Administrator's and Service Guide

HP 16500L LAN Interface Module

In This Book

Use this guide for installing, connecting, and troubleshooting the HP 16500L LAN interface module for the HP 16500B Logic Analysis System.

Applications for the HP 16500L are connecting the HP 16500B mainframe to a LAN, connecting the mainframe to an expansion frame, and connecting the mainframe to an external monitor. This guide covers the LAN application for the HP 16500L.

To use this guide effectively, you need to be familiar with the following:

System administration tasks
Network administration
Your network setup and operation

Also, you need system administration access to your system, and your network and the host system needs to be fully operational.

This guide is organized as follows:

- Chapter 1, "Introducing the HP 16500L LAN Interface Module," introduces the interface module and identifies requirements for using the module.

- Chapter 2, "Installing the LAN interface module into the HP 16500B," provides procedures for installing the HP 16500L LAN interface module hardware into the HP 16500B Logic Analysis System mainframe. If you purchased the HP 16500L with an HP 16500B mainframe, you can skip this chapter because the interface module will be installed in the mainframe by HP before shipment.

- Chapter 3, "Connecting and Configuring," provides information about connecting the HP 16500B system with the HP 16500L module to a network. Also, procedures are included for configuring the HP 16500L to operate with a network.

- Chapter 4, "Troubleshooting," provides troubleshooting procedures in case you have problems with the HP 16500L.

- Chapter 5, "Replacing the HP 16500L," provides replacement procedures, ordering information, and a replaceable parts list.

- Chapter 6, "Support Services," provides information about support services for the HP 16500L.

See Also

The *HP 16500L LAN Interface Module User's Guide* for information about using the HP 16500L module.

The *HP 16500B Logic Analysis System User's Guide* for information about using the HP 16500B system.

The *HP 16500B Logic Analysis System Service Guide* for information about connecting the HP 16500L to an expansion frame or to an external monitor.

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3 Connecting and Configuring

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1

Introducing the HP 16500L LAN Interface Module

Introducing the HP 16500L LAN Interface Module

The HP 16500L LAN interface module provides a network-based interface from the HP 16500B Logic Analysis System to personal computers and workstations over an Ethernet local area network (LAN).

Installed in a slot on the rear panel of the HP 16500B mainframe, the HP 16500L connects to an Ethernet LAN and uses the TCP/IP protocol stack.

You can obtain data by using File Transfer Protocol (FTP) or by mounting the HP 16500B Logic Analysis System onto your networked computing environment using Network File System (NFS).

16500E73
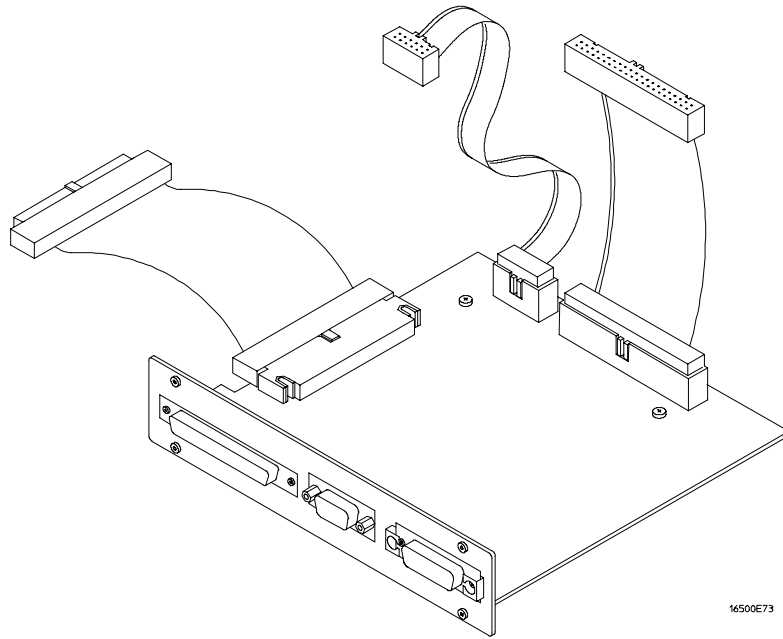
The HP 16500L

Accessories Supplied

The HP 16500L is shipped with the following accessories:

- screws and three cables to install the HP 16500L into the HP 16500B mainframe
- *User's Guide*
- *Administrator's and Service Guide*
- TORX 10 and TORX 15

  If your HP 16500L was installed into the HP 16500B by HP, you will not receive these tools. If your HP 16500L was not installed by HP, you will receive these tools.

Requirements

- HP 16500B Logic Analysis System mainframe
- Media Access Unit (MAU) to connect your network to the 15 pin Attachment Unit Interface (AUI) on the HP 16500L
- NFS or FTP capabilities on your TCP/IP Ethernet LAN

Characteristics

Physical Connection

  15-Pin Attachment Unit Interface (AUI)

Supports

  IEEE 802.3 type 10Base-T networks and StarLan 10 networks.

    Requires HP 28685B EtherTwist Transceiver (MAU) or equivalent.

  IEEE 802.3 type ThinLan (10Base-2) networks.

    Requires the HP 28641B ThinLan Transceiver (MAU) or equivalent.

Supported Protocols

Transmission Control Protocol/Internet Protocol (TCP/IP)

Network File System (NFS)

File Transfer Protocol (FTP)

Program Interfaces

Instrument settings and operating modes may be remotely programmed through data files transmitted via NFS or FTP.

Data Files

ASCII formatted data is available from popular measurement modules. Binary file format data is available from all measurement modules.

Screen images are available in TIFF, PCX, and EPI file formats.

Refer to the table on the next page.

File Structures

File structures for binary ASCII data are documented in the User's Guide.

Dynamic Files

Dynamic files are files that the size is not known until you actually try to retrieve them. Because file sizes vary, the HP 16500B creates a dynamic file when you request a file copy. Refer to "Dynamic Files" in chapter 4 for more information.

Network Management

The HP 16500L supports the Simple Network Management Protocol (SNMP) and is MIB II compliant. Community name: public.

HP 16500L Networked File System Support Matrix

Features	Modules	
	HP 16517A, 16518A, 16550A, 16542A, HP 16532A	HP 16500B, 16501A, and all other HP 16500-series measurement modules
ASCII Data Files	State per label, Timing per label, Digitized Analog Data(HP 16532A)	Not Available
Binary Data	Yes	Yes
Status Files	Yes	Yes
Program Files	Yes	Yes
Screen Image Files	All menus: TIFF (BW, color); PCX (color), EPI (BW)	

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Installing the interface module into the HP 16500B

Installing the interface module into the HP 16500B

This chapter includes procedures to install the HP 16500L LAN hardware into the HP 16500B Logic Analysis System mainframe and to verify the LAN module operation.

If you purchased your HP 16500L LAN interface module with an HP 16500B mainframe, the hardware is installed by HP before it is shipped to you.

The following chart shows an overview of the process.

| | Is the HP 16500L installed in the HP 16500B mainframe? | Yes → | Go to chapter 3, "Connecting and Configuring." |

No

Install

Install the HP 16500L hardware into the HP 16500B mainframe.

Verify

| Is Ethernet available in the Communications menu? | No → | Go to chapter 4, "Troubleshooting." |

Yes

Check

| Does the performance verification test pass? | No → | Go to chapter 4, "Troubleshooting." |

Yes

Go to chapter 3, "Connecting and Configuring."

Install the hardware

The following procedure instructs you on installing the HP 16500L into the HP 16500B mainframe.

If you need instructions for removing and replacing parts of the HP 16500B, refer to the *HP 16500B Logic Analysis System Service Guide*.

WARNING
SHOCK HAZARD Disconnect the power from the instrument before performing the following procedures. After disconnecting the power, wait at least six minutes for the capacitors on the power supply board and the CRT driver board to discharge before servicing the instrument. Failure to do so could result in electrical shock. Hazardous voltages exist on the power supply, the CRT, and the CRT driver board of the HP 16500B mainframe. As long as the AC LED on the power supply has any illumination, a significant charge remains on the capacitors.

CAUTION
Use grounded wriststraps and mats when performing any service to this module or to the HP 16500B Logic Analysis System. Electrostatic discharge can damage electronic components.

For correct orientation of the cables, match the slots on the cable connectors and on the board connectors.

1 Remove power from the HP 16500B mainframe, then remove the optional modules, the four rear feet, and the top and bottom covers of the mainframe.

2 Remove the sheetmetal plate on the rear of the mainframe covering the slot where the HP 16500L LAN interface module will be installed.

With the interface module installed, you will not use the plate. Save the plate to use in case the interface module is removed.

3 Remove the cable connecting the CRT module to the CPU board.

To release the cable, push the tabs on the board connector to the outside of the connector.

With the interface module installed, you will not use this cable. Save the cable to use in case the interface module is removed.

If you need more room to replace the CRT cable, you can remove the hard disk drive. Removing the hard disk drive is not necessary, but gives you more room for replacing the CRT cable. The hard disk drive is connected with four screws.

---

4 Connect one end of the new 40-pin cable to the CRT module.

Push the cable connector into the board connector until the tabs lock in the cable.

If you removed the hard disk drive, replace it before going to the next step.

