Installation/Service Guide

HP 64700B
Card Cage

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Printing History

New editions are complete revisions of the manual. The date on the title page changes only when a new edition is published.

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

Edition 1 64700-97008, January 1994
Edition 2 64700-97009, April 1994

Safety, Electromagnetic Interference, and Certification and Warranty

Safety, electromagnetic interference (see the Declaration of Conformity), and certification and warranty information can be found at the end of this manual on the pages before the back cover.

In This Book

This book describes the installation and service procedures for the HP 64700B card cage. It is organized into three parts whose chapters are described below.

Part 1. Installation Guide

Chapter 1 presents an overview of the HP 64700B and its installation.
Chapter 2 shows how to install hardware into the HP 64700B.
Chapter 3 shows how to connect the HP 64700B to a power source.
Chapter 4 shows how to connect the HP 64700B to a Local Area Network (LAN).
Chapter 5 shows how to connect the HP 64700B to a computer or terminal using the RS-232 or RS-422 interface.
Chapter 6 shows how to update HP 64700 Series firmware.
Chapter 7 shows how to connect the HP 64700B to external instruments or other HP 64700Bs for coordinated measurements.

Part 2. Service Guide

Chapter 8 shows how to run performance verification tests and remove the HP 64700B's power supply. It also contains an exchange parts locator and an exchange parts list.
Chapter 9 contains HP 64700B specifications.

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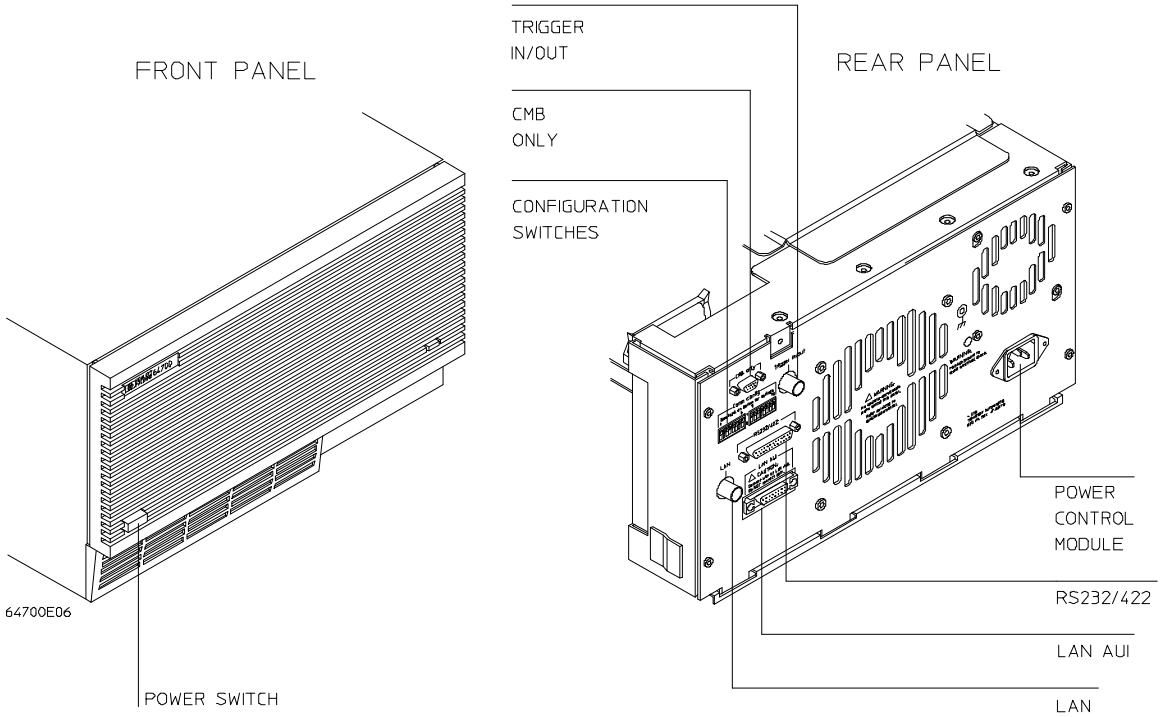
Part 1

Installation Guide

1

Overview

The HP 64700B Card Cage — At a Glance



HP 64700 Series Hardware

The HP 64700B card cage:

- provides five full-size card slots and one half-size card slot for emulators, analyzers, and other HP 64700 Series embedded microprocessor system development tools.
- is re-useable. You can remove and install different emulators and analyzers.

Refer to the "Installing Hardware into the HP 64700B" chapter for information on removing and installing HP 64700 Series development tools.

User Interfaces

The HP 64700B provides a low-level user interface, called the Terminal Interface, which resides in firmware inside the HP 64700B. The Terminal Interface lets you control HP 64700 Series emulators and analyzers from any computer on the LAN with telnet software, from any computer with an RS-232 or RS-422 interface and terminal emulation program, or from an RS-232 data terminal.

The HP 64700B can also be used with high-level user interfaces that provide greater capability and are easier to use than the Terminal Interface. These high-level interfaces are:

- Debugger/Emulators that run on HP 9000 Series 300/400/700 computers and Sun SPARCsystem computers.
- Graphical User Interfaces or Softkey Interfaces that run on HP 9000 Series 300/400/700 computers and Sun SPARCsystem computers.
- PC Interfaces that run on IBM PC AT compatible computers.

Given the type of computer and user interface that will be used with the HP 64700B, the following table lists the communication channels that are supported. This table also shows where the installation information can be found.

Supported HP 64700B Communication Channels					
	User Interface				
Computer/Terminal	**Debugger/ Emulator**	**Graphical or Softkey Interface**	**Real-Time C Debugger Interface**	**PC Interface**	**Terminal Interface**
HP 9000 Series 700	LAN[1,4]	LAN[1,5]			LAN[1] RS-232[2]
HP 9000 Series 300/400	LAN[1,4] RS-422[2,4] RS-232[2,4]	LAN[1,5] RS-422[2,5] RS-232[2,5]			LAN[1] RS-232[2]
Sun SPARCsystem	LAN[1,4]	LAN[1,5]			LAN[1] RS-232[2]
Personal Computer (IBM PC/AT compatible)			LAN[1] RS-422[3] RS-232[2,6]	RS-422[3] RS-232[2,7]	LAN[1] RS-232[2]
Other computer					LAN[1] RS-232[2]
Terminal					RS-232[2]

[1]Refer to the "Connecting the HP 64700B to a LAN" chapter.

[2]Refer to the "Connecting the HP 64700B Using RS-232/RS-422" chapter.

[3]Refer to the *Installation Guide* that comes with the HP 64037 High Speed Interface card.

[4]Refer to the Debugger/Emulator *User's Guide* manual.

[5]Refer to the Graphical User Interface *User's Guide* manual.

[6]Refer to the Real-Time C Debugger *User's Guide* manual.

[7]Refer to the PC Interface *User's Guide* manual.

Firmware Updates

Built-in Flash EPROM provides flash memory for products in the HP 64700 family. Flash memory allows you to download the latest versions of firmware into the HP 64700B.

Coordinated Measurements

When HP 64700Bs are connected to each other using the Coordinated Measurement Bus (CMB), you can start and stop up to 16 emulators at the same time, and you can use the analyzer in one HP 64700B to arm (that is, activate) the analyzers in other HP 64700B card cages or to cause emulator execution in other HP 64700B card cages to break.

You can use the HP 64700B's BNC connector to trigger an external instrument (for example, a logic analyzer or oscilloscope) when the analyzer finds its trigger condition, or you can allow an external instrument to arm the analyzer or break emulator execution.

2

Installing Hardware into the HP 64700B

Installing Hardware into the HP 64700B

This chapter shows you how to remove and install HP 64700 Series products into the HP 64700B card cage. The HP 64700B card slots are allotted as shown in the following table.

HP 64700B Card Cage Card Slots

Slot	Card Installed from Top of Card Cage
7	Future expansion (half slot)
6	System control card.
5	Analysis card (an upside-down slot).
4	Empty.
3	Software Performance Analyzer.
2	Empty or second card of two-card emulator.
1	Emulator card.

This chapter shows you how to:

- Connect a ground strap.
- Remove the top cover.
- Remove the side cover.
- Remove the card supports.
- Remove emulator cards.
- Remove the front bezel.
- Remove the external analyzer right-angle adapter.
- Remove analyzer cards.

- Install emulator and analyzer cards.
- Connect the 5V power cable.
- Install the front bezel.
- Install the card supports.
- Install the side cover.
- Install the top cover.
- Connect the external analyzer probe to the target system.

Generally, you'll perform these tasks in the order listed. You may not perform some of the tasks if your emulator/analyzer products don't provide certain features.

Equipment and tools needed

In order to install emulator/analyzer products into the HP 64700B, you need:

- Flat-blade screwdriver.

Antistatic precautions

Integrated-circuit boards contain electrical components that are easily damaged by small amounts of static electricity. To avoid damage to the emulator cards, follow these guidelines:

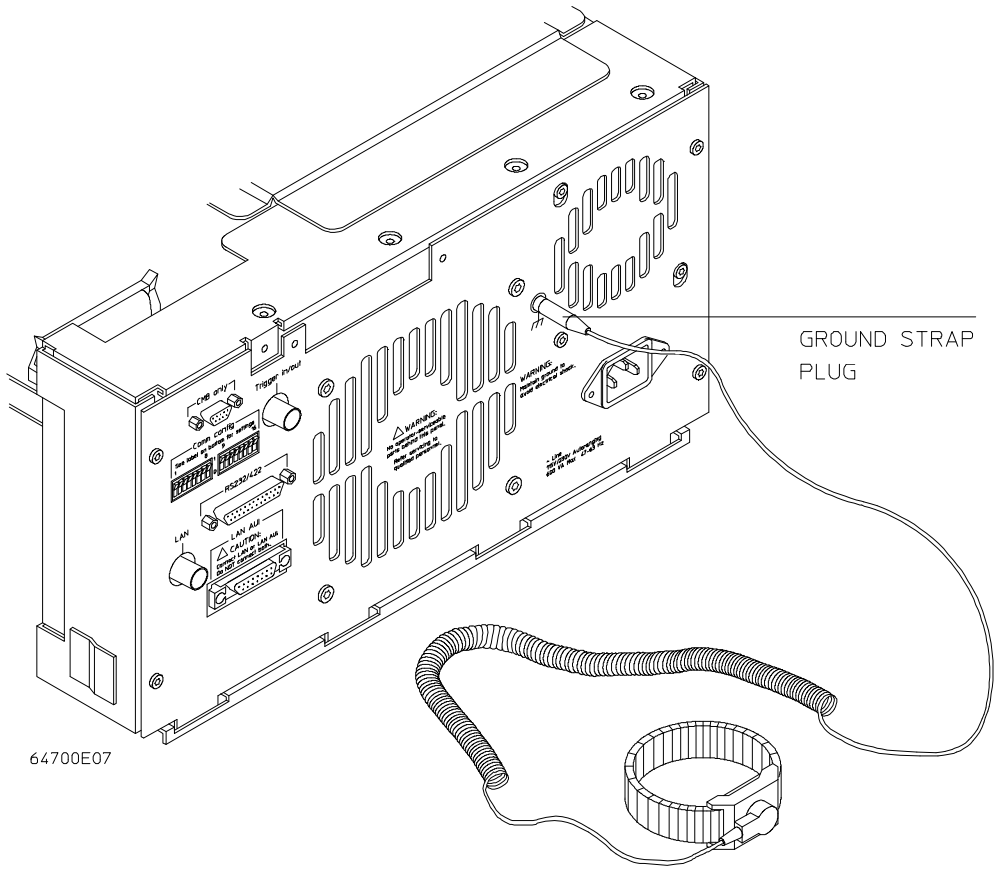
- If possible, work at a static-free workstation.
- Handle the boards only by the edges; do not touch components or traces.
- Use a grounding wrist strap that is connected to the HP 64700B's chassis.

WARNING **Before removing or installing parts in the HP 64700B Card Cage, make sure that the card cage power is off and that the power cord is disconnected.**

CAUTION Do NOT stand the HP 64700B on the rear panel. You could damage the rear panel ports and connectors.

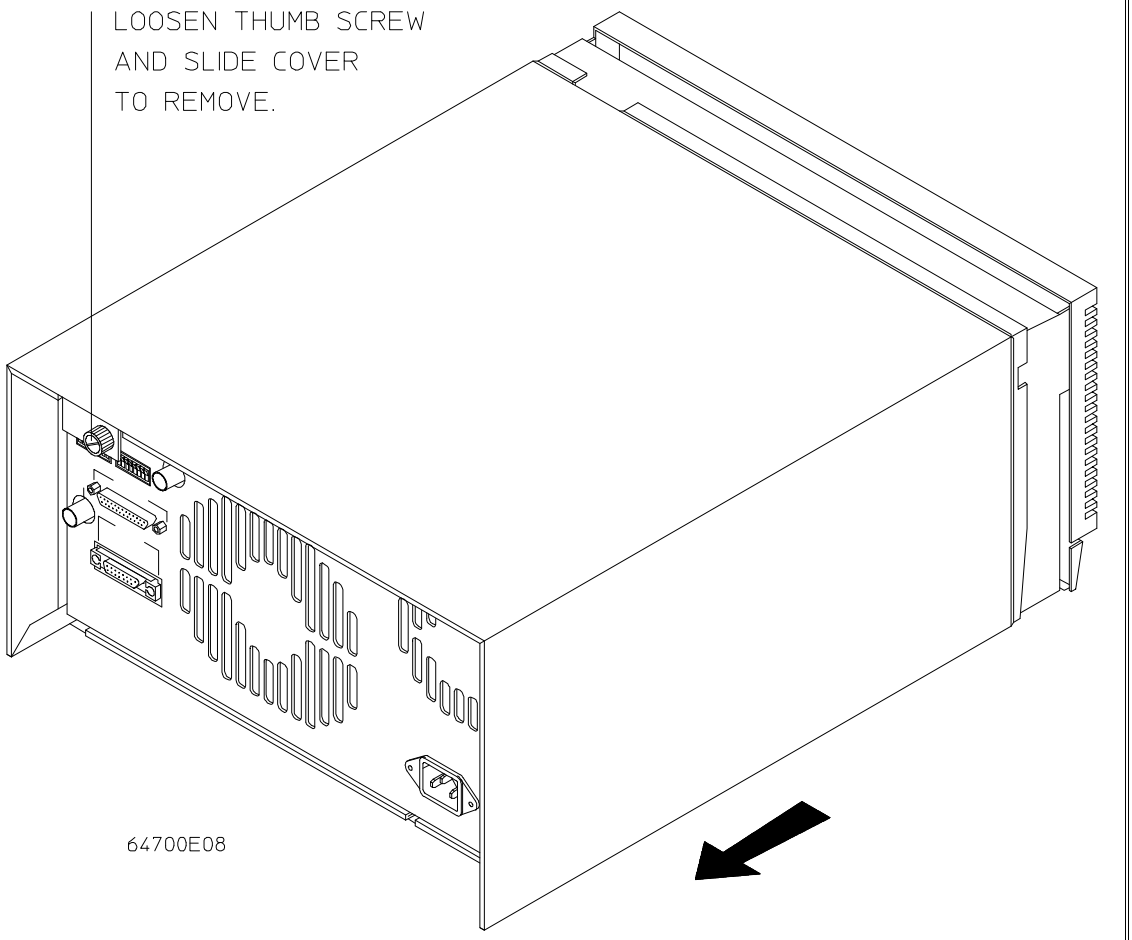
To connect a ground strap

1 Use a ground strap when removing or installing boards into the HP 64700B Card Cage to reduce the chances of damage to the circuit cards from static discharge. A jack on the rear panel of the HP 64700B Card Cage is provided for this purpose.



