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Installing Peripherals

Volume I

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Introduction

This manual describes how to add many devices to your HP 9000 Series 300/400 computer system and is intended for system administrators. You should locate and have the following manuals available for reference:

- *How HP-UX Works: Concepts for the System Administrator*, HP part number B1852-90005
- *System Administration Tasks Manual*, HP part number B1862-90008

Note If your system is part of an HP-UX cluster, you should locate and have available *Managing Clusters of HP-UX Computers*, HP part number B1862-90010.

References will be made to these manuals where necessary. You should also have the documentation that was shipped with your device.

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Manual Organization

The two-volume *Installing Peripherals* set has a “paired” chapter organization. For each type of device you will find the following:

An “Installing ... ” chapter containing the hardware installation procedures,

followed by;

A “Setting-Up ... ” chapter containing the HP-UX configuration instructions.

For example, Chapter 7: "Installing Disk and Tape Drives" is followed by Chapter 8: "Setting Up HP-UX for Disk Drives".

The “Setting-Up ... ” chapters focus on providing the necessary procedures for setting up your device using SAM (System Administration Manager). If SAM is not available, use the final chapter of each volume to learn how to set up HP-UX for devices using commands. If you use commands, refer to the HP-UX values provided in the “HP-UX Set-Up Information” sections for your device to complete the set-up task.

The structure of *Installing Peripherals* is as follows:

- *Volume 1* contains:
 - hardware installation and HP-UX software set up instructions for:
 - interface cards
 - accessory cards
 - terminals
 - modems
 - disk drives
 - tape drives
 - Instructions for installing memory and I/O Expanders.

- *Volume 2* contains:
 - hardware installation and HP-UX software set up instructions for:
 - printers
 - plotters
 - graphic devices
 - computer accessories



Overview of Adding a Peripheral

Ten basic steps are required to add peripheral devices to your system. The following general procedure highlights these steps. Consult the chapter in this manual for the specific peripheral you are adding to get more detailed information related to the following steps.

1. Play it safe.
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

For SCSI devices and interface cards, this step is required. For all other cases, it is recommended but not required.
2. Determine the hardware address or location of the peripheral. The best location to connect your peripheral depends on the shared sets of I/O resources and the expected usage. For example, you would not want to connect a plotter to the same HP-IB interface as your root disk. This would substantially degrade your disk performance. A better location for the plotter would be on a separate HP-IB interface with other slower devices.
3. Install the peripheral. This can involve two steps: (1) installing an interface card (however, the interface card will most often already be installed) and (2) connecting the peripheral to the interface card. Consult

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the documentation that came with the peripheral and the section in the *Installing Peripherals* manual dedicated to the particular interface or peripheral.

4. Reconnect the power cord to your computer and turn it on. This will cause your system to reboot. This is not necessary if you did not turn your system off in step 1.
5. Determine how the peripheral is to be accessed: block or character (raw) mode. A device file must exist for each type of access to the peripheral.
6. Determine the device driver necessary to communicate with the peripheral.
7. Determine if the device driver necessary to communicate with the peripheral is part of the current kernel configuration. You can use SAM for this or look at the the system configuration file `/etc/conf/dfile`.
8. If the device driver is not part of the current kernel configuration, you will need to edit the system configuration file to add the device driver and regenerate the kernel. You can use SAM for this entire process or edit the files and regenerate the kernel using HP-UX commands. Refer to *System Administration Tasks Manual* Chapter 2: "Constructing an HP-UX System" for instructions on regenerating your kernel.
9. Determine if the device file necessary to communicate with the peripheral device already exists on your HP-UX system. Device files are located in the `/dev` directory. The device files shipped with your system are shown in Table 1-1. If you do not want to use these device names, you can link them to the name you want. However, do not link the file `/dev/dsk/0s0` to another filename.
10. If the appropriate device file does not exist for the newly installed peripheral, you must create one. If you are using SAM to add your device, SAM will create the device file. If you are not using SAM, use the `mknod` command to create the device file.

Note

If your system is a cluster, you must execute SAM or HP-UX commands on the cluster node to which the device is physically connected.

1-4 Introduction

Device Files

The HP-UX operating system requires special files, called **device files**, to perform I/O to peripheral devices. Each peripheral on your system needs a device file associated with it for HP-UX to communicate with the peripheral. Device files are created using the `mknod(1M)` command. If you are using SAM, it will automatically create the device file for you when you add the peripheral to your system. If you are not using SAM, you must directly execute `mknod` to create the device file. Adding your peripheral using the `mknod(1M)` command is described in *Installing Peripherals, Volume 1* Chapter 9: "Setting Up Devices Using HP-UX Commands" and *Installing Peripherals, Volume 2* Chapter 7: "Setting Up Devices Using HP-UX Commands". Device files contain the code for the following peripheral attributes:

Select Code	All peripherals connect to an interface card, either built-in or optional. The interface card has switch settings on it that identify the interface card on the DIO bus. These switch settings are referred to as the select code . Each interface card must have a unique select code.
Bus Address or Port Number	There are interfaces to which more than one device can connect. For these interfaces (HP-IB, SCSI, RS-232C multiplexers, etc.) the device is assigned a number. This number is the bus address for HP-IB and SCSI interfaces and the port number for RS-232C interfaces that, like multiplexers, have more than one port.
Device Type	Each device can be classified as a block device or a character device depending on the method used to transfer data to and from the device.
Device Driver	Each device has a software module, called a device driver , that arbitrates communication between HP-UX and the device. The device drivers are listed in the <code>/etc/master</code> file. The driver must be included in the kernel configuration file, <code>/etc/conf/dfile</code> .
Device Information	Additional device information is device and driver specific. This information controls the device behavior. For example, a tape drive can be instructed to rewind or not rewind after an access.

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There are four parameters to the `mknod(1M)` command:

- device filename (absolute or relative)
- file type
- major number
- minor number

The device file type parameter contains the device type attribute.

The file type parameter may specify a block or character device type.

The major number specifies the driver in numeric form. The `lsdev(1M)` command will display major numbers for all the device drivers. To find out what drivers are necessary to use your peripherals, look in `/etc/master` for the list of available drivers and a product number/driver alias table. Look up your product number in the alias table; you will need the associated driver number. For example, if you look up 9122, you will see that you need a `cs80` driver.

The minor number parameter contains the select code, bus address or port number, and the additional device information encoded in a six digit hexadecimal number, for example `0xFaF201`. The minor number format varies from device type to device type. The minor number format for each device type is described in *Installing Peripherals, Volume 1* Chapter 9: "Setting Up Devices Using HP-UX Commands" and *Installing Peripherals, Volume 2* Chapter 7: "Setting Up Devices Using HP-UX Commands".

Miscellaneous Device Files

The miscellaneous device class includes the device files that the system needs to run properly. Each HP-UX installation must have the device files `/dev/null`, `/dev/console`, `/dev/mem`, `/dev/kmem`, `/dev/dsk/0s0`, `/dev/swap` and `/dev/tty`. The device file `/dev/null` is a null file (a “bit bucket”) used by many HP-UX commands. The device file `/dev/console` identifies the system console and the device file `/dev/tty` is a synonym for the control terminal associated with a process group.

These miscellaneous device files are copied to your system when HP-UX is installed. *Do not change or modify them.* If one or more of these files is accidentally deleted or otherwise destroyed, you can recreate it with the `mknod` command using the character/blocked designation, major, and minor numbers given in Table 1-1.

Although there are additional device files created when HP-UX is installed, only the ones listed in Table 1-1 are vital to booting and running HP-UX.

Table 1-1. Default Device Files

Device File	File Type	Major Number	Minor Number	Device Description
<code>/dev/console</code>	c	0	0x000000	System message port
<code>/dev/syscon</code>	c	0	0x000000	System console (linked to console)
<code>/dev/systty</code>	c	0	0x000000	System tty (linked to console)
<code>/dev/tty</code>	c	2	0x000000	Process group control terminal
<code>/dev/null</code>	c	3	0x000002	Null file (“bit bucket”)
<code>/dev/mem</code>	c	3	0x000000	Physical memory image
<code>/dev/kmem</code>	c	3	0x000001	Kernel virtual memory image
<code>/dev/swap</code>	c	8	0x000000	Swap device
<code>/dev/dsk/0s0</code>	b	255	0xffff	Root pseudo device file

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Note The `/dev/dsk/0s0` device file (the root device) *must not* be removed from the system or linked to another file name, if HP-UX is to operate properly.

There needs to be a `/dev/systty` (which is linked to `/dev/console`), and a `/dev/syscon` (which is linked to some terminal—usually the console). This is explained in *init(1M)*.

HP-IB Device Guidelines

The following list provides some guidelines for HP-IB interfaces.

- DO NOT connect or disconnect an HP-IB device while the system is running, or turn power on or off to an HP-IB device while connected to a powered-up system. This could result in bad data on the HP-IB bus.
- If you should need to change the bus address switch settings on an HP-IB device, be sure to perform the task in the following sequence:
 1. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 2. TURN OFF the computer and unplug the power cord.
 3. Change the switch settings on the device.
 4. Turn on the device.
 5. Turn on your system.
- The system root device (hard disk) is usually located at select code 14, bus address 0 on a (high-speed) HP 98625A, HP 98625B, HP 98262A high-speed disk interface card, or SCSI interface card (HP 98265A).
- The built-in (internal) HP-IB is always at select code 7.
- The system printer (if present) should be on a low-speed HP-IB interface, separate from the system root device. A bus address of 1 is typical.
- An HP 7971 9-track tape must be placed on a low speed HP-IB. A bus address of 3 is typical.
- An HP 7974 or 7978 9-track tape drive should be placed on a high-speed disk HP-IB, if possible. A bus address of 3 is typical.
- Avoid putting flexible disk drives, cartridge tape drives, or 9-track tape drives on the same interface as the root device.
- Plotters and the HP 9111 graphics tablet should be placed on separate low-speed HP-IB interfaces when possible. Typical bus addresses are 5 and 6 for plotters and graphics tablets, respectively.

Introduction

SCSI Device Guidelines

The following list provides some guidelines for SCSI devices.

- Use of third party peripherals is at user's risk, and it is unsupported by Hewlett-Packard's standard support process.
- Because SCSI cable impedance and construction can have a significant effect on signal quality, only HP cables are recommended.
- *Do not* connect or disconnect any SCSI device while the system is running, or turn power on or off to any SCSI device while connected to a powered-up system. This could result in invalid data on the SCSI bus.
- Keep all devices powered on during and after system boot-up.
- *Do not* add or remove SCSI devices while the system is powered on.
- If you should need to change the bus ID on a SCSI device, please be sure to perform the task in the following sequence:
 1. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 2. TURN OFF the computer and unplug the power cord.
 3. Turn off the device.
 4. Change the bus ID on the device.
 5. Turn on the device.

Power on all SCSI peripherals and make sure they have time to complete their selftest before powering on the SPU (System Processor Unit).
 6. Turn on your system.
- The first SCSI interface is usually located at select code 14. Multiple SCSI interfaces can be added, using select codes 15, 16, and so on.
- The SCSI interface can support multiple SCSI disks, optical devices and DAT tape drives simultaneously.
- All Devices should have an unique bus address between 0 and 6. Please note the C1700A, Magneto Optical Disk Autochanger, requires 3 (three) SCSI addresses (one for the autochanger and one for each of its two drives).

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- The Series 300 BootROM searches from bus address 0 to 6. On the Series 300 your root disk should have a lower bus address than any other device on the bus. It is recommended that SCSI bus address 0 contain your root/system disk.

Note The SCSI DAT DDS Format Drive must be at a higher address than the root/system disk on the Series 300.

- The Series 400 BootROM searches from bus address 6 to 0. On the Series 400 your root disk should have a higher bus address than any other device on the bus. It is recommended that SCSI bus address 6 contain your root/system disk.
- Ensure that the total cable length (including external and internal cables) does not exceed 6 meters. The length of the SCSI bus should be kept as short as possible. However, do not use cables less than 0.5m in length. Refer to Table 1-2 for internal cable length of supported peripherals.

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Table 1-2. Supported SCSI Peripherals

Device Description	Internal Cable Length	Boot	System Disk	Install/Update
C2212A 332 Mb Disk	1.5 Meters	YES	YES	NO
Opt 001 332 Mb Disk	~	YES	YES	NO
Opt 003 1.3 Gb DAT	~	YES	NO	YES
Opt 004 CD-ROM	~	YES	NO	YES
Opt 004 2 CD-ROM	~	YES	NO	YES
C2213A 664 Mb Disk	1.5 Meters	YES	YES	NO
Opt 001 332 Mb Disk	~	YES	YES	NO
Opt 002 664 Mb Disk	~	YES	YES	NO
Opt 003 1.3 Gb DAT	~	YES	NO	YES
Opt 004 CD-ROM	~	YES	NO	YES
Opt 004 2 CD-ROM	~	YES	NO	YES
HP A1999A 700/S CD-ROM	0.3 Meters	YES	NO	YES
7980S/SX 1/2-inch tape	0.0 Meters	YES	NO	YES
C1701A MO Disk	0.1 Meters	NO	YES ¹	NO
C1700A MO Autochanger	0.2 Meters	NO	YES ¹	NO
C1512A 1.3 Gb DAT	0.4 Meters	YES	NO	YES
HOST	Model 375 : .1 meters Model 345 : .5 meters Model 400S: 1.5 meters HP 98625A: 1.0 meter HP 98658A: .1 meters			

¹ Could be used as a system disk but it is not recommended because it has slower throughput than a winchester disk drive. The best use for optical devices is for online backup or large data archival.

- Interrupt level for SCSI devices must be 4.
- SCSI bus address 7 is recommended for the SCSI interface.
- Terminator resistors are always installed in the Host Adapter. This terminator provides matching impedance on the bus circuits. Without the terminator the bus will not work. HP SCSI host adapter is shipped with proper terminator.
- The last SCSI device in the chain, even if it is the only one, must have a terminator installed to its second connector. This terminator provides matching impedance on the bus circuits. Without the terminator the bus will not work.
- Make sure there are no unterminated cables (i.e. all cables are attached to a device at both ends). Both the 400S and 400T must have a high-density terminator installed on the back panel if no external devices are in use.
- All devices should be powered by the same electrical circuit. The system ground must be isolated from other electrical devices such as copying machines, arc welders and air conditioners. HP supplied cables supply correct grounding.

Introduction

RS-232C Cabling Guidelines

Terminology and Background

The type of connect that a device (SPU or peripheral) provides is usually one of, or a variant of:

DCE	Data Communications Equipment
DTE	Data Terminal Equipment
DQE	Nominally wired DCE, but with DTE hidden on pins unused by EIA.

Historically, DCEs were modems, and DTEs were whatever “terminated” the data path, typically an actual terminal and one end, and the computer at the other. A pair of DCEs were always assumed to be in the link, and they used something other than RS-232 to communicate with each other. The generalized circuit was:

```
Computer[DTE]---{ DCE~~phone lines~~DCE }---[DTE] terminal
```

The connectors and pin-outs at the DCE (“-{}” above) are specified. The cable termination at the DTE itself is not, and in the early days, the cable was hard-wired right into the device (typically an ASR-33 TTY).

When the EIA created RS-232, it failed to adequately describe the case of direct computer-peripheral connection. This is the now-common configuration of DTEs connecting directly to other DTEs, with no DCEs in sight. This may be what you are trying to do, and why you are reading this document. Today’s devices, and their serial connectors, often do not clearly fall under DTE or DCE, and they provide a dismaying assortment of connector genders, styles and pin counts.

Although nominally a 25-pin connection, HP systems typically provide a maximum of 9-pins, sometimes 7, and all that is really required for a device-device direct connection is 3 pins.

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Despite this potential confusion, the terms DTE and DCE still have their uses. For our purposes, when normalized to 25 pins:

DCE:

- Transmits on pin 3
- Receives on pin 2
- Monitors pins 4 (RTS), 20 (DTR), if present
- Asserts pins 5 (CTS), 6 (DSR), 8 (CD), 22 (RI), if present

DTE:

- Transmits on pin 2
- Receives on pin 3
- Asserts pins 4 (RTS), 20 (DTR), if present
- Monitors pins 5 (CTS), 6 (DSR), 8 (CD), 22 (RI), if present

DQE: Wired for DCE-25F, but convertible to DTE-25M with 92219Q cable.

Pin 7 is signal ground for both DCE and DTE.

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Pin Counts

When there are fewer than 25 pins (especially 9-pin), the actual pin numbers vary. The type of connector implied by the counts listed in this guide are:

50	Amp "blue ribbon" D-style
25	DB-25 subminiature D-style
9	DB-9 subminiature D-style
4	USOC RJ-11C (same as on contemporary consumer telephones)

Connector Gender

Actual DCEs, such as modems, are still usually 25-pin female. No particular connector gender is common to DTEs. The abbreviations used in this guide are:

M	Male
F	Female

The following tables are intended to be a quick-reference to to selection of RS-232 cables for connecting serial devices directly to an HP 9000 Series 300/400 workstation. It does not cover RS-422. It does not cover the case of direct CPU-CPU connections, as LAN has replaced RS-232 in this application.

Table 1-3. RS-232-C Interconnections

Host Type	Device Type	Cable Suggested
DTE-4F	DCE-25F	Not recommended for actual DCEs. Use 92219T + 17255=D otherwise.
DTE-4F	DTE-25F	92219T
DTE-4F	DTE-25M	92219T plus 92224F adaptor
DTE-9F	DCE-25F	92221M, or 98561-61604 plus 40242M
DTE-9F	DTE-25F	92221P, or 98561-61604 plus 40242G
DTE-9F	DTE-25M	98561-61604 plus 40242C
DTE-9M	DCE-25F	24542M, or 98574-61606 plus 92221M, or 98574-61606 + 98561-61604 + 40242M
DTE-9M	DTE-25F	24542G, or 98574-61606 plus 92221P, or 98574-61606 + 98561-61604 + 40242G
DTE-9M	DTE-25M	24542H, or 98574-61606 + 98561-61604 + 40242C
DCE-25F	DCE-25F	40242G
DCE-25F	DTE-25F	40242M, or 92224M adaptor, if cables present
DCE-25F	DTE-25M	40242C, or simply directly interconnect, if cables present
DQE-25F	DCE-25F	92219Q
DTE-25F	DCE-25F	40242M, or 92224M adaptor, if cables present
DTE-25F	DTE-25F	40242G
DTE-25F	DTE-25M	17255D
DTE-50F	DCE-25F	5061-4215
DTE-50F	DTE-25F	5061-4216 plus 92224M
DTE-50F	DTE-25M	5061-4216

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Table 1-4. RS-232C Host Connector Types

Host	Type of Connector	Cable Included
Model 310 built-in	DTE-25F	<i>none</i>
Model 318 built-in	DTE-25F	<i>none</i>
Model 319 built-in	DTE-25F	<i>none</i>
Model 320 built-in	see 98561-6653x	-
Model 330 built-in	see 98562-6653x	-
Model 332 built-in	DTE-25F	<i>none</i>
Model R/332 built-in	DTE-25F	<i>none</i>
Model 340 built-in	DTE-25F	<i>none</i>
Model 345 built-in	DTE-25F	<i>none</i>
Model 350 built-in	see 98562-6653x	-
Model 360 built-in	see 98562-6653x	-
Model V/360 built-in	DTE-9F	<i>none</i>
Model 370 built-in	see 98562-6653x	-
Model 375, 380 built-in without 98574-61606	-	-
with 98574-61606	DTE-9M	-
w/98574-61606 + 98561-61604	DTE-9F	0.3m
	DTE-25F	0.3m
Model 400 built-in without K2292	-	-
with K2292	DTE-25F	<i>none</i>
	3x DTE-25F	0.3m
98561-6653x without 98561-61604	-	-
with 98561-61604	DTE-9F	-
	DTE-25F	0.3m
98562-6653x without 98561-61604	-	-
with 98561-61604	DTE-9F	-
	DTE-25F	0.3m
98626A with #001 (5061-4215)	DTE-50F	<i>none</i>
with #002 (5061-4216)	DTE-25M	4.9m
	DCE-25F	4.9m
98628A with #001 (5061-4215)	DTE-50F	<i>none</i>
with #002 (5061-4216)	DTE-25M	4.9m
	DCE-25F	4.9m
98638A (standard) or may be considered	8x DCE-25F	<i>none</i>
	8x DQE-25F	<i>none</i>
98642A, port 0 with 92219S cable	DTE-25F	<i>none</i>
	DTE-25M	15m
98642A, port 1 with 92219T cable	DTE-4F	<i>none</i>
	DCE-25M	15m

Table 1-5. Peripheral Types

Type	HP Peripheral Products
DCE-25F	These devices are all modems, and require that the host provide at least a 9-pin DTE connection. K1489, K1492, K1494, K1498, 37212A/B, 39301A, 50759A, 92203A, 92205A/B
DTE-25F	C1001, C1002, C1003, C1006, C1010, C1200A, C1202A#1A9, C1600A, C1601A, C1602A#1AX, C1620A, C1625A, C1627A, C1629A, C1631A, C2106A, HP150, 2225D, 2227A, 2228A, 2235, 2276A, 2277A, 2382A, 2390-series, 2560-series (#049), 2601A, 2602A, 2603A, 2620-series (port 2), 2631B, 2684A (w/26843A), 2686, 2687A, 2930-series, 3082A/B, 33440A, 33447A, 33449A, 33459A, 33471A, 3630A#001, 41063A, 45810, 45850, 7440A#001, 7475A#001, 7570A, 7575A, 7576A, 7580, 7585, 7586B, 7595, 7596A, 7599A, 9666A, 9807
DTE-25M	C1004, C1007, C1017, 7510A, 7550A
unknown	7550B

Installing Interface and Accessory Cards

Introduction

This chapter contains the hardware installation procedures for the following interface and accessory cards:

- HP 98546A Display Compatibility Interface
- HP 98622A GPIO (General Purpose I/O) Interface
- HP 98624A HP-IB Interface
- HP 98265A Small Computer Systems Interface (SCSI)
- HP 98625A Disk Interface
- HP 98625B Disk Interface
- HP 98626A RS-232-C Interface
- HP 98628A Datacomm Interface
- HP 98629A SRM Interface HP 50961A SRM Interface
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98643A Local Area Network (LAN) Interface
- HP 98644A Asynchronous Serial Interface
- HP 98562-66530 Human (System) Interface Board
- HP 98248A Floating-Point Accelerator Accessory Card
- HP 98248B Floating-Point Accelerator Accessory Card
- HP 98635A Floating Point Math Accessory Card
- HP 98620B DMA Controller Accessory Card

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Note

The hardware installation instructions for the following graphic device interface cards are documented in Volume 2, Chapter 4: "Installing Plotters and Graphic Devices":

- HP 98627A Color Output Interface
 - HP 98556A 2D Graphics Accelerator Accessory Card
 - HP 98548/49/50A High Resolution Graphics Interfaces
 - HP A1416A High Resolution Color Graphics Interface
 - HP 98287A Graphics Display Controller Interface
 - HP 98724A/98725A Local Graphics Bus Interface
 - HP 98726A Local Graphics Bus Interface
 - HP 98702A Graphics Address and Data Bus Interface
 - HP 98735-66580 Physical DMA Interface
 - HP 98735-66581 Virtual DMA Interface
-

HP 98546A Display Compatibility Interface

The HP 98546A Display Compatibility Interface converts digital display data from Series 300 computers into a composite video signal which is compatible with HP 35721, HP 35731, and HP 35741 monitors. It requires two adjacent slots in the backplane and the lower slot must be an I/O card (that is, even-numbered) slot.

The interface consists of two cards: a video card with an attached front panel and a graphics card that connects to the video card through a short ribbon cable.

Note The display connected to the HP 98546 Interface must be the only display in the system.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.



HP 98546A Display Compatibility Interface

Installing the HP 98546A Display Compatibility Interface

1. *Play it safe.*

- a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
- b. TURN OFF the computer and unplug the power cord.
- c. Remove the Display Compatibility Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
- d. Place the card on the envelope.

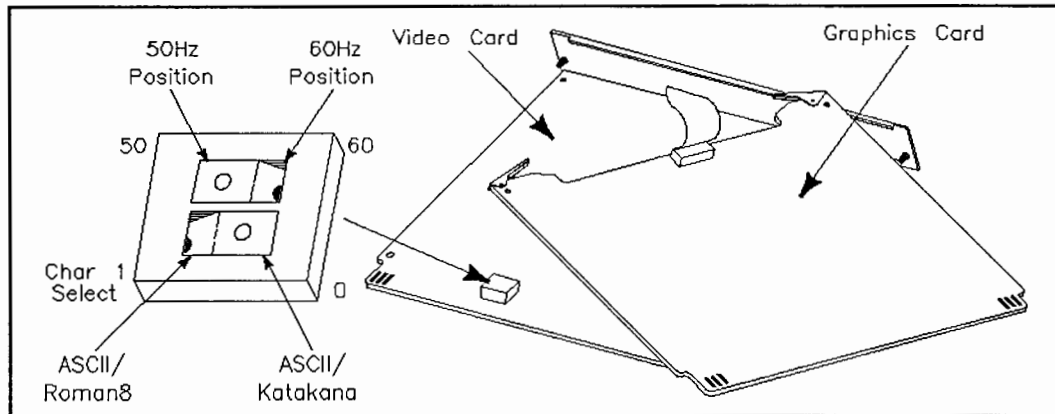


Figure 2-1.
Display Compatibility Interface switches

2. Check the power frequency.

Note This switch is preset to 60 Hz. If your power frequency is 60 Hz, or if you don't know your power frequency, you can skip to step 3. If you later notice a problem with your screen, come back and change the Hz setting.

- a. Find the 50/60 Hz switch on the video card (see Figure 2-1).
- b. Set the 50/60 Hz switch to the desired setting by referring to Figure 2-1.

3. Set the character select switch.

Note The character select switch is preset to ASCII/Roman 8; skip to step 4 if this the desired character set.

To change the character set from ASCII/Roman 8 to ASCII/Katakana (Japanese):

- a. Find the character select switch on the video card (see Figure 2-1).
- b. Set the character select switch from ASCII/Roman 8 to ASCII/Katakana by referring to Figure 2-1.

4. Insert the interface.

- a. If the graphics and video cards are not already connected together, plug the ribbon cable connector on the graphics card cable into the matching connector on the video card. The connector is designed so you cannot insert it backwards.
- b. Remove the *painted* cover plates from the back of your computer until you find two adjacent empty slots. The bottom slot must be a wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
- c. Hold the interface with the graphics card above the video card. Make sure the components are facing up.
- d. Keeping the graphics card slightly ahead of the video card, slide the cards into adjacent accessory slots as shown in Figure 2-2.

HP 98546A Display Compatibility Interface

2

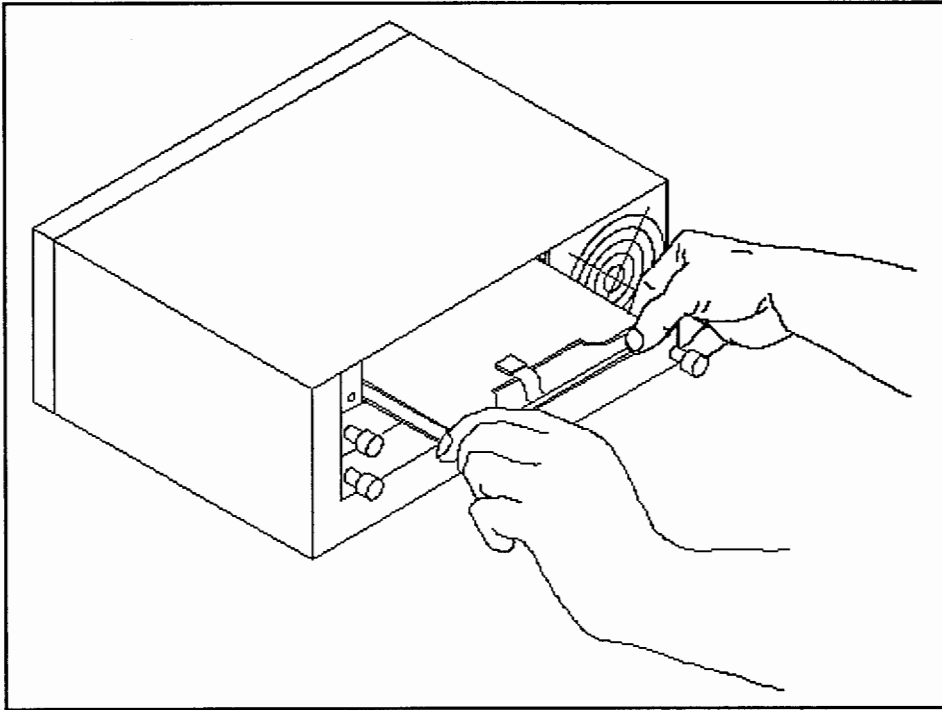


Figure 2-2.
Installing the Interface

- e. Using your thumbs, press the graphics (top) card into its slot first. When it is securely seated in its slot, its extractor levers will be even with the back of the computer frame.

2-6 Installing Interface and Accessory Cards

- f. Place the ribbon cable between the two cards, then tighten the thumb screws on the front panel until the end plate is flush with the back of the computer.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98622A GPIO (General Purpose I/O) Interface

HP 98622A General Purpose Input/Output (GPIO) Interface card is used for a wide variety of peripheral requirements. It supports 16-bit bi-directional data exchange. Extended control and status lines are available for applications that require more than one signal from the computer. Several handshake modes are also available to permit interfacing to a variety of equipment.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98622A GPIO Interface

The GPIO Interface can be configured in any number of ways depending on the requirements of your application. Abbreviated instructions are provided here; refer to the installation manual that came with the interface if you need more information.

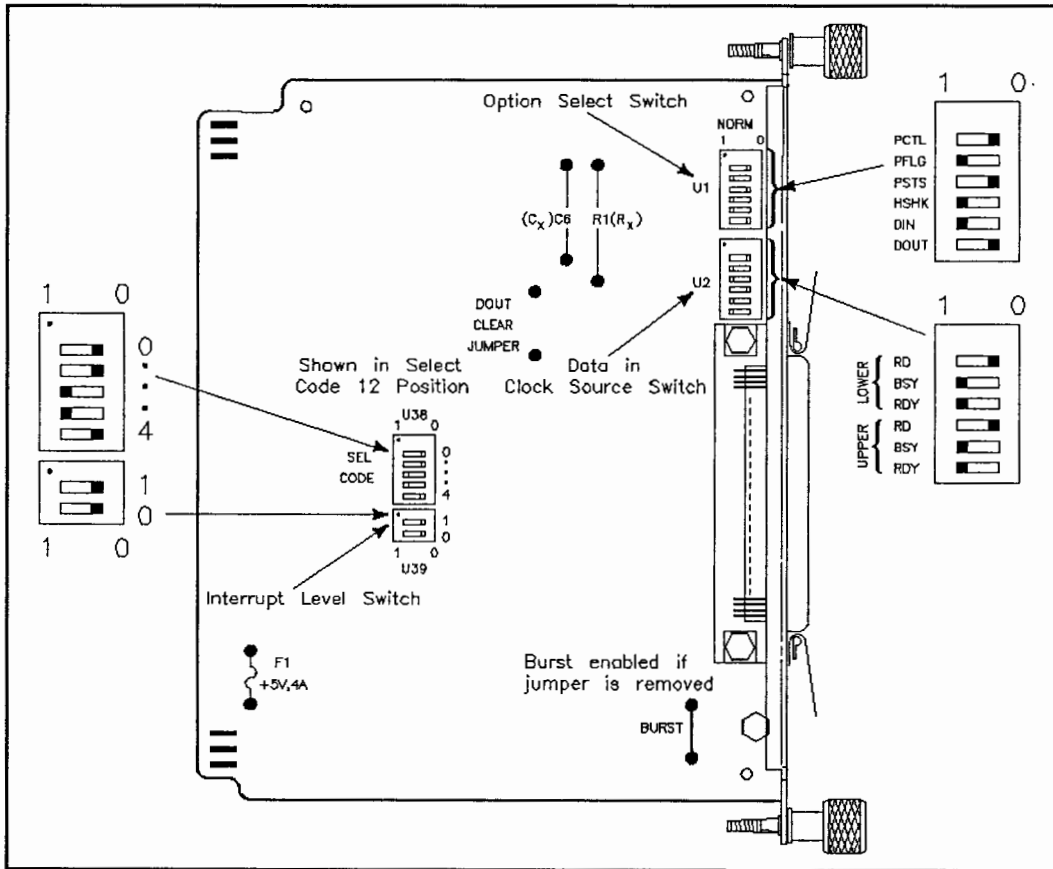


Figure 2-3.
HP 98622A GPIO Switches and Jumpers

HP 98622A GPIO Interface

1. *Play it safe.*
 - a. Follow the computer “shut down” procedure. See *System Administration Tasks Manual* Chapter 3: “Starting and Stopping HP-UX” for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the GPIO Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.
2. *Set the select code.*

Note The select code is preset to 12.

If select code 12 is already assigned to another device, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of five switches labeled U38 on the GPIO Interface (Figure 2-3). This group of switches determines the select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

3. *Set interrupt level switch.*

Set the interrupt level switch labeled U39 on the card, to interrupt level 3 (00) as shown in Figure 2-3 (interrupt level 3 is required for HP-UX). Refer to Table 2-1 for setting the interrupt level value.

Table 2-1.

Interrupt Level	Switch 1	Switch 0
3	0	0
4	0	1
5	1	0
6	1	1

4. *Set the data-in clock source switches.*

Set the data-in clock source switches (labeled U2). If connecting an HP 9884A Paper Tape Punch to this interface, set these switches as shown in Figure 2-3.

The right-hand three switches set the clock source for the data input lines DI0 through DI7. The left-hand 3 switches set the clock source for the data input lines DI8 through DI15. Select only one clock source (logic 0) for each group of input lines. The three clock sources are:

- **RD.** This mode causes the data to be clocked into the input register when the register is read. It accomplishes this by clocking the leading edge of the output enable signal of the register.
- **BSY.** This mode clocks the data into the data input register by a ready-to-busy transition of the PFLG line. This transition also clears the PCTL line.
- **RDY.** This mode clocks the data into the data input register by a busy-to-ready transition of the PFLG line.

HP 98622A GPIO Interface

5. Set the option Select switches.

Set the option Select switches (labeled U1) by referring to Table 2-2. If connecting an HP 9884A Paper Tape punch to this interface, set all of these switches to 1.

Table 2-2.
HP 98622A GPIO Interface
Option Select Switch Values

Switch Position Name	Function	Logic 1 (Switch Open)	Logic 0 (Switch Closed)
DOUT	Invert Data Out	Low = 1 High = 0	Low = 0 High = 1
DIN	Invert Data In	Low = 1 High = 0	Low = 0 High = 1
HSHK	Full/Pulse Handshake	Full	Pulse
PSTS	Invert PSTS	Low = \overline{OK} High = OK	Low = OK High = \overline{OK}
PFLG	Invert PFLG	Low = Rdy High = Bsy	Low = Bsy High = Rdy
PCTL	Invert PCTL	Low = set High = Clr	Low = Clr High = Set

6. Install or remove the jumpers on your HP 98622A card(s) as required by your peripheral.

- DOUT CLEAR Jumper.** With the jumper installed, both data output registers are cleared at power up and after an interface reset. With the jumper removed, contents of the register are undefined. The card is

2-12 Installing Interface and Accessory Cards

shipped without the jumper. If you intend to use the HP 9884A Paper Tape Punch with this interface, the jumper should be in.

- **BURST Jumper.** With the jumper installed, there is better overall system performance, but slightly slower GPIO performance on high-speed transfers. With the jumper removed, there is slightly degraded overall system performance, but better GPIO performance for transfers greater than 100K transfers/second. The card is shipped with the jumper. If you intend to use the HP 9884A Paper Tape Punch with this interface, the jumper should be removed.

Adjust the PCTL Delay if required. The PCTL line has a built in delay of 250ns. To increase the delay, increase the value of C6 40pF per 100ns of additional delay. To decrease the delay, decrease the value of R1 1.47k ohms per 100ns of decreased delay.

7. *Insert the interface.*

- a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. (*Do not* remove the silver cover plates from the bottom of a your computer.
- b. Insert the GPIO Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the metal end plate until the end plate is flush with the back of the computer.
- c. If you changed the select code of the GPIO Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
- d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

8. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98622A GPIO Interface9. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98622 at 12

appears in the list, you have correctly installed the GPIO Interface.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98624A Standard-Speed HP-IB Interface

The HP 98624A HP-IB Interface card implements the IEEE 488-1978 Standard Digital Interface for Programmable Instrumentation. The interface can communicate with as many as 14 HP-IB compatible instruments, connected with a maximum of 20 meters of cable (65.6 ft.) between them. It has interrupt capabilities and can carry out DMA transfers via the optional DMA Controller card.

It is a "normal" or "standard" speed HP-IB interface.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

HP 98624A HP-IB Interface

2

Installing the HP 98624A HP-IB Interface

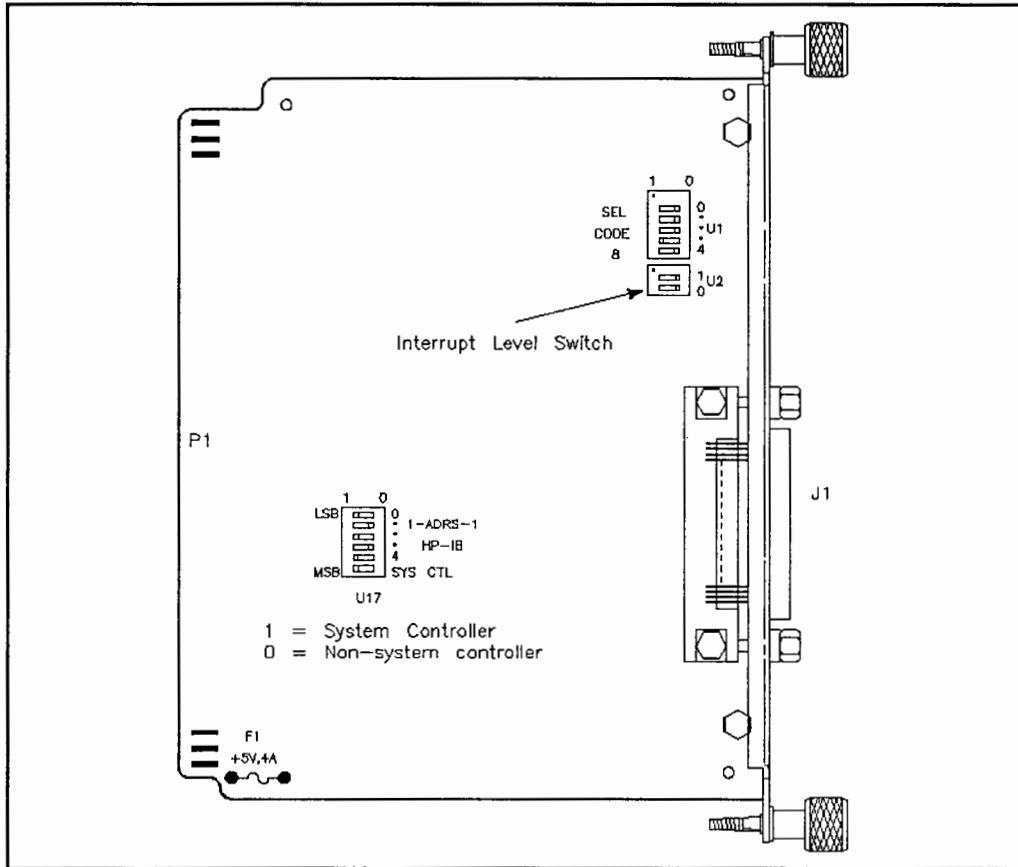


Figure 2-4.
HP 98624A HP-IB Interface Switches

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the HP-IB Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.
2. *Set the select code.*

Note The select code is preset to 8.

If select code 8 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of five switches labeled U1 on the HP-IB Interface (see Figure 2-4). This group of switches determines the interface's select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

HP 98624A HP-IB Interface

3. Set the interrupt level.

Note The interface is preset to interrupt level 3. Unless you are certain that interrupt level 3 is inappropriate for your application, do not adjust the interrupt level and skip to step 4.

To change the interrupt level, refer to Figure 2-4 and set the switches labeled U2 according to Table 2-3:

Table 2-3.

Interrupt Level	Switch 1	Switch 0
3	0	0
4	0	1
5	1	0
6	1	1

4. Set the address and system controller switches.

Note If you do not intend to connect two computers together with this interface, skip to step 5. The interface is configured to be system controller at address 21 and need not be changed.

- a. If you are connecting two computers together via HP-IB, only one of them can be set to address 21. To change the address of this interface, reset switches 0 through 4 in the group of switches labeled U17 (see Figure 2-4). As an example, to change the address from the default setting of 21 to a new setting of 20, just change switch 0 in this group to 0 (the opposite of that shown).

- b. If you are connecting two computers together via HP-IB, only one of them can be set to system controller. To change this interface to non-system controller, move the SYS CTL switch shown in Figure 2-4 to the 0 position (the opposite of that shown).

Note If you will be connecting a disk drive, printer, plotter or other peripheral to this interface, *and* you will be using an HP Series 200/300 operating system, *do not* set this switch to non-system controller.

5. *Insert the interface.*

- a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
- b. Insert the HP-IB Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the metal end plate until the end plate is flush with the back of the computer.
- c. If you changed the select code of the HP-IB Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
- d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

6. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98624A HP-IB Interface

7. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98624 at 8

appears in the list, you have correctly installed the HP-IB Interface.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

HP 98265A Small Computer Systems Interface (SCSI)

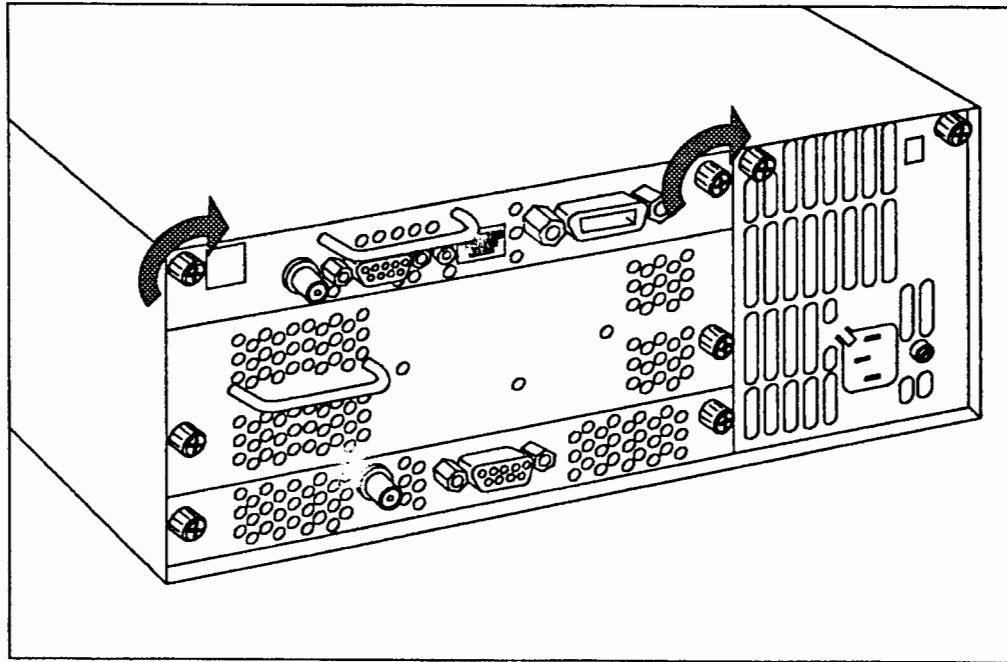
The HP 98265A SCSI Interface is a **daughter** board which allows you to connect SCSI devices (normally disk and/or tape drives) to your system. Daughter boards are boards that connect to a DIO System card or a DIO-II card to provide additional RAM on a processor or RAM board, an additional interface on the system interface board, an accelerator on a video board, or other augmentation of system capabilities.

Caution The HP 98265A SCSI Interface is not supported on the same system containing an HP 98625A HP-IB Interface. Only one of these interfaces is supported per system. If your system contains an HP 98625A HP-IB interface card, you must remove it before installing your HP 98265A SCSI Interface card.

HP 98265A Small Computer Systems Interface (SCSI)

Installing the HP 98265A Small Computer Systems Interface (SCSI)

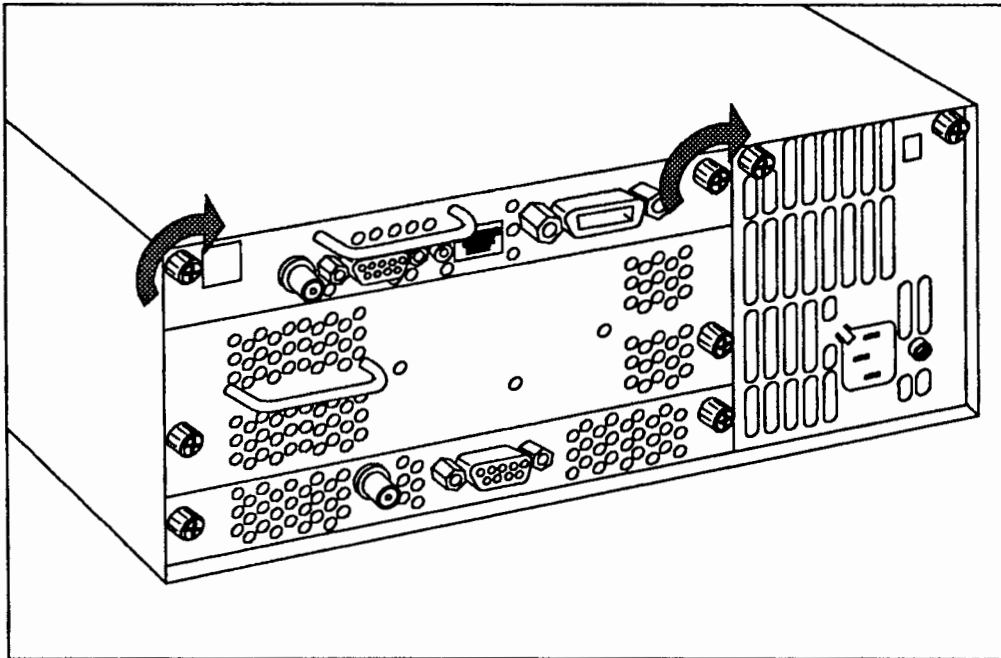
1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the SCSI Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on its envelope.
2. *Locate the Human (System) Interface Board (HP part number 98562-66530).*



LG200171_009

Figure 2-5.
Human (System) Interface Board

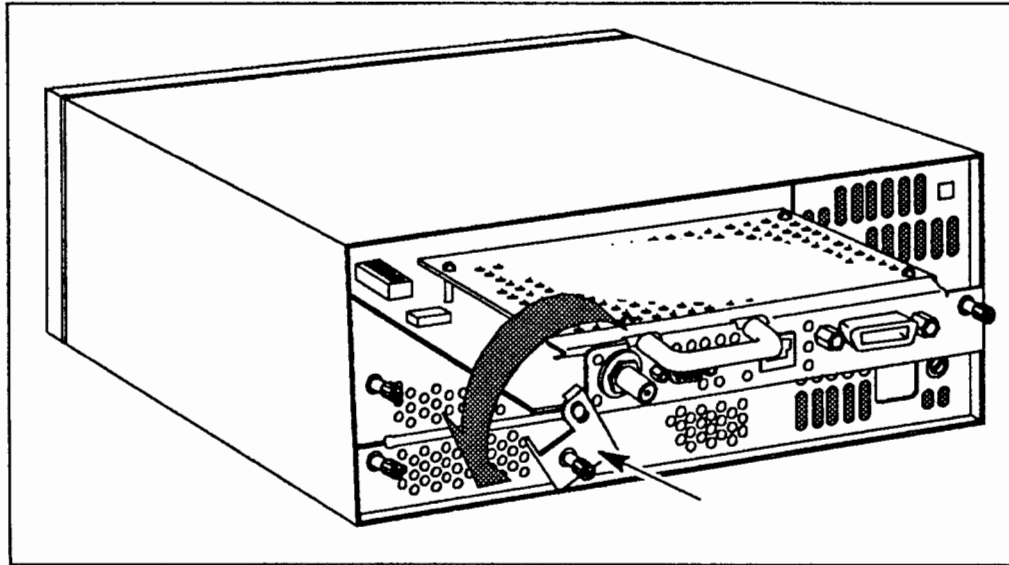
3. *Loosen the screws on the Human (System) Interface Board and slide it out far enough to expose the large connector.*



LG200171_009

Figure 2-6.
Slide-out Human (System) Interface Board

4. *Slide the left-hand flange out and rotate it down.*



LG200171_021

Figure 2-7.
Left-hand Flange

5. *Remove existing interface card.*

Note

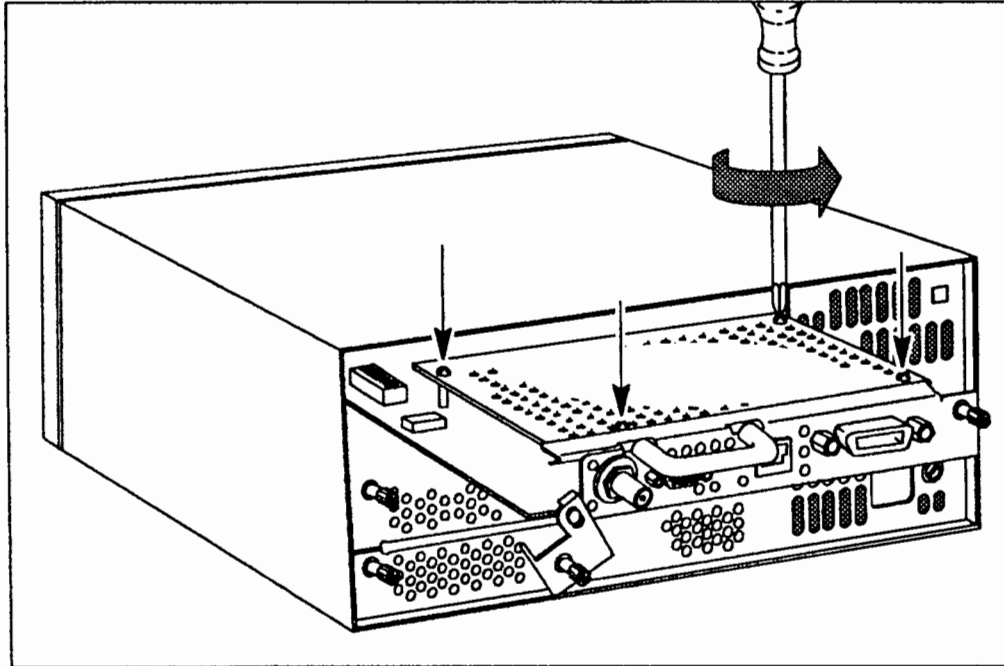
If the Human (System) Interface Board does not have an interface currently mounted on it, skip to step 6.

- a. Remove the existing cable by pulling it away from the interface card.

HP 98265A Small Computer Systems Interface (SCSI)

2

- b. Remove the four Pozidriv screws securing the interface card to the Human (System) Interface Board.

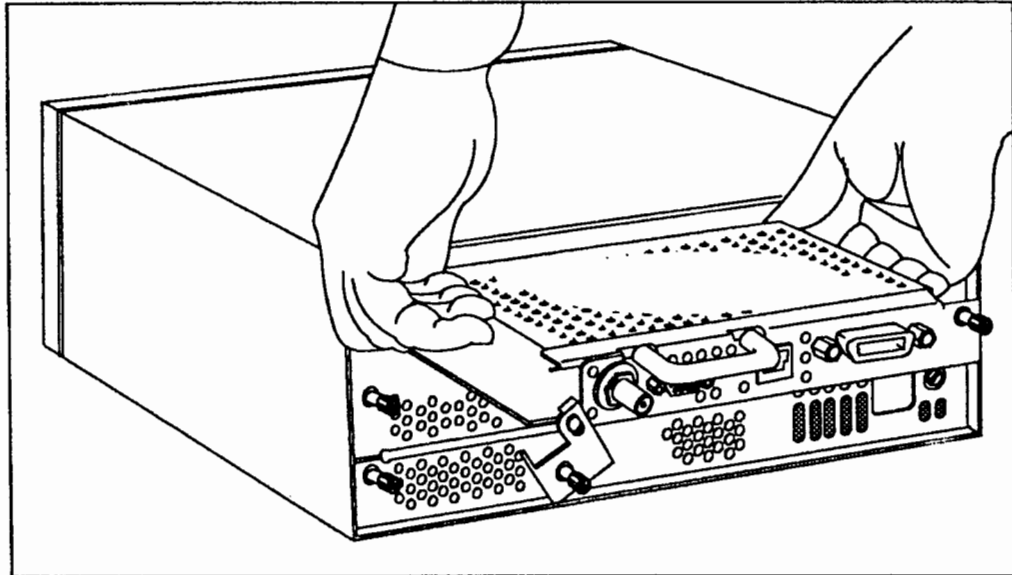


LG200171_018

Figure 2-8.
Pozidriv Screws

- c. Gently pull the interface card straight up and remove it from the Human (System) Interface Board.

2-26 Installing Interface and Accessory Cards



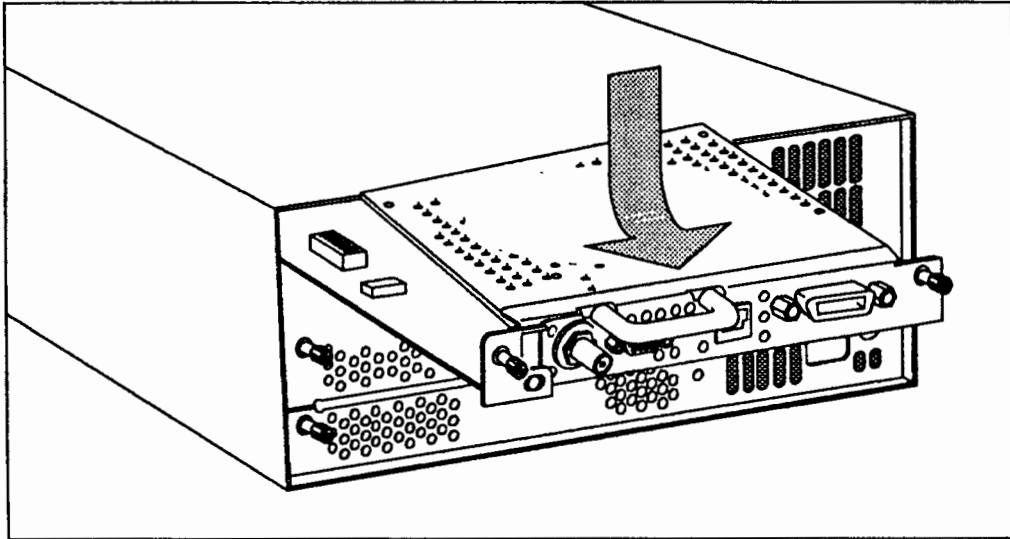
LG200171_014

Figure 2-9.
Removing the Existing Interface Card

- d. Wrap the interface card in static-free material and set it and the cable aside. The envelope that interface cards are shipped in is made of static-free material.
6. *Hold the SCSI card with the component side down and with the cable connector to the left.*

HP 98265A Small Computer Systems Interface (SCSI)

2



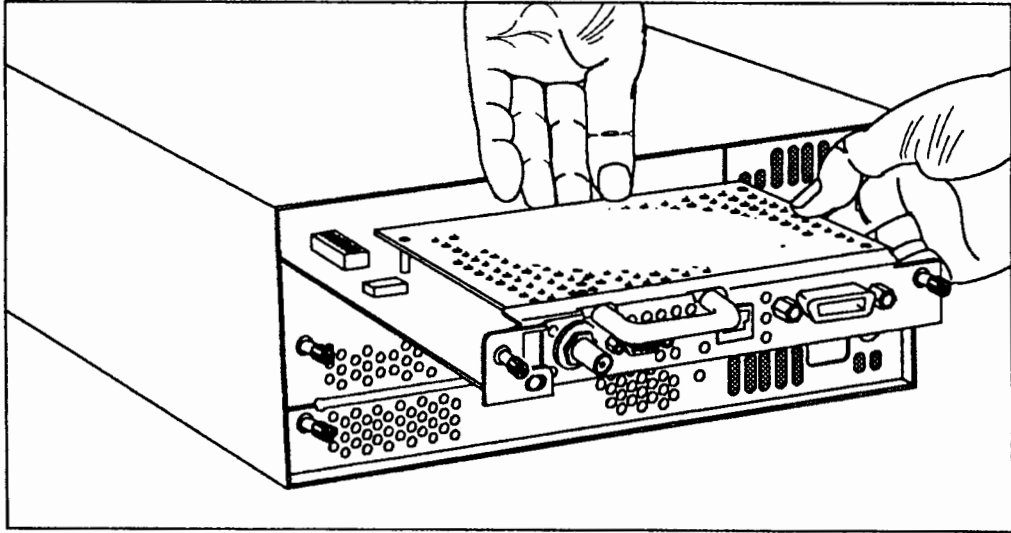
LG200171_028

Figure 2-10.
Position the SCSI Card

HP 98265A Small Computer Systems Interface (SCSI)

2

7. Press the connector on the SCSI card into the connector on the Human (System) Interface Board.



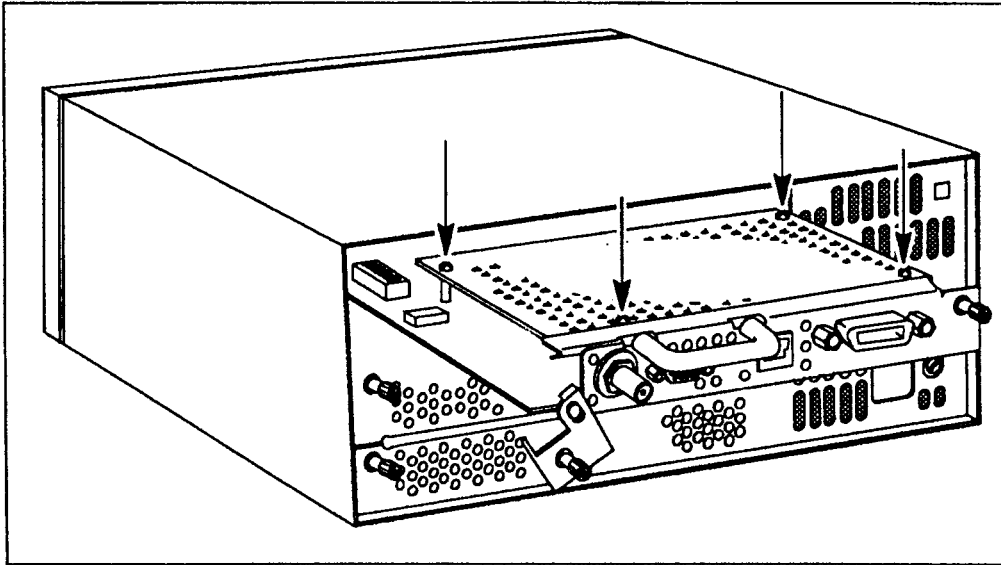
LG200171_027

Figure 2-11.
Joining the Connectors

8. Fasten the card to the board with the four screws provided.

HP 98265A Small Computer Systems Interface (SCSI)

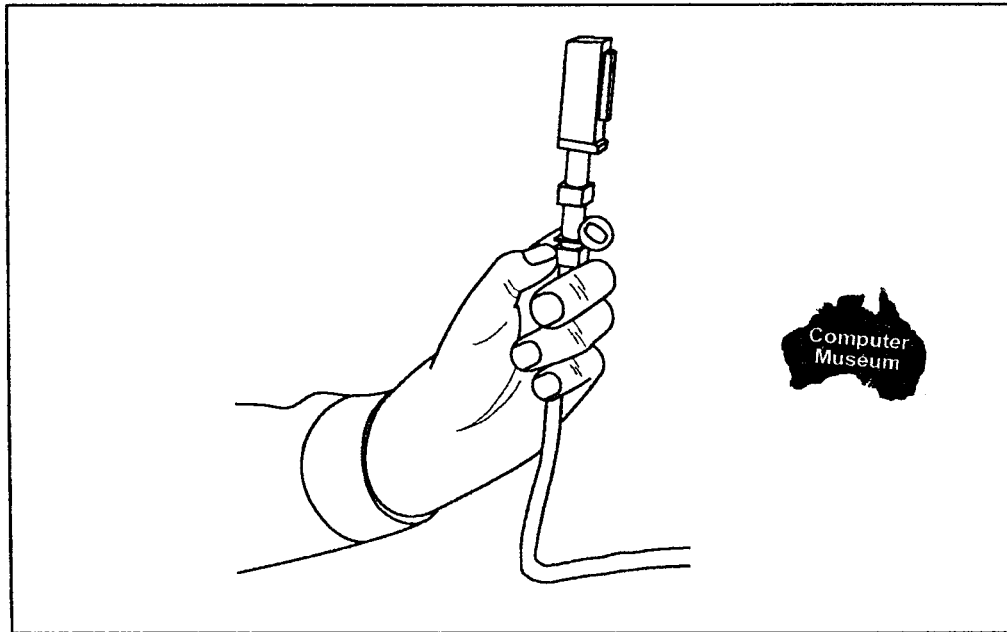
2



LG200171_020

Figure 2-12.
Locating the Four Screws

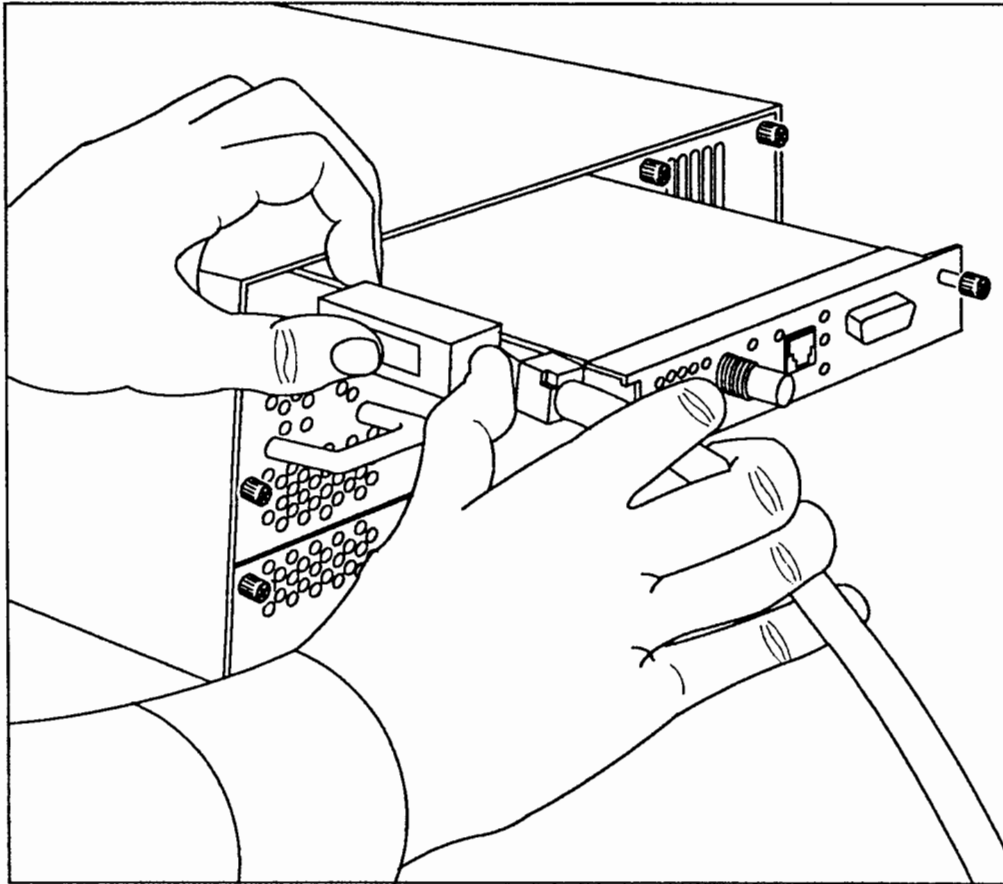
9. *Attach the cable.*
 - a. Locate the interface end of the cable.



LG200171_017

Figure 2-13.
Interface End of Cable

- b. Slide the connector onto the socket on the interface card.