40 Pin Connector
(Hidden)

Hard Disk

16500e70
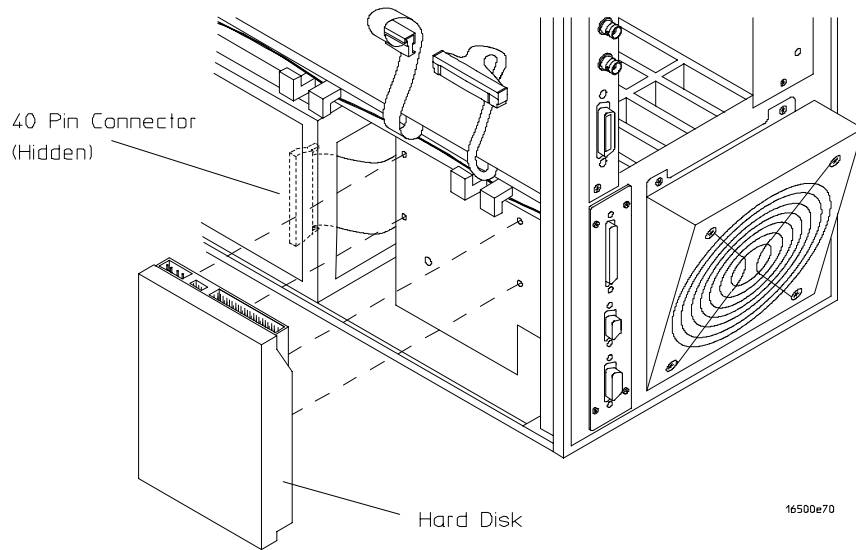
5 Slide the interface module into the mainframe through the slot in the rear panel.

6 Install the screws connecting the interface module to the mainframe.

Two screws through the top of the interface module connect it to the sheetmetal plate, and four screws through the rear plate of the interface module connect it to the rear panel of the mainframe.

7 Connect the end of the 40-pin CRT cable to the interface module.

8 Connect the 80-pin cable to the CPU board and to the interface module.

  a Slide the 80-pin cable halfway through the rear slot of the card cage between the interface module and the CPU board.

  b Connect the cable to the CPU board.

  c Connect the cable to the interface module.

9 Connect the 10-pin cable to the CPU board and to the interface module.

10 Replace the top and bottom covers, the optional modules, and the rear feet of the mainframe.

80-Pin
Connectors

10-Pin
Connectors

40-Pin
Connector

16500E69
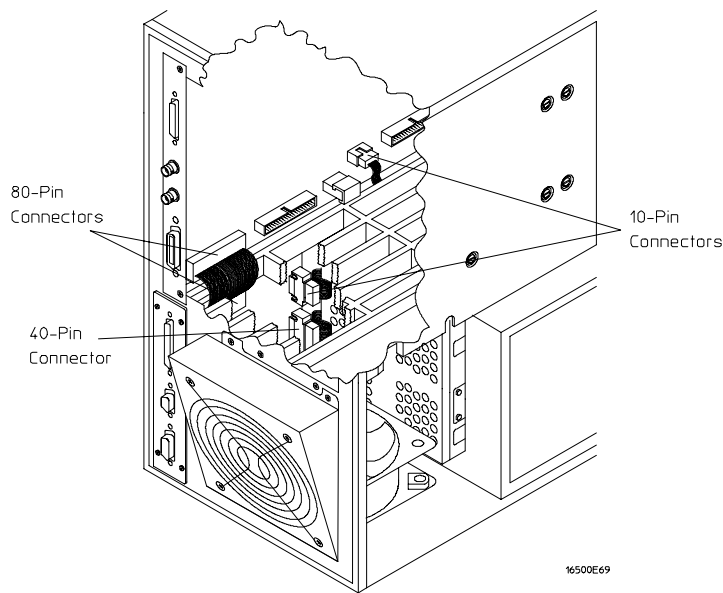
Verify the installation

- Check that Ethernet is available in the Communications menu of the System Configuration menu.

  When you power-up the mainframe, the Logic Analysis System performs the power-up self-tests. After the self-tests are finished, the screen displays the System Configuration menu. If the operating system finds an HP 16500L interface module installed, then Ethernet is available in the Communications box.

  If Ethernet is not available in the Communications box, go to chapter 4, "Troubleshooting."

Check the performance verification

This procedure verifies the performance of the HP 16500L interface module. To verify performance of the HP 16500B Logic Analysis System or the optional modules installed in the system, refer to the Service Guides for those products.

1 Touch the blue field in the uppermost left corner of the HP 16500B screen. In the pop-up menu, select System.

2 Touch the blue field immediately to the right. In the pop-up menu, select Configuration.

3 Touch Configuration, then touch Test. When the test menu appears, touch the field near the center of the screen to load the test system.

4 Touch Test System, then select Mainframe Test in the pop-up menu.
The screen will display the Mainframe Test menu.

```
┌──────────────────────────────────────────────────────────────┐
│  ( Mainframe Test )                            ( Print )       │
│                                                               │
│                                                               │
│      ┌──────────────────┐        ┌──────────────────┐         │
│      │    ROM Test      │        │    Disk Test     │         │
│      │ status  UNTESTED │────────│ status  UNTESTED │         │
│      └──────────────────┘        └──────────────────┘         │
│      ┌──────────────────┐        ┌──────────────────┐         │
│      │    RAM Test      │        │ Intermodule Test │         │
│      │ status  UNTESTED │────────│ status  UNTESTED │         │
│      └──────────────────┘        └──────────────────┘         │
│      ┌──────────────────┐        ┌──────────────────┐         │
│      │   HP-IB Test     │        │ Color Display Test│        │
│      │ status  UNTESTED │────────│ status  UNTESTED │         │
│      └──────────────────┘        └──────────────────┘         │
│      ┌──────────────────┐        ┌──────────────────┐         │
│      │  RS-232C Test    │        │ Option Board Test│         │
│      │ status  UNTESTED │────────│ status           │         │
│      └──────────────────┘        └──────────────────┘         │
│      ┌──────────────────┐        ┌──────────────────┐         │
│      │    HIL Test      │        │ All System Tests │         │
│      │ status  UNTESTED │────────│ status  UNTESTED │         │
│      └──────────────────┘        └──────────────────┘         │
│                                                               │
└──────────────────────────────────────────────────────────────┘
```
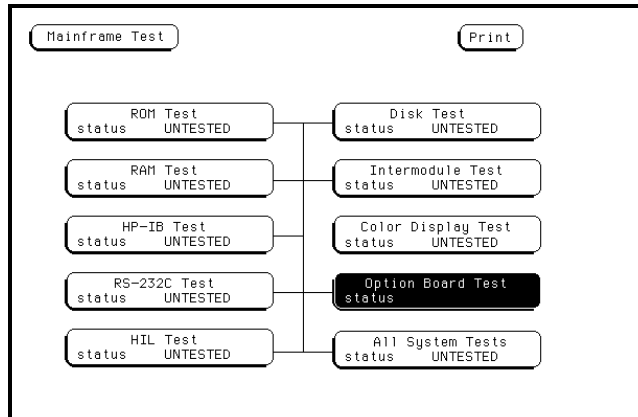
5 Select Option Board Test, then select Run.

If any of the tests fail, then go to chapter 4, "Troubleshooting."
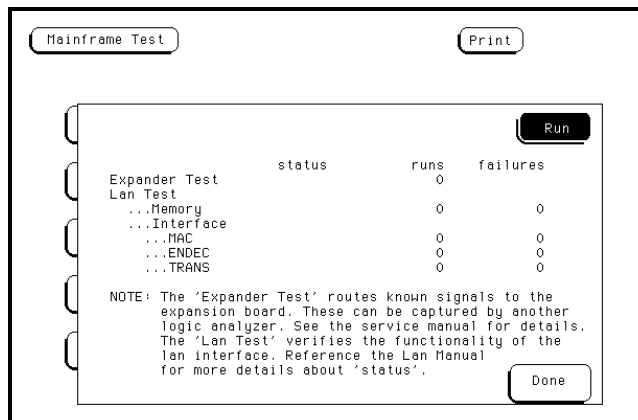
```
┌──────────────────────────────────────────────────────────────┐
│  ( Mainframe Test )                            ( Print )       │
│                                                               │
│    ┌──────────────────────────────────────────────────┐       │
│  ( │                                      ┌────────┐   │       │
│    │                                      │  Run   │   │       │
│  ( │              status     runs    failures └───────┘│      │
│    │  Expander Test            0                       │       │
│  ( │  Lan Test                                         │       │
│    │    ...Memory              0          0            │       │
│  ( │    ...Interface                                   │       │
│    │    ...MAC                 0          0            │       │
│    │    ...ENDEC               0          0            │       │
│  ( │    ...TRANS               0          0            │       │
│    │                                                   │       │
│    │  NOTE: The 'Expander Test' routes known signals to the│   │
│    │        expansion board. These can be captured by another│ │
│    │        logic analyzer. See the service manual for details.│ │
│    │        The 'Lan Test' verifies the functionality of the│  │
│    │        lan interface. Reference the Lan Manual   │       │
│    │        for more details about 'status'.  ┌────────┐│     │
│    │                                          │  Done  ││     │
│    └──────────────────────────────────────────└────────┘┘     │
└──────────────────────────────────────────────────────────────┘
```

If an HP 16501A expansion frame is not connected, then expect a "No
Expander Card Present" message to appear when you run the Option Board
Test. Refer to the HP 16500B Service Guide for more information about the
expansion frame.