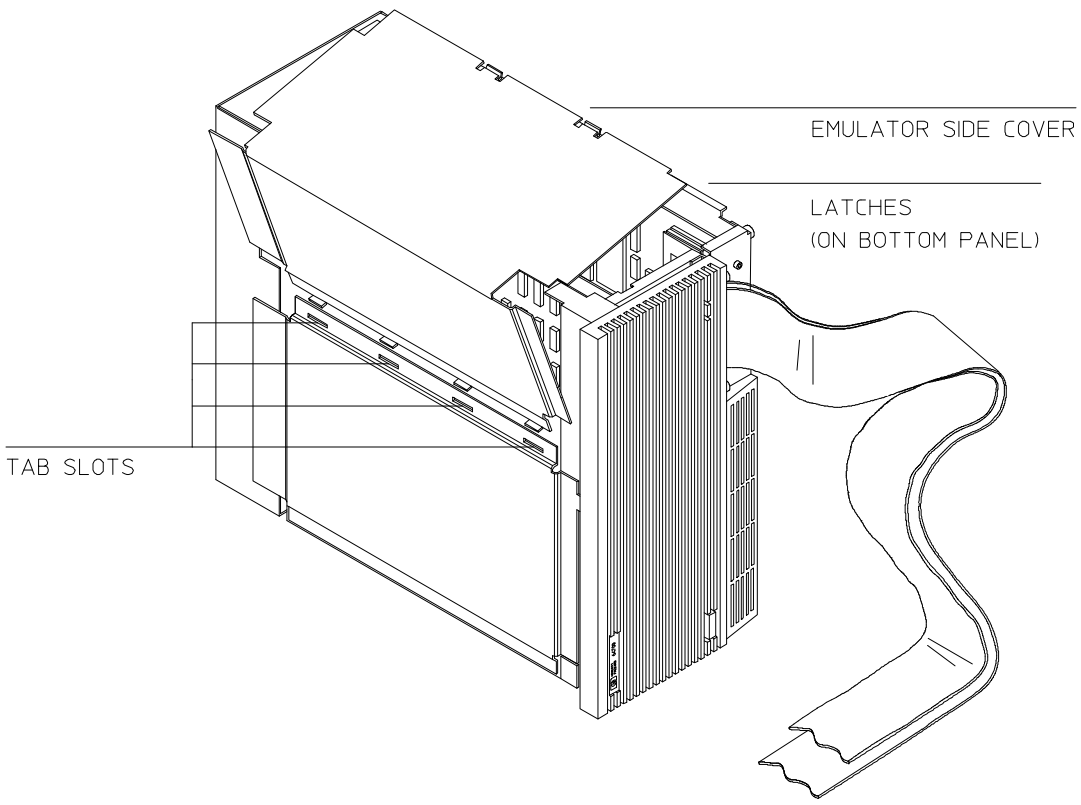
To remove the top cover

1 Turn the thumb screw and remove the top cover by sliding the cover toward the rear and up.



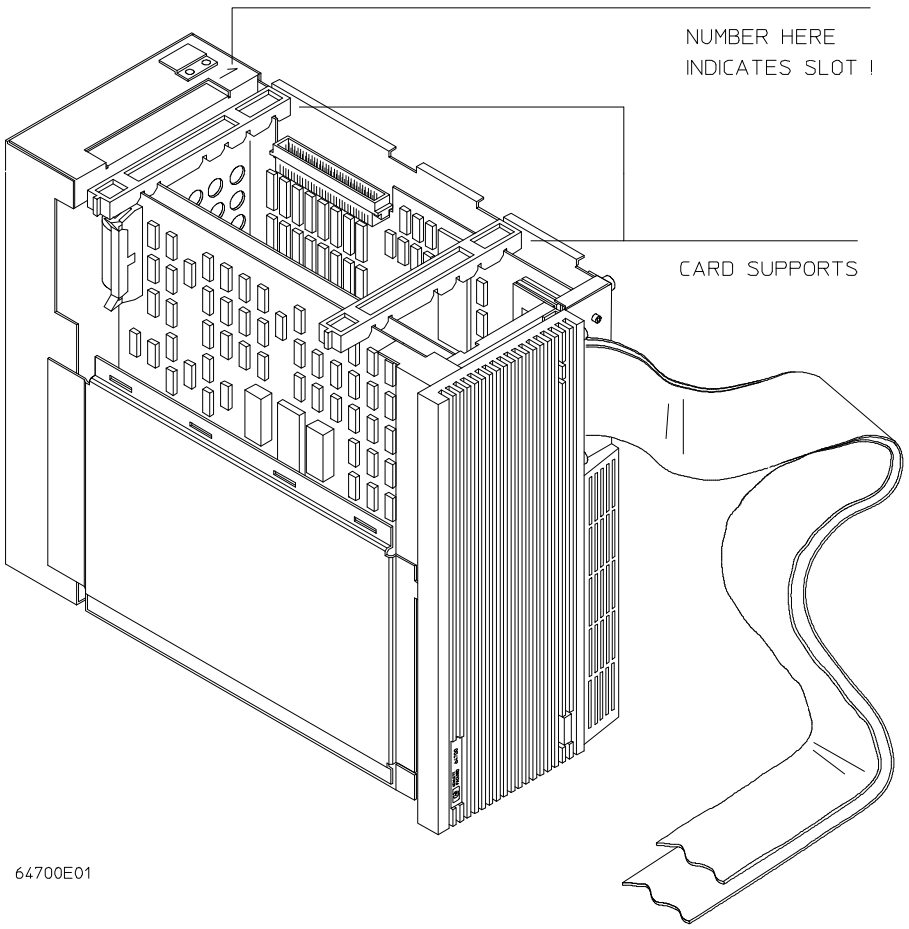
To remove the side cover

1 Remove the side cover by unsnapping the two latches and lifting off.



To remove the card supports

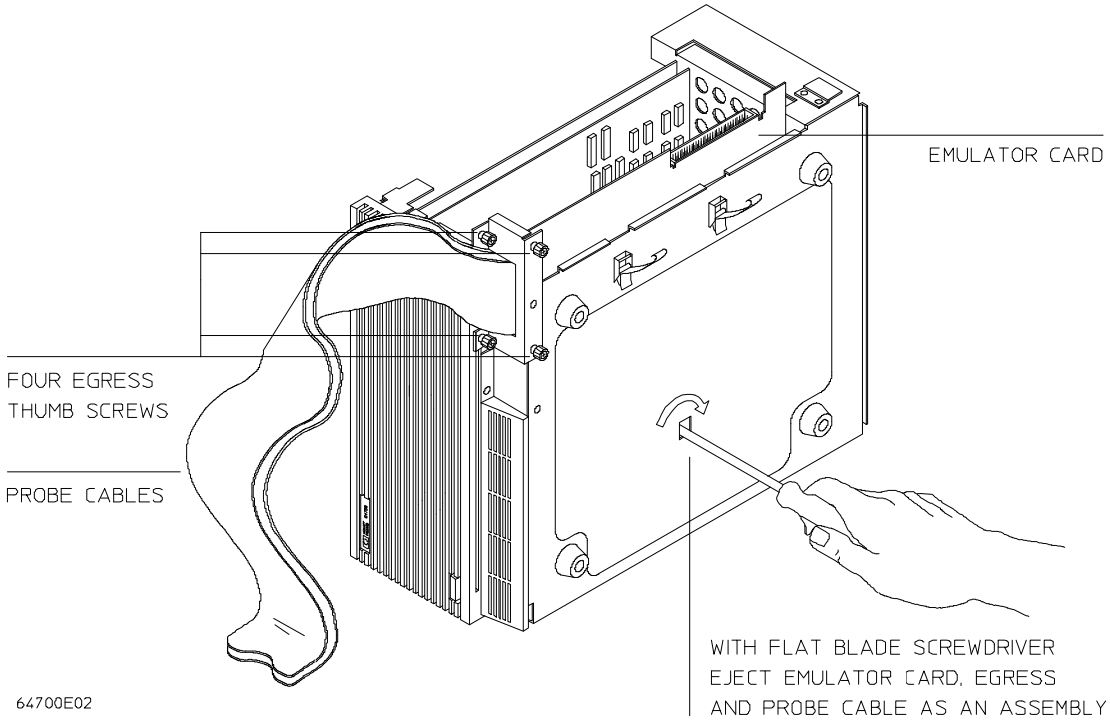
1 Remove the card supports.



To remove emulator cards

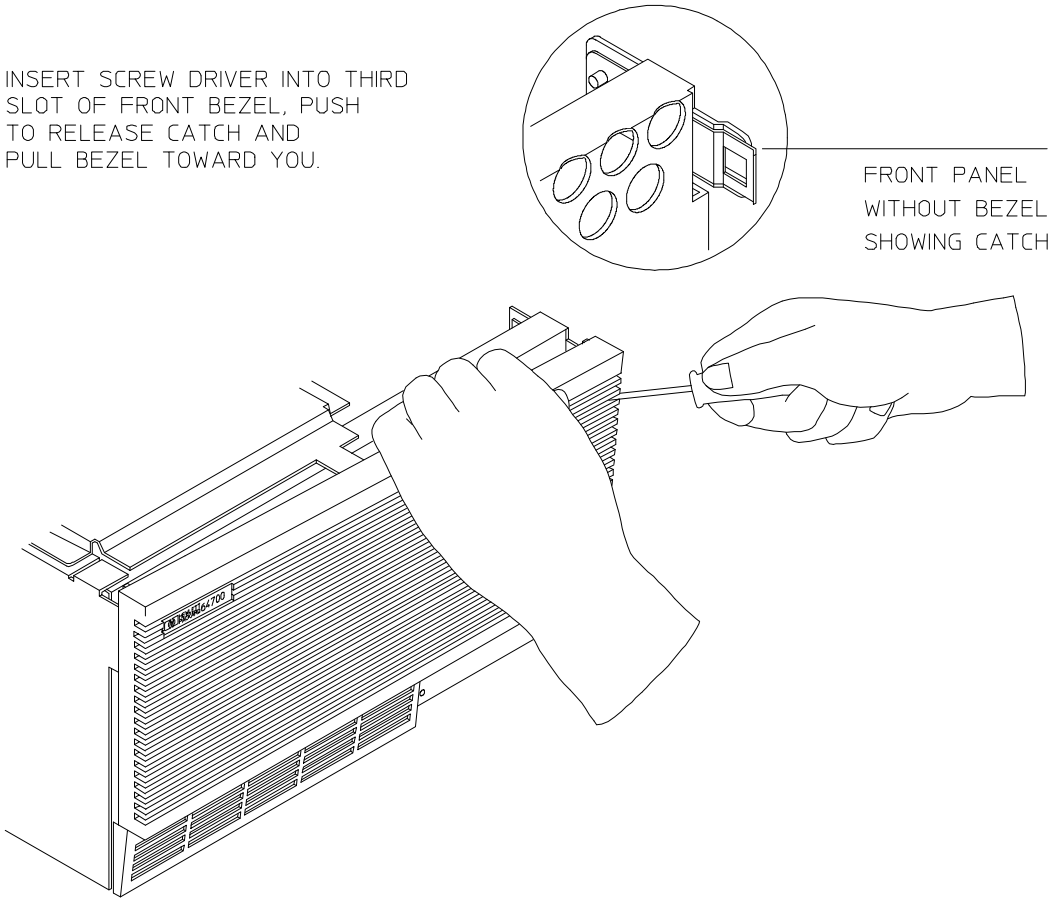
1 First, completely loosen the four egress thumb screws.

To remove emulator cards, insert a flat blade screwdriver in the access hole and eject the emulator cards by rotating the screwdriver.



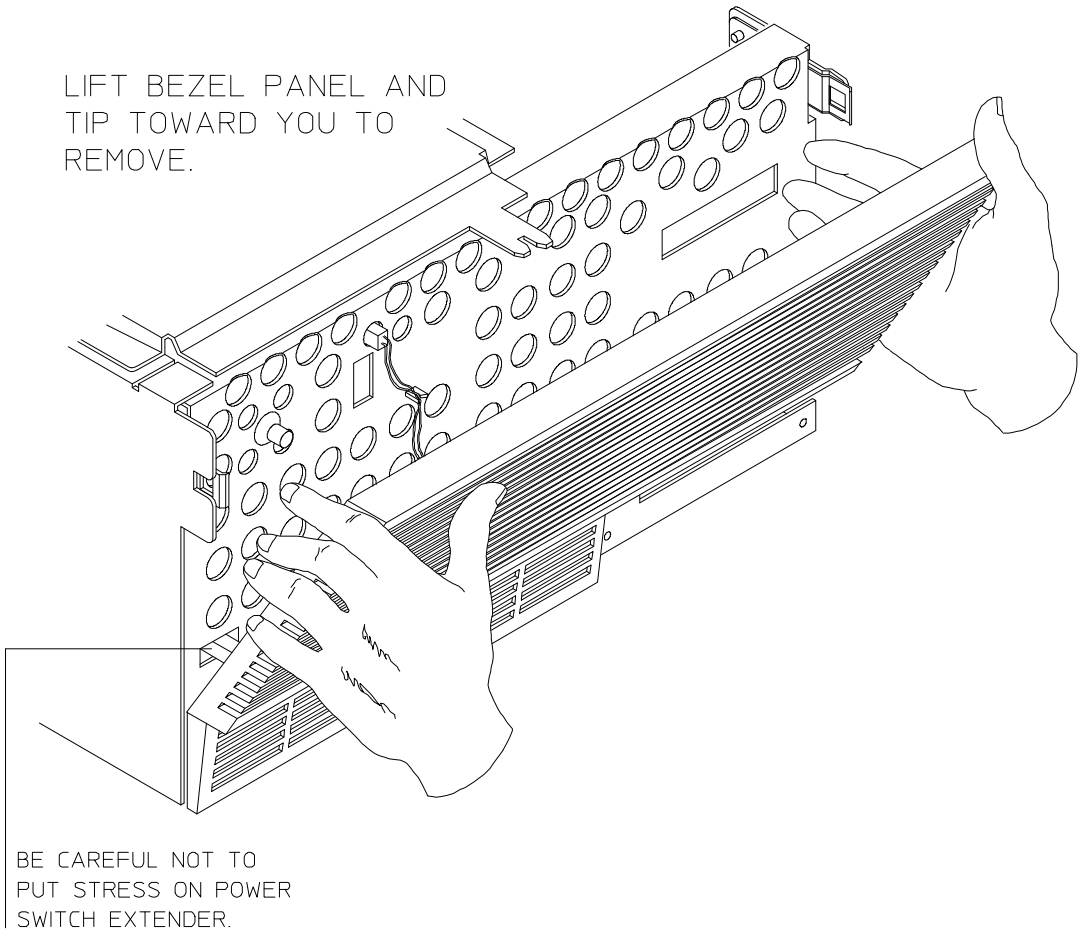
To remove the front bezel

1 Insert a screw driver into the third slot of the right side of the front bezel, push to release catch, and pull the right side of the bezel about one half inch away from the front of the HP 64700B. Then, do the same thing on the left side of the bezel. When both sides are released, pull the bezel toward you approximately 2 inches.



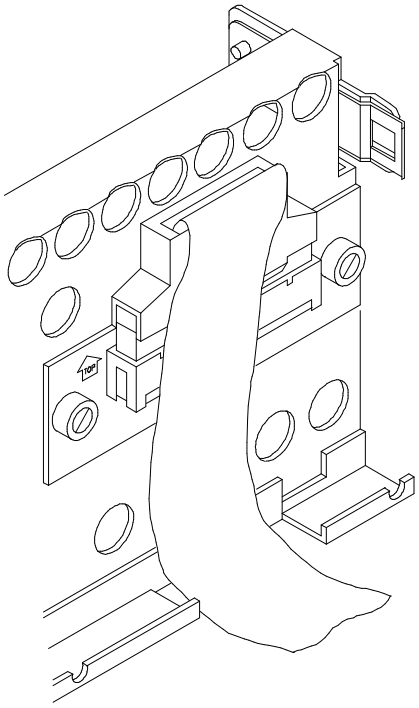
To remove the front bezel

2 Lift the bezel panel to remove. Be careful not to put stress on the power switch extender.



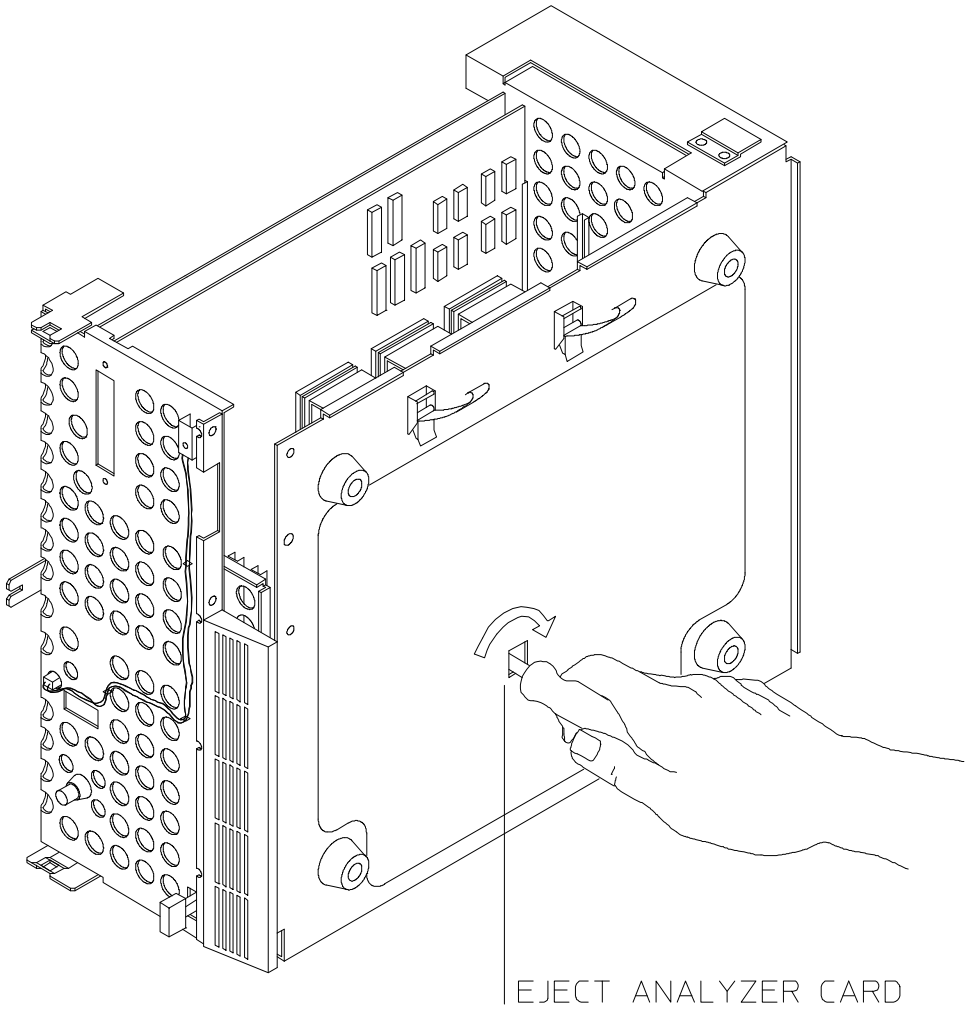
To remove analyzer cards

1 If you're removing an existing analyzer card that provides external analysis, remove the right-angle adapter board by turning the thumb screws counter-clockwise.