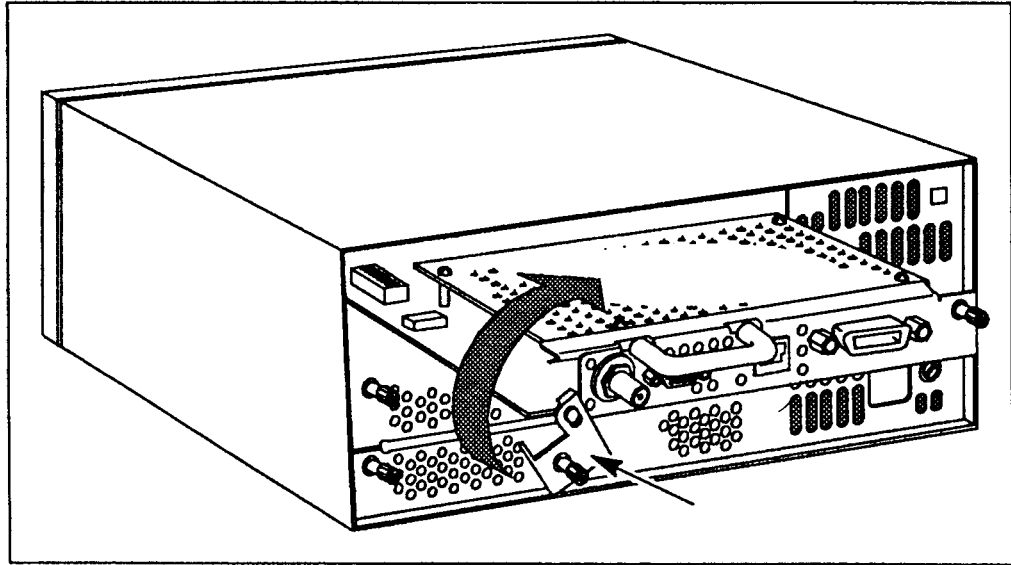
LG200171_024

Figure 2-14.
Connecting Cable to Interface Card

HP 98265A Small Computer Systems Interface (SCSI)

2

- c. Press the cable into the cable clamp.
- d. Rotate the left-hand flange up and slide it into place.



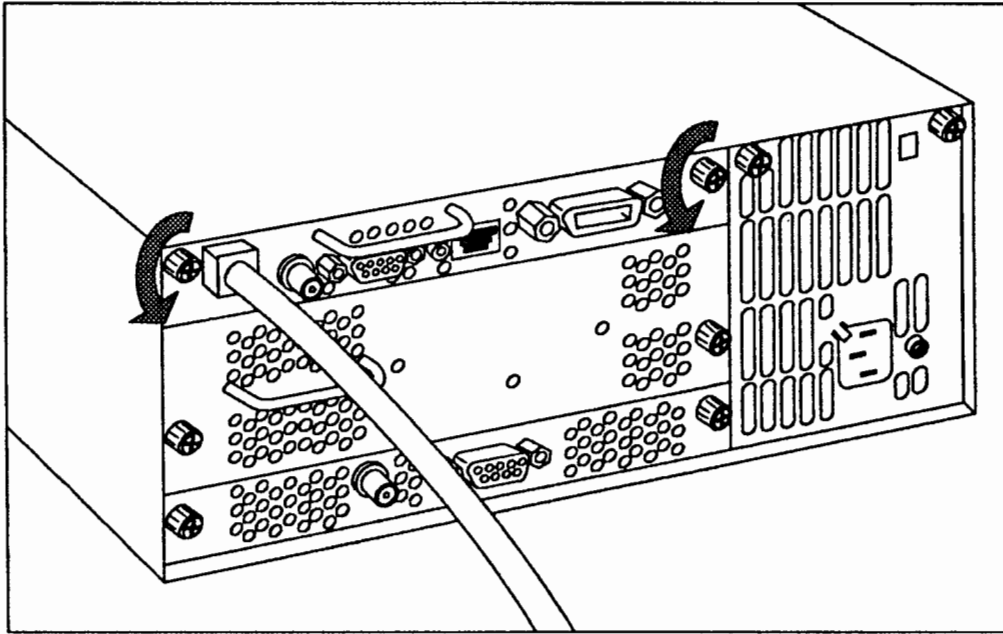
LG200171_023

Figure 2-15.
Sliding Left-hand Flange Into Place

HP 98265A Small Computer Systems Interface (SCSI)

2

10. Slide the Human (System) Interface Board into the computer and tighten the two screws.



LG200171_026

Figure 2-16.
Fasten Two Screws

11. Set the select code.

Note The select code is preset to 14.

The select code for the SCSI interface card is set by the select code switches found on the Human (System) Interface Board, see Figure 2-32.

2-34 Installing Interface and Accessory Cards

Note Both the SCSI and the HP 98625B interface are preset to select code 14. If you have both SCSI and HP 98625B interfaces, change the select code of the HP 98625B Interface to an unused value.

12. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98625A High-Speed HP-IB Disk Interface

Note There is a difference between the HP 98625A and the HP 98625B disk interfaces. If you have an HP 98625A Disk Interface you are in the correct section. If you have an HP 98625B Disk Interface, you need refer to HP 98625B Disk Interface section of this chapter.

The HP 98625A HP-IB Disk Interface provides a high-speed HP-IB interface to Command Set 80 (CS/80) disks. The Disk Interface is capable of handling up to four disks on one interface card.

Only one HP 98625A HP-IB Disk Interface is supported per system. If an HP 98625A HP-IB Disk Interface is used in a system with one or more HP 98625B HP-IB Disk Interfaces, an interrupt level adjustment must be made.

Caution The HP 98625A HP-IB Interface is not supported on the same system containing an HP 98265A SCSI Interface. Only one of these interfaces is supported per system. If your system contains an HP 98265A SCSI Interface card, you must remove it before installing your HP 98625A HP-IB Interface card.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98625A HP-IB Disk Interface

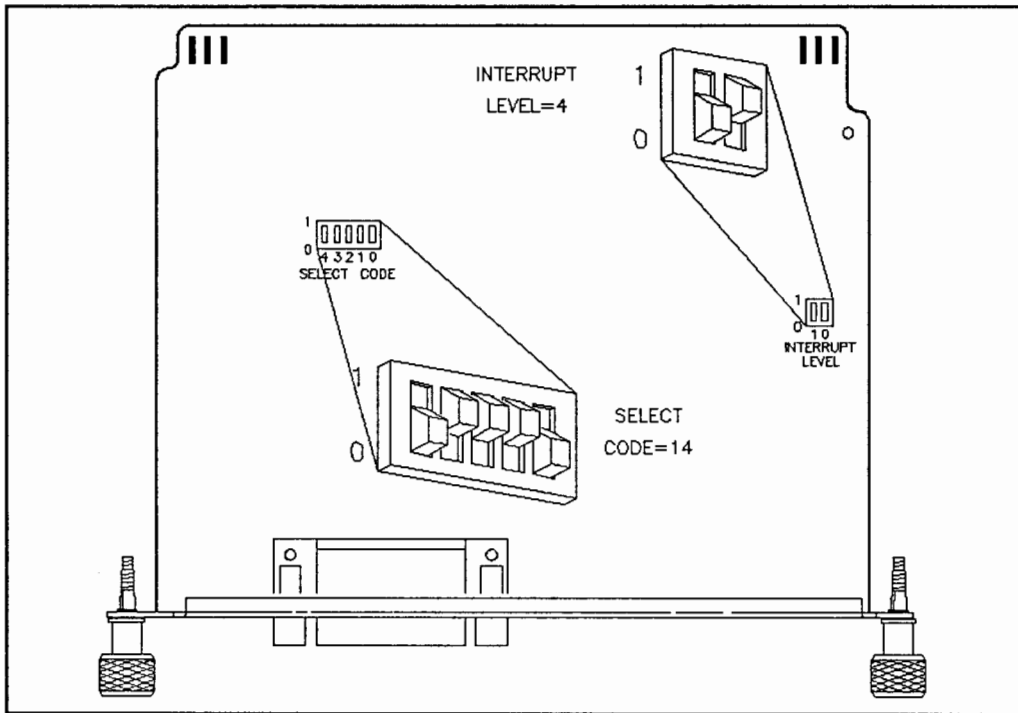


Figure 2-17.
HP 98625A Disk Interface switches

Note The HP 98625A Disk Interface cannot be installed in the HP 9888A bus expander. However, it can be installed in the HP 98568A Backplane Expander.

HP 98625A HP-IB Disk Interface

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the Disk Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.
2. *Set the select code.*

Note

The select code is preset to 14. *However*, if you have the HP 98265A SCSI card, it also is preset to Select Code 14. You need to ensure that the HP 98265A SCSI card and the HP 98625A HP-IB Disk Interface card have unique select codes. If you choose to change the HP 98625A select code, continue with this step. Otherwise, continue to the next step.

Refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of five select code switches by referring to Figure 2-17.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information. Refer to the installation note that came with the interface if you need additional switch settings.

3. *Set the interrupt level.*

If an HP 98625A HP-IB Disk Interface is used in a system with one or more HP 98625B HP-IB Disk Interfaces, the HP 98625A must be set to interrupt level 4 and the HP 98625B HP-IB Disk Interface(s) must be set to interrupt level 3.

- a. Find the Interrupt Level switches by referring to Figure 2-17.
- b. Set these switches to interrupt level 4 as shown in Figure 2-17. To get interrupt level 4, set the left switch to 0 and the right switch to 1.

Note Do not set any other interface to interrupt level 4.

4. *Insert the interface.*

- a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
- b. Insert the Disk Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the metal end plate until the end plate is flush with the back of the computer.
- c. If you changed the select code of the Disk Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
- d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

5. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98625A HP-IB Disk Interface6. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98625 at 14

appears in the list, you have correctly installed the Disk Interface.

This message should also appear when verifying the installation of the 98562-66530 Human (System) Interface Board.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98625B High-Speed HP-IB Disk Interface

Note There is a difference between the HP 98625A and the HP 98625B disk interfaces. If you have an HP 98625B Disk Interface, you are in the correct section. If you have an HP 98625A Disk Interface, you need to refer to the proper section in this chapter.

The HP 98625B HP-IB Disk Interface provides a high-speed HP-IB interface to Command Set 80 (CS/80) disks. The Disk Interface is capable of handling up to four disks on one interface card. A DMA Controller card is required for the Disk Interface to achieve optimum performance.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

HP 98625B HP-IB Disk Interface

2

Installing the HP 98625B HP-IB Disk Interface

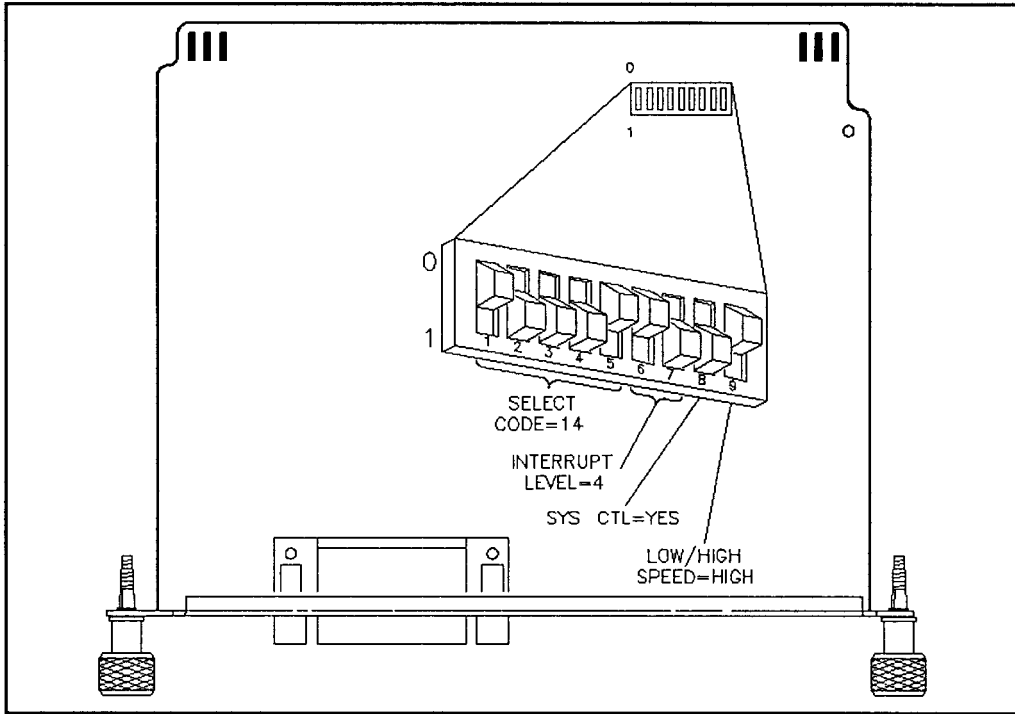


Figure 2-18.
HP 98625B Disk Interface Switches

Note The HP 98625B Disk Interface cannot be installed in the HP 9888A bus expander. However, it can be installed in the HP 98568A Backplane Expander.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the Disk Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.
2. *Set the select code.*

Note The select code is preset to 14.

However, if you have the HP 98265A SCSI card, it also is preset to Select Code 14, so you will need to continue with this step to change the select code on your HP 98625B Interface.

If select code 14 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of nine switches by referring to Figure 2-18. Switches 1 through 5 in this group determine the select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

HP 98625B HP-IB Disk Interface

3. *Set the interrupt level.*

Note Default interrupt level set at 4.

If an HP 98625A HP-IB Disk Interface is used in a system with one or more HP 98625B HP-IB Disk Interfaces, the HP 98625A must be set to interrupt level 4 and the HP 98625B HP-IB Disk Interface(s) must be set to interrupt level 3.

- a. Find the set of nine switches by referring to Figure 2-18. Switches 6 and 7 in this group determine the interrupt level.
- b. Set these switches to interrupt level 4 as shown in Figure 2-18. To get interrupt level 4, set the left switch to *0* and the right switch to *1*.

Note Do not set any other interface (except for the HP 98629A SRM Interface) to interrupt level 4.

4. *Set the system controller switch.*

Note The interface is configured to be system controller and may not need to be changed. If you intend to connect two computers with this interface, continue on with this step; otherwise skip to the next step.

- a. Find the set of nine switches by referring to Figure 2-18. Switch 8 in this group determines the system controller setting.
- b. If you are connecting two computers together via HP-IB, only one of them can be set to system controller. To change this interface to non-system controller, move the system controller switch shown in Figure 2-18 to the 0 position (the opposite of that shown).
DO NOT set this switch to non-system controller.

2-44 Installing Interface and Accessory Cards

5. *Set the low/high speed switch.*

Note The Low/High Speed switch is preset to 0, “high speed,” as shown in Figure 2-18. This setting is appropriate for most applications. If you want to change this setting, continue this step; otherwise skip to the next step.

- a. Find the set of nine switches by referring to Figure 2-18. Switch 9 in this group is the Low/High Speed switch.
 - b. Set this switch as follows:
 - To set this switch to “low speed,” set switch 9 to 1, which is opposite of that shown in Figure 2-18.
 - To set this switch to “high speed,” set switch 9 to 0 as shown in Figure 2-18.
6. *Insert the interface.*
- a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
 - b. Insert the Disk Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the front panel until the front panel of the interface is flush with the back of the computer.
 - c. If you changed the select code of the Disk Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
 - d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.
7. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98625B HP-IB Disk Interface8. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98625 at 14

appears in the list, you have correctly installed the Disk Interface.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98626A RS-232-C Interface

The HP 98626A RS-232-C Interface is connected to a terminal, modem, serial peripheral, or computer and supports the RS-232-C standard. One interface is required for each device, and each interface must be set to a unique select code.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98626A RS-232-C Interface

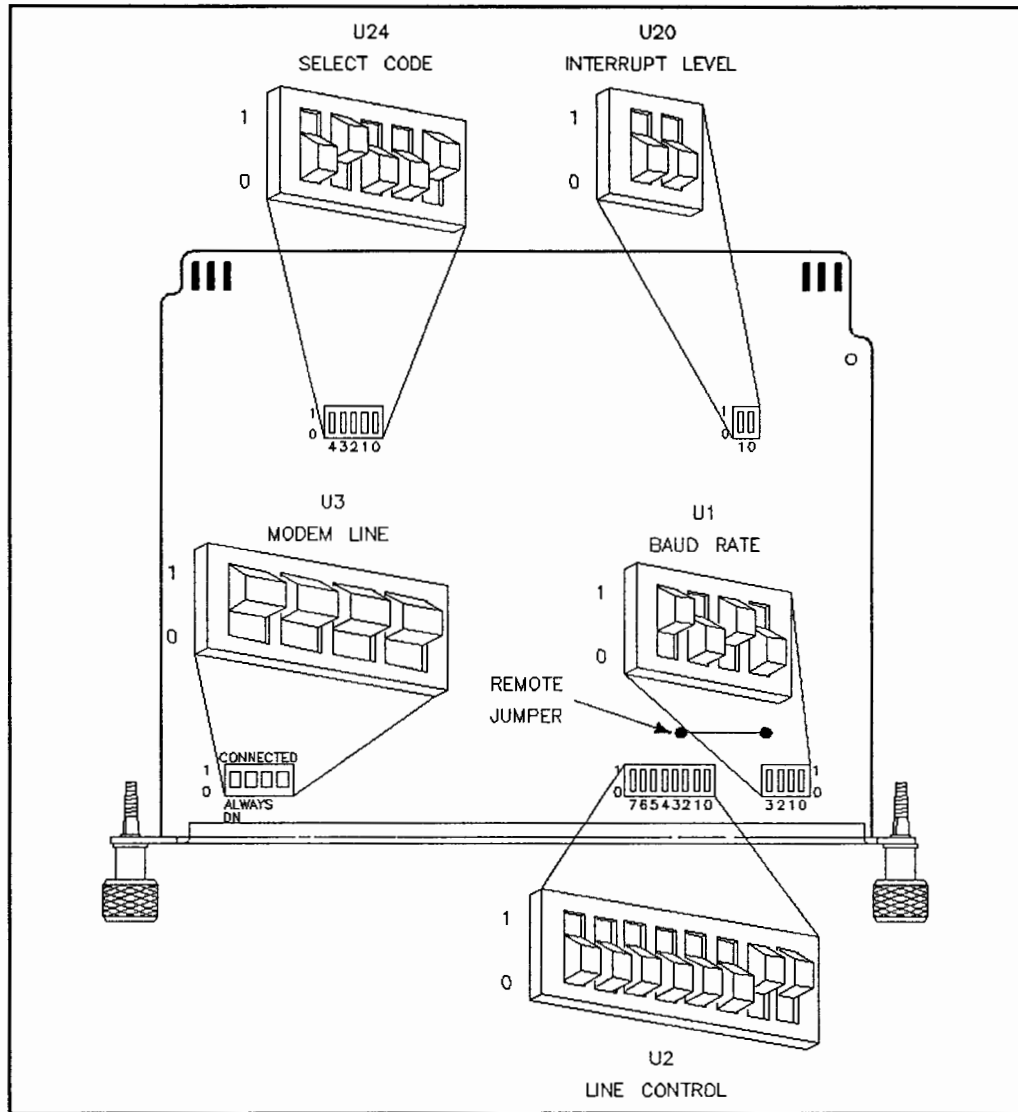


Figure 2-19.
HP 98626A RS-232-C Serial Interface Switches

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the RS-232-C Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.
2. *Set the select code.*

Note The select code is preset to 9.

If select code 9 is being used by the RS-232-C interface on the HP 98562-66530 Human Interface Board, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of five select code switches, labeled U24, by referring to Figure 2-19.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

HP 98626A RS-232-C Interface*3. Set the character length.*

Note The interface's character length is preset to 8 bits/character. If you are certain that this character length is inappropriate for your application, continue on with this step; otherwise skip to the next step.

The character length switches, numbers 0 and 1 on the group labeled U2, are preset to 8 bits/character, which is appropriate for most applications. If you know you need to change the character length, refer to the manual that came with the interface for additional settings.

4. Set the number of stop bits.

Note The interface is preset to 1 stop bit. If you are certain that 1 stop bit is inappropriate for your application, continue with step 6, otherwise skip to step 7.

The stop bits switch, number 2 on the group labeled U2, is preset to 1 stop bit, which is appropriate for most applications. If you know you need to change the number of stop bits to 2, change this switch to its alternate setting.

5. *Set the parity enable switch.*

- a. Find the group of Line Control switches, labeled U2 on the interface, by referring to Figure 2-19. Switch 3 in this group is the parity enable switch.
- b. Set the parity enable switch as follows:
 - If connecting a terminal or an HP 2686 *LaserJet* printer to this interface, set this switch to “parity disabled.” To disable parity, set switch 3 to 0 like this:

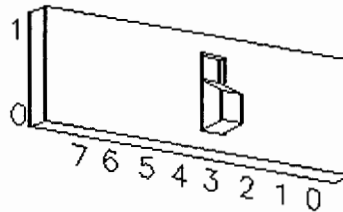


Figure 2-20.

- If connecting an HP 39800/01A bar code reader or an HP 92205A/C *Hayes Smartmodem 1200* to this interface, set this switch to “parity enabled.” To enable parity, set switch 3 to 1 like this:

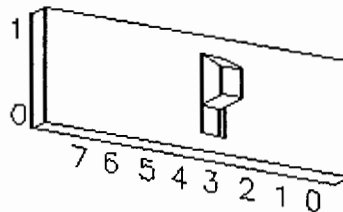


Figure 2-21.

- If connecting any other device to this interface, set this switch to match that of the connected device.

HP 98626A RS-232-C Interface

2

6. Set the parity type.

- a. Find the Line Control switches, labeled U2 on the interface, by referring to Figure 2-19. Switches 4 and 5 in this group determine the parity type.
- b. Set the parity type switches as follows:
 - If you are connecting a terminal, an HP 2601A printer or an HP 2686 *LaserJet* printer to this interface, the parity type does not matter since parity was disabled in step 7. Skip to step 9.
 - If you are connecting an HP 39800/01A bar code reader, set this switch to “parity is 0.” To set parity to 0, set both switches 4 and 5 to 1 like this:

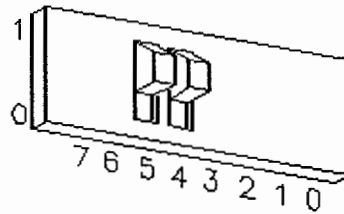


Figure 2-22.

- If connecting an HP 92205A/C *Hayes Smartmodem 1200* to this interface, set the parity type to match the setting on the computer or terminal you are communicating with. See the installation manual that came with the interface for details.

7. *Set the handshake type.*
 - a. Find the Line Control switches, labeled U2 on the interface, by referring to Figure 2-19. Switches 6 and 7 in this group determine the handshake type.
 - b. Set the handshake type switches to XON/XOFF. To get XON/XOFF, set switch 6 to 1, and set switch 7 to 0 like this:

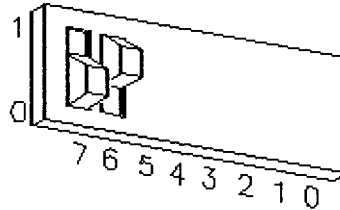


Figure 2-23.

8. *Set the modem line switches.*
 - a. Find the Modem Line switches, labeled U3 on the interface, by referring to Figure 2-19.
 - b. Set these switches as follows:
 - If connecting a modem, HP 2686A *LaserJet* printer, or uucp to this interface, set these switches to the “Connected” position as shown in Figure 2-19.
 - If connecting a terminal or bar code reader, set these switches to the “Always on” position, which is *opposite* that shown in Figure 2-19.

HP 98626A RS-232-C Interface

9. *Set the remote jumper.*

Note If you want to connect your system console terminal to this interface, continue with this step; otherwise, skip to the next step.

- a. Find the remote keyboard jumper by referring to Figure 2-19.
 - b. If you are connecting a terminal to this interface and would like the terminal to be the system console, remove the remote keyboard jumper. Otherwise, leave the jumper intact.
10. *Insert the interface.*
- a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
 - b. Insert the RS-232-C Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the metal end plate until the end plate is flush with the back of the computer.
 - c. If you changed the select code of the RS-232-C Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
 - d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.
11. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

12. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98626 at 9

appears in the list, you have correctly installed the HP 98626A RS-232-C Interface.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98628A Datacomm Interface

The HP 98628A Datacomm Interface connects to a serial peripheral, terminal, modem or computer and supports the RS-232-C datacomm standard. One interface is required for each terminal, and each interface must be set to a unique select code.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98628A Datacomm Interface

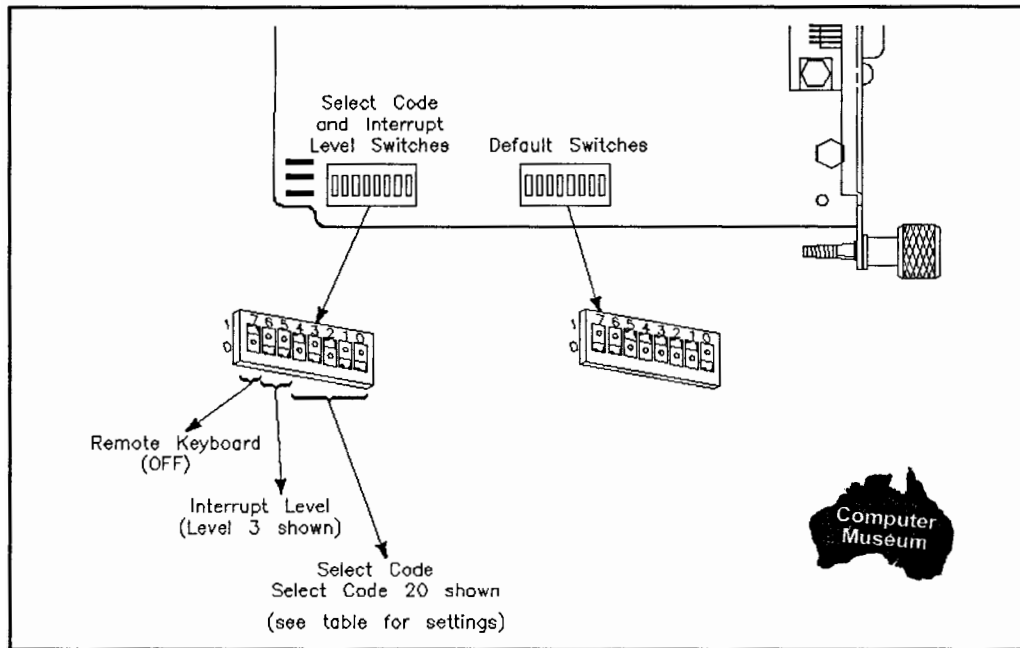


Figure 2-24.
98628A Datacomm Interface Switches

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the Datacomm Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.

HP 98628A Datacomm Interface*2. Set the select code.*

Note The select code is preset to 20.

If select code 20 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of select code and interrupt level switches by referring to Figure 2-24. Switches 0 through 4 in this group determine the select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

3. *Set the interrupt level.*

Note The interface is preset to interrupt level 3. If you are certain that interrupt level 3 is inappropriate for your application continue with step 3, otherwise skip to step 4.

- a. Find the set of select code and interrupt level switches by referring to Figure 2-24. Switches 5 and 6 in this group determine the interrupt level.
- b. If you need to change the interrupt level, set the switches according to the following table:

Table 2-4.
HP 98628A Datacomm Interface
Interrupt Level Switch Values

Interrupt Level	Switch 1	Switch 0
3	0	0
4	0	1
5	1	0
6	1	1

HP 98628A Datacomm Interface4. *Set the remote switch.***Note**

The Remote switch is preset to “OFF,” which does *not* configure the interface to be the system console. If you are connecting your system console to this interface, you can continue with step 4; otherwise, skip to step 5.

- a. Find the set of select code and interrupt level switches by referring to Figure 2-24. Switch 7 in this group is the Remote switch.
- b. Set the Remote switch as follows:
 - If you are connecting a terminal to this interface and want the terminal to be the system console, set this switch to *0* (remote), which is *opposite* that shown in Figure 2-24.

Caution

The boot ROM will not recognize this terminal as the system console, even though HP-UX will. No boot ROM messages will appear on the associated terminal; therefore, do not use the HP 98628A for a system console until after HP-UX is installed.

- If you are connecting a terminal to this interface but *do not* want the terminal to be the system console, set this switch to *1* (OFF) as shown in Figure 2-24.

5. *Insert the interface.*
 - a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
 - b. Insert the Datacomm Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the metal end plate until the end plate is flush with the back of the computer.
 - c. If you changed the select code of the Datacomm Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
 - d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

6. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98628A Datacomm Interface*7. Verify installation*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98628 at 20

appears in the list, you have correctly installed the Datacomm Interface.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98629A SRM Interface

HP 50961A SRM Interface

The HP 98629A Shared Resource Management (SRM) Interface and the HP 50961A SRM Coax Interface provide both protocol management and electrical levels for communication between the computer and the Shared Resource Management (SRM) system. The SRM system allows the computer to share common disks, printers and plotters.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98629A SRM Interface

1. *Play it safe.*
 - a. Follow the computer “shut down” procedure. See *System Administration Tasks Manual* Chapter 3: “Starting and Stopping HP-UX” for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Refer to the documentation shipped with your SRM system for information about installation.*
3. *Set the select code.*

Note The select code is preset to 21. Both the SRM and LAN interfaces are preset to select code 21. If you have both SRM and LAN interfaces, continue with this step to change the setting of the SRM Interface select code.

If select code 21 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the set of select code switches by referring to the documentation for your SRM system.
 - b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.
4. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

5. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98629 at 21

appears in the list, you have correctly installed the SRM Interface.

If the message above does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98642A 4-Channel Multiplexer Interface

The HP 98642A 4-Channel Multiplexer Interface has three direct-connect ports and one port with full modem control. The buffering of this interface makes it suitable for nearly all applications, including graphics terminals.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98642A 4-Channel Multiplexer Interface

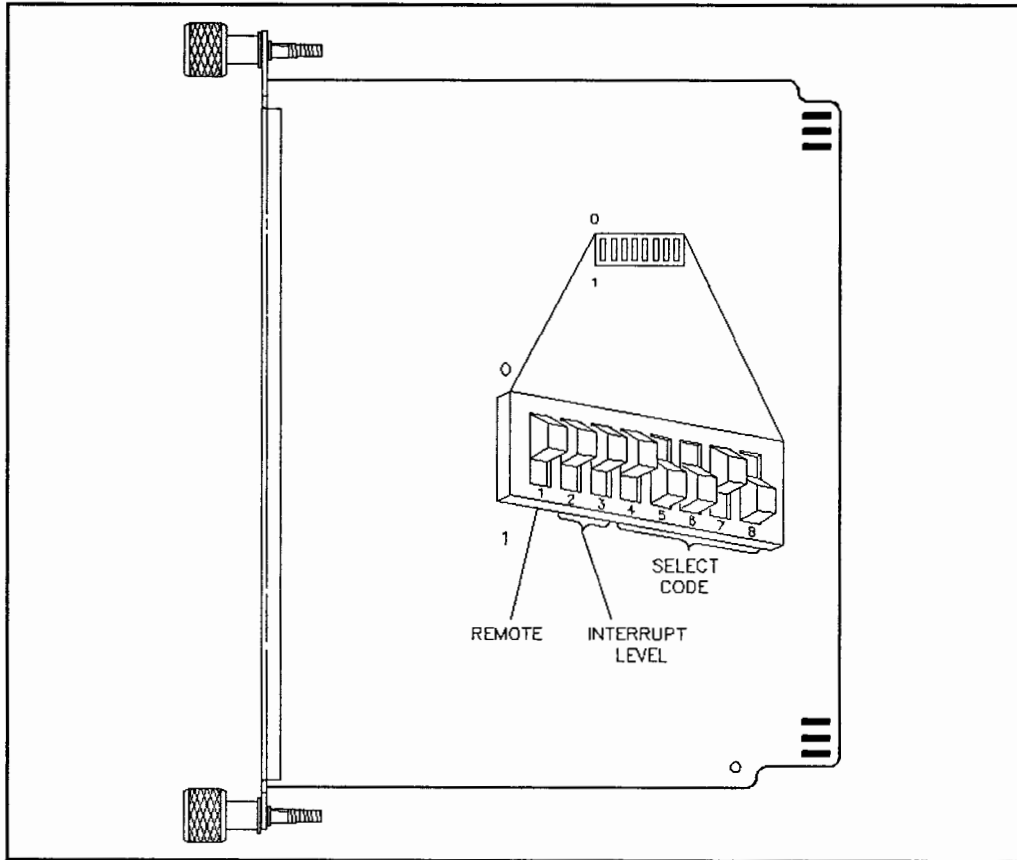


Figure 2-25.
HP 98642A 4-Channel Multiplexer Interface Switches

HP 98642A 4-Channel Multiplexer Interface

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the 4-Channel Multiplexer Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap). Do NOT touch any of the card's components or exposed solder pins.
 - d. Place the card on the envelope.
2. *Set the select code.*

Note The select code is preset to 13.

If select code 13 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the group of eight switches on the interface by referring to Figure 2-25. Switches 4 through 8 in this group determine the select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

3. *Set the interrupt level.*

Note The interface is preset to interrupt level 3. If interrupt level 3 is inappropriate for your application, continue with this step; otherwise, skip to the next step.

- a. Find the group of eight switches on the interface by referring to Figure 2-25. Switches 2 and 3 in this group determine the interrupt level.
- b. Set the interrupt level to the desired value by referring to Table 2-5:

Table 2-5.
HP 98642A 4-Channel Multiplexer Interface
Interrupt Level Switch Values

Interrupt Level	Switch 2	Switch 3
3	0	0
4	0	1
5	1	0
6	1	1

HP 98642A 4-Channel Multiplexer Interface

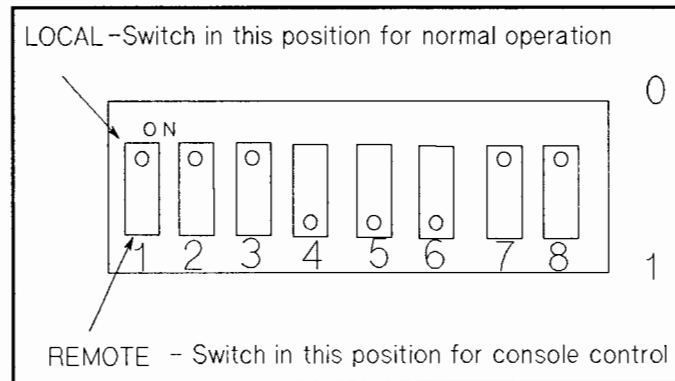


Figure 2-26.

HP 98642A 4-Channel Multiplexer Local/Remote Switch Setting

4. Set the remote switch.

Note

The Remote switch is preset to “local,” which does *not* configure port 1 to be the system console. If you are connecting your system console to port 1 of this interface, continue with step 4; otherwise, skip to step 5.

If you are connecting a terminal to port 1 of this interface and want the terminal on port 1 to be the system console, set switch 1 to *1* (remote), which is *opposite* that shown in Figure 2-26.

5. *Insert the interface.*
 - a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
 - b. Insert the 4-Channel Multiplexer Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the front panel until the front panel of the interface is flush with the back of the computer.
 - c. If you changed the select code of the 4-Channel Multiplexer Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the metal end plate.
 - d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

6. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98642A 4-Channel Multiplexer Interface

7. *Verify installation*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98642 at 13

appears in the list, you have correctly installed the HP 98642A 4-Channel Multiplexer Interface.

If the message does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions. Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for information about creating device files for devices attached to the HP 98642A 4-Channel Multiplexer Interface.

HP 98638A 8-Channel Multiplexer Interface

The HP 98638A 8-Channel Multiplexer Interface provides a means of connecting up to eight asynchronous devices such as terminals, printers, plotters and modems to the HP 9000 computers. This interface is a DIO System card and fits into the DIO System slot or a DIO II slot. There are two versions of the HP 96838A available:

1. The HP 96838A supports devices that use the RS-232 interface standard.
2. The HP 96838A Option 1C8 supports devices that use the RS-422 interface standard.

The RS-232-C ADP (Active Distribution Panel) supports both modem and direct connects to terminals, printers, and plotters. The RS-422 supports direct connections only.

The standard HP 98638A 8-Channel Multiplexer Interface has the following features:

- Eight full duplex asynchronous serial I/O (Input/Output) ports.
- Parity, overrun, and framing error checks to detect transmission faults.
- CTS handshaking between the host and devices.
- Programmable data transmission rates on all ports.
- EIA RS-232-C and Full Modem CCITT V.24 and V.28 compatibility.

For additional product description and detailed specifics refer to the *HP 98638A Eight Port Asynchronous Multiplexer Installation and Reference Manual* HP part number 98638-90001.

HP 98638A 8-Channel Multiplexer Interface

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information. Figure 2-27 provides a diagram of the HP 98638A product.

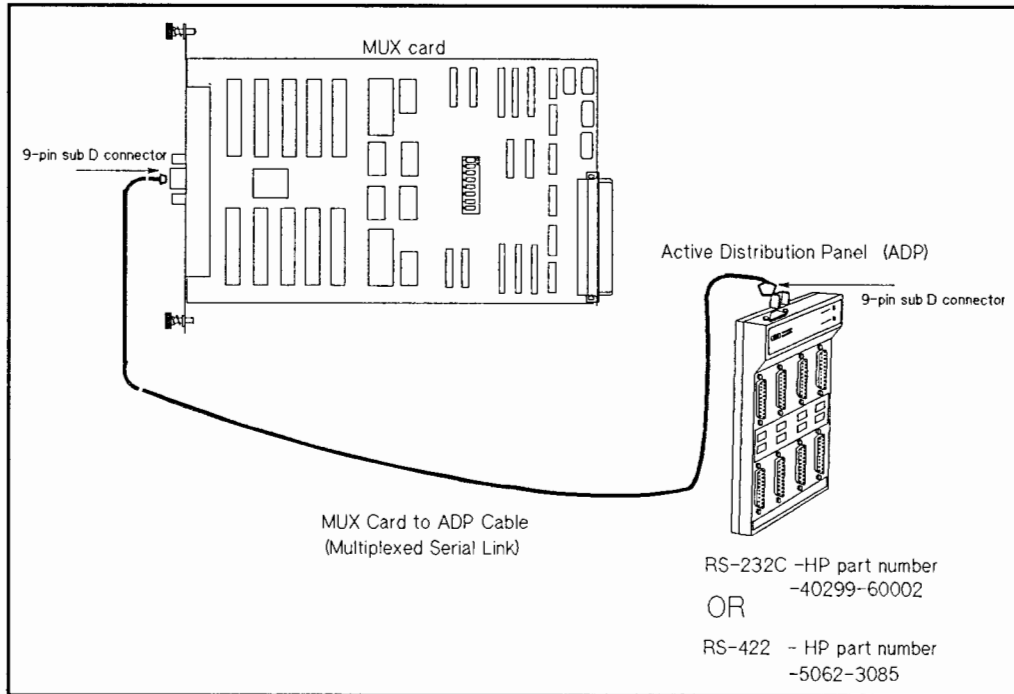


Figure 2-27.
HP 98638A 8-Channel Multiplexer Interface Assemblies

The following supported RS-232-C cables allow direct connection to asynchronous serial devices:

13242M	5 meter 25 pin male - 25 pin male. Pins 1-8, 12, 15, 17, 20, 22, 24 are wired end-to-end.
13242Y	5 meter 25 pin male - 25 pin male. Pins 1-3, 7 are wired end-to-end. Pins 11 and 19 are crossed.
13242N	5 meter 25 pin male - 25 pin male. Pins 1-8, 12, 15, 17, 20, 23, 24 are wired end-to-end. Pins 11 and 19 are crossed.
92219G	3.8 meter 25 pin male - 25 pin male. Pins 1-8, 11, 12, 19, 20, 22, 23, 24, are wired end-to-end.

Refer to the *HP 98638A Eight Port Asynchronous Multiplexer Installation and Reference Manual* HP part number 98638-90001 for details on cabling.

To connect the ports of the RS-232-C ADP to supported modems the 92219Q cable is required. The 92219Q is a 5 meter 25 pin male - 25 pin male with some pins crossed.

HP 98638A 8-Channel Multiplexer Interface

Supported Modems

Table 2-6 contains modems supported from an RS-232-C modem port to another terminal or serial printer. A pair of modems is needed for each connection: one to connect the modem port of the telecommunications line, and the other to connect the terminal or serial printer to the other end of the telecommunications line. Asynchronous modem connections on the HP 98638A can support full duplex modems only.

Table 2-6. HP 98638A Supported Modems

Modem	Baud Rate
Bell 212A	300,1200
RacalMilog MPS 1222	300, 1200
Hayes Smart Modem	1200
HP 37212B	300,1200,2400-V.22
HP 50759A	300,1200,2400
Telebit Trailblazer Plus	1200,2400,fast (9600,19200,38400)

Note Only modems which have BS 6301 approval are recommended by Hewlett-Packard.

Supported Plotters, Printers, and Terminals

Table 2-7 contains the plotters, printers, and terminals that are supported on the HP 98638A 8-Channel Multiplexer.

**Table 2-7.
HP 98638A Supported Plotters, Printers, and Terminals**

Plotters	Printers	Terminals
7550A	2993A	2392
	2934A	2393
	2562A	2394
	2563B	2397
	2686D	700/43
	33447A	700/22
	2684D/P	700/32
		700/92
		700/94
		2625A
		2627A
		2628A

HP 98638A 8-Channel Multiplexer Interface

Installing the HP 98638A 8-Channel Multiplexer Interface

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the 4-Channel Multiplexer Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap). Do NOT touch any of the card's components or exposed solder pins.
 - d. Place the card on the envelope.

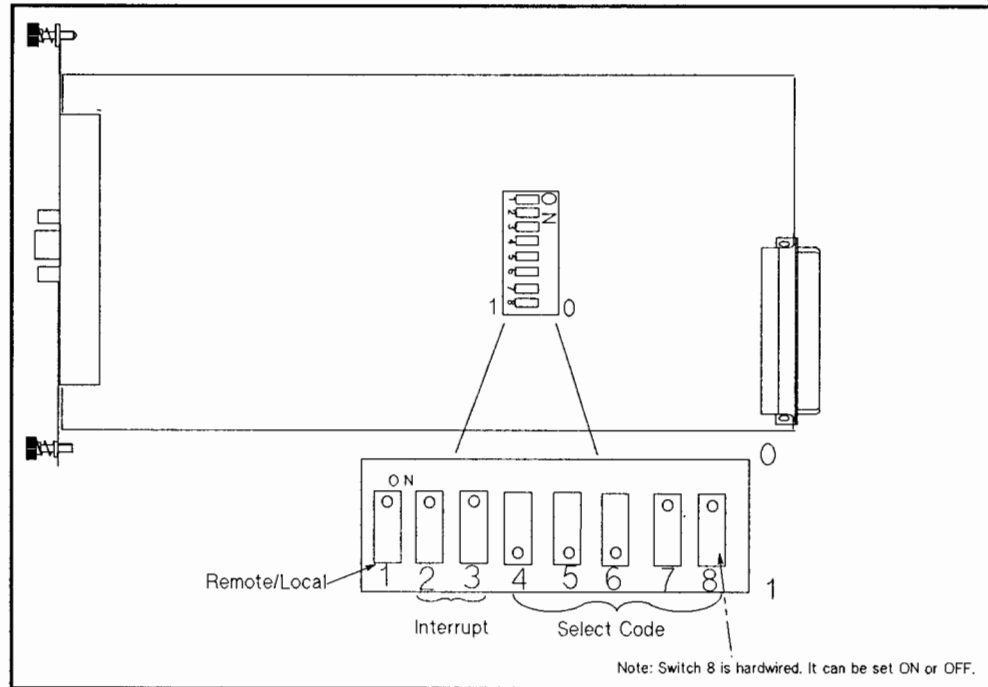


Figure 2-28.
HP 98638A 8-Channel Multiplexer Interface Switches

2. *Set the select code.*

Note The select codes are preset to 28 and 29.

If select codes 28 or 29 are already assigned, refer to the foldout worksheet at the end of this book to choose select codes that are not already assigned.

HP 98638A 8-Channel Multiplexer Interface

Note Two consecutive select codes, starting on an even number, are needed for the HP 98638A because two identical four channel multiplexers are implemented on the card.

To change the select code:

- a. Find the group of eight switches on the interface by referring to Figure 2-28. Switches 4 through 8 in this group determine the select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

3. *Set the interrupt level.*

Note The interface is preset to interrupt level 3. If you are certain that interrupt level 3 is inappropriate for your application continue with this step; otherwise skip to the next.

- a. Find the group of eight switches on the interface by referring to Figure 2-28. Switches 2 and 3 in this group determine the interrupt level.
- b. Set the interrupt level to the desired value by referring to Figure 2-28:

Table 2-8.
HP 98638A 8-Channel Multiplexer Interface
Interrupt Level Switch Values

Interrupt Level	Switch 2	Switch 3
3	0	0
4	0	1
5	1	0
6	1	1

HP 98638A 8-Channel Multiplexer Interface

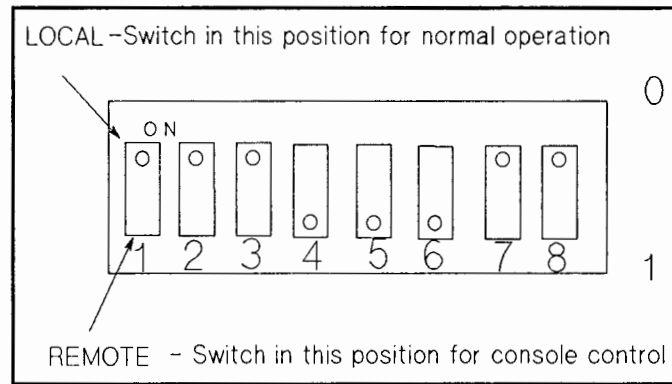


Figure 2-29.

HP 98638A 8-Channel Multiplexer Local/Remote Switch Setting

4. Set the remote switch.

Note

The Remote switch is preset to "local," which does *not* configure port 1 to be the system console. If you are connecting your system console to port 1 of this interface, continue with this step; otherwise, skip to the next step.

If you are connecting a terminal to port 1 of this interface and want the terminal on port 1 to be the system console, set switch 1 to *1* (remote), which is *opposite* that shown in Figure 2-29.

5. *Insert the interface.*
 - a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.

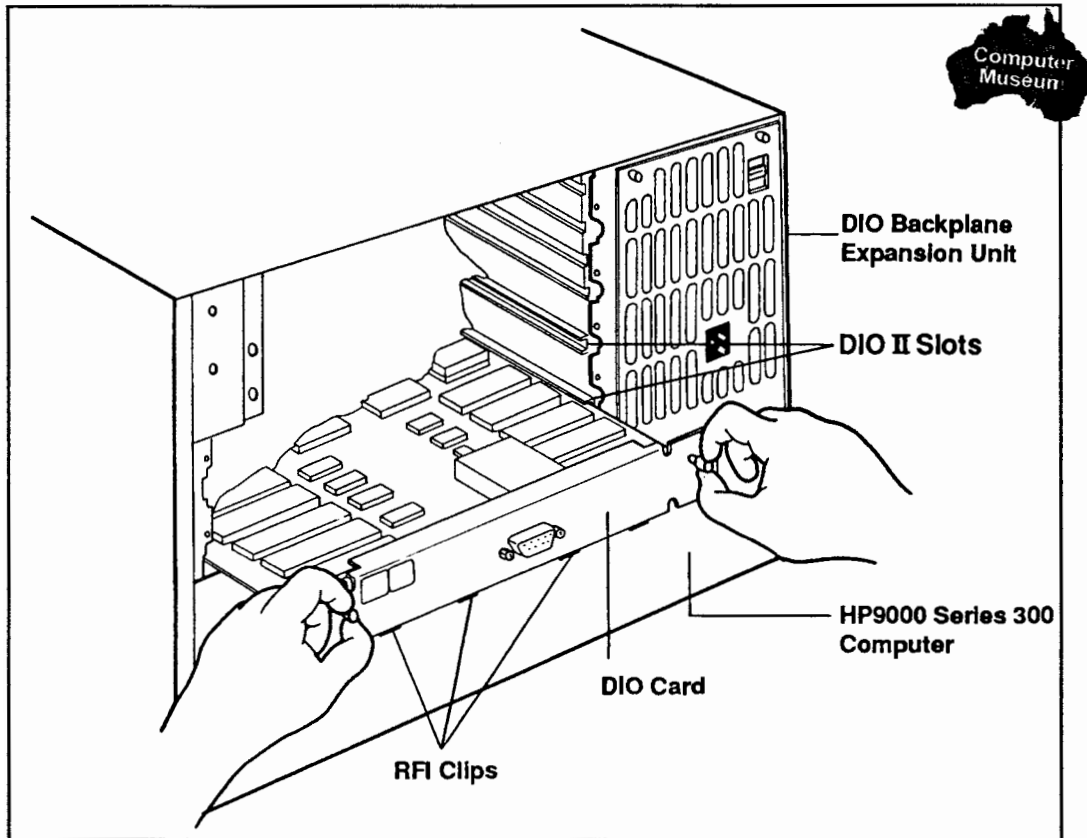


Figure 2-30. Inserting the HP 98638A 8-Channel MUX Interface

HP 98638A 8-Channel Multiplexer Interface

- b. Insert the 8-Channel Multiplexer Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the front panel until the front panel of the interface is flush with the back of the computer. Refer to Figure 2-30.
- c. If you changed the select code of the 8-Channel Multiplexer Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the metal end plate.
- d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

6. Record the select code.

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

7. *Verify installation*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

```
HP98642A (RS-232-C MUX) at 28
HP98642A (RS-232-C MUX) at 29
```

appears in the list, you have correctly installed the HP 98638A 8-Channel Multiplexer Interface. This will be the display even if an RS-422 ADP can be connected to the interface card.

If the message does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions. Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for information about creating device files for devices attached to the HP 98638A 8-Channel Multiplexer Interface.

98643A Local Area Network (LAN) Interface

The HP 98643A Local Area Network (LAN) Interface is used to connect a computer to a local area network.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98643A Local Area Network (LAN) Interface

1. See manuals for your LAN system for information about installation.
2. Set the Switches.

There is one set of dual in-line package (DIP) switches on the LAN card, SW1, which is used to assign the card's select code and interrupt level. It is an eight position DIP switch located near the backplane edge connector.

Switch positions five through one (SW1_5 through SW1_1) determine the select code of the card. Switch SW1_1 is the least significant bit (LSB) nearest the backplane connector. Switches SW1_6 (LSB) and SW1_7 (MSB) define the card's hardware priority level for interrupting the host CPU. Switch SW1_8 is reserved for future use and should be zero.

The default factory settings are:

switch #	value	
SW1_1	1	(LSB)
SW1_2	0	
SW1_3	1	
SW1_4	0	
SW1_5	1	
SW1_6	0	
SW1_7	1	
SW1_8	0	(MSB)

Note: OFF = 1
ON = 0

HP 98643A Local Area Network (LAN) Interface

- a. Set the select code.

Note

The select code is preset to 21. Both the LAN and SRM interfaces are preset to select code 21. If you have both LAN and SRM interfaces, continue with this step to change the setting of the LAN Interface select code.

Also, the HP 98562-66530 Human (System) Interface Board contains a LAN interface that is preset to select code 21. Continue with this step to change the select code of the HP 98643A card if you have an HP 98562-66530 Human (System) Interface Board.

If select code 21 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code, set these switches to the switch settings associated with your select code. Refer to the foldout worksheet for switch settings. Refer to the documentation that came with the LAN interface if you need additional switch setting information.

- b. Set the interrupt level.

The interrupt priority level must be set to five. Table 2-9 contains various switch positions and associated priority levels.

Note

The LAN card is shipped from the factory with interrupt level 5.

Table 2-9. HP 98643A Interrupt Level Switch Settings

SW1_6 Position	SW1_7 Position	Priority Level
0	0	3
1	0	4
0	1	5
1	1	6

Note OFF equals 1 and ON equals 0.

3. *Record the select code.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

HP 98643A Local Area Network (LAN) Interface

4. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message:

HP98643 at 21

appears in the list, you have correctly installed the HP 98643A LAN Interface.

The message "HP98643 at 21" is also generated by the internal LAN circuit on the 98562-66530 Human (System) Interface Board.

If the message does not appear, repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98644A Asynchronous Serial Interface

The HP 98644A Asynchronous Serial Interface connects to a terminal, modem, serial peripheral, or computer and supports the RS-232-C standard. One interface is required for each device, and each interface must be set to a unique select code.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

HP 98644A Asynchronous Serial Interface

2

Installing the HP 98644A Asynchronous Serial Interface

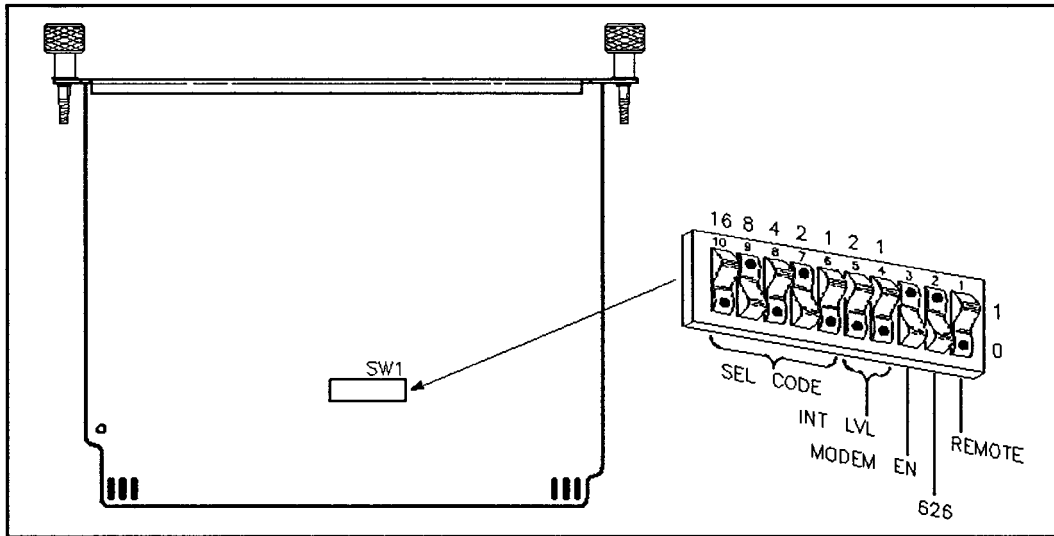


Figure 2-31.

HP 98644A Asynchronous Serial Interface Switches

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the Asynchronous Serial Interface from its envelope, being careful to handle the card only by its edges and front panel. The card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on the envelope.

2. *Set the select code.*

Note

The select code is preset to 9. Both the Asynchronous Serial Interface and the RS-232-C Interface are preset to select code 9. If you have both Asynchronous Serial Interface and the RS-232-C Interface, continue with this step to change the setting of the Asynchronous Serial Interface select code.

If select code 9 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the group of switches labeled SW1 by referring to Figure 2-31. Switches 6 through 10 in this group determine the select code.
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

HP 98644A Asynchronous Serial Interface

3. Set the interrupt level.

Note The interface is preset to interrupt level 3. If you are certain that interrupt level 3 is inappropriate for your application, continue with this step; otherwise, skip to the next step.

- a. Find the group of switches labeled SW1 by referring to Figure 2-31. Switches 4 and 5 in this group determine the interrupt level.
- b. Set the interrupt level to the desired value by referring to the following table:

Table 2-10.

Interrupt Level	Switch 5	Switch 4
3	0	0
4	0	1
5	1	0
6	1	1

4. Set the MODEM ENable switch.

- a. Find the group of switches labeled SW1 by referring to Figure 2-31. Switch 3 in this group is the MODEM ENable switch.
- b. Set the MODEM ENable switch as follows:
 - If you intend to connect an HP 2686A *Laserjet* printer, an HP 92205A/C Hayes *Smartmodem*, or a uucp, set this switch to 1 as shown in Figure 2-31.
 - If you intend to connect a terminal or the HP 39800/01A bar code reader, set this switch to 0, which is *opposite* that shown in Figure 2-31.

5. *Set the 626 switch.*
 - a. Find the group of switches labeled SW1 by referring to Figure 2-31. Switch 2 in this group is the 626 switch.
 - b. Set the 626 switch to 1 as shown in Figure 2-31.
6. *Set the REMOTE switch.*
 - a. Find the group of switches labeled SW1 by referring to Figure 2-31. Switch 1 in this group is the remote switch.
 - b. Set the Remote switch as follows:
 - If you are connecting a terminal to this interface and want this terminal to be the system console, set this switch to 1, which is *opposite* that shown in Figure 2-31.
 - If you are connecting a terminal to this interface but *do not* want this terminal to be the system console, or if you are connecting any other device, set this switch to 0 as shown in Figure 2-31.
7. *Insert the interface.*
 - a. Remove the *painted* cover plates from the back of your computer until you find an empty wide or system slot. *Do not* remove the silver cover plates from the bottom of a Series 300 computer.
 - b. Insert the Asynchronous Serial Interface, component side up, into the empty even-numbered slot. Tighten the thumb screws on the metal end plate until the end plate is flush with the back of the computer.
 - c. If you changed the select code of the Asynchronous Serial Interface in step 2, find this number in the set of select code labels supplied with the interface. Affix this label to the front panel.
 - d. If you have other interface or accessory cards to install, leave the cover plates off; otherwise, replace them.

HP 98644A Asynchronous Serial Interface

8. Record the select code.

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

9. Verify installation.

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If you have boot ROM 4.0 or later, the message:

```
HP98644 at 9
```

should appear in the list. If it does, you have correctly installed the HP 98644A Asynchronous Serial Interface.

This message should also appear when verifying the installation of the 98562-66530 Human (System) Interface Board.

Note If you have boot ROM 3.0, no message will appear, as boot ROM 3.0 does not identify the HP 98644A Asynchronous Serial Interface. Assume installation is correct.

If no message appears (and you do not have Boot ROM Rev 3.0), repeat the installation procedure, making sure there are no select code conflicts and that the card is firmly seated in an even-numbered slot. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98562-66530 Human (System) Interface Board

The HP 98562-66530 Human Interface board (also called the System Interface board) includes an RS-232-C Serial interface, an HP-HIL interface, a standard-speed HP-IB interface, a DMA controller, and a Local Area Network (LAN) interface. You can also get an Optional interface (such as an optional Disk interface or SCSI) in addition to those mentioned above.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

HP 98562-66530 Human (System) Interface Board

2

Installing the HP 98562-66530 Human (System) Interface Board

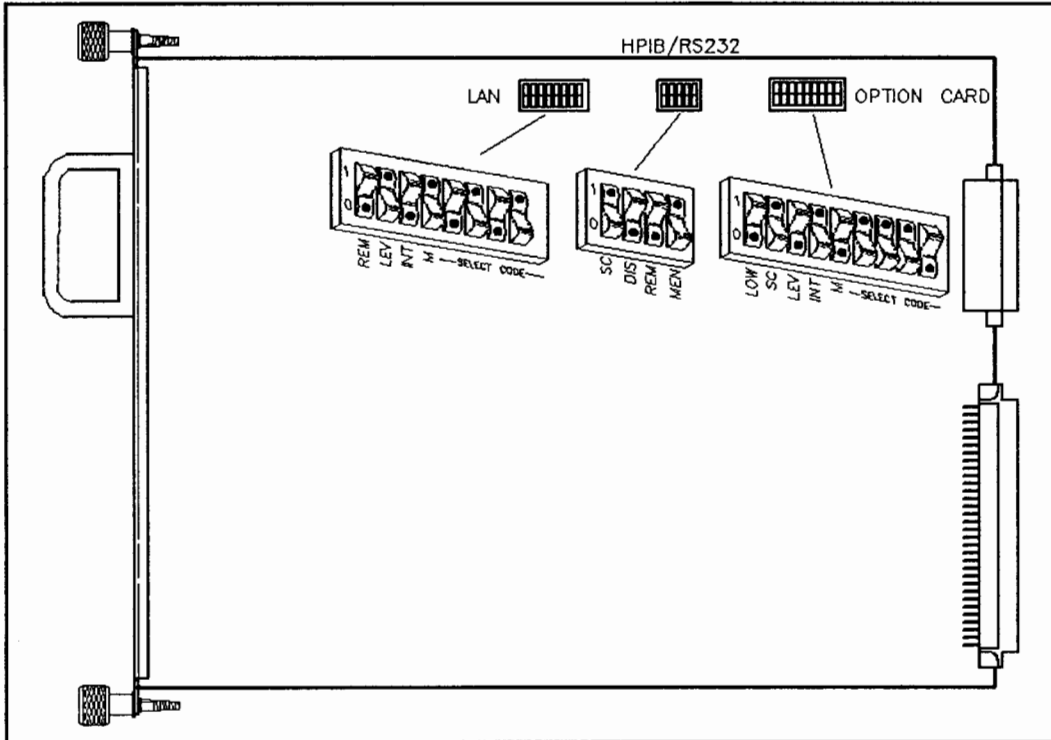


Figure 2-32.
Human (System) Interface Board Switches

2-98 Installing Interface and Accessory Cards

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. Remove the Human (System) Interface board from the back of your computer by loosening the two thumb screws and pulling on the handle. Be careful to handle the card only by its edges and front panel, as the card can be easily damaged by electrostatic discharge (static zap).
 - d. Place the card on a static-free surface.
 - e. *Do not* disconnect the option card or its cable.
2. *Set the HP-IB system controller switch.*

Note

- The interface is configured to be system controller and may not need changing. If you intend to connect two computers with this interface, continue with this step; otherwise, skip to the next step.
- You can set the HP-IB system controller switch during the HP-UX boot sequence. Refer to Appendix A: "Using Boot ROM Revision D Configuration Mode" for an explanation of the boot ROM configuration mode for Series 300 machines. Refer to Appendix B: "Using Boot ROM Revision 400 Configuration Mode" for an explanation of the boot ROM configuration mode for the following Series 400 machines:
 - 400t
 - 400dl
 - 400s
 - 425t
 - 433s

HP 98562-66530 Human (System) Interface Board

- a. Find the group of four switches labeled "HPIB/RS232". The switch labeled "SC" in this group is the System Controller switch (see Figure 2-32).
- b. If connecting two computers together via HP-IB, only one of them can be set to system controller. To change this interface to non-system controller, move the System Controller switch to the *0* position (the opposite of that shown in Figure 2-32).

Note If you will be connecting a disk drive, printer, plotter or other device to this interface, *do not* set this switch to *0* non-system controller.

3. Set the RS-232-C disable switch.

Note The interface is shipped from the factory with the RS-232-C Serial interface *enabled* (meaning you can use the interface). If you intend to disable this interface (meaning you do not want to use the interface) continue with this step; otherwise skip to the next step. If you do not intend to use this RS-232-C interface, you can use select code 9 for another interface. Continue with this step. Once disabled, this interface will not be recognized by the boot ROM and will not occupy select code 9.

- a. Find the group of four switches labeled "HPIB/RS232". The switch labeled "DIS" in this group is the RS-232-C Disable switch (see Figure 2-32).
- b. To disable the RS-232-C Serial interface, move the *DIS* switch to the *1* position (the opposite of that shown in Figure 2-32).

If you later want to enable the RS-232-C Serial interface, move the switch back to the *0* position as shown in Figure 2-32.

4. Set the RS-232-C remote terminal enable switch.

Note

- The interface is shipped from the factory with the remote terminal enable switch set to local mode. If you intend to connect a terminal to the RS-232-C interface, and want this terminal to be the system console, continue with this step. Otherwise, skip to step 5.
- You can set the RS-232-C remote terminal enable switch during the HP-UX boot sequence. Refer to Appendix A: "Using Boot ROM Revision D Configuration Mode" for an explanation of the boot ROM configuration mode. Refer to Appendix B: "Using Boot ROM Revision 400 Configuration Mode" for an explanation of the boot ROM configuration mode for the following Series 400 machines:
 - 400t
 - 400dl
 - 400s
 - 425t
 - 433s

-
- a. Find the group of four switches labeled "HPIB/RS232". The switch labeled "REM" in this group is the Remote Terminal Enable switch (see Figure 2-32).
 - b. Set the "REM" switch as follows:
 - If you are connecting a terminal to this interface and want this terminal to be the system console, set this switch to *1*, which is the *opposite* of that shown in Figure 2-32.
 - If you are connecting a terminal to this interface but *do not* want this terminal to be the system console, or if you are connecting any other device, set this switch to *0* as shown in Figure 2-32.

HP 98562-66530 Human (System) Interface Board

5. *Set the modem lines enable switch.*

Note

You can set the modem lines enable switch during the HP-UX boot sequence. Refer to Appendix A: "Using Boot ROM Revision D Configuration Mode" for an explanation of the Series 300 boot ROM configuration mode. Refer to Appendix B: "Using Boot ROM Revision 400 Configuration Mode" for an explanation of the boot ROM configuration mode for the following Series 400 machines:

- a. 400t
- b. 400dl
- c. 400s
- d. 425t
- e. 433s

-
- a. Find the group of four switches labeled "HPIB/RS232". The switch labeled "MEN" in this group is the Modem Lines Enable switch (see Figure 2-32).
 - b. Set the "MEN" switch as follows:
 - If you intend to connect an HP 2601A printer, an HP 2686A *LaserJet* printer, an HP 92205A/C Hayes *SmartModem*, or a uucp, set this switch to *1* as shown in Figure 2-32.
 - If you intend to connect a terminal or the HP 39800/01A bar code reader, set this switch to *0*, which is the *opposite* of that shown in Figure 2-32.