6 Exit the Test System.

   a Touch the Module field, then touch Test System.

   b Touch the Menu field, then touch Exit Test.

   c Touch the field near the center of the screen to exit the test system and to load the operating system.

See Also   Chapter 4, "Troubleshooting," for information about the test and the status number on the Option Board Test screen.

The *HP 16500B Logic Analysis System Service Guide* for help performing the performance verification (self-tests).

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⚠

Connecting and Configuring

Connecting and Configuring

After installing the HP 16500L interface module into the HP 16500B mainframe, you need to connect it to your network. Then, you need to configure the HP 16500B to work with your network.

The following chart shows an overview of the process.

Connect

> Attach a MAU between the HP 16500L and your network, then turn on the HP16500B mainframe.

Configure

> Setup the configuration menus.

Ping

> Verify connectivity with the ping utility. Ping OK?

No → Go to chapter 4, "Troubleshooting."

Yes

Mount

> Mount the logic analysis system. Mount OK?

No → Go to chapter 4, "Troubleshooting."

Yes

> Ready to use. Refer to the *HP 16500L User's Guide*.
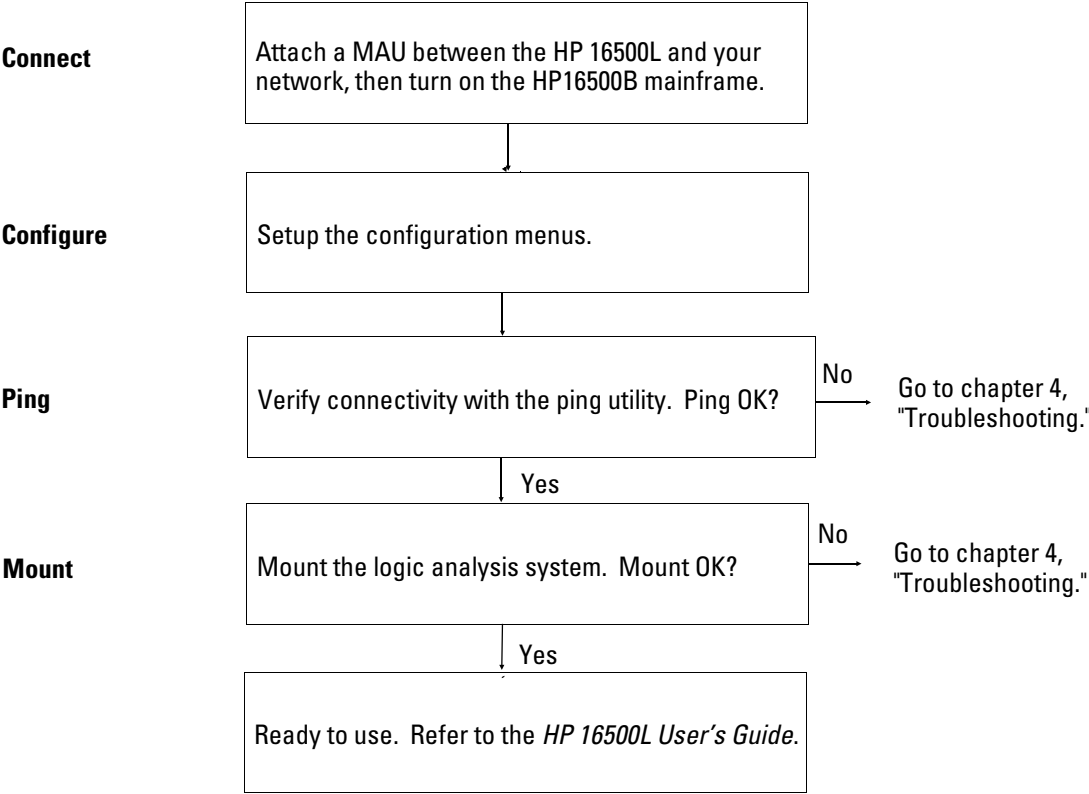
Connect to your network

1 Remove power from the HP 16500B mainframe.

2 Connect the appropriate MAU (Media Access Unit) to the 15-pin AUI (Attachment Unit Interface) on the back of the HP 16500L LAN interface module.

LAN AUI

16500E61
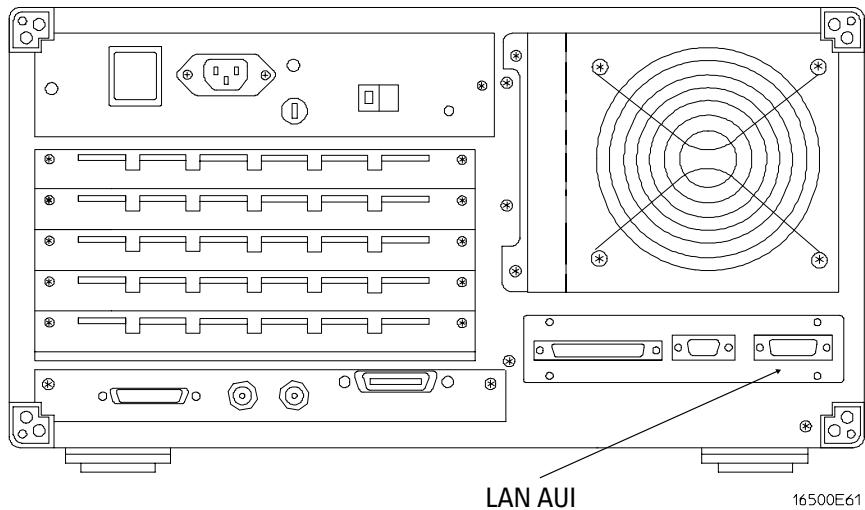
See Also

The *HP 16500B Logic Analysis Service Guide* for information about the other connectors on the HP 16500L.

The following table lists common Hewlett-Packard MAUs.

MAUs

Your Network Physical Layer	MAU Required
ThinLan	HP 28641B ThinLan Transceiver or equivalent
Twisted pair	HP 28685B EtherTwist Transceiver or equivalent

3 Connect the MAU to your network.

16500N59
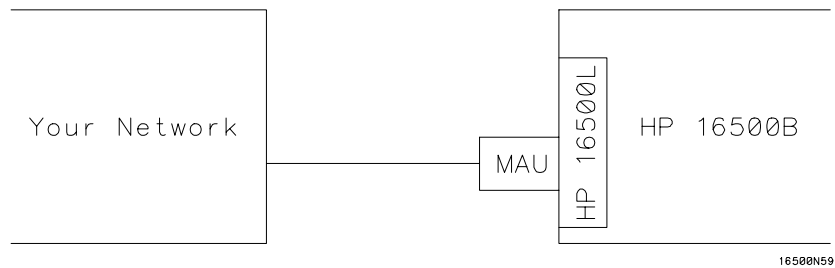
4 Turn on the HP 16500B Logic Analysis System.

Configure the network addresses

You can configure the HP 16500L to work with your network from the HP 16500B front-panel touchscreen.

Information entered in the configuration menus will be stored in nonvolatile memory.

1 Access the Ethernet Configuration menu.

   a Turn on the HP 16500B mainframe and wait until the power-up tests are complete.

   b In the System Configuration menu, select the Communications box.

   c In the Communications Configuration menu, select Ethernet below Configuration.
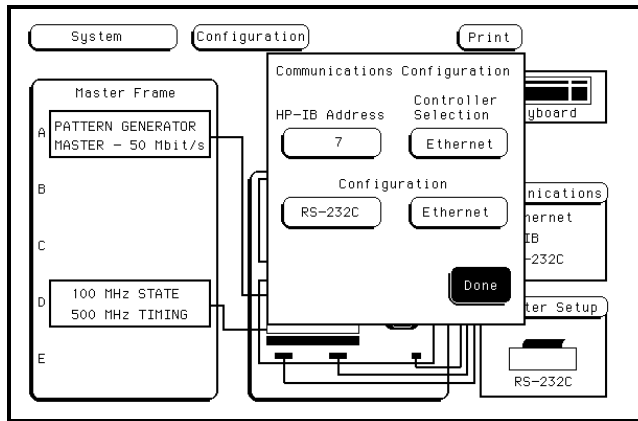
2 Setup the Ethernet Configuration menu.
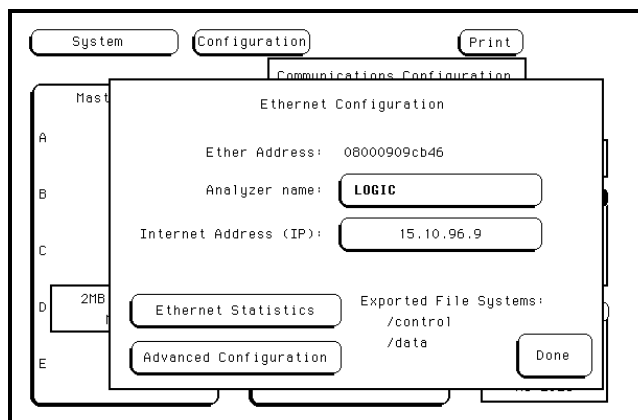
Ether Address	The Ether Address is a 12-character hex ASCII address. This address is configured in each HP 16500L interface card shipped from HP. You cannot enter or change the Ether Address.
Analyzer Name	The Analyzer Name is entered as 20 characters. When you select the Analyzer Name field on the touchscreen, an alphanumeric keypad appears for entering the name. This name is for user reference only and appears in the status files of the HP 16500B. It can be used by a remote user to confirm that the correct HP 16500B has been mounted.
Internet Address (IP)	The TCP/IP protocol uses the Internet Protocol Address (IP) for communication between network nodes and requires this entry. The value entered is in integer dot notation. The IP Address is valid when you enter the address, then select Done in the Ethernet Configuration menu. Then, the HP 16500B responds to messages sent to this IP address.