To remove analyzer cards

2 To remove the analyzer card, insert a flat blade screwdriver in the access hole and eject the analyzer card by rotating the screwdriver.

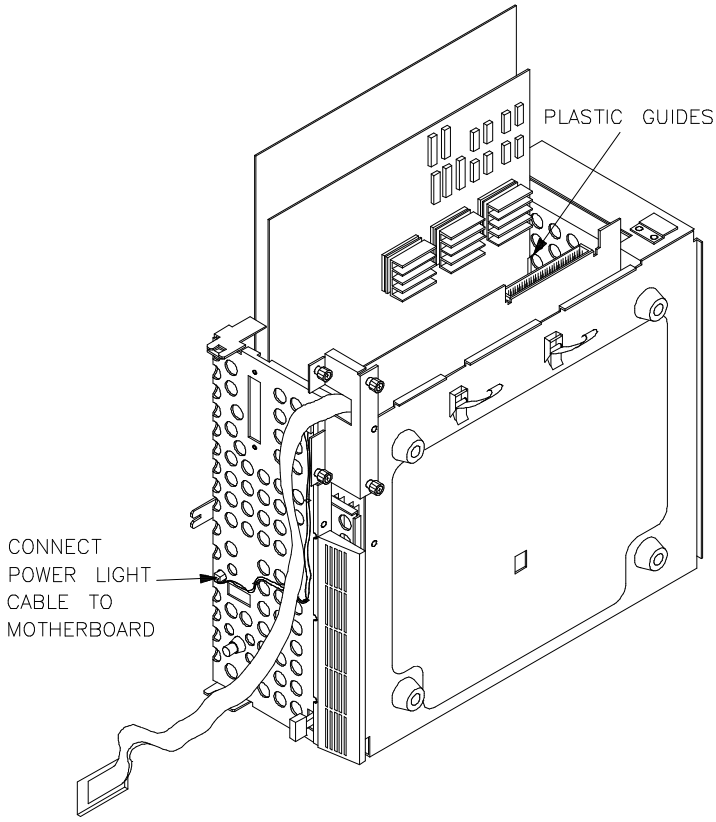


To install emulator and analyzer cards

1 Install emulator cards into slot 1. If the emulator is a two card set, install the card with the egress panel into slot 1 and install the other card into slot 2.

Install analyzer cards into slot 5.

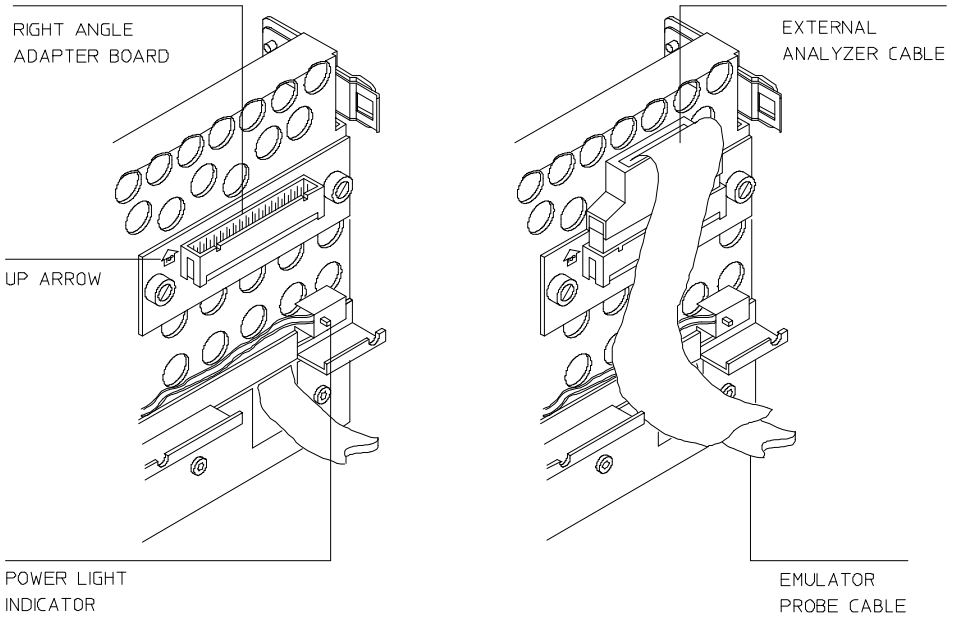
To install a card, insert it into the plastic guides. Make sure the connectors are properly aligned; then, press the card into mother board sockets. Check to ensure that the cards are seated all the way into the sockets. If the cards can be removed with your fingers, the cards are NOT seated all the way into the mother board socket.



To install the external analyzer right-angle adapter

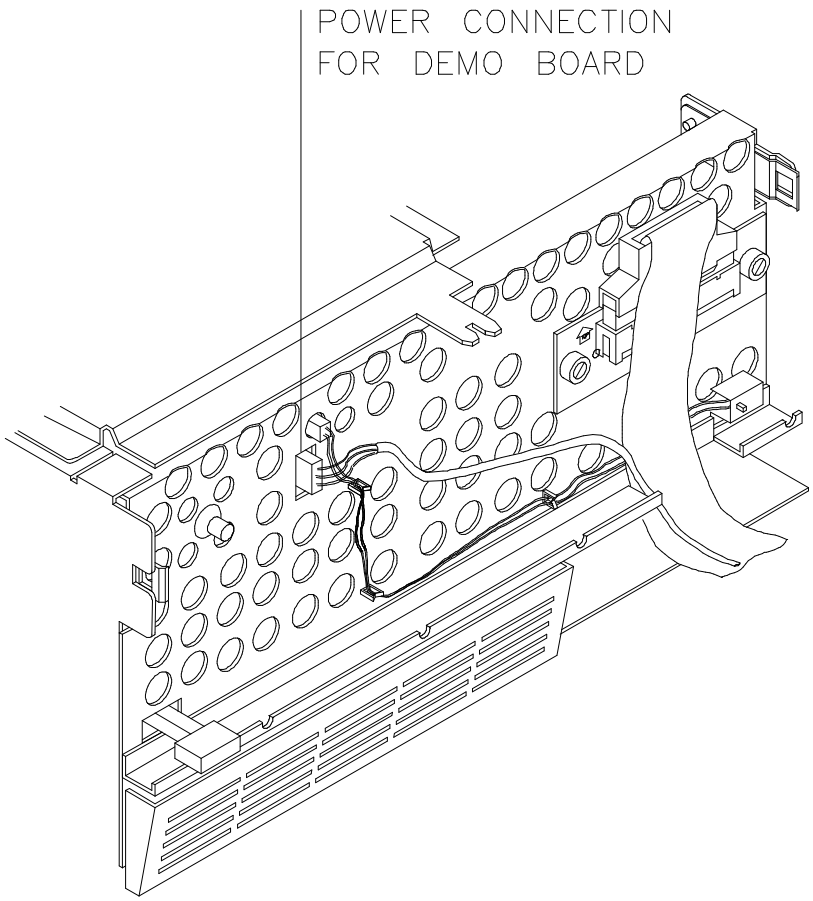
2 If your analyzer card provides external analysis, install the right angle adapter board by turning the thumb screws clockwise.

Connect the external analyzer probe cable to the right angle adapter board. Each connector of the external analyzer cable is keyed so that it can be connected to the right angle adapter board in only one way. Check for bent connector pins before connecting the analyzer probe cable. Align the key of the external analyzer cable connector with the slot in the right angle adapter board, and gently press the external analyzer cable connector into the connector on the right angle adapter board. Position the cable as shown below.



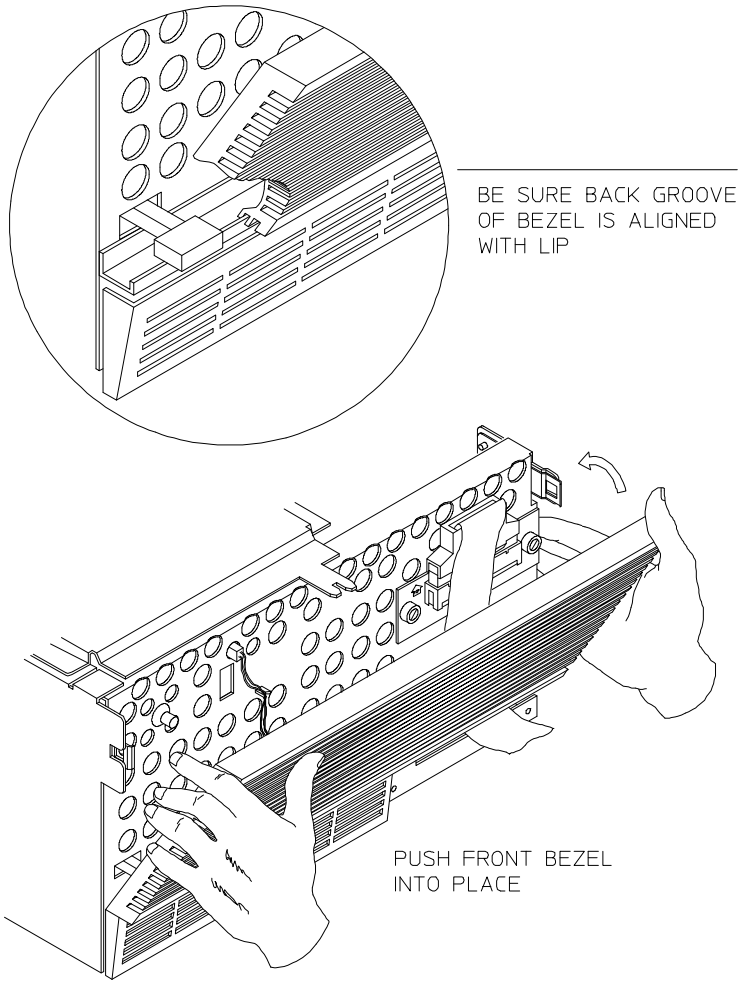
To connect the 5V power cable

1 A 5V power cable is used with some emulators to provide power for demo target systems. Connect the +5 V power cable to the connector in the HP 64700B front panel.



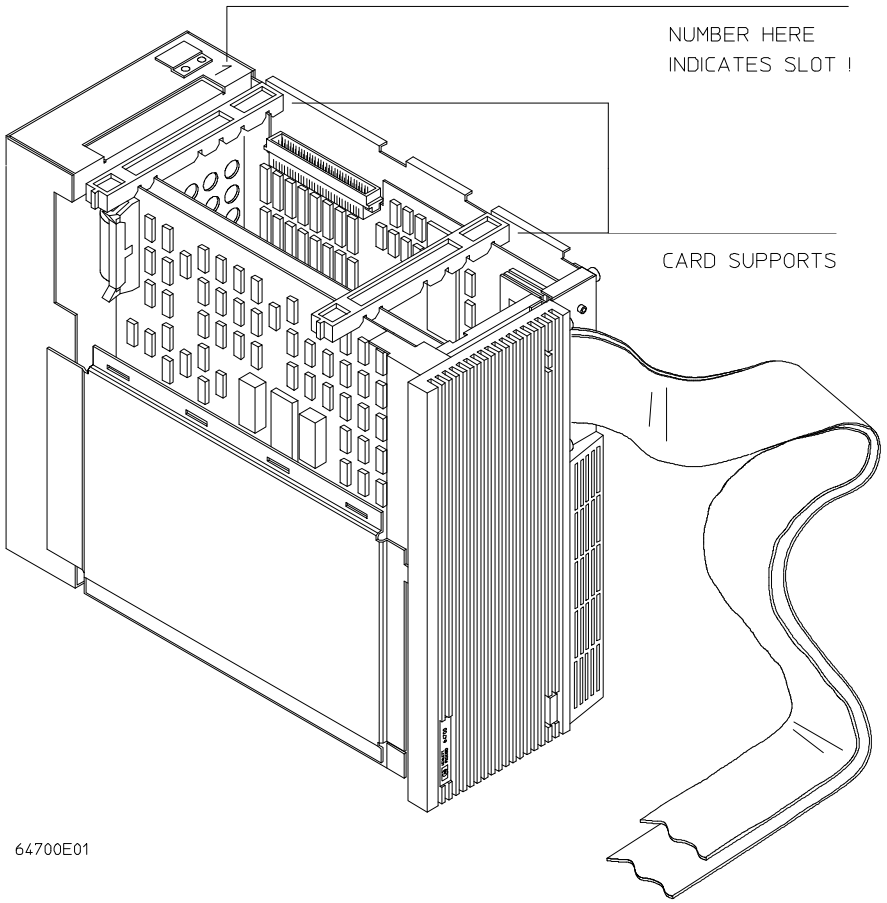
To install the front bezel

1 To reinstall the front bezel, be sure that the bottom rear groove of the front bezel is aligned with the lip as shown below.