6. Set the select code

Note

- The LAN select code is preset to *21*. If you also have an SRM interface installed in your computer (at select code *21*), you must change the select code of the LAN interface to an unused value; continue with this step. Otherwise, skip to step 7.
- You can set the LAN select code during the HP-UX boot sequence. Refer to Appendix A: "Using Boot ROM Revision D Configuration Mode" for an explanation of the boot ROM configuration mode for models 345/375 only. Refer to Appendix B: "Using Boot ROM Revision 400 Configuration Mode" for an explanation of the boot ROM configuration mode for the following Series 400 models:
 - 400t
 - 400dl
 - 400s
 - 425t
 - 433s

If select code 21 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the group of eight switches labeled "LAN". The five switches labeled "M" (for Most-significant bit) and "SELECT CODE" in this group are the LAN Select Code switches (see Figure 2-32).
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch-setting information.

HP 98562-66530 Human (System) Interface Board

7. Set the interrupt level.

Note

- The LAN interface is preset to interrupt level 5, the setting required by HP-UX. If you are certain that interrupt level 5 is inappropriate for your application, continue with this step; otherwise, skip to the next step.
- You can set the LAN interrupt level during the HP-UX boot sequence. Refer to Appendix A: "Using Boot ROM Revision D Configuration Mode" for an explanation of the Series 300 boot ROM configuration mode. Refer to Appendix B: "Using Boot ROM Revision 400 Configuration Mode" for an explanation of the boot ROM configuration mode for the following Series 400 machines:
 - 400t
 - 400dl
 - 400s
 - 425t
 - 433s

- a. Find the group of eight switches labeled "LAN". The two switches labeled "INT" and "LEV" in this group are the LAN Interrupt Level switches (see Figure 2-32).
- b. Set the LAN Interrupt Level switches according to Table 2-11:

Table 2-11.

Interrupt Level	LEV	INT
3	0	0
4	0	1
5	1	0
6	1	1

8. *Set the local/remote switch.*

Note The interface is shipped from the factory with the remote/local switch set to local mode (0). We recommend that you do not alter this value.

9. *Set the optional interface select code.*

Note Both the Optional interface and the HP 98625A/B disk interfaces are preset to select code 14. If you have both the Optional and HP 98625A/B interfaces, change the select code of Optional interface.

If select code 14 is already assigned, refer to the foldout worksheet at the end of this book to choose a select code that is not already assigned. To change the select code:

- a. Find the group of nine switches labeled "OPTION CARD". The five switches labeled "M" (for Most-significant bit) and "SELECT CODE" in this group are the Select Code switches (see Figure 2-32).
- b. Set these switches to the switch settings associated with your select code. See the foldout worksheet for switch settings. Refer to the installation note that came with the interface if you need additional switch setting information.

HP 98562-66530 Human (System) Interface Board

10. *Set the optional interface interrupt level.*

Note The interrupt level is preset to 4. *Do not set any other interface (except for the HP 98629A SRM interface) to interrupt level 4.*

- a. Find the group of nine switches labeled "OPTION CARD". The two switches labeled "INT" and "LEV" in this group are the Interrupt Level switches.
- b. Set the interrupt level switches according to Table 2-12:

Table 2-12.
HP 98562-66530 Human Interface Board
Interrupt Level Switch Values

Interrupt Level	LEV	INT
3	0	0
4	0	1
5	1	0
6	1	1

11. *Set the optional interface system controller switch.*

Note If you intend to connect two computers together with this interface, skip to step 12. The interface is configured to be system controller and need not be changed.

- a. Find the group of nine switches labeled "OPTION CARD". The switch labeled "SC" in this group is the System Controller switch (see Figure 2-32).
- b. If connecting two computers, only one of them can be set to system controller. To change this interface to non-system controller, change the System Controller switch to 0 (the opposite of that shown in Figure 2-32).

Note If you will be connecting a disk drive or other device to this interface, *do not* set this switch to non-system controller.

12. *Set the optional interface low/high speed switch.*

Note The Low/High Speed switch is preset to 0, "high speed," as shown in Figure 2-32. This setting is appropriate for most applications. If you want to change this setting, continue with step 12; otherwise, skip to step 13.

- a. Find the set of nine switches labeled "OPTION CARD". The switch labeled "LOW" in this group is the Low/High Speed switch (see Figure 2-32).
- b. Set this switch as follows:
 - To set this switch to low speed, set the "LOW" switch to 1, which is opposite of that shown in Figure 2-32.
 - To set this switch to high speed, set the "LOW" switch to 0 as shown in Figure 2-32.

HP 98562-66530 Human (System) Interface Board13. *Insert the interface.*

Re-insert the Human (System) Interface board into the slot you removed it from and tighten the thumb screws to secure it.

14. *Record the select codes.*

Make a note that the select code assigned to the interface is no longer available. If your device occupies more than one select code, make a note for all of the occupied select codes. Use the foldout worksheet at the end of this book for this purpose.

7	the built-in, standard-speed HP-IB interface.
9	the built-in RS-232-C Serial interface (unless you disabled the interface in step 3).
14	the Optional interface (unless you changed the select code in step 9 or did not purchase this option).
21	the built-in LAN interface (unless you changed the select code in step 6).

Note

- a. If you entered the configuration mode during the boot sequence and altered the select codes, record the newly assigned select codes instead of the above listed default select codes.
 - b. Do not record the RS-232-C Serial Interface select code if it is disabled. Do not record the Optional interface if you did not purchase it.
-

15. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the messages:

```
HP-IB
HP98644 at 9
HP98643 at 21
HP98625 at 14
```

appear you have correctly installed the built-in standard-speed HP-IB interface, the built-in RS-232-C Serial interface, the built-in LAN interface, and the Optional interface respectively.

Note Select codes for the HP98643 and 98625 can be different from the default setting if you changed the select codes to avoid a conflict.

If any of these messages do not appear, make sure there are no select code conflicts and that the board is firmly seated in the slot. If you still have problems, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98248A Floating-Point Accelerator Accessory Card

The HP 98248A Floating-Point Math board set provides HP Series 300 DIO-II 32-bit computers with high-speed floating-point hardware.

Note There is a difference between the HP 98248A and the HP 98248B Floating-Point accessory cards. If you have an HP 98248A Floating-Point Accelerator you are in the correct section. If you have an HP 98248B Floating-Point Accelerator, you need to refer to the HP 98248B Floating-Point Accelerator section in this chapter.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98248A Floating-Point Accelerator

- Note** Installing the Floating-Point Accelerator involves two tasks:
- preparing the operating system for the new hardware
 - physically installing the hardware

This procedure describes how to install the hardware *only*. For instructions on preparing the operating system to use the hardware, refer to the installation note that came with the Floating-Point Accelerator.

You will need an expander if either of these statements is true:

1. You have no empty system slots in your computer.
2. Your video output board consists of two printed circuit boards.

If either of these conditions is true, you will need an expander, and the video board must be placed in it. If you do not know whether your video board contains two printed-circuit boards, check it by loosening the two screws securing it and sliding it out of the computer.

The hardware installation process can take either of two paths, depending upon whether your computer has a system bus. An installation procedure for each is presented here. Go to the correct procedure. For example, the Model 350 has a system bus, the Model 330 does not.

If you do not know whether your computer has a System Bus, look at the rear panel of the computer. The System Bus is a metal plate covering two or more slots. If your computer has such a plate, refer to the procedure titled, "With a System Bus". Otherwise, refer to the procedure titled, "Without a System Bus".

HP 98248A Floating-Point Accelerator

With a System Bus

1. Make sure that the computer and expander are turned off and the power cords removed.

Caution In the following steps, handle the circuit boards as little as possible. Handle them by the edges or backplate only.

2. Locate an empty system slot in the computer, either by moving the video board to the expander or by removing the cover plate from an empty slot.
3. Check that the empty slot is next to the System Bus. If it is not, rearrange the boards so that it is.
4. Remove the Floating-Point Accelerator board set from the packaging material and slide it into the empty slot. Slide the two-connector end in first, with the board with the connectors on the bottom.
5. Loosen the screws holding the System Bus and remove it.
6. Locate the new, larger System Bus packaged with the Floating-Point Accelerator and install it onto the Accelerator, processor board and RAM board(s).

Note You *must* reinstall the System Bus to ensure system performance, provide needed air cooling, and meet statutory requirements for fire safety and radiated emissions.

7. Reinstall the power cords and turn the computer and expander on.

Hardware Installation Complete!

Refer to the installation note that came with the HP 98248A Floating Point Accelerator for software configuration instructions.

Without a System Bus

1. Make sure that the computer and expander are turned off and the power cords removed.

Caution In the following steps, handle the circuit boards as little as possible. Handle them by the edges or backplate only.

2. Locate an empty system slot in the computer, either by moving the video board to the expander or by removing the cover plate from an empty slot.
3. Remove the Floating-Point Accelerator board set from the packaging material and slide it into the empty slot. Slide the two-connector end in first, with the board with the connectors on the bottom.
4. Reinstall the slot cover plate removed in step 2.

Note You *must* install the slot cover plate to provide needed air cooling and meet statutory requirements for fire safety and radiated emissions.

5. Reinstall the power cords and turn the computer and expander on.

Hardware Installation Complete!

Refer to the installation note that came with the HP 98248A Floating Point Accelerator for software configuration instructions.

HP 98248B Floating-Point Accelerator Accessory Card

The HP 98248B Floating-Point Math board set provides HP Series 300 32-bit computers with high-speed floating-point hardware.

Note There is a difference between the HP 98248A and the HP 98248B Floating-Point accessory cards. If you have an HP 98248B Floating-Point Accelerator you are in the correct section. If you have an HP 98248A Floating-Point Accelerator you need to refer to the proper section in this chapter.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98248B Floating-Point Accelerator

- Note** Installing the Floating-Point Accelerator involves two tasks:
- preparing the operating system for the new hardware
 - physically installing the hardware.

This procedure describes how to install the hardware *only*. For instructions on preparing the operating system to use the hardware, refer to the installation note that came with the Floating-Point Accelerator.

You will need an expander if either of these statements is true:

1. You have no empty system slots in your computer.
2. Your video output board consists of two printed circuit boards.

If either of these conditions is true, you will need an expander, and the video board must be placed in it. If you do not know whether your video board contains two printed-circuit boards, check it by loosening the two screws securing it and sliding it out of the computer.

The hardware installation process can take either of two paths, depending upon which computer you are installing the Accelerator in. An installation procedure is presented here for the Models 330, 360, and 370. The HP 98248B Accelerator is not supported in the Model 350.

HP 98248B Floating-Point Accelerator

In to Models 330 and 360

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. TURN OFF the expander and unplug the power cord.
 - d. In the following steps, handle the circuit boards as little as possible. Handle them by the edges or backplate only.
 - e. Remove the Floating-Point Accelerator board set from the packaging material and place it on the envelope it was shipped in.

Note If you need to install an expander, do so at this point.

2. *Insert the Floating-Point Accelerator.*

- a. Check to see whether the bottom slot in the computer is empty. If it is, remove the slot cover plate. If it is occupied, remove the board and place it elsewhere in the computer or expander.
- b. With the two-connector end in first, slide the Floating-Point Accelerator board into the bottom slot.
- c. Reinstall a slot cover plate over the Floating-Point Accelerator board.

Note You *must* reinstall the System Bus to ensure system performance, provide needed air cooling and meet statutory requirements for fire safety and radiated emissions.

3. *Ensure that all power switches are in the OFF position.*
4. *Reconnect the power cords.*
5. *Turn on the expander.*
6. *Turn on the computer.*

Hardware Installation Complete!

HP 98248B Floating-Point Accelerator

In to a Model 370

Here is a step-by-step procedure for installing and Floating-Point Accelerator board in a Model 370 computer:

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 - c. TURN OFF the expander and unplug the power cord.
 - d. In the following steps, handle the circuit boards as little as possible. Handle them by the edges or backplate only.
 - e. Remove the Floating-Point Accelerator board set from the packaging material and place it on the envelope it was shipped in.

2. *Remove the System Bus.*

Loosen the screws holding the system bus and remove it.

3. *Check the bottom slot of the computer.*

Check to see whether the bottom slot in the computer is empty. If it is, remove the slot cover plate. If it is occupied, remove the board and place it elsewhere in the computer or expander. If it is the processor board, place it in the slot next to the bottom.

Rearrange the other boards in the backplane so that the processor board is directly above the Accelerator and the RAM board(s) are directly above the processor board.

4. *Connect the Floating-Point Accelerator Bus Cable.*

Note The cable may already be installed on the Accelerator. If so, skip to the next step.

- a. Locate the FPA Bus connectors on the Floating-Point Accelerator as shown in Figure 2-33.

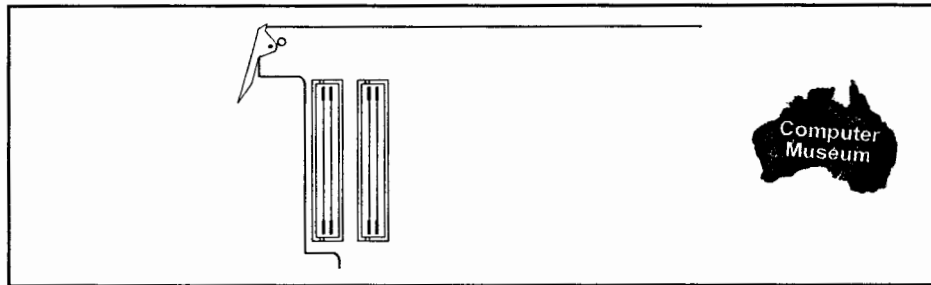


Figure 2-33. Floating-Point Accelerator Bus Connectors

- b. Attach one end of the Floating-Point Accelerator Bus Cable to the connectors. Make sure that the edge with the large notch is toward the side of the board, as shown in Figure 2-34.

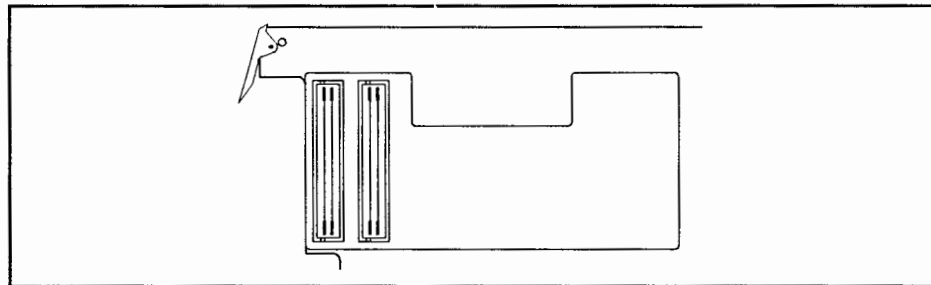


Figure 2-34. Floating-Point Accelerator Bus Cable Positioning

HP 98248B Floating-Point Accelerator**5. Insert the Floating-Point Accelerator.**

Slide the Accelerator into the empty slot. Slide the end with the two DIO-II connectors in first. Hold the FPA Bus Cable out so that it remains out of the computer.

6. Slide the processor board out about 1 inch.**7. Connect the Floating-Point Accelerator Bus Cable to the processor board.**

- a. Locate the FPA Bus Cable connectors on the processor board. They are directly above the cable protruding from the Accelerator.
- b. Wrap the FPA Bus Cable around the back of the processor board, and attach it to the connectors on the processor board. The cable will become S-shaped, as in the side view in Figure 2-35.

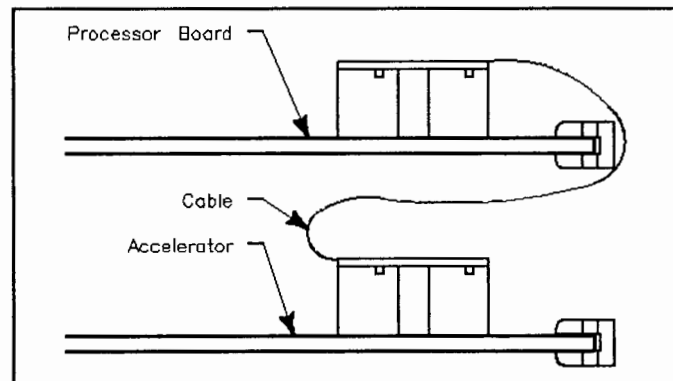


Figure 2-35.
Floating-Point Accelerator Connections (side view)

8. Slide the processor board back into the backplane.**9. Insert the new System Bus.**

Locate the new, larger system bus packaged with the Floating-Point Accelerator and install it onto the Accelerator, processor board and RAM boards(s).

2-120 Installing Interface and Accessory Cards

Note You *must* install the system bus to ensure system performance, provide needed air cooling and meet statutory requirements for fire safety and radiated emissions.

10. *Ensure that all power switches are in the OFF position.*
11. *Reconnect the power cords.*
12. *Turn on the expander.*
13. *Turn on the computer.*

Hardware Installation Complete!

HP 98635A Floating Point Math Accessory Card

The Floating Point Math Card (HP 98635A) enhances the performance of your computer and supports the proposed IEEE standard for binary floating point numbers. With this card, computational performance can be increased up to three times. Actual performance is highly dependent on the application, language, and operating system.

Note Use this Math card only with the model 320.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Installing the HP 98635A Floating Point Math Card

Note The Floating Point Math Card can be installed in the HP 9888A Bus Expander, but with reduced performance. Installation in an HP 98568A Backplane Expander will not reduce performance.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Find a slot for the Floating Point Math Card.*
 - a. Remove the *painted* cover plates from the back of your computer until you find an empty slot. Do not remove the silver cover plates on the bottom of a Series 300 computer.
 - b. Select an empty odd-numbered slot for the Floating Point Math Card if one is available; otherwise use an even-numbered slot. (Slots are numbered from the top down, so the top-most slot is number 1, the next slot down is number 2, etc.)
3. *Insert the Floating Point Math Card.*

Insert the Floating Point Math Card into the slot with the component side up. Using your thumbs, push on the extractor levers until the card is firmly seated in the backplane.

Note If you have additional cards to install in the backplane, leave the cover plates off; otherwise replace the cover plates.

HP 98635A Floating Point Math Card

4. *Verify installation.*

- a. Plug in the power cord and turn on your computer. Watch for the word "Keyboard" to appear, then press the space bar once.
- b. Check the list of components displayed on the left-hand side of the screen. If the message,

HP98635

appears in the list, you have correctly installed the Floating Point Math Card.

If the message above does not appear, repeat the installation procedure. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

HP 98620B DMA Controller Accessory Card

The HP 98620B Direct Memory Access (DMA) Controller Card provides two DMA channels for I/O transfer. This high speed I/O capability works with GPIO, HP-IB and Disk interfaces to increase the maximum data exchange rate between the computer and its peripherals.

Note Do *not* use this DMA card with models other than the 320. Another DMA card, the 98620C, is built into 32-bit models like the 330, 350, and 360.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

HP 98620B DMA Controller Card

Installing the HP 98620B DMA Controller Card

Note The DMA Controller Card *cannot* be installed in an HP 9888A Backplane Expander. It *can* be installed in an HP 98568A Backplane Expander, however.

1. *Play it safe.*
 - a. Follow the computer “shut down” procedure. See *System Administration Tasks Manual* Chapter 3: “Starting and Stopping HP-UX” for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Find a slot for the HP 98620B DMA Controller Card.*
 - a. Remove the *painted* cover plates from the back of your computer until you find an empty slot. Do not remove the silver cover plates on the bottom of a Series 300 computer.
 - b. Select an empty odd-numbered slot for the DMA Controller Card if one is available; otherwise use an even-numbered slot. (Slots are numbered from the top down, so the top-most slot is number 1, the next slot down is number 2, etc.)

3. *Insert the DMA Controller Card.*

Insert the DMA Controller Card into the slot with the component side up. Using your thumbs, push on the extractor levers until the card is firmly seated in the backplane.

Note If you have additional cards to install in the backplane, leave the cover plates off; otherwise replace the cover plates.

4. *Verify installation.*
 - a. Plug in the power cord and turn on your computer. Watch for the word “Keyboard” to appear, then press the space bar once.

- b. Check the list of components displayed on the left-hand side of the screen. If the message, HP98620B, appears in the list, you have correctly installed the DMA Controller Card.

If the message above does not appear, repeat the installation procedure. If the message still does not appear, call your HP Service Representative for assistance.

Hardware Installation Complete!

Refer to Chapter 3: "Setting Up HP-UX for Interface and Accessory Cards" for software configuration instructions.

Setting Up HP-UX for Interface and Accessory Cards

Introduction

Setting-up HP-UX for interface and accessory cards consists of ensuring the appropriate HP-UX device driver is part of the current kernel configuration.

There are two methods for changing the current kernel configuration.

1. SAM method
2. HP-UX Commands method

This chapter focuses on the SAM method for setting-up HP-UX. For a description of the HP-UX Commands method see Chapter 9: "Setting Up Devices Using HP-UX Commands"

Adding an I/O Card Device Driver to the Kernel Configuration

The following sequence of SAM menus from the main menu `System Administration Manager` will display the current kernel configuration for I/O cards:

```
Kernel Configuration ->
  ↓
Change I/O Configuration ->
  ↓
I/O Card Drivers... or Miscellaneous Drivers...
```

Setting Up HP-UX for Interface and Accessory Cards

Table 3-1. Device Drivers for Interface and Accessory Cards

Interface or Accessory Card	Driver Name
98546A	ite
98622A ¹	gpio
98624A ²	98624
98265A	98265
98625A ²	98625
98625B ²	98625
98626A ²	98626
98628A ²	98628
98629A ¹	srm
98638A ²	98642
98642A ²	98642
98643A	lla
98644A ²	98626
98562-66530	not needed
98248A	not needed
98248B	not needed
98635A	not needed
98620B	not needed

1 SAM submenu
Miscellaneous Drivers

2 SAM submenu
I/O Card Drivers

The ite driver for the HP 98546 Display Compatibility Interface is by default part of the HP-UX kernel.

The HP 98265A SCSI interface driver 98265 is automatically added when you add your first SCSI device using SAM. It is not necessary to add the SCSI interface driver at this time if you intend to add a SCSI device to your system using the newly installed SCSI interface.

The HP 98643 Local Area Network (LAN) Interface is configured differently than other interfaces. See the section at the end of this chapter for a description of menus for configuring your LAN interface.

3-2 Setting Up HP-UX for Interface and Accessory Cards

Setting Up HP-UX for Interface and Accessory Cards

- If the driver you are checking for is *not* included in the current kernel configuration and has an *n* next to the driver description, change the *n* to a *y* and rebuild the kernel.

To rebuild the kernel after modifying the I/O Card Drivers or Miscellaneous Driver menus, go to the `Generate a New Kernel` menu within the `Kernel Configuration` menu to rebuild the kernel with the modifications to the I/O card driver information. You will be prompted with the following message:

```
This option will build a new kernel in /etc/conf. You will then be asked if
you want to reboot the system. Do you want to continue (y or n )
```

Press *y*. After you reboot the system the new kernel configuration will reflect the modifications you made to the I/O card driver information.

- If the particular driver you are checking for is included in the current kernel configuration and has a *y* next to the driver description, the kernel does not need to be rebuilt.

HP-UX set-up complete!

Adding an HP 98643 Local Area Network (LAN) Interface

The following sequence of SAM menus from the main menu `System Administration Manager` will display the menu for adding your LAN card to the system:

```
Networks/Communications ->
↓
LAN Hardware and Software (Cards and Services) ->
↓
Add a New LAN Card...
```

Enter the following information about the LAN card to be added to the system:

- IP address
- Hostname aliases
- Subnetwork information

Use the `(Tab)` key to move from field to field as you fill in information on this screen. If you need additional information about a particular field, position the cursor on the field and press `Help (F1)`.

When you have filled in all of the information press `Perform Task (F4)`.

After you have added the LAN card to your system enter the LAN Software (Services) menus:

```
ARPA Services Configuration
or
NFS (Network File System) Configuration
or
NS (Network Services) Configuration
```

Refer to networking software documentation for configuration information.

3-4 Setting Up HP-UX for Interface and Accessory Cards

Installing Memory and I/O Expanders

Introduction

This chapter contains hardware installation instructions for adding memory to your system and installing the following backplane expanders:

- HP 98568A Backplane Expander
- HP 98570A Backplane Expander
- HP 98577A VMEbus Expander

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Adding Memory to Your System

RAM cards add additional program memory to your computer. Table 4-1 and Table 4-2 show you the possible combinations of computer model, maximum RAM, and HP-UX supported RAM cards.

Table 4-1.
Maximum Installable RAM

on Model	Mbytes RAM
320	7 1/2
330	8
350	32* 48** 48***
370	48
375/380/385	32 (1M Bit Parts) 128 (4M Bit Parts)
* parity RAM	
** ECC RAM	
*** combined ECC and parity RAM	

Refer to Appendix C: Series 300 Support Matrix or Appendix D: Series 400 Support Matrix for hardware and software information.

If all of the backplane slots in your computer are full, and your system does not already include an HP 98570A Backplane Expander, you will need to install and configure one in order to use this product. You must turn the computer off before you install the expander. If you already have one, skip down to the next section.

4-2 Installing Memory and I/O Expanders

Adding Memory to Your System

If you have a Model 350 computer, you will need an expander if either of the following statements is true:

- Your video output board consists of two printed-circuit boards
- You have a total of more than four large boards.

If either condition exists, you will need an expander. If you do not know whether your video board contains two printed-circuit boards, (make sure that your operating system is shut down and the computer turned off, first) check it by loosening the two screws securing it and sliding it out of the computer.

Table 4-2.
Series 300 HP-UX Operating System Support

RAM Card	on Model
HP 98256A HP 98257A	320
HP98258A	330 350
HP 98258B/C	350
HP 98264A/B	350 370
HP 98229A	345
HP 98229B	375 380 385
HP 98229C	400T 425T
HP 98229D	425T 425S
HP 98229E	375 400S 425S

Adding Memory to Your System

Installing Memory Boards in a Model 320 Computer

This procedure describes how to install RAM cards in Series 300 Model 320 computers. If you have a Series 300 Model 330 or 350 computer, refer to the sections that follow this one.

In this procedure, you will set the switches on each of your RAM cards to a unique setting. No two RAM cards may have their switches set the same way.

1. Follow the directions on the *Series 300 Memory Configuration Wheel* to set the switches on your RAM cards. If you need help refer to the “Help with the Memory Configuration Wheels” section of this chapter.
2. Once you have completed all instructions on the Memory Configuration Wheel, turn the computer on and check the number of bytes displayed on the screen. This number should be approximately equal to the total number of bytes of RAM you have installed in your computer. Count:
 - 1 048 000 bytes for each 1 Mbyte card you installed
 - 256 000 bytes for each 256 Kbyte card you installed
 - 64 000 bytes for each 64 Kbyte card you installed

4

Adding Memory to Your System

3. If the number of bytes shown on the screen is:
 - *More than you expected:* Do not be concerned—your computer probably contains some built-in RAM.
 - *Slightly less than you expected:* Do not be concerned—your computer consumes a few hundred bytes of RAM as overhead.
 - *Significantly less than you expected:* Repeat this procedure, and check for an increase in bytes after each card is installed.
4. Replace all cover plates on the back of your computer.

Hardware Installation Complete!

4

Adding Memory to Your System

Help with the Memory Configuration Wheel

This section provides advice for using the Memory Configuration Wheels. If you have trouble following a step, look up the step in this section and read the explanation.

Step 2-b Unscrew and remove the cover plates from the back of your computer. If your computer also has an interface card installed (that is, a painted cover plate with a circuit board attached), remove this also—it may be covering a RAM card. Do not unscrew the *unpainted*, silver cover plates at the bottom of a Series 300 computer.

Once the cover plates are off, you may see some cards inside. Decide which of these cards are RAM cards by looking at the colors of their plastic extractor levers:

Green and *violet* extractor levers identify a 1 Mbyte RAM card.

Red and *yellow* extractor lever identify a 256 Kbyte RAM card.

Two red extractor levers identify a 64 Kbyte RAM card.

Remove all 1 Mbyte, 256 Kbyte and 64 Kbyte RAM cards by pulling their extractor levers toward you and sliding them out. RAM cards may be damaged by static discharge, so be careful not to touch the electrical components on the cards, and don't place them on a charged surface such as a carpet or cloth.

Step 2-d If your screen remains blank, write down *0* and go on to Step 3.

Step 2-e The Bytes window is immediately below Step 2 on the wheel. Turn the wheel until the number shown in the Bytes window approximates the number you wrote down in Step 2-d.

Step 3 Repeat this step for each 1 Mbyte RAM card you have. Do not go on to Step 4 until you have set the switches on all of your 1 Mbyte RAM cards.

4-6 Installing Memory and I/O Expanders

Adding Memory to Your System

- Step 3-c Turn the wheel until the next set of switches comes into view. *Whenever you are told to turn the wheel, always turn the wheel to the next set of switches; never use a set of switches that is already in view.*
- For example, if you come to this step and a set of switches already appears in the window, you should turn the wheel past this set of switches and on to the next one. If you come to this step and an arrow appears in the window or the window is blank, you should turn the wheel until a set of switches comes into view.
- Step 3-d Set the switches on the RAM card to match those shown in the window.
- Step 3-e If you have additional 1 Mbyte RAM cards, begin again at Step 3-b to set the switches on the next 1 Mbyte RAM card. Remember to turn the wheel to the next set of switches when you repeat Step 3-c.
- If you have set the switches on all of your 1 Mbyte RAM cards, make sure your computer is turned off and re-insert all 1 Mbyte RAM cards into your computer. You may insert them into any slot, but be sure you do not use a slot which was previously occupied by an interface card (if you have one).
- Step 4-b Check that the number of bytes now shown on the screen has increased over the number you wrote down in Step 2-d.
- Step 4-c Turn the wheel clockwise until the number in the Bytes window approximates the number of bytes you see on the screen. If the number in the Bytes window is already set correctly, you do not have to turn the wheel.
- Step 5-c (Series 300) See the advice for Step 3-c. Be sure you turn the wheel counter clockwise as indicated by the arrows on the edge of the wheel.

Adding Memory to Your System

Some Common Mistakes

If something goes wrong, watch out for these common mistakes:

- Whenever you are told to turn the wheel, be sure to turn it, even if a set of switches already appears in the window. Never use a set of switches unless you have just turned the wheel to bring it into view. Remember, no two RAM cards can have the same switch setting.
- When you use the back side of the wheel, don't forget to turn it counter clockwise, rather than clockwise.

4

Installing Memory Boards in a Model 330 Computer

This procedure describes how to install an HP 98258A RAM board in your Series 300 Model 330 computer. If you have a Series 300 Model 320 computer, refer to the preceding section. If you have a Series 300 Model 350 computer, see the next section.

Caution RAM boards can be easily damaged by static electricity. Be careful to handle them only by their edges and make sure you place them on the anti-static envelope they were shipped in.

4

1. Carefully unpack your new RAM board.
2. Place your new RAM board, component-side up, on the static-free envelope it was shipped in.
3. Set the switches on your new RAM board as shown in Figure 4-1.

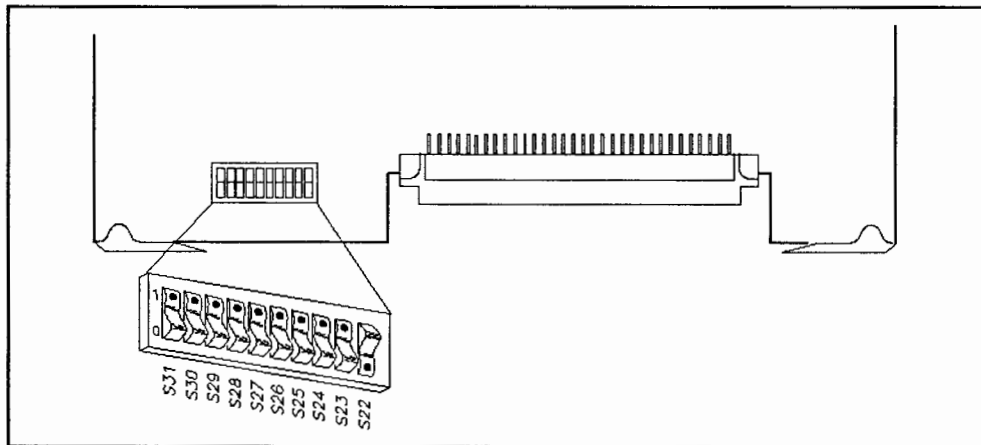


Figure 4-1.
Setting Switches on the New HP 98258A RAM board

4. Remove the cover plates on the back of your computer until you find a vacant slot.

Adding Memory to Your System

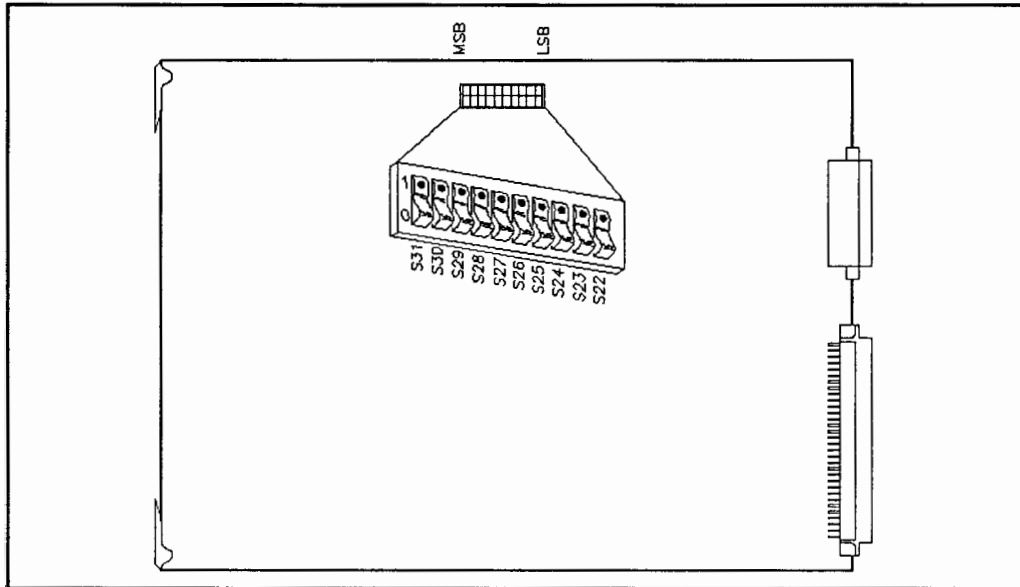
5. Insert the new RAM board, component side up, into the vacant slot. Place the grey and green extractor levers against the board and push firmly until the board is securely seated in the backplane.
6. Replace the cover plates on the back of your computer.
7. Turn your computer on and hold down the space bar a few seconds. Check the display to make sure the amount of RAM in your computer has increased to *approximately* 8 Mbytes (8 338 608 bytes). See Figure 4-2. If the memory reported is significantly less, check that the switches for your built-in RAM are set as shown in Figure 4-3. Then double-check that your new RAM board's switches are set as shown in Figure 4-1.

4

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BOOTROM Rev. A2
MC68020 Processor
MC68881 Coprocessor
Bit Mapped Display
Keyboard
HP-IB
DMA-C0
HP98644 at 9
HP98625 at 14
HP98643 at 20
8338633 Bytes

Figure 4-2.
Display Showing Amount of RAM Installed



4

Figure 4-3.
Built-in RAM Switch Settings

Optimizing Model 330 Performance

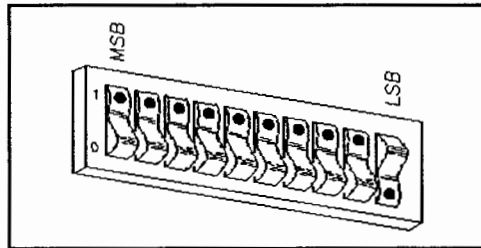
The BASIC, Pascal and HP-UX operating systems occupy different areas of memory. Because programs occupying built-in RAM run faster than programs occupying add-on RAM, you may want to rearrange memory so that your most important programs occupy the fast, built-in RAM.

Here's what to do:

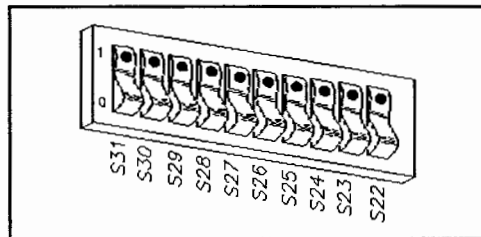
1. Select a program to use as a benchmark, or choose a commonly-used operating system function.
2. Run and time the benchmark program several times to determine its average execution time under the current RAM configuration.
3. *Turn your computer off.*

Adding Memory to Your System

4. Remove the HP 98258A add-on RAM board. Reverse the switch settings of your add-on RAM board and your built-in RAM. When done, your built-in RAM should be set to:



and your add-on RAM board should be set to:



5. Re-insert your add-on RAM board into the computer.
6. Turn your computer on and hold down the space bar a few seconds. Verify that you still have 8 Mbytes of RAM installed by looking at the amount of RAM shown on the display.
7. Run your benchmark program several times to determine its average execute time.
8. Compare the program's performance under each RAM configuration and choose the fastest one.

Hardware Installation Complete!

4-12 Installing Memory and I/O Expanders

Installing Memory Boards in a Model 350 Computer

This procedure describes how to install HP 98258A/B/C and 98264A/B boards in your Series 300 Model 350 computer. If you have a Series 200 computer, or a Series 300 Model 310, 320, or 330, refer to the preceding sections.

Play it safe.

- Follow the computer “shut down” procedure. See *System Administration Tasks Manual* Chapter 3: “Starting and Stopping HP-UX” for specific instructions.
- TURN OFF the computer.
- TURN ON the computer.

4

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BOOTROM Rev. A2
Bit Mapped Display
MC68020 Processor
MC68881 Coprocessor
Keyboard
HP-IB
HP98620 DMA-CO
HP98644 at 9
HP98625 at 14
HP98643 at 21
XXXXXXX Bytes

Power-up Display

Write down the amount of RAM listed: _____ Bytes. You will use this figure later to check that the new RAM board is correctly installed.

Now, shut down the operating system following normal HP-UX procedures (refer to your *System Administrator Manual* if you need more information).

Adding Memory to Your System

Although installing RAM boards in the Model 350 is an easy task, it is broken down into three short pieces for your convenience:

1. Identifying which RAM boards are already in the computer.
2. Assigning the RAM board addresses.
3. Physically installing the new RAM board in the computer.

If you already know which RAM boards your computer contains, skip the section on “Identifying Existing RAM Boards” and go to the section on “Assigning the Addresses”.

If you know that your computer contains about 16 Mbytes of RAM (from the power-up display), go directly to the section titled, “Installing the RAM Board”. It includes all the information you will need to add the RAM board.

Identifying Existing RAM Boards

In order to properly address a new board, you need to know the sizes of the boards already in the computer. If you already know what size boards are in the computer, put their quantities in Table 4-3 and skip down to the section titled, “Assigning the Addresses”.

Table 4-3.
RAM Board Inventory Table

Board Size	Quantity
16 Mbyte boards	
8 Mbyte boards	
4 Mbyte boards	

If you do not know what sizes the RAM boards in your computer are, the easiest way to determine this information is to look at the amount of RAM in the power-up display (the figure you wrote down near the beginning of this section) and compare it to the number of boards in the backplane.

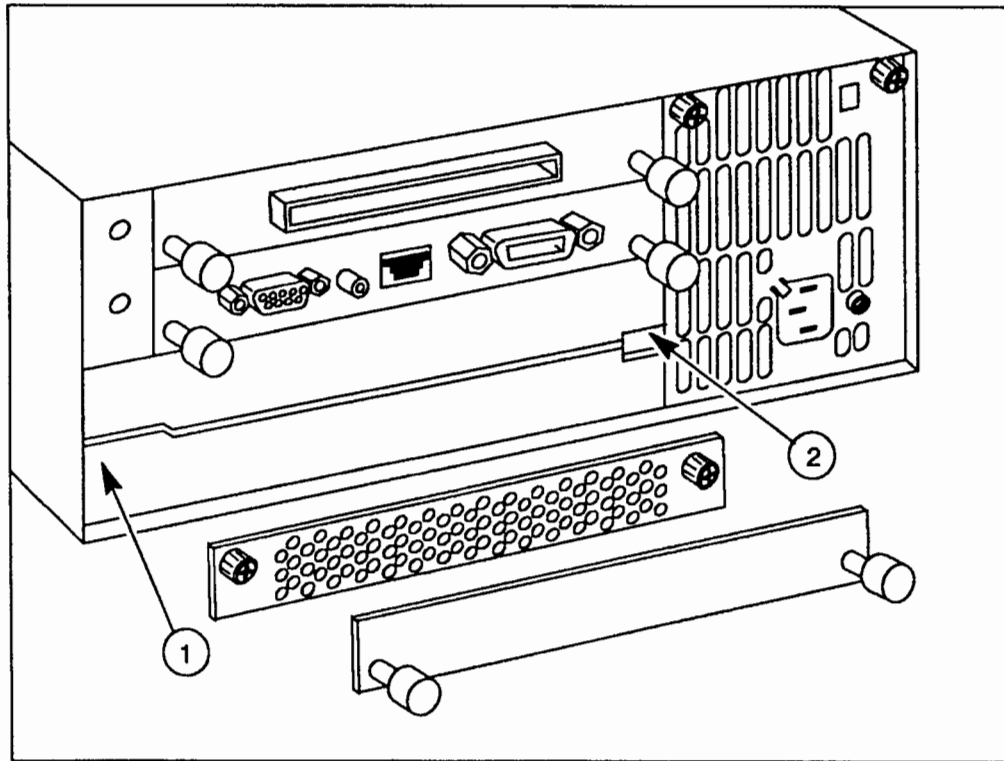
Adding Memory to Your System

Now remove the system bus interface board and look for boards fitting the descriptions in Table 4-4:

Table 4-4.
RAM Board Identification

Extractor Colors (Left-Right)	Configuration	Memory Size
Grey-Green	Single board Two-board pair	4 Mbytes 8 or 16 Mbytes
Blue-Yellow	Two-board pair	8 or 16 Mbytes

Adding Memory to Your System



LG200171_034

Figure 4-4.
RAM Memory Board Extractors

- ① Left Extractor
- ② Right Extractor

If you have a large number of boards and are still unable to determine what board sizes you have, you will have to use the part numbers of the boards. Carefully remove each board from the computer and locate the part number. It is located on the underside of the top board, immediately above the address switches on the bottom board.

4-16 Installing Memory and I/O Expanders

Adding Memory to Your System

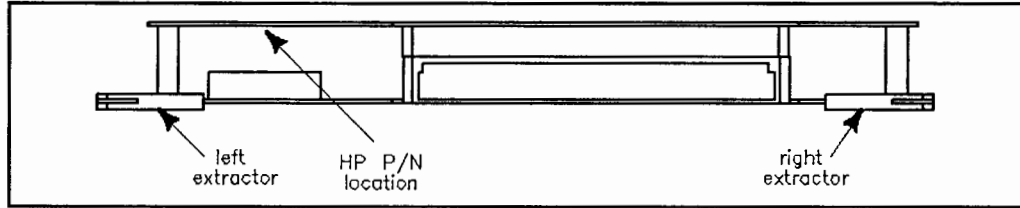


Figure 4-5.
Part Number Location

Identify the board size with the following chart:

Table 4-5.
RAM Board Identification

Extractor Colors Left-Right	Part Number	Memory Size
Grey-Green	none (Single board) 98258-66521 98258-66522	4 Mbytes 8 Mbytes 16 Mbytes
Blue-Yellow	98264-66521 98264-66522	8 Mbytes 16 Mbytes

Put each board back into the computer when you have determined its size. You may wish to label the boards with their size, as you will need this information later.

When you have determined the sizes of all the RAM boards in the computer, you are ready to assign the address to the boards. If your system contains approximately 16 Mbytes in any combination, go directly to the section titled, "Installing the RAM Board". Otherwise, continue with the next section.

Adding Memory to Your System

Assigning the Addresses

The general rule to follow when addressing the RAM is that any board must be addressed higher in RAM space than any RAM board of smaller capacity and below any larger RAM. In practice, RAM being added to a computer is addressed below any existing RAM of the same size, in order to avoid having to readdress existing RAM boards. You will have to readdress any smaller RAM boards.

4 Although that is the general rule, there are some exceptions. For instance, if you have a 16 Mbyte system made up of 4 and 8 Mbyte boards, they can be treated as one 16 Mbyte board. The board to be added can then be addressed as if it were being placed below an existing 16 Mbyte board.

Addressing new RAM boards as well as readdressing smaller existing RAM boards are covered in this procedure.

1. Copy the numbers from the RAM Board Inventory Table (Table 4-3) to Table 4-6.

Table 4-6.
RAM Board Inventory Table

Board Size	Quantity
16 Mbyte boards	
8 Mbyte boards	
4 Mbyte boards	

2. For each 16 Mbyte board already installed in the computer, cross off four of the 4 Mbyte blocks in Figure 4-6. Start with the first block and work down.

Adding Memory to Your System

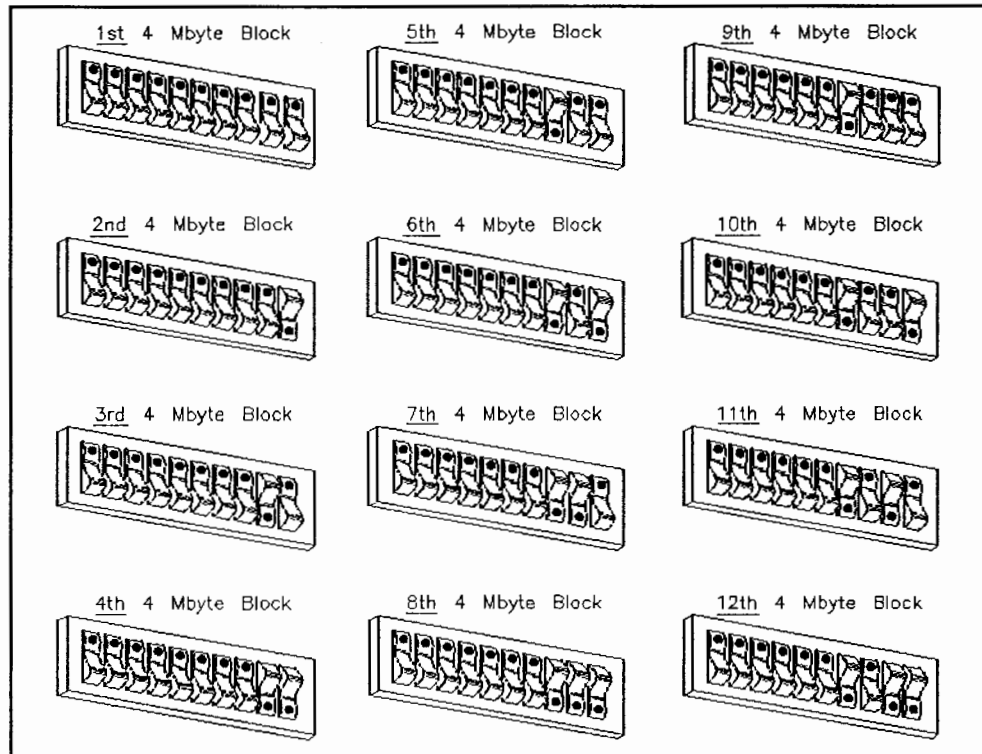


Figure 4-6.
Address Worksheet



3. If you are installing a 16 Mbyte RAM board, write the word “NEW” beside the next *UNUSED* block, and cross off the following *three* blocks.
4. For each 8 Mbyte board in the computer, write the number “8” beside the next *UNUSED* block and cross off the following *one* block.
5. If you are installing an 8 Mbyte RAM board, write the word “NEW” beside the next *UNUSED* block, and cross off the following *one* block.
6. For each 4 Mbyte board in the computer, write the number “4” beside the next *UNUSED* block.

Adding Memory to Your System

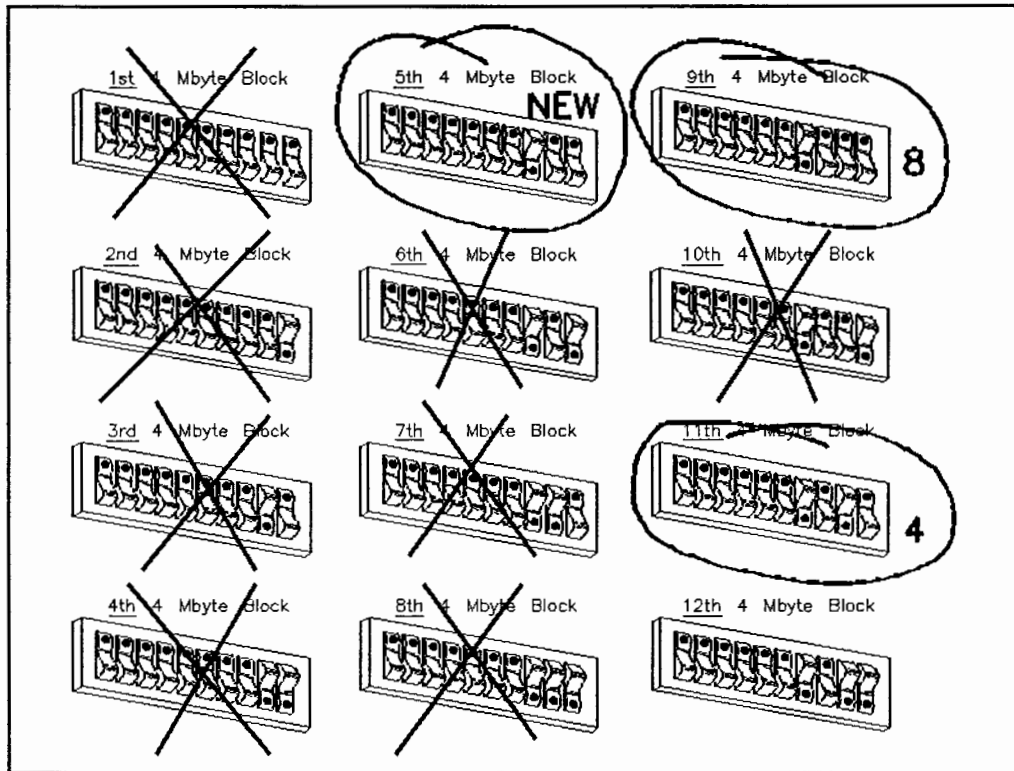
7. If you are installing a 4 Mbyte RAM board, write the word “NEW” beside the next *UNUSED* block.

An Example

If you would like to try out the addressing procedure before actually tackling your situation, run through the following example.

The Situation: You are adding a 16 Mbyte board to a computer already containing a 16 Mbyte board, an 8 Mbyte board and a 4 Mbyte board.

Figure 4-7 shows how the 4 Mbyte block chart in Step 2 will look when you are finished:



4

Figure 4-7.
Completed Address Worksheet

- In Step 2, blocks 1 through 4 were crossed out.
- In Step 3, the word “NEW” was written by block 5 and blocks 6 through 8 were crossed out.
- In Step 4, the number “8” was written by block 9 and block 10 was crossed out.
- In Step 6, the number “4” was written by block 11.

Adding Memory to Your System

Installing the RAM Board

If you will be installing an expander, go ahead and do so, using the instructions packaged with the expander.

If your computer contains a system bus, there are several configuration restraints.

Both parity and ECC RAM are normally installed in the computer chassis, because we strongly recommend that the RAM boards be connected to the processor board by the system bus for maximum performance. However, both RAM types may be installed in the expander if the resulting performance loss is acceptable to you.

The 4 Mbyte parity RAM board may be installed in any slot. The other RAM boards may be installed in any slot except for these:

- The top slot of either the computer or expander.
- If your computer or expander contains DIO accessory slots (these are narrow slots toward the top of the chassis), they can not go in the slot immediately under the DIO slots.

Note

You may have to temporarily loosen or remove the board or slot cover immediately above the empty slot in order to install the new RAM board. Make sure to retighten this board after installing the new board.

The processor board, the RAM boards and the Floating-Point Accelerator (if installed) should all be clustered together in the computer, in order to take advantage of the faster speed of the system bus.

If your video output board consists of two printed circuit boards, it should go in the expander. If your computer is full, a good general rule is to move the video board to the expander.

Here is a step-by-step procedure for installing the new RAM board in your computer:

1. Make sure that the computer and expander are turned off and the power cords removed.
2. Loosen the screws holding the system bus connector board and remove it.

4-22 Installing Memory and I/O Expanders

Caution In the following steps, handle the circuit boards as little as possible. Handle them by the edges or backplate only.

3. Locate an empty system slot in the computer (or in the expander if you have chosen to put the new RAM there) and remove the cover plate from it.
4. If the empty slot is in the computer, check that it is immediately above or below the system bus connector board. If not, rearrange the boards so that it is.
5. Remove the new RAM board from its packaging material and place it on a static-free surface, such as the bag it was shipped in.
6. Locate the RAM address switches.

4

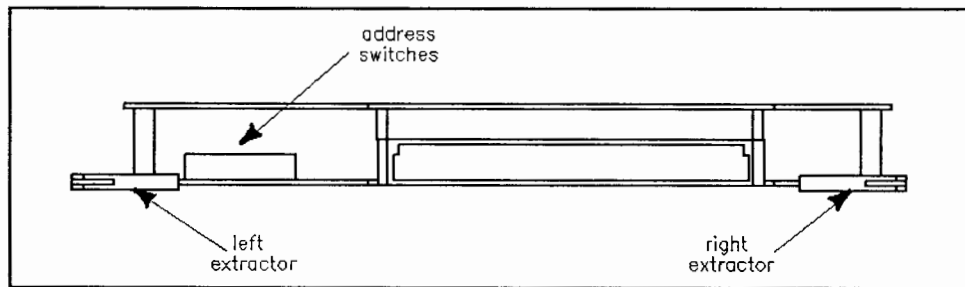


Figure 4-8.
RAM Board Address Switch Location

7. If your system contains 16 Mbytes in any combination, set the address switches on the new board according to Figure 4-9 and then skip down to step 10:

Adding Memory to Your System

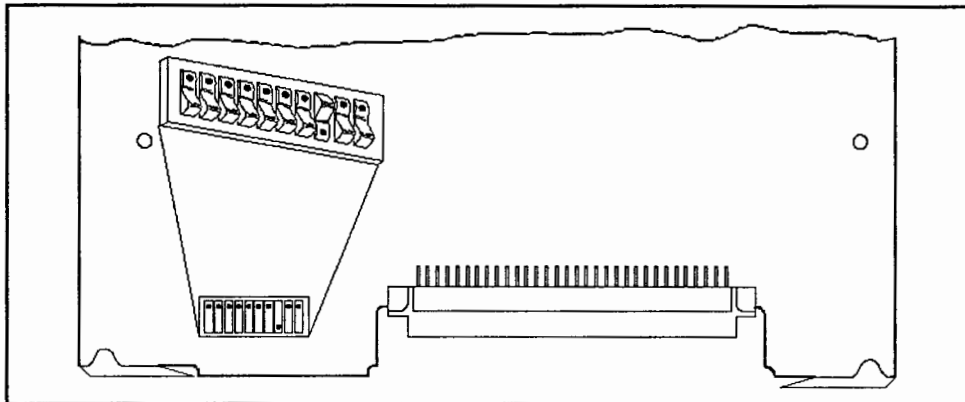


Figure 4-9.
16 Mbyte Address Setting

8. If your system contains other than 16 Mbytes, set the address switches on the new RAM board to match the block labeled “NEW”.
9. Now change the address switches on all *SMALLER* boards to the ones numbered in the chart. “Smaller” refers to memory size rather than physical size. Note that boards the same size as or larger than the new board need not be changed. Only the smaller boards need new addresses.
10. Pick up the new RAM board by the edges and slide it into the empty slot. Slide the two-connector end in first, with the board with the connectors on the bottom.
11. If you installed the new RAM board in the expander, reinstall the cover plate over the slot and reinstall the system bus connector board removed in step 2. Then skip down to step 13.
12. Locate the new, larger system bus connector board packaged with the new RAM board and *carefully* install it onto the processor board and RAM board(s), and Floating-point Accelerator if installed.

Note You MUST reinstall the system bus connector board to ensure system performance, provide needed air cooling and meet statutory requirements for fire safety and radiated emissions.

13. Reinstall the power cords and turn the computer and expander on.
14. Now check the power-up display for the amount of RAM installed.