3 Access the Advanced Configuration menu.

Select Advanced Configuration in the Ethernet Configuration menu.

4 Setup the Advanced Configuration menu.
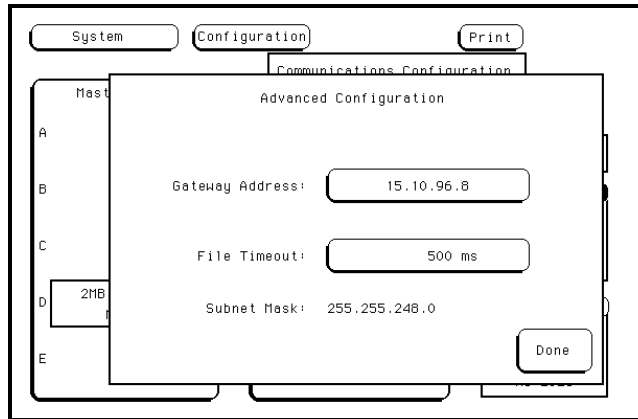
Gateway Address   To make connections between the HP 16500B and other networks or subnets, this address must be set to the address of the gateway machine. The value entered is in integer dot notation. The address 0.0.0.0 disables the gateway function.

File Timeout   The File Timeout , ranging from 500 ms to 1 ks, is used by the HP 16500B to determine whether a file should be considered complete.   The recommended value (and the default value) is 1.5 seconds. 1.5 s is enough time for an average packet to go from source to destination. If your packet has a long destination or your network has alot of gateways, you may need to increase the time.
A guideline for setting the File Timeout is to set the timeout to 150% of the average time for packets to go from source to destination.

File Timeout Caution

Set the File Timeout for the minimum time for packets to go from source to destination. File Timeouts can affect file transfer time. If the File Timeout is set to long, the HP 16500B will not respond soon enough.

Subnet Mask   The HP 16500B/L automatically obtains the subnet mask by sending a broadcast ICMP query over the network. The broadcast ICMP query is transmitted approximately 10 seconds after power is applied to the HP 16500B and approximately 2 seconds after the IP address is changed. When the query is answered by another network device, the HP 16500B/L stores the subnet mask information in internal memory.

5 Exit the Advanced Configuration menu, the Ethernet Configuration menu, and the Communications Configuration menu.

Select Done in each menu.

Verify connectivity with the ping utility

Use the ping utility to verify that the HP 16500B system is on your network.

Refer to your network documentation for the exact syntax.

- UNIX

  ping [IP address|symbolic name]

- MS-DOS

  ping [IP address|symbolic name]

- MS-Windows

  For a Windows environment, select the ping icon in your network menu. Refer to your network documentation for more information about using the ping utility.

3–8

Mount the logic analysis system

Before Mounting

You need to wait at least 15 seconds after the System Configuration menu is displayed before attempting to mount. If you try to mount too soon, you will receive an error message.

You can mount the HP 16500B Logic Analysis System on your network for two different levels of use, control or data. The HP 16500B system accommodates one controller and multiple data users. Control allows users to read and write files to and from the HP 16500B system, while data only allows users to read the files from the system. Data users can also write files to the disk drives of the HP 16500B.

For problem solving, refer to chapter 4, "Troubleshooting."

For the exact syntax of the mount command for mount, refer to your network documentation.

Mounting and Unmounting

You must unmount the HP 16500B before power is removed from it. Then, you can mount the HP 16500B 15 seconds after the System Configuration menu is displayed when powering up the instrument. You can write a network script that executes an unmount and mount procedure.

- UNIX

  For UNIX, use your network mount command for an NFS mount.

  For example:

  ```
  [mount][computername:]/[control|data][mount point]
  ```

  Some UNIX workstations will not accept a straight IP address. You must add an aliased name of the HP 16500B Logic Analysis System to the host file, then use that name in your mount command.

  Refer to your network documentation for more information.

- MS-DOS®

  For a PC using MS-DOS and running PC-NFS, use your net use command.

  For example:

  ```
  net use [drive specifier][IP address or a named alias]\
  [control|data]
  ```

  Refer to your PC-based NFS documentation for more information.

- MS-Windows

  For an MS-Windows environment, refer to your MS-Windows based NFS documentation and MS-Windows File Manager documentation for mounting instructions.

4

Troubleshooting

Troubleshooting

This chapter lists troubleshooting information for the HP 16500L interface module installed in the HP 16500B System.

The following chart shows an overview of the process.

Assess

> Assess the problem.

Verify

> Verify the communications link using the ping utility.

Mount

> Attempt a remote NFS mount.

Assess the problem

No utilities or proprietary driver software is needed or included with either the HP 16500B or the HP 16500L to connect the HP 16500B System to your network. The HP 16500B operating system was designed to operate with common network utilities and drivers.

Either a hardware problem or a software problem can prevent the HP 16500B remote file server from communicating over the LAN.

Single server/single client network

You can connect the HP 16500L to a single server/single client network. In this configuration, the client is running an NFS application program. In case of difficulties, the troubleshooting procedures included with the documentation for both the NFS application program and the communications controller should be attempted first. If the NFS application program is running in an MS-Windows environment, then the MS-Windows documentation should be consulted.

- Ethernet not available

  If Ethernet was not available in the Communications box during "Verify installation" in chapter 2, then go to "Verify the performance of the HP 16500L" in this chapter.

- Performance verification failed

  If the performance verification test failed during "Check performance verification" in chapter 2, then go to "Verify the performance of the HP 16500L" in this chapter.

- Timeout errors

  Error messages such as "Device Timeout," "File Timeout," "Operation Timeout," or other similar messages from workstations or PCs indicate timeout problems with the workstation or PC. To increase your timeout period, refer to your local workstation or PC documentation for instructions.

- Problems transferring or copying files

  Copying files out of the HP 16500B/L

     If you have problems copying files out of the HP 16500B/L, you might be having timeout problems. Refer to the paragraph above for timeout problems.

     If you only receive 1 byte back when copying files, refer to "Dynamic Files" later in this chapter.

  Copying files into the HP 16500B/L

     If you have problems copying files into the HP 16500B/L, such as copying setup or data to change a configuration, then check the File Timeout setting in the Advanced Configuration menu. Refer to "Configure the network addresses" in chapter 3 for more information.

- Packets routinely lost

  If packets are routinely lost, proceed to the troubleshooting section in this chapter relating to your network.

- Communications not established

  If you have just installed and configured the HP 16500L LAN Interface Module and you have never been able to read the HP 16500B remote file server directory, go directly to the troubleshooting section relating to your network in this chapter.

  If you have been able to read the HP 16500B remote file server directory and now cannot do so, check the following:

  Has any hardware been added or moved on your network? This includes adding or removing any workstations or peripherals, or changing any cabling.

  Have software applications been added to the network?

  Have any configuration files been modified?

  Have any of the following files been deleted or overwritten?

  UNIX:

  /etc/hosts
  /etc/inetd.conf
  /etc/services

  PCs:

  dependent network files

  If you know or suspect that something has changed on your network, check the changes and adjust the configuration for the HP 16500L LAN Interface module using the procedures in chapter 3. Otherwise, proceed to the troubleshooting section in this chapter relating to your network.

- Problems with the HP 16500B measurement modules or the HP 16500B mainframe

  If you are having trouble accessing one of the HP 16500B measurement modules, go to the Service Guide for that module. If you suspect a problem with the HP 16500B mainframe, go to the Service Guide for the mainframe.

Troubleshoot in a workstation environment

1 Verify the communications link.

Verify the communications link between the client and the HP 16500B remote file server using the ping utility.

```
ping [hostname|IP Address] 64 10
```

Hostname is the name assigned to the HP 16500B remote file server in the node names database (/etc/hosts). Most workstation platforms permit an IP address to be used in place of hostname. Packet size will be 64 and 10 packets will be transmitted.

To aid in troubleshooting, enter the Ethernet Statistics menu on the HP 16500B. You can view Transmit and Receive activity on this menu. If needed, refer to "Network Status Information" in this chapter for more information about the Ethernet Statistics menu.

● Normal Response

A normal response to the ping will be a total of 9, 10, or possibly 11 packets received with a minimal average of round-trip time. The minimal average will be different from network to network. LAN traffic will cause the round-trip time to vary widely.

Because the number of packets received depends on your network traffic and integrity, the normal number might be different for your network.

For every packet transmitted and received because of the ping command, the Transmit Successful and Receive Successful fields in the HP 16500B Ethernet Statistics menu will increment by 1.

Go to step 2, "Attempt a remote NFS mount."

● Error Messages

If error messages appear, then check the command syntax before continuing with the troubleshooting. If the syntax is correct, then resolve the error messages using your network documentation.

If an unknown host error message appears, then check the node names database (/etc/hosts) to see that the hostname and IP address are correctly entered.

- No response

  No packets received indicates no response from a ping.

  If there is no response, type in the IP address with the ping command. Check that the typed address matches the IP address assigned in the HP 16500B Ethernet Configuration menu, then check the other addresses in the menu.

  Check that the hostname and IP address are correctly entered in the node names database on your workstation (/etc/hosts).