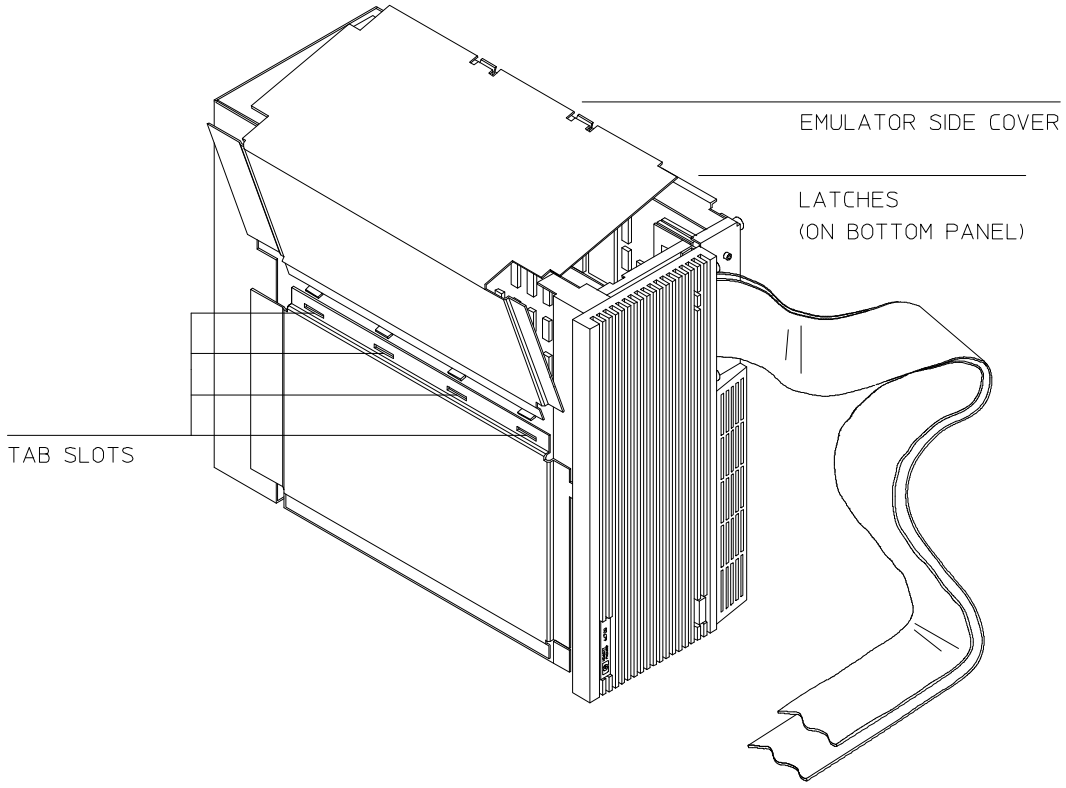
To install the card supports

1 Install the card supports.



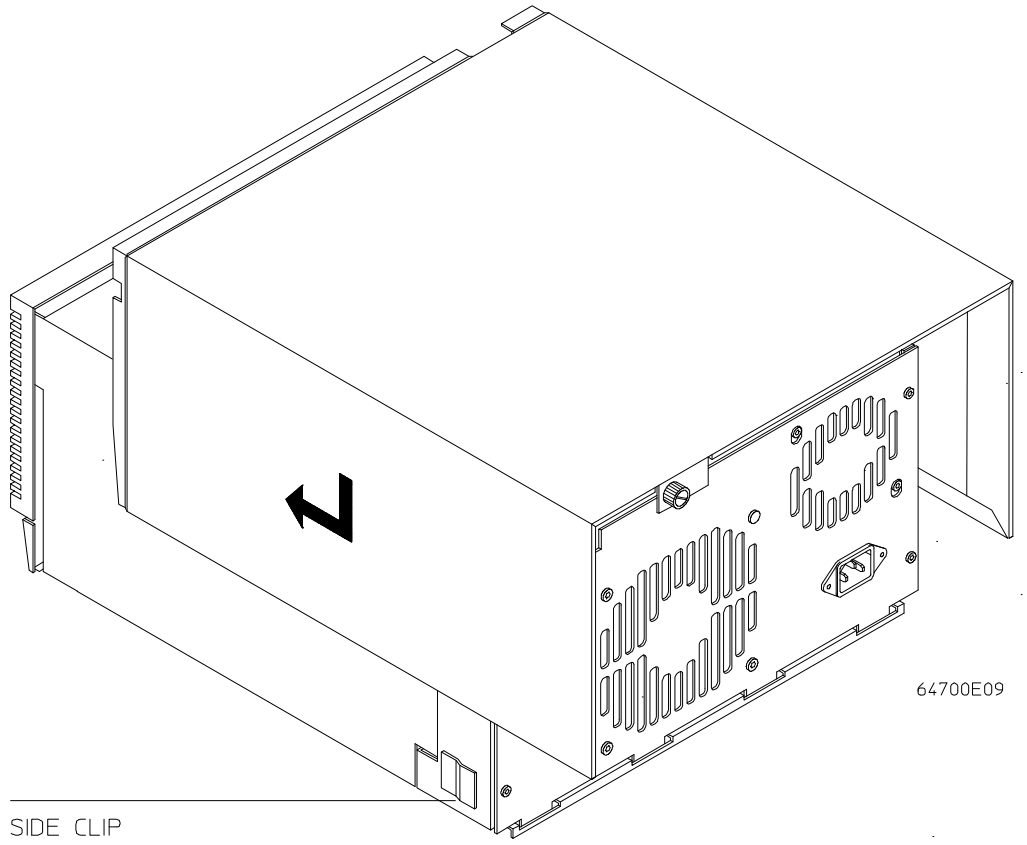
To install the side cover

1 To install the side cover, insert the side cover into the tab slots and fasten the two latches.



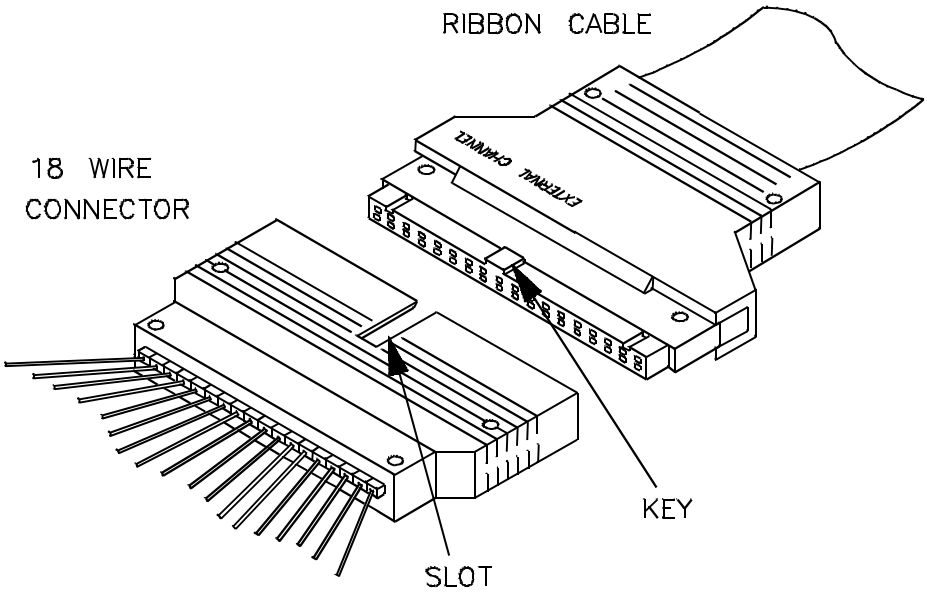
To install the top cover

1 Install the top cover in reverse order of its removal, but make sure that the side panels of the top cover are attached to the side clips on the frame.

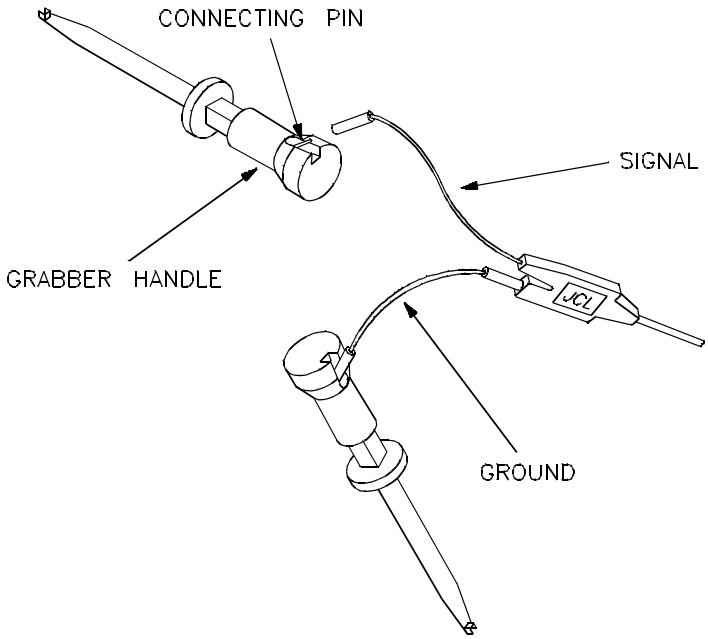


To connect the external analyzer probe to the target system

1 Assemble the Analyzer Probe. The analyzer probe is a two-piece assembly, consisting of ribbon cable and 18 probe wires (16 data channels and the J and K clock inputs) attached to a connector. Either end of the ribbon cable may be connected to the 18 wire connector, and the connectors are keyed so they may only be attached one way. Align the key of the ribbon cable connector with the slot in the 18 wire connector, and firmly press the connectors together.



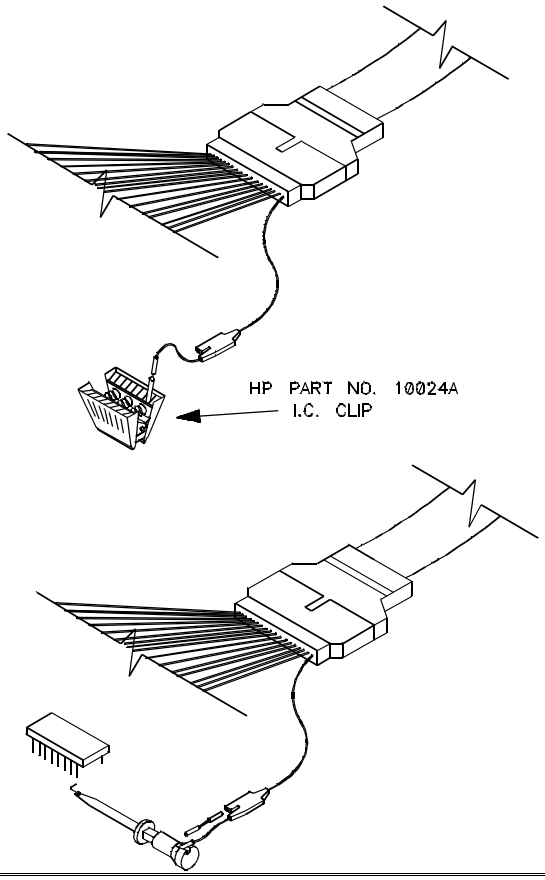
2 Attach grabbers to probe wires. Each of the 18 probe wires has a signal and a ground connection. Each probe wire is labeled for easy identification. Thirty-six grabbers are provided for the signal and ground connections of each of the 18 probe wires. The signal and ground connections are attached to the pin in the grabber handle.



To connect the external analyzer probe to the target system

CAUTION Turn OFF target system power before connecting analyzer probe wires to the target system. The probe grabbers are difficult to handle with precision, and it is extremely easy to short the pins of a chip (or other connectors which are close together) with the probe wire while trying to connect it.

3 You can connect the grabbers to pins, connectors, wires, etc., in the target system. Pull the hilt of the grabber towards the back of the grabber handle to uncover the wire hook. When the wire hook is around the desired pin or connector, release the hilt to allow the grabber spring tension to hold the connection.



3

Connecting the HP 64700B to a Power Source

Connecting the HP 64700B to a Power Source

This chapter shows you how to:

- Select the power cord.
- Connect the power cord and turn ON the HP 64700B.

The HP 64700B automatically selects the 115 Vac or 220 Vac range.

In the 115 Vac range, the HP 64700B will draw a maximum of 345 W and 520 VA.

In the 220 Vac range, the HP 64700B will draw a maximum of 335 W and 600 VA.

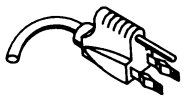
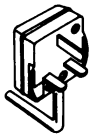
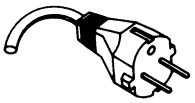
To select the power cord

The HP 64700B is shipped from the factory with a power cord appropriate for your country. You should verify that you have the correct power cable for installation by comparing the power cord you received with the HP 64700B with the drawings under the "Plug Type" column of the following table.

If the cable you received is not appropriate for your electrical power outlet type, contact your Hewlett-Packard sales and service office.

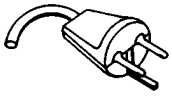
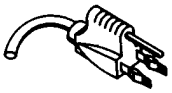
To select the power cord

Power Cord Configurations

Plug Type	Cable Part No.	Plug Description	Length in/cm	Color
Opt 903 125V ** 	8120-1378 8120-1521	Straight * NEMA5-15P 90°	90/228 90/228	Jade Gray Jade Gray
Opt 900 250V 	8120-1351 8120-1703	Straight * BS136A 90°	90/228 90/228	Gray Mint Gray
Opt 901 250V 	8120-1369 8120-0696	Straight * NZSS198/ASC 90°	79/200 87/221	Gray Mint Gray
Opt 902 250V 	812001689 8120-1692 8120-2857	Straight * CEE7-Y11 90° Straight (Shielded)	79/200 79/200 79/200	Mint Gray Mint Gray Coco Brown

* Part number shown for plug is industry identifier for plug only.
Number shown for cable is HP part number for complete cable including plug.
** These cords are included in the CSA certification approval for the equipment.

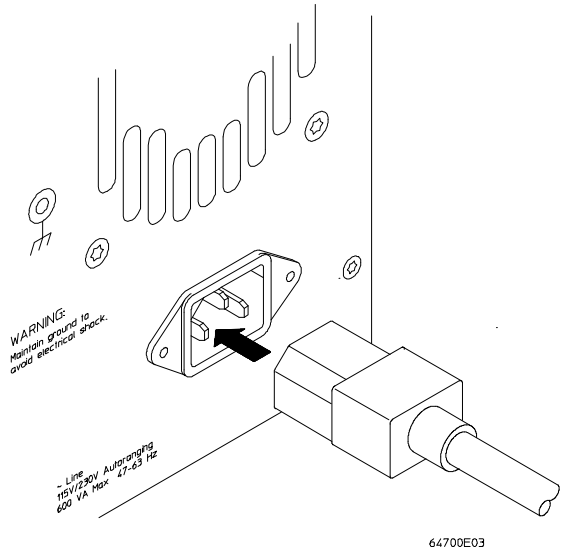
Power Cord Configurations (Cont'd)

Plug Type	Cable Part No.	Plug Description	Length in/cm	Color
Opt 906 250V 	8120-2104 8120-2296	Straight * SEV1011 1959-24507 Type 12 90°	79/20 79/200	Mint Gray Mint Gray
Opt 912 220V 	8120-2957	Straight *DHCK107 90°	79/200 79/200	Mint Gray Mint Gray
Opt 917 250V 	8120-4600 8120-4211	Straight SABS164 90°	79/200 79/200	Jade Gray
Opt 918 100V 	8120-4753 8120-4754	Straight Miti 90°	90/230 90/230	Dark Gray
* Part number shown for plug is industry identifier for plug only. Number shown for cable is HP part number for complete cable including plug. ** These cords are included in the CSA certification approval for the equipment.				

To connect the power cord and turn ON the HP 64700B

1 Connect the power cord and turn on the HP 64700B.

The line switch is a push button located at the lower left hand corner of the front panel. To turn ON power to the HP 64700B, push the line switch button in to the ON (1) position. The power light at the lower right hand corner of the front panel will be illuminated.



4

Connecting the HP 64700B to a LAN

Connecting the HP 64700B to a LAN

Most user interfaces to the HP 64700B can use LAN. In addition, you can telnet or ftp from a computer on the LAN to access the Terminal Interface or download absolute files and symbol files.

- A BNC connector that can be directly connected to a IEEE 802.3 Type 10BASE2 cable (ThinLAN). When using this connector, the HP 64700B provides the functional equivalent of a Medium Attachment Unit (MAU) for ThinLAN.
- A 15-pin connector for an Attachment Unit Interface (AUI) cable. The AUI cable allows you to connect to an off-board MAU for an IEEE 802.3 Type 10BASE5 (ThickLAN) connection, or to an IEEE 802.3 Type 10BASE-T (StarLAN) connection.

CAUTION Use either the BNC or the AUI connector. Do NOT use both. The HP 64700B will not work with both connected at the same time.

The HP 64700B must be assigned an Internet Address before it can operate on the LAN, and you can set up other network parameters as well. These network parameters are held in nonvolatile memory within the HP 64700B.

When using the HP 64700B over a LAN, the Terminal Interface commands that set up parameters or configuration values for the RS-232/RS-422 port have no effect. These commands are: **stty** (set or display current communications settings), and **po** (set or display the current port settings).

Connecting the HP 64700B to a LAN is a step you perform during the configuration of the HP 64700B's LAN parameters.

This chapter shows you how to configure LAN parameters in any of the following three ways:

- Using "ipconfig700".
- Using BOOTP.
- Using the Terminal Interface.

To configure LAN parameters using "ipconfig700"

If you are using an HP 9000 Series 300/400/700 computer or Sun SPARCsystem computer and you have installed the HP B1471 64700 Operating Environment software, you can configure the HP 64700B's LAN parameters with the **ipconfig700** command.

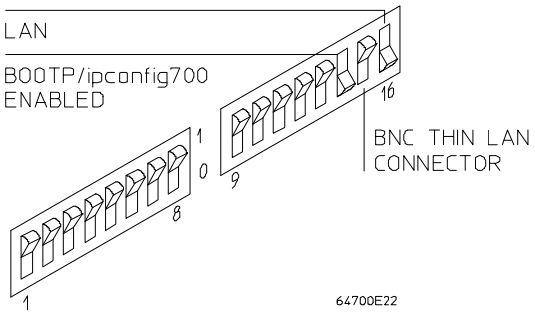
The **ipconfig700** command sets the Internet Address and Gateway Address for the HP 64700B. An Internet Address must be configured in the HP 64700B before a network interface connection can be made.

The **ipconfig700** command cannot be used if your system has a bootp daemon running. If this is the case, use BOOTP to configure LAN parameters. To determine if BOOTP is enabled on your computer, see "To configure LAN parameters using BOOTP" in this chapter.

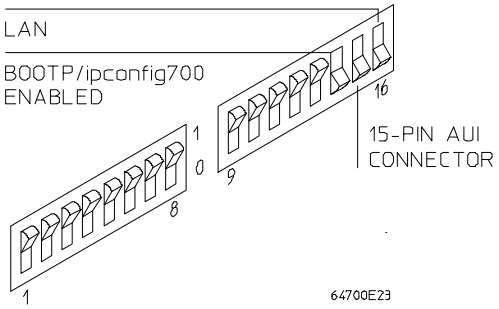
The following steps need to be taken when configuring the network parameters with **ipconfig700**.