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BOOTROM Rev. A2  
Bit Mapped Display  
MC68020 Processor  
MC68881 Coprocessor  
Keyboard  
HP-IB  
HP98620 DMA-CO  
HP98644 at 9  
HP98625 at 14  
HP98643 at 21  
XXXXXXX Bytes
```

4

Figure 4-10. Power-up Display

Write the amount here: _____ Bytes.

15. If the amount of RAM in step 14 has not increased by approximately the amount of RAM you added, go to the section titled "In Case of Trouble".
16. Boot your HP-UX operating system as usual.

Hardware Installation Complete!

Adding Memory to Your System

In Case of Trouble

If you do not obtain the correct amount of available memory, first turn the computer off and verify that the cards are plugged in correctly. Then turn it back on and see if the amount of memory is correct. If it still is not, turn the computer off and check the card addressing. If it is correct, set a card aside and continue the process with the remaining cards.

If you still have trouble, verify that you have assigned the addresses correctly. If you have, and no arrangement of cards will increase the amount of memory, put the computer into use with the maximum amount of memory you can obtain. Then replace all the unused cards in their anti-static bags and call your HP Sales and Service office for assistance.

HP 98568A Backplane Expander

The HP 98568A Backplane Expander adds eight additional I/O and Accessory slots to your Series 300 computer.

Connecting the HP 98568A Backplane Expander

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

HP 98568A Backplane Expander

2. Loosen the two captive screws securing the power supply access door on the computer and remove the access door.

You may need a Pozidriv screwdriver to loosen the captive screws.

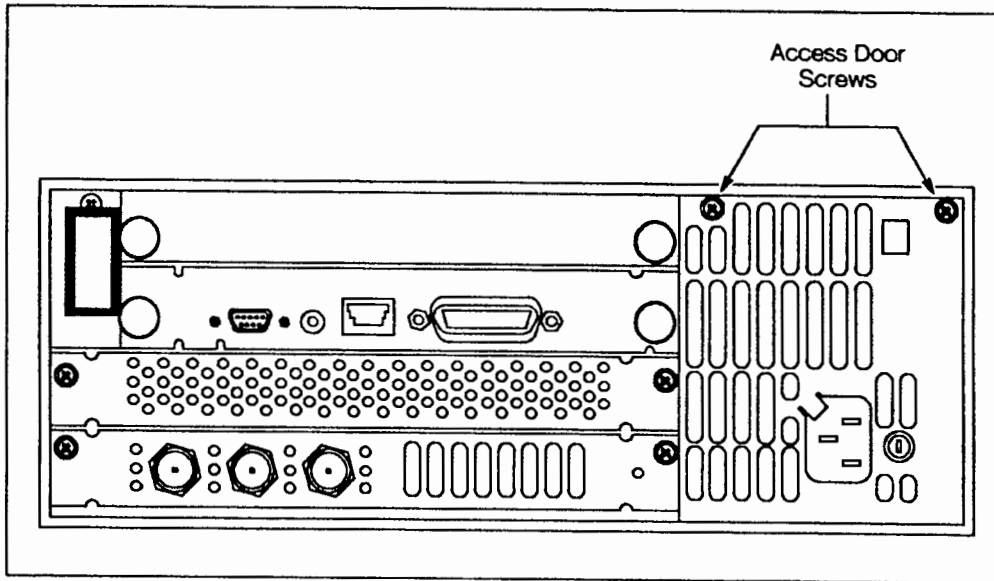


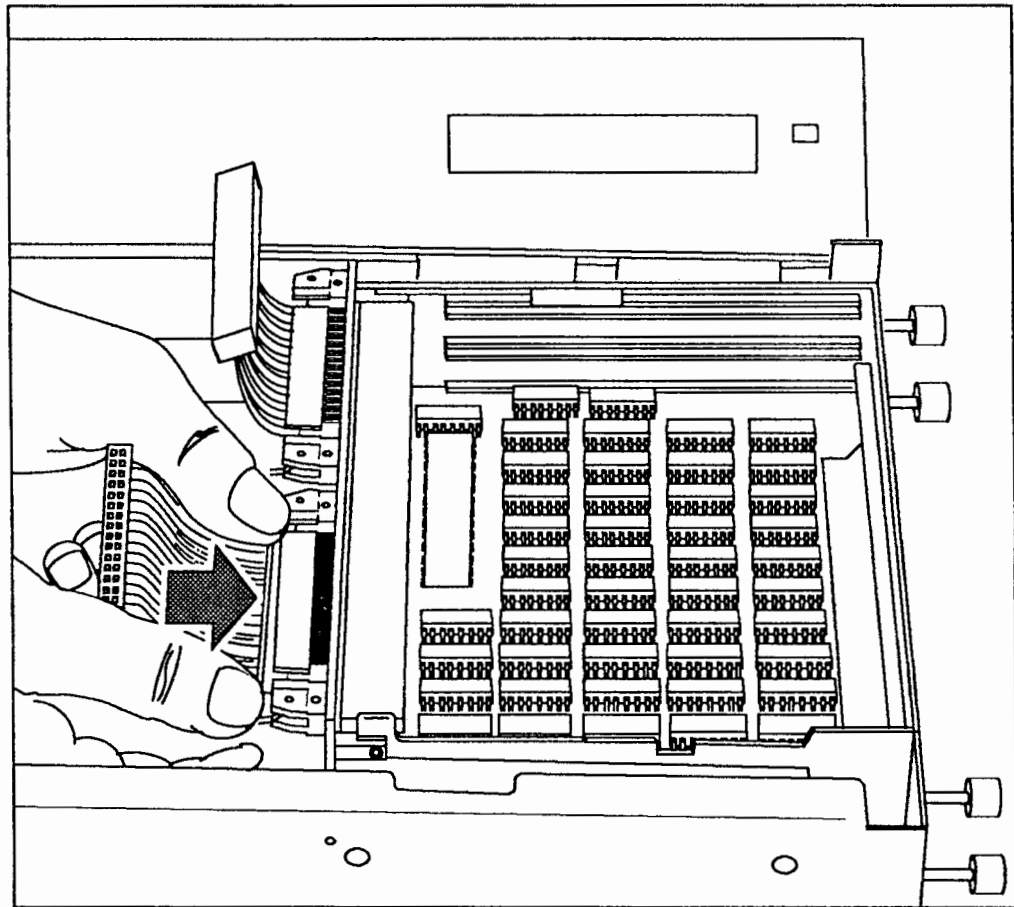
Figure 4-11.
Access Door Screws

3. Slide the computer top cover toward the rear of the computer.
Spring the sides out and up and lift it off.

HP 98568A Backplane Expander

4. *Insert the two flat cables received with the expander into the two connectors on the top edge of the computer's four-slot backplane.*

Be careful not to bend any of the pins in the connector. Press in until the locking tabs lock across the back of the cable connector. Bend the cables so that the free ends point upward.



LG200171_029

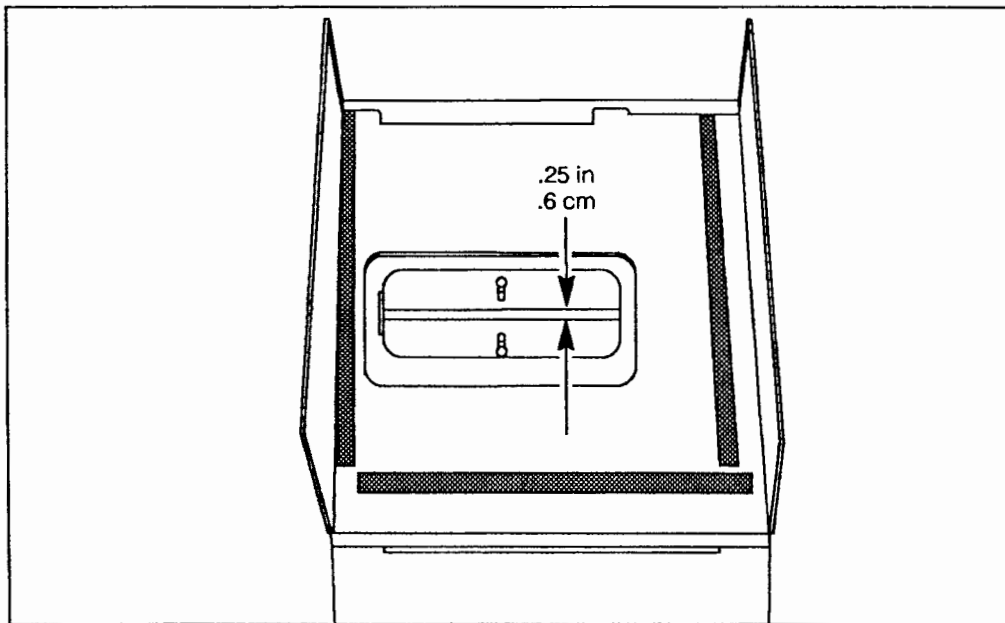
Figure 4-12.
Installing the Two Cables

HP 98568A Backplane Expander

5. Loosen the two captive screws securing the expander power supply access door and remove the access door.
6. Slide the expander top cover toward the rear of the expander.
Spring the sides out and up and lift it off.
7. Place the expander upside-down on a flat, solid surface.
8. Press the two sliding clips toward each other.

Locate the two sliding clips on the top of the slotted cover and press them toward each other as far as they will go.

4



LG200171_036

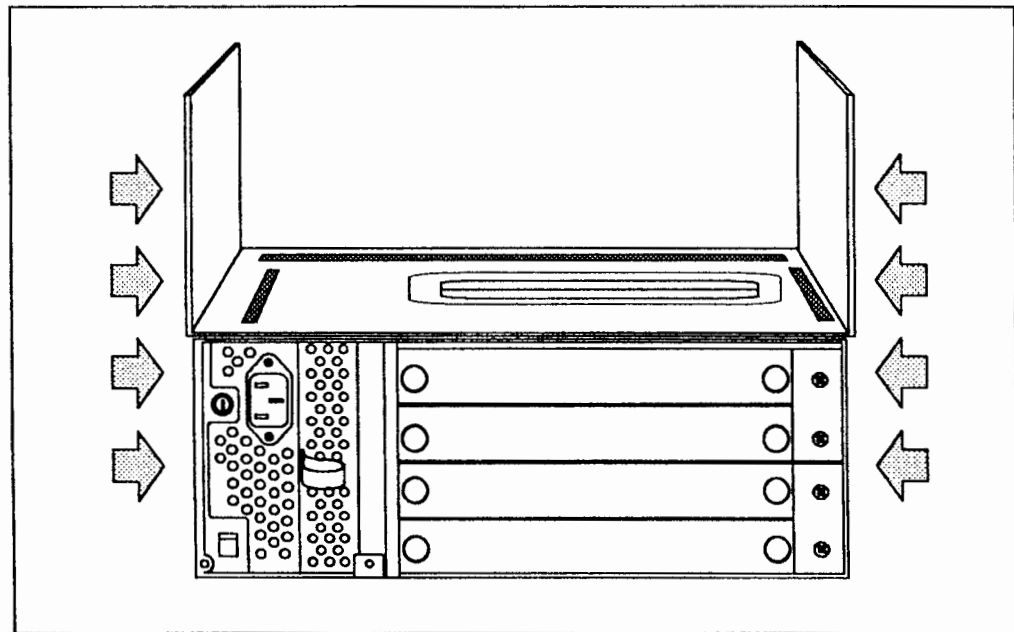
Figure 4-13.
Sliding Clips

HP 98568A Backplane Expander

9. *Place the slotted cover upside-down on the bottom of the expander.*

Place the slotted cover upside-down on the bottom of the expander, with the front of the cover toward the front of the expander. The slot in the cover should line up with the slot in the expander.

10. *Align the computer top cover on the expander.*
 - a. Align the computer top cover on the expander such that it is centered side-to-side.

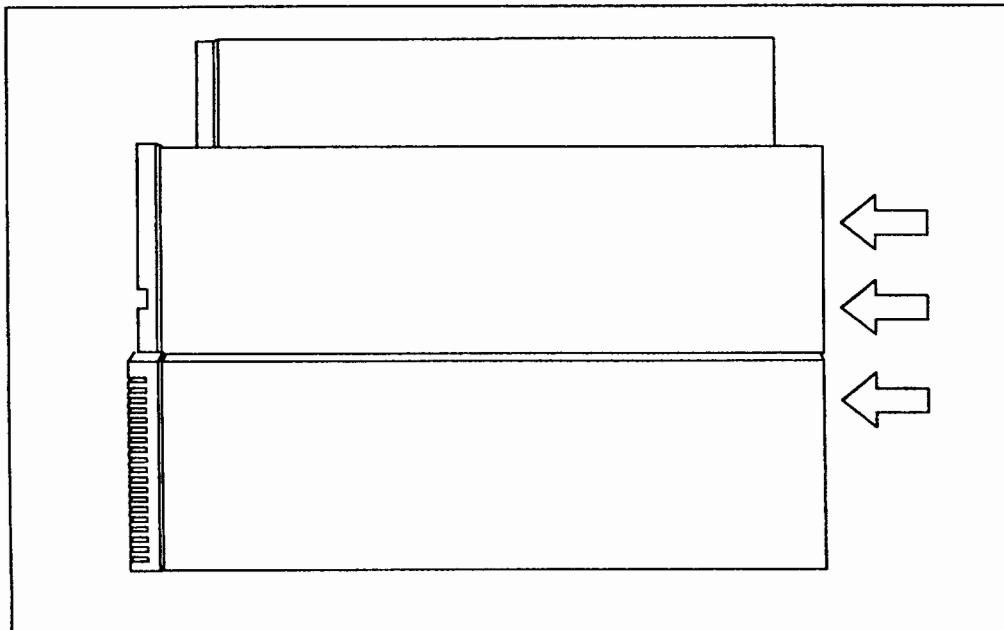


LG200171_032

Figure 4-14.
Aligning the Top from Side-to-Side

HP 98568A Backplane Expander

- b. Align the top so that the rear edge of the cover is even with the rear edge of the expander bottom. The indent at the front of the top should fit over the plastic feet on the expander.

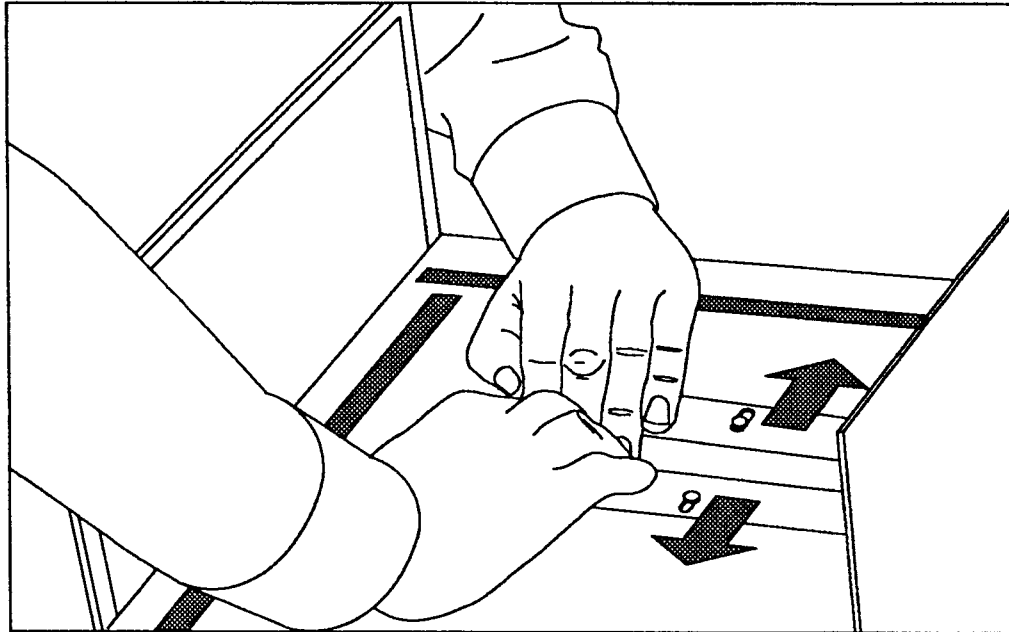


LG200171_037

Figure 4-15.
Aligning the Top from Front-to-Back

11. *Press the sliding clips onto the edges of the opening.*

Press the clips until they “snap” into place.



4

Figure 4-16.
Pressing the Clips into Place

Note If the sliding clips are difficult to install, make sure that the top is properly aligned. If so, work on one end of the clips at a time.

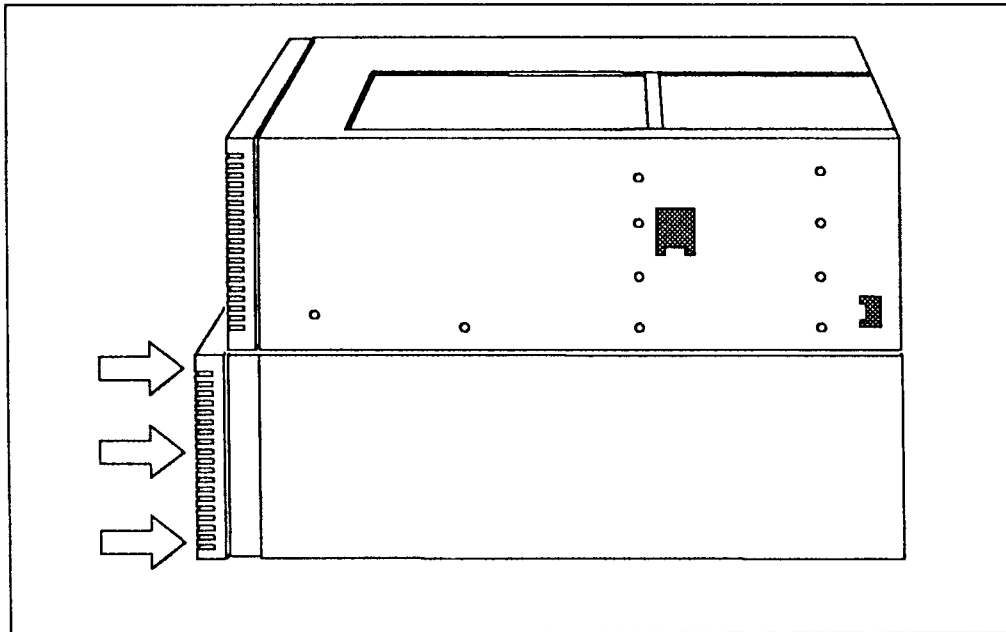
HP 98568A Backplane Expander

12. *Place the computer cover and attached expander on the computer.*

Turn the expander and attached computer cover over and place it on top of the computer with the flat cables passing up through the slot in the bottom of the expander.

- a. Slide the top cover into place on the computer. Press in on the front edge of the cover with the heels of your hands while pressing in on the rear corners with your elbows.

4



LG200171_010

Figure 4-17.
Installing the Cover on the Computer

- b. Make sure that the bottom, rear corners of the top are seated in their retaining clips. If you can flex the rear corners of the cover away from the computer, they are not seated properly.

4-34 Installing Memory and I/O Expanders

HP 98568A Backplane Expander

13. *Install the two cables onto the bottom of the expander backplane.*

Be careful not to bend any of the pins in the connector. Press in until the locking tabs lock across the back of the cable connector.

14. *Install the top cover removed from the computer onto the expander.*

Install the top cover removed from the computer onto the expander using the method in step 15. Make sure that the bottom, rear corners of the top are seated in their retaining clips.

15. *Re-install the power supply access doors on the computer and expander.*

Re-install the power supply access doors on the computer and expander and tighten the captive screws. Make sure that the “feet” on the bottom of the door are installed in their retaining grooves.

4

Hardware Installation Complete!

HP 98570A Backplane Expander

The HP 98570A adds two wide System slots and four narrow I/O slots (except option 004 which adds four wide System slots and no I/O slots) to your Series 300 computer.

Connecting the HP 98570A Backplane Expander

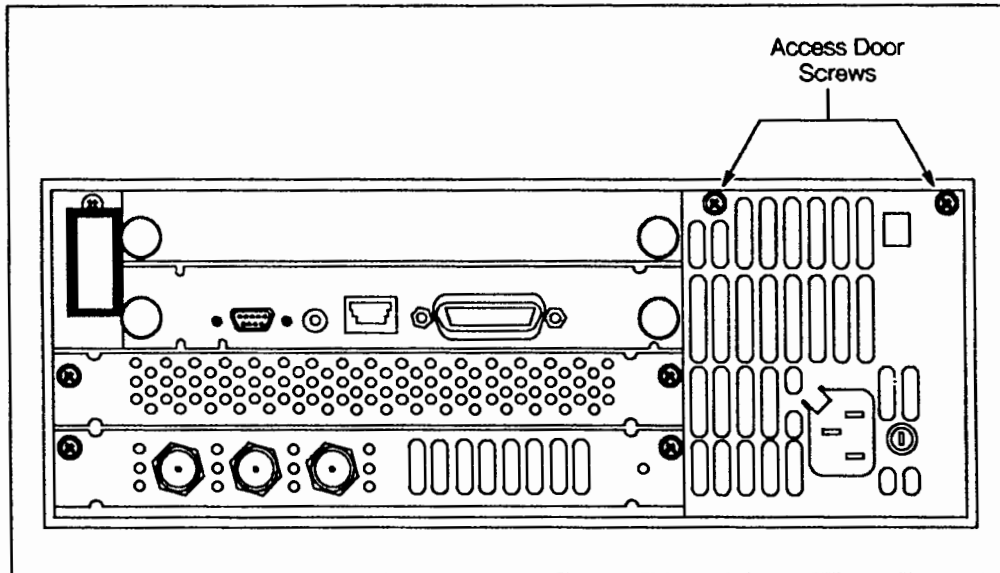
1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

4

HP 98570A Backplane Expander

2. Loosen the two captive screws securing the power supply access door on the computer and remove the access door.

You may need a #1 Pozidriv screwdriver to loosen the captive screws.



LG200171_001

Figure 4-18.
Power Supply Door Screws

4

HP 98570A Backplane Expander

3. *Remove the computer top cover.*

Slide the computer top cover toward the rear of the computer. Spring the sides out and up and lift it off.

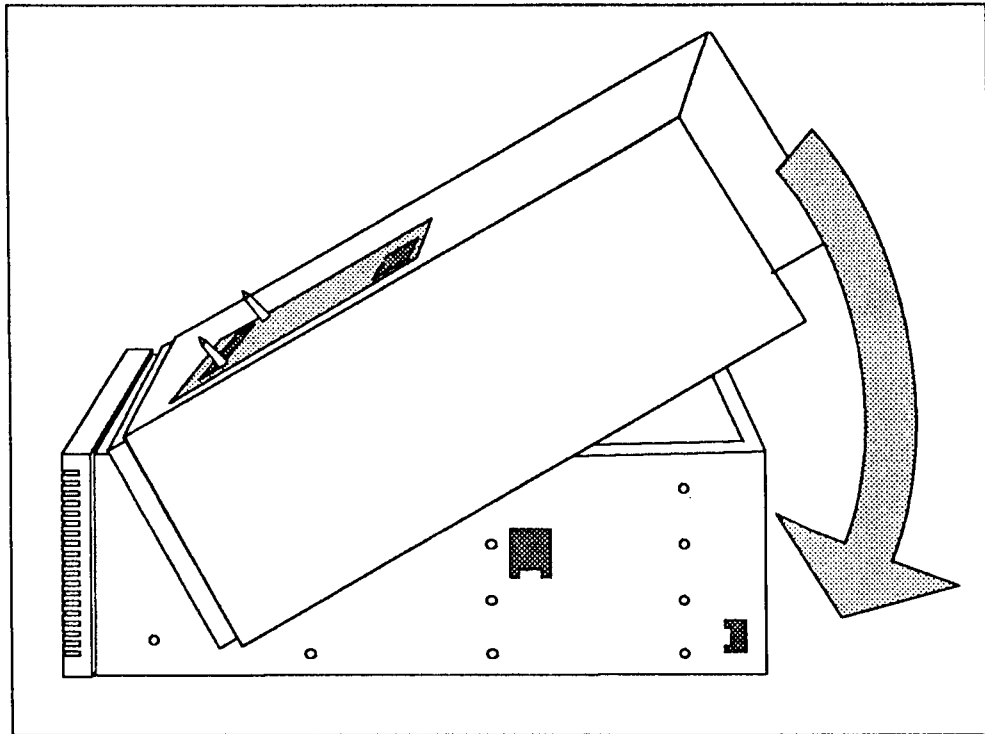
4. *Loosen the two captive screws securing the expander power supply access door and remove the access door.*
5. *Remove the expander top cover.*

Slide the expander top cover toward the rear of the expander. Spring the sides out and up and lift it off.

6. *Install the Expander top on the computer.*

Start the front edge first, at a 45° angle.

4

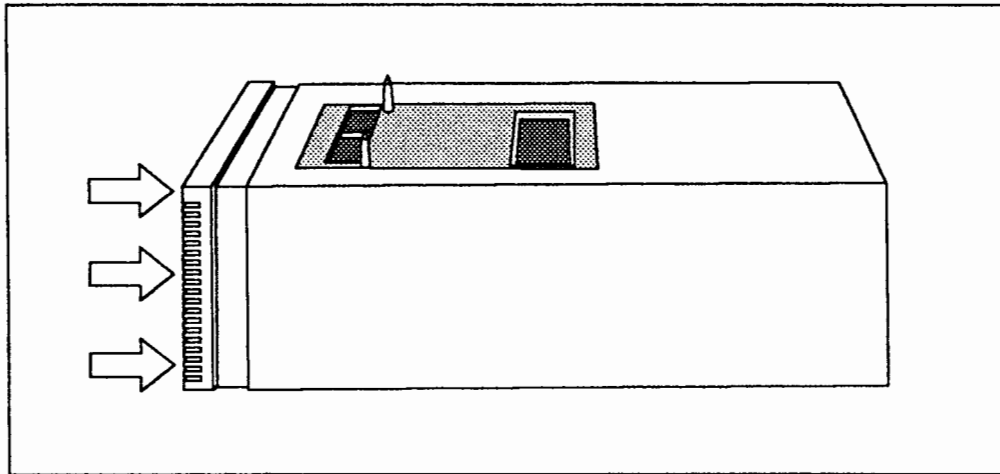


LG200171_022

Figure 4-19.
Installing the Cover

Press the slotted cover down, then slide it forward. Make sure that the bottom, rear corners of the top are seated in their retaining clips.

HP 98570A Backplane Expander

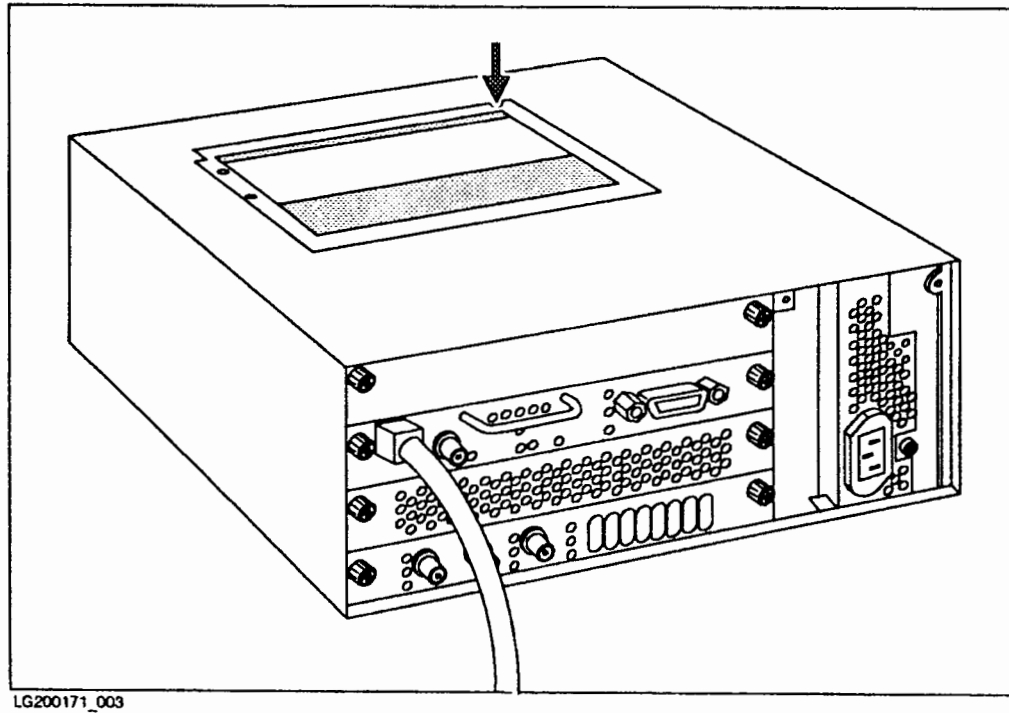


LG200171_004

Figure 4-20.
Seating the Cover

HP 98570A Backplane Expander

7. Locate the screw supplied in the bag with the power cord and install it into the front of the computer top.



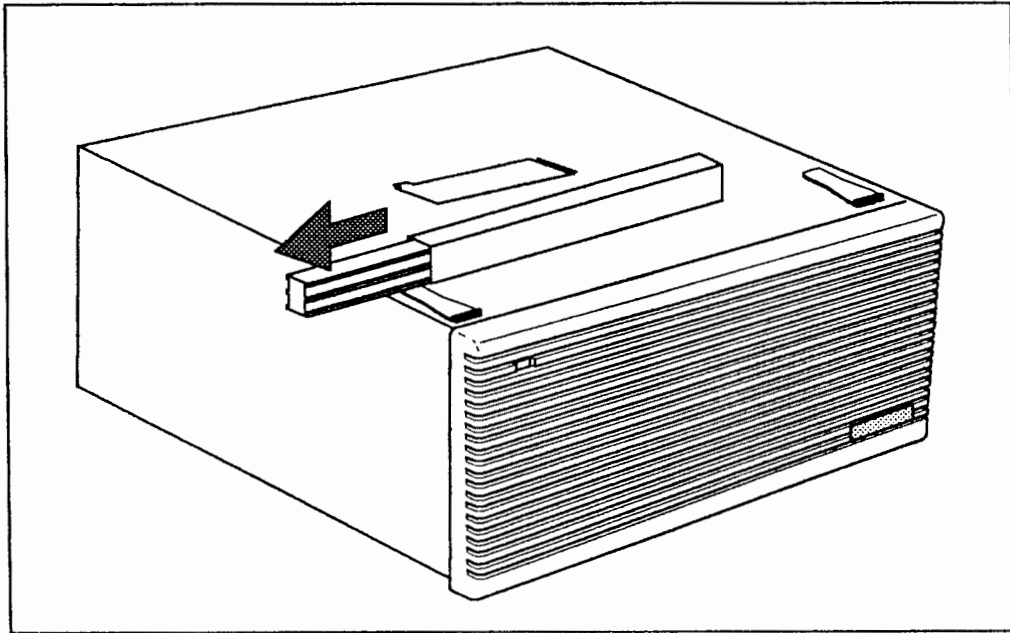
LG200171_003

Figure 4-21.
Installing the Flat-head Screw

8. Turn the Expander upside-down and locate the protective plastic sleeves on the backplane.

HP 98570A Backplane Expander

- a. Remove the *inner* protective sleeve by sliding it out sideways.

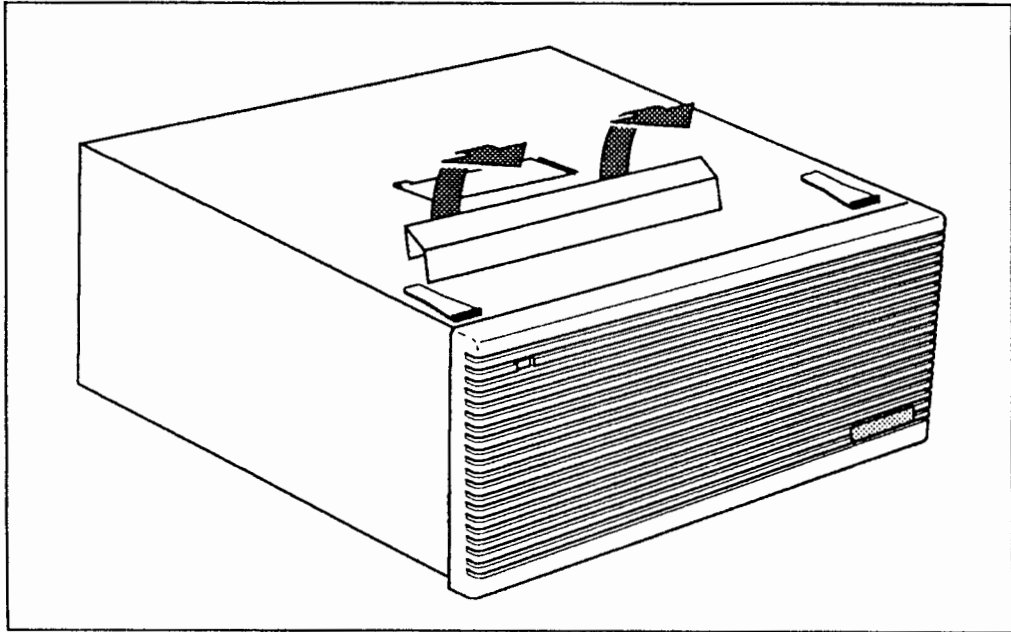


LG200171_031

Figure 4-22.
Removing the Inner Sleeve

HP 98570A Backplane Expander

- b. Remove the *outer* protective sleeve by pinching it and rolling it forward.



LG200171_030

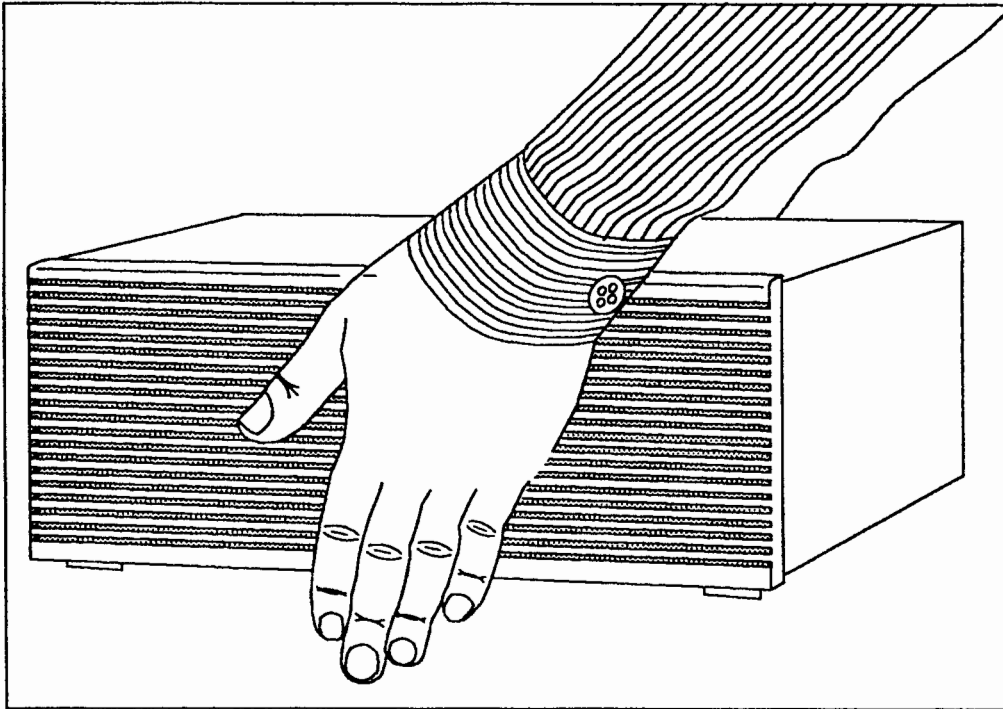
Figure 4-23.
Removing the Outer Sleeve

9. *Locate the five rivets in the computer top.*

HP 98570A Backplane Expander

10. *Turn the Expander right-side up.*

Pick the Expander up and turn it right-side-up, holding it by the front and rear panels.

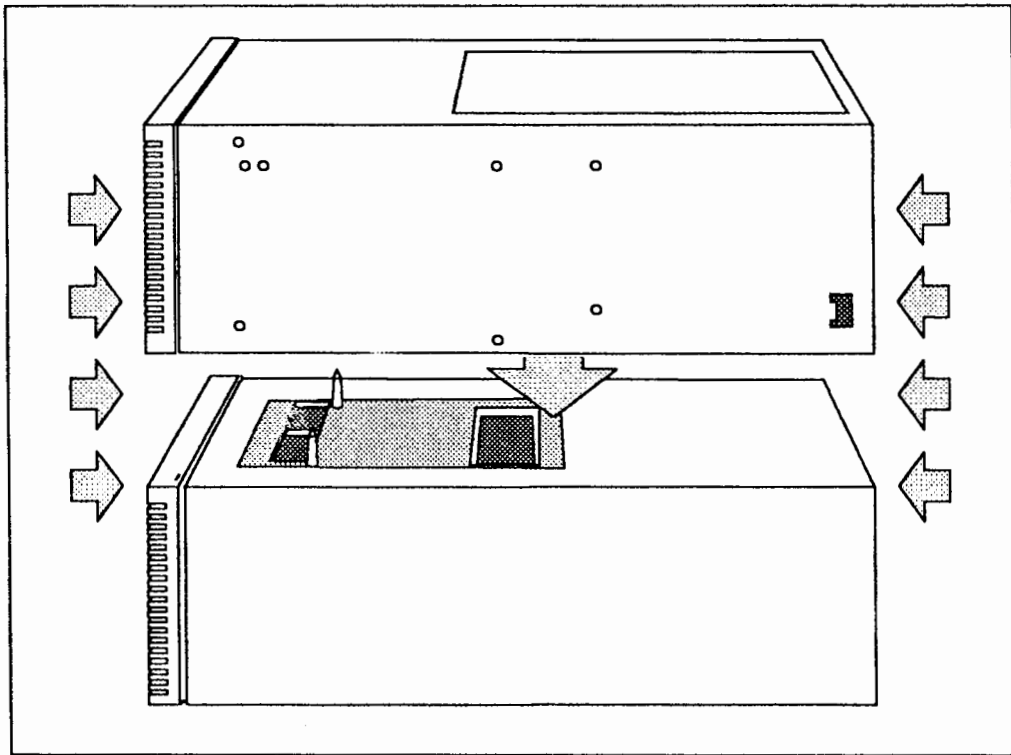


LG200171_002

Figure 4-24.
Lifting the Expander

11. *Connect the expander to the computer.*
 - a. Lower the Expander onto the computer, making sure that it is lined up front-to-back with your fingers and side-to-side visually.
 - b. Look through the expander bottom to see the five rivets. There is a hole for each in the expander bottom.
 - c. When you see all five rivets, gently lower the expander onto the computer. Do not push it down yet.
 - d. Visually check that the expander is lined up exactly.
 - e. With the expander properly lined up, push down to bottom it onto the computer. If excessive force is needed, the alignment is not correct.

4



LG200171_012

Figure 4-25.
Aligning the Expander and Computer

HP 98570A Backplane Expander

12. *Fasten the expander to the computer.*

- a. Locate the holes for the two screws which fasten the expander to the computer. They go through the expander bottom and into the slotted top cover.
- b. Fasten the expander to the computer with the two pan-head screws. Make sure that the screws are tight, but don't overtighten them.

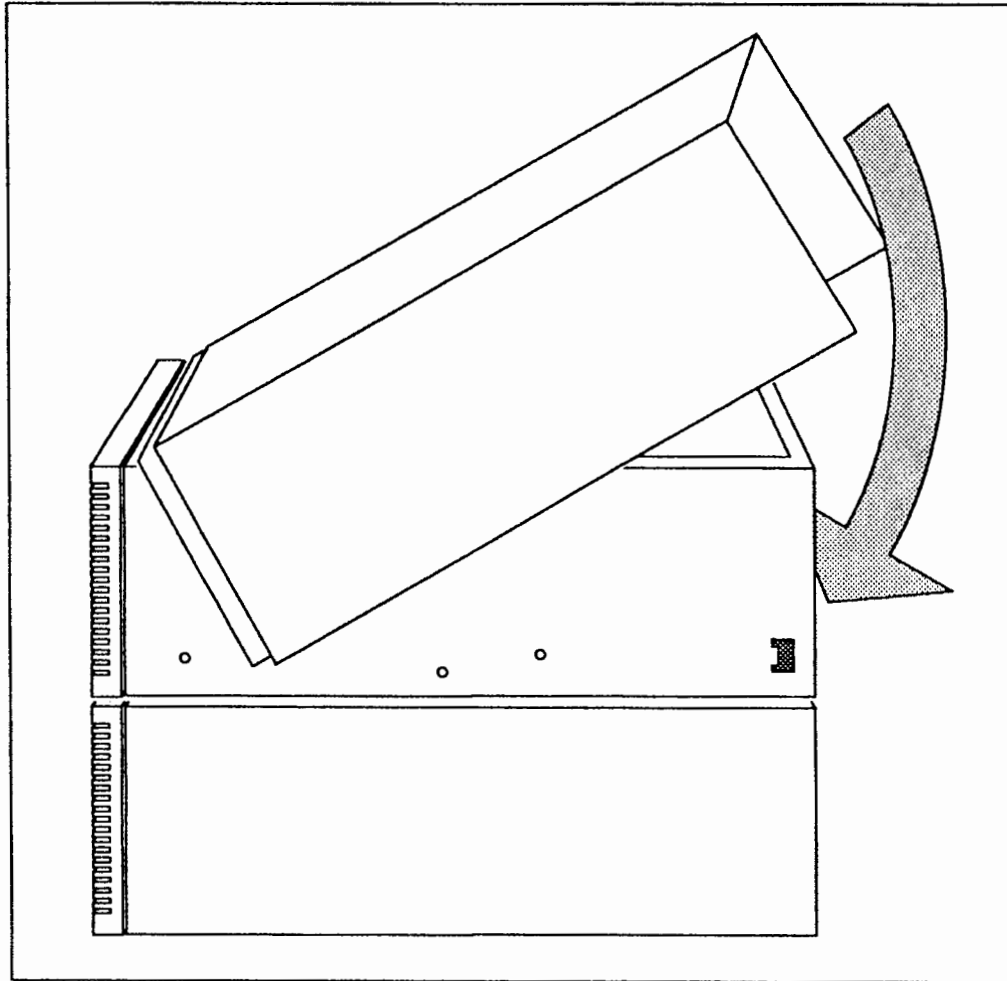
Note

If you drop a screw through the slot, it will land on the top, wide system board installed in the computer. Retrieve the screw by loosening the top system board and carefully sliding it out of the backplane.

4

13. *Install the computer top cover on the expander.*

Start the front edge first, at a 45° angle.



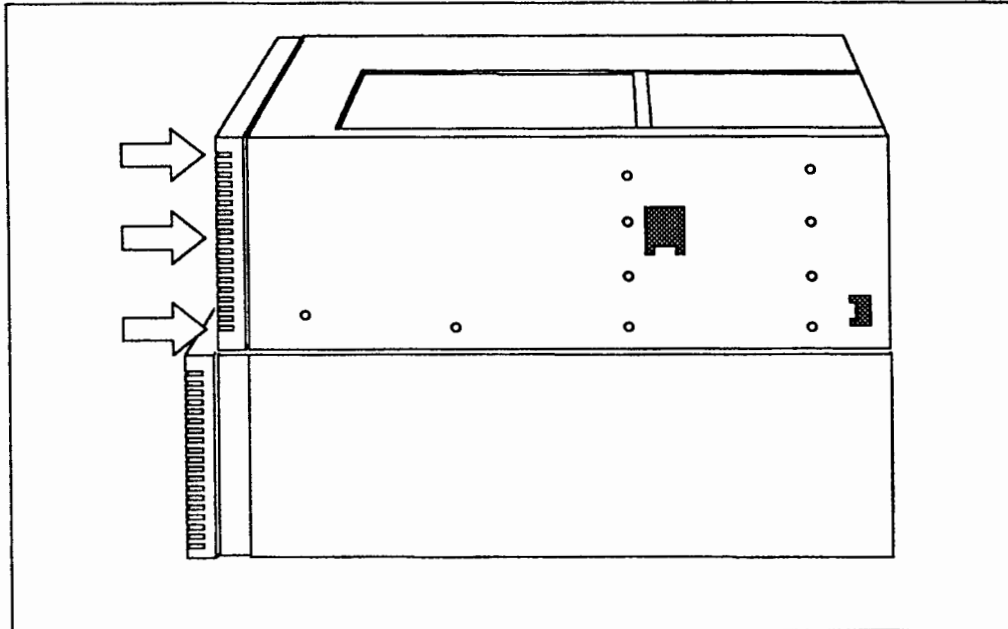
4

LG200171_011

Figure 4-26.
Installing the Expander Cover

HP 98570A Backplane Expander

Press the cover down, then slide it forward. Make sure that the bottom, rear corners of the top are seated in their retaining clips.



LG200171_010

Figure 4-27.
Seating the Expander Cover

HP 98570A Backplane Expander

14. *Re-install the power supply access doors on the computer and the expander.*

Tighten the captive screws. Make sure that the “feet” on the bottom of the door are installed in their retaining slots.

15. *Ensure that all power switches are in the OFF position.*
16. *Connect the power cords to the computer and expander.*

Hardware Installation Complete

Install the desired cards into the backplane. Refer to the installation instruction in Chapter 2: "Installing Interface and Accessory Cards".

4

HP 98577A VMEbus Expander

The HP 98577A Series 300 VMEbus Expander is a VME backplane which conforms to the VITA C.1 specifications for bus protocol and physical format. It consists of a chassis plus some code segments in HP-UX and a Driver Development Manual so you can write a custom driver for your application. It holds any four of about 3000 types of VME boards.

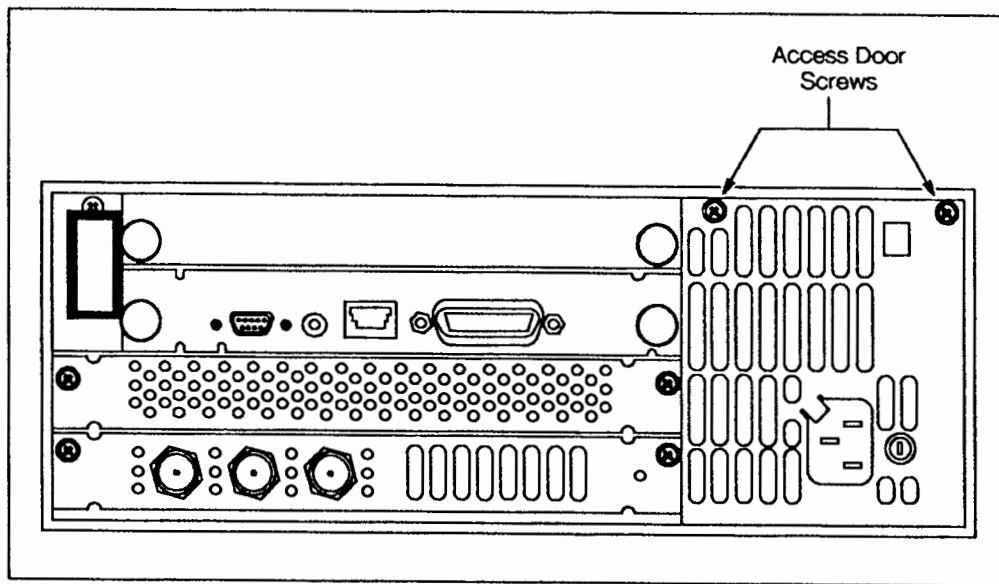
4

Connecting the HP 98577A VMEbus Expander

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Loosen the two captive screws securing the power supply access door on the computer and remove the access door.*

You may need a #1 Pozidriv screwdriver to loosen the captive screws.

4



LG200171_001

Figure 4-28.
Power Supply Door Screws

HP 98577A VMEbus Expander

3. Check the Serial Number.

Note

If you have a Model 350 computer, skip to the next step. If you have a Model 330 computer, you may need a new processor board. To determine this, follow the instructions in this step.

Find the Serial Number, located on the sheet metal base just inside the power supply access door of the computer. If the first four digits read 2740 or higher, the board will operate correctly with the VMEbus Expander. If they are 2739 or lower, you will need a new processor board. Contact your Sales and Service Office for a free replacement. Refer them to Service Note 98562A-1.

4

4. Check the Voltage Select Switch.

Check that the Voltage Select Switch is in the correct position for the power supplied in your area. If you do not know what it should be, make sure that it is set the same as your computer.

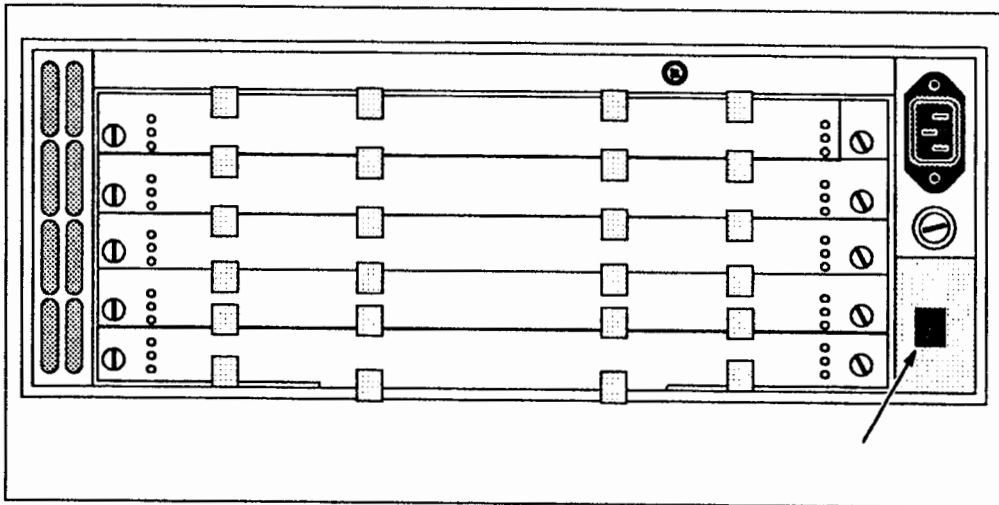
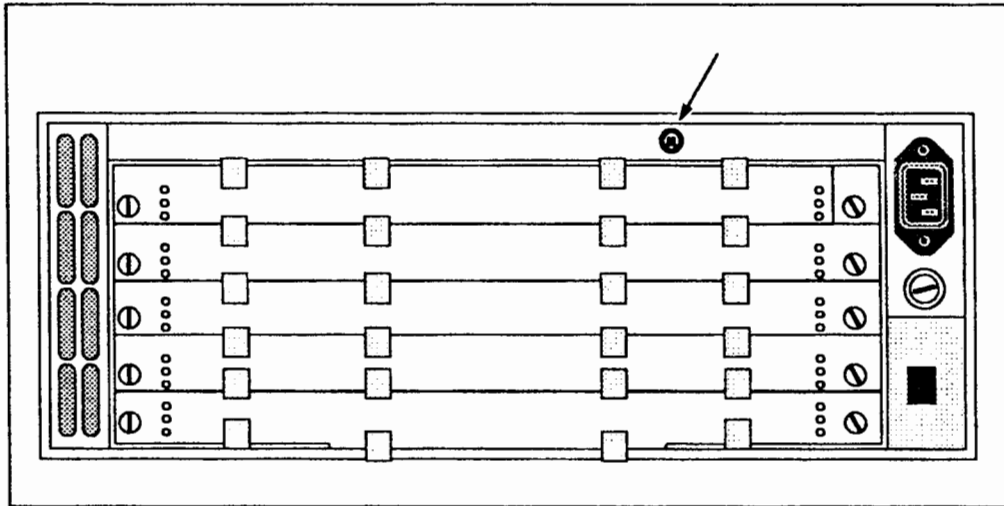


Figure 4-29.
Voltage Select Switch

HP 98577A VMEbus Expander

5. Slide the computer top cover toward the rear of the computer.
Spring the sides out and up, and lift it off.
6. Remove the Pozidriv screw securing the Expander cover.
It is located on the top edge of the rear panel.



LG200171_008

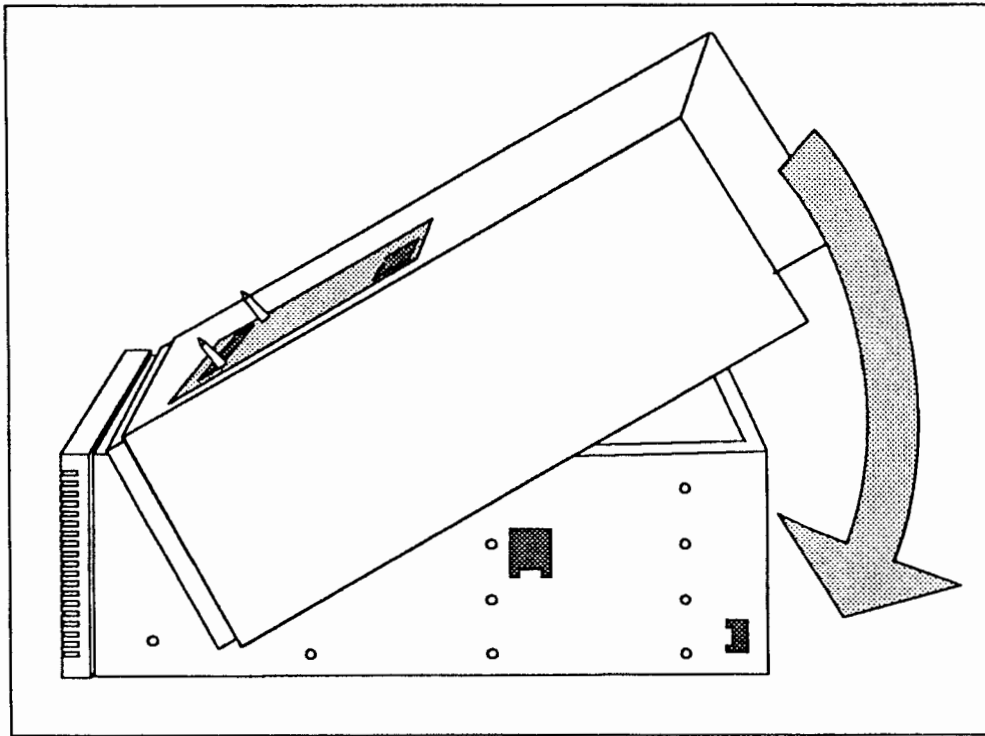
Figure 4-30.
Locating the Cover Screw

4

HP 98577A VMEbus Expander

7. Remove the Expander cover and install it on the computer.

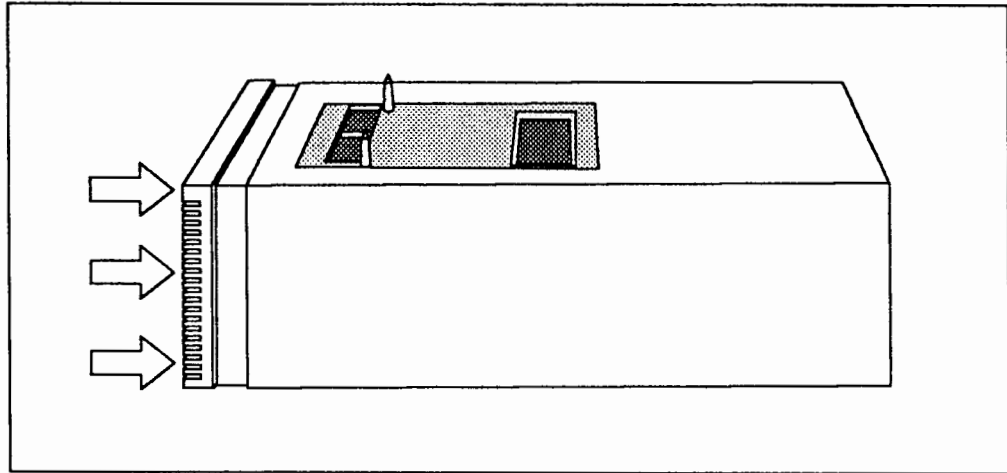
Start the front edge first, at a 45° angle.



LG200171_022

Figure 4-31.
Installing the Cover

Press the slotted cover down, then slide it forward. Make sure that the bottom, rear corners of the top are seated in their retaining clips.



LG200171_004

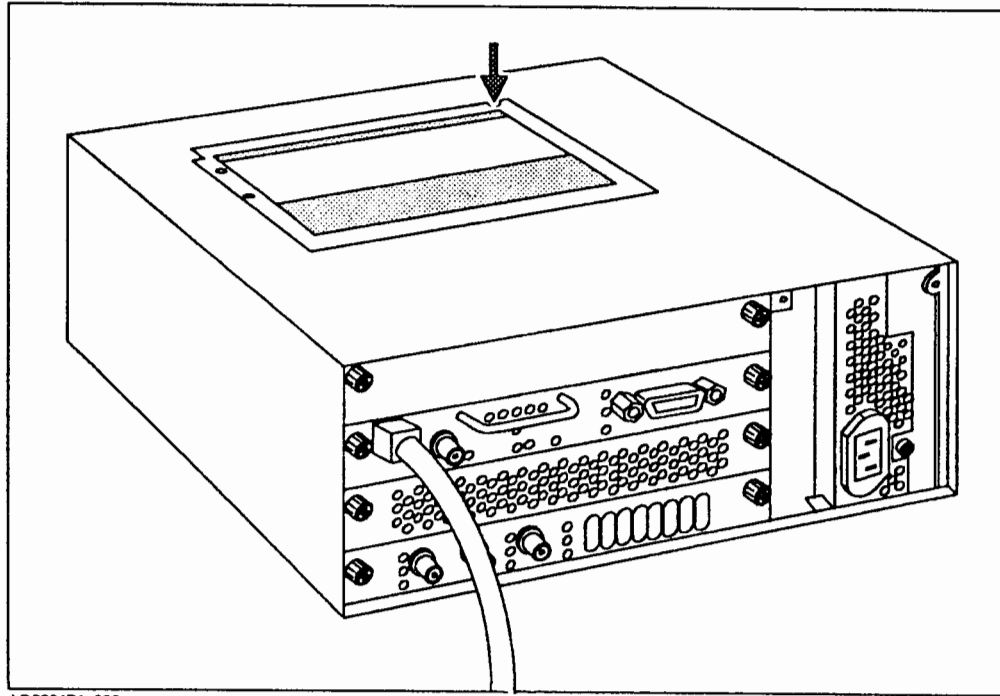
Figure 4-32.
Seating the Cover

4



HP 98577A VMEbus Expander

8. Locate the screw supplied in the bag with the power cord and install it into the front of the computer top.



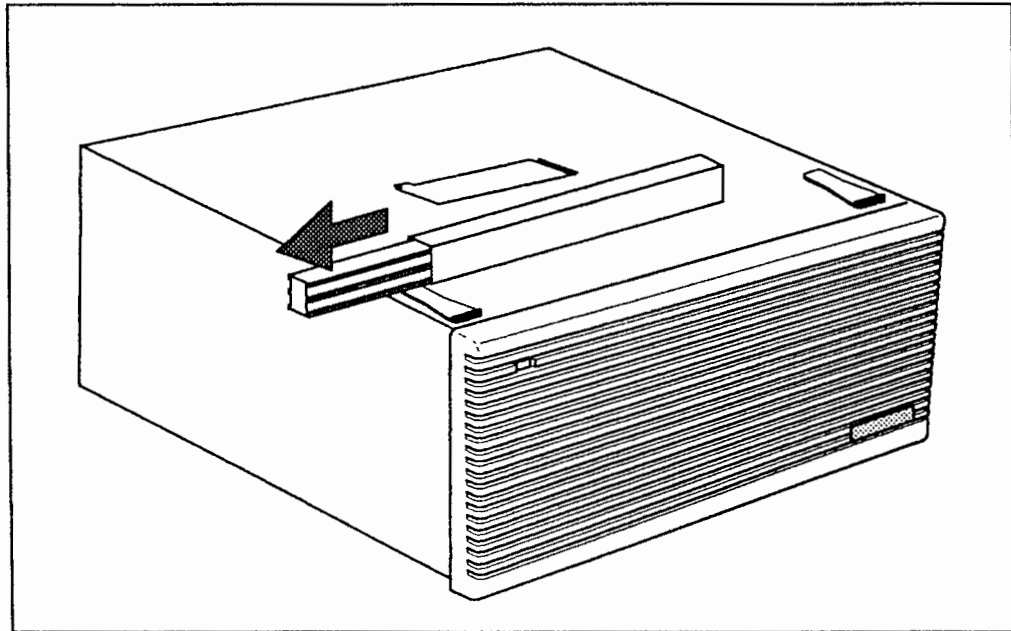
LG200171_003

Figure 4-33.
Installing the Flat-head Screw

9. *Locate the expander protective plastic sleeves.*

Turn the Expander upside-down and locate the protective plastic sleeves on the backplane.

- a. Remove the *inner* protective sleeve by sliding it out sideways.



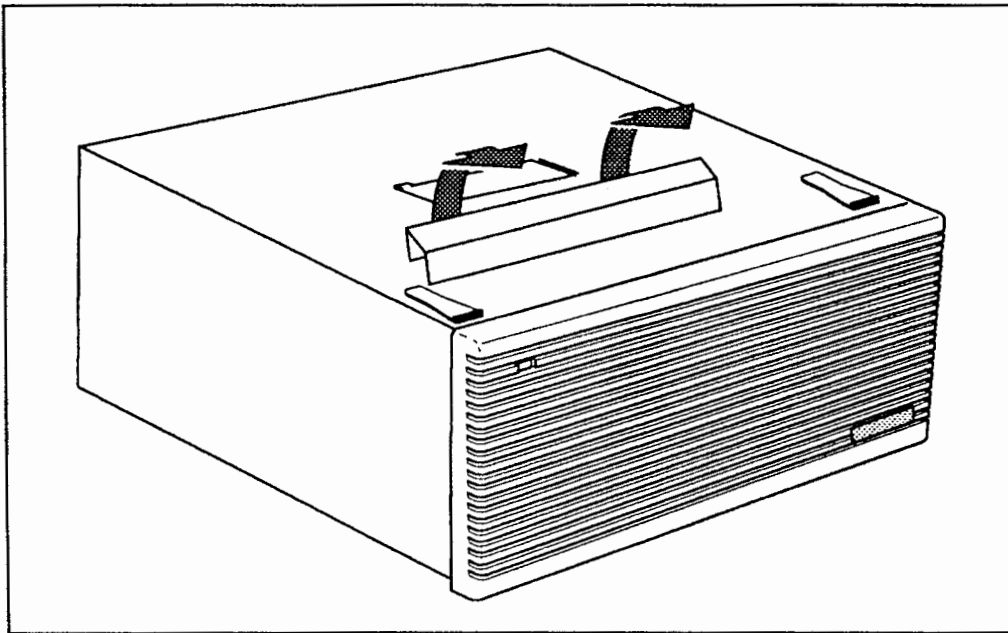
LG200171_031

Figure 4-34.
Removing the Inner Sleeve

4

HP 98577A VMEbus Expander

- b. Remove the *outer* protective sleeve by pinching it and rolling it forward.

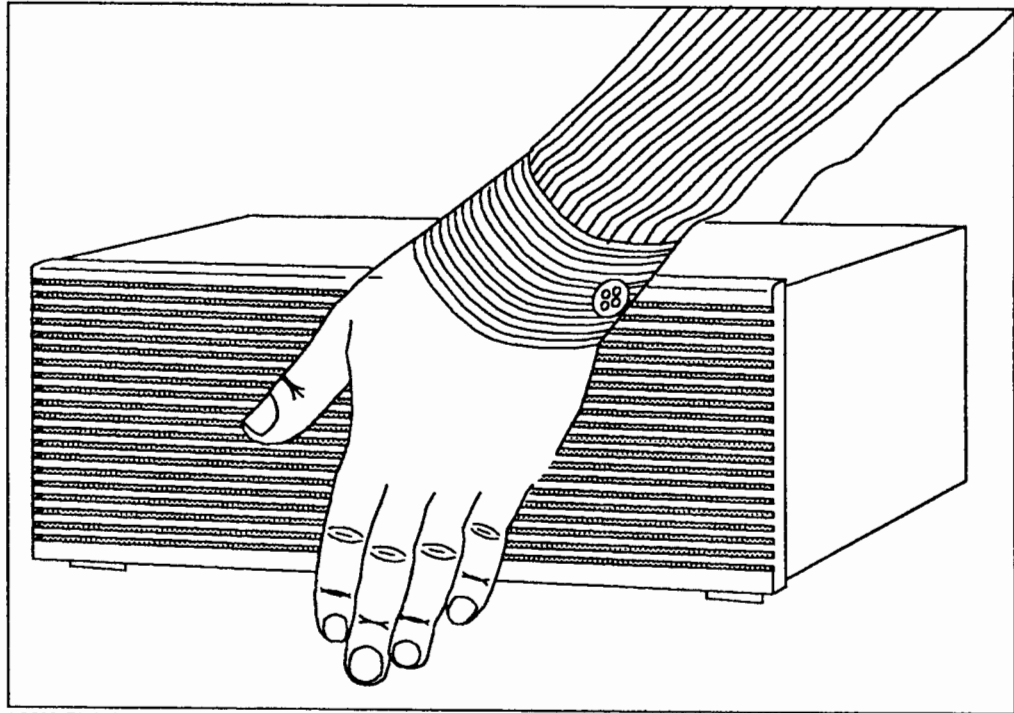


LG200171_030

Figure 4-35.
Removing the Outer Sleeve

10. *Turn the Expander right-side up.*

Pick the Expander up and turn it right-side-up, holding it by the front and rear panels.



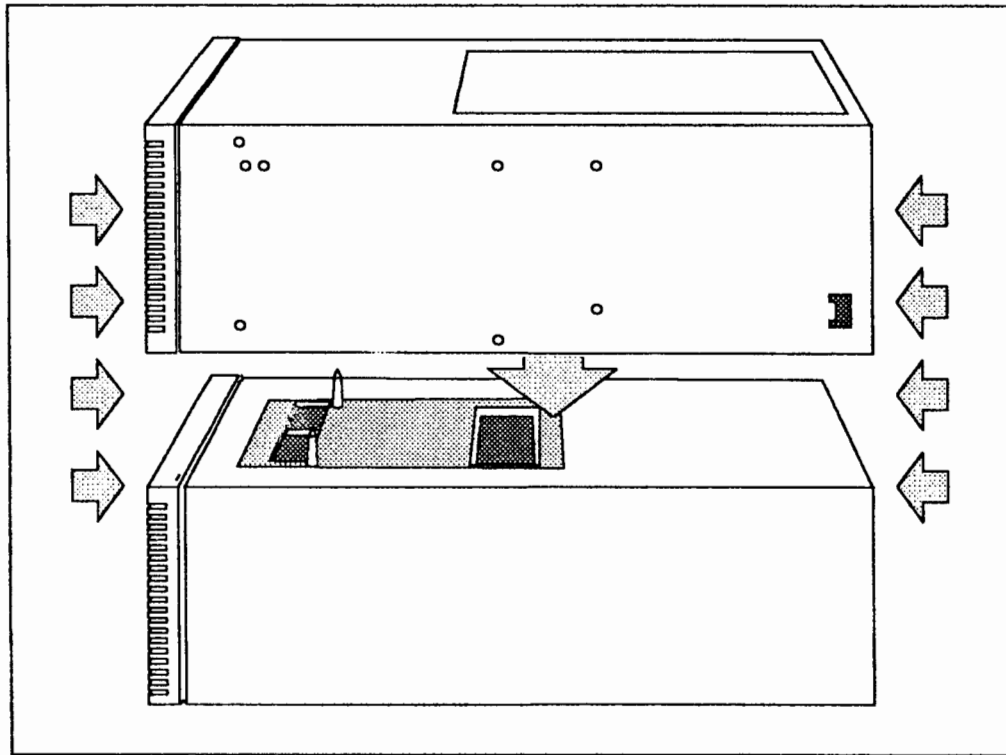
4

LG200171_002

Figure 4-36.
Lifting the Expander

HP 98577A VMEbus Expander

11. *Connect the Expander to the computer.*
 - a. Lower the Expander onto the computer, making sure that it is lined up front-to-back with your fingers and side-to-side visually.



LG200171_012

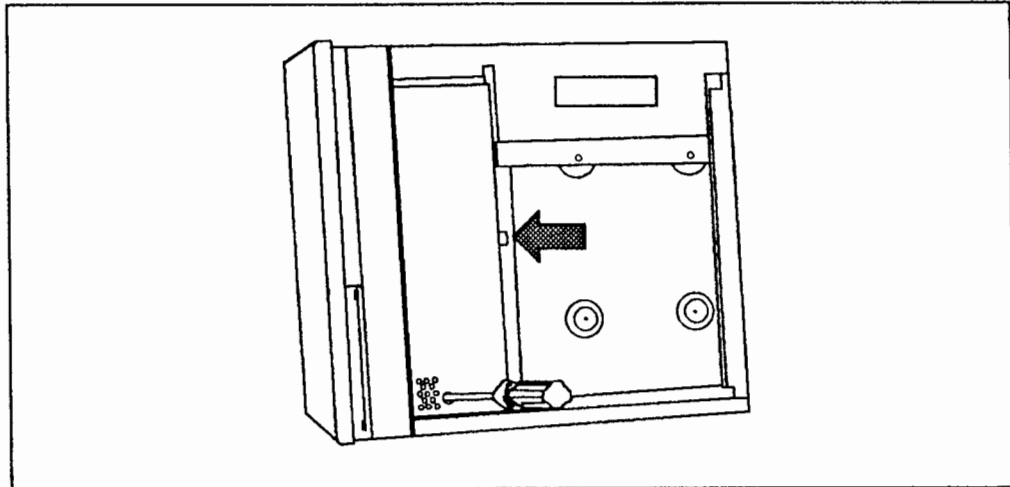
Figure 4-37.
Aligning the Expander and Computer

- b. Press the Expander onto the two guide posts, then *gently* press it onto the connector.
- c. Check to see that the connector is mating properly, then press the two together. If excessive force is needed, the alignment is not correct.

4-60 Installing Memory and I/O Expanders

HP 98577A VMEbus Expander

- d. Now locate the two captive screws which fasten the expander to the computer. They go through the expander bottom and into the slotted top cover.



LG200171_033

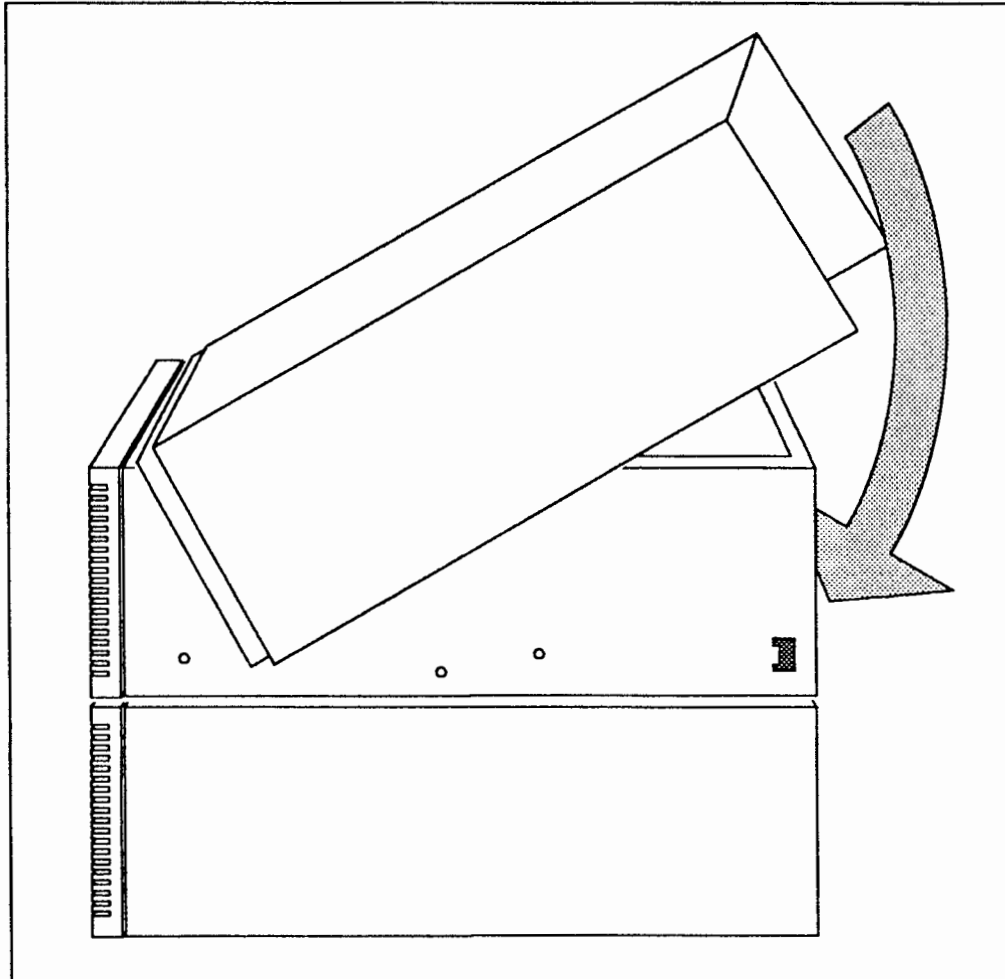
Figure 4-38.
Connecting Screw Holes

- e. Tighten the two screws with a large, flat-blade screwdriver. Make sure they are tight, but don't overtighten them.

HP 98577A VMEbus Expander

12. *Install the computer top cover on the expander.*

Start the front edge first, at a 45° angle.

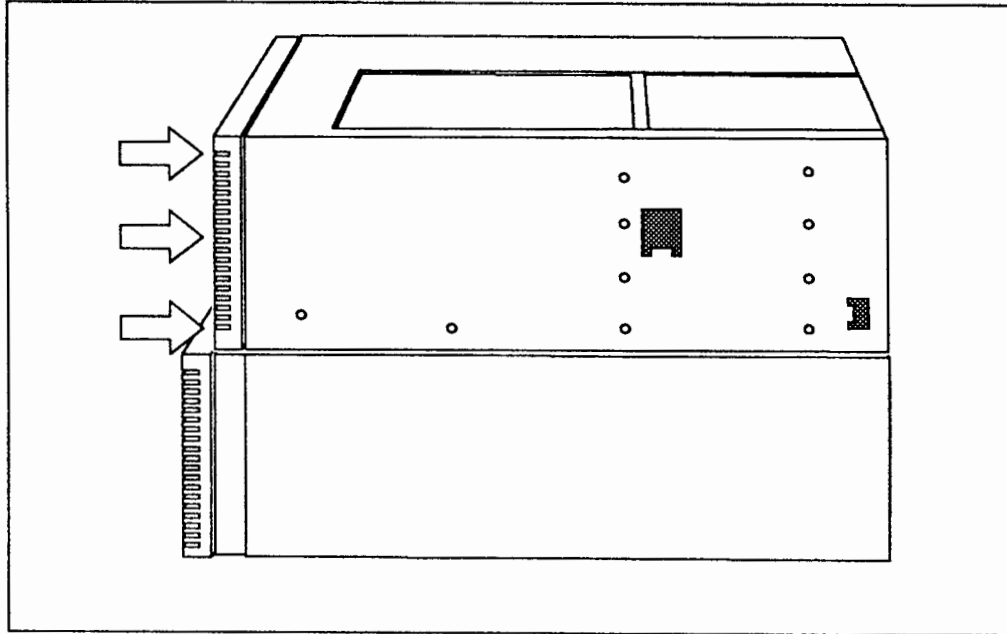


LG200171_011

Figure 4-39.
Installing the Expander Cover

HP 98577A VMEbus Expander

Press the cover down, then slide it forward. Make sure that the bottom, rear corners of the top are seated in their retaining clips.



LG200171_010

Figure 4-40.
Seating the Expander Cover

13. *Re-install the power supply access doors on the computer and tighten the captive screws.*

Make sure that the “feet” on the bottom of the door are installed in their retaining slots.

14. *Install the rear panel screw removed in step 6 on the expander.*
15. *Ensure that all power switches are in the OFF position.*
16. *Connect the power cords to the computer and expander.*

17. *Verify Installation.*

- a. With a small, flat-blade screwdriver, loosen the two captive screws on the cover plate of slot 2 (that is, the second slot from the bottom), and remove the cover plate.

Note Do not loosen or remove any screws other than the captive screws on the slot cover plates. Also, do not change the position of the small RFI clips on the plates.

4

- b. Turn power on to the expander (but not to the computer).
- c. A red LED located at the rear edge of the card in slot 1 should turn on and remain on.
- d. Turn the computer on. The LED in step 3 should now turn off and remain off. (If you boot HP-UX and have the VME driver installed, the LED should come on again).
- e. If these two don't happen, try again. If you still have problems, call your Hewlett-Packard Customer Support engineer.

Hardware Installation Complete!

Adding VMEbus Cards

The VMEbus Expander adheres to the specifications established by the VMEbus International Trade Association (VITA), revision C.1. VMEbus accessories which do not adhere to the VITA C.1 specification are not guaranteed to operate properly, if at all, in the VMEbus Expander.

Refer to the installation information that came with your VMEbus cards to properly install them in the VMEbus Expander.

Installing Terminals and Modems

Introduction

This chapter contains the hardware installation procedures for the following terminals:

HP Terminals

- HP 2392A, 2393A and 2397A Terminals
- HP 45610A/B HP Touchscreen PC (HP 150)
- HP 45850A/B HP Touchscreen-II PC (HP 150-II)
- HP 45710A HP The Portable PC (HP 110)
- HP 45711A HP The Portable Plus PC (HP 110-Plus)
- HP 9807A Integral PC (HP 9807)
- HP 13279B Color Monitor
- HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal
- HP C1003A/G 700/41 Display Entry-Level Terminal
- HP C1006A/G/W 700/43 ASCII Terminal
- HP C1007A 700/44 Display Terminal
- HP C1001A/G/W 700/92 Block-Mode Display Terminal
- HP C1002A/G/W 700/94 Alphanumeric Display Terminal

HP Terminals

This section describes the installation of all HP 2390-series and 2620-series terminals, as well as the HP Touchscreen, Portable and Integral PCs when used as terminals.

HP Terminals connect to any supported Series 300 RS-232C interface. The HP 98628A Datacomm, the HP 98642A 4-Channel Multiplexer, or the HP 98638A 8-Channel Multiplexer interfaces are required for graphics terminals, unless their graphics capability will not be used.

Connecting HP Terminals

Refer to the manual(s) that came with your terminal to complete the following tasks:

5

- Unpack the terminal.
- Connect the keyboard, if applicable.
- Check the voltage.
- Connect the power cable.

To install your terminal complete the following tasks:

1. *Play It Safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

Note The HP 98642A or HP 98628A is recommended if you use an application that sends data faster than 2400 baud (average). Such applications include graphics from graphics terminals, softkeys, and reading terminal status.

HP Terminals

3. *Select Your Cable(s).*

Refer to the "RS-232C Cabling Guidelines" in Chapter 1: "Introduction".

4. *Connect the Terminal to the Computer.*

- a. Connect one end of the terminal's cable to the connector on the back of the terminal. Lock the connector in place using the screws or clips.
- b. If your interface connection requires one or more additional cables, connect the remaining cable(s) to the interface.
- c. Connect the other end of the terminal's cable either directly to the interface or to cable(s) connected to the interface.

5. *Configure the Terminal and Datacomm Port.*

Refer to your terminal's manual for instructions on configuring your terminal and datacomm port to match the characteristics given in Table 5-1. Not all of the characteristics listed in the table will apply to your terminal.

5

Table 5-1.
Recommended Terminal Characteristics.

Characteristic	Setting	Comments
Alternate Set	Line(B)	Suggested
ASCII 8 Bits	No	YES required for NLS support
Asterisk	Off	Suggested
AUTO LF	Off	Required
Auto Terminator	No	Suggested
Baud Rate	9600	HP-UX Std.
Bell	On	Suggested
BLOCK MODE	Off	Required
Block Terminator	RS	Suggested
Break Time	200ms	Suggested
BufSiz	128	Suggested
Caps Lock	Off	May change after login
Carrier Detect	Open	Suggested
Check Parity	No	Required
Circuit Assurance	Closed	Cabling may require
Clear Terminator	No	Suggested
Clock	INT	Required
CPU Break	Open	Suggested
CS(CB)Xmit	No	Cabling may require
Cursor Type	Line	Your choice
Continued on next page ...		

HP Terminals

**Recommended terminal characteristics.
(continued)**

Characteristic	Setting	Comments
Data Bits	8	Required for NLS support
Data Speed Select	Open	Suggested
Datacomm Handshake	XonXoff	Required
DISPLAY FUNCTIONS	Off	Suggested
Display Off After	15 min.	Your choice
DM(CC)Xmit	No	Cabling may require
EnqAck	No	EnqAck not supported
Esc Xfer	Yes	Suggested
Fast Binary Read	Closed	Suggested
Field Separator	US	Suggested
GraphCompat		Your choice
Inh DC2	Yes	Required
InhDcTest	Yes	Suggested
InhEolWrp	No (Closed)	Required
InhHndShk	Yes	Required
InhSkfTst	No	Suggested
Insert & delete sense	Closed	Suggested
Inverse Background		Your choice
Keyboard		Should match your keyboard
LINE MODIFY	Off	Suggested
Continued on next page ...		

5

**Recommended terminal characteristics.
(continued)**

Characteristic	Setting	Comments
Line/Page	Line	Required
Local Echo	Off	Suggested
Main Channel	Closed	Should have no effect
MEMORY LOCK	Off	Suggested
MODIFY ALL	Off	Suggested
Parity	None (Open)	Required for NLS support
Power On	Terminal	Suggested
Printer Code 4		Your choice
Printer Nulls		Your choice
RecvPace	XonXoff (Open)	Required
Remote/Serial Dev	PORT1/PORT2	If using terminal's port 1
	PORT2/PORT1	If using terminal's port 2
Remote	On	Required
Resolution	512x390	Required
RETURN Def	CR	Required
RETURN=ENTER	No	Required
RR(CF)Recv	No	Cabling may require
SPOW	No (Closed)	Strongly suggested
SR(CH)	Lo	Modem use may require
SRRInvert	No	Cabling may require
Continued on next page . . .		

5

HP Terminals

Recommended terminal characteristics. (continued)

Characteristic	Setting	Comments
SRRXmit	No	Cabling may require
Start Column	1	Suggested
Stop Bits	1	HP-UX
STOP Function	XonXoff	Suggested
StripNulDel	No	Suggested
Tab=Spaces	No	Required
Terminal Id	2622A	Suggested for 2392A
	2623A	Required for DGL on HP150 and 2393A
Terminal Mode	HP	Required by default terminfo
Transmit	All Fields	Suggested
Transmit indicator	Closed	Suggested
TR(CD)	Hi	Modem use may require
XmitFunctn	No (Closed)	vi changes as needed
XmitPace	XonXoff	Suggested

5

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

HP Terminals

Table 5-2. HP Terminals Connected to RS-232-C Interfaces

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP Terminal	/dev/tty02	c	1	98626	9 ²	0x090004
HP Terminal	/dev/tty02	c	1	98628	20 ³	0x140004
HP Terminal port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP Terminal port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP Terminal port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP Terminal port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP Terminal port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP Terminal port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP Terminal port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP Terminal port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP Terminal port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP Terminal port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP Terminal port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP Terminal port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

¹ See Chapter 9: "Setting Up Devices Using HP-UX Commands" for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (tty02). If not, change the path name accordingly (for example, /dev/tty03 for the third terminal).

² Built-in RS-232-C Interface and HP 98626A RS-232-C Interface.

³ HP 98628A Datacomm Interface.

⁴ HP 98642A 4-Channel Multiplexer Interface

⁵ HP 98638A 8-Channel Multiplexer Interface

5-10 Installing Terminals and Modems

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

The HP C1004A/G/W ANSI DEC VT220 Compatible Terminal is an HP 700/22 terminal. It has 80 or 132 column display, four pages of display memory, and two RS-232C ports. The HP C1004A/G/W is not term0 compatible.

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

Connecting the HP C1004A/G/W 700/22 Terminal

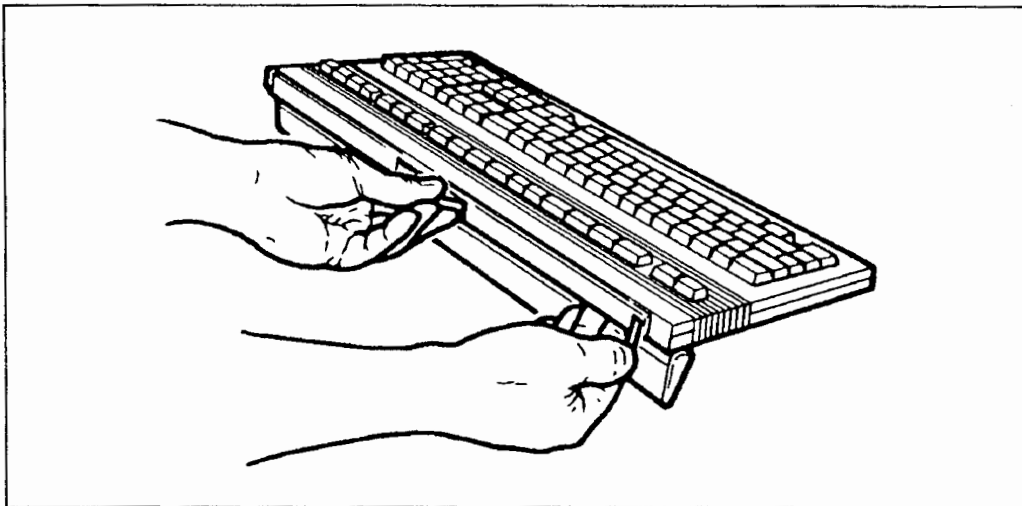
Perform the following steps to connect this terminal:

1. *Unpack the terminal.*
2. *Place the terminal on a hard and level surface, such as a desk or table.*

Caution Do not place objects on top of the display unit because this blocks the air vents.

3. *Unwrap the keyboard cable.*
4. *Connect the keyboard.*
 - a. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back) as shown in Figure 5-1.

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MN0326-03-1

Figure 5-1. Connecting and Routing Keyboard Cable

- b. Route the cable to the right or left as desired. Tuck the flat portion of the cable under the cable channel protector at the rear of the keyboard.

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

Direct the cable through the slot at the end of the cable channel as shown in Figure 5-1.

- c. Connect the other end of the keyboard cable into the keyboard connector on the rear panel of the terminal as shown in Figure 5-2.

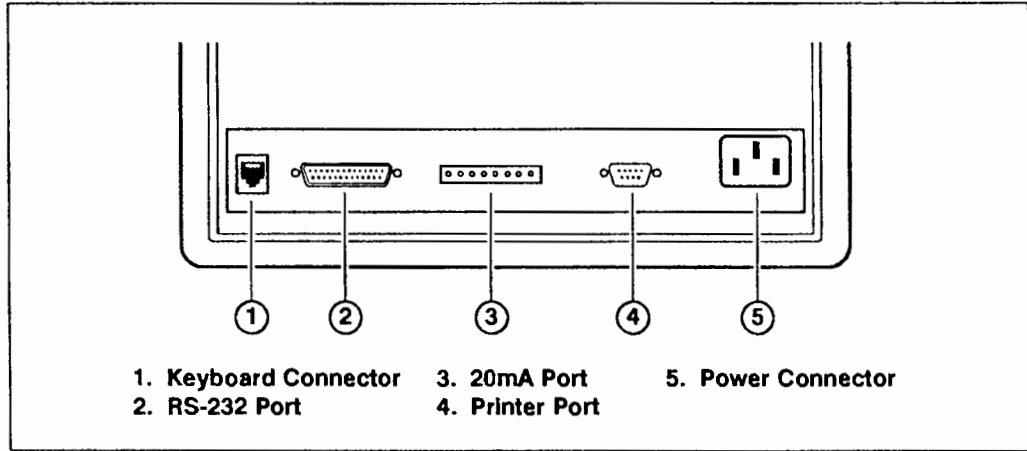


Figure 5-2. Rear Panel Terminal Connections

5. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note

If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

6. *Connect the terminal to the computer.*

Refer to the "RS-232C Cabling Guidelines" in Chapter 1: "Introduction".

- a. Use either the RS-232C port or the 20mA port as shown in Figure 5-2. Only one interface port can be used at a time.

If you are using the RS-232C interface, connect the cable to the port labeled RS-232 on the terminal's rear panel.

If you are using the current loop interface, connect the cable to the port labeled 20mA on the terminal's rear panel.

- b. Connect the other end of the cable to an RS-232C computer port or modem if you are using the RS-232C cable.

Alternatively, connect the other end of the cable to the computer's current loop connector.

- c. Tighten the two screws that secure the connection. Use a 1/8th-inch flat blade screwdriver to perform this task.
- d. Insert one end of the power cord into the Power Connector on the rear panel of the terminal as shown in Figure 5-2.

Warning Turn off the terminal before you apply power. The power button on the front lower left-hand corner of the terminal is flush with the front panel when the terminal is off.

- e. Plug the three-prong connector on the other end of the power cord into an electrical outlet.

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

7. Turn on the computer.
8. Turn on the terminal by pressing the power button. The button must be in the ON position.

You are now ready to configure this terminal. Go to “Configuring the HP C1004A/G/W 700/22 Terminal” in this section to continue.

Configuring the HP C1004A/G/W 700/22 Terminal

Use the default values shown in the following figures except where otherwise noted. If you change any of the default values, you must then change the corresponding values in the HP-UX operating system. Go to the *HP-UX Reference Manual* for further references on `terminfo` and `termio` if you decide to change any default value.

1. *Configure the terminal.*
 - a. Press `System`.
 - b. Press `config keys` to display the function key screen-labels for available menus.
 - c. Press `datacomm config` to display the Communications Setup menu.

The Communications Setup menu then displays the following default values as shown in Figure 5-3.



HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

COMMUNICATIONS SETUP

Host

Xmit Baudrate	4800	XON/XOFF	@ 64
Recv Baudrate	=Xmit	Disconnect Delay	2 5
DataBits/Parity	8/None	Stop Bits	1
Check Parity	NO	Local Echo	NO
Port Selection	E1A, Data Leads Only	Unlimited Xmit	NO

Printer

Baudrate	4800	Print Mode	Normal
DataBits/Parity	8/None	Print Scroll Region	NO
Stop Bits	1	Terminator	None
Printer Type	HP	XON/XOFF	@ 64

[Page Down] = Next Setup <arrows> [Num Enter] = Select [Setup] = Exit

MN0328-03-9

Figure 5-3. Communication Setup Menu (Default Values)

- d. Select the transmission rate (bits per second) you need for communication with the computer in the **BaudRate** field. Write it down on the foldout worksheet.

Note Enter the same baud rate that you selected in the **Xmit Baudrate** field on this terminal in the **baud rate** field in the Peripheral Devices menu in SAM or in the stty file.

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

- e. Change the type of parity and number of bits per byte from `8/none` to `7/0`.

Warning **If you do not change this setting, this terminal will not work.
Write it down on the foldout worksheet.**

- f. Press `SAVE CONFIG`.
- g. Press `Exit` to exit the Communication Setup menu.

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

HP C1004A/G/W 700/22 ANSI DEC VT220 Compatible Terminal

Table 5-3.
HP C1004A/G/W 700/22 Connected to RS-232-C Interfaces

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP C1004A/G/W 700/22	/dev/tty02	c	1	98626	9 ²	0x090004
HP C1004A/G/W 700/22	/dev/tty02	c	1	98628	20 ³	0x140004
HP C1004A/G/W 700/22 port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP C1004A/G/W 700/22 port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP C1004A/G/W 700/22 port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP C1004A/G/W 700/22 port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP C1004A/G/W 700/22 port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP C1004A/G/W 700/22 port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP C1004A/G/W 700/22 port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP C1004A/G/W 700/22 port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP C1004A/G/W 700/22 port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP C1004A/G/W 700/22 port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP C1004A/G/W 700/22 port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP C1004A/G/W 700/22 port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

1 See Chapter 9 for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (tty02). If not, change the path name accordingly (for example, /dev/tty03 for the third terminal).

2 Built-in RS-232-C Interface and HP 98626A RS-232-C Interface.

3 HP 98628A Datacomm Interface.

4 HP 98642A 4-Channel Multiplexer Interface

5 HP 98638A 8-Channel Multiplexer Interface

5-18 Installing Terminals and Modems

HP C1003A/G 700/41 Display Entry-Level Terminal

The HP C1003A/G Display Entry-Level Terminal is an HP 700/41 display terminal with two RS-232C ports.

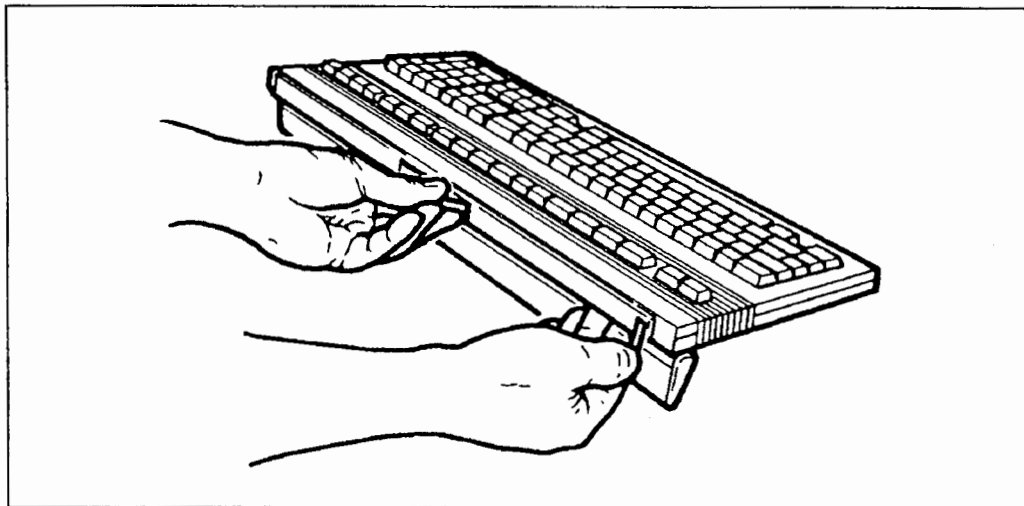
Connecting the HP C1003A/G 700/41 Terminal

Perform the following steps to connect this terminal:

1. *Unpack the terminal.*
2. *Place the terminal on a hard and level surface, such as a desk or table.*

Caution Do not place objects on top of the display unit because this blocks the air vents.

3. *Unwrap the keyboard cable.*
4. *Connect the keyboard.*
 - a. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back) as shown in Figure 5-4.

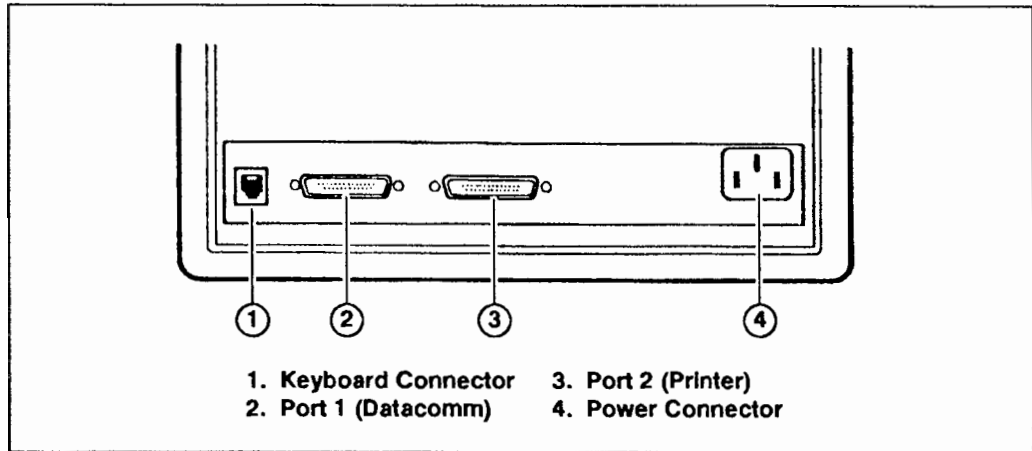


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Figure 5-4. Connecting and Routing Keyboard Cable

- b. Route the cable to the right or left as desired. Tuck the flat portion of the cable under the cable channel protector at the rear of the keyboard. Direct the cable through the slot at the end of the cable channel as shown in Figure 5-4.
- c. Connect the other end of the keyboard cable into the keyboard connector on the rear panel of the terminal as shown in Figure 5-5.

HP C1003A/G 700/41 Display Entry-Level Terminal



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Figure 5-5. Rear Panel Terminal Connections

HP C1003A/G 700/41 Display Entry-Level Terminal

5. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

6. *Connect the terminal.*

Refer to the “RS-232C Cabling Guidelines” in Chapter 1: “Introduction”.

- a. Insert the RS-232C connector of the datacomm cable into the socket provided in port 1 on the rear panel of the terminal as shown in Figure 5-5. The connector shell is shaped so that it fits into the socket in the correct position.

Note If you use Port 2 for your datacomm connection, set up your terminal as described in “Configuring the HP C1003A/G 700/41 Terminal” in this section. Be sure to write it down on the foldout worksheet.

- b. After fully inserting the connector into the socket on the rear panel of the terminal, tighten the two screws that secure the connection.

5-22 Installing Terminals and Modems

HP C1003A/G 700/41 Display Entry-Level Terminal

- c. Connect the other end of the datacomm cable to the host computer or modem.
- d. Insert one end of the power cord into the Power Connector on the rear panel of the terminal as shown in Figure 5-5.

Warning **Turn the terminal off before you apply power. The power button on the front lower left-hand corner of the terminal is flush with the front panel when the terminal is off.**

- e. Plug the three-prong connector on the other end of the power cord into an electrical outlet.
7. *Turn on the computer.*
8. *Turn on this terminal by pressing the power button. The button remains depressed in the ON position.*

You are now ready to configure this terminal. Go to “Configuring the HP C1003A/G 700/41 Terminal” in this section to continue.

HP C1003A/G 700/41 Display Entry-Level Terminal

Configuring the HP C1003A/G 700/41 Terminal

You are now ready to configure this terminal.

Note Use the default values as shown in the following figures except where otherwise noted. If you change any of the default values, you must then change the corresponding values in the HP-UX operating system. Go to the *HP-UX Reference Manual* for further references on `terminfo` and `termio` if you decide to change any default value.

1. *Configure the terminal.*

- a. Press `datacomm setup` to display the Main Port and Printer or Auxiliary Port menus.

The Datacomm Configuration menu then displays the default values shown in Figure 5-6.

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HP C1003A/G 700/41 Display Entry-Level Terminal

MAIN PORT				
Baud Rate	Handshake	Data Length	Parity	Communication
A 9600	B None	C 8 bits	D None	E Full Duplex

PRINTER PORT				
Baud Rate	Handshake	Data Length	Parity	Print Mode
F 9600	G None	H 8 bits	I None	J Off

SAVE FOR POWER ON	NEXT CHOICE	PREVIOUS CHOICE	SHOW DEFAULTS	SHOW ACTIVE	SHOW POWER ON	previous menu	next menu
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Figure 5-6. Datacomm Configuration Menu (Default Values)

- b. Select the transmission rate (bits per second) you need for communication with the computer in the **BaudRate** field. Write it down on the foldout worksheet.

Note Enter the same baud rate that you have selected in the **BaudRate** field on this terminal in the **baud rate** field in the Peripheral Devices menu in SAM.

HP C1003A/G 700/41 Display Entry-Level Terminal

- c. Select `7 bits` in the `Data Length` field.
- d. Select `0` in the `Parity` field.

Warning **If you do not change these settings, this terminal will not work.
Write these values down on the foldout worksheet.**

- e. Press `SAVE CONFIG`.
- f. Press `Exit` to exit the Datacomm Configuration menu.

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

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HP C1003A/G 700/41 Display Entry-Level Terminal

**Table 5-4.
HP C1003A/G 700/41 Connected to RS-232-C Interfaces**

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP C1003A/G 700/41	/dev/tty02	c	1	98626	9 ²	0x090004
HP C1003A/G 700/41	/dev/tty02	c	1	98628	20 ³	0x140004
HP C1003A/G 700/41 port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP C1003A/G 700/41 port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP C1003A/G 700/41 port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP C1003A/G 700/41 port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP C1003A/G 700/41 port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP C1003A/G 700/41 port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP C1003A/G 700/41 port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP C1003A/G 700/41 port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP C1003A/G 700/41 port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP C1003A/G 700/41 port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP C1003A/G 700/41 port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP C1003A/G 700/41 port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

1 See Chapter 9 for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (tty02).

If not, change the path name accordingly (for example, /dev/tty03 for the third terminal).

2 Built-in RS-232-C Interface and HP 98626A RS-232-C Interface.

3 HP 98628A Datacomm Interface.

4 HP 98642A 4-Channel Multiplexer Interface

5 HP 98638A 8-Channel Multiplexer Interface

HP C1006A/G/W 700/43 ASCII Terminal

The HP C1006A/G/W ASCII Terminal is an HP 700/43 display terminal with two RS-232C ports. It has 12 non-HP compatibility modes.

Connecting the HP C1006A/G/W 700/43 Terminal

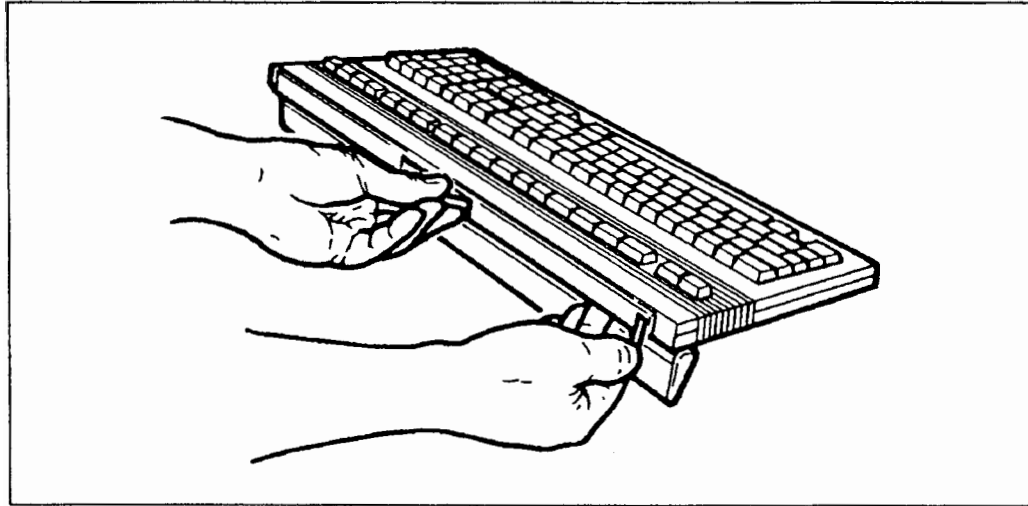
Perform the following steps to connect this terminal:

1. *Unpack the terminal.*
2. *Place the terminal on a hard and level surface, such as a desk or table.*

Caution Do not place objects on top of the display unit because this blocks the air vents.

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3. *Unwrap the keyboard cable.*
4. *Connect the keyboard.*
 - a. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back) as shown in Figure 5-7.

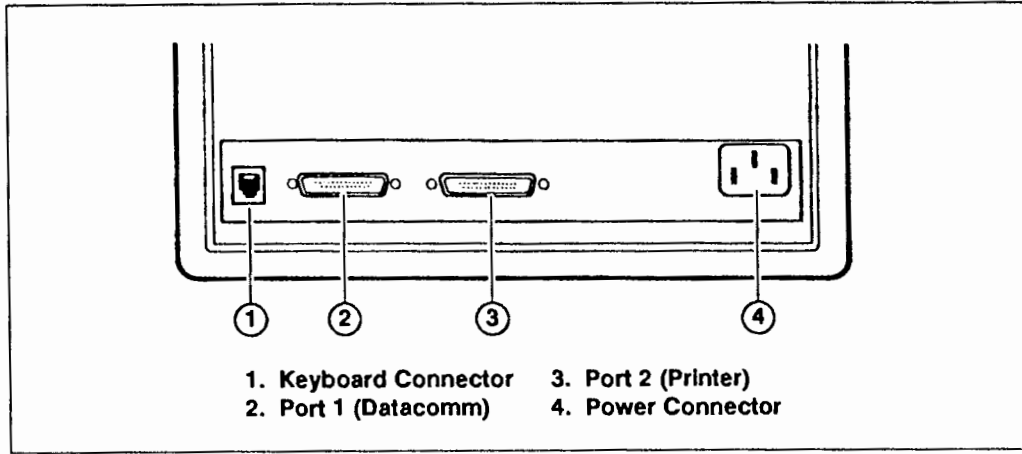


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Figure 5-7. Connecting and Routing Keyboard Cable

- b. Route the cable to the right or left as desired. Tuck the flat portion of the cable under the cable channel protector at the rear of the keyboard. Direct the cable through the slot at the end of the cable channel as shown in Figure 5-7.
- c. Connect the other end of the keyboard cable into the keyboard connector on the rear panel of the terminal as shown in Figure 5-8.

HP C1006A/G/W 700/43 ASCII Terminal



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Figure 5-8. Rear Panel Terminal Connections

5. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

6. *Connect the terminal to the computer.*

Refer to the "RS-232C Cabling Guidelines" in Chapter 1: "Introduction".

- a. Insert the RS-232C connector of the datacomm cable into the socket provided in port 1 on the rear panel of the terminal as shown in Figure 5-8. The connector shell is shaped so that it fits into the socket in the correct position.

Note If you use Port 2 for your datacomm connection, set up your terminal as described in "Configuring the HP C1006A/G/W 700/43 Terminal" in this section. Be sure to write it down on the foldout worksheet.

- b. After fully inserting the connector into the socket on the rear panel of the terminal, tighten the two screws that secure the connection.

HP C1006A/G/W 700/43 ASCII Terminal

- c. Connect the other end of the datacomm cable to the host computer or modem.
- d. Insert one end of the power cord into the Power Connector on the rear panel of the terminal as shown in Figure 5-8.

Warning **Turn the terminal off before you apply power. The power button on the front lower left-hand corner of the terminal is flush with the front panel when the terminal is off.**

- e. Plug the three-prong connector on the other end of the power cord into an electrical outlet.
7. Turn on the computer.
8. Turn on this terminal by pressing the power button. The button remains depressed in the ON position.

You are now ready to configure this terminal. Go to “Configuring the HP C1006A/G/W 700/43 Terminal” in this section to continue.

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Configuring the HP C1006A/G/W 700/43 Terminal

You are now ready to configure this terminal.

Note Use the default values as shown in the following figures except where otherwise noted. If you change any of the default values, you must then change the corresponding values in the HP-UX operating system. Go to the *HP-UX Reference Manual* for further references on `terminfo` and `termio` if you decide to change any default value.

1. *Configure the terminal.*

- a. Press `datacomm setup` to display the Main Port and Printer or Auxiliary Port menus.

The Datacomm Configuration menu then displays the following default values as shown in Figure 5-9.

MAIN PORT				
Baud Rate	Data Length	Parity	Stop Bits	Communication
A 9600	B 8 bits	C None	D 1	E Full Duplex
Recv Pace	Xmit Pace	CTS	DSR	CD
F None	G None	H Ignore	I Ignore	J Ignore
Monitor Line				
K Off				
AUXILIARY PORT				
Baud Rate	Data length	Parity	Stop Bits	Aux Mode
L 9600	M 8 bits	N None	O 1	P Off
Recv Pace	Xmit Pace	Cts	DSR	
Q None	R None	S Ignore	T Ignore	
SAVE FOR POWER ON	NEXT CHOICE	PREVIOUS CHOICE	SHOW DEFAULTS	SHOW ACTIVE
				SHOW POWER ON
				previous menu
				next menu

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Figure 5-9. Datacomm Configuration Menu (Default Values)

- b. Select the transmission rate (bits per second) you need for communication with the computer in the BaudRate field. Write it down on the foldout worksheet.

Note Enter the same baud rate that you have selected in the BaudRate field on this terminal in the baud rate field in the Peripheral Devices menu in SAM.

- c. Select `7 bits` in the `Data Length` field.
- d. Select `0` in the `Parity field`.

Warning **If you do not change these settings, this terminal will not work.
Write these settings down on the foldout worksheet.**

- e. Press `SAVE CONFIG`.
- f. Press `Exit` to exit the Datacomm Configuration menu.

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

HP C1006A/G/W 700/43 ASCII Terminal

Table 5-5.
HP C1006A/G/W 700/43 Connected to RS-232-C Interfaces

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP C1006A/G/W 700/43	/dev/tty02	c	1	98626	9 ²	0x090004
HP C1006A/G/W 700/43	/dev/tty02	c	1	98628	20 ³	0x140004
HP C1006A/G/W 700/43 port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP C1006A/G/W 700/43 port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP C1006A/G/W 700/43 port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP C1006A/G/W 700/43 port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP C1006A/G/W 700/43 port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP C1006A/G/W 700/43 port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP C1006A/G/W 700/43 port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP C1006A/G/W 700/43 port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP C1006A/G/W 700/43 port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP C1006A/G/W 700/43 port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP C1006A/G/W 700/43 port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP C1006A/G/W 700/43 port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

¹ See Chapter 9 for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (tty02). If not, change the path name accordingly (for example, /dev/tty03 for the third terminal).

² Built-in RS-232-C Interface HP 98626A RS-232-C Interface.

³ HP 98628A Datacomm Interface.

⁴ HP 98642A 4-Channel Multiplexer Interface

⁵ HP 98638A 8-Channel Multiplexer Interface

5-36 Installing Terminals and Modems

HP C1007A 700/44 Display Terminal

The HP C1007A Display Terminal is an HP 700/4 display terminal. It is a versatile, high-performance, low-cost, PC- and ANSI-compatible terminal. This terminal is designed for use in a multiuser PC environment. It includes the IBM PC character set, IBM-PC/AT2-compatible keyboard and PC key-scanning codes. With these features and proper application support, this terminal provides the same display and keyboard as a monochrome alpha/numeric PC.

Additionally, this terminal is functionally compatible with the DEC VT220 terminal supporting both the VT220's 7-bit and 8-bit control modes. It is also compatible with the DEC VT100 and DEC VT52 terminals.

HP C1007A 700/44 Display Terminal

Connecting the HP C1007A 700/44 Terminal

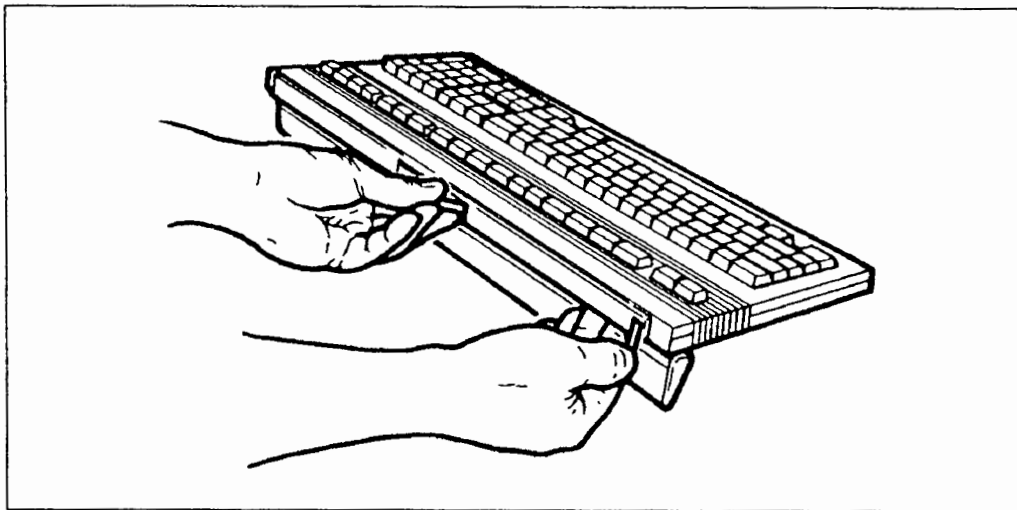
Perform the following steps to connect this terminal:

1. *Unpack the terminal.*
2. *Place the terminal on a hard and level surface, such as a desk or table.*

Caution Do not place objects on top of the display unit because this blocks the air vents.

3. *Unwrap the keyboard cable.*
4. *Connect the keyboard.*
 - a. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back) as shown in Figure 5-10.

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Figure 5-10. Connecting and Routing Keyboard Cable

- b. Route the cable to the right or left as desired. Tuck the flat portion of the cable under the cable channel protector at the rear of the keyboard.

HP C1007A 700/44 Display Terminal

Direct the cable through the slot at the end of the cable channel as shown in Figure 5-10.

- c. Connect the other end of the keyboard cable into the keyboard connector on the rear panel of the terminal as shown in Figure 5-11.

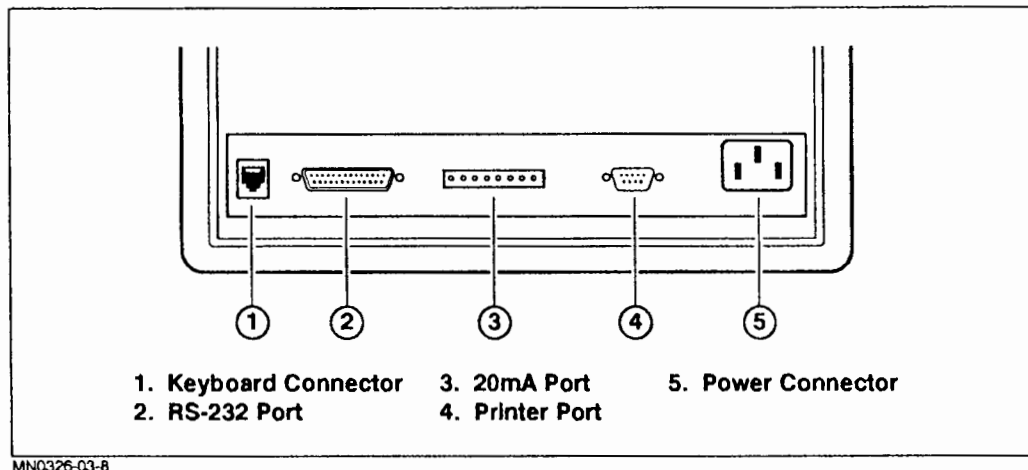


Figure 5-11. Rear Panel Terminal Connections

5. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note

If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

HP C1007A 700/44 Display Terminal

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

6. *Connecting the terminal.*

Refer to the "RS-232C Cabling Guidelines" in Chapter 1: "Introduction".

- a. Connect the terminal to a computer or modem using either the RS-232C port or the 20mA port as shown in Figure 5-11. Only one interface port can be used at a time.

If you are using the RS-232C interface, connect the cable to the port labeled RS-232 on the terminal's rear panel.

If you are using the current loop interface, connect the cable to the port labeled 20mA on the terminal's rear panel.

- b. Connect the other end of the cable to an RS-232C computer port or modem if you are using the RS-232C cable.

Alternatively, connect the other end of the cable to the computer's current loop connector.

- c. Tighten the two screws that secure the connection. Use a 1/8th-inch flat blade screwdriver to perform this task.
- d. Insert one end of the power cord into the Power Connector on the rear panel of the terminal as shown in Figure 5-11.

Warning Turn the terminal off before you apply power. The power button on the front lower left-hand corner of the terminal is flush with the front panel when the terminal is off.

- e. Plug the three-prong connector on the other end of the power cord into an electrical outlet.

HP C1007A 700/44 Display Terminal

7. Turn on the computer.
8. Turn on this terminal by pressing the power button. The button remains depressed in the ON position.

You are now ready to configure this terminal. Go to “Configuring the HP C1007A 700/44 Terminal” in this section to continue.

HP C1007A 700/44 Display Terminal

Configuring the HP C1007A 700/44 Terminal

You are now ready to configure this terminal.

Note Use the default values shown in the following figures except where otherwise noted. If you change any of the default values, you must then change the corresponding values in the HP-UX operating system. Go to the *HP-UX Reference Manual* for further references on `terminfo` and `termio` if you decide to change any default value.

1. *Configure the terminal.*

- a. Press `System`.
- b. Press `config keys` to display the function key screen-labels for available menus.
- c. Press `datacomm config` to display the Communications Setup menu.

The Communications Setup menu then displays the following default values as shown in Figure 5-12.