  Check that the LAN cable and MAU are connected and seated properly. Your MAU might have status lights that indicate proper installation. Verify that these status lights are functioning properly. If either the LAN cable or MAU are not connected and properly seated, then the No Heartbeat field in the HP 16500B Ethernet Statistics menu might increment at the same rate as the Transmit Successful and Receive Successful fields.

  Ping each node along the route between client and the HP 16500B remote file server starting with the client (your workstation). Ping each gateway, then attempt a ping of the remote file server.

  If the HP 16500B remote file server still does not respond to ping, then suspect a hardware problem with the HP 16500L. To performance verify the HP 16500L, refer to "Verify the HP 16500L performance " in this chapter.

- Intermittent Response

  A problem with the network is indicated if 1-8 packets were received. Because the number of packets received depends on your network traffic and integrity, the number might be different for your network.

  Use a LAN analyzer or LAN management software to monitor activity and determine where bottlenecks or other problems are occurring. The HP 16500B remote file server will still function; however communications over the LAN will be slower.

2 Attempt a remote NFS mount.

Attempt a remote NFS mount of the HP 16500B remote file server using command syntax that is specific for NFS mounts. Refer to your computer reference documentation for the specific command syntax, but the command usually includes the remote NFS directory (hostname and either the /control or /data directory) and the mount point (the directory the remote file server will be attached to).

For example:

```
mount logic4:/control/nfs/logic4
```

- Normal Response

  The UNIX command line prompt reappears. To verify that the remote NFS mount was successful, type $ mount to view the mount table (/etc/mnttab). The remote file server should appear on the table of mounted devices.

- Error Messages

  If error messages appear, then check the command syntax before continuing with the troubleshooting. If the syntax is correct, then resolve the error messages using your network documentation.

  Verify that all of the mounting rules are being followed. Refer to the documentation of your network platform for the mounting rules.

  A Device Busy error message appears when you try to mount for control if someone else has already mounted for control. Also, the Device Busy error message appears when an unmount is attempted and a user's pwd (present work directory) is a directory on the remote file server. If the Device Busy message appears, then recycle power on the HP 16500B and reattempt the remote NFS mount.

  An error message is also received if you try to mount too soon after power-up. You need to wait at least 15 seconds after the System Configuration menu is displayed before attempting to mount.

Troubleshoot in an MS-DOS environment

1 Verify the communications link.

Verify the communications link between the client and the HP 16500B remote file server using the ping utility or other similar echo request utility.

To aid in troubleshooting, enter the Ethernet Statistics menu on the HP 16500B. You can view Transmit and Receive activity on this menu. If needed, refer to "Network Status Information" in this chapter for more information about the Ethernet Statistics menu.

If the ping utility is not available on the PC, then this is an indication that the PC-based NFS software is not properly installed. Reinstall the PC-based NFS software and attempt to verify the communications link.

The syntax of the ping command varies with the PC-based NFS software used. Usually, the command requires at least the IP address. If the syntax permits a specified number of echo requests, then specify 10 as the number of echo requests. Refer to the PC-based NFS software documentation for more information.

```
ping [IP address] 10
```

- Normal Response

  A normal response to the ping will be a total of 9, 10, or possibly 11 packets received if 10 echo requests were specified. Because the number of packets received depends on your network traffic and integrity, the normal number might be different for your network.

  For every packet transmitted and received because of the ping command, the Transmit Successful and Receive Successful fields in the HP 16500B Ethernet Statistics menu will increment by 1.

  Go to step 2, "Attempt a remote NFS mount."

- Error Messages

  If error messages appear, then check the command syntax before continuing with the troubleshooting. If the syntax is correct, then resolve the error messages using your NFS documentation.

  Certain PC-based NFS software packages permit the use of hostname in place of the IP address. In this case, if an unknown host error message appears, then check the node names database to see that the hostname and IP address are correctly entered.

Refer to the documentation of the PC-based NFS software for specific information on any error messages.

- No response

  No packets received indicates no response from a ping.

  If there is no response, type in the IP address with the ping command. Check that the typed address matches the IP address assigned in the HP 16500B Ethernet Configuration menu, then check the other addresses in the menu.

  Check that the LAN cable and MAU are connected and seated properly. Your MAU might have status lights that indicate proper installation. Verify that these status lights are functioning properly. If either the LAN cable or the MAU is not properly seated, then the No Heartbeat field in the HP 16500B Ethernet Statistics menu might increment at the same rate as the Transmit Successful and Receive Successful fields.

  Check that the hostname and IP address are correctly entered in the node names database and that the IP address matches the IP address assigned in the HP 16500B Ethernet Configuration menu.

  If the HP 16500B remote file server still does not respond to ping, then suspect a hardware problem with the HP 16500L. To performance verify the HP 16500L, refer to "Verify the HP 16500L performance" in this chapter.

- Intermittent Response

  On a multiclient network, a problem with the network is indicated if 1-8 packets were received. Because the number of packets received depends on your network traffic and integrity, the number might be different for your network.

  Use a LAN analyzer or LAN management software to monitor activity and determine where bottlenecks or other problems are occurring. The HP 16500B remote file server will still function; however communications over the LAN will be slower.

  On a single-client/single-server network, the most likely cause of intermittent response to an echo request is a hardware problem with the LAN module installed in the client, the cable, or the HP 16500L. To performance verify the HP 16500L, refer to "Verify the HP 16500L performance" in this chapter.

2 Attempt a remote NFS mount.

Attempt a remote NFS mount of the HP 16500B remote file server using command syntax that is specific for NFS mounts. Refer to the PC-based NFS software documentation for the specific command syntax. The command usually includes the remote NFS directory (hostname and either the /control or /data directory) and a disk drive designation.

- Normal Response

  The DOS command line prompt should reappear. To verify that the remote NFS mount was successful, type net use to view the mounted drives.

- Error Messages

  If error messages appear, then check the command syntax before continuing with the troubleshooting. If the syntax is correct, then resolve the error messages using your network documentation.

  Verify that all of the mounting rules are being followed. Refer to the documentation of your network platform for the mounting rules.

  A Device Busy error message appears when you try to mount for control if someone else has already mounted for control.

  Also, if a Device Busy (or similar) error message appears, check the CONFIG.SYS file for the LASTDRIVE= command. The LASTDRIVE= command should be set to a drive letter that would make a disk drive designation available to use as a drive for the remote file server while still allowing the last three disk drive designations to be available for printers. For more information, refer to the documentation for MS-DOS.

  An error message is also received if you try to mount too soon after power-up. You need to wait at least 15 seconds after the System Configuration menu is displayed before attempting to mount.

Troubleshoot in an MS-Windows environment

1 Verify the communications link.

Verify the communications link between the client and the HP 16500B remote file server using the ping utility or other similar echo request utility.

To aid in troubleshooting, enter the Ethernet Statistics menu on the HP 16500B. You can view Transmit and Receive activity on this menu. If needed, refer to "Network Status Information" in this chapter for more information about the Ethernet Statistics menu.

If the ping utility is not available on the PC (the icon does not appear), then this is an indication that the MS-Windows–based NFS software is not properly installed. Reinstall the MS-Windows–based NFS software and attempt to verify the communications link.

The execution of the ping command depends on the MS-Windows–based NFS software used. Usually, the command requires at least the IP address. If a specified number of echo requests can be sent, then specify 10 as the number of echo requests. Refer to the MS-Windows–based NFS software documentation for more information.

- Normal Response

  A normal response to the ping will be a total of 9, 10, or possibly 11 packets received if 10 echo requests were specified. Because the number of packets received depends on your network traffic and integrity, the normal number might be different for your network.

  For every packet transmitted and received because of the ping command, the Transmit Successful and Receive Successful fields in the HP 16500B Ethernet Statistics menu will increment by 1.

  Go to step 2, "Attempt a remote NFS mount."

- Error Messages

  If error messages appear, then check the command syntax before continuing with the troubleshooting. If the syntax is correct, then resolve the error messages using your NFS documentation.

  Check that all fields are correctly filled.

  Certain MS-Windows–based NFS software packages permit the use of hostname in place of the IP address. In this case, if an unknown host error message appears then check the node names database to see that the hostname and IP address are correctly entered.

Refer to the documentation of the MS-Windows–based NFS software for specific information on any error messages.

- No response

No packets received indicates no response from a ping.

If there is no response, type in the IP address with the ping command. Check that the typed address matches the IP address assigned in the HP 16500B Ethernet Configuration menu, then check the other addresses in the menu.

Check that the hostname and IP address are correctly entered in the node names database.

Check that the LAN cable and MAU are connected and seated properly. Your MAU might have status lights that indicate proper installation. Verify that these status lights are functioning properly. If either the LAN cable or MAU are not connected and properly seated, then the No Heartbeat field in the HP 16500B Ethernet Statistics menu might increment at the same rate as the Transmit Successful and Receive Successful fields.

If the HP 16500B remote file server still does not respond to ping, then suspect a hardware problem with the HP 16500L. To performance verify the HP 16500L, refer to "Verify the HP 16500L performance" in this chapter.

- Intermittent Response

On a multiclient network, a problem with the network is indicated if 1 to 8 packets were received. Because the number of packets received depends on your network traffic and integrity, the number might be different for your network.

Use a LAN analyzer or LAN management software to monitor activity and determine where bottlenecks or other problems are occurring. The HP 16500B remote file server will still function, however communications over the LAN will be slower.