1 Connect the the HP 64700B to your network. This connection can be made by using either the 15 Pin AUI connector or the LAN BNC connector on the HP 64700B.

2 Set the rear panel dip switches to indicate the type of connection that is to be made.



To configure LAN parameters using "ipconfig700"



Switch 16 must be set to one (1) indicating that a LAN connection is being made.

Switch 15 should be zero (0) if you are connecting up to the BNC connector or set to one (1) if a 15 pin AUI connection is made.

Switch 14 must be set to one (1) to prepare for the receiving of the network parameters.

Set all other switches to zero (0).

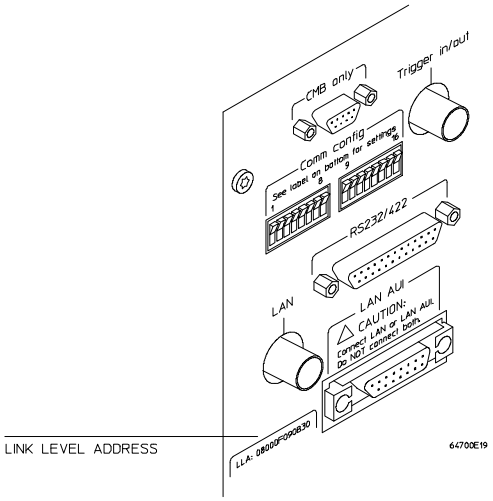
3 Turn ON power to the HP 64700B.

4 Become the root user on the system from which you wish to configure the HP 64700B.

5 Enter the **ipconfig700 -l <link> -i <internet> [-g <gateway>]** command.

The **ipconfig700** parameters are:

-l <link> The Link Level Address is entered as 12 character hex ASCII address. This address is configured in each HP 64700B shipped from the factory. This address is printed on the rear panel of the HP 64700B frame (as shown below). For example, 08000F090B30 is a link level address.



-i <internet> The Internet Address must be obtained from your Local System Administrator. The value is entered in integer dot notation. For example, 192.35.12.6 is an Internet Address.

-g <gateway> The Gateway Address is also an Internet address and is entered in integer dot notation. This entry is optional and will default to 0.0.0.0, meaning all connections are to be made on the local network or subnet. If connections are to be made to workstations on other networks or subnets, this address must be set to the address of the gateway machine. The gateway address must be obtained from your local system administrator.

If the **ipconfig700** command is entered without any options, the program interactively prompts for the necessary information.

If the Link Level Address on the rear panel of your HP 64700B read 08000F090F30, and your system administrator gave you the Internet Address 192.35.12.6, you could enter the following command:

```
$ ipconfig700 -l 08000F090B30 -i 192.35.12.6 <RETURN>
```

Because no Gateway Address was entered, this value would default to 0.0.0.0. When the Internet Address is successfully programmed, **ipconfig700** will then send a HP 64700B Terminal Mode version command and display the output on your terminal.

6 Set switch 14 back to zero (0). Do this so that the next time power is cycled on the HP 64700B it will not enter a state waiting for network parameters.

7 Verify your emulator is now active and on the network by issuing a **telnet** to the Internet Address. For example:

```
$ telnet 192.35.12.6 <RETURN>
```

This connection will give you access to the HP 64700B Terminal Interface. To view the LAN parameters, enter the **lan** command at the Terminal Interface prompt:

```
R>lan
lan is enabled
lan -i 192.35.12.6
lan -g 0.0.0.0
lan -p 6470
Ethernet Address : 08000F090B30
```

To exit from this telnet session, type <CTRL>d at the HP 64700B prompt.

The best way to change the HP 64700B's Internet Address, once it has already been set, is to telnet to the emulator and use the Terminal Interface **lan** command to make the change. Remember, after making your changes, you must cycle power or enter a Terminal Interface **init -p** command before the changes take effect.

To configure LAN parameters using BOOTP

There is no reason to use BOOTP software to configure HP 64700B LAN parameters unless you need to use BOOTP for something else. The **ipconfig700** command does the same thing as BOOTP and is easier to use. The **ipconfig700** command cannot be used if your system already has a bootp daemon running.

The BOOTP software is shipped with HP-UX version 8.0 or later. Your Hewlett-Packard Sales Engineer can provide the BOOTP software if you have an earlier version of HP-UX.

1 Make sure that your host computer supports BOOTP.

If the following commands yield the results shown below, your machine supports the BOOTP protocol.

```
$ grep bootp /etc/services <RETURN>

bootps      67/udp
bootpc      68/udp

$ grep bootp /etc/inetd.conf <RETURN>

bootps  dgram  udp  wait    root  /etc/bootpd   bootpd
```

If the commands did not yield the results shown, you must either add BOOTP support to your HP 9000 or use a different method to configure the HP 64700B LAN parameters.

2 If your host provides the BOOTP service, you will need to make an entry to the host BOOTP database file, /etc/bootptab. For example:

```
# Global template for options common to all HP 64700 emulators.
# Gateway addresses can be specified differently if
# necessary.

hp64700.global:\
        :gw=0.0.0.0:\
        :vm=auto:\
        :hn:\
        :bs=auto:\
        :ht=ether:

# Specific emulator entry specifying hardware address
# (link-level address) and ip address.

emulator1.div.hp.com:\
        :tc=hp64700.global:\
        :ha=080009090B0E:\
        :ip=192.6.29.31:
```

In the example above, the "ha=080009090B0E" identifies the link-level address of the HP 64700B. This address is printed on the HP 64700B rear panel.

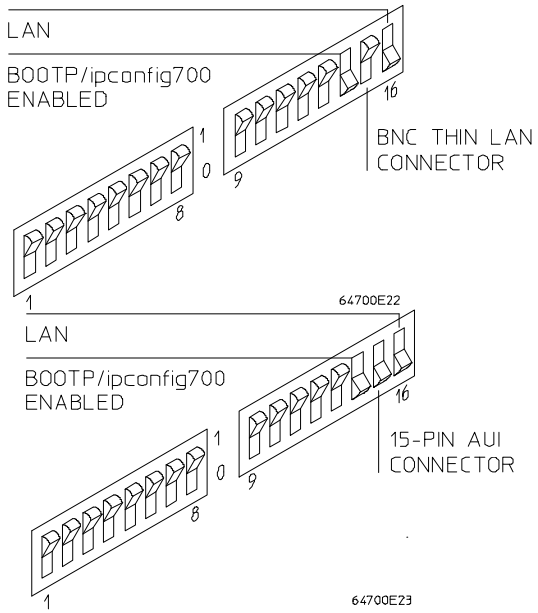
The "ip=192.6.29.31" specifies the Internet Address that is assigned to the HP 64700B. This address must be obtained from your Local System Administrator.

The node name "hplsday.hp.com" is also obtained from your Local System Administrator.

For additional information about using bootpd, refer to the HP-UX man pages.

3 Connect the the HP 64700B to your network. This connection can be made by using either the 15 Pin AUI connector or the LAN BNC connector on the HP 64700B.

4 Set the rear panel dip switches to indicate the type of connection that is to be made.



Switch 16 must be set to one (1) indicating that a LAN connection is being made.

Switch 15 should be zero (0) if you are connecting up to the BNC connector or set to one (1) if a 15 pin AUI connection is made.

Switch 14 must be set to one (1) to prepare for the receiving of the network parameters.

Set all other switches to zero (0).

5 Turn ON power to the HP 64700B.

Verify that the green light stays on after 10 seconds by looking through the front panel grill.

The HP 64700B will make the BOOTP request for its Internet Address (when switch 14 and switch 16 are set to 1). After picking up the IP address over bootp, it is stored in EEPROM.

6 Set switch 14 back to zero (0). Do this so that the HP 64700B does not request its Internet Address each time power is cycled.

7 Verify your emulator is now active and on the network by issuing a **telnet** to the Internet Address. For example:

```
$ telnet 192.6.29.31 <RETURN>
```

This connection will give you access to the HP 64700B Terminal Interface. To exit from this telnet session, type <CTRL>d at the HP 64700B prompt.

To configure LAN parameters using the Terminal Interface

1 Set all of the rear panel switches to the down position. This will set the HP 64700B serial port to 9600 baud, DCE.

2 Connect an ASCII terminal to the HP 64700's RS-232/422 port with a 25-pin RS-232 cable.

You could also connect the HP 64700's RS-232/422 port to a computer's RS-232 port and use a terminal emulation program on the computer. Refer to the "Connecting the HP 64700B Using RS-232/RS-422" chapter.

3 Turn ON the HP 64700B. Press the terminal's <RETURN> key a couple times. You should see the "R>" prompt.

At this point, you should be communicating with the HP 64700B.

4 Display the current LAN configuration values by entering the **lan** command:

```
R>lan
lan is disabled
lan -i 0.0.0.0
lan -g 0.0.0.0
lan -p 6470
Ethernet Address : 08000903212f
```

Note the Ethernet Address, also known as the link-level address. This address is preassigned at the factory, and is printed on the rear panel.

5 Enter the **lan -i <internet> [-g <gateway>] [-p <port>]** command.

The **lan** command parameters are:

-i <internet> The Internet Address must be obtained from your Local System Administrator. The value is entered in integer dot notation. For example, 192.35.12.6 is an Internet Address.

-g <gateway> The Gateway Address is also an Internet address and is entered in integer dot notation. This entry is optional and will default to 0.0.0.0, meaning all connections are to be made on the local network or subnet. If connections are to be made to workstations on other networks or subnets, this address must be set to the address of the gateway machine. The gateway address must be obtained from your local system administrator.

-p <port> This changes the base TCP service port number. The host computer interfaces communicate with the HP 64700B through two TCP service ports. The default base port number is 6470. The second port has the next higher number (default 6471). If you change the base port, the new value must also be entered in the /etc/services file on the host computer. For example, you could modify the line:

hp64700 6470/tcp

The default numbers (6470, 6471) can be changed if they conflict with some other product on your network. TCP service port numbers must be greater than 1024.

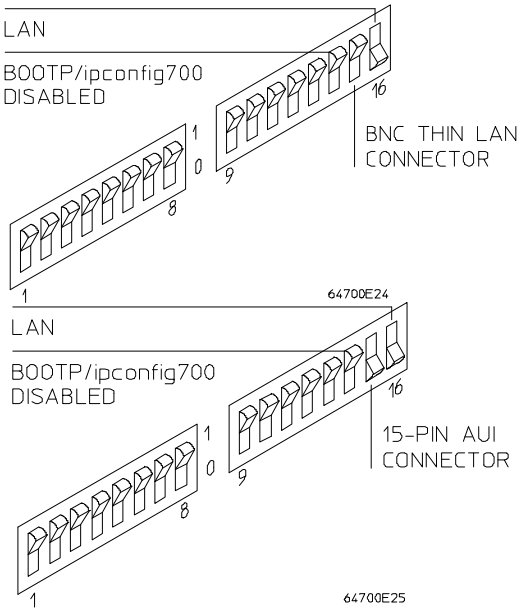
For example, to assign an Internet Address of 192.6.94.2 to the HP 64700B, enter the following command:

```
R>lan -i 192.6.94.2 <RETURN>
```

The Internet Address and any other LAN parameters you change are stored in nonvolatile memory and will take effect the next time the HP 64700B is powered off and back on again.

6 Turn power to the HP 64700B OFF, and connect the the HP 64700B to your network. This connection can be made by using either the 15 Pin AUI connector or the LAN BNC connector on the HP 64700B.

7 Set the rear panel dip switches to indicate the type of connection that is to be made.



Switch 16 must be set to one (1) indicating that a LAN connection is being made.

Switch 15 should be zero (0) if you are connecting up to the BNC connector or set to one (1) if a 15 pin AUI connection is made.

Switch 14 should be zero (0).

Set all other switches to zero (0).

8 Turn ON power to the HP 64700B.

9 Verify your emulator is now active and on the network by issuing a **telnet** to the Internet Address. For example:

```
$ telnet 192.6.94.2 <RETURN>
```

This connection will give you access to the HP 64700B Terminal Mode. To exit from this telnet session, type <CTRL>d at the HP 64700B prompt.

The next time LAN parameters need to be configured, telnet to the HP 64700B, and use the Terminal Interface **lan** command.

If "telnet" does not access the HP 64700B

When switch 16 is set to LAN, you must use the **telnet** command on the host computer to access the HP 64700B's firmware-resident Terminal Interface. After powering up the HP 64700B, it takes a minute before the HP 64700B can be recognized on the network. After a minute, try the **telnet <internet address>** command.

If **telnet** does not make the connection:

- ☐ Make sure that you have connected the emulator to the proper power source and that the power light is lit.
- ☐ Make sure that the LAN cable is connected. Refer to your LAN documentation for testing connectivity.
- ☐ Make sure the HP 64700B rear panel communication configuration switches are set correctly. Switch settings are only used to set communication parameters in the HP 64700B when power is turned OFF and then ON.
- ☐ Make sure that the HP 64700B's Internet Address is set up correctly. You must use the RS-232/RS-422 port (switch 16 must be set to serial) to verify this that the Internet Address is set up correctly. While accessing the emulator via the RS-232/RS-422 port, run performance verification on the LAN hardware with the **lanpv** command. See "To run PV on the LAN interface" in the "Service" chapter.

If **telnet** makes the connection, but no Terminal Interface prompt (for example, R>, M>, U>, etc.) is supplied:

- ☐ It's possible that the HP 64000 software is in the process of running a command (for example, if a repetitive command was initiated from telnet in another window). You can use <CTRL>c to interrupt the repetitive command and get the Terminal Interface prompt.
- ☐ It's also possible for there to be a problem with the HP 64700B firmware while the LAN hardware is still up and running. In this case, you must cycle power on the HP 64700B.

5

Connecting the HP 64700B Using RS-232/RS-422

Connecting the HP 64700B Using RS-232/RS-422

This chapter describes the HP 64700B switch settings.

The HP 64700B supports asynchronous and isosynchronous serial communications at RS-232 and RS-422 signal levels through the 25-pin connector on the rear panel. Baud rates from 300 to 460800 are available. Initial serial configuration is done through the rear panel configuration switches and can be changed and expanded through the **stty** command.

Generally, the steps in connecting the HP 64700B to an RS-232/RS-422 interface are:

1 Set the HP 64700B configuration switches.

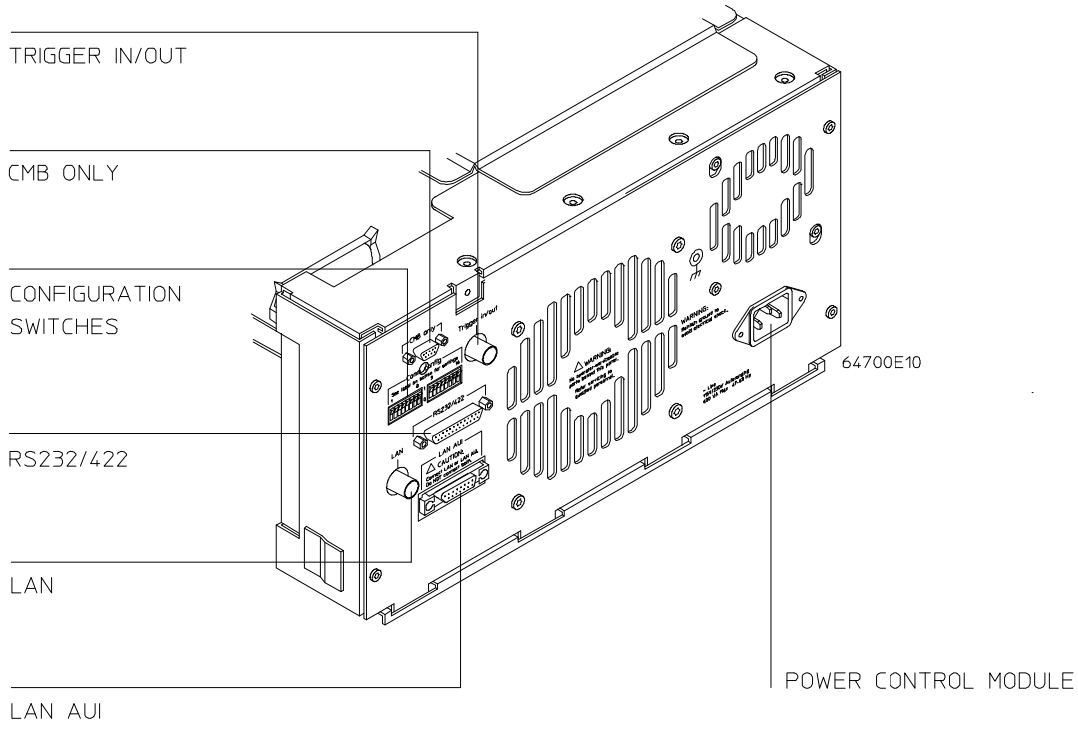
2 Connect the HP 64700B to the RS-232/RS-422 interface.