```

COMMUNICATIONS SETUP

Host
Xmit Baudrate 4800
Recv Baudrate =Xmit
DataBits/Parity 8/None
Check Parity NO
Port Selection EIA, Data Leads Only

XON/XOFF @ 64
Disconnect Delay 2 5
Stop Bits 1
Local Echo NO
Unlimited Xmit NO

Printer
Baudrate 4800
DataBits/Parity 8/None
Stop Bits 1
Printer Type HP

Print Mode Normal
Print Scroll Region NO
Terminator None
XON/XOFF @ 64

[Page Down] = Next Setup <arrows> [Num Enter] = Select [Setup] = Exit
    
```

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Figure 5-12. Communication Setup Menu (Default Values)

- d. Select the transmission rate (bits per second) you need for communication with the computer in the **BaudRate** field. Write it down on the foldout worksheet.

Note Enter the same baud rate that you have selected in the **Xmit Baudrate** field on this terminal in the **baud rate** field in the Peripheral Devices menu in SAM.

- e. Change the parity and number of bits per byte from **8/None** to **7/0**.

HP C1007A 700/44 Display Terminal

Warning **If you do not change this setting, this terminal will not work.
Write it down on the foldout worksheet.**

- f. Press `SAVE CONFIG`.
- g. Press `Exit` to exit the Communication Setup menu.

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Table 5-6. HP C1007A 700/44 Connected to RS-232-C Interfaces

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP C1007A 700/44	/dev/tty02	c	1	98626	9 ²	0x090004
HP C1007A 700/44	/dev/tty02	c	1	98628	20 ³	0x140004
HP C1007A 700/44 port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP C1007A 700/44 port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP C1007A 700/44 port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP C1007A 700/44 port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP C1007A 700/44 port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP C1007A 700/44 port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP C1007A 700/44 port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP C1007A 700/44 port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP C1007A 700/44 port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP C1007A 700/44 port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP C1007A 700/44 port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP C1007A 700/44 port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

¹ See Chapter 9 for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (tty02). If not, change the path name accordingly (for example, /dev/tty03 for the third terminal).

² Built-in RS-232-C Interface and HP 98626A RS-232-C Interface.

³ HP 98628A Datacomm Interface.

⁴ HP 98642A 4-Channel Multiplexer Interface

⁵ HP 98638A 8-Channel Multiplexer Interface

HP C1001A/G/W 700/92 Block-Mode Display Terminal

The HP C1001A/G/W Block-Mode Display Terminal is an HP 700/92 display terminal, which offers 80 or 132 column display, eight pages of display memory, and two RS-232C ports. It also provides system console support.

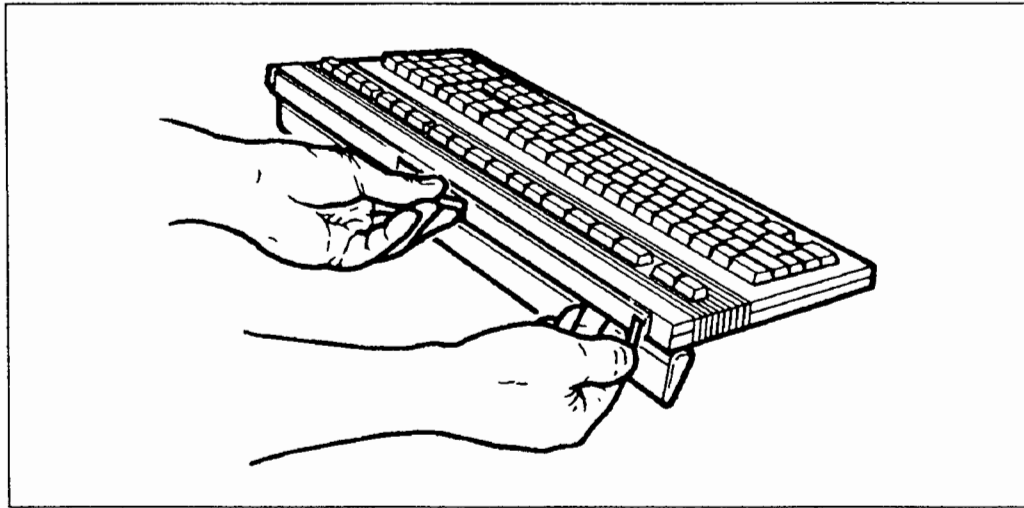
Connecting the HP C1001A/G/W 700/92 Terminal

Perform the following steps to connect this terminal:

1. *Unpack the terminal.*
2. *Place the terminal on a hard and level surface, such as a desk or table.*

Caution Do not place objects on top of the display unit because this blocks the air vents.

3. *Unwrap the keyboard cable.*
4. *Connect the keyboard.*
 - a. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back) as shown in Figure 5-13.



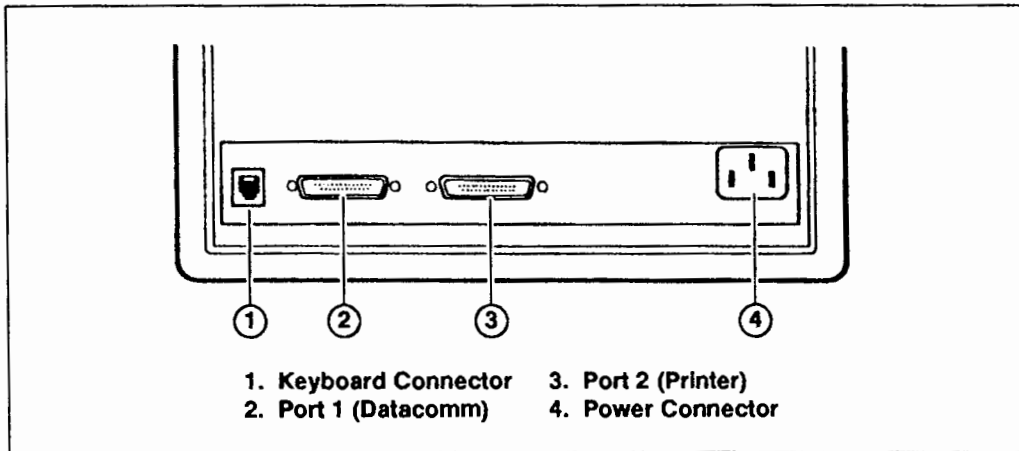
MN0328-03-1

Figure 5-13. Connecting and Routing Keyboard Cable

- b. Route the cable to the right or left as desired. Tuck the flat portion of the cable under the cable channel protector at the rear of the keyboard. Direct the cable through the slot at the end of the cable channel as shown in Figure 5-13.
- c. Connect the other end of the keyboard cable into the keyboard connector on the rear panel of the terminal as shown in Figure 5-14.

5

HP C1001A/G/W 700/92 Block-Mode Display Terminal



5

Figure 5-14. Rear Panel Terminal Connections

5. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

6. *Connect the terminal to the computer.*

Refer to the "RS-232C Cabling Guidelines" in Chapter 1: "Introduction".

- a. Insert the RS-232C connector of the datacomm cable into the socket provided in port 1 on the rear panel of the terminal as shown in Figure 5-14. The connector shell is shaped so that it fits into the socket in the correct position.

Note If you use Port 2 for your datacomm connection, set up your terminal accordingly in "Configuring the HP C1001A/G/W 700/92 Terminal" in this section. Be sure to write it down on the foldout worksheet.

- b. After fully inserting the connector into the socket on the rear panel of the terminal, tighten the two screws that secure the connection.

HP C1001A/G/W 700/92 Block-Mode Display Terminal

- c. Connect the other end of the datacomm cable to the host computer or modem.
- d. Insert one end of the power cord into the Power Connector on the rear panel of the terminal as shown in Figure 5-14.

Warning **Turn the terminal off before you apply power. The power button on the front lower left-hand corner of the terminal is flush with the front panel when the terminal is off.**

- e. Plug the three-prong connector on the other end of the power cord into an electrical outlet.
7. Turn on the computer.
8. Turn on this terminal by pressing the power button. The button remains depressed in the ON position.

You are now ready to configure this terminal. Go to “Configuring the HP C1001A/G/W 700/92 Terminal” in this section to continue.

Configuring the HP C1001A/G/W 700/92 Terminal

You are now ready to configure this terminal.

Note Use the default values as shown in the following figures except where otherwise noted. If you change any of the default values, you must then change the corresponding values in the HP-UX operating system. Go to the *HP-UX Reference Manual* for further references on `terminfo` and `termio` if you decide to change any default value.

1. *Configure the terminal.*
 - a. Press `System`.
 - b. Press `config keys` to display the function key screen-labels for available menus.
 - c. Press `terminal config` to display the Terminal Configuration menu.
The Terminal Configuration menu then displays the following default values as shown in Figure 5-15.

HP C1001A/G/W 700/92 Block-Mode Display Terminal

TERMINAL CONFIGURATION			
Datacomm/ExtDev	PORT1/PORT2	Keyboard	USASCII
Terminal Id	70094	Language	ENGLISH
Local Echo	OFF	CapsLock	OFF
XmitFnctn(A)	NO	SPOW(B)	NO
InhHndShk(G)	NO	Inh DC2(H)	NO
Start Col	001	Bell	ON
InhEolWrp(C)	NO	Line/Page(D)	LINE
		Esc Xfer(M)	NO
		Forms Buf Size(256x)	000
FldSeparator	US	BklTerminator	R s
Tab=Spaces	NO	NumPad Tab=	TAB
		Return=Enter	NO
		ReturnDef	Cr
		TermMode	HP
FORMAT MODE			
Decimal Type	US	Imp Dec Digits	2
Transmit	All Fields	Print	FIELDS

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Figure 5-15. Terminal Configuration Menu (Default Values)

- d. Select **PORT1/PORT2** in the **Datacomm/ExtDev** field if port 1 is the line of communication to the computer and port 2 is the line of communication to a printer; select **PORT2/PORT1** if port 2 is the line of communication to the computer and port 1 is the line of communication to a printer.

Note Be sure to verify this setting. If this setting does not match your hardware setup, the terminal will not function properly.

- e. Press **SAVE CONFIG**.
- f. Press **PREVIOUS CHOICE**.
- g. Press **datacomm config** to display the Datacomm Configuration menu.

The Datacomm Configuration menu then displays the default values shown in Figure 5-16.

HP C1001A/G/W 700/92 Block-Mode Display Terminal

DATACOM CONFIGURATION			
BaudRate	9600	EnqAck	YES
Asterisk	OFF	Parity/DataBits	None/8
RecvPace	XON/XOFF	Chk Pairty	NO
		XmitPace	None
		SR(CH)	LO
		CS(CB)Xmit	NO

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Figure 5-16. Datacomm Configuration Menu (Default Values)

- h. Select the transmission rate (bits per second) you need for communication with the computer in the `BaudRate` field. Write it down on the foldout worksheet.

Note Enter the same baud rate that you have selected in the `BaudRate` field on this terminal in the `baud rate` field in the Peripheral Devices menu in SAM.

- i. Select the type of parity and number of bits per byte that fit your computer application in the `Parity/DataBits` field. Change the default setting from `None/8` to `0/7`.

Warning If you do not change this setting, this terminal will not work. Write it down on the foldout worksheet.

- j. Press `SAVE CONFIG`.
- k. Press `Exit` to exit the Datacomm Configuration menu.

HP C1001A/G/W 700/92 Block-Mode Display Terminal

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

HP C1001A/G/W 700/92 Block-Mode Display Terminal

Table 5-7.
HP C1001A/G/W 700/92 Connected to RS-232-C Interfaces

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP C1001A/G/W 700/92	/dev/tty02	c	1	98626	9 ²	0x090004
HP C1001A/G/W 700/92	/dev/tty02	c	1	98628	20 ³	0x140004
HP C1001A/G/W 700/92 port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP C1001A/G/W 700/92 port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP C1001A/G/W 700/92 port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP C1001A/G/W 700/92 port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP C1001A/G/W 700/92 port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP C1001A/G/W 700/92 port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP C1001A/G/W 700/92 port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP C1001A/G/W 700/92 port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP C1001A/G/W 700/92 port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP C1001A/G/W 700/92 port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP C1001A/G/W 700/92 port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP C1001A/G/W 700/92 port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

¹ See Chapter 9 for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (tty02). If not, change the path name accordingly (for example, /dev/tty03 for the third terminal).

² Built-in RS-232-C Interface and HP 98626A RS-232-C Interface.

³ HP 98628A Datacomm Interface.

⁴ HP 98642A 4-Channel Multiplexer Interface

⁵ HP 98638A 8-Channel Multiplexer Interface

HP C1002A/G/W 700/94 Alphanumeric Display Terminal

The HP C1002A/G/W Alphanumeric Display Terminal is an HP 700/94 display terminal, which offers 80 or 132 column display, eight pages of display memory, and two RS-232C ports. It also provides system console support.

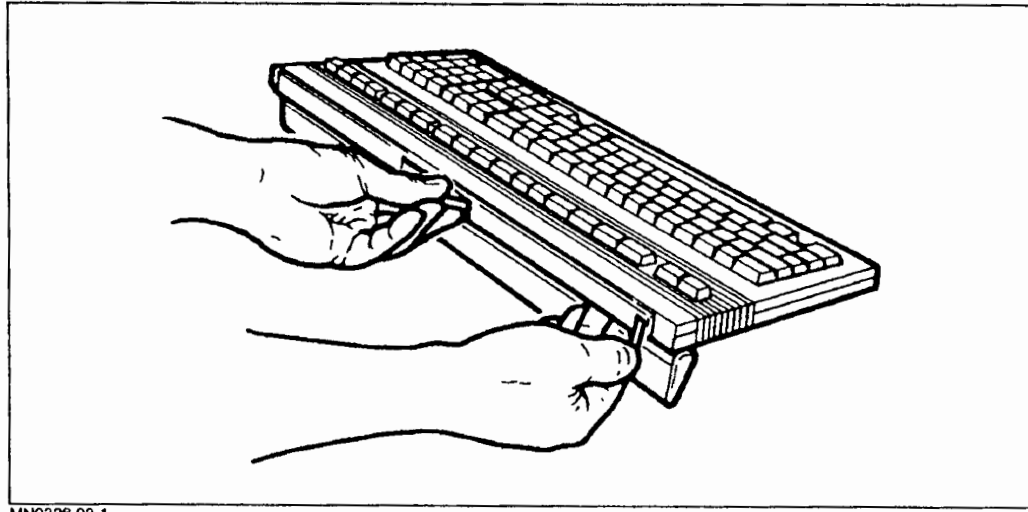
Connecting the HP C1002A/G/W 700/94 Terminal

Perform the following steps to connect this terminal:

1. *Unpack the terminal.*
2. *Place the terminal on a hard and level surface, such as a desk or table.*

Caution Do not place objects on top of the display unit because this blocks the air vents.

3. *Unwrap the keyboard cable.*
4. *Connect the keyboard.*
 - a. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back) as shown in Figure 5-17.



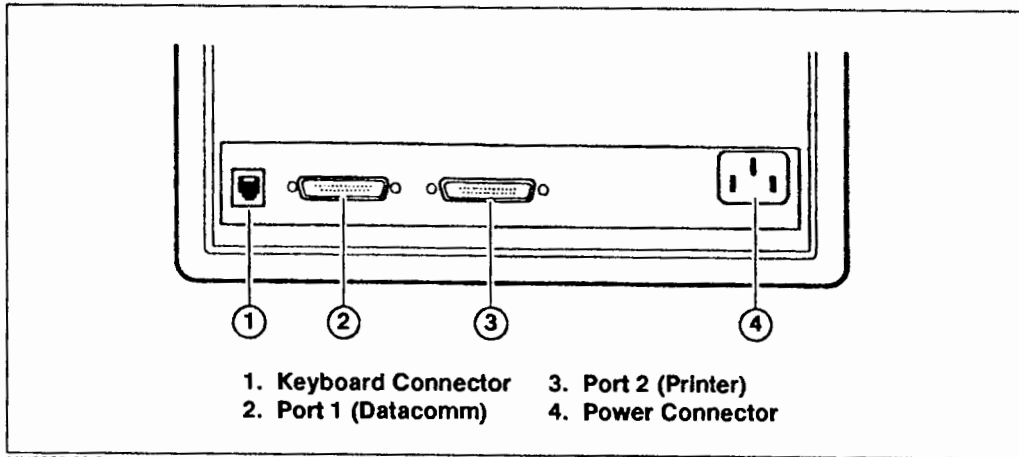
MN0326-03-1

Figure 5-17. Connecting and Routing Keyboard Cable

- b. Route the cable to the right or left as desired. Tuck the flat portion of the cable under the cable channel protector at the rear of the keyboard. Direct the cable through the slot at the end of the cable channel as shown in Figure 5-17.

HP C1002A/G/W 700/94 Alphanumeric Display Terminal

- c. Connect the other end of the keyboard cable into the keyboard connector on the rear panel of the terminal as shown in Figure 5-18.



MN0328-03-2

Figure 5-18. Rear Panel Terminal Connections

5. *Select your interface.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note

If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

6. *Connect the terminal to the computer.*

Refer to the "RS-232C Cabling Guidelines" in Chapter 1: "Introduction".

- a. Insert the RS-232C connector of the datacomm cable into the socket provided in port 1 on the rear panel of the terminal as shown in Figure 5-18. The connector shell is shaped so that it fits into the socket in the correct position.

Note If you use Port 2 for your datacomm connection, set up your terminal accordingly in "Configuring the HP C1002A/G/W 700/94 Terminal" in this section. Be sure to write it down on the foldout worksheet.

- b. After fully inserting the connector into the socket on the rear panel of the terminal, tighten the two screws that secure the connection.
- c. Connect the other end of the datacomm cable to the host computer or modem.
- d. Insert one end of the power cord into the Power Connector on the rear panel of the terminal as shown in Figure 5-18.

Warning **Turn the terminal off before you apply power. The power button on the front lower left-hand corner of the terminal is flush with the front panel when the terminal is off.**

- e. Plug the three-prong connector on the other end of the power cord into an electrical outlet.

HP C1002A/G/W 700/94 Alphanumeric Display Terminal

7. *Turn on the computer.*
8. *Turn on the terminal.*

Press the power button. The button remains depressed in the ON position.

You are now ready to configure this terminal. Go to “Configuring the HP C1002A/G/W 700/94 Terminal” in this section to perform this task.

Configuring the HP C1002A/G/W 700/94 Terminal

You are now ready to configure this terminal.

Note Use the default values as shown in the following figures except where otherwise noted. If you change any of the default values, you must then change the corresponding values in the HP-UX operating system. Go to the *HP-UX Reference Manual* for further references on `terminfo` and `termio` if you decide to change any default value.

1. *Configure the terminal.*
 - a. Press `System`.
 - b. Press `config keys` to display the function key screen-labels for available menus.
 - c. Press `terminal config` to display the Terminal Configuration menu.

The Terminal Configuration menu then displays the following default values as shown in Figure 5-19.

HP C1002A/G/W 700/94 Alphanumeric Display Terminal

```

                                TERMINAL CONFIGURATION
Datacomm/ExtDev PORT1/PORT2      Keyboard USASCII
Terminal Id      70094           Language ENGLISH

Local Echo OFF      CapsLock OFF      Start Col 001      Bell ON
XmitFnctn(A) NO    SPOW(B) NO        InhEolWrp(C) NO   Line/Page(D) LINE
InhHndShk(G) NO    Inh DC2(H) NO                Esc Xfer(N) NO
                                           Forms Buf Size(256x) 000

FldSeparator US   BklTerminator Rs    Return=Enter NO   ReturnDef Cr
Tab=Spaces NO    NumPad Tab= TAB      TermMode HP