On a single-client/single-server network, the most likely cause of intermittent response to an echo request is a hardware problem with the LAN module installed in the client, the cable, or the HP 16500L. To performance verify the HP 16500L, refer to "Verify the HP 16500L performance" in this chapter.

2 Attempt a remote NFS mount.

Attempt a remote NFS mount of the HP 16500B remote file server using MS-Windows File Manager. In the Disk menu of File Manager, the Network Connections field should appear. If this field does not appear, this indicates that the MS-Windows–based NFS software was not properly installed.

Select a Drive Letter under New Connection. If a drive letter does not appear, then check the LASTDRIVE = command in the CONFIG.SYS file. The LASTDRIVE = command should be set to a drive letter that would make a disk drive designation available to use as a drive for the remote file server while still allowing the last three disk drive designations to be available for printers. For more information about the CONFIG.SYS file, refer to the documentation for MS-DOS.

- Normal Response

  When Connect is selected, the drive letter and the mounted remote file server should appear under the Network Drive Connections window.

- Error Messages

  If error messages appear, then resolve the error messages using your NFS documentation.

  Check to make sure all of the appropriate fields in the Network Connections menu have the correct information. If all of the fields have correct information, then refer to the documentation for the MS-Windows–based NFS software and for MS-Windows File Manager for more information.

  A Device Busy error message appears when you try to mount for control if someone else has already mounted for control.

  An error message is also received if you try to mount too soon after power-up. You need to wait at least 15 seconds after the System Configuration menu is displayed before attempting to mount.

Verify the HP 16500L performance

The HP 16500L performance verification (self-test) is divided into two sections. The first section tests the physical connection, for example, the cable and termination. The second section tests the internal functions of the LAN IC on the HP 16500L LAN Interface Module. When both sections of the self-test have completed, a status reporting message appears in the Option Board Test menu. The status reporting message indicates whether the tests pass, if a failure occurs, and which section failed.

The first section, the physical connection, is tested depending on the LAN topology used. If ThinLAN is used, then a test transmission signal is transmitted over the LAN. If a reply is received, then the physical connection is considered good. If Ethertwist (10-BaseT) is used, then the HP 16500L will listen for the heartbeat signal from the LAN. If a heartbeat is received, then the physical connection is considered good.

The second section is tested using internal loopback features of the LAN IC. Transmitted packets are looped back to the receive circuit of the LAN IC. When the looped back packets are received, they are processed like a packet received from a remote client or server. If the looped back packet is recognized and processed, then the LAN IC and the LAN function are considered good.

Perform the following checks before beginning the procedure.

☐ Check all network cables and connectors. Verify that all cables are properly connected.

☐ Check that the MAU is properly connected to the HP 16500L AUI and that the appropriate status LEDs on the MAU are illuminated (if applicable).

Procedure

This procedure verifies the performance of the HP 16500L interface module. To verify performance of the HP 16500B Logic Analysis System or the optional modules, refer to the Service Guides for those products.

1 Touch the blue field in the upper-left corner of the HP 16500B screen. In the pop-up menu, select System.

2 Touch the blue field immediately to the right. In the pop-up menu, select Configuration.

3 Verify that Ethernet is available in the Communications box on the HP 16500B System Configuration screen.

If the Ethernet selection appears in the Communications box, then go to the next step.

If Ethernet does not appear in the Communications box, then the HP 16500L LAN Interface Module is not recognized by the HP 16500B operating system. Suspect a hardware problem associated with the installation of the HP 16500L LAN Interface Module. If the screen is completely blank, then cables might be defective, disconnected, or not properly seated.

To check the hardware problems, perform the following steps.

a Remove power from the HP 16500B, disconnect the power cable, then remove both the top and bottom covers.

b Ensure that all cables are connected according to the installation procedures and that all cables are properly seated. For installation procedures, refer to chapter 2, "Installing the interface module into the HP 16500B."

c Install the top and bottom covers of the HP 16500B mainframe, connect the power cable, and reapply power.

If Ethernet still does not appear, then suspect a defective HP 16500L circuit board. Replace the HP 16500L circuit board according to chapter 5, "Removing and replacing the HP 16500L."

4 Touch Configuration, then touch Test. When the test menu appears, touch the blue field to load the performance verification test system.

5 Touch Test System, then select Mainframe Test in the pop-up menu. The screen will display the Mainframe Test menu.

```
┌─────────────────────────────────────────────────────┐
│  ( Mainframe Test )                      ( Print )    │
│                                                       │
│                                                       │
│    ┌──────────────────┐      ┌──────────────────┐    │
│    │    ROM Test       │      │    Disk Test      │   │
│    │ status  UNTESTED  │      │ status   UNTESTED │   │
│    └──────────────────┘      └──────────────────┘    │
│    ┌──────────────────┐      ┌──────────────────┐    │
│    │    RAM Test       │      │ Intermodule Test  │   │
│    │ status  UNTESTED  │      │ status   UNTESTED │   │
│    └──────────────────┘      └──────────────────┘    │
│    ┌──────────────────┐      ┌──────────────────┐    │
│    │    HP-IB Test     │      │ Color Display Test│   │
│    │ status  UNTESTED  │      │ status   UNTESTED │   │
│    └──────────────────┘      └──────────────────┘    │
│    ┌──────────────────┐      ┌──────────────────┐    │
│    │   RS-232C Test    │      │ Option Board Test │   │
│    │ status  UNTESTED  │      │ status            │   │
│    └──────────────────┘      └──────────────────┘    │
│    ┌──────────────────┐      ┌──────────────────┐    │
│    │    HIL Test       │      │ All System Tests  │   │
│    │ status  UNTESTED  │      │ status   UNTESTED │   │
│    └──────────────────┘      └──────────────────┘    │
│                                                       │
└─────────────────────────────────────────────────────┘
```

6 Select Option Board Test, then select Run.

```
┌─────────────────────────────────────────────────────┐
│  ( Mainframe Test )                      ( Print )    │
│                                                       │
│   ┌───────────────────────────────────────────────┐  │
│  ││                                    ┌────────┐  ││ │
│  │ │                                    │  Run   │  │ │
│  │ │             status    runs   failures └─────┘ │ │
│  │ │ Expander Test            0                    │ │
│  │ │ Lan Test                                      │ │
│  │ │   ...Memory             0         0           │ │
│  │ │   ...Interface                                │ │
│  │ │     ...MAC              0         0           │ │
│  │ │     ...ENDEC            0         0           │ │
│  │ │     ...TRANS            0         0           │ │
│  │ │                                               │ │
│  │ │ NOTE: The 'Expander Test' routes known signals to the │ │
│  │ │       expansion board. These can be captured by another │ │
│  │ │       logic analyzer. See the service manual for details. │ │
│  │ │       The 'Lan Test' verifies the functionality of the │ │
│  │ │       lan interface. Reference the Lan Manual │ │
│  │ │       for more details about 'status'.  ┌────────┐ │ │
│  │ │                                          │  Done  │ │ │
│  │ └──────────────────────────────────────── └────────┘ │
│   └───────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────┘
```
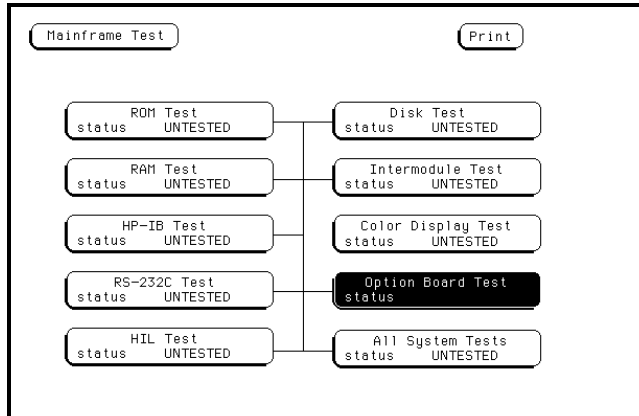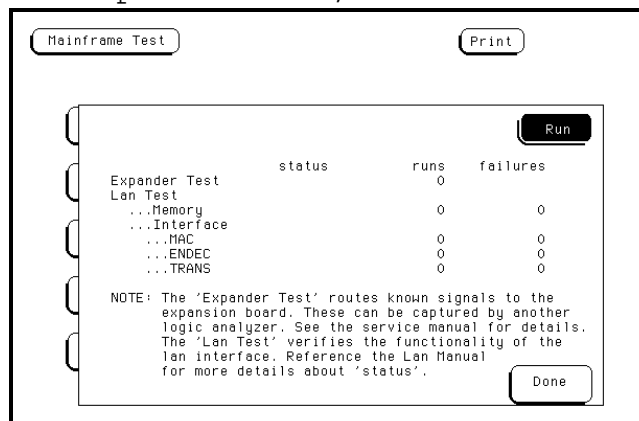
If an HP 16501A expansion frame is not connected, then expect a "No Expander Card Present" message to appear when you run the Option Board Test. Refer to the HP 16500B Service Guide for more information about the expansion frame.

7 Verify that the tests pass.

If all of the tests pass, then go to the next step.

If any of the tests fail, then LAN hardware or the HP 16500L interface module hardware is suspect.

The status number in the Option Module Test menu indicates whether the LAN hardware or the HP 16500L interface module hardware caused the failures.