3 Verify communications.

Step 1: Set the HP 64700B configuration switches

Set the data communications configuration switches so that the HP 64700B port will have characteristics compatible with the terminal or host computer interface to which it will be connected (see the following switch summary tables). Note that the configuration switch settings are only read when the HP 64700B is powered ON or when the **init -p** command is entered.

The locations of the data communications ports and configuration switches are shown below.



HP 64700B Configuration Switch Summary

The information in the following table is also on an adhesive label attached to each HP 64700B.

<table>
<tr><th colspan="8">Configuration Switches S1-S8</th></tr>
<tr><th>S1</th><th>S2</th><th>S3</th><th>S4</th><th>S5</th><th>S6</th><th>S7</th><th>S8</th></tr>
<tr><td rowspan="2" colspan="3">RS-232/RS-422 Baud Rate
1 1 1 = 230400
1 1 0 = 115200
1 0 1 = 38400
1 0 0 = 57600
0 1 1 = 1200
0 1 0 = 2400
0 0 1 = 19200
0 0 0 = 9600</td><td>1 =
DTE</td><td>1 =
RS-422</td><td>1 =
Service</td><td>1 =
Service</td><td>1 =
Reserved for future use</td></tr>
<tr><td>0 =
DCE</td><td>0 =
RS-232</td><td>0 =
Normal</td><td>0 =
Normal</td><td>0 =
Normal</td></tr>
<tr><td colspan="8">NOTES:

S1 - S3: Asynchronous baud rates include 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200. The rear panel switches can be used to initialize at 1200, 2400, 9600, 19200, 38400, or 115200 baud. Rates of 300 baud and 4800 baud are only selectable through the Terminal Interface stty command. This entire range of rates are supported at RS-422 signal levels. The EIA-RS232-D standard only covers data rates up to 20,000 bits per second (actual 19200). Asynchronous connections using RS-232 signal levels above this rate can be used but cannot be guaranteed.

Isosynchronous rates of 230400 baud and 460800 baud are supported at RS-422 signal levels using a 1X clock. The rate of 230400 can be selected through the rear panel switches but 460800 is only selectable through the stty command.

S4: DCE = Data Communications Equipment, DTE = Data Terminal Equipment. This switch is ignored if S5 sets the serial port to be an RS-422 device (which is always DCE).

S6: When this switch is set to "1", self diagnostic information is displayed by a flashing LED on the control board during the powerup cycle. This information is intended to be used by a qualified service technician only.

S7: When this switch is set to "1", the HP 64700B firmware is forced to execute from ROM instead of Flash EPROM. This mode is intended to be used by a qualified service technician only.</td></tr>
</table>

Configuration Switches S9-S16							
S9	**S10**	**S11**	**S12**	**S13**	**S14**	**S15**	**S16**
1 = 7 Bit character size	1 = Parity enabled	1 = Parity even	1 = RTS/CTS DSR/DTR	1 = XON/ XOFF	1 = LAN BOOTP enabled	1 = 15 pin AUI	1 = LAN
0 = 8 Bit character size	0 = Parity disabled	0 = Parity odd	0 = No HW handshake	0 = No SW handshake	0 = LAN BOOTP disabled	0 = BNC ThinLAN	0 = Serial

NOTES:

S12: Hardware pacing uses a modified handshake. When hardware handshake is enabled, the DTE uses Clear to Send (CTS) to control its output. When CTS is true, data may be output, when CTS is false, data output will stop at the end of the current character. The DCE is expected to negate CTS during receipt of a character if the internal hardware buffer is full. Once a position is available in the internal hardware buffer, CTS is to be set true.

A modification is made in the use of Request to Send (RTS) as a reverse channel Clear to Send to control the output of the DCE. The DTE sets RTS false during the receipt of a character if there is no room in its hardware buffer. The DCE must stop transmission of data at the conclusion of the current character and wait until the DTE sets RTS true before resuming transmission.

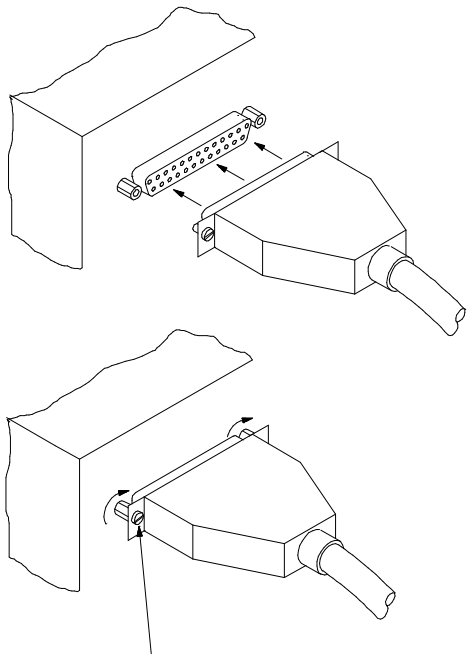
This modified RTS/CTS handshake protocol provides full bi-directional hardware handshaking of the data streams. The HP 64700B can support baud rates up to 460800 using this protocol.

S13: Software pacing uses XON/XOFF protocols (DC1/DC3). Upon receipt of an XOFF, the HP 64700B can continue to transmit up to 3 additional characters. The HP 64700B sends an XOFF when its internal buffer can accept only 64 additional bytes before overflow. Software pacing is only valid on the transmission of ASCII data streams. It is not supported for binary transfers. It will support a maximum baud rate of 57600. Above this rate hardware handshaking must be used to prevent data loss.

Step 2: Connect the HP 64700B to the RS-232/RS-422 interface

1 Select and connect the RS-232/RS-422 cable.

To connect cables to the HP 64700B, simply align the cable with the serial port and insert the 25-pin male connector of the cable until it is firmly seated. You should then tighten the holding screws on each side of the cable with a small flat blade screwdriver. This will ensure that the cable pins and shield hood make good contact with the HP 64700B connector and will also guard against accidental disconnection of the cable.



Step 3: Verify communications

1 Connect the power cord to the HP 64700B, and set the line switch to the ON position.

The line switch is a push button located at the lower left hand corner of the front panel. To turn ON power to the HP 64700B, push the line switch button in to the ON (1) position. The power light at the lower right hand corner of the front panel will be illuminated.

When the emulator powers up, it sends a message (similar to the one that follows) to the serial port and then displays the Terminal Interface prompt. You can verify that your data communications configuration is at least partially functional by looking for the message and prompt on the controlling device (terminal or terminal emulation program running on a host computer).

```
                  Copyright (c) Hewlett-Packard Co. 1987
All Rights Reserved.  Reproduction,, adaptation,, or translation
without prior
written permission is prohibited,, except as allowed under copyright
laws.

  HP64700B Series Emulation System
    Version:   B.01.00 20Dec93
    Location:  Flash
    System RAM:1 Mbyte

  HP64751A Motorola 68340 Emulator
  HP64740 Emulation Analyzer
R>
```

The powerup message is sent to the serial port even if the LAN interface is enabled.

If the HP 64700B does not provide the Terminal Interface prompt

If the HP 64700B does not provide the Terminal Interface prompt to the controlling device when power is applied:

- ☐ Make sure that you have connected the emulator to the proper power source and that the power light is lit.

- ☐ Make sure that you have properly configured the data communications switches on the emulator and the data communications parameters on your controlling device. Baud Rate, Parity, Character Size, and Handshaking should be the same on both ends. You should also verify that you are using the correct cable.

  The most common type of data communications configuration problem involves the configuration of the HP 64700B as a DCE or DTE device and the selection of the RS-232 cable. If you are using the wrong type of cable for the device selected, no prompt will be displayed.

  When serial port is configured as a DCE device, a modem cable should be used to connect the HP 64700B to the host computer of terminal. Pins 2 and 3 at one end of a modem cable are tied to pins 2 and 3 at the other end of the cable.

  When serial port is configured as a DTE device, a printer cable should be used to connect the HP 64700B to the host computer of terminal. Pins 2 and 3 at one end of a printer cable are swapped and tied to pins 3 and 2, respectively, at the other end of the cable.

  If you suspect that you may have the wrong type of cable, try changing the S4 setting and cycling power.

- ☐ The HP 64700B is designed to receive and transmit data continously at the specified baud rate. Many serial ports on workstations and PCs are designed to support terminals and printers. These applications require the ability to output large amounts of data rapidly but only receive small amounts of data at a low overall sustained data rate. When connected to a HP 64700B, they often loose input data even at relatively slow baud rates when the HP 64700B is transmitting a long stream of information. If data loss occurs on input to the host from the HP 64700B, the user can improve the reliability of the connection by reducing the baud rate, reducing the load on the host computer, connect to an intelligent serial interface

which can support the sustained input rate, or else use a different communications approach such as LAN.

RS-232/RS-422 Pinouts

The three possible pinouts, RS-232 DCE, RS-232 DTE, and RS-422 are mutually exclusive. Pins not assigned in the selected configuration appear as high impedance inputs.

At RS-232 levels, the individual pins are configurable to either DTE or DCE pinout combinations.

RS-232 Pinouts

	Description	Direction		Pinout on 25-pin connector
		DCE	DTE	
Data				
BA	Transmitted Data	In	Out	2
BB	Received Data	Out	In	3
Control				
CA	Request to Send (RTS)	In	Out	4
CB	Clear to Send (CTS)	Out	In	5
CC	Data Set Ready (DSR) (also connected to pin 8, Data Carrier Detect)	Out	In	6
CF	Data Carrier Detect	Out	In	8
CD	Data Terminal Ready	In	Out	20
Other				
AA	Chassis GND			1
AB	Signal GND			7

The differential RS-422 signals are embedded in the 25-pin connector as shown in the table below. For proper operation, the RS-422 differential pairs should be carried on twisted-pair cable. The differential RS-422 inputs are terminated at 100 ohms. The RS-422 outputs should be terminated at 100 ohms at the receiver.

RS-449 (as RS-422) Pinouts

	Description	Direction DCE	Pinout on 25-pin connector	
			A	B
Data				
SD	Send Data	In	9	10
RD	Receive Data	Out	25	18
Control				
RS	Request to Send	In	17	19
CS	Clear to Send	Out	21	23
DM	Data Mode	Out	12	13
RR	Receiver Ready	Out	12	13
TR	Terminal Ready	In	20	GND
Timing				
TT	Terminal Timing In	In	24	14
RT	Terminal Timing Out	Out	11	16
Other				
AA	Protective GND		1	1
AB	Signal GND		7	7

6

Updating HP 64700 Series Firmware

Updating HP 64700 Series Firmware

It’s possible to mix old and new products in the HP 64700B card cage (for example, an old revision of an emulator with a new revision of an analyzer). While most of these combinations will work, Hewlett-Packard formally supports only configurations that include the latest revisions of all software and firmware. Software updates can be ordered to get the latest firmware revisions.

You can update the firmware for products in the HP 64700B (emulators, analyzers, system controller, etc.) by running the **progflash** utility program. **Progflash** downloads code from files on the host computer into Flash EPROM memory which is built-in to the HP 64700B.

This chapter describes how to:

- Order the software updates.
- Update firmware with the "progflash" command.
- Display current firmware version information.

To order the software updates

1 Order the HP BasicLine software support service for the products that are to be kept up to date. The Software Update Materials will include files for updating firmware as well as the host-resident user interface software.

2 Order Software Materials Subscription (SMS) subscriptions for the products that contain the **progflash** program and the flashware.

If you're using the HP 64700B with an HP 9000 computer or a Sun SPARCsystem computer:

The HP B1471 64700 Operating Environment product contains **progflash** and the flashware for the system controller and analyzer products.

The Graphical User Interface or Softkey Interface product contains flashware for the emulator.

If you're using the HP 64700B with an IBM PC AT compatible computer:

The HP 64700BX Option 006 product contains **progflash** and the flashware for the system controller and analyzer products.

The PC Interface product contains flashware for the emulator.

Some emulator products also include the **progflash** command and emulator flashware an a 5 1/4 MS-DOS format floppy.

To update firmware with "progflash"

1 Install the update software on your computer.

The following table describes the files that are used when updating HP 64700B firmware.

Files Used During Firmware Updates			
File	**Description**	**Location on HP 9000 or Sun SPARCsystem computers**	**Location on IBM PC AT compatible computers**
progflash	Executable program.	/usr/hp64000/bin	\hp64700\bin
<product>.cfg <product>.X	Product configuration file. Product code file.	/usr/hp64000/inst/update	\hp64700\update
64700B.cfg 64700B.X 64740.cfg 64740.X	System controller flashware. Analyzer flashware.		

2 Enter the **progflash [-v] [emul_name] [products_to_update ...]** command.

The **progflash** command downloads code from files on the host computer into Flash EPROM memory in the HP 64700B.

The **-v** option means "verbose". It causes progress status messages to be displayed during operation.

The **emulname** option is the logical emulator name as specified in the 64700tab or 64700tab.net file.

The **products_to_update** option names the products whose firmware is to be updated.

If you enter the **progflash** command without options, it becomes interactive. If you don’t include the "emulname" option, it displays the logical names in the 64700tab

or 64700tab.net file and asks you to choose one. If you don't include the "products_to_update" option, it displays the products which have firmware update files on the system and asks you to choose one. (In the interactive mode, only one product at a time can be updated.) You can abort the interactive **progflash** command by pressing <CTRL>c.

Progflash will print "Flash programming SUCCEEDED" and return 0 if it is successful; otherwise, it will print "Flash programming FAILED" and return a nonzero (error).

You can verify the update by displaying the firmware version information.

Examples

To update the system controller firmware in the HP 64700B that contains the "em80960" emulator:

```
$ progflash <RETURN>


                    HPB1471-19309 A.05.00 03Jan94
                  64700 SERIES EMULATION COMMON FILES

                   A Hewlett-Packard Software Product
                   Copyright Hewlett-Packard Co. 1988

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                           RESTRICTED RIGHTS LEGEND

     Use , duplication , or disclosure  by the  Government is  subject to
     restrictions as set forth in subparagraph (c) (1) (II) of the Rights
     in Technical Data and Computer Software clause at  DFARS 52.227-7013.
     HEWLETT-PACKARD Company , 3000 Hanover St. , Palo Alto, CA 94304-1181

            Logical Name        Processor
          1 em68k               m68000
          2 em80960             i80960
          3 em68340             m68340

Number of Emulator to Update? (intr (usually cntl C or DEL) to abort)
```

To update firmare in the HP 64700B that contains the "em80960" emulator, enter "2".

```
            Product
          1 64700
          2 64703/64704/64706/64740
          3 64708
          4 64744
          5 64760
          6 64751

Number of Product to Update? (intr (usually cntl C or DEL) to abort) 1
```

To update the system controller firmare, enter "1".

```
Enable progress messages? [y/n] (y)
```

To enable status messages, enter "y".

```
Checking System firmware revision...
Mainframe is a 64700B

Reading configuration from '/usr/hp64000/inst/update/64700B.cfg'
ROM identifier address = BFFFF0H
Required hardware identifier = 64700B
Control ROM start address = 10000000H
Control ROM size = 100000H
Control ROM width = 32
Programming voltage control address = 150022H
Programming voltage control value = 1H
Programming voltage control mask = FFFFH

Rebooting HP64700...
Checking Hardware id code...
Erasing Flash ROM
Downloading ROM code: /usr/hp64000/../../users/test/progflash/64700B.X
    Code start 10000000H (should equal control ROM start)
    Code size E59EEH (must be less than control ROM size)
Finishing up...

Rebooting HP64700...
Flash programming SUCCEEDED
$
```

You could perform the same update as in the previous example with the following command:

```
$ progflash -v em80960 64700 <RETURN>
```

To display current firmware version information

- Use the Terminal Interface **ver** command to view the version information for firmware currently in the HP 64700B.

  When using the Graphical User Interface or Softkey Interface, you can enter Terminal Interface commands with the **pod_command** command. For example:

  display pod_command <RETURN>
  pod_command "ver" <RETURN>

  When using the PC Interface, the system terminal window is used to access the Terminal Interface. For example, select the command:

  System **T**erminal

  Type in "ver" and press <RETURN>. Press <CTRL>\ to exit the system terminal window.