                                FORMAT MODE
Decimal Type US   Imp Dec Digits 2   Transmit All Fields  Print FIELDS

```

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Figure 5-19. Terminal Configuration Menu (Default Values)

- d. Select `PORT1/PORT2` in the `Datacomm/ExtDev` field if port 1 is the line of communication to the computer and port 2 is the line of communication to a printer; select `PORT2/PORT1` if port 2 is the line of communication to the computer and port 1 is the line of communication to a printer.

Note Be sure to verify this setting. If this setting does not match your hardware setup, the terminal will not function properly.

- e. Press `SAVE CONFIG`.
- f. Press `PREVIOUS CHOICE`.
- g. Press `datacomm config` to display the Datacomm Configuration menu.

The Datacomm Configuration menu then displays the following default values as shown in Figure 5-20.

HP C1002A/G/W 700/94 Alphanumeric Display Terminal

DATACOM CONFIGURATION					
BaudRate	9600	Parity/DataBits	None/8	EnqAck	YES
Asterisk	OFF	Chk Pairty	NO	SR(CH)	LO
RecvPace	XON/XOFF	XmitPace	None	CS(CB)Xmit	NO

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Figure 5-20. Datacomm Configuration Menu (Default Values)

- 5
- h. Select the transmission rate (bits per second) you need for communication with the computer in the `BaudRate` field. Write it down on the foldout worksheet.

Note Enter the same baud rate that you have selected in the `BaudRate` field on this terminal in the `baud rate` field in the Peripheral Devices menu in SAM.

- i. Select the type of parity and number of bits per byte that fit your computer application in the `Parity/DataBits` field. Change the default setting from `None/8` to `0/7`.

Warning If you do not change this setting, this terminal will not work. Write it down on the foldout worksheet.

- j. Press `SAVE CONFIG`.
- k. Press `Exit` to exit the Datacomm Configuration menu.

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".



HP C1002A/G/W 700/94 Alphanumeric Display Terminal

Table 5-8.
HP C1002A/G/W 700/94 Connected to RS-232-C Interfaces

Device Name	Path Name ¹	File Type	Major Number	Driver Name	Select Code	Minor Number
HP C1002A/G/W 700/94	/dev/tty02	c	1	98626	9 ²	0x090004
HP C1002A/G/W 700/94	/dev/tty02	c	1	98628	20 ³	0x140004
HP C1002A/G/W 700/94 port 0	/dev/tty02	c	1	98642	13 ⁴	0x0d0004
HP C1002A/G/W 700/94 port 1	/dev/tty02	c	1	98642	13 ⁴	0x0d0104
HP C1002A/G/W 700/94 port 2	/dev/tty02	c	1	98642	13 ⁴	0x0d0204
HP C1002A/G/W 700/94 port 3	/dev/tty02	c	1	98642	13 ⁴	0x0d0304
HP C1002A/G/W 700/94 port 0	/dev/tty02	c	1	98642	28 ⁵	0x1c0004
HP C1002A/G/W 700/94 port 1	/dev/tty02	c	1	98642	28 ⁵	0x1c0104
HP C1002A/G/W 700/94 port 2	/dev/tty02	c	1	98642	28 ⁵	0x1c0204
HP C1002A/G/W 700/94 port 3	/dev/tty02	c	1	98642	28 ⁵	0x1c0304
HP C1002A/G/W 700/94 port 4	/dev/tty02	c	1	98642	28 ⁵	0x1c0404
HP C1002A/G/W 700/94 port 5	/dev/tty02	c	1	98642	28 ⁵	0x1c0504
HP C1002A/G/W 700/94 port 6	/dev/tty02	c	1	98642	28 ⁵	0x1c0604
HP C1002A/G/W 700/94 port 7	/dev/tty02	c	1	98642	28 ⁵	0x1c0704

¹ See Chapter 9 for device file naming conventions.

The path name given here assumes this is the second terminal you are connecting (**tty02**). If not, change the path name accordingly (for example, **/dev/tty03** for the third terminal).

² Built-in RS-232-C Interface and HP 98626A RS-232-C Interface.

³ HP 98628A Datacomm Interface.

⁴ HP 98642A 4-Channel Multiplexer Interface

⁵ HP 98638A 8-Channel Multiplexer Interface

5-64 Installing Terminals and Modems

HP 37212B 1200/2400 Baud Modem

The HP 37212B 1200/2400 Baud Modem connects to your computer via an RS-232C interface.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Connecting the HP 37212B 1200/2400 Baud Modem

Refer to the manual that came with the modem to complete the following tasks:

- Unpack the modem.
- Contact the telephone company.
- Check the voltage setting and fuse.
- Mount the modem in a rack (if applicable).

Complete the following tasks to install your modem:

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Set the internal switches.*

The modem contains eight internal switches that set various operating characteristics of the modem. The switches are all set to the OPEN position and should not be changed, at least not initially. If you later decide that you want to change these switches, refer to the instructions in the manual that came with the modem.

Warning **Be sure to disconnect the power cord from the modem whenever you are working with the internal switches and jumpers. Lethal voltages are exposed when the top cover is removed while the power cord is connected.**

HP 37212B 1200/2400 Baud Modem

3. *Connect the telephone cable.*

- a. Plug one end of the modular telephone cable into the "TELCO" connector on the back of the modem.
- b. Insert the remaining end of the telephone cable into a telephone wall jack.
- c. If you want to connect a telephone to the modem, plug the telephone's cable into the "PHONE" connector on the back of the modem.

4. *Select your interface and cable.*

Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note

If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution

Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

Note

For the 4-Channel and 8-Channel MUX interfaces, ports 1, 2 and 3 are not recommended for use with the modem.

Refer to the "RS-232-C Cabling Guidelines" in Chapter 1: "Introduction".

5. *Connect the modem to your computer.*

Before you connect your modem there are three things to consider:

- Is the DTR (Data Terminal Ready) line forced high? If so, set it to follow the line or do not force it high.
- Is the CD (Carrier Detect) line forced high? If so, set it to follow the line or do not force it high.
- Is the modem a Hayes compatible? If so, the S0 register needs to be set to one or greater. If you are going to use `cu` or `uucp` then the number should not be greater than three or connection will fail.

You will need a cable with the following pins:

Table 5-9.

Computer	Modem
1	1
2	2
3	3
7	7
8	8
20	20

Note The 9 pin port will work if the 9 pin to 25 pin adaptor that ships with the system is used with this cable.

Connect the cable between the modem and the interface.

6. *Connect the power cord.*

Connect the power cord into the power connector on the back of the modem, and plug the other end into your power outlet.

HP 37212B 1200/2400 Baud Modem

7. *Set the front panel buttons.*
 - a. Turn the modem on.
 - b. Locate the set of four buttons labeled HS, ALB, RDL, and DATA on the front of the modem.
 - c. Set these buttons as follows:
 - Push the HS button in.
 - Leave the ALB, RDL and DATA buttons out.

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Table 5-10.
HP 37212B 1200/2400 Baud Modem
Built-in Interface (Select Code 9)

5

Device Name	Path* Name	File Type	Major Number	Minor Number
HP 37212B	/dev/tty02	c	1	0x090000
HP 37212B	/dev/cua02	c	1	0x090001
HP 37212B	/dev/cu102	c	1	0x090001
* The path names given here assume this is the second terminal or modem you are connecting (that is, tty02). If this is not the case, change the path names accordingly (for example, /dev/tty03 for the third modem, etc.).				

HP 37212B 1200/2400 Baud Modem

Table 5-11. HP 37212B 1200/2400 Baud Modem

Device Name	Path* Name	File Type	Major Number	Minor Number
HP 37212B on select code 9	/dev/tty02	c	1	0x090000
HP 37212B on select code 9	/dev/cua02	c	1	0x090001
HP 37212B on select code 9	/dev/cu102	c	1	0x090001
HP 37212B on select code 10	/dev/tty02	c	1	0x0a0000
HP 37212B on select code 10	/dev/cua02	c	1	0x0a0001
HP 37212B on select code 10	/dev/cu102	c	1	0x0a0001
HP 37212B on select code 13	/dev/tty02	c	1	0x0d0000
HP 37212B on select code 13	/dev/cua02	c	1	0x0d0001
HP 37212B on select code 13	/dev/cu102	c	1	0x0d0001
HP 37212B on select code 15	/dev/tty02	c	1	0x0f0000
HP 37212B on select code 15	/dev/cua02	c	1	0x0f0001
HP 37212B on select code 15	/dev/cu102	c	1	0x0f0001
HP 37212B on select code 16	/dev/tty02	c	1	0x100000
HP 37212B on select code 16	/dev/cua02	c	1	0x100001
HP 37212B on select code 16	/dev/cu102	c	1	0x100001
HP 37212B on select code 17	/dev/tty02	c	1	0x110000
HP 37212B on select code 17	/dev/cua02	c	1	0x110001
HP 37212B on select code 17	/dev/cu102	c	1	0x110001
HP 37212B on select code 19	/dev/tty02	c	1	0x130000
HP 37212B on select code 19	/dev/cua02	c	1	0x130001
HP 37212B on select code 19	/dev/cu102	c	1	0x130001
HP 37212B on select code 20	/dev/tty02	c	1	0x140000
HP 37212B on select code 20	/dev/cua02	c	1	0x140001
HP 37212B on select code 20	/dev/cu102	c	1	0x140001

* The path names given here assume this is the second terminal or modem you are connecting (that is, `tty02`). If this is not the case, change the path names accordingly (for example, `/dev/tty03` for the third modem, etc.).

HP 92205A/C Hayes Smartmodem 1200

The HP 92205A/C Hayes Smartmodem 1200 connects to your computer via an RS-232C interface.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Connecting the HP 92205A/C Hayes Smartmodem 1200

Refer to the manual that came with the modem to complete the following tasks:

- Unpack the modem.
- Contact the telephone company.

To install your modem complete the following tasks:

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Connect the telephone cable.*
 - a. With the gold contacts up, plug one end of the modular telephone cable into the telephone connector on the back of the modem.
 - b. Insert the remaining end of the telephone cable into a telephone wall jack.

HP 92205A/C Hayes Smartmodem 1200

3. *Select your interface and cable.*

The modem can be connected to any of the following RS-232C interfaces:
Select one of the following RS-232-C interfaces:

- The built-in RS-232-C interface.
- HP 98626A RS-232-C Interface.
- HP 98628A Datacomm Interface.
- HP 98642A 4-Channel Multiplexer Interface
- HP 98638A 8-Channel Multiplexer Interface
- HP 98644A RS-232-C Serial Interface.

Note If you have more than one serial port, you need to know the address of your port. You need this information for testing communications and for configuring your software.

Caution Many computer systems have both parallel and RS-232-C ports. These ports frequently appear identical. Make sure you plug your cable into the correct port or you could damage your device.

Note For the 4-Channel and 8-Channel MUX interfaces ports, 1, 2 and 3 are not recommended for use with the modem.

4. *Connect the modem to your computer.* Before you connect your modem there are three things to consider:

- Is the DTR (Data Terminal Ready) line forced high? If so, set it to follow the line or do not force it high.
- Is the CD (Carrier Detect) line forced high? If so, set it to follow the line or do not force it high.
- The S0 register needs to be set to one or greater. If you are going to use `cu` or `uucp` then the number should not be greater than three or connection will fail.

You will need a cable with the following pins:

Table 5-12.

Computer	Modem
1	1
2	2
3	3
7	7
8	8
20	20

Note The 9 pin port will work if the 9 pin to 25 pin adaptor that ships with the system is used with this cable.

5

Connect the cable between the modem and the interface.

5. *Connect the power cord.*

Connect the power cord into the power connector on the back of the modem, and plug the other end into your power outlet.

HP 92205A/C Hayes Smartmodem 1200

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Table 5-13.
HP 92205A/C Hayes Smartmodem 120
Built-in Interface (Select Code 9)

Device Name	Path* Name	File Type	Major Number	Minor Number
Smartmodem	/dev/tty02	c	1	0x090000
Smartmodem	/dev/cua02	c	1	0x090001
Smartmodem	/dev/cu102	c	1	0x090001

* The path names given in these examples assume this is the second terminal or modem you are connecting (that is, tty02). If this is not the case, change the path names accordingly (for example, /dev/tty03 for the third modem, etc.).

Table 5-14. HP 92205A/C Hayes Smartmodem 1200

Device Name	Path* Name	File Type	Major Number	Minor Number
Smartmodem, select code 9	/dev/tty02	c	1	0x090000
Smartmodem, select code 9	/dev/cua02	c	1	0x090001
Smartmodem, select code 9	/dev/cu102	c	1	0x090001
Smartmodem, select code 10	/dev/tty02	c	1	0x0a0000
Smartmodem, select code 10	/dev/cua02	c	1	0x0a0001
Smartmodem, select code 10	/dev/cu102	c	1	0x0a0001
Smartmodem, select code 13	/dev/tty02	c	1	0x0d0000
Smartmodem, select code 13	/dev/cua02	c	1	0x0d0001
Smartmodem, select code 13	/dev/cu102	c	1	0x0d0001
Smartmodem, select code 15	/dev/tty02	c	1	0x0f0000
Smartmodem, select code 15	/dev/cua02	c	1	0x0f0001
Smartmodem, select code 15	/dev/cu102	c	1	0x0f0001
Smartmodem, select code 16	/dev/tty02	c	1	0x100000
Smartmodem, select code 16	/dev/cua02	c	1	0x100001
Smartmodem, select code 16	/dev/cu102	c	1	0x100001
Smartmodem, select code 17	/dev/tty02	c	1	0x110000
Smartmodem, select code 17	/dev/cua02	c	1	0x110001
Smartmodem, select code 17	/dev/cu102	c	1	0x110001
Smartmodem, select code 19	/dev/tty02	c	1	0x130000
Smartmodem, select code 19	/dev/cua02	c	1	0x130001
Smartmodem, select code 19	/dev/cu102	c	1	0x130001
Smartmodem, select code 20	/dev/tty02	c	1	0x140000
Smartmodem, select code 20	/dev/cua02	c	1	0x140001
Smartmodem, select code 20	/dev/cu102	c	1	0x140001

* The path names given in these examples assume this is the second terminal or modem you are connecting (that is, tty02). If this is not the case, change the path names accordingly (for example, /dev/tty03 for the third modem, etc.).

5

Setting Up HP-UX for Terminals and Modems

Introduction

This chapter discusses setting up HP-UX to communicate with your terminal. Setting up HP-UX for a terminal consists of:

- creating the device file or verify that the correct device file already exists for communication with the device.
- ensuring the appropriate HP-UX device driver is part of the current kernel configuration.

There are two methods for setting up HP-UX:

- SAM method
- HP-UX Commands method

This chapter focuses on the SAM method to set up HP-UX for terminals. Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for a description of the HP-UX commands method if you do not have SAM on your system.

Adding a Terminal to Your System

The following sequence of SAM menus from the main menu `System Administration Manager` will display the screen on which you will enter information specific to your disk drive.

```
Peripheral Devices ->
↓
Add a Terminal or Modem ->
```

Enter the following information about the terminal to be added to the system:

- terminal or modem specifier
- select code of interface
- port number
- speed (baud rate)

Use the `(Tab)` key to move from field to field as you fill in information on this screen. If you need additional information about a particular field, position the cursor on the field and press `Help (F1)`.

When you have filled in all of the information press `Perform Task (F4)`.

SAM will create the device file needed to communicate with the terminal and add the `getty` entry in the `/etc/inittab`. In Chapter 9: "Setting Up Devices Using HP-UX Commands" the "Terminals and Modems" section describes adding a `getty` entry to the `/etc/inittab` file. This section also describes using HP-UX commands to delete a terminal from the system and an an entry in the `/etc/ttytype` file.

If the device driver for the disk drive is not part of the current HP-UX kernel configuration, SAM will ask you if you would like the device driver to be added. SAM will tell you that adding the device driver to the kernel will require a reboot of your system.

Installing Disk and Tape Drives

Introduction

This chapter contains the hardware installation procedures for the following disk and tape drives:

- HP C1707A Series 6100 Model 600/A HP-IB CD-ROM Drive
- HP Series 6100 Model 700/S CD-ROM Drive
- HP C1700A Series 6300 Model 20GB/A Optical Disk Library System
- HP C1701A Series 6300 Model 650/A Optical Disk Drive
- HP 7907A Disk Drive
- HP 7911P/R, 7912P/R, and 7914P/R/CT Disk and Tape Drives
- HP 7933H/7935H Disk Drives
- HP 7936H/7937H Disk Drives
- HP 7941A, 7942A, 7945A, 7946A Disk and Disk/Tape Drives
- HP 7957A/B, 7958A/B, and 7959B/62B/63B Disk Drives
- HP 7957/58/59S SCSI Disk Drives
- HP 9121D/S and HP 9122D/S/C Flexible Disk Drives
- HP 9125S and HP 9127A Flexible Disk Drive
- HP 9133D/H/L and 9134D/H/L Disk Drives
- HP 9153A/B and 9154A/B Disk Drives
- HP C2200/03A Disk Drives
- HP C2212A/13A Mass Storage Systems
- HP 9144A/45A Tape Drive
- HP 7974A Tape Drive
- HP 7978A/B Tape Drive
- HP 7979A/7980A/7980XC Tape Drives
- HP 7980S/SX Tape Drives
- HP C1511A Series 6400 Model 1300H HP-IB DDS-Format Drive
- HP C1512A Series 6400 Model 1300S SCSI DDS-Format Drive

HP C1707A Series 6100 Model 600/A HP-IB CD-ROM Drive

The Model 600/A is a Command Set 80 (CS/80) Compact Disk-Read Only Memory (CD-ROM) Drive. The Model 600/A CD-ROM support the ISO-9660 (or High Sierra Group) data format. It connects to your computer via the built-in, high-speed HP-IB interface or the high-speed HP-IB disk interface card.

Additional information can be found in the *HP Series 6100 Model 600/A HP-IB CD-ROM User's Guide*, HP part number C1707-90000.

For more information about CD-ROM technology, please refer to the *How HP-UX Works: Concepts for the System Administrator* manual.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Connecting the HP Series 6100 Model 600/A HP-IB CD-ROM Drive

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

**HP C1707A Series 6100
Model 600/A CD-ROM Drive**

3. *Set the HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Choose an available HP-IB bus address.
 - b. Find the address dial located in the lower left corner on the back of the CD-ROM drive.
 - c. Rotate the inner arrow of the dial to point to the desired address using a small, flat-blade screwdriver.
4. *Connect the Model 600/A to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

HP 10833A 1.0 meter HP-IB cable
HP 10833B 2.0 meter HP-IB cable
HP 10833C 4.0 meter HP-IB cable
HP 10833D 0.5 meter HP-IB cable

- a. Connect one end of an HP-IB cable to the HP-IB connector on the back of the Model 600/A. Tighten the thumb screws to secure the connection.
- b. Connect the other end of the HP-IB cable to the interface or to the last device on the chain.

**HP C1707A Series 6100
Model 600/A CD-ROM Drive**

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-1. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-2.

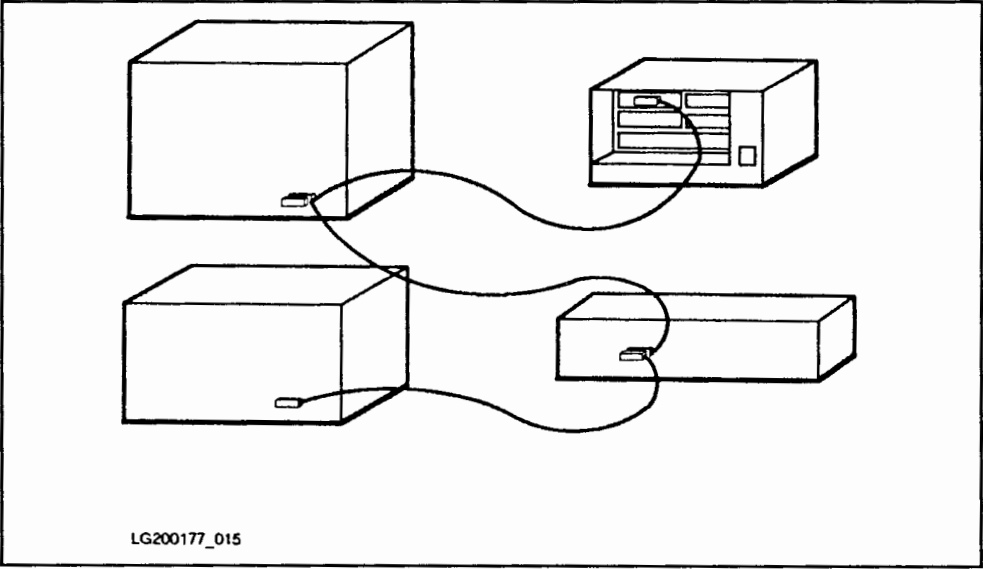
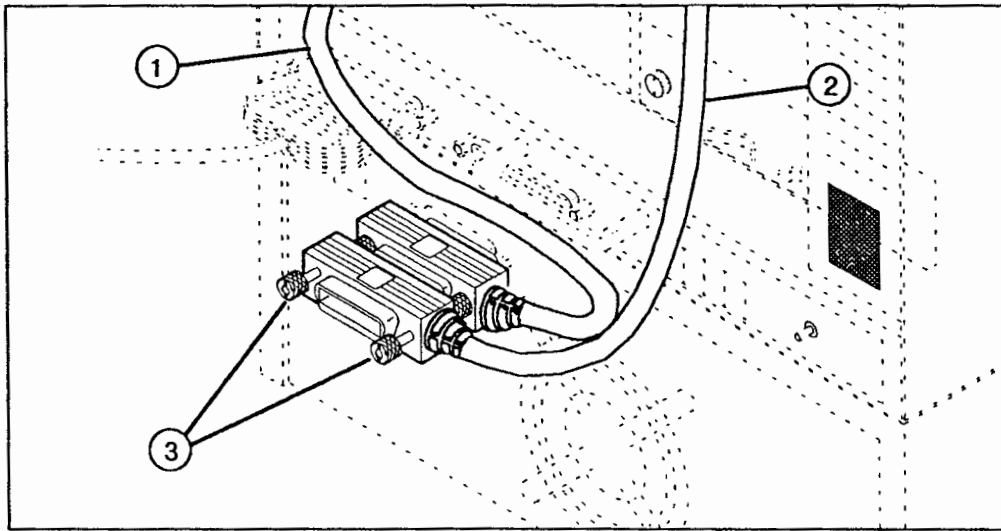


Figure 7-1. Daisy-Chained HP-IB Devices

**HP C1707A Series 6100
Model 600/A CD-ROM Drive**



LG200177_008

Figure 7-2. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the Model 600/A.
- ③ Thumb screws to be tightened.

5. *Ensure all power switches are in the OFF position.*

6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

**HP C1707A Series 6100
Model 600/A CD-ROM Drive**

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-1. HP C1707A

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
C1707A CD-ROM	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
C1707A CD-ROM	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
C1707A CD-ROM	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
C1707A CD-ROM	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP A1999A Series 6100 Model 700/S SCSI CD-ROM Drive

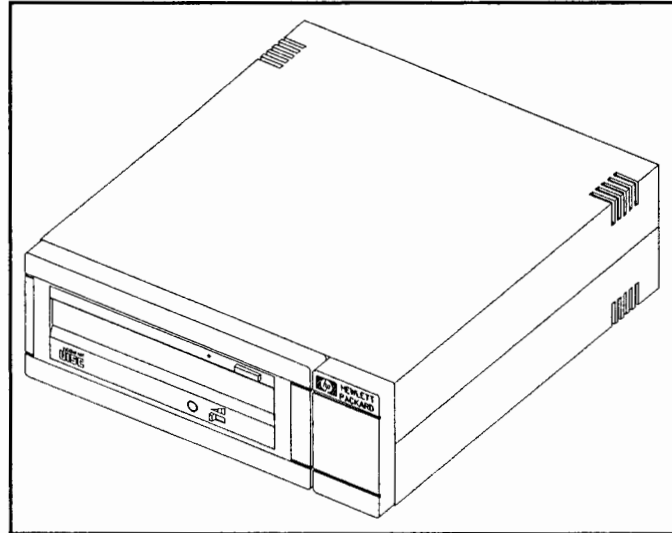


Figure 7-3. HP Series 6100 Model 700/S CD-ROM Drive

The HP A1999A Series 6100 Model 700/S SCSI CD-ROM drive is a half height device. Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

HP Series 6100 Model 700/S CD-ROM Drive

Connecting the HP Series 6100 Model 700/S CD-ROM Drive

The front and rear panels of the CD-ROM drive are contained in Figure 7-4 and Figure 7-5.

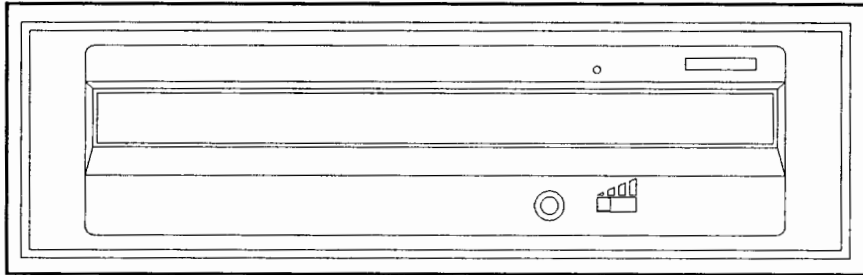


Figure 7-4. HP Series 6100 Model 700/S CD-ROM Drive Front Panel

HP Series 6100 Model 700/S CD-ROM Drive

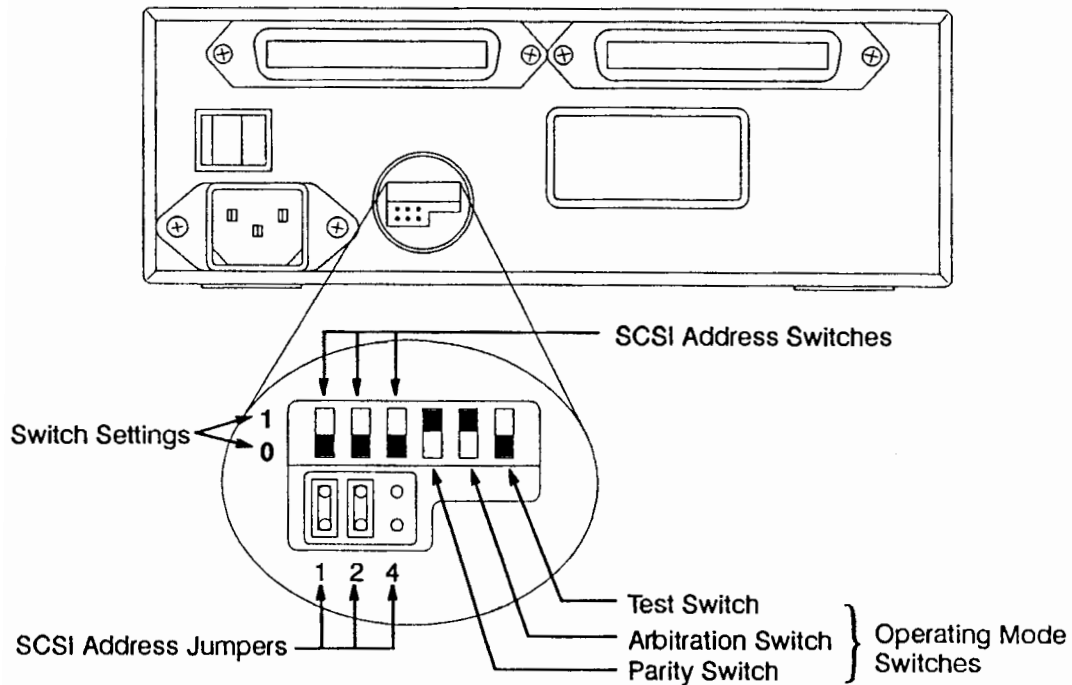


Figure 7-5. HP Series 6100 Model 700/S CD-ROM Drive Rear Panel

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.*

HP Series 6100 Model 700/S CD-ROM Drive

Select one of the following SCSI interfaces:

- Built-in SCSI interface
- HP 98658A SCSI interface card
- HP 98265A SCSI interface daughter card

3. *Set the SCSI bus address*

Note You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system's SCSI controller uses address 7.

The SCSI bus address is preset to 3.

To set the CD-ROM drive SCSI address you can use either SCSI address switches or jumpers. The jumpers are located directly under the address switches.

- a. Locate the switches and jumpers on the rear of the CD-ROM drive, refer to Figure 7-5.
- b. Perform one of the two following tasks to set the SCSI address.
 - i. To set the target address by using the address switches, first remove all address jumpers from their pins. Use a sharp instrument, such as a pencil or pen, to set the SCSI address switches to your desired address. Refer to the switches and jumpers in Figure 7-5.
 - ii. To set the target address by using the address jumpers, first use a sharp instrument, such as a pencil or pen, to set the three address switches to 0, as shown in Figure 7-6. Place the jumpers in the correct position for your desired target address, as shown in Figure 7-6.

HP Series 6100 Model 700/S CD-ROM Drive

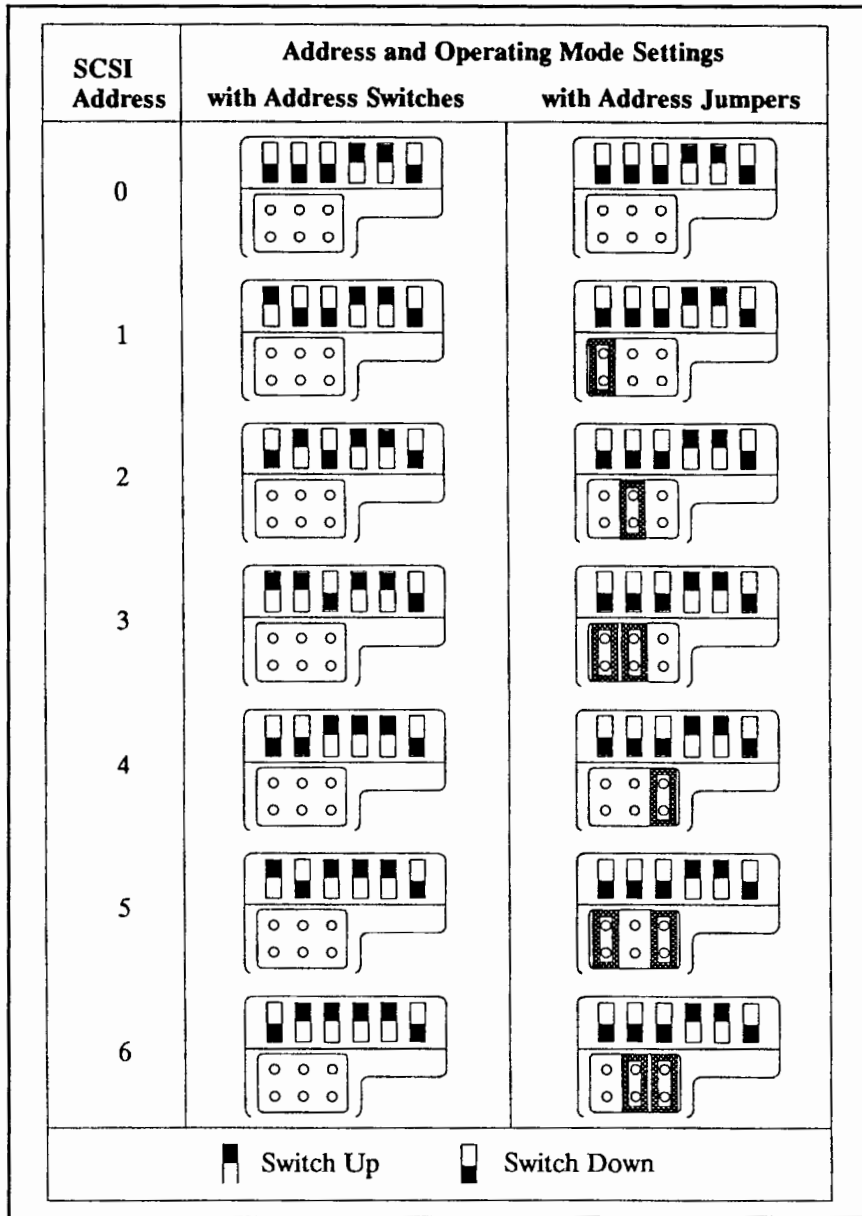


Figure 7-6.

HP Series 6100 Model 700/S CD-ROM
SCSI Address Switch and Jumper Settings

HP Series 6100 Model 700/S CD-ROM Drive

4. Set the Parity, Arbitration, and Test switches.

Parity and Arbitration switches should be set to 1 (up) and the Test switch should be set to 0 (down). Refer to Figure 7-5.

5. Connect the CD-ROM drive to your computer.

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

Table 7-2. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

1 HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

2 Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

3 Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

4 Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

7

HP Series 6100 Model 700/S CD-ROM Drive

The HP Series 6100 Model 700/S CD-ROM drive has an internal bus length of 0.3 meters.

- a. Attach one end of the SCSI cable to one of the two connectors on the CD-ROM drive (it does not matter which one). Press it completely in.
- b. Attach the other end of the new SCSI cable to the SCSI interface card.
- c. Attach the terminator to the unoccupied connector on the CD-ROM drive. If you do not have a terminator, you will need to order one. Refer to the “SCSI Cable and Terminator Matrix” to determine the terminator part number you need to order.

If you have one or more devices attached to the SCSI interface as in Figure 7-7:

- i. Remove the terminator from the last device on the chain.
- ii. Attach the end of the new SCSI cable to the connector you removed the terminator from.

A close-up of the SCSI connectors on the previously last device on the chain is provided in Figure 7-8.

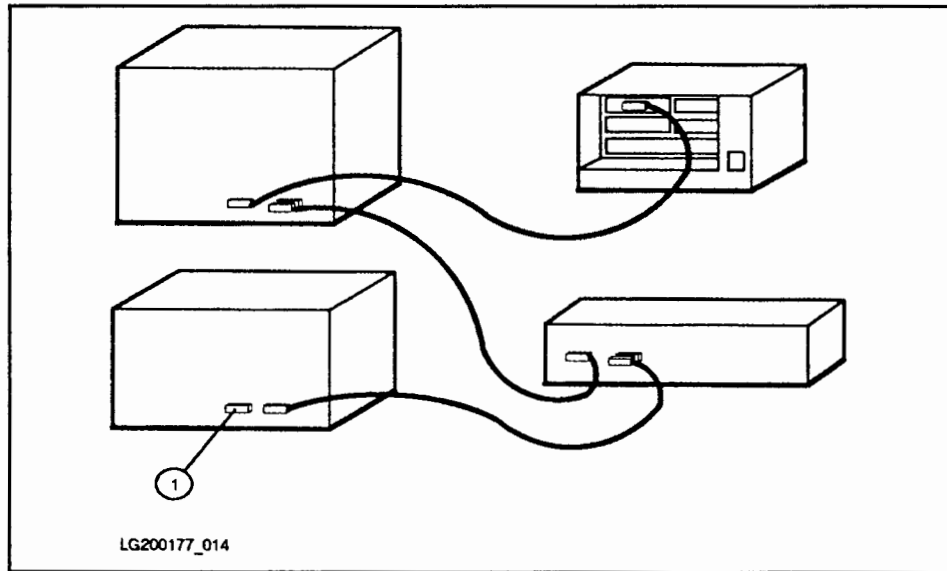
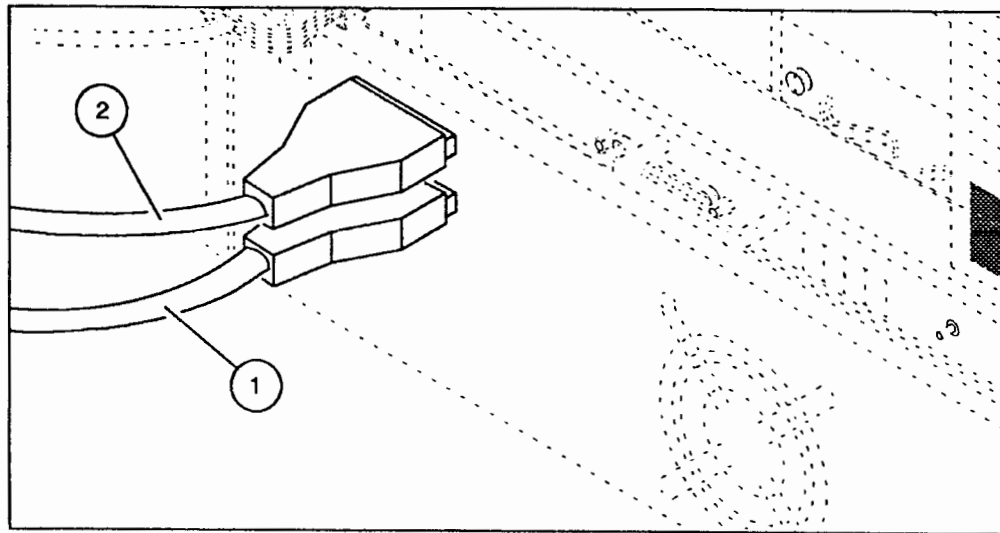


Figure 7-7. Daisy-Chained SCSI Devices

- ① Terminator

HP Series 6100 Model 700/S CD-ROM Drive



LG200177_013

Figure 7-8. SCSI Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP Series 6100 Model 700/S CD-ROM drive.

d. Place the terminator (supplied with the SCSI interface card) on the other connector on the back of the CD-ROM drive. Press completely in.

6. *Record the SCSI bus address.*

Make a note that the SCSI bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

7. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

Table 7-3. HP Series 6100 Model 700/S CD-ROM Drive

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Select Code	Minor Number ²
Model 700/S CD-ROM	/dev/dsk/#s0	b	7	scsi	14	0x0e0n00
Model 700/S CD-ROM	/dev/rdisk/#s0	c	47	scsi	14	0x0e0n00

- 1 # is a number that identifies the bus address of the device . Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdsk entries (for example, /dev/dsk/1s0 and /dev/rdsk/1s0).
- 2 n is a number that identifies the bus address. Replace n with a 2 if the bus address was set to 2, use 3 if the address set to 3, and so on.



Series 6300 Model 20GB/A Optical Disk Library System

The Deskside and Rackmount HP C1700A Series 6300 Model 20GB/A Optical Disk Library System is a direct access secondary storage (DASS) peripheral that allows multiple rewritable optical disks to be shared between one or two optical disk drives. The Optical Disk Library System can hold as many as 32 disks; each disk can store 325 Mbytes of data per side. The Optical Disk Library System connects to your computer with a SCSI interface and can be accessed as a conventional magnetic disk drive.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

**Series 6300 Model 20GB/A
Optical Disk Library System**

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

Table 7-4. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

1 HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

2 Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

3 Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

4 Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The Deskside Series 6300 Model 20GB/A Optical Disk Library System has an internal bus length of 1.0 meter.

**Series 6300 Model 20GB/A
Optical Disk Library System**

Connecting the Series 6300 Model 20GB/A Optical Disk Library System

Note The Deskside Series 6300 Model 20GB/A Optical Disk Library System should be installed by an HP Customer Engineer. The installation cost is included in the purchase price of the unit. Your HP Customer Engineer will unpack and install your Optical Disk Library System for you. For these details, please refer to the unpacking and installation procedures that came with the Model 20GB/A.

The following four figures illustrate the front panel and internal structure of the Deskside and Rackmount Series 6300 Model 20GB/A Optical Disk Library.

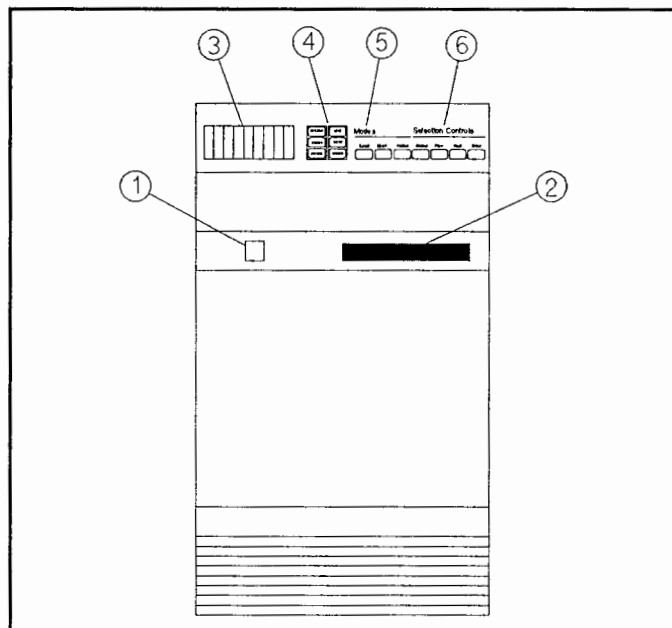


Figure 7-9. Deskside Optical Disk Library Front Panel

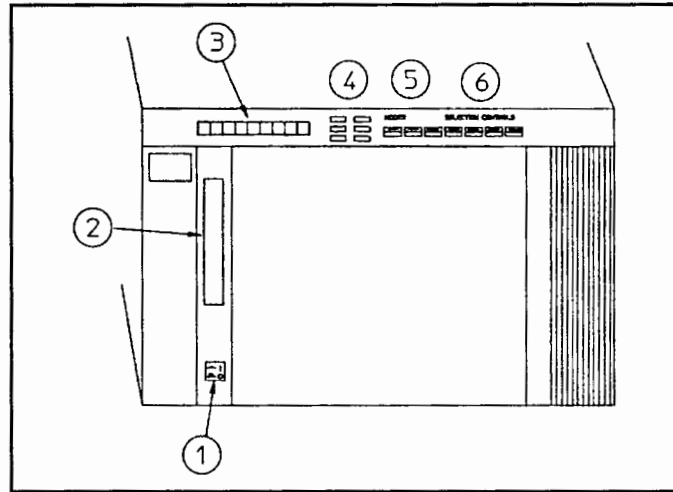


Figure 7-10. Rackmount Optical Disk Library Front Panel

- ① **Power On Button.**
Pushed to switch the Model 20GB/A on or off.
- ② **Mailslot.**
Allows you to insert or remove disks.
- ③ **9-Character Display.**
Displays information about the current operation. Generally, you press **NEXT** or **PREV** to control the selections. Once your selection is displayed, you press **ENTER**. You may press **CANCEL** to cancel your selection.
- ④ **Status Indicators.**
Lit when the indicated activity is taking place.

**Series 6300 Model 20GB/A
Optical Disk Library System**

⑤ **Modes Keys.**

Press these buttons to perform the desired operation.

LOAD is pressed after you place the disk in the mailslot. Once **LOAD** is pressed, the display prompts you for the desired destination inside the unit. Once you choose the location, press **ENTER**. The disk loads to that location.

EJECT is pressed to remove a disk to the mailslot. Once **EJECT** is pressed, the display prompts you for which disk location to eject. Once you choose the location, press **ENTER**. The disk ejects from that location to the mailslot.

OPTION is pressed to display the current operation options available such as TEST, INFORMATION, CONFIGURATION, and SCSI ID.

⑥ **Selection Control Keys**

Press these buttons to perform the desired operation.

CANCEL is pressed to cancel the current operation or choice.

PREV is pressed to scroll the display choice backward by one.

NEXT is pressed to scroll the display choice forward by one.

ENTER is pressed to choose the displayed selection.

**Series 6300 Model 20GB/A
Optical Disk Library System**

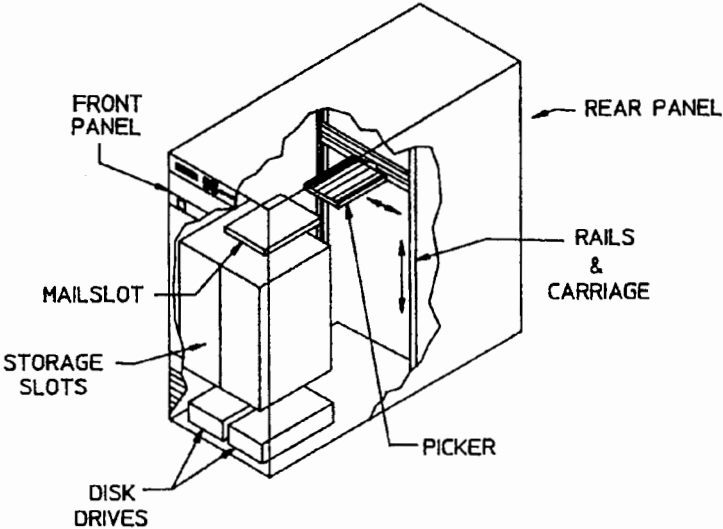


Figure 7-11. Desk-side Optical Disk Library Components

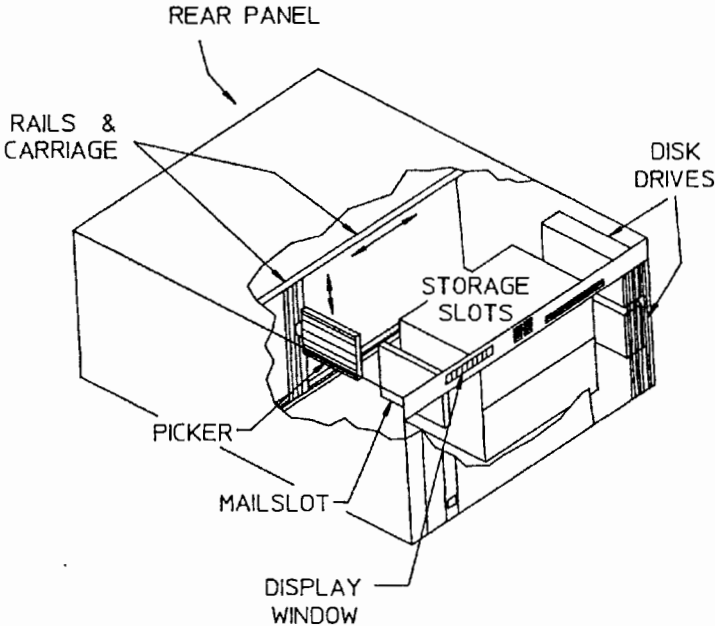


Figure 7-12. Rack-mount Optical Disk Library Components



**Series 6300 Model 20GB/A
Optical Disk Library System**

Disk Drives	There are two optical disk drives for read/write data transfer inside the Autochanger. Each drive requires a unique SCSI address. When you face the front panel of the Deskside version, Drive 1 is located on the right side and drive 2 is on the left. When you face the front panel of the Rackmount version, drive 1 is located on the top and Drive 2 is on the bottom.
Storage Slots	There are 32 storage slots for magneto-optical disks inside the Model 20GB/A.
Mailslot	Where disks are inserted and removed from the Disk Library System.
Front Panel	Includes a control panel used to manage and display autochanger functions, and a place to insert and remove disks.
Rear Panel	The rear panel, which is covered by the cabinet, provides voltage selection, SCSI connections, and drive address select switches.
Rails and Carriage	Supports the picker for its movement along the carriage movement axis.
Picker, Mechanical Picker, or Autochanger Mechanism	Rotates, flips, and transports disks to and from storage slots, drives, and the mailslot.

7

HP-UX Set Up Information

Note SAM does not support this device for software configuration. Continue to read this section and then refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration using HP-UX commands.



HP C1701A Series 6300 Model 650/A Optical Disk Drive

The Model 650/A is a stand-alone 5.25 inch Rewritable Optical disk drive. The removable Magneto-Optical (MO) disk can store 650 Mbytes of data (325 Mbytes per side) and complies with the Continuous-Composite format. The disk drive connects to your computer with a SCSI interface and can be accessed as a conventional magnetic disk drive.

The HP Series 6300 Model 650/A optical disk drive is supported as a mass storage device or as a boot device, although this device is not recommended for use as a boot device.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Connecting the HP Series 6300 Model 650/A Optical Disk Drive

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.* Select one of the following SCSI interfaces:
 - Built-in SCSI interface
 - HP 98658A SCSI interface card
 - HP 98265A SCSI interface daughter card

**HP C1701A Series 6300
Model 650/A Optical Disk Drive**

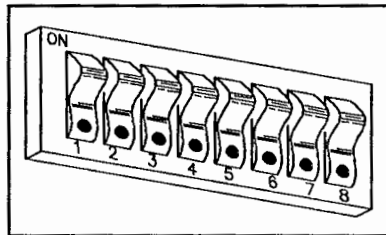
3. *Set the SCSI bus address.*

Note

You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system's SCSI controller uses address 7.

- a. Locate the SCSI ID and operation mode switch (see Figure 7-13) on the rear panel of the disk drive.



**Figure 7-13.
SCSI ID and
Operation Mode Switch**

- b. Verify that switches 1 through 5 are in the “OFF” position.
- c. Switches 6 through 8 are used to set the address. The address can be set from 0 to 6, with 0 being the default setting.

Note You cannot use address 7 because the host system SCSI controller uses address 7.

Table 7-5. SCSI Address Settings

SCSI Address	Switch 6	Switch 7	Switch 8
0	Off	Off	Off
1	Off	Off	On
2	Off	On	Off
3	Off	On	On
4	On	Off	Off
5	On	Off	On
6	On	On	Off

**HP C1701A Series 6300
Model 650/A Optical Disk Drive**

4. *Connect the disk drive to your computer.*

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

Table 7-6. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

1 HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

2 Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

3 Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

4 Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The HP C1701A Series 6300 Model 650/A optical disk drive has an internal bus length of 0.3 meters.

**HP C1701A Series 6300
Model 650/A Optical Disk Drive**

- a. Attach the cable coming from the SCSI interface of your computer to one of the two connectors on the rear panel of the disk drive (it does not matter which one). Press completely in.
 - b. If either connector on the rear panel is not being used to connect to another SCSI device, the unused connector *must* be terminated. Attach the terminator (supplied with the SCSI interface card) to the unused connector on the disk drive. Press completely in. If you do not have a terminator, you will need to order one (HP part number 1252-2297).
5. *Ensure all power switches are in the OFF position.*
 6. *Connect the power cord.*

Connect the female end of the power cord to the “AC LINE” socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the SCSI bus address.*

Make a note that the SCSI bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the disk drive.*

Do NOT turn on the power to the computer before the disk drive.

Caution

If you are using the Model 650/A as a boot device, insert the media *before* the system is powered up and do not remove until after the system is powered down.

9. *Turn on the computer.*

Hardware Installation Complete!

**HP C1701A Series 6300
Model 650/A Optical Disk Drive**

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

Note SAM does not support Model 650/A Optical Disk Drive set up.

Table 7-7. HP 1701A

Device Name	Path Name	File Type	Major Number	Device Driver	Minor Number ¹	Interleave Factor	Select Code
C1701 Model 650/A	/dev/dsk/mo	b	7	scsi	0x0e0n00	1	14
C1701 Model 650/A	/dev/rdisk/mo	c	47	scsi	0x0e0n00	1	14

¹ n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

**HP C1701A Series 6300
Model 650/A Optical Disk Drive**

Since optical media is removable, do not use the media as part of your automatically-mounted file systems (that is, do not add this disk drive to `/etc/checklist`). The Model 650/A can be used as a temporary or emergency boot device. To prepare the optical disk drive for use as a boot device, you must first perform the following:

1. Backup your current boot device to the optical disk as follows:

