, 4
  16720A, 71
  16742/41/40A, 16752/51/50A/B, 63
  16756/55/54/53A, 48
  16760A, 58
  16911/10A, 53
  16950A, 48
  16951/50B, 43
  16960A, 37
  16962A, 30
  general installation, 26
  screw replacement, 24, 26
minimum space for cooling, 15
model comparison, 4
monitor, 4, 14
mouse, 4, 14
multiframe cable, 4
multiframe configuration, 85
  other notes, 98
  performance, 92
multiple frames, 4

N

network
  adding logic analyzer, 78
  connection decision, 78
  debugging, 132
network connection problems, 132
network settings, 104

O

online help, 100
optional accessories, 4
optional tools, 104
ordering thumb screws, 24, 26
oscilloscope time markers, 19
oscilloscope, time correlation, 19
overheating, 15
overview, 3
overview flowchart, 5

P

password, 79
PCI
  cards, 115, 121
  LAN card, 120
  slots, 115, 121
performance multiframe configuration, 92
  considerations when running, 97
power
  connect, 15
  LEDs, 127
  problems, 127
  requirements, 101
  turning off, 112
  turning on, 77
printer, 18
probes, 4, 24

Q

quick start, 100

R

read problems, CD, 129
recovery procedures, 133
recovery process, 133
registry error, 128
remove
  CPU tray, 115, 121
  filler panels, 27
removing
  cover, 122
replace
  CPU battery, 124
restoring system, 133
running self tests, 126

S

safety
  notices, 139
  symbols, 139
screw replacement, 24, 26
self tests, 126
service
  contacting Agilent, 138
  ground instrument, 115, 121
  ground modules, 26, 113
  web address, 127
shut down system, 112
software
  add-in, 103
  installation, 78, 83, 103
  updating, 103
  version requirements, 23, 70
space between instruments, 15
specifications, 102
standalone operation, 78
supplied accessories, 4
symbols
  safety, 139
system
  power, 127
  recovery, 133
  software, 103
System recovery on Windows 7
    installation, 133

T

target control port, 4
temperature, 101
thumb screws, measurement module, 24, 26
time correlation, 98
tips for experienced users, 100
tools, optional, 104
touch off button, 15
Trigger In, 19, 98, 101
Trigger Out, 19, 98

U

update software, 103

V

version requirements, 23, 70
virus software, 17, 83

W

warnings, 139
web address
  probes, 24
  service/support, 127
windows
  power problems, 128
  updates, 83
  welcome, 79
  welcome questions, 79
Windows Boot Manager, 135
Windows Firewall settings
  changing, 106
workgroup, 78
  changing, 83

Index