Examples

The Terminal Interface **ver** command displays information similar to:

```
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written permission is prohibited, except as allowed under copyright laws.

  HP64700B Series Emulation System
    Version:   B.01.00 20Dec93
    Location:  Flash
    System RAM:1 Mbyte

  HP64744A (PPN: 64742A) Motorola 68000/68HC001/68EC000 Emulator
    Version:   A.01.00 13Mar92
    Probe:     Loopback Board
    Speed:     16 MHz
    Memory:    60 KBytes

  HP64740 Emulation Analyzer with External State/Timing Analyzer
    Version:   A.02.02 13Mar91
```

If the firmware doesn't appear to be updated

Though Flash EPROM is very reliable, it can fail. If the HP 64700B determines the Flash EPROM is not working, it will try to use the ROMs on the system control card. The only useful operation the system ROMs allow is running **progflash**.

If the Flash EPROM doesn't contain the firmware for a particular product, the ROMs on that product are used.

- ☐ Make sure the current version information is incorrect by comparing it with the version numbers of the update software.

- ☐ Try updating the firmware again.

If none of these steps solves the problem, contact your local HP Representative.

If there is a power failure during a firmware update

If there is a power glitch during a firmware update, some bits may be lost during the download process, possibly resulting in an HP 64700B that will not boot up.

- ☐ Repeat the firmware update process.

- ☐ If the HP 64700B is connected to the LAN in this situation and you are unable to connect to the HP 64700B after the power glitch, try repeating the firmware update with the HP 64700B connected to an RS-232 or RS-422 interface.

7

Connecting the HP 64700B for Coordinated Measurements

Connecting the HP 64700B for Coordinated Measurements

When HP 64700B Card Cages are connected together via the Coordinated Measurement Bus (CMB), you can start and stop up to 32 emulators at the same time.

You can use the analyzer in one HP 64700B to arm (that is, activate) the analyzers in other HP 64700B Card Cages or to cause emulator execution in other HP 64700B Card Cages to break into the monitor.

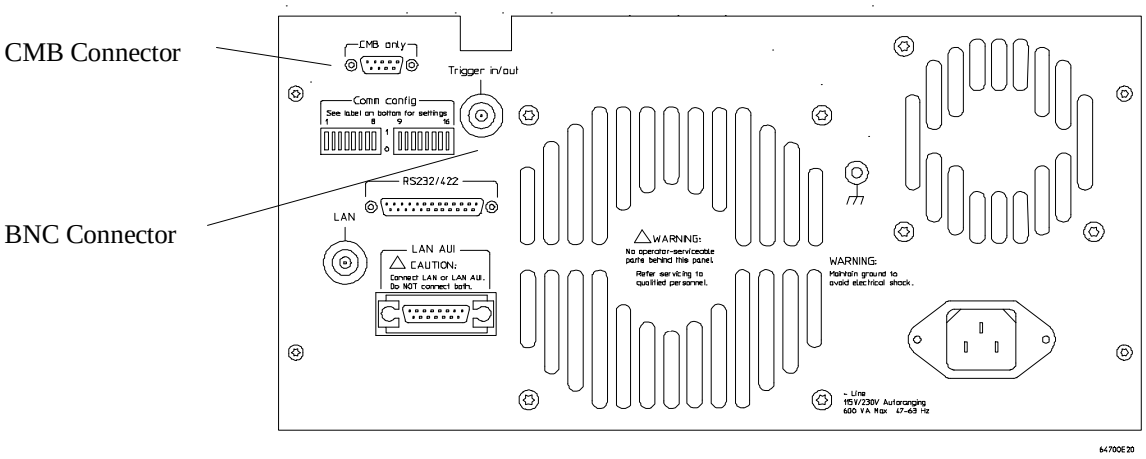
You can use the HP 64700B's BNC connector (labeled TRIGGER IN/OUT on the upper left corner of the HP 64700B rear panel) to trigger an external instrument (for example, a logic analyzer or oscilloscope) when the analyzer finds its trigger condition. Also, you can allow an external instrument to arm the analyzer or break emulator execution into the monitor.

This chapter shows you how to:

- Connect the Coordinated Measurement Bus.
- Connect the rear panel BNC.

Refer to your emulator/analyzer *User's Guide* manual for information on making coordinated measurements.

The location of the CMB and BNC connectors on the HP 64700B rear panel is shown in the following figure.



Signal Lines on the CMB

There are three bi-directional signal lines on the CMB connector on the rear panel of the emulator. These CMB signals are:

TRIGGER The CMB TRIGGER line is low true. This signal can be driven or received by any HP 64700B connected to the CMB. This signal can be used to trigger an analyzer. It can be used as a break source for the emulator.

READY The CMB READY line is high true. It is an open collector and performs an ANDing of the ready state of enabled emulators on the CMB. Each emulator on the CMB releases this line when it is ready to run. This line goes true when all enabled emulators are ready to run, providing for a synchronized start.

When CMB is enabled, each emulator is required to break to background when CMB READY goes false, and will wait for CMB READY to go true before returning to the run state. When an enabled emulator breaks, it will drive the CMB READY false and will hold it false until it is ready to resume running. When an emulator is reset, it also drives CMB READY false.

EXECUTE The CMB EXECUTE line is low true. Any HP 64700B on the CMB can drive this line. It serves as a global interrupt and is processed by both the emulator and the analyzer. This signal causes an emulator to run from a specified address when CMB READY returns true. It can also be configured to start or restart an analysis trace.

BNC Trigger Signal

The BNC trigger signal is a positive rising edge TTL level signal. The BNC trigger line can be used to either drive or receive an analyzer trigger, or receive a break request for the emulator.

Comparison Between CMB and BNC Triggers The CMB trigger and BNC trigger lines have the same logical purpose: to provide a means for connecting the internal trigger signals (trig1 and trig2) to external instruments. The CMB and BNC trigger lines are bi-directional. Either signal may be used directly as a break condition.

The CMB trigger is level-sensitive, while the BNC trigger is edge-sensitive. The CMB trigger line puts out a true pulse following receipt of EXECUTE, despite the commands used to configure it. This pulse is internally ignored.

Note that if you use the EXECUTE function, the CMB TRIGGER should not be used to trigger external instruments, because a false trigger will be generated when EXECUTE is activated.

To connect the Coordinated Measurement Bus (CMB)

CAUTION Be careful not to confuse the 9-pin connector used for CMB with those used by some computer systems for RS-232C communications. Applying RS-232C signals to the CMB connector is likely to result in damage to the HP 64700B Card Cage.

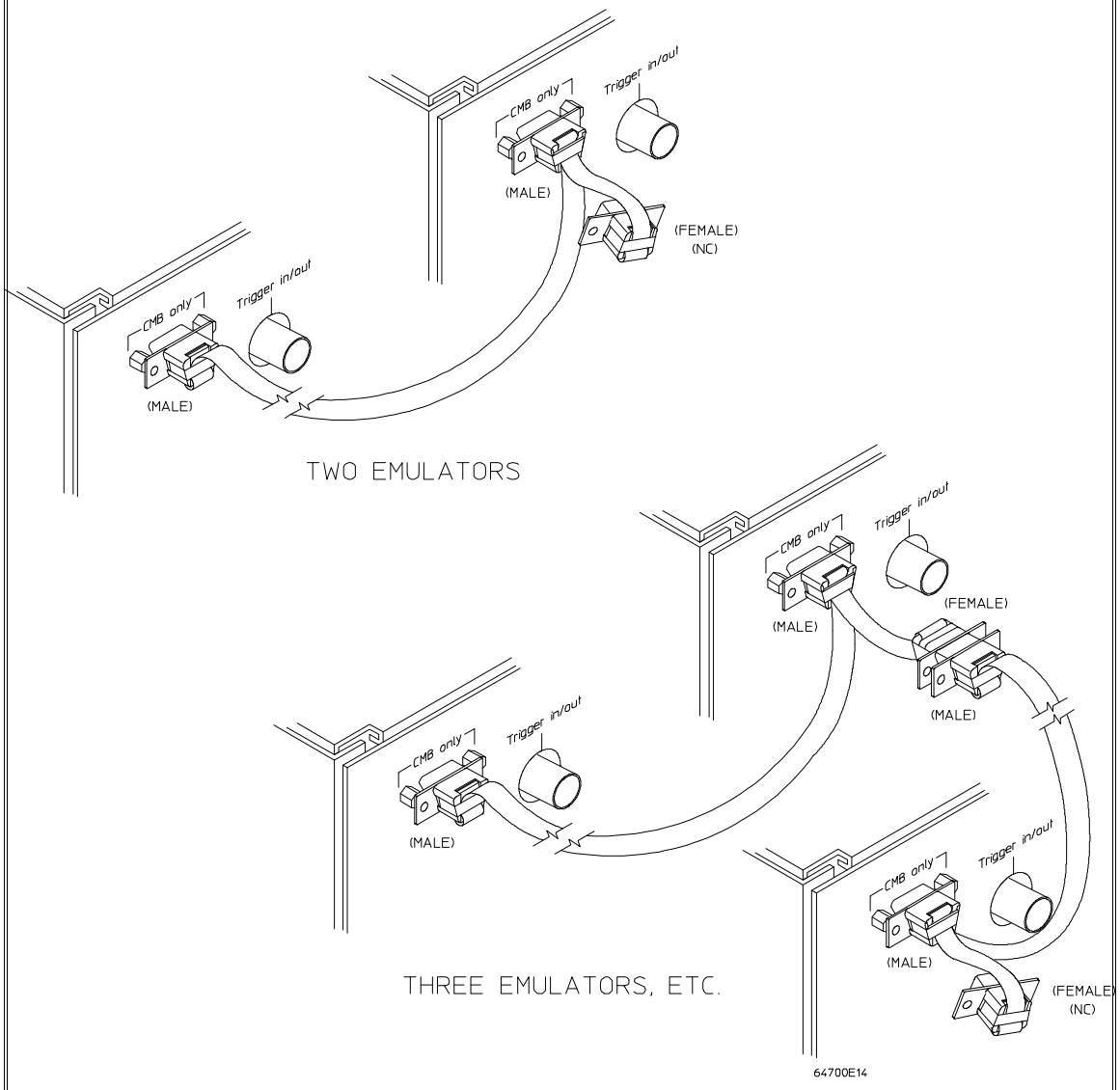
To use the CMB, you will need one CMB cable for the first two emulators and one additional cable for every emulator after the first two. The CMB cable is orderable from HP under product number HP 64023A. The cable is four meters long.

You can build your own compatible CMB cables using standard 9-pin D type subminiature connectors and 26 AWG wire.

Note that Hewlett-Packard does not ensure proper CMB operation if you are using a self-built cable!

To connect the Coordinated Measurement Bus (CMB)

1 Connect the cables to the HP 64700B CMB ports.

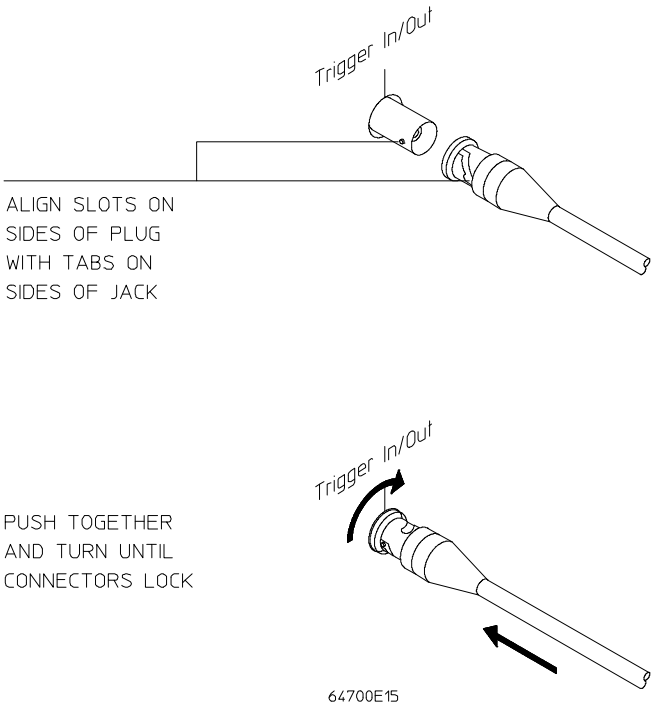


Number of HP 64700 Series Emulators	**Maximum Total Length of Cable**	**Restrictions on the CMB Connection**
2 to 8	100 meters	None.
9 to 16	50 meters	None.
9 to 16	100 meters	Only 8 emulators may have rear panel pullups connected. *
17 to 32	50 meters	Only 16 emulators may have rear panel pullups connected. *
* A modification must be performed by your HP Customer Engineer. Emulators using the CMB must use background emulation monitors. At least 3/4 of the HP 64700-Series emulators connected to the CMB must be powered up before proper operation of the entire CMB configuration can be assured.		

To connect to the rear panel BNC

CAUTION The BNC line on the HP 64700B accepts input and output of TTL levels only. (TTL levels should not be less than 0 volts or greater than 5 volts.) Failure to observe these specifications may result in damage to the HP 64700B Card Cage.

1 Connect one end of a 50 ohm coaxial cable with male BNC connectors to the HP 64700 BNC receptacle and the other end to the appropriate BNC receptacle on the other measuring instrument.



The BNC connector is capable of driving TTL level signals into a 50 ohm load. (A positive rising edge is the trigger signal.) It requires a driver that can supply at least 4 mA at 2 volts when used as a receiver. The BNC connector is configured as an open-emitter structure which allows for multiple drivers to be connected. It can be used for cross-triggering between multiple HP 64700Bs when no other cross-measurements are needed. The output of the BNC connector is short-circuit protected and is protected from TTL level signals when the emulator is powered down.

Part 2

Service Guide

8

Service

Service

This chapter describes:

- Running performance verification.
- Removing/installing the power supply.

WARNING **SHOCK HAZARD!**

Any adjustment, maintenance and repair of the opened apparatus under voltage shall be avoided as far as possible and, if inevitable, shall be carried out only by a skilled person who is aware of the hazard involved.

When the apparatus is connected to its supply, terminals may be live, and the opening of covers or removal of parts (except those to which access can be gained by hand) is likely to expose live parts.

The apparatus shall be disconnected from all voltage sources before it is opened for any adjustment, replacement, maintenance, or repair.

Capacitors inside the apparatus may still be charged even if the apparatus has been disconnected from all voltage sources.

WARNING **SHOCK HAZARD!**

Whenever it is likely that the protection has been impaired, the apparatus shall be made inoperative and be secured against any unintended operation. The protection is likely to be impaired if, for example, the apparatus:

. shows visible damage,
. fails to perform the intended measurements,
. has been subjected to prolonged storage under unfavorable conditions,
. has been subjected to severe transport stresses.

Running Performance Verification

This section shows you how to:

- Run PV on emulation/analysis products.
- Run PV on the LAN interface.

To run PV on emulation/analysis products

After power has been applied to the HP 64700B, and the HP 64700B has supplied the Terminal Interface prompt to the controlling device, you can run performance verification tests on the emulator and analyzer.

- Use the Terminal Interface **pv <num_of_tests>** command to run performance verification on emulation and analysis products.

  When using the Graphical User Interface or Softkey Interface, you can enter Terminal Interface commands with the **pod_command** command. Be aware, however, that this will reset the emulator and force an **end release_system**. For example:

  ```
  display pod_command <RETURN>
  pod_command "pv 1" <RETURN>
  ```

  When using the PC Interface, the system terminal window is used to access the Terminal Interface. For example, select the command:

  ```
  System Terminal
  ```

  Type in "pv 1" and press <RETURN>. Press <CTRL>\ to exit the system terminal window.

  PV cannot be run from the Real-Time C Debugger Interface. In order to run PV, you must exit the interface and use a terminal emulator to access the Terminal Interface. Once you have accessed the Terminal Interface, you can use the **pv <num_of_tests>** command.

Examples The Terminal Interface **pv** command displays information similar to:

```
   Testing: HP64751A Motorola 68340 Emulator
     PASSED
     Number of tests: 1           Number of failures: 0
   Testing: HP64740 Emulation Analyzer
     PASSED
     Number of tests: 1           Number of failures: 0

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   HP64700B Series Emulation System
     Version:   B.01.00 20Dec93
     Location:  Flash
     System RAM:1 Mbyte

   HP64751A Motorola 68340 Emulator
   HP64740 Emulation Analyzer
R>
```

If emulation/analysis performance verification fails

☐ Make sure the emulator and analyzer boards have been installed into the HP 64700B Card Cage correctly and that there are no bent or broken pins on any of the connectors.

If this does not seem to solve the problem, call the nearest Hewlett-Packard Sales and Service office listed in the *Support Services* manual.

To run PV on the LAN interface

1 Connect a host computer or terminal to the HP 64700B using the RS-232 interface.

The HP 64700B LAN interface can be tested through a Terminal Interface command called **lanpv**. You can only use this command when communicating with the HP 64700B over an RS-232 connection. Do not use this command when communicating with the HP 64700B over the LAN.