```
dd if=/dev/rdisk/hd of=/dev/rdisk/mo bs=64k
```

2. Test the backup copy by rebooting the system using the optical disk drive.

HP 7907A Disk Drive

The HP 7907A is a Command Set 80 (CS/80) device containing a 20.5 Mbyte fixed disk and a 20.5 Mbyte removable cartridge disk. It connects to your computer via the "optional" built-in high-speed HP-IB interface or a high-speed HP-IB disk interface card.

-
- Note**
- The HP 7907A disk drive is not supported as a system disk and can only be used for secondary "mounted volumes" or LIF utility volumes.
 - Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.
-

Additional information can be found in the *HP 7907A Owner's Manual*, HP part number 07907-90901.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Connecting the HP 7907A Disk Drive

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

HP 7907A Disk Drive

3. Set the HP-IB bus address.

Note

You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- Find the set of four switches labeled "HP-IB ADDRESS" on the back of the disk drive.
- Set the HP-IB bus address according to Table 7-8. An example of setting the HP-IB bus address to 2 is illustrated in Figure 7-14.

Table 7-8. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3	Switch 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1

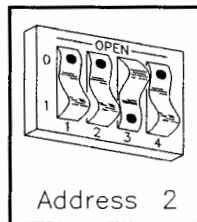


Figure 7-14. Address 2

4. *Connect the HP 7907A to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the HP 7907A. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-15. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-16.

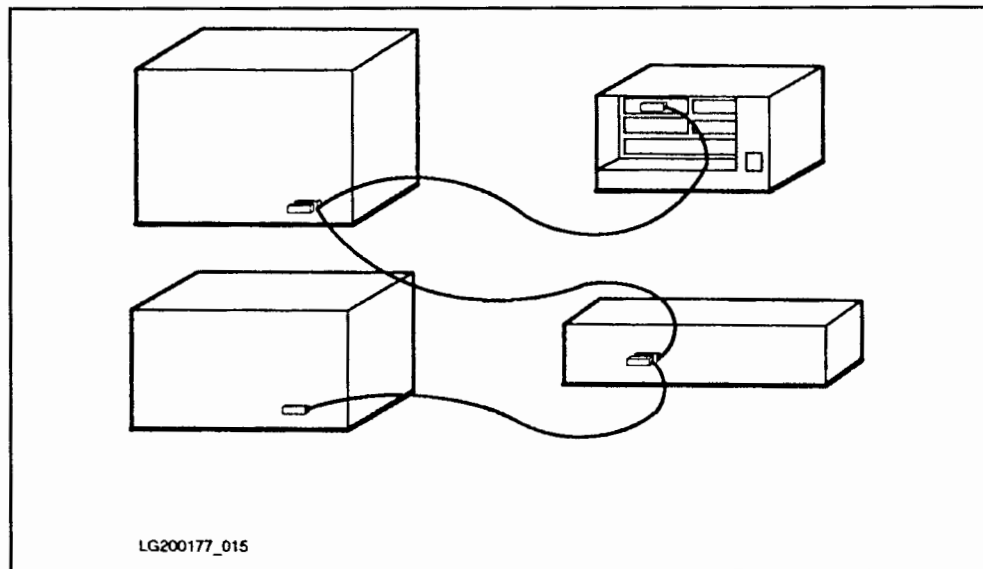
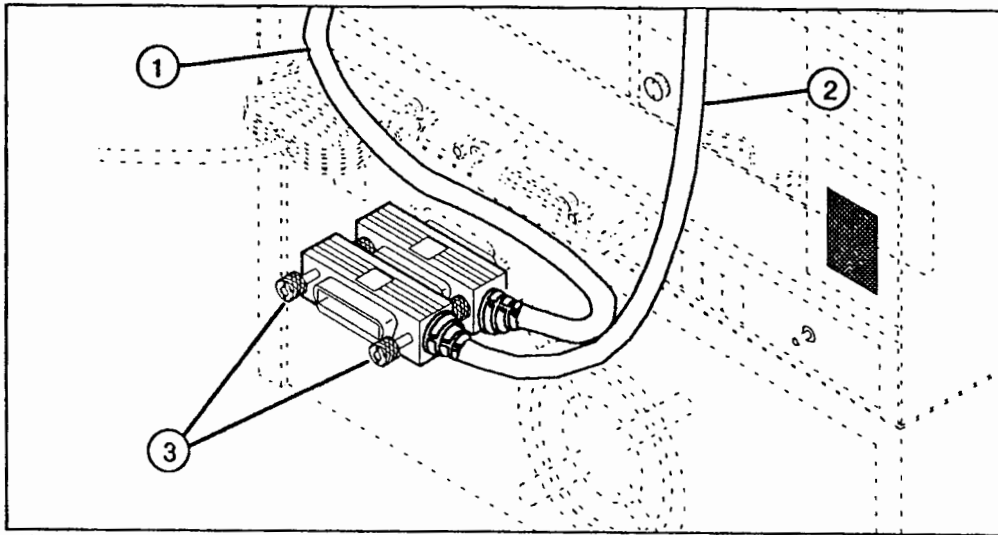


Figure 7-15. Daisy-Chained HP-IB Devices

HP 7907A Disk Drive



LG200177_008

Figure 7-16. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7907A.
- ③ Thumb screws to be tightened.

5. *Ensure all power switches are in the OFF position.*

6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP 7907A Disk Drive

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-9. HP 7907A

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7907A - Fixed Disk	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7907A - Fixed Disk	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 7907A - Removable Disk	/dev/dsk/#s0	b	0	cs80	0x0e0n10	1	14
HP 7907A - Removable Disk	/dev/rdisk/#s0	c	4	cs80	0x0e0n10	1	14
HP 7907A - Fixed Disk	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 7907A - Fixed Disk	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7
HP 7907A - Removable Disk	/dev/dsk/#s0	b	0	cs80	0x070n10	1	7
HP 7907A - Removable Disk	/dev/rdisk/#s0	c	4	cs80	0x070n10	1	7

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed).

Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 7911P/R, 7912P/R, and 7914P/R/CT Disk and Tape Drives

These disk and tape drives are Command Set 80 (CS/80) devices. These disks connect to your computer via the “optional” built-in, high-speed HP-IB or the high-speed HP-IB disk interface card.

- The HP7911P/R is a 28.1 Mbyte disk with cartridge tape drive.
- The 7912P/R is a 65.6 Mbyte disk with cartridge tape drive.
- The 7914P/R is a 132 Mbyte disk with cartridge tape.
- The 7914CT is a 7914R disk drive and a 9144A cartridge tape drive in a 92211R cabinet.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the *HP 7911, 7912, and 7914 Disc/Tape Drives Operating and Installation Manual*, HP part number 07912-90902.

Note The HP 7911P/R disk with tape drive is not supported as a system disk and can only be used for secondary “mounted volumes” or LIF utility volumes.

7

Connecting the HP 7911/7912/7914 Disk/Tape Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

Caution Do not attempt to operate the unit until it is moved to the installation site and the spindle and actuator are unlocked. Do not apply any sudden mechanical shocks to the unit.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your disk interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in “optional” secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the “optional” secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. *Set the disk HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

If you have a dual controller you must allocate two HP-IB addresses. Setting the tape drive HP-IB address is described in step 6. If you do not have a dual controller, the tape is accessed through the same HP-IB connector as the disk.

- a. Find the set of three switches labeled “HP-IB DISC” on the back of the disk drive.
- b. Set the HP-IB bus address according to Table 7-10. Note that S1 (Switch 1) is the LSB (Least Significant Bit). An example of setting the HP-IB bus address to 3 is illustrated in Figure 7-17.

**HP 7911P/R,7912P/R,7914P/R/CT
Disk/Tape Drives**

Table 7-10. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3
0	0	0	0
1	1	0	0
2	0	1	0
3	1	1	0
4	0	0	1
5	1	0	1
6	0	1	1
7	1	1	1

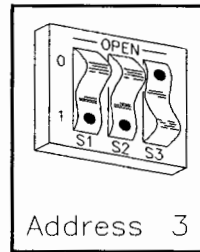


Figure 7-17. Address 3

4. *Connect the disk to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk/tape drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket to the right of the "HP-IB DISC" address switches. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-18. A close-up of the "piggy-backed" HP-IB connectors on the last device on the chain is provided in Figure 7-19.

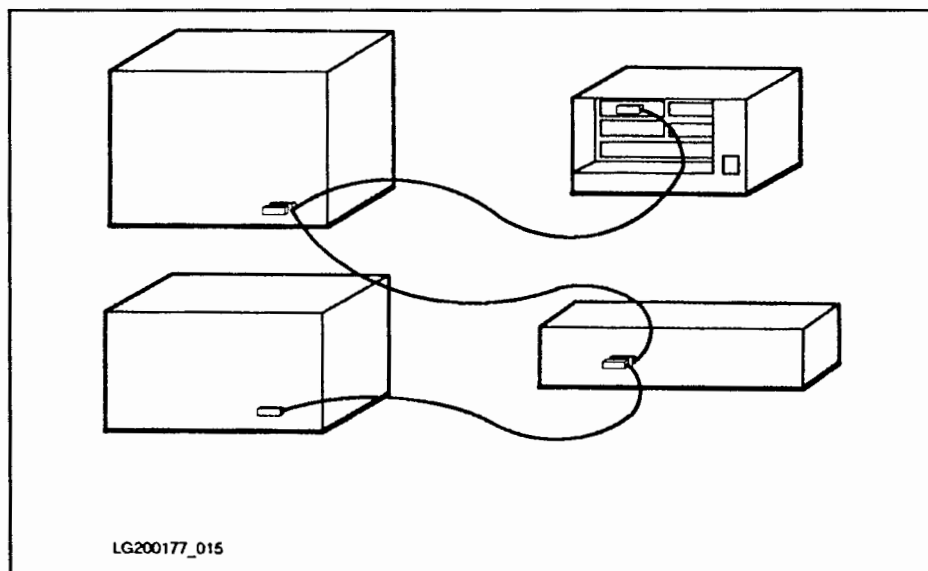
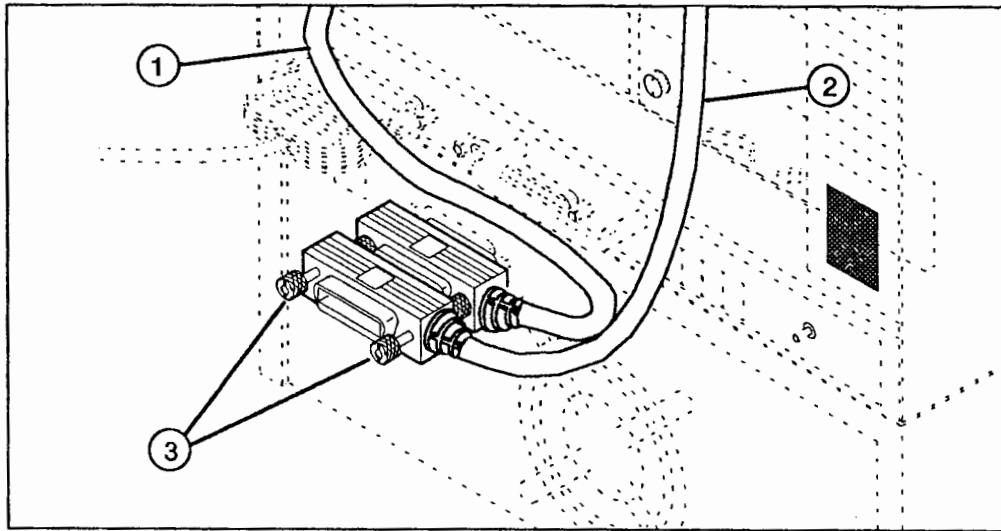


Figure 7-18. Daisy-Chained HP-IB Devices

**HP 7911P/R,7912P/R,7914P/R/CT
Disk/Tape Drives**



LG200177_006

Figure 7-19. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7911/12/14.
- ③ Thumb screws to be tightened.

Note Complete steps 5, 6, and 7 only if you have a dual controller. If you do not have a dual controller, skip to step 8.

5. *Select the tape interface. (Dual Controller Only).*

Note Tape drives should not be installed on the same interface as the root device (main disk drive).

- If you selected the HP 98625B HP-IB Disk Interface or HP 98625A HP-IB Disk Interface for your disk, use the built-in HP-IB Interface for your tape.
- If you selected the built-in HP-IB interface for your disk, use an HP 98624A HP-IB Interface for your tape (if available).
- Otherwise, use your built-in HP-IB interface for both disk and tape.

6. *Set the tape HP-IB bus address (Dual Controller Only).*

- a. Find the set of three switches labeled “HP-IB TAPE” on the back of the disk drive.
- b. Set the HP-IB tape address, making sure that you do not set it to the same address you just set the HP 7911/12/14 disk drive to in the previous step if you are connecting them to the same interface. Set the tape HP-IB bus address value according to Table 7-10. An example of setting the tape HP-IB bus address to 0 is illustrated in Figure 7-20.

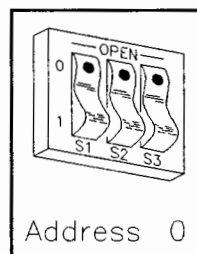


Figure 7-20. Address 0

HP 7911P/R,7912P/R,7914P/R/CT
Disk/Tape Drives

7. *Connect the tape to your computer (Dual Controller Only).*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the additional HP-IB cable provided with the disk/tape drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket to the right of the "HP-IB TAPE" address switches. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-18.

8. *Ensure all power switches are in the OFF position.*

9. *Connect the power cord.*

- a. Check the power switch. Ensure that it is in the off position.
- b. Connect the female end of the power cord to the "AC LINE" socket on the back of the disk drive, and connect the other end to your power outlet.
- c. Position the drive in its operating location and lower the leveling feet until the casters carry no weight. Ensure that there is at least three inches of clearance behind the drive.

10. *Record the HP-IB bus addresses.*

Make a note that the HP-IB bus addresses you selected for the disk and tape (for dual controller) have been used and are no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

11. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions for the disk drive. Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions for the tape drive.

**HP 7911P/R,7912P/R,7914P/R/CT
Disk/Tape Drives**

Table 7-11. HP 7911/12/14

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7911/12/14 - Disk	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7911/12/14 - Disk	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 7911/12/14 - Tape ³	/dev/ct/#s0	b	0	cs80	0x0e0n10	1	14
HP 7911/12/14 - Tape ³	/dev/rct/#s0	c	4	cs80	0x0e0n10	1	14
HP 7911/12/14 - Disk	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 7911/12/14 - Disk	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7
HP 7911/12/14 - Tape ³	/dev/ct/#s0	b	0	cs80	0x070n10	1	7
HP 7911/12/14 - Tape ³	/dev/rct/#s0	c	4	cs80	0x070n10	1	7
HP 7911/12/14 - Tape ⁴	/dev/ct/#s0	b	0	cs80	0x070n00	1	7
HP 7911/12/14 - Tape ⁴	/dev/rct/#s0	c	4	cs80	0x070n00	1	7
HP 7911/12/14 - Tape ⁴	/dev/ct/#s0	b	0	cs80	0x080n00	1	8
HP 7911/12/14 - Tape ⁴	/dev/rct/#s0	c	4	cs80	0x080n00	1	8

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

3 Single tape controller

4 Dual tape controller

HP 7933H/7935H Disk Drives

These disk drives are Command Set 80 (CS/80) devices. These disk drives connect your computer via the built-in, high-speed HP-IB interface or the high-speed HP-IB disk interface card.

The HP 7933H is a 404 Mbyte fixed disk.

The 7935H is a 404 Mbyte removable disk.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information about the HP 7933H/35H can be found in the following documents:

HP 7933 Disc Drive Operator Instructions,
HP part number 07930-90901

HP 7933 Disc Drive Operating and Installation Manual,
HP part number 07930-90902

HP 7935 Disc Drive Operator Instructions,
HP part number 07935-90901

HP 7935 Disc Drive Operating and Installation Manual,
HP part number 07935-90902

7

Connecting the HP 7933H/7935H Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

Caution Do not attempt to operate the unit until it is moved to the installation site and the spindle and actuator are unlocked.

Do not apply any sudden mechanical shocks to the unit.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. Set the HP-IB bus address.

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the set of three switches labeled “HP-IB PRIMARY PORT” on the back of the disk drive.
- b. Set the HP-IB bus address according to Table 7-12. An example of setting the HP-IB bus address to 2 is illustrated in Figure 7-21.

Table 7-12. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

7

HP 7933H and 7935H Disk Drives

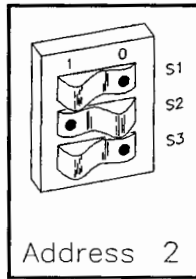


Figure 7-21. Address 2

4. *Connect the disk to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-22. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-23.

HP 7933H and 7935H Disk Drives

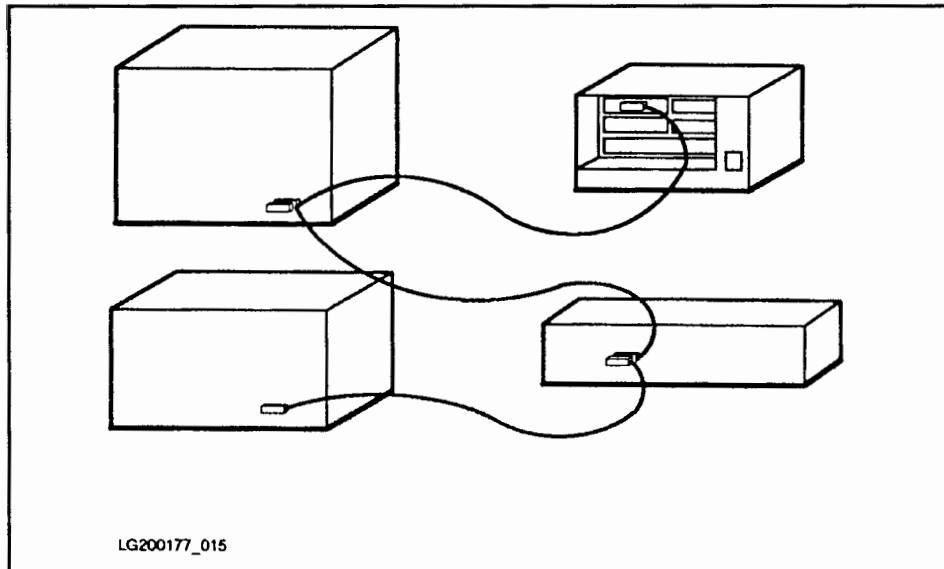
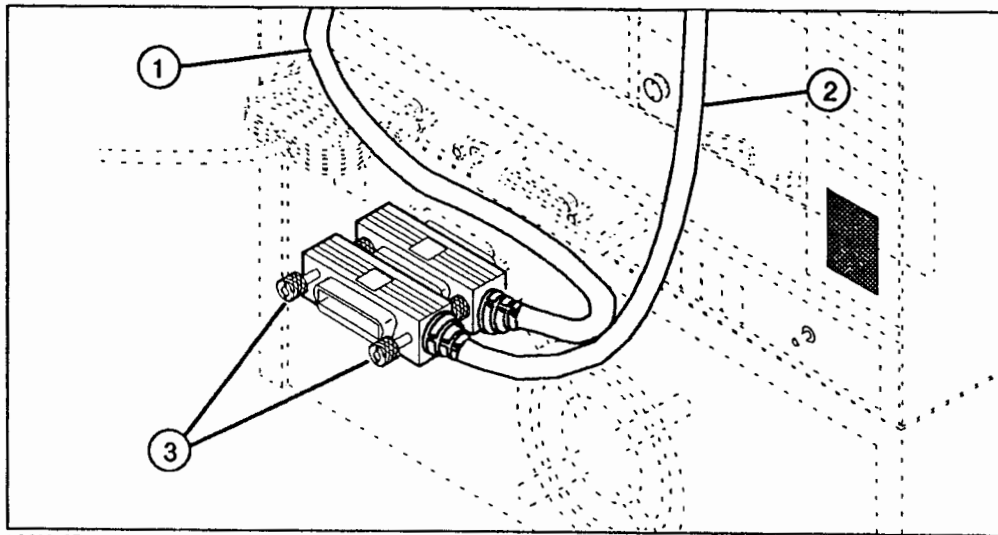


Figure 7-22. Daisy-Chained HP-IB Devices

HP 7933H and 7935H Disk Drives



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Figure 7-23. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7933H/7935H.
- ③ Thumb screws to be tightened.

HP 7933H and 7935H Disk Drives

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP 7933H and 7935H Disk Drives

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-13. HP 7933H/35H

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7933/35	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7933/35	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 7933/35	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 7933/35	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 7936H/7937H Disk Drives

These disk drives are Command Set (CS/80) devices. The HP 7936H is a 308 Mbyte fixed disk and the 7937H is a 571 Mbyte fixed disk.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the *HP 7936 and HP 7937 Disc Drives Operating and Installation Manual*, HP part number 07937-90902.



Connecting the HP 7936H/7937H Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

Caution Do not attempt to operate the unit until it is moved to the installation site and the spindle and actuator are unlocked.

Do not apply any sudden mechanical shocks to the unit.

1. *Play it safe.*

- a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
- b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. Set the HP-IB bus address.

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the set of four switches in the upper-left corner on the back of the disk drive.
- b. Set the HP-IB bus address according to Table 7-14. An example of setting the HP-IB bus address to 2 is illustrated in Figure 7-24.

Table 7-14. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3	Switch 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1

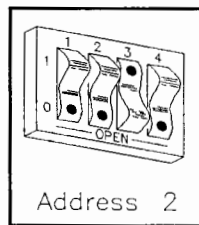


Figure 7-24. Address 2

7

HP 7936H/7937H Disk Drives

4. Connect the disk drive your computer.

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

HP 10833A 1.0 meter HP-IB cable
HP 10833B 2.0 meter HP-IB cable
HP 10833C 4.0 meter HP-IB cable
HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-25. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-26.

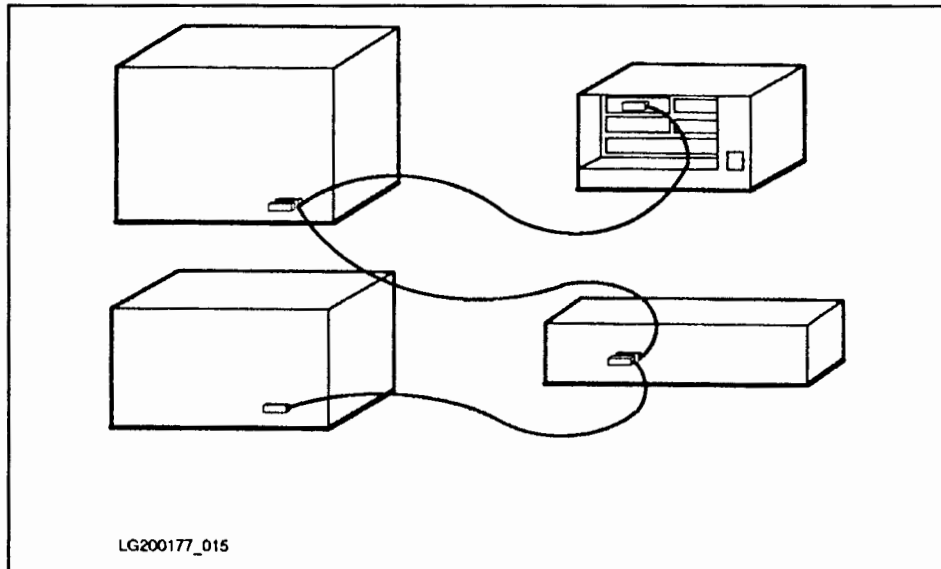
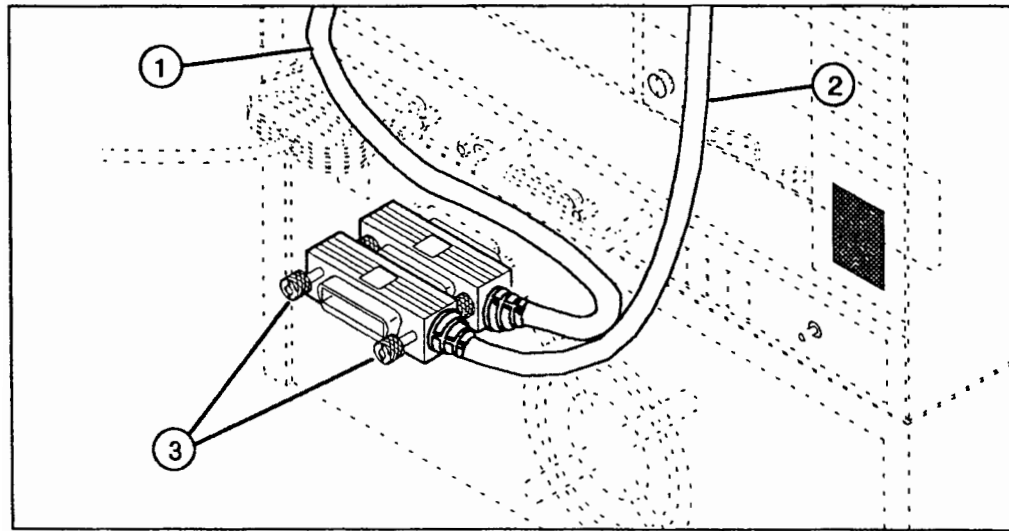


Figure 7-25. Daisy-Chained HP-IB Devices



LG200177_008

Figure 7-26. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7936H/7937H.
- ③ Thumb screws to be tightened.

HP 7936H/7937H Disk Drives

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-15. HP 7936H/37H

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7936/37H	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7936/37H	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 7941A, 7942A, 7945A, 7946A Disk and Disk/Tape Drives

The HP 7941A and HP 7945A are Command Set 80 (CS/80) disks. These disk drives connect to your computer via the built-in high-speed HP-IB or the high-speed HP-IB disk interface card.

The HP 7941 is a 23.8 Mbyte disk.

The HP 7945A is a 55.5 Mbyte disk.

The HP 7942A and HP 7946A products contain a 9144A cartridge tape drive in addition to the HP 7941A and HP 7945A disk drives respectively.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the following documents:

HP 7941 and 7945 Disc Drives Owner's Manual,
HP part number 07940-90901

HP 7942 and 7946 Disc/Tape Drives Owner's Manual,
HP part number 07942-90901

Note The HP 7941A and 7942A disk drives are not supported as system disks and can only be used for secondary "mounted volumes" or LIF utility volumes.

Connecting the HP 7941A, 7942A, 7945A, 7946A Disk and Disk/Tape Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

HP 7941A, 7942A, 7945A, 7946A
Disk and Disk/Tape Drives

3. *Set the HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the set of four switches labeled "ADDRESS" on the back of the disk drive.
- b. Set the HP-IB bus address according to Table 7-16. An example of setting the HP-IB bus address to 3 is illustrated in Figure 7-27.

Table 7-16. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3	Switch 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1

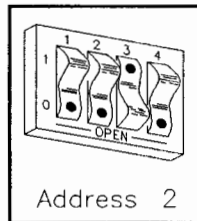


Figure 7-27. Address 2

4. *Connect the disk drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-28. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-29.

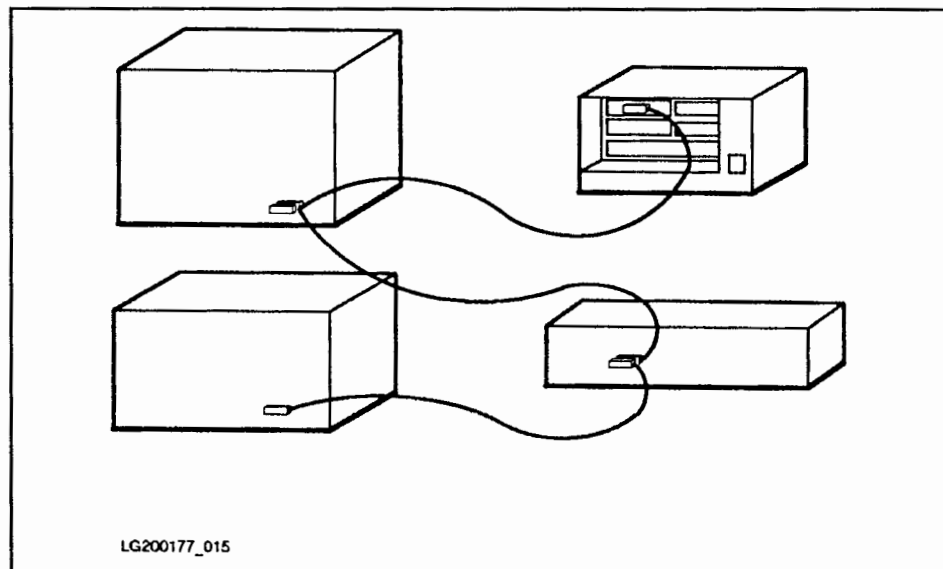
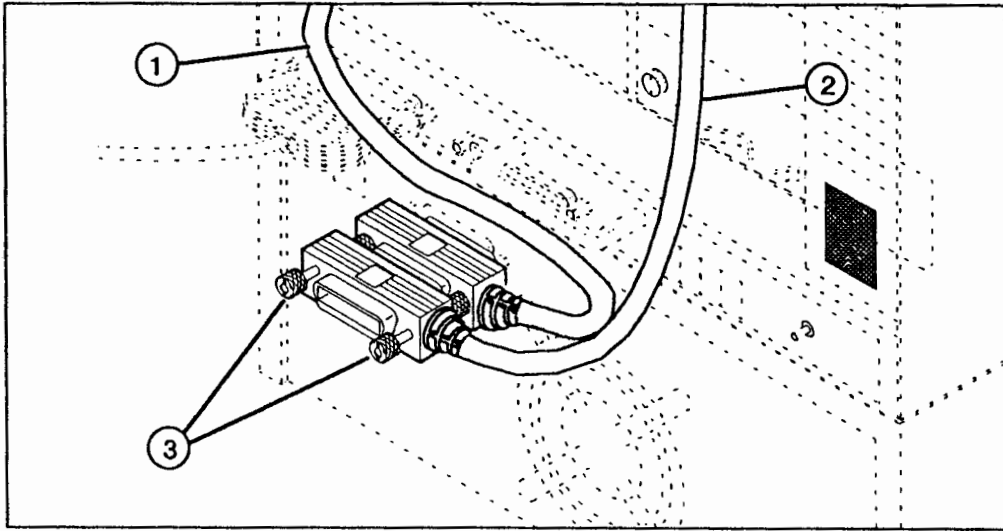


Figure 7-28. Daisy-Chained HP-IB Devices

HP 7941A, 7942A, 7945A, 7946A
Disk and Disk/Tape Drives



LG200177_008

Figure 7-29. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7941/42/45/46.
- ③ Thumb screws to be tightened.

5. *Ensure all power switches are in the OFF position.*

6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP 7941A, 7942A, 7945A, 7946A
Disk and Disk/Tape Drives

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support tape drive set up.

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for disk software configuration instructions.

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for tape software configuration instructions.

Table 7-17. HP 7941A/42A/45A/46A Disk and Disk/Tape

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7941/42/45/46 - Disk	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7941/42/45/46 - Disk	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 7942/46 - Tape	/dev/ct/#s0	b	0	cs80	0x0e0n10	1	14
HP 7942/46 - Tape	/dev/rct/#s0	c	4	cs80	0x0e0n10	1	14
HP 7941/42/45/46 - Disk	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 7941/42/45/46 - Disk	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7
HP 7942/46 - Tape	/dev/ct/#s0	b	0	cs80	0x070n10	1	7
HP 7942/46 - Tape	/dev/rct/#s0	c	4	cs80	0x070n10	1	7

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

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HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

These disk drives are Command Set (CS/80) devices. They connect to your computer via the built-in, high-speed HP-IB interface or the high-speed HP-IB disk interface card.

The HP 7957A has a capacity of 80 Mbytes.

The HP 7957B has a capacity of 80 Mbytes.

The HP 7958A has a capacity of 131 Mbytes.

The HP 7958B has a capacity of 152 Mbytes.

The HP 7959B has a capacity of 304 Mbytes.

The HP 7962B has a capacity of 152 Mbytes.

The HP 7963B has a capacity of 304 Mbytes.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the following documents:

HP 7957A and HP 7958A Disc Drives Owner's Manual,
HP part number 07957-90901.

HP 7957B, 7958B, and 7959B Disc Drives Owner's Manual,
HP part number 07959-90901

HP 7961B, 7962B, and 7963B Disc Drives Owner's Manual,
HP part number 07961-90901

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HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

Connecting the HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

3. Set the HP-IB bus address.

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the address wheel labeled "ADDRESS" in the upper-left corner on the back of the HP 7957A/B,7958A/B, or 7959B/62B/63B disk drive.
- b. Turn the wheel until the address you have selected appears.

Caution For the HP 7957B/58B/59B/62B/63B disk drives positions 8 and 9 on the ADDRESS wheel are for use by service personnel only. If the drive is powered on with 8 or 9 selected, possible loss of data can occur.

4. Connect the disk drive to your computer.

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

HP 10833A 1.0 meter HP-IB cable
HP 10833B 2.0 meter HP-IB cable
HP 10833C 4.0 meter HP-IB cable
HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-30. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-31.

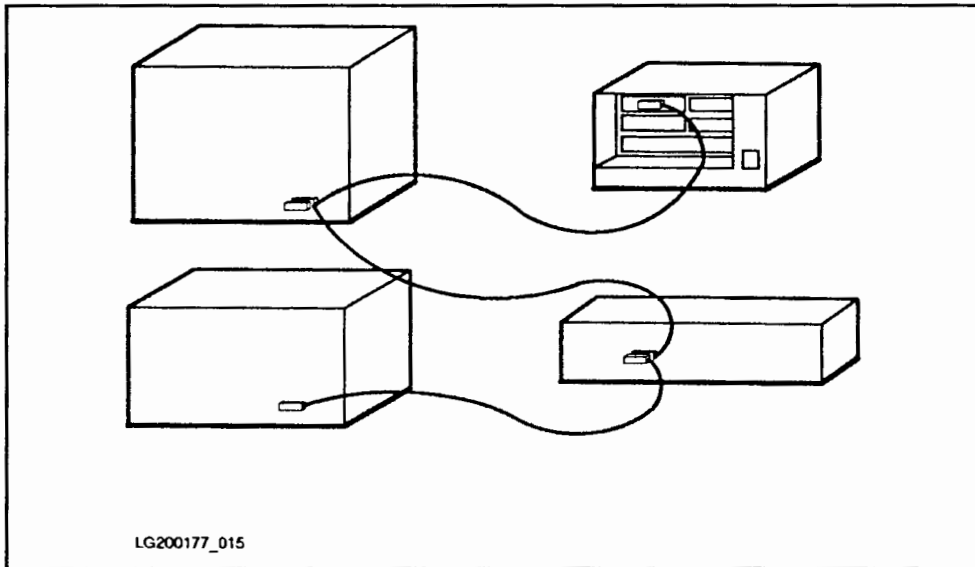
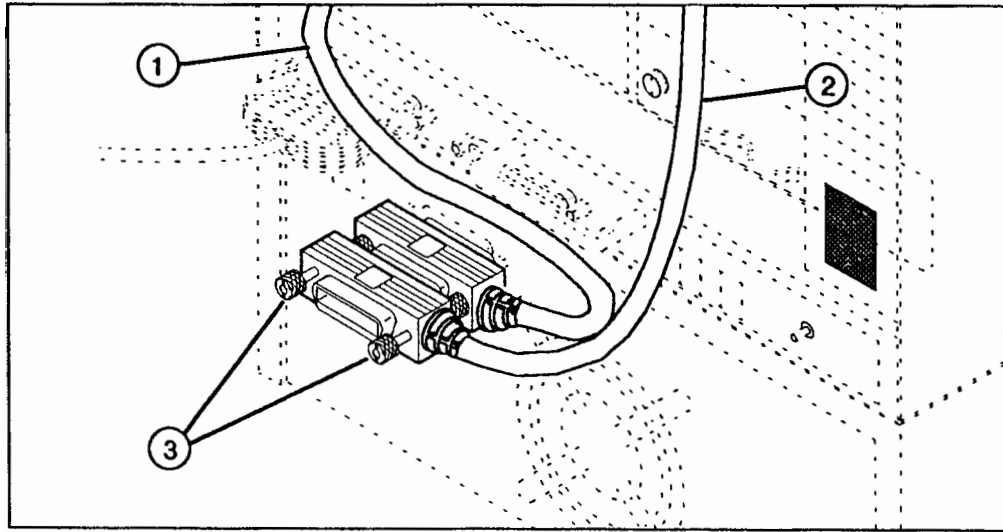


Figure 7-30. Daisy-Chained HP-IB Devices

HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives



LG200177_008

Figure 7-31. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7957A/B,7958A/B or 7959B/62B/63B.
- ③ Thumb screws to be tightened.

HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

5. *Ensure all power switches are in the OFF position.*

6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-18. HP 7957A/58A

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7957A/7958A	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7957A/7958A	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 7957A/7958A	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 7957A/7958A	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 7957A/B,7958A/B, and 7959B/62B/63B Disk Drives

Table 7-19. HP 7957B/58B/59B or HP 7962B/63B

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7957/58/59B or HP 7962/63B	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 7957/58/59B or HP 7962/63B	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 7957/58/59B or HP 7962/63B	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 7957/58/59B or HP 7962/63B	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 7957/58/59S SCSI Disk Drives

These disk drives are Small Computer Systems Interface (SCSI) devices. They connect to your computer via the built-in SCSI interface or SCSI interface card.

The HP 7957S has a capacity of 107 Mbytes.

The HP 7958S has a capacity of 161 Mbytes.

The HP 7959S has a capacity of 323 Mbytes.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Additional information can be found in the *HP 7957S, 7958S, and 7959S Disc Drives Owner's Manual*, HP part number 07959-90911.

Connecting the HP 7957/58/59S SCSI Disk Drives

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.* Select one of the following SCSI interfaces:
 - Built-in SCSI interface
 - HP 98658A SCSI interface card
 - HP 98265A SCSI interface daughter card

3. *Set the SCSI bus address.*

Note You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system's SCSI controller uses address 7.

- a. Find the address switches labeled "ADDRESS" in the upper-left corner on the back of the disk drive.
- b. Set the SCSI bus address by pressing the buttons labeled "+" and "-" until the desired address appears in the address indicator window.

Note Setting the SCSI bus address to 8 or 9 selects the bus addresses 0 or 1 respectively.

HP 7957/58/59S SCSI Disk Drives

4. Connect the disk drive to your computer.

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

Table 7-20. SCSI Cable and Terminator Matrix

↕ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

1 HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

2 Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

3 Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

4 Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The HP 7957/58/59S SCSI disk drives have internal bus lengths of 0.3 meters.

- a. Attach one end of the SCSI cable to one of the two connectors on the disk drive (it does not matter which one). Press completely in.
- b. Attach the end of the SCSI cable to the SCSI interface card.

HP 7957/58/59S SCSI Disk Drives

- c. Attach the terminator to the unoccupied connector on the disk. If you do not have a terminator, you will need to order one (HP part number 1252-2297).

If you have one or more devices attached to the SCSI interface as in Figure 7-32:

- i. Remove the terminator from the last device on the chain.
- ii. Attach one end of the new SCSI cable to the connector you removed the terminator from.

A close-up of the SCSI connectors on the previously last device on the chain is provided in Figure 7-33.

HP 7957/58/59S SCSI Disk Drives

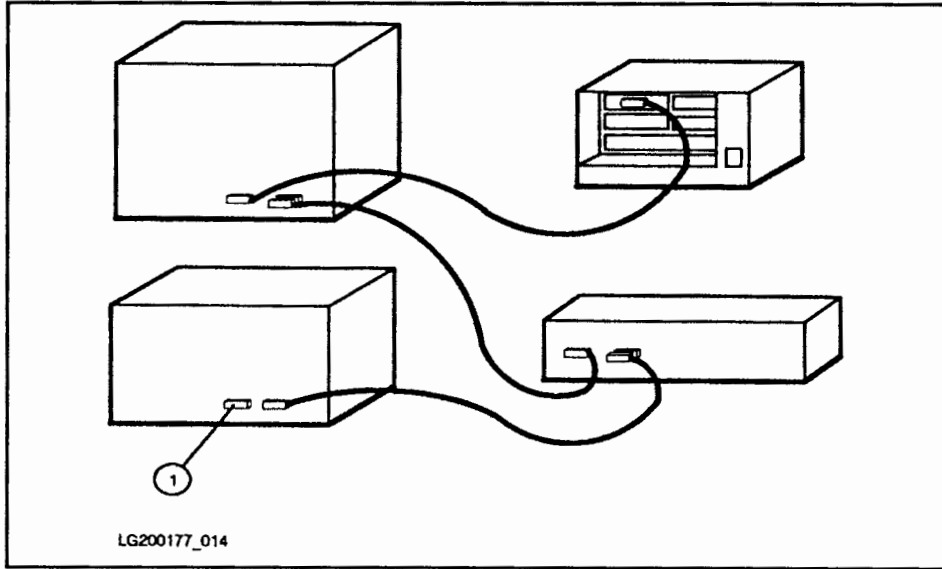
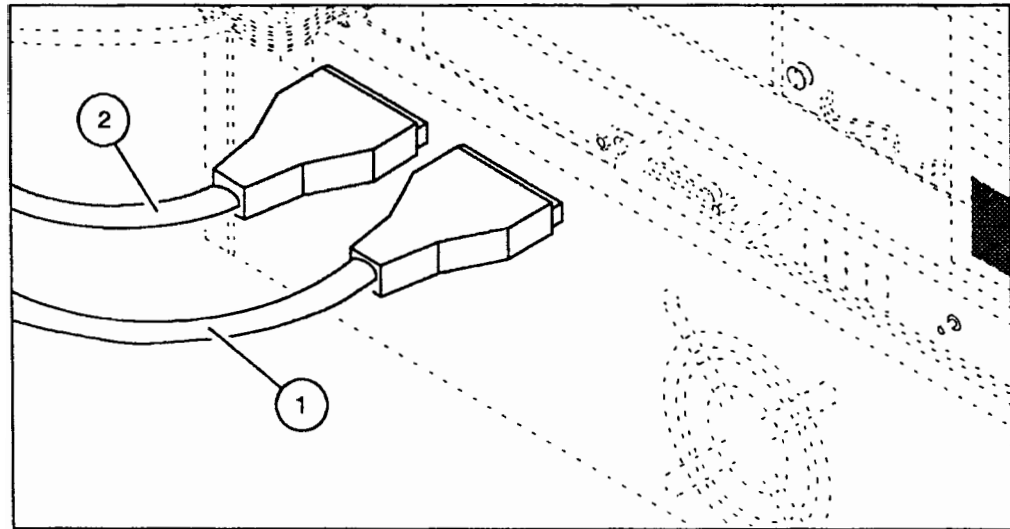


Figure 7-32. Daisy-Chained SCSI Devices

- ① Terminator

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LG200177_012

Figure 7-33. SCSI Connectors

- ① Cable to the interface or previous device.
 - ② Cable to the HP 7957/58/59S.
- d. Place the terminator (supplied with the SCSI interface card) on the other connector on the back of the disk drive. Press completely in.

HP 7957/58/59S SCSI Disk Drives

5. *Ensure all power switches are in the OFF position.*

6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the SCSI bus address.*

Make a note that the SCSI bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the power to the disk drive.*

Do NOT turn on the power to the computer before the disk drive.

9. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-21. HP 7957S/58S/59S

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7957/58/59S	/dev/dsk/#s0	b	7	scsi	0x0e0n00	1	14
HP 7957/58/59S	/dev/rdisk/#s0	c	47	scsi	0x0e0n00	1	14

- 1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).
- 2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

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HP 9121D/S Flexible Disk Drives

The HP 9121D/S records 270 Kbytes of data on a single-sided (low density) 3 1/2 inch disk.

The HP 9121S has a single disk drive, while the HP 9121D has two disk drives in the unit.

These disk drives connect to your computer via the built-in, standard-speed HP-IB interface or the standard-speed HP-IB disk interface card. The HP 9121 uses the amigo protocol.

Note

- The HP 9121D/S flexible disk drives are not supported as system disks and can only be used for secondary “mounted volumes” *or* LIF utility volumes.
- Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Connecting the HP 9121D/S Flexible Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following standard-speed HP-IB interfaces:

- HP 98624A standard-speed HP-IB interface card
- Built-in standard-speed HP-IB interface

HP 9121D/S Flexible Disk Drives

3. Set the HP-IB bus address.

Note

You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- Find the set of four switches labeled "ADDRESS" on the back of the disk drive.
- Set the HP-IB bus address according to Table 7-22. An example of setting the HP-IB bus address to 3 is illustrated in Figure 7-34.

Table 7-22. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3	Switch 4
0	1	0	0	0
1	1	0	0	1
2	1	0	1	0
3	1	0	1	1
4	1	1	0	0
5	1	1	0	1
6	1	1	1	0
7	1	1	1	1

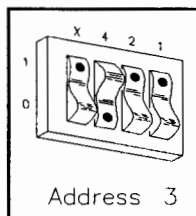


Figure 7-34. Address 3

4. *Connect the disk drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-35. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-36.

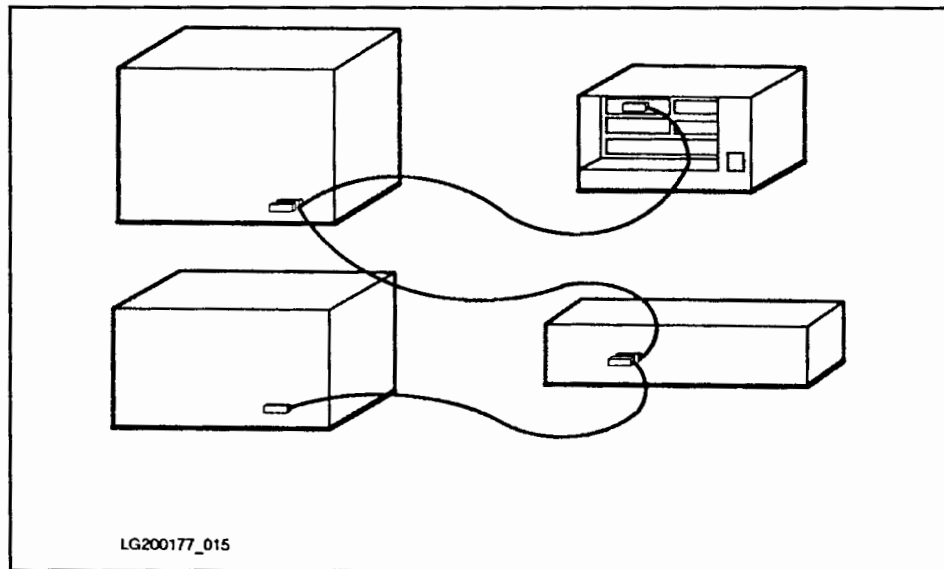
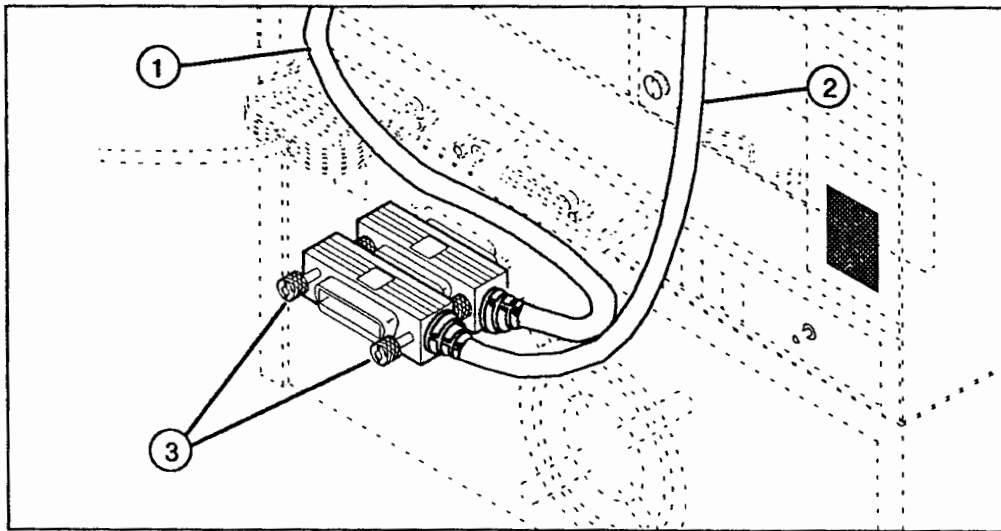


Figure 7-35. Daisy-Chained HP-IB Devices

HP 9121D/S Flexible Disk Drives



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Figure 7-36. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9121.
- ③ Thumb screws to be tightened.

HP 9121D/S Flexible Disk Drives

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP 9121D/S Flexible Disk Drives

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support 9121 disk drive set up.

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-23. HP 9121 and HP 9121D

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9121 - Left	/dev/dsk/#s0	b	2	amigo	0x070n00	2	7
HP 9121 - Left	/dev/rdisk/#s0	c	11	amigo	0x070n00	2	7
HP 9121D - Right	/dev/dsk/#s0	b	2	amigo	0x070n10	2	7
HP 9121D - Right	/dev/rdisk/#s0	c	11	amigo	0x070n10	2	7
HP 9121 - Left	/dev/dsk/#s0	b	2	amigo	0x080n00	2	8
HP 9121 - Left	/dev/rdisk/#s0	c	11	amigo	0x080n00	2	8
HP 9121D - Right	/dev/dsk/#s0	b	2	amigo	0x080n10	2	8
HP 9121D - Right	/dev/rdisk/#s0	c	11	amigo	0x080n10	2	8

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 9122D/S/C Flexible Disk Drives

HP 9122D/S records 630 Kbytes of data on double-sided (high density) or 315 Kbytes of data on single-sided (low density) 3 1/2 inch disks.

The 9122S has a single disk drive, while the HP 9122D has two disk drives in the unit.

The HP 9122C records 2 Mbytes of data unformatted and 1.4 Mbytes formatted on double-sided (high density) 3 1/2 inch disks. The HP 9122C unit is available with one or two disk drives per unit.

These disk drives connect to your computer via the built-in, standard-speed HP-IB interface or the standard-speed HP-IB disk interface card. The HP 9122 uses the Command Set 80 (CS-80) protocol.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the *Getting Started with Your HP 9122D/S Disc Drive* (Manual kit), HP part number 09122-90099.

Note The HP 9122D/S/C flexible disk drives are not supported as system disks and can only be used for secondary "mounted volumes" or LIF utility volumes.

Connecting the HP 9122D/S/C Flexible Disk Drives

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.* Select one of the following standard-speed HP-IB interfaces:
 - HP 98624A standard-speed HP-IB interface card
 - Built-in standard-speed HP-IB interface

3. Set the HP-IB bus address.

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the set of four switches labeled "ADDRESS" on the back of the disk drive.
- b. Set the HP-IB bus address according to Table 7-24. An example of setting the HP-IB bus address to 3 is illustrated in Figure 7-37.

Table 7-24. HP-IB Address Settings

HP-IB Bus Address	Switch X	Switch 4	Switch 2	Switch 1
0	1	0	0	0
1	1	0	0	1
2	1	0	1	0
3	1	0	1	1
4	1	1	0	0
5	1	1	0	1
6	1	1	1	0
7	1	1	1	1

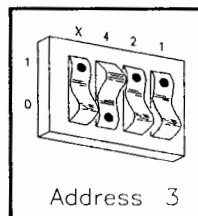


Figure 7-37. Address 3

**HP 9122D/S/C
Flexible Disk Drives**

4. *Connect the disk drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-38. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-39.

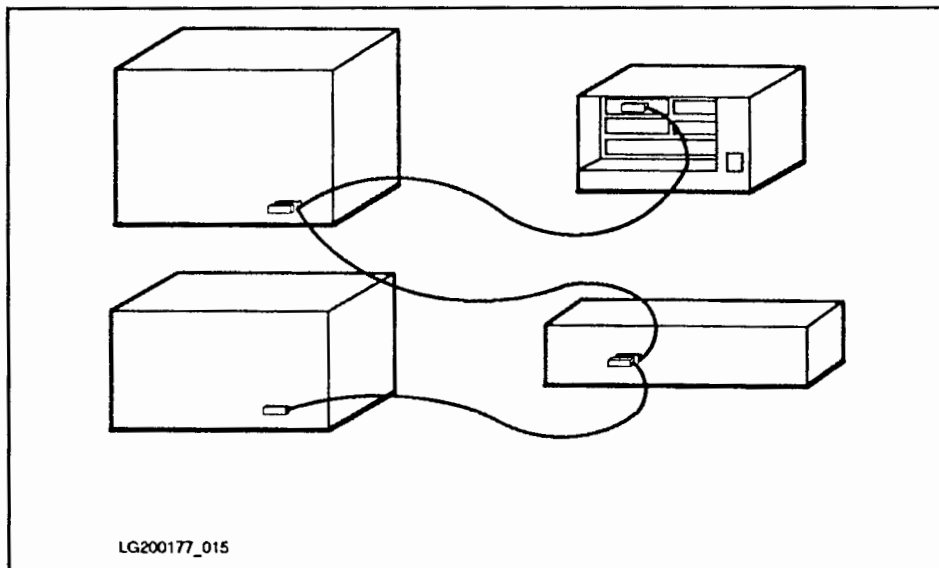
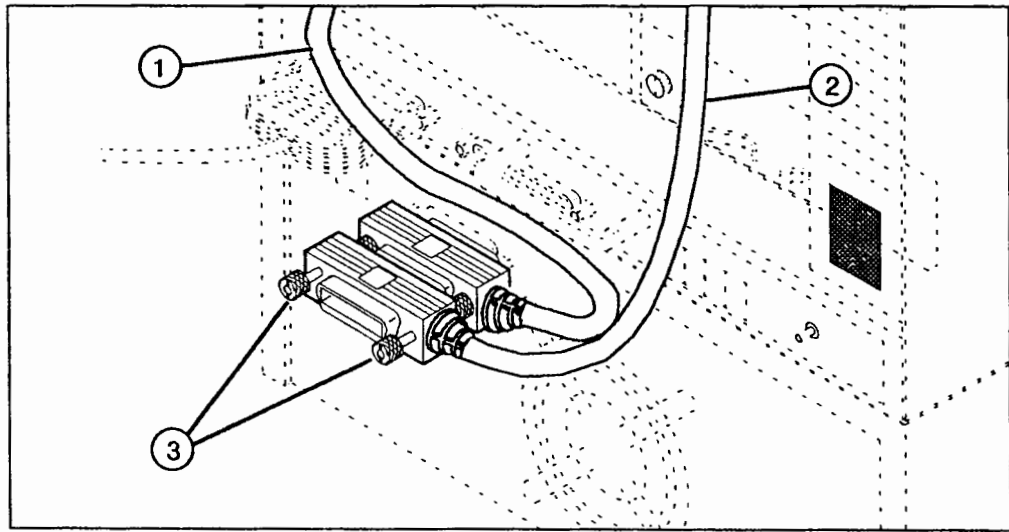


Figure 7-38. Daisy-Chained HP-IB Devices



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Figure 7-39. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9122.
- ③ Thumb screws to be tightened.

**HP 9122D/S/C
Flexible Disk Drives**

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

Note SAM does not support 9122D/S/C disk drive set up.

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-25. HP 9122 and HP 9122D

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9122 - Left	/dev/dsk/#s0	b	0	cs80	0x070n00	2	7
HP 9122 - Left	/dev/rdisk/#s0	c	4	cs80	0x070n00	2	7
HP 9122D - Right	/dev/dsk/#s0	b	0	cs80	0x070n10	2	7
HP 9122D - Right	/dev/rdisk/#s0	c	4	cs80	0x070n10	2	7
HP 9122 - Left	/dev/dsk/#s0	b	0	cs80	0x080n00	2	8
HP 9122 - Left	/dev/rdisk/#s0	c	4	cs80	0x080n00	2	8
HP 9122D - Right	/dev/dsk/#s0	b	0	cs80	0x080n10	2	8
HP 9122D - Right	/dev/rdisk/#s0	c	4	cs80	0x080n10	2	8

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

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HP 9125S Flexible Disk Drive

The HP 9125S is a single 5 1/4 inch flexible disk drive and has a capacity of 270 Kbytes.

This disk drive connects to your computer via the built-in, standard-speed HP-IB or the standard-speed, HP-IB disk interface card.

Note

- The HP 9125S flexible disk drive is not supported as system disks and can only be used for secondary "mounted volumes" or LIF utility volumes.
- Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Connecting the HP 9125S Flexible Disk Drive

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 2. *Select your interface.*

Select one of the following standard-speed HP-IB interfaces:

 - HP 98624A standard-speed HP-IB interface card
 - Built-in standard-speed HP-IB interface
 3. *Set the HP-IB bus address.*
-

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the HP-IB bus address wheel labeled "ADDRESS" on the back of the disk drive.
- b. Set the HP-IB bus "ADDRESS" wheel to an available unused bus address.

HP 9125S Flexible Disk Drive

4. *Connect the disk drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

HP 10833A 1.0 meter HP-IB cable
HP 10833B 2.0 meter HP-IB cable
HP 10833C 4.0 meter HP-IB cable
HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-40 . A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-41.

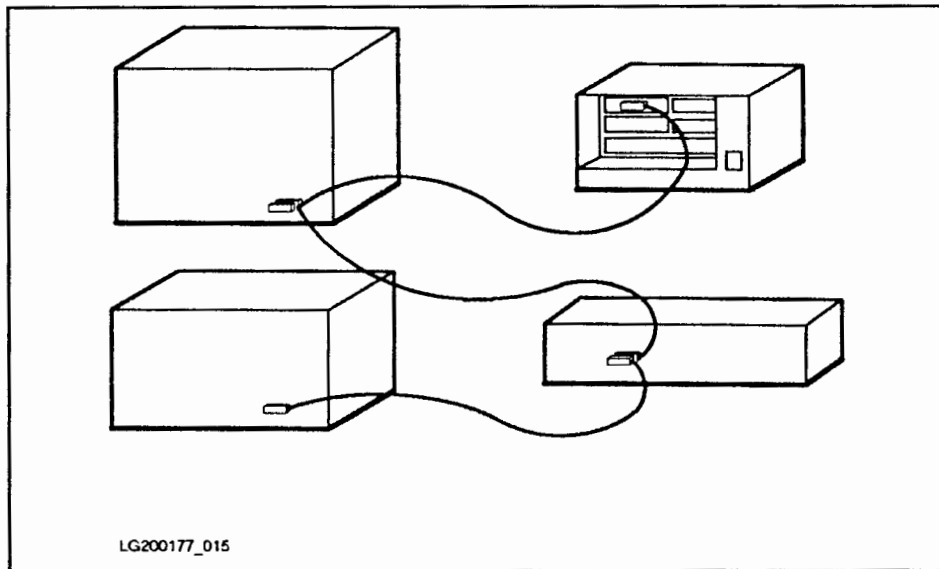
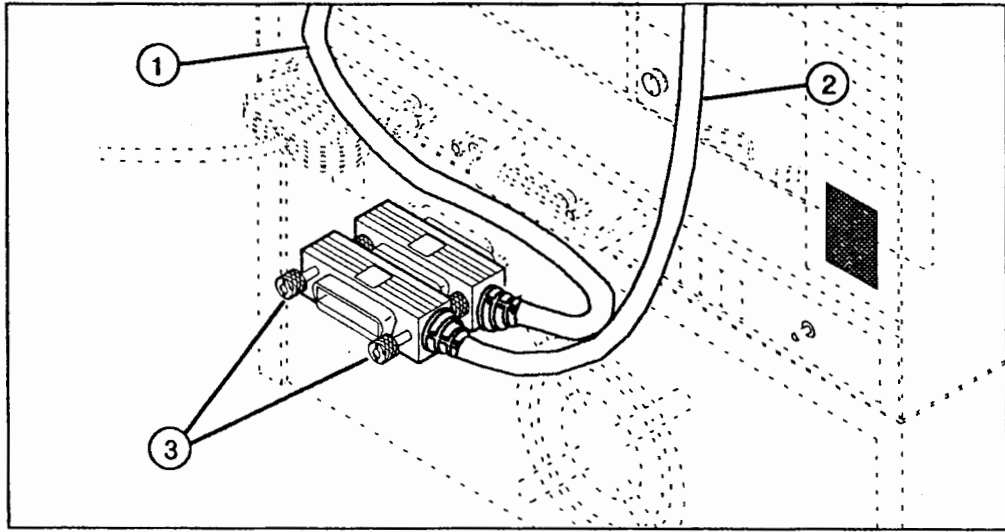


Figure 7-40. Daisy-Chained HP-IB Devices



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Figure 7-41. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9125S.
- ③ Thumb screws to be tightened.

7

HP 9125S Flexible Disk Drive

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support 9125 disk drive set up.

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-26. HP 9125S

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9125S	/dev/dsk/#s0	b	0	cs80	0x070n00	2	7
HP 9125S	/dev/rdisk/#s0	c	4	cs80	0x070n00	2	7
HP 9125S	/dev/dsk/#s0	b	0	cs80	0x080n00	2	8
HP 9125S	/dev/rdisk/#s0	c	4	cs80	0x080n00	2	8

- 1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).
- 2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.



HP 9127A Flexible Disk Drive

The 9127A is single 5 1/4 inch flexible disk drive and has a capacity of 270 Kbytes.

This disk drive connects to your computer via the built-in, standard-speed HP-IB or the standard-speed, HP-IB disk interface card.

Note

- The HP 9127A flexible disk drive is not supported as a system disk and can only be used for secondary “mounted volumes” or LIF utility volumes.
- Refer to the “HP-IB Device Guidelines” section in Chapter 1: “Introduction” before connecting this device to your system.

Refer to Appendix C: “Series 400 Support Matrix” for Series 400 hardware and software support information.

Additional information can be found in the *Getting Started with Your HP 9127A Disc Drive* (Manual kit), HP part number 09127-90099.

Connecting the HP 9127A Flexible Disk Drive

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.* Select one of the following standard-speed HP-IB interfaces:
 - HP 98624A standard-speed HP-IB interface card
 - Built-in standard-speed HP-IB interface
3. *Set the HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the HP-IB bus address wheel labeled "ADDRESS" on the back of the disk drive.
- b. Set the HP-IB bus "ADDRESS" wheel to an available unused bus address.

HP 9127A Flexible Disk Drive

4. Connect the disk drive to your computer.

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-42. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-43.

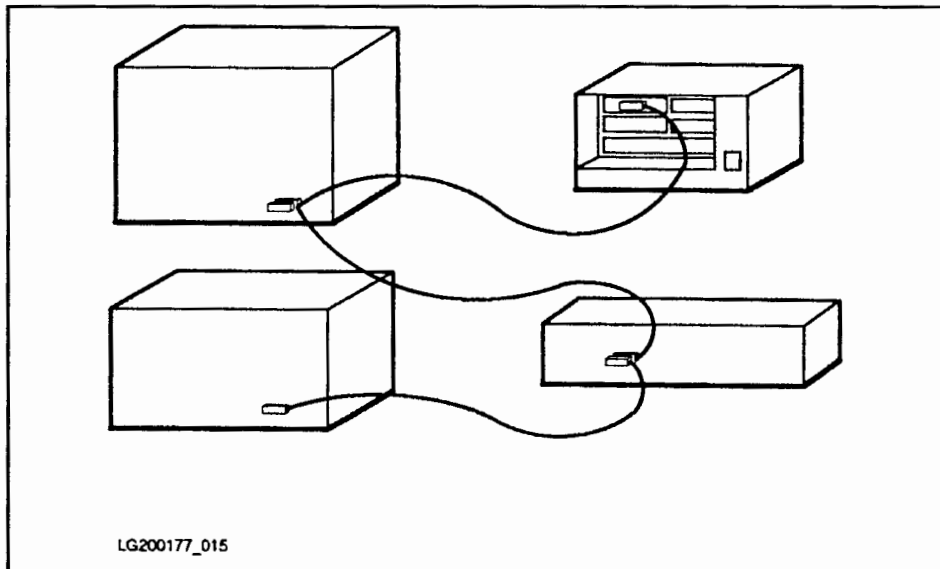
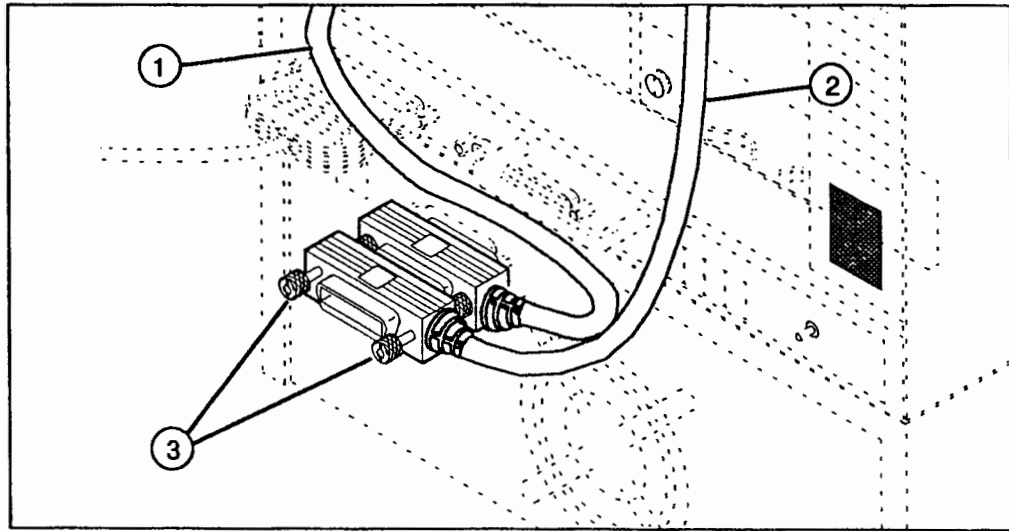


Figure 7-42. Daisy-Chained HP-IB Devices



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Figure 7-43. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9127A.
- ③ Thumb screws to be tightened.

HP 9127A Flexible Disk Drive

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

Note SAM does not support 9127A disk drive set up.

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-27. HP 9127A

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9127A	/dev/dsk/#s0	b	0	cs80	0x070n00	2	7
HP 9127A	/dev/rdisk/#s0	c	4	cs80	0x070n00	2	7
HP 9127A	/dev/dsk/#s0	b	0	cs80	0x080n00	2	8
HP 9127A	/dev/rdisk/#s0	c	4	cs80	0x080n00	2	8

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 9133D/H/L and 9134D/H/L Disk Drives

The HP 9133D/H/L contains a 9134D/H/L Winchester (hard) disk drive and an HP 9122A 3 1/2 inch double-sided flexible disk drive.

The HP 9134D/H/L contains the Winchester (hard) disk drive only.

The 9133D contains a 9134D disk.

The 9133H contains a 9134H disk.

The 9133L contains a 9134L disk.

These disk drives connect to your computer via the built-in, high-speed HP-IB, high-speed HP-IB disk interface card, or the standard-speed HP-IB disk interface card.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information on the 9133D/H/L and 9134D/H/L can be found in the following documents:

Getting Started with Your HP 9133/HP 9134 Disc Drive (Manual kit),
HP part number 09133-90099

Using Your HP 9133L and HP 9134L Disc Drives,
HP part number 09133-90072

Connecting the HP 9133D/H/L and 9134D/H/L Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

HP 9133D/H/L and 9134D/H/L Disk Drives

3. *Set the HP-IB bus address.*

Note

You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the HP-IB bus address wheel labeled "ADDRESS" on the back of the disk drive.
- b. Set the HP-IB bus "ADDRESS" wheel to an available unused bus address.



HP 9133D/H/L and 9134D/H/L Disk Drives

4. *Set the Configuration Switch.*

Note The configuration switch partitions the disk into multiple volumes, making the disk act like several smaller disk drives. The switch is preset for a single volume. If you want multiple volumes on your disk, continue with this step. If you are satisfied with one volume (as is usually the case with HP-UX), skip to step 5.

- a. Find the configuration switch, labeled "CONFIGURATION," on the back of the disk drive.
- b. Refer to the manual that came with your disk drive for a list of configuration switch settings.
- c. Decide how you would like your hard disk partitioned and set the configuration switch accordingly. Make this decision carefully, for you cannot change this setting without re-initializing the disk. Some factors to consider:
 - If you will be primarily storing large files on your disk, partition your disk into a few large volumes.
 - If you will be primarily storing small files on your disk, partition the disk into several small volumes.
 - If you will store both large and small files on the disk, then create both small and large volumes, or choose a good median volume size.
 - If you want to create different volume types on your disk, partition the disk according to the storage requirements of each system or volume.

Caution Files can be lost if you change the configuration switch after initializing the disk. Only change the configuration switch immediately before you initialize, or re-initialize, the disk.

HP 9133D/H/L and 9134D/H/L Disk Drives

5. Connect the disk drive to your computer.

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-44. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-45.

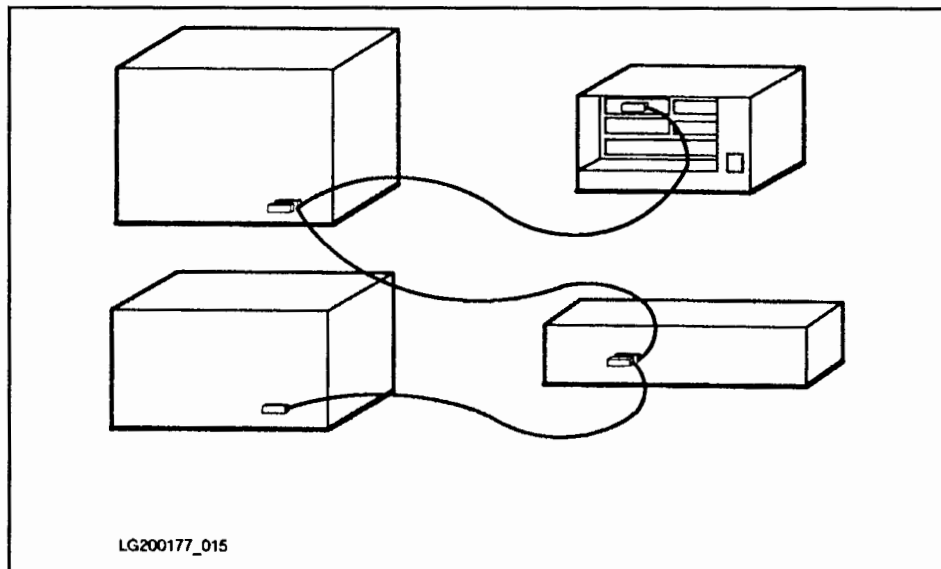
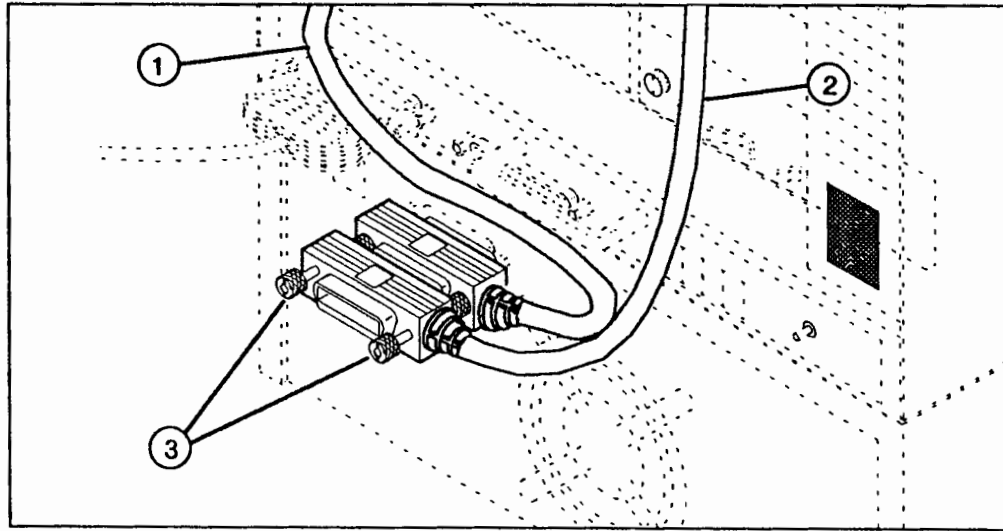


Figure 7-44. Daisy-Chained HP-IB Devices

HP 9133D/H/L and 9134D/H/L Disk Drives



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Figure 7-45. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9133/34.
- ③ Thumb screws to be tightened.

HP 9133D/H/L and 9134D/H/L Disk Drives

6. *Ensure all power switches are in the OFF position.*
7. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

8. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

9. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note	SAM does not support 9133D/H/L and 9134D/H/L disk drive set up.
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Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

HP 9133D/H/L and 9134D/H/L Disk Drives

Table 7-28. HP 9133/34 (select code 14)

Device Name ¹	Path Name ²	File Type	Major Number	Device Driver	Minor Number ³	Interleave Factor	Select Code
HP 9133/34 - Hard, 1st vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n00	3	14
HP 9133/34 - Hard, 1st vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	3	14
HP 9133/34 - Hard, 2nd vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n01	3	14
HP 9133/34 - Hard, 2nd vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n01	3	14
HP 9133/34 - Hard, 3rd vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n02	3	14
HP 9133/34 - Hard, 3rd vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n02	3	14
HP 9133/34 - Hard, 4th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n03	3	14
HP 9133/34 - Hard, 4th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n03	3	14
HP 9133/34 - Hard, 5th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n04	3	14
HP 9133/34 - Hard, 5th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n04	3	14
HP 9133/34 - Hard, 6th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n05	3	14
HP 9133/34 - Hard, 6th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n05	3	14
HP 9133/34 - Hard, 7th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n06	3	14
HP 9133/34 - Hard, 7th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n06	3	14
HP 9133/34 - Hard, 8th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n07	3	14
HP 9133/34 - Hard, 8th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n07	3	14
HP 9133 - Flexible	/dev/dsk/#s0	b	0	cs80	0x0e0n10	2	14
HP 9133 - Flexible	/dev/rdisk/#s0	c	4	cs80	0x0e0n10	2	14

1 Refer only to the entries for the number of volumes you selected. If you have one volume (default configuration), only the "1st vol" entry applies to your disk.