- To troubleshoot the failure using the status number, note the number, then compare it with the status number descriptions and perform the recommended action. Refer to "Status Number" on the next few pages for status number descriptions and recommended actions.

- To verify the LAN hardware, perform the following checks:

  Check that the LAN cable is properly seated at both ends, at the MAU and at the client/server/router end.

  Check that the LAN cable is good and that all signal lines in the cable have electrical integrity.

  Check that the MAU is properly seated in the HP 16500L LAN Interface Module AUI.

- To replace a defective HP 16500L circuit board, refer to chapter 5, "Removing and Replacing the HP 16500L."

8 Exit the Test System.

  a Touch the Module field, then touch Test System.

  b Touch the Menu field, then touch Exit Test.

  c Touch the field near the center of the screen to exit the test system and to load the operating system.

Status Number

When you run the Option Board Test, the test menu reports a status number. The following figure shows the bit positions of the hexidecimal status reporting word.

A "1" in a bit position signifies that the bit is set and the test failed.

A "0" in a bit position signifies that the bit is not set and the test passed.
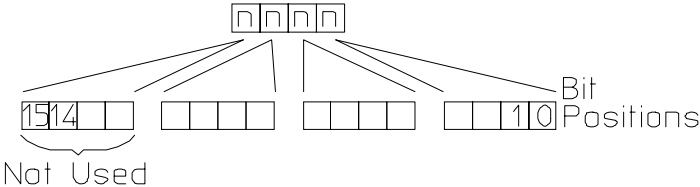
16500m05

Status Reporting Message

The following table describes each bit in the status number.

Status Bits

Bit 0	The internal registers of the LAN IC are loaded with known test values and then are read. If this bit is not set, it implies that the LAN IC is operating properly and that the microprocessor can communicate with the LAN IC. If this bit is set, then the LAN module is not operational and must be replaced.
Bit 1	The CAM (Content Addressable Memory) bit reports whether the LAN address can be written from the LAN module Static RAM (SRAM) to the internal memory of the LAN IC. Also, the CAM bit reports whether the LAN address can be written to SRAM from the LAN IC. If this bit is not set, it implies that both the SRAM and the LAN IC internal memory are able to recognize and store the LAN address. If this bit is set, then the LAN module is not operational and must be replaced.
Bit 2	If this bit is not set, then the self-test has detected that the LAN cable and MAU are properly connected to the HP 16500L LAN module. If this bit is set, then the physical connection of the MAU and the LAN cable must be checked.
Bit 3	If the Termination bit is set, then the self-test has detected an excessive number of collisions. The most probable cause of excessive collisions is an improperly terminated LAN cable. Provide a proper termination of the LAN cable according to the LAN topology being used.
Bit 4	The MAC (Media Access Control) bit indicates whether the Media Access Control unit on the LAN IC is functioning. If this bit is not set, it implies that both the transmit functions and receive functions of the LAN IC are operating properly. If this bit is set, then the LAN module is not able to properly transmit and receive packets and must be replaced.
Bit 5	The ENDEC (Encoder/Decoder) bit indicates whether the encoder/decoder internal to the LAN IC is functioning. The encoder/decoder is the interface between the MAC and the Ethernet transceiver. If this bit is set, then the ENDEC is not operating properly and the LAN module must be replaced.

Status Bits (continued)

Bit 6 | The TRANS (Transceiver, such as Ethernet transceiver) bit indicates whether the circuitry between the LAN IC and the LAN cable is functioning. If this bit is not set, then the path between the LAN cable and the LAN IC is operating properly. If this bit is set, then either the LAN module or the MAU must be replaced.

Bit 7 | If the Timeout bit is set, then bits 4, 5, or 6 will also be set. Refer to the appropriate bit for a suggested course of action.

Bit 8 | The Tx bit indicates whether the transmission portion of the MAC, ENDEC, or TRANS test failed. Therefore, the Tx bit is used in conjunction with bits 4, 5, and 6. Refer to the appropriate bit for the suggested course of action.

Bit 9 | The Rx bit indicates whether the receive portion of the MAC, ENDEC, or TRANS test failed. The Rx bit is used in conjunction with bits 4, 5, and 6. Refer to the appropriate bit for the suggested course of action.

Bit 10 | The Parameters bit indicates the integrity of the LAN module self-test parameters. If this bit is not set, then the parameters sent to the self-test routine are correct. If this bit is set, then contact your nearest HP Sales and Service Office.

Bit 11 | The E2PROM that is used to hold the Ethernet address, IP address, and gateway address has been corrupted. If this bit is set, the LAN module must be replaced.

Bits 12–15 | Not Used

Network Status Information

The Ethernet Statistics menu supports network troubleshooting through the front-panel.

- To access the statistics menu, select Ethernet in the Communications box at power-up. In the Communications Configuration menu, select Ethernet below Configuration, then select Ethernet Statistics.
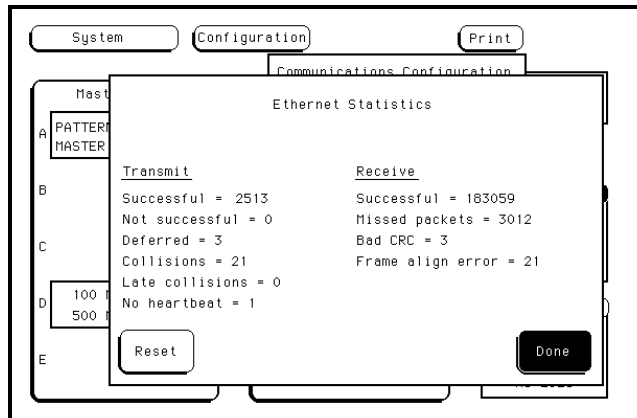
Ethernet Statistics Menu

Information on the Ethernet Statistics menu

Transmit

Successful	Number of successfully transmitted packets
Not successful	Number of packets not transmitted due to errors. The transmit not successful field is tied primarily to transmit deferrals and possible hardware problems. If a packet is deferred (not because of a collision), then the packet is given a delay and retransmission is attempted. After 15 deferrals, the not successful field is incremented.
Deferred	Number of packets deferred due to network traffic. After 15 deferrals, the not successful field is incremented.
Collisions	Number of packets that had to be retransmitted due to network traffic
Late collisions	Number of illegal collisions that have occurred after 51.2 μs from either the first bit of preamble or from SFD (Start of Frame Delimiter)
No heartbeat	Number of packets where the transceiver fails to provide a collision pulse

Receive

Successful	Number of successfully received packets
Missed packets	Number of packets that were dropped for lack of resources in the HP 16500B
Bad CRC	Number of corrupt packets
Frame align error	Number of packets with frame alignment error

Dynamic Files

Dynamic files are files that the size is not known until you actually try to retrieve them. Because file sizes vary, the HP 16500B creates a dynamic file when you request a file copy.

If you do a "file stat" to get the file statistics before file transfer, a file with valid data will have a size of 1, and a file without valid data will have the size of 0. If you do a "file stat" during or after file transfer, you will see the regular file size.

Known incompatibilities

Solaris and Sun operating systems 4.1.1 through 4.1.3 have a file copy command that does not work with dynamic files. Therefore, with those operating systems you need to use the command dd instead of cp, cat, or I/O redirect to copy dynamic files.

5

Replacing the HP 16500L

Replacing the HP 16500L

This chapter lists replacement information for the HP 16500L interface module installed in the HP 16500B System.

Remove and replace the HP 16500L

1 Disconnect the HP 16500B Logic Analysis System from the network.

Mounting and Unmounting

You must unmount the HP 16500B before power is removed from it. Then, you can mount the HP 16500B 15 seconds after the System Configuration menu is displayed when powering up the instrument. You can write a network script that executes an unmount and mount procedure.

---

2 Remove power from the HP 16500B mainframe, then remove the two rear feet on the top and the top cover of the mainframe.

Turn off the power switch located on the front-panel of the mainframe and the standby switch located on the rear panel. Then, unplug the power cord from the mainframe.

Refer to the HP 16500B Service Guide if you need instructions for removing and replacing parts of the HP 16500B.

3 On the HP 16500L interface module, disconnect the two cables from the CPU board and the cable from the CRT module.

4 Remove the screws connecting the interface module to the mainframe.

Two screws through the top of the interface module connect it to the sheet metal plate, and four screws connect the rear plate of the interface module to the rear panel of the mainframe.

Keeping the Serial Number

The module serial number is located on the module rear panel. To keep the same serial number with your system, remove the rear panel from the old interface module and install it on the replacement interface module. The module rear panel is connected to the module circuit board with four screws.

16500E66

5 Install the new interface module by reversing this procedure.

6 Test the performance of the HP 16500L.

Refer to "Check the performance verification" in chapter 2 for the performance verification test procedure.

7 Reconnect the HP 16500L interface module to your network.

Check with your system administrator for reconnecting instructions.

The Ether Address of the replacement module will be different than the other module. At powerup, the HP 16500B operating system reads the address of the interface module, then records the address in memory.

If your network configuration did not change, the addresses and information in the configuration menus will remain the same.

Return parts

Before shipping the module to Hewlett-Packard, contact your nearest Hewlett-Packard sales office for additional details.

1 Write the following information on a tag and attach it to the part to be returned.

- Name and address of owner
- Model number
- Serial number
- Description of service required or failure indications

2 Remove accessories from the module.

Only return accessories to Hewlett-Packard if they are associated with the failure symptoms.

3 Package the module or assemblies.

You can use either the original shipping containers, or order materials from an HP sales office.