2 Disconnect the HP 64700B from the LAN and terminate the HP 64700B's LAN port you want to test.

Before you run the test, the HP 64700B must be disconnected from the network.

The connector you wish to test must be completely terminated, and the other connector must not be terminated. Only one connector can be tested at a time.

To properly terminate the BNC port, place a BNC "T" connector on the port and place 50 ohm terminators on each end of the T-connector.

To properly terminate the 15-pin AUI port, leave the MAU attached to the port and, using the appropriate loopback hood or loopback connector, terminate the end of the MAU that is normally connected to the LAN.

3 Access the Terminal Interface and enter the **lan -va** command to test the 15-pin AUI connector or the **lan -vb** command to test the BNC connector.

This command will return "PASSED" or "FAILED" before issuing a prompt. For example, to test the BNC connector:

```
R>lanpv -vb
  Testing: HP 64700B LAN interface (BNC connector)
      PASSED
```

Removing/Installing the Power Supply

If you must replace the power supply assembly, follow the steps outlined in this section.

WARNING

Shock Hazard!
Before removing the power supply, make sure that the card cage is powered off and wait a few minutes for the capacitors to discharge.

The steps to take when removing the power supply are:

1 Remove the top cover.

2 Remove side panel.

3 Remove emulator and analyzer cards.

4 Remove the system controller card.

5 Remove front bezel and disconnect the power light cable.

6 Remove the rear panel.

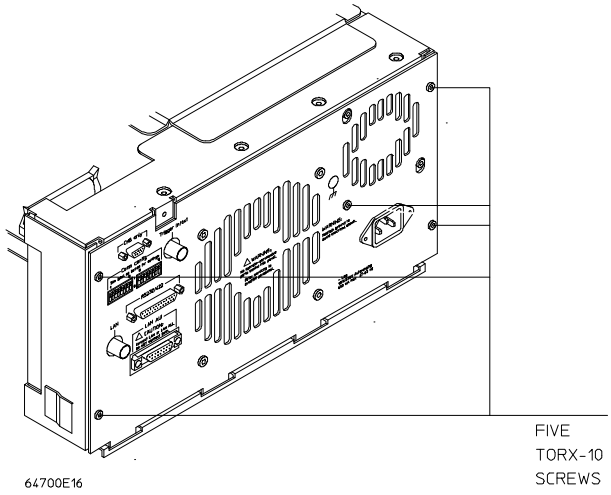
7 Disconnect the fan power cable.

8 Remove the power supply.

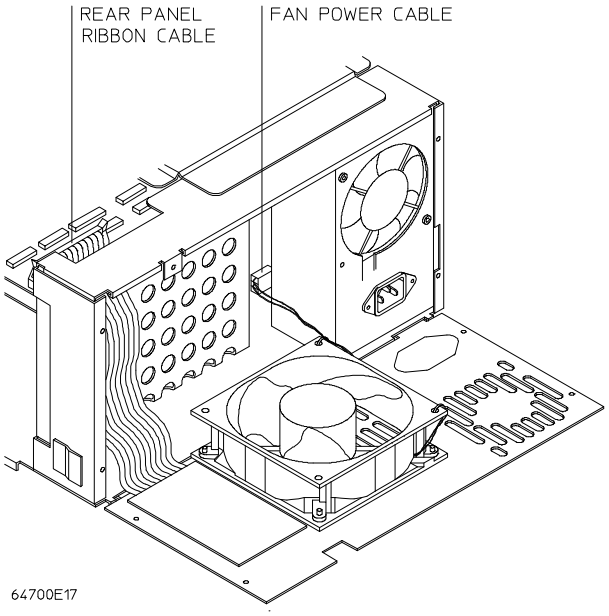
The first six steps are described in the "Installing Emulator/Analyzer Products into the HP 64700B" section of the "Installing Hardware into the HP 6470A" chapter.

The replacement power supply is installed in the reverse order.

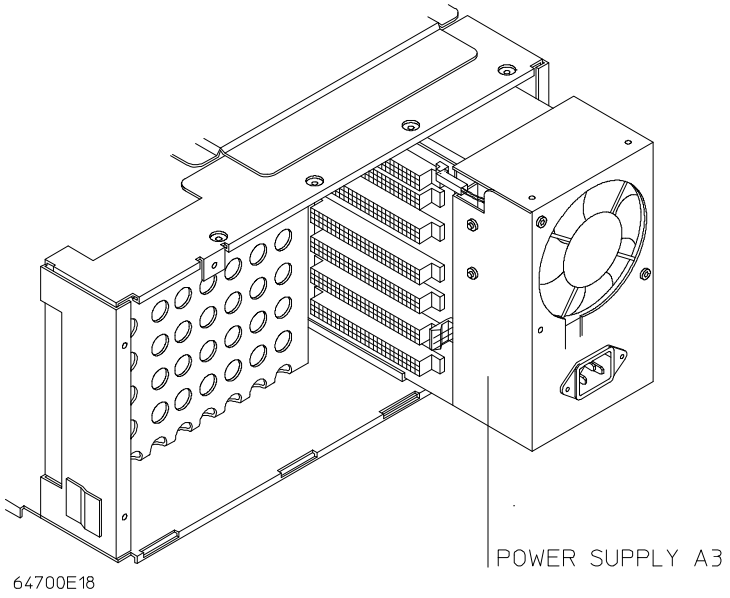
6 Remove five Torx T-10 screws as shown.



7 Pull the rear panel back and remove the fan cable.

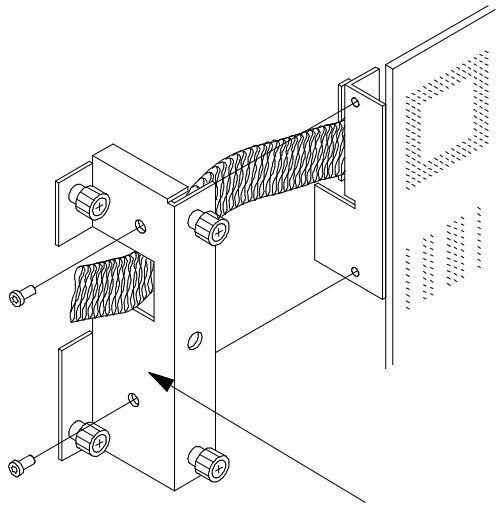


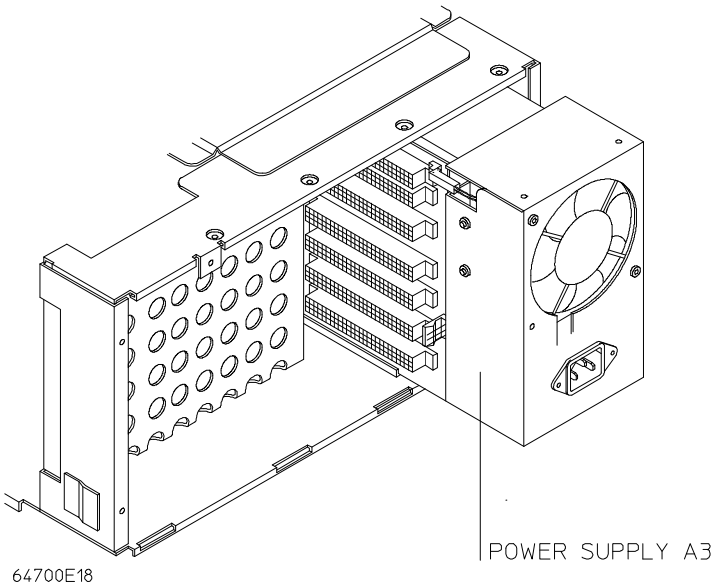
8 Remove two screws holding the power supply in place. Slide power supply assembly back to remove.

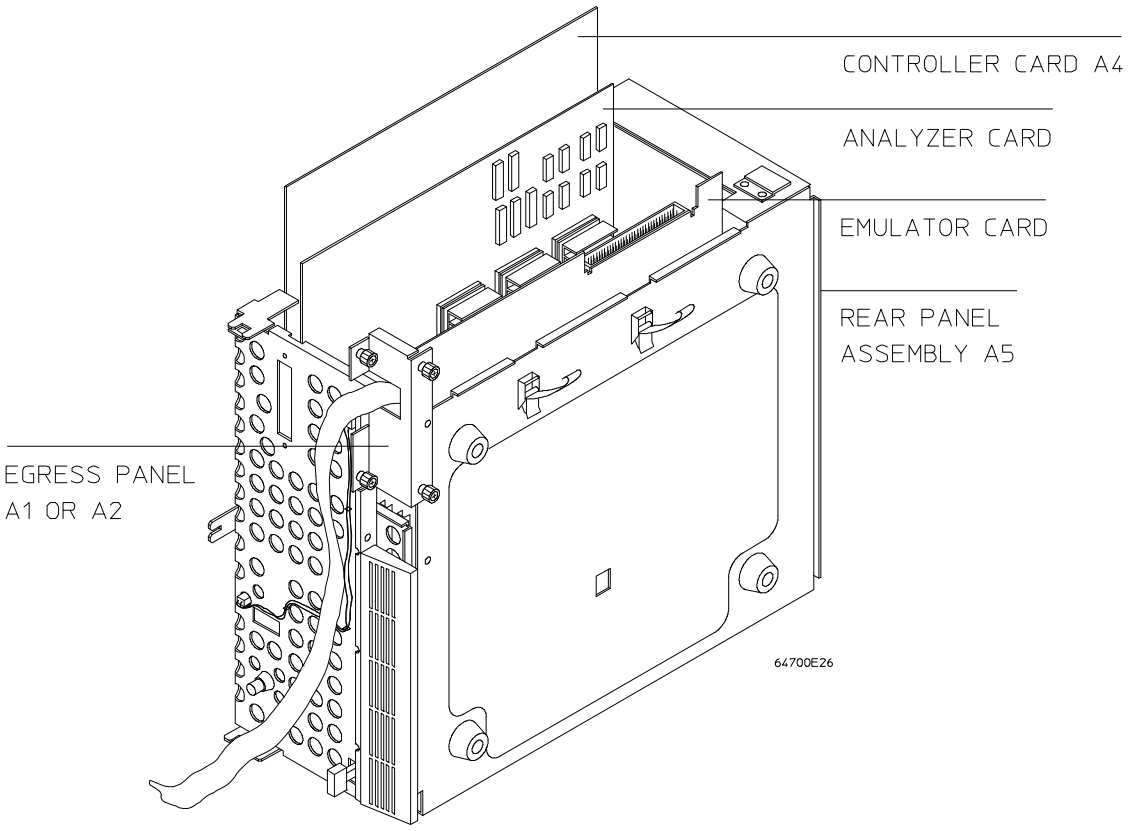


Parts Locator

This section provides information in the form of illustrations for locating hardware parts you may want to order. When you find the part in the illustration, it is labeled by a reference designator number. All reference designators in this chapter will have the prefix "**A**" followed by a designator number. When you have located the designator number, go the the next section entitled Parts List and find the reference designator in the first column. The corresponding part number and description of the part will be listed in this section. You can order the parts through the Support Materials Organization (SMO), or through you local HP Representative.


EGRESS PANEL A1 OR A2
(SEE PARTS LIST)


POWER SUPPLY A3
64700E18


CONTROLLER CARD A4
ANALYZER CARD
EMULATOR CARD
REAR PANEL
ASSEMBLY A5
EGRESS PANEL
A1 OR A2
64700E26

Parts List

Ref	Part Number	Description
A1	64700-00203	Egress Panel (for narrow width cables)
A2	64700-00204	Egress Panel (for wide width cables)
A3	64700-62603	Power Supply Assembly
	64700-69603	Power Supply Assembly - Exchange Part Number
A4	64740-66515	Host controller card
A5	64700-60202	Rear panel assembly

9

Specifications

Specifications

Physical

Dimensions: 173 mm high, 325 mm wide, 389 mm deep (6.8 in. x 12.8 in. x 15.3 in.).

Weight: empty, 9.3 kg (20.6 lb).

Electrical

Power: 110 or 230 Vac (autoselecting), -18% to +20% 48 to 63 Hz, 600 VA max.

CMB: Maximum input Vcc +5 V, GND -5 V.

BNC Trigger Input: positive edge TTL level with 511 ohms to ground with <= 50 pF in parallel. Maximum input: 5 V above Vcc, 5 V below ground.

BNC Trigger Output (open emitter): logic high level with 50 ohm load, >= 2.0 V; logic low level with 50 ohm load, <= 0.4 V.

Environmental

Temperature: operating, 0°C to +40°C (+32°F to 104°F); non-operating, -40°C to +70°C (-40°F to 158°F).

Altitude: operating/non-operating, 4 600m (15 000 ft).

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Certification and Warranty

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 Bureau of Standards, to the extent allowed by the Bureau's calibration facility, and to the calibration facilities of other International Standards Organization members.

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

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
U.S.A.

declares, that the product

Product Name: Microprocessor Emulator/Analyzer

Model Number(s): HP 64700B Series Mainframe and All 64700 Series Emulators, Analyzers, and Memory

Product Options: All

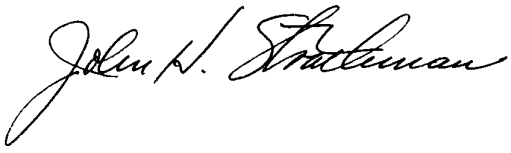
conforms to the following Product Specifications

Safety: IEC 348 / HD 401 S1
UL 1244
CSA-C22.2 No. 231 Series-M89

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, 80% Modulation, 26 MHz - 1000 MHz
IEC 801-4:1988 /EN 50082-1 (1992): 0.5 kV Signal Lines, 1 kV Power Lines

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, October 4, 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: +49-7031-144195)

Product Regulations

Safety IEC 348 / HD 401 S1
UL 1244
CSA-C22.2 No. 231 Series-M89

EMC This product meets the requirements of the European Communities (EC) EMC Directive 89/336/EEC.

Emissions EN55011/CISPR 11 (ISM, Group 1, Class A equipment)

Immunity

EN50082-1	Code[1]	Notes[2]
IEC 801-2 (ESD) 4kV CD, 8kV AD	3	1,2,3
IEC 801-3 (Rad.) 3 V/m	1	3
IEC 801-4 (EFT) 0.5 kV Signal Lines, 1kV power	1	3

[1] Performance Codes:
1 PASS - Normal operation, no effect.
2 PASS - Temporary degradation, self recoverable.
3 PASS - Temporary degradation, operator intervention required.
4 FAIL - Not recoverable, component damage.

[2] Notes:
1 Electrostatic Discharge (ESD) to the 64700B mainframe may cause degradation in performance requiring operator intervention.
2 The active probe is sensitive to ESD events. Use standard ESD preventative practices to avoid component damage.
3 The CMB and active probe power ports were not subjected to immunity testing.

Sound Pressure Level Less than 60 dBA

Safety

Summary of Safe Procedures

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

Ground The Instrument

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument is equipped with a three-conductor ac power cable. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable meet International Electrotechnical Commission (IEC) safety standards.

Do Not Operate In An Explosive Atmosphere

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

Keep Away From Live Circuits

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with the power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

Do Not Service Or Adjust Alone

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

Do Not Substitute Parts Or Modify Instrument

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification of the instrument. Return the instrument to a Hewlett-Packard Sales and Service Office for service and repair to ensure that safety features are maintained.

Dangerous Procedure Warnings

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

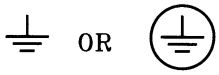
WARNING Dangerous voltages, capable of causing death, are present in this instrument. Use extreme caution when handling, testing, and adjusting.

Safety Symbols Used In Manuals

The following is a list of general definitions of safety symbols used on equipment or in manuals:

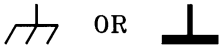
Instruction manual symbol: the product is marked with this symbol when it is necessary for the user to refer to the instruction manual in order to protect against damage to the instrument.

Indicates dangerous voltage (terminals fed from the interior by voltage exceeding 1000 volts must be marked with this symbol).



Protective conductor terminal. For protection against electrical shock in case of a fault. Used with field wiring terminals to indicate the terminal which must be connected to ground before operating the equipment.

Low-noise or noiseless, clean ground (earth) terminal. Used for a signal common, as well as providing protection against electrical shock in case of a fault. A terminal marked with this symbol must be connected to ground in the manner described in the installation (operating) manual before operating the equipment.



Frame or chassis terminal. A connection to the frame (chassis) of the equipment which normally includes all exposed metal structures.

Alternating current (power line).

Direct current (power line).

Alternating or direct current (power line).

CAUTION A CAUTION denotes a hazard. It calls your attention to an operating procedure, practice, condition, or similar situation, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

WARNING A WARNING denotes a hazard. It calls your attention to a procedure, practice, condition or the like, which, if not correctly performed, could result in injury or death to personnel.