CAUTION Package the logic analyzer in electrostatic material. Failure to do so could cause electrostatic discharge, damaging the instrument.

4 Seal the shipping container securely, and mark it FRAGILE.

Replaceable Parts Ordering

Parts listed

To order a part on the list of replaceable parts, quote the Hewlett-Packard part number, indicate the quantity desired, and address the order to the nearest Hewlett-Packard Sales Office.

Parts not listed

To order a part not on the list of replaceable parts, include the model number and serial number of the module, a description of the part (including its function), and the number of parts required. Address the order to your nearest Hewlett-Packard Sales Office.

Direct mail order system

To order using the direct mail order system, contact your nearest Hewlett-Packard Sales Office.

Within the USA, Hewlett-Packard can supply parts through a direct mail order system. The advantages to the system are direct ordering and shipment from the HP Part Center in Mountain View, California. There is no maximum or minimum on any mail order. (There is a minimum amount for parts ordered through a local Hewlett-Packard Sales Office when the orders require billing and invoicing.) Transportation costs are prepaid (there is a small handling charge for each order) and there are no invoices.

In order for Hewlett-Packard to provide these advantages, a check or money order must accompany each order. Mail order forms and specific ordering information are available through your local Hewlett-Packard Sales Office. Addresses and telephone numbers are located in a separate document at the back of the HP 16500B Service Guide.

Exchange Assemblies

Some assemblies are part of an exchange program with Hewlett-Packard. The exchange program allows you to exchange a faulty assembly with one that has been repaired and performance verified by Hewlett-Packard.

After you receive the exchange assembly, return the defective assembly to Hewlett-Packard. A United States customer has 30 days to return the defective assembly. If you do not return the defective assembly within the 30 days, Hewlett-Packard will charge you an additional amount. This amount is the difference in price between a new assembly and that of the exchange assembly. For orders not originating in the United States, contact your nearest Hewlett-Packard Sales Office for information.

Replaceable Parts List

The following table lists the replaceable parts.

Parts List

Designator	HP Part Number	QTY	Description
	16500-69511		Exchange assembly
A1	16500-66511	1	Board assembly
H1	0151-0374	6	Screws MSPH M3.0 x 10mm T10
H2	1251-5436	2	Screwlocks (video port)
H3	0515-0366	2	Screws MSPH M2.5 x 6mm T8 (expander frame port)
M1	16500-00205	1	Rear panel
W1	16500-61608	1	Cable (10-pin to CPU)
W2	16500-61610	1	Cable (40-pin to CRT)
W3	16500-61614	1	Cable (80-pin to CPU)

6
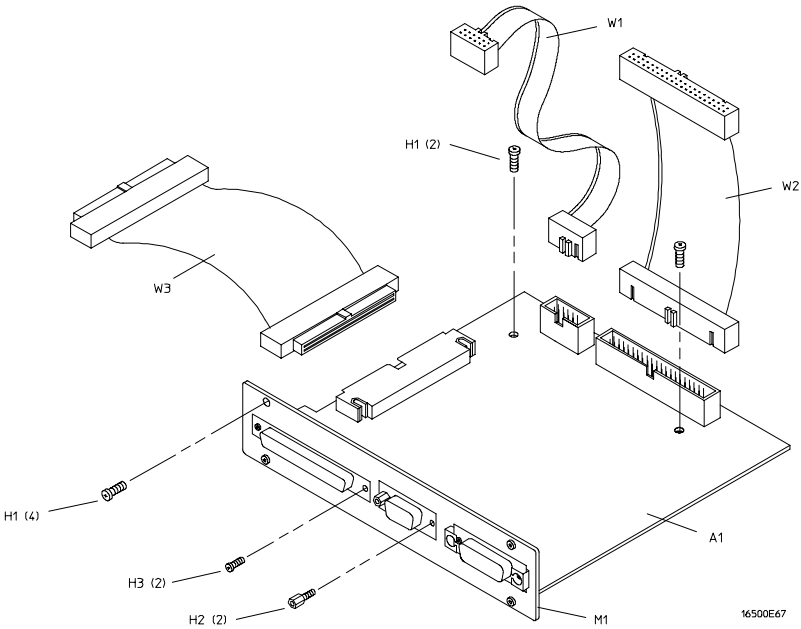
Support Services

Support Services

This chapter provides you with information about support services.

HP On-Site Service

With HP on-site service, HP pays for parts, labor, and travel to have an HP service representative visit your site for repairing equipment under warranty.

The default service support for the HP 16500L is on-site service. Support contracts are also available for either 4 hour response or next day response. The support contracts are available for economical support beyond the 90-day warranty period. Contact your nearest Hewlett-Packard Sales Office for information regarding support contracts.

Although the HP 16500B mainframe, HP 16501A expansion frame, and HP 16500-series measurement modules default to return to HP service, on-site support contracts and options are available as well. For more information, contact your nearest Hewlett-Packard Sales Office.

Return to HP Service

With return to HP service, you return the equipment to your nearest Hewlett-Packard service center for repair. During the warranty period, HP pays for parts and labor needed for repair. After the warranty period, you are billed for the parts and labor.

The default service support for the HP 16500B mainframe, HP 16501A expansion frame, and HP 16500-series measurement modules default to return to HP service.

Although the HP 16500L defaults to HP on-site service, return to HP service is available for the HP 16500L as well. For more information, contact your nearest Hewlett-Packard Sales Office.

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DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: 1900 Garden of the Gods Road
                                  Colorado Springs, CO 80901
                                  USA.

Declares, That the product

   Product Name: Logic Analysis System

   Model Number(s):   HP 16500B/16501A/16500L

   Product Options: All
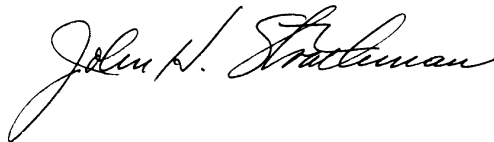
Conforms to the following Product Specifications:

   Safety: IEC 348/HD 401
              UL 1244
              CSA-C22.2 No.231 Series M-89

   EMC: CISPR 11:1990/EN 55011 (1991):Group 1 Class A
            IEC 801-2:1991/EN 50082-1 (1992):4 kV CD, 8 kV AD
            IEC 801-3:1984/EN 50082-1 (1992):3 V/m
            IEC 801-4:1988/EN 50082-1 (1992):1 kV

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage
Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Colorado Springs, May 1, 1993

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH,
Department ZQ/Standards Europe, Herrenberger Straße 130, D-7030 Böblingen (FAX:+49-7031-143143)

Document Warranty

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose.

Hewlett-Packard shall not be liable for errors contained herein or for damages in connection with the furnishing, performance, or use of this material.

Safety

This apparatus has been designed and tested in accordance with IEC Publication 348, 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."

Warning

● 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 fuseholders. To do so could cause a shock of fire hazard.

● 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.

● If you energize this instrument by an auto transformer (for voltage reduction), make sure the common terminal is 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.

● 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 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.

● Use caution when exposing or handling the CRT. Handling or replacing the CRT shall be done only by qualified maintenance personnel.

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.

WARNING

The Warning sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a Warning sign until the indicated conditions are fully understood and met.

CAUTION

The Caution sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product. Do not proceed beyond a Caution symbol until the indicated conditions are fully understood or met.

Product Warranty

This Hewlett-Packard product has a warranty against defects in material and workmanship for a period of 90 days from date of shipment. During the warranty period, Hewlett-Packard Company will, at its option, either repair or replace products that prove to be defective.

Warranty service or repair for this product is performed at the Buyer's facility at no charge within the Hewlett-Packard service travel area. Outside the travel area, warranty service will be performed at the Buyer's facility only upon Hewlett-Packard's prior agreement, and the Buyer shall pay Hewlett-Packard's round trip travel expenses.

For warranty service or repair, certain other products designated by Hewlett-Packard must be returned to a service facility designated by Hewlett-Packard.

For products returned to Hewlett-Packard for warranty service, the Buyer shall prepay shipping charges to Hewlett-Packard and Hewlett-Packard shall pay shipping charges to return the product to the Buyer. However, the Buyer shall pay all shipping charges, duties, and taxes for products returned to Hewlett-Packard from another country.

Hewlett-Packard warrants that its software and firmware designated by Hewlett-Packard for use with an instrument will execute its programming instructions when properly installed on that instrument. Hewlett-Packard does not warrant that the operation of the instrument software, or firmware will be uninterrupted or error free.

Limitation of Warranty

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

No other warranty is expressed or implied. Hewlett-Packard specifically disclaims the implied warranties of merchantability or fitness for a particular purpose.

Exclusive Remedies

The remedies provided herein are the buyer's sole and exclusive remedies. Hewlett-Packard shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

Assistance

Product maintenance agreements and other customer assistance agreements are available for Hewlett-Packard products.

For any assistance, contact your nearest Hewlett-Packard Sales Office.

Certification

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

About this edition

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New editions are complete revisions of the manual. Update packages, which are issued between editions, contain additional and replacement pages to be merged into the manual by you. The dates on the title page change only when a new edition is published.

A software or firmware code may be printed before the date. This code indicates the version level of the software or firmware of this product at the time the manual or update was issued. Many product updates do not require manual changes; and, conversely, manual corrections may be done without accompanying product changes. Therefore, do not expect a one-to-one correspondence between product updates and manual updates.

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All pages original edition