2 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

3 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

7

HP 9133D/H/L and 9134D/H/L Disk Drives

Table 7-29. HP 9133/34 (select code 7)

Device Name ¹	Path Name ²	File Type	Major Number	Device Driver	Minor Number ³	Interleave Factor	Select Code
HP 9133/34 - Hard, 1st vol.	/dev/rdisk/#s0	c	4	cs80	0x070n00	7	7
HP 9133/34 - Hard, 2nd vol.	/dev/dsk/#s0	b	0	cs80	0x070n01	7	7
HP 9133/34 - Hard, 2nd vol.	/dev/rdisk/#s0	c	4	cs80	0x070n01	7	7
HP 9133/34 - Hard, 3rd vol.	/dev/dsk/#s0	b	0	cs80	0x070n02	7	7
HP 9133/34 - Hard, 3rd vol.	/dev/rdisk/#s0	c	4	cs80	0x070n02	7	7
HP 9133/34 - Hard, 4th vol.	/dev/dsk/#s0	b	0	cs80	0x070n03	7	7
HP 9133/34 - Hard, 4th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n03	7	7
HP 9133/34 - Hard, 5th vol.	/dev/dsk/#s0	b	0	cs80	0x070n04	7	7
HP 9133/34 - Hard, 5th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n04	7	7
HP 9133/34 - Hard, 6th vol.	/dev/dsk/#s0	b	0	cs80	0x070n05	7	7
HP 9133/34 - Hard, 6th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n05	7	7
HP 9133/34 - Hard, 7th vol.	/dev/dsk/#s0	b	0	cs80	0x070n06	7	7
HP 9133/34 - Hard, 7th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n06	7	7
HP 9133/34 - Hard, 8th vol.	/dev/dsk/#s0	b	0	cs80	0x070n07	7	7
HP 9133/34 - Hard, 8th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n07	7	7
HP 9133 - Flexible	/dev/dsk/#s0	b	0	cs80	0x070n10	2	7
HP 9133 - Flexible	/dev/rdisk/#s0	c	4	cs80	0x070n10	2	7

- 1 Refer only to the entries for the number of volumes you selected. If you have one volume (default configuration), only the "1st vol" entry applies to your disk.
- 2 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).
- 3 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 9133D/H/L and 9134D/H/L Disk Drives

Table 7-30. HP 9133/34 (select code 8)

Device Name ¹	Path Name ²	File Type	Major Number	Device Driver	Minor Number ³	Interleave Factor	Select Code
HP 9133/34 - Hard, 1st vol.	/dev/dsk/#s0	b	0	cs80	0x080n00	7	8
HP 9133/34 - Hard, 1st vol.	/dev/rdisk/#s0	c	4	cs80	0x080n00	7	8
HP 9133/34 - Hard, 2nd vol.	/dev/dsk/#s0	b	0	cs80	0x080n01	7	8
HP 9133/34 - Hard, 2nd vol.	/dev/rdisk/#s0	c	4	cs80	0x080n01	7	8
HP 9133/34 - Hard, 3rd vol.	/dev/dsk/#s0	b	0	cs80	0x080n02	7	8
HP 9133/34 - Hard, 3rd vol.	/dev/rdisk/#s0	c	4	cs80	0x080n02	7	8
HP 9133/34 - Hard, 4th vol.	/dev/dsk/#s0	b	0	cs80	0x080n03	7	8
HP 9133/34 - Hard, 4th vol.	/dev/rdisk/#s0	c	4	cs80	0x080n03	7	8
HP 9133/34 - Hard, 5th vol.	/dev/dsk/#s0	b	0	cs80	0x080n04	7	8
HP 9133/34 - Hard, 5th vol.	/dev/rdisk/#s0	c	4	cs80	0x080n04	7	8
HP 9133/34 - Hard, 6th vol.	/dev/dsk/#s0	b	0	cs80	0x080n05	7	8
HP 9133/34 - Hard, 6th vol.	/dev/rdisk/#s0	c	4	cs80	0x080n05	7	8
HP 9133/34 - Hard, 7th vol.	/dev/dsk/#s0	b	0	cs80	0x080n06	7	8
HP 9133/34 - Hard, 7th vol.	/dev/rdisk/#s0	c	4	cs80	0x080n06	7	8
HP 9133/34 - Hard, 8th vol.	/dev/dsk/#s0	b	0	cs80	0x080n07	7	8
HP 9133/34 - Hard, 8th vol.	/dev/rdisk/#s0	c	4	cs80	0x080n07	7	8
HP 9133 - Flexible	/dev/dsk/#s0	b	0	cs80	0x080n10	2	8
HP 9133 - Flexible	/dev/rdisk/#s0	c	4	cs80	0x080010	2	8

1 Refer only to the entries for the number of volumes you selected. If you have one volume (default configuration), only the "1st vol" entry applies to your disk.

2 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

3 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

7

HP 9153A/B and 9154A/B Disk Drives

The HP 9153A contains an HP 9154A 10 Mbyte Winchester (hard) disk drive and an HP 9122S 3 1/2 inch double-sided flexible disk drive. The HP 9153B contains an HP 9154B 20 Mbyte Winchester (hard) disk drive and an HP 9122S 3 1/2 inch double-sided flexible disk drive. The HP 9154A and HP 9154B contain the Winchester (hard) disk drive only.

These disk drives connect to your computer via the built-in, high-speed HP-IB disk interface card, or the standard-speed HP-IB disk interface card.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the *Getting Started with Your HP 9153/HP 9154 Disc Drive* (Manual kit), HP part number 09153-9009.

Note The HP 9153A/B and 9154A/B disk drives are not supported as system disks and can only be used for secondary "mounted volumes" or LIF utility volumes.

HP 9153A/9154A Disk Drives

Connecting the HP 9153A/9154A Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. *Set the HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the HP-IB bus address wheel labeled "ADDRESS" on the back of the disk drive.
- b. Set the HP-IB bus "ADDRESS" wheel to an available unused bus address.

HP 9153A/9154A Disk Drives

4. Set the Configuration Switch.

Note The configuration switch partitions the disk into multiple volumes, making the disk act like several smaller disk drives. The switch is preset for a single volume. If you want multiple volumes on your disk, continue with this step. If you are satisfied with one volume (as is usually the case with HP-UX), skip to step 5.

- a. Find the HP-IB Module in the lower-left corner of the back of the disk drive (Note: the HP-IB module contains the HP-IB connector).
- b. Remove the two screws holding the module in place.
- c. Remove the HP-IB module by pulling the flange at the bottom straight out of the disk drive.
- d. Refer to the manual that came with your disk drive for a list of configuration switch settings.
- e. Decide how you would like your hard disk partitioned and set the configuration switch accordingly. Make this decision carefully, for you cannot change this setting without re-initializing the disk. Some factors to consider:
 - If you will be storing primarily large files on your disk, partition your disk into a few large volumes.
 - If you will be storing primarily small files on your disk, partition the disk into several small volumes.
 - If you will store both large and small files on the disk, choose a good median volume size.
 - If storing more than one system on your disk (for example BASIC and the Pascal Workstation), or if you want to create different volume types on your disk, partition the disk according to the storage requirements of each system or volume.
- f. Replace the HP-IB module in your disk drive.

Caution Files can be lost if you change the configuration switch after initializing the disk. Only change the configuration switch immediately before you initialize, or re-initialize, the disk.

5. *Connect the disk drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-46. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-47.

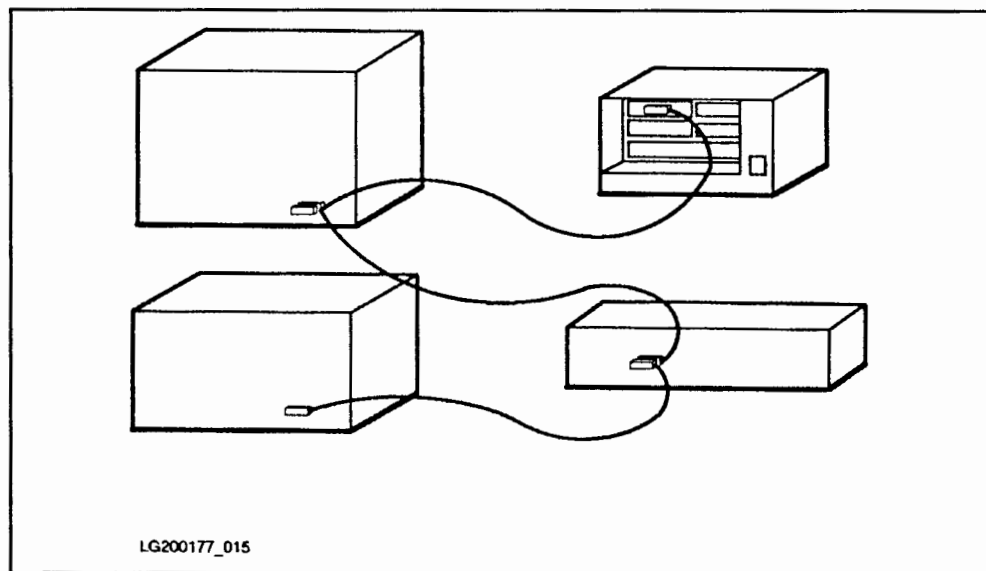
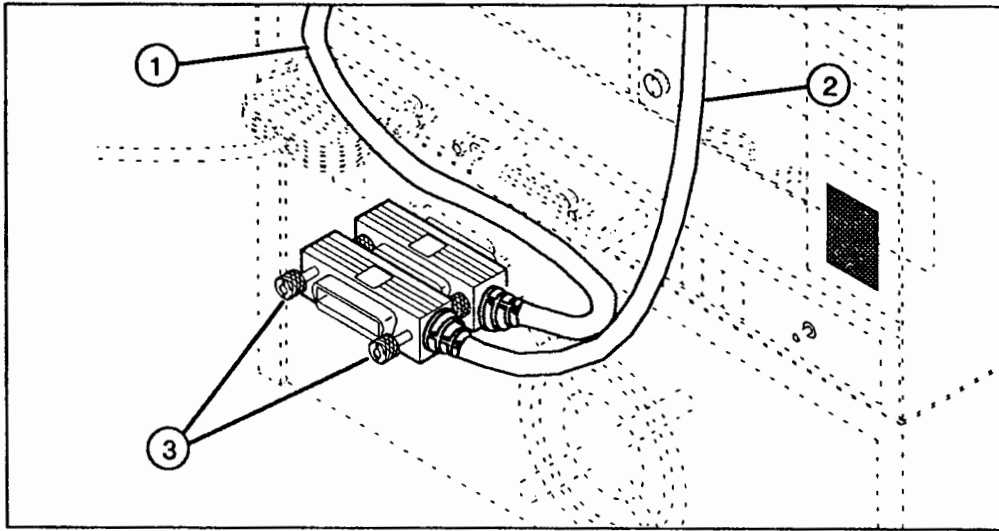


Figure 7-46. Daisy-Chained HP-IB Devices

HP 9153A/9154A Disk Drives



LG200177_008

Figure 7-47. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9153A/9154A.
- ③ Thumb screws to be tightened.

6. *Ensure all power switches are in the OFF position.*

7. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

8. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

9. *Turn on the computer.*

Hardware Installation Complete!

HP 9153A/9154A Disk Drives

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support 9153A and 9154A disk drive set up.

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-31. HP 9153A/54A (select code 14)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9153/54 - Hard, 1st vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 9153/54 - Hard, 1st vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 9153/54 - Hard, 2nd vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n01	1	14
HP 9153/54 - Hard, 2nd vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n01	1	14
HP 9153/54 - Hard, 3rd vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n02	1	14
HP 9153/54 - Hard, 3rd vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n02	1	14
HP 9153/54 - Hard, 4th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n03	1	14
HP 9153/54 - Hard, 4th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n03	1	14
HP 9153/54 - Hard, 5th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n04	1	14
HP 9153/54 - Hard, 5th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n04	1	14
HP 9153/54 - Hard, 6th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n05	1	14
HP 9153/54 - Hard, 6th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n05	1	14
HP 9153/54 - Hard, 7th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n06	1	14
HP 9153/54 - Hard, 7th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n06	1	14
HP 9153/54 - Hard, 8th vol.	/dev/dsk/#s0	b	0	cs80	0x0e0n07	1	14
HP 9153/54 - Hard, 8th vol.	/dev/rdisk/#s0	c	4	cs80	0x0e0n07	1	14
HP 9153 - Flexible	/dev/dsk/#s0	b	0	cs80	0x0e0n10	2	14
HP 9153 - Flexible	/dev/rdisk/#s0	c	4	cs80	0x0e0n10	2	14

¹ # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed).

Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 9153A/9154A Disk Drives

Table 7-32. HP 9153A/54A (select code 7)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9153/54 - Hard, 1st vol.	/dev/dsk/#s0	b	0	cs80	0x070n00	3	7
HP 9153/54 - Hard, 1st vol.	/dev/rdisk/#s0	c	4	cs80	0x070n00	3	7
HP 9153/54 - Hard, 2nd vol.	/dev/dsk/#s0	b	0	cs80	0x070n01	3	7
HP 9153/54 - Hard, 2nd vol.	/dev/rdisk/#s0	c	4	cs80	0x070n01	3	7
HP 9153/54 - Hard, 3rd vol.	/dev/dsk/#s0	b	0	cs80	0x070n02	3	7
HP 9153/54 - Hard, 3rd vol.	/dev/rdisk/#s0	c	4	cs80	0x070n02	3	7
HP 9153/54 - Hard, 4th vol.	/dev/dsk/#s0	b	0	cs80	0x070n03	3	7
HP 9153/54 - Hard, 4th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n03	3	7
HP 9153/54 - Hard, 5th vol.	/dev/dsk/#s0	b	0	cs80	0x070n04	3	7
HP 9153/54 - Hard, 5th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n04	3	7
HP 9153/54 - Hard, 6th vol.	/dev/dsk/#s0	b	0	cs80	0x070n05	3	7
HP 9153/54 - Hard, 6th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n05	3	7
HP 9153/54 - Hard, 7th vol.	/dev/dsk/#s0	b	0	cs80	0x070n06	3	7
HP 9153/54 - Hard, 7th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n06	3	7
HP 9153/54 - Hard, 8th vol.	/dev/dsk/#s0	b	0	cs80	0x070n07	3	7
HP 9153/54 - Hard, 8th vol.	/dev/rdisk/#s0	c	4	cs80	0x070n07	3	7
HP 9153 - Flexible	/dev/dsk/#s0	b	0	cs80	0x070n10	2	7
HP 9153 - Flexible	/dev/rdisk/#s0	c	4	cs80	0x070n10	2	7

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed).

Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

7

HP C2200/03A HP-IB Disk Drives

The HP C2200/03A 5 1/4 inch disk drives are HP-IB interface devices. The HP C2200A (Model 335H) has a capacity of 335 Mbytes and the HP C2203A (Model 670H) has a capacity of 670 Mbytes.

These disk drives connect to your computer via the built-in, high-speed HP-IB interface, high-speed HP-IB disk interface card, or the standard-speed HP-IB disk interface card. high-speed HP-IB disk interface card or the standard-speed HP-IB disk interface card.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Additional information can be found in the following documents:

HP Series 6000 Disk Storage Systems Owner's Manual Models 335H, 670H, and 670XP, HP part number C2200-90901

HP Series 6000 Disk Storage Systems Installation Guide Models 335H, 670H, and 670XP, HP part number C2200-90902

HP C2200/03 Disk Drives

Connecting the C2200/03A Disk Drives

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

Note You can install the HP C2200/03A disks yourself if you deleted the installation option when you purchased the unit(s). If you deleted the installation support refer to the *HP Series 6000 Disk Storage Systems Installation Guide Models 335H, 670H, and 670XP* that was shipped with your unit(s) for installation details. The following section describes a brief overview of how to install your C2200/03A disk drive.

The HP C2200/03A disks can be installed by an HP Customer Engineer. The installation cost is included in the purchase price of the unit if you did not select the "delete installation" option. Your HP Customer Engineer will unpack and install your disk for you. For these details, please refer to the unpacking and installation procedures that came with the disk drive.

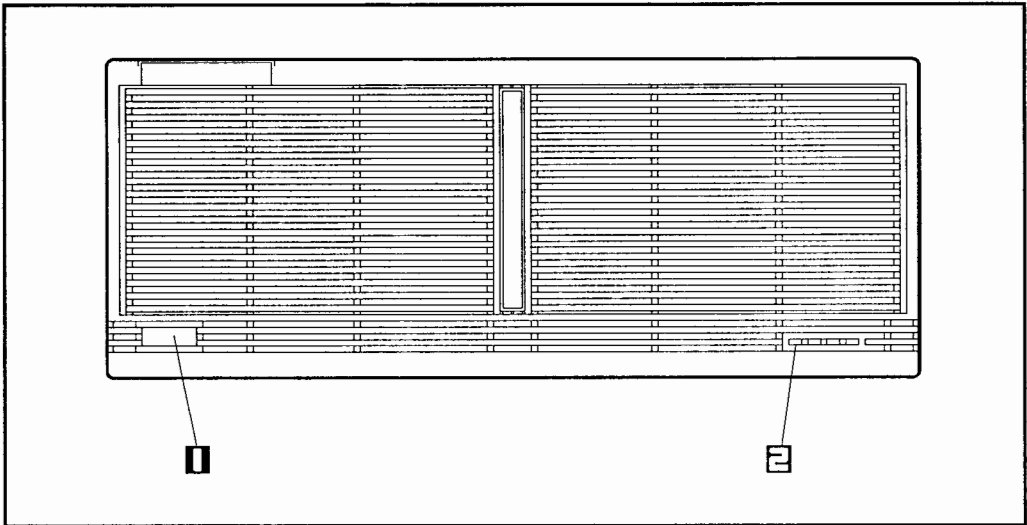


Figure 7-48. HP C2200/03A Front Panel

1 Line Switch

2 Disk Drive Status Indicators

HP C2200/03 Disk Drives

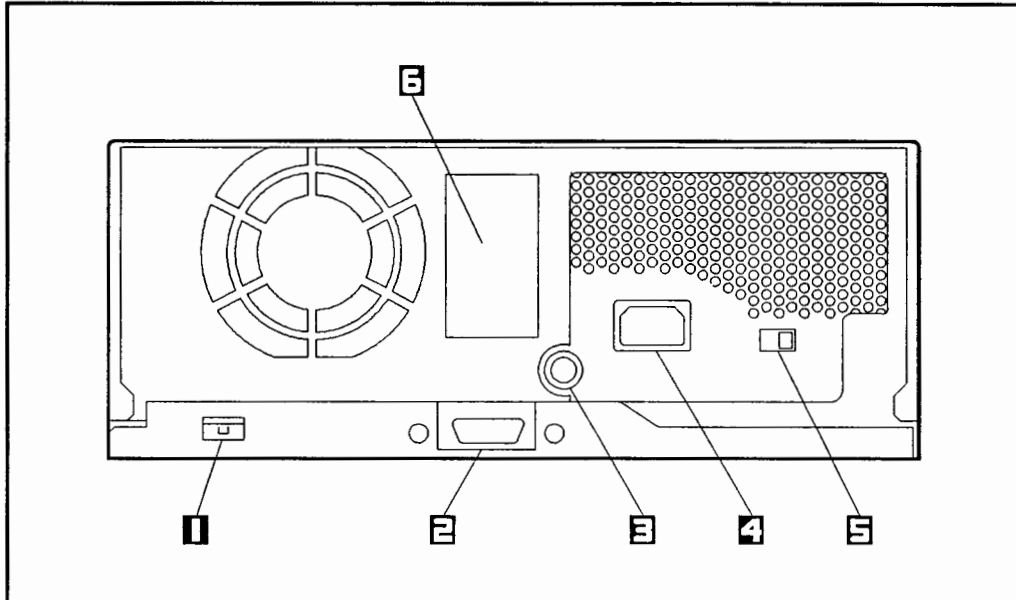


Figure 7-49. HP C2200/03A Rear Panel

- | | |
|---------------------|--------------------------------------|
| 1 Address switch | 4 Power cord connector |
| 2 HP-IB connector | 5 Voltage select switch ¹ |
| 3 Fuse ¹ | 6 Serial Number |

¹ Fuse and voltage select switches are not included on disk storage systems equipped with an automatic ranging power supply.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in “optional” secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the “optional” secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. *Set the HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the address wheel labeled “ADDRESS” in the lower-left corner on the back of the disk drive.
 - b. Turn the wheel until the address you have selected appears.
-

Caution Positions 8 and 9 on the ADDRESS wheel are for use by service personnel only. If the drive is powered on with 8 or 9 selected, possible loss of data can occur.

HP C2200/03 Disk Drives

4. Connect the disk drive to your computer.

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

HP 10833A 1.0 meter HP-IB cable
HP 10833B 2.0 meter HP-IB cable
HP 10833C 4.0 meter HP-IB cable
HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the disk drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the disk drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-50. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-51.

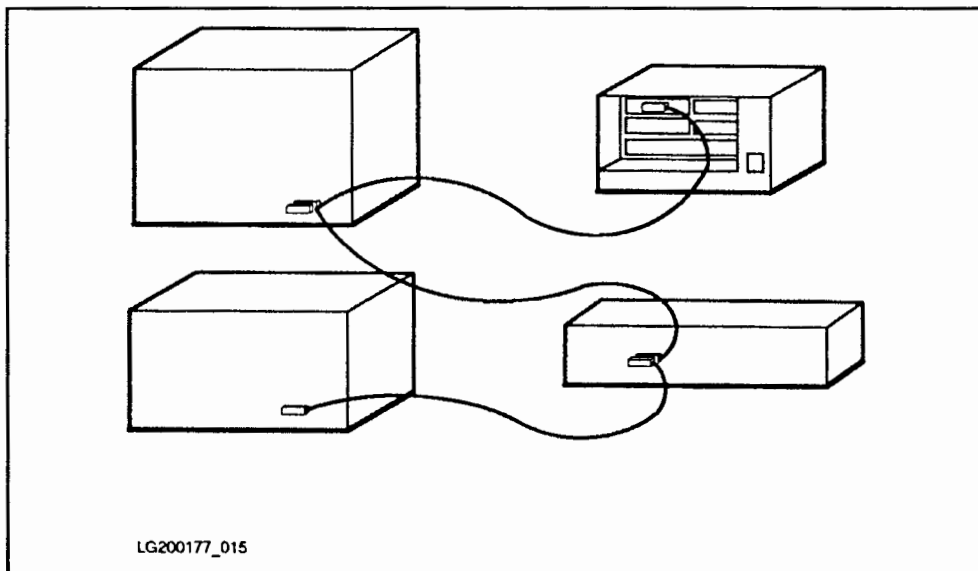
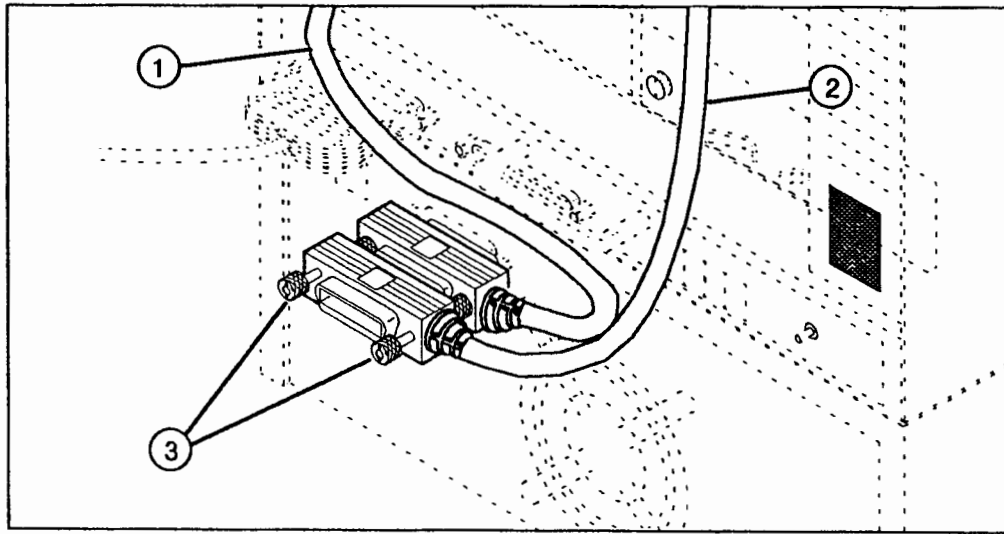


Figure 7-50. Daisy-Chained HP-IB Devices



LG200177_006

Figure 7-51. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the C2200/03A.
- ③ Thumb screws to be tightened.



5. *Select the Line Voltage.*

Refer to the *HP Series 6000 Disk Storage Systems Installation Guide Models 335H, 670H, and 670XP* that was shipped with your disk drive to set the proper setting for the voltage select switch.

HP C2200/03 Disk Drives

6. *Ensure all power switches are in the OFF position.*

7. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

8. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

9. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for software configuration instructions.

Table 7-33. HP 2200/03

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 2200/03	/dev/dsk/#s0	b	0	cs80	0x0e0n00	1	14
HP 2200/03	/dev/rdisk/#s0	c	4	cs80	0x0e0n00	1	14
HP 2200/03	/dev/dsk/#s0	b	0	cs80	0x0e0n10	1	14
HP 2200/03	/dev/rdisk/#s0	c	4	cs80	0x0e0n10	1	14
HP 2200/03	/dev/dsk/#s0	b	0	cs80	0x070n00	1	7
HP 2200/03	/dev/rdisk/#s0	c	4	cs80	0x070n00	1	7
HP 2200/03	/dev/dsk/#s0	b	0	cs80	0x070n10	1	7
HP 2200/03	/dev/rdisk/#s0	c	4	cs80	0x070n10	1	7

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.



HP C2212A Mass Storage System

The HP C2212A Mass Storage System contains a power supply, 5 1/4 inch high disk drive, and two open slots within the cabinet to install additional SCSI (Small Computer System Interface) devices. The HP C2212A is also referred to as a Series 6000 Model 330S.

Text in this section will refer to this product as the HP C2212A.

The HP C2212A contains a 332 Mbyte disk.

The Mass Storage System is shipped in a cabinet with two additional 5 1/4 inch slots available for one or a combination of the following devices:

- one or two 600 MB SCSI CD-ROM Drive(s)
- one 1.3 GB Digital Audio Tape DDS-Format mechanism
- one 650 MB SCSI Optical Disk (HP 1701A)
- one 332 MB SCSI Hard Disk

The Series 6000 Mass Storage System is available with various combinations of the above listed devices as factory installed options or field upgrade kits.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

For additional information and instructions on installing the above listed additional devices into your Mass Storage System, refer to the *HP Series 6000 Mass Storage Systems Owner's Manual for Models 330S and 660S*, HP part number C2212-90901.

Connecting the Mass Storage Systems

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

C2212A Mass Storage Systems

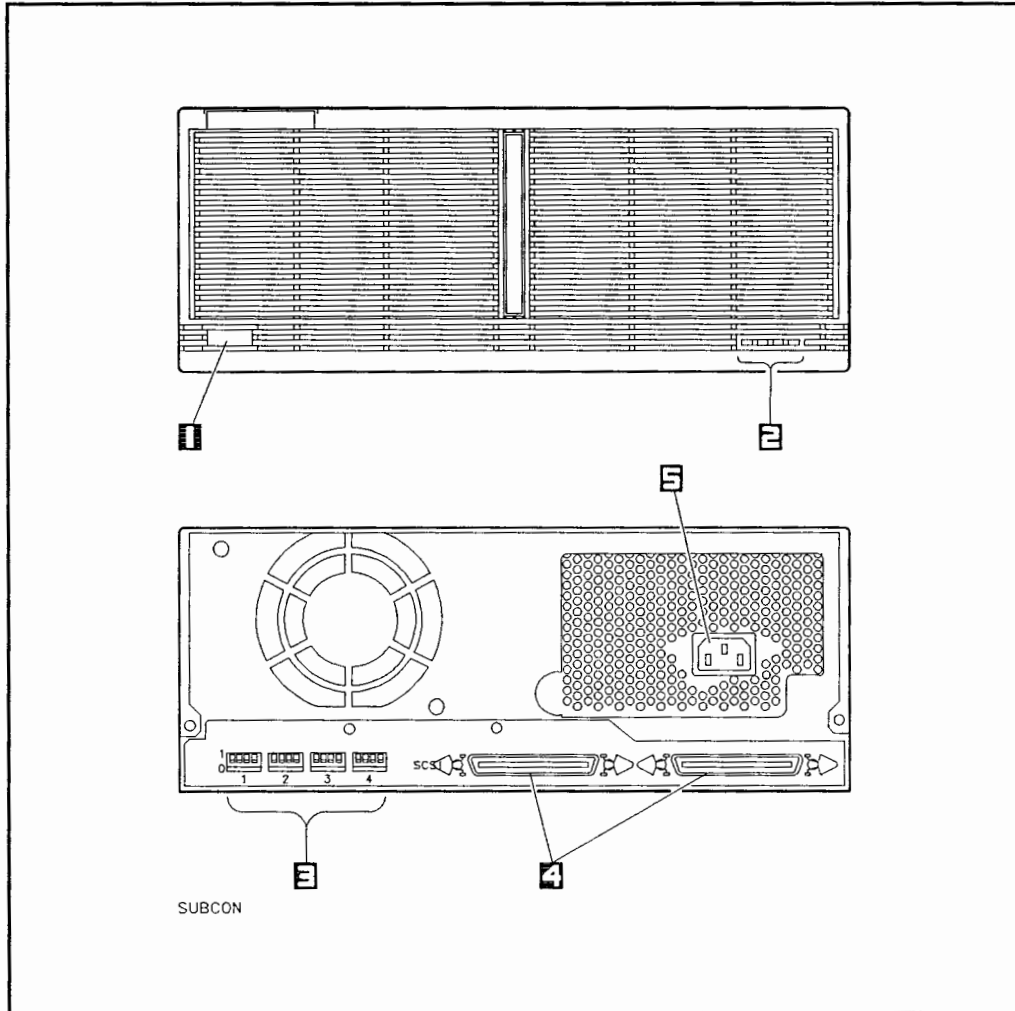


Figure 7-52. Controls and Connectors

- | | |
|--|----------------------|
| 1 <input type="checkbox"/> LINE Switch | 4 SCSI Connectors |
| 2 Hard Disk Drive Status Indicators | 5 ~AC LINE Connector |
| 3 Hard Disk Drive Address Switches | |

7-150 Installing Disk and Tape Drives

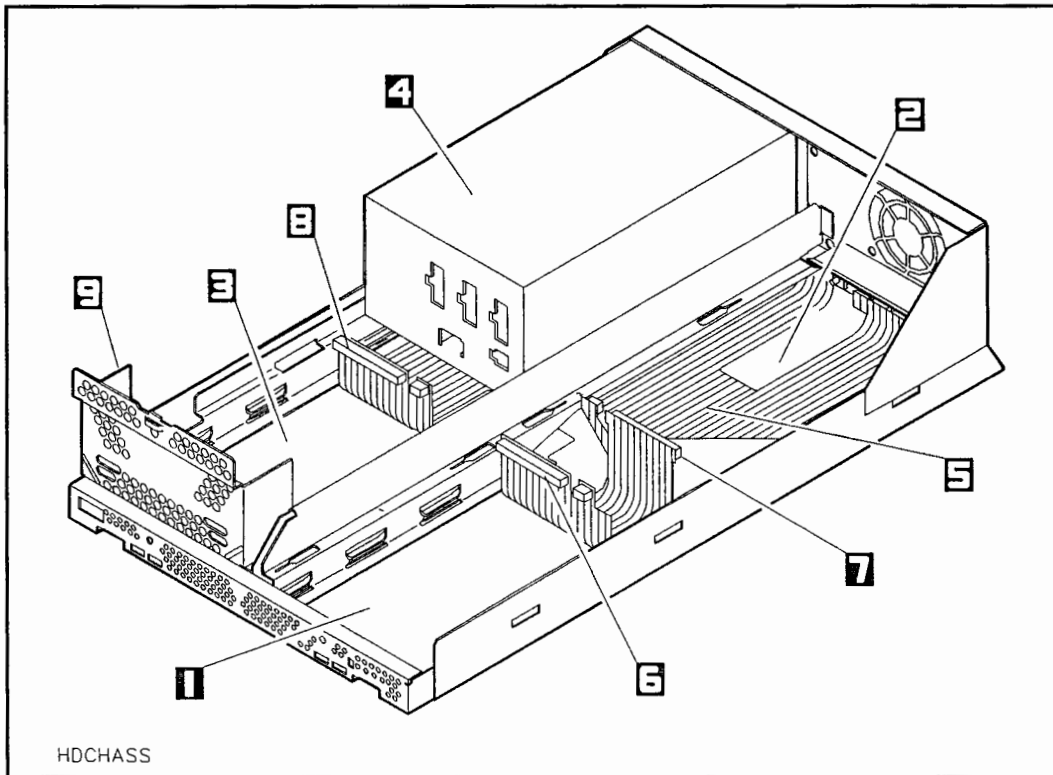


Figure 7-53. Mass Storage System Chassis

- | | |
|-------------------|------------------------------|
| 1 Slot 1 | 6 Slot 1 BEND/flex Connector |
| 2 Slot 2 | 7 Slot 2 BEND/flex Connector |
| 3 Slot 3 | 8 Slot 3 BEND/flex Connector |
| 4 Power Supply | 9 RFI Bracket |
| 5 BEND/flex Cable | |

C2212A Mass Storage Systems

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
2. *Select your interface.*

Select one of the following SCSI interfaces:

 - Built-in SCSI interface
 - HP 98658A SCSI interface card
 - HP 98265A SCSI interface daughter card
3. *Set the SCSI bus address(es).*

Note You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system's SCSI controller uses address 7.

- a. Set the Hard Disk SCSI bus address(es).
 - i. Find the address switches labeled Hard Disk Address Switches in Figure 7-52. These switches are only used to address the hard disks. Address-switch set 1 corresponds to the contents of slot 1, address-switch set 2 corresponds to the contents of slot 2, and address-switch set 3 corresponds to the contents of slot 3. Address-switch set 4 is NOT used.
 - ii. Set the bus address(es) to any unused address from 0 to 6 (the SCSI interface is set to 7). Refer to Table 7-34 for switch values associated the available bus addresses. For optimum disk performance, your system disk should be set to SCSI address 6. The SCSI interface gives highest priority to the highest address (6) and priority decreases as you work back towards zero (0).

Table 7-34. SCSI Hard Disk Address Switches

SCSI Address	SCSI-ID X	SCSI-ID 4	SCSI-ID 2	SCSI-ID 1
0	X	0	0	0
1	X	0	0	1
2	X	0	1	0
3	X	0	1	1
4	X	1	0	0
5	X	1	0	1
6	X	1	1	0

- b. Set the SCSI address of the CD-ROM, DDS-format tape drive, and the optical disk in the Mass Storage System. Setting the SCSI address of other devices supported in the Mass Storage System is described in the *HP Series 6000 Mass Storage Systems Owner's Manual for Models 330S and 660S*, HP part number C2212-90901.
4. *Connect the Mass Storage System to your computer.*

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

C2212A Mass Storage Systems

Table 7-35. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

¹ HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

² Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

³ Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

⁴ Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The Series 6000 Models 330S and 660S Mass Storage Systems have internal bus lengths of 1.5 meters.

- a. Attach one end of the SCSI cable to one of the two connectors on the Mass Storage System (it does not matter which one). Press completely in.
- b. Attach the other end of the new SCSI cable to the SCSI interface card.
- c. Attach the terminator to the unoccupied connector on the Mass Storage System. If you do not have a terminator, you will need to order one. Refer to the "SCSI Cable and Terminator Matrix" to determine the terminator part number you need to order.

If you have one or more devices already attached to the SCSI interface as in Figure 7-54:

- i. Remove the terminator from the last device on the chain.
- ii. Attach the end of the new SCSI cable to the connector from which you removed the terminator.
- iii. Place the terminator (supplied with the SCSI interface card) on the other connector on the back of the disk drive. Press completely in.

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C2212A Mass Storage Systems

A close-up of the Mass Storage SCSI cable and connector attached to the previous last device on the chain is provided in Figure 7-55.

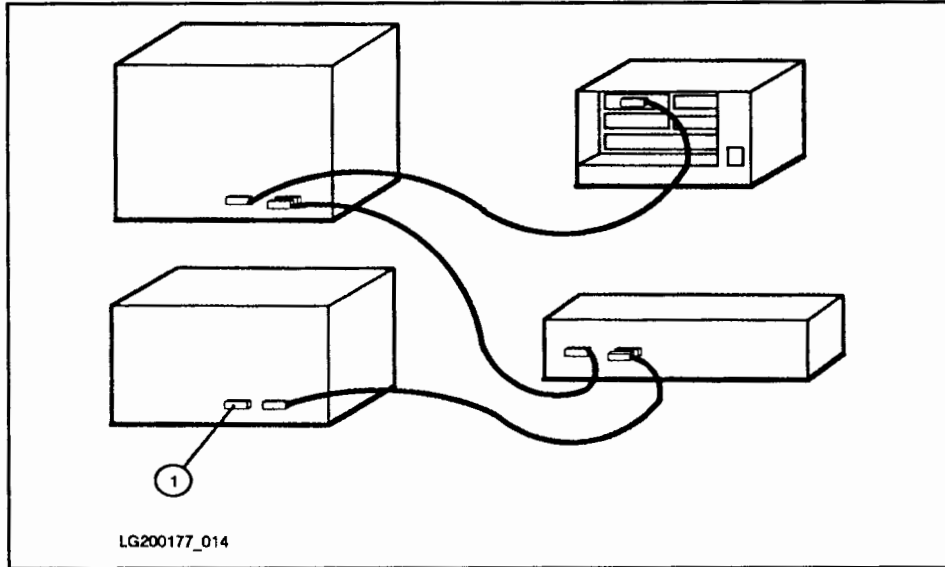
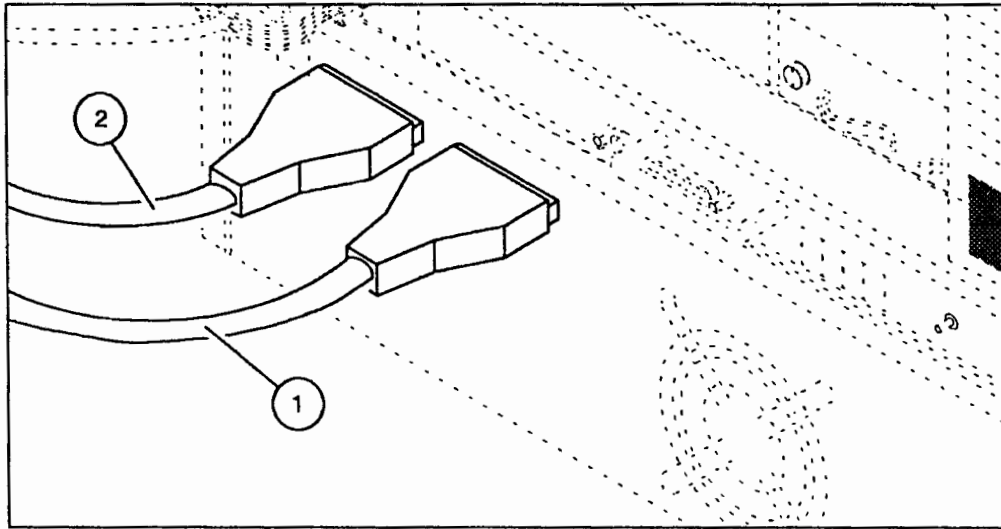


Figure 7-54. Daisy-Chained SCSI Devices

① Terminator

C2212A Mass Storage Systems



LG200177_012

Figure 7-55. SCSI Connectors

- ① Cable to the interface or previous device.
- ② Cable to the Series 6000 Mass Storage System.

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the SCSI bus address.*

Make a note that the SCSI bus addresses you selected have been used and are no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the power to the Mass Storage System.*

Do NOT turn on the power to the computer before the Mass Storage System.

Note Apparent disk drive self test failure will occur when computer power is off. When computer power is added in step 9, the self test failure should clear. If you are concerned about the apparent self test failure, disconnect both SCSI connectors from the Mass Storage System and observe the self test completion.

9. *Turn on the computer.*

Hardware Installation Complete!

C2212A Mass Storage Systems

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for disk drive software configuration instructions. Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for tape drive software configuration instructions.

Table 7-36. HP C2212A Mass Storage System

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Interleave Factor	Select Code	Minor Number ²
disk drive	/dev/dsk/#s0	b	7	scsi	1	14	0x0e0n00
disk drive	/dev/rdisk/#s0	c	47	scsi	1	14	0x0e0n00
optical disk	/dev/dsk/mo	b	7	scsi	-	14	0x0e0n00
optical disk	/dev/rdisk/mo	c	47	scsi	-	14	0x0e0n00
DDS-format drive, no rewind	/dev/rmt/0mn	c	54	scsitape	-	14	0x0e0n00
CD-ROM	/dev/dsk/#s0	b	7	scsi	0	14	0x0e0n00
CD-ROM	/dev/rdisk/#s0	c	47	scsi	0	14	0x0e0n00

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed).

Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the bus address. Replace n with a 2 if the bus address was set to 2, use 3 if the address set to 3, and so on.

HP C2213A Mass Storage System

The HP C2213A Mass Storage System contains a power supply, 5 1/4 inch high disk drive, two open slots within the cabinet to install additional SCSI (Small Computer System Interface) devices and a 664 Mbyte disk. (The HP C2213A is also referred to as a Series 6000 Model 660S. Text in this section will refer to this product as the HP C2213A.)

The Mass Storage Systems are shipped in a cabinet with two additional 5 1/4 inch slots available for one or a combination of the following devices:

- one or two 600 MB SCSI CD-ROM Drive(s)
- one 1.3 GB Digital Audio Tape DDS-Format mechanism
- one 650 MB SCSI Optical Disk (HP 1701A)
- one or two 664 MB SCSI Hard Disk(s)

The Series 6000 Mass Storage System is available with various combinations of the above listed devices as factory installed options or field upgrade kits.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

For additional information and instructions on installing the above listed additional devices into your Mass Storage System, refer to the *HP Series 6000 Mass Storage Systems Owner's Manual for Models 330S and 660S*, HP part number C2212-90901.

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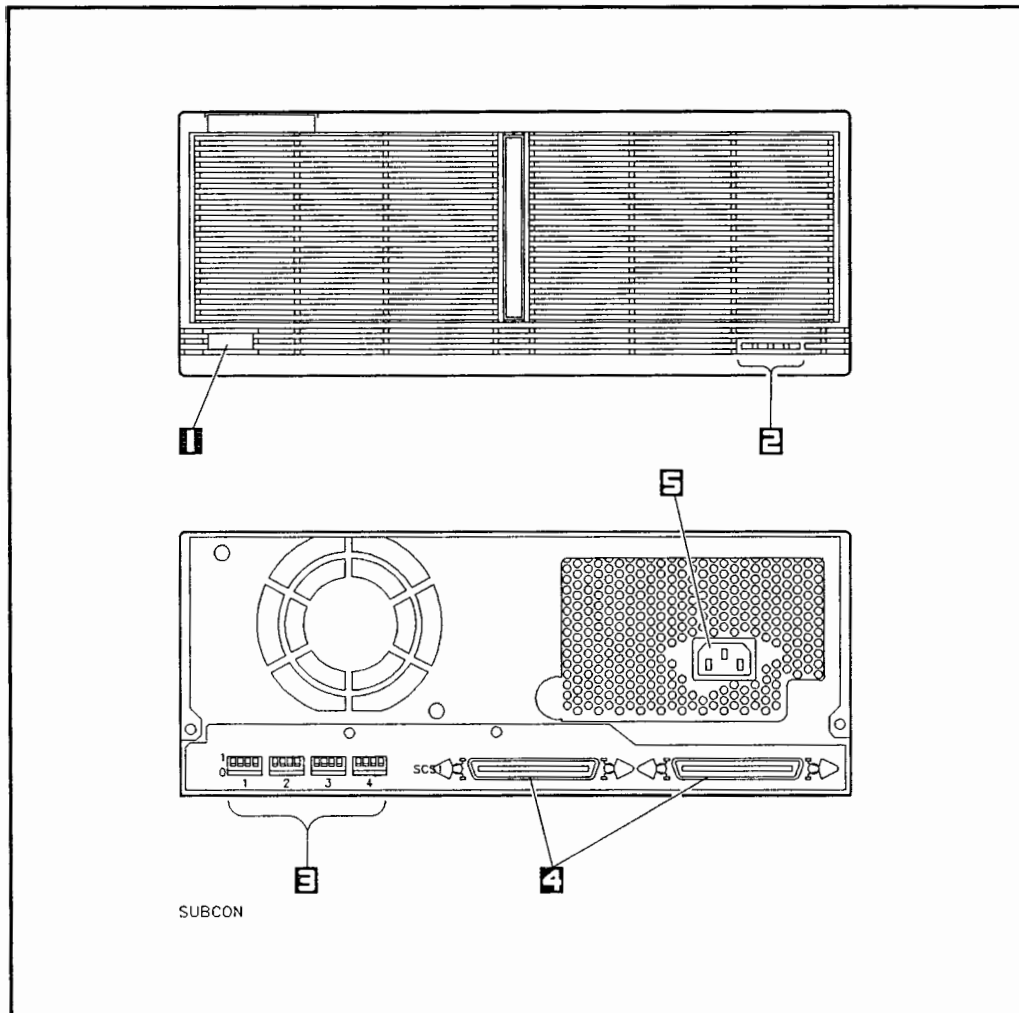
C2213A Mass Storage Systems

Connecting the Mass Storage Systems

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.



7

Figure 7-56. Controls and Connectors

- | | |
|-------------------------------------|----------------------|
| 1 LINE Switch | 4 SCSI Connectors |
| 2 Hard Disk Drive Status Indicators | 5 ~AC LINE Connector |
| 3 Hard Disk Drive Address Switches | |

C2213A Mass Storage Systems

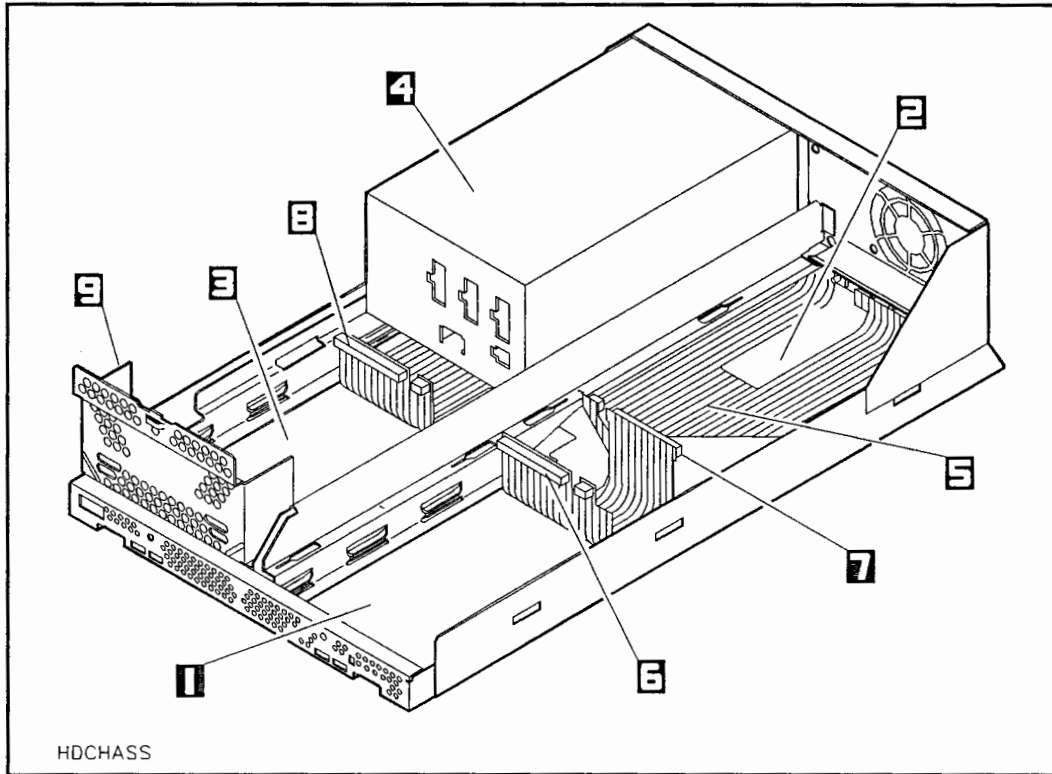


Figure 7-57. Mass Storage System Chassis

7

- | | |
|-------------------|------------------------------|
| 1 Slot 1 | 6 Slot 1 BEND/flex Connector |
| 2 Slot 2 | 7 Slot 2 BEND/flex Connector |
| 3 Slot 3 | 8 Slot 3 BEND/flex Connector |
| 4 Power Supply | 9 RFI Bracket |
| 5 BEND/flex Cable | |

1. *Play it safe.*
 - a. Follow the computer “shut down” procedure. See *System Administration Tasks Manual* Chapter 3: “Starting and Stopping HP-UX” for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following SCSI interfaces:

- Built-in SCSI interface
- HP 98658A SCSI interface card
- HP 98265A SCSI interface daughter card

3. *Set the SCSI bus address(es).*

Note You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system’s SCSI controller uses address 7.

- a. Set the Hard Disk SCSI bus address(es).
 - i. Find the address switches labeled Hard Disk Address Switches in Figure 7-56. These switches are only used to address the hard disks. Address-switch set 1 corresponds to the contents of slot one, address-switch set 2 corresponds to the contents of slot 2, and address-switch set 3 corresponds to the contents of slot 3. Address-switch set 4 is NOT used.
 - ii. Set the bus address(es) to any unused address from 0 to 6 (the SCSI interface is set to 7). Refer to Table 7-37 for switch values associated the available bus addresses. For optimum disk performance, your system disk should be set to SCSI address 6. The SCSI interface gives highest priority to the highest address (6) and priority decreases as you work back towards zero (0).

C2213A Mass Storage Systems

Table 7-37. SCSI Hard Disk Address Switches

SCSI Address	SCSI-ID X	SCSI-ID 4	SCSI-ID 2	SCSI-ID 1
0	X	0	0	0
1	X	0	0	1
2	X	0	1	0
3	X	0	1	1
4	X	1	0	0
5	X	1	0	1
6	X	1	1	0

- b. Set the SCSI address of the CD-ROM, DDS-format tape drive, and the optical disk in the Mass Storage System. Setting the SCSI address of other devices supported in the Mass Storage System is described in the *HP Series 6000 Mass Storage Systems Owner's Manual for Models 330S and 660S*, HP part number C2212-90901.

4. *Connect the Mass Storage System to your computer.*

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

7

Table 7-38. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

1 HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

2 Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

3 Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

4 Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The Series 6000 Models 330S and 660S Mass Storage Systems have internal bus lengths of 1.5 meters.

- a. Attach one end of the SCSI cable to one of the two connectors on the Mass Storage System (it does not matter which one). Press completely in.
- b. Attach the other end of the new SCSI cable to the SCSI interface card.
- c. Attach the terminator to the unoccupied connector on the Mass Storage System. If you do not have a terminator, you will need to order one. Refer to the "SCSI Cable and Terminator Matrix" to determine the terminator part number you need to order.

If you have one or more devices already attached to the SCSI interface as in Figure 7-58:

- i. Remove the terminator from the last device on the chain.
- ii. Attach the end of the new SCSI cable to the connector from which you removed the terminator.
- iii. Place the terminator (supplied with the SCSI interface card) on the other connector on the back of the disk drive. Press completely in.

C2213A Mass Storage Systems

A close-up of the Mass Storage SCSI cable and connector attached to the previous last device on the chain is provided in Figure 7-59.

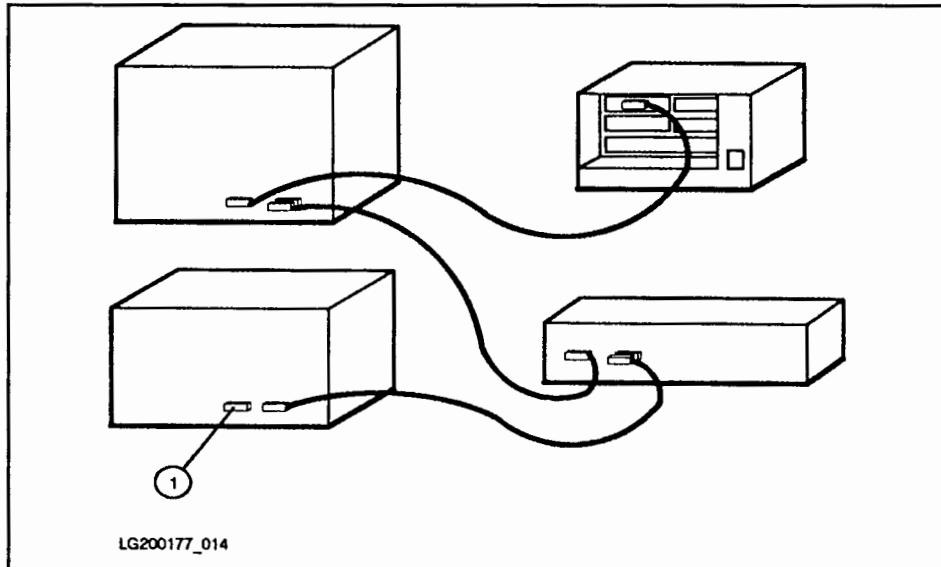
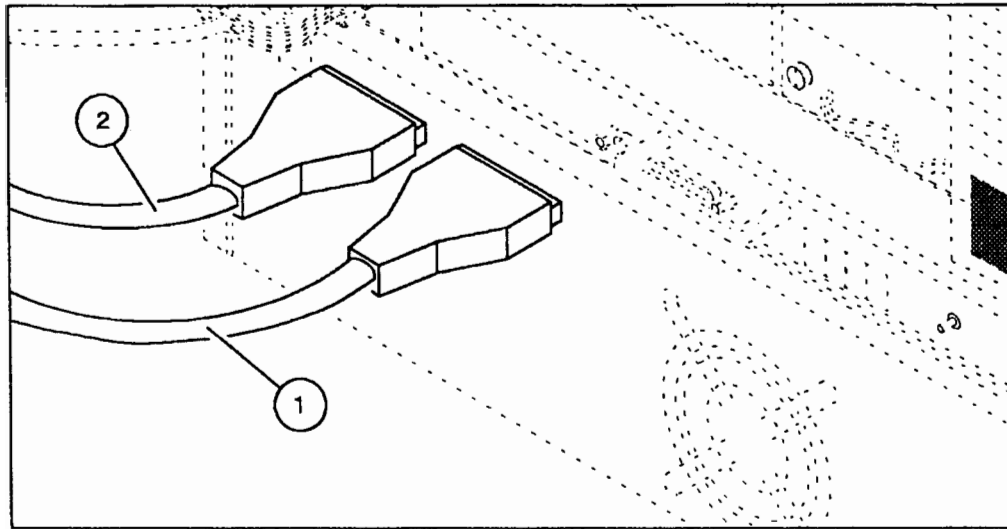


Figure 7-58. Daisy-Chained SCSI Devices

- ① Terminator



LG200177_012

Figure 7-59. SCSI Connectors

- ① Cable to the interface or previous device.
- ② Cable to the Series 6000 Mass Storage System.

C2213A Mass Storage Systems

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the SCSI bus address.*

Make a note that the SCSI bus addresses you selected have been used and are no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the power to the Mass Storage System.*

Do NOT turn on the power to the computer before the Mass Storage System.

Note Apparent disk drive self test failure will occur when computer power is off. When computer power is added in step 9, the self test failure should clear. If you are concerned about the apparent self test failure, disconnect both SCSI connectors from the Mass Storage System and observe the self test completion.

9. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Refer to Chapter 8: "Setting Up HP-UX for Disk Drives" for disk drive software configuration instructions. Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for tape drive software configuration instructions.

Table 7-39. HP C2213A Mass Storage Systems

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Interleave Factor	Select Code	Minor Number ²
disk drive	/dev/dsk/#s0	b	7	scsi	1	14	0x0e0n00
disk drive	/dev/rdisk/#s0	c	47	scsi	1	14	0x0e0n00
optical disk	/dev/dsk/mo	b	7	scsi	0x0e0n00	-	14
optical disk	/dev/rdisk/mo	c	47	scsi	-	14	0x0e0n00
DDS-format drive, no rewind	/dev/rmt/0mn	c	54	scsitape	-	14	0x0e0n00
CD-ROM	/dev/dsk/#s0	b	7	scsi	-	14	0x0e0n00
CD-ROM	/dev/rdisk/#s0	c	47	scsi	-	14	0x0e0n00

¹ # is a number that identifies the device bus address. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

² n is a number that identifies the bus address. Replace n with a 2 if the bus address was set to 2, use 3 if the address set to 3, and so on.

HP 9144A/45A Tape Drive

The HP 9144A/45A Tape Drives use 1/4 inch tape cartridges. Two formatted storage capacities are available using the 88140SC (a package of 5, 150 ft. cartridge tapes, each 16.7 megabyte) or the 88140LC (a package of 5, 600 ft. cartridge tapes, each 67.0 megabyte) cartridges. The tape drive provides read-after-write capability for data verification as well as data-recovery and auto-sparing, and it is compatible with existing 1/4 inch cartridges built into other HP mass storage devices.

The 9144 tape drive can read and write to 16 track tape only. The 9145 tape drive reads 16 track tape and can read and write to 32 track tape.

The 9144A/45A tape drives connect to your computer via the built-in, standard-speed HP-IB or the standard-speed HP-IB disk interface cards.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Connecting the HP 9144A/45A Tape Drive

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*
 - a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - b. TURN OFF the computer and unplug the power cord.
 2. *Select your interface.* Select one of the following standard-speed HP-IB interfaces:
 - HP 98624A standard-speed HP-IB interface card
 - Built-in standard-speed HP-IB interface
-

Note Tape drives should not be installed on the same interface as the root device (main disk drive).

HP 9144A/45A Tape Drive

3. Set the HP-IB bus address.

Note

You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Find the set of four switches labeled "ADDRESS" on the back of the tape drive.
- b. Set the HP-IB bus address according to Table 7-40. An example of setting the HP-IB bus address to 2 is illustrated in Figure 7-60.

Table 7-40. HP-IB Address Settings

HP-IB Bus Address	Switch 1	Switch 2	Switch 3	Switch 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1

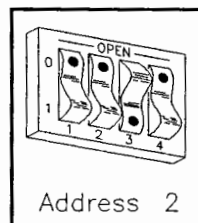


Figure 7-60. Address 2

4. *Connect the tape drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the tape drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the back of the tape drive. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-61. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-62.

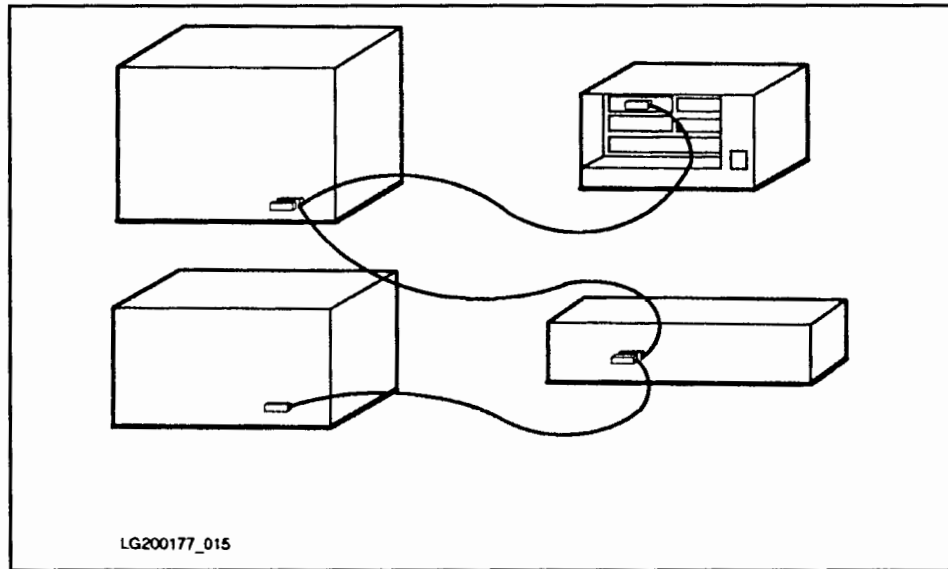
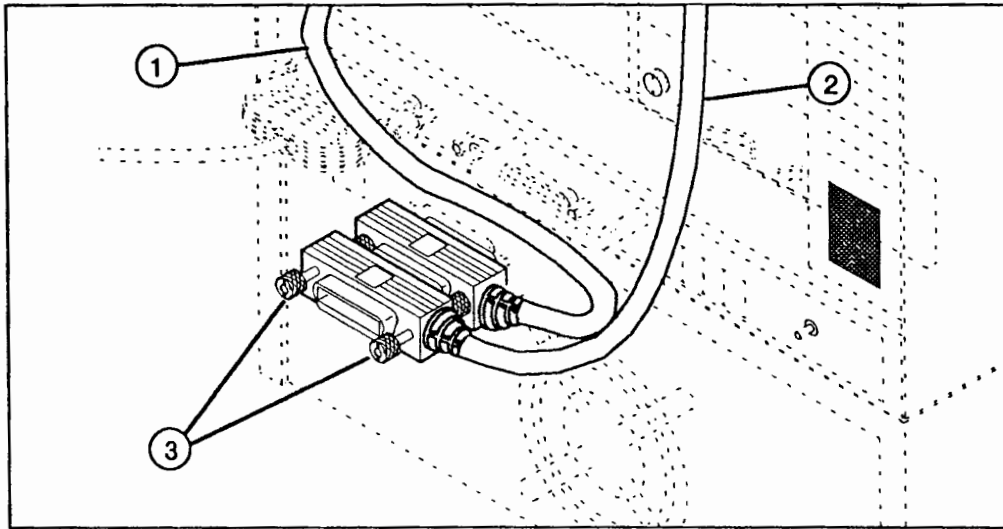


Figure 7-61. Daisy-Chained HP-IB Devices

HP 9144A/45A Tape Drive



LG200177_008

Figure 7-62. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 9144A/45A.
- ③ Thumb screws to be tightened.

HP 9144A/45A Tape Drive

5. *Ensure all power switches are in the OFF position.*
6. *Connect the power cord.*

Connect the female end of the power cord to the "AC LINE" socket on the back of the disk or tape drive and connect the other end to your power outlet.

7. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

8. *Turn on the computer.*

Hardware Installation Complete!

HP 9144A/45A Tape Drive

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support tape drive set up.

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

Table 7-41. HP 9144A/45A

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 9144A/45A	/dev/ct/#s0	b	0	cs80	0x070n00	-	7
HP 9144A/45A	/dev/rct/#s0	c	4	cs80	0x070n00	-	7
HP 9144A/45A	/dev/ct/#s0	b	0	cs80	0x080n00	-	8
HP 9144A/45A	/dev/rct/#s0	c	4	cs80	0x080n00	-	8

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP 7974A Tape Drive

The HP 7974A is a 100/50 ips, 1/2 inch, 9-track, open-reel tape drive supplied in an upright cabinet. It supports 1600 cpi Phase Encoded (PE) format and optionally 800 cpi NRZI format. The HP 7974A operates in either start/stop (50 ips) or streaming (100 ips) mode depending on whether data is available on the bus.

This tape drive connects to your computer via the built-in, high-speed HP-IB interface or the high-speed HP-IB disk interface card.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.



HP 7974A Tape Drive

Connecting the HP 7974A Tape Drive

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*

- a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
- b. TURN OFF the computer and unplug the power cord.
- c. TURN ON your HP 7974A Tape Drive.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note

With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

Note

Tape drives should not be installed on the same interface as the root device (main disk drive).

3. *Set the HP-IB bus address.*

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Press the OFFLINE RESET button on the tape drive unit until the ONLINE indicator light turns off.
- b. Press the ADDRESS button to display the current address.
- c. Set the address:
 - Press the UNITS button until the selected HP-IB bus address appears in the display.
 - Press the enter button to assign the new address.
 - Press the ADDRESS button to exit the address select mode.

HP 7974A Tape Drive

4. *Connect the tape drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Find the HP-IB cable provided with the tape drive.
- b. Connect one end of the HP-IB cable to the HP-IB socket on the inside of the cabinet at the top. Tighten the thumb screws to secure the connection.
- c. Connect the other end of the HP-IB cable to the interface or the last device on the chain. If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-63. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-64.

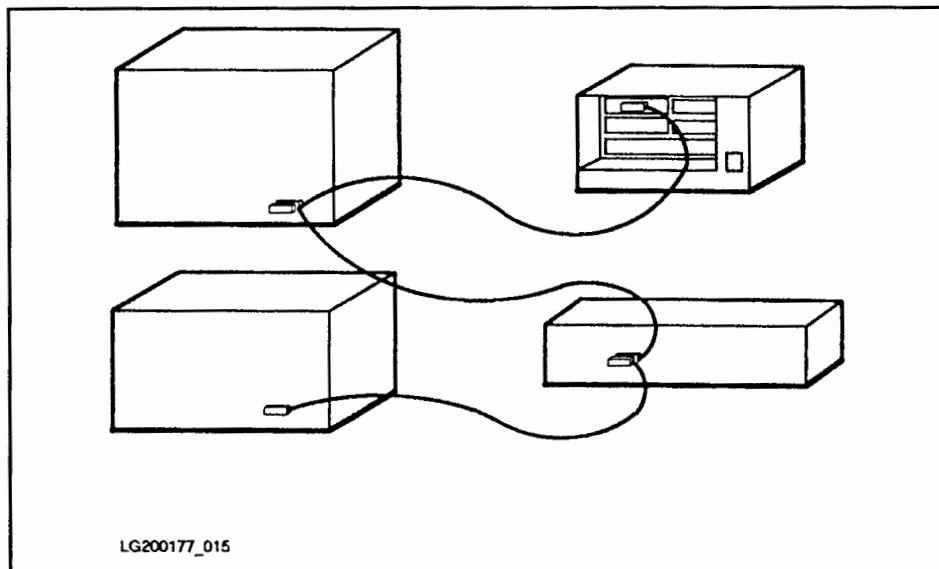
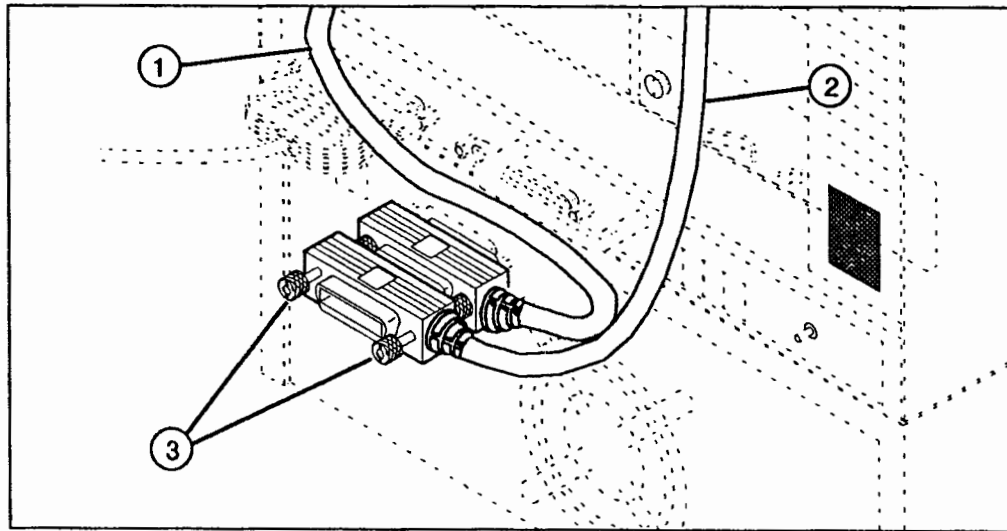


Figure 7-63. Daisy-Chained HP-IB Devices



LG200177_006

Figure 7-64. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7974A.
- ③ Thumb screws to be tightened.

HP 7974A Tape Drive

5. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

6. *Ensure that the computer power switch is in the OFF position.*
7. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support tape drive set up.

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

HP 7974A Tape Drive

Table 7-42. HP 7974

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP 7974A, 800 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n03	-	14
HP 7974A, 800 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n02	-	14
HP 7974A, 800 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n01	-	14
HP 7974A, 800 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n00	-	14
HP 7974A, 1600 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n43	-	14
HP 7974A, 1600 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n42	-	14
HP 7974A, 1600 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n41	-	14
HP 7974A, 1600 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n40	-	14
HP 7974A, 800 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x070n03	-	7
HP 7974A, 800 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x070n02	-	7
HP 7974A, 800 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x070n01	-	7
HP 7974A, 800 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x070n00	-	7
HP 7974A, 1600 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x070n43	-	7
HP 7974A, 1600 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x070n42	-	7
HP 7974A, 1600 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x070n41	-	7
HP 7974A, 1600 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x070n40	-	7

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed). Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

7-184 Installing Disk and Tape Drives

HP 7978A/B Tape Drives

The HP 7978A/B are 75 ips, 1/2 inch, 9-track, open-reel tape drives are supplied in an upright cabinet. They support 1600 cpi Phase Encoded (PE) format and 6250 cpi Group Code Recording (GCR) format. The HP 7978A/B operates only in streaming mode.

These tape drives connect to your computer via the built-in, high-speed HP-IB or the high-speed HP-IB disk interface card.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Note The HP 7978A/B Tape drives should be installed by an HP Customer Engineer. The installation cost is included in the purchase price of the unit.

HP-UX Set Up Information

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

HP 7979A/7980A/7980XC Tape Drives

The HP 7979A is an HP-IB 125 ips 1/2 -inch 9-track open-reel tape drive supplied in an upright cabinet. It supports 1600 cpi Phase Encoded (PE) format (can be upgraded to 6250 cpi).

The HP 7980A is an HP-IB 125 ips 1/2 -inch 9-track open-reel tape drive which supports 1600 Phase Encoded (PE) format and 6250 Group Coded Recording (GCR) format.

The HP 7980XC is the same as the 7980A, with the added feature of being able to read and write in compressed format.

Note These tape drives are to be installed by an HP Customer Engineer. The installation cost is included in the purchase price of the unit.

Note Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

Connecting the HP 7979A/7980A/7980XC Tape Drives

Your HP Customer Engineer will unpack and install your tape drive for you. The following procedure describes how to connect your tape drive to your computer.

Caution Do not attempt to operate the unit until your HP Customer Engineer has installed the unit for you.

1. *Play It Safe.*
 - a. Make arrangements with your HP Customer Engineer to have your tape drive installed.
 - b. Follow the computer “shut down” procedure. See *System Administration Tasks Manual* Chapter 3: “Starting and Stopping HP-UX” for specific instructions.
 - c. TURN OFF the computer and unplug the power cord.
2. *Select your interface.* Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:
 - HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
 - HP 98625A high-speed HP-IB disk interface card
 - Built-in “optional” secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the “optional” secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. *Ensure that the power switch is in the OFF position.*
4. *Connect the power cord.*
5. *Turn ON the tape drive.*

HP 7979A/7980A/7980XC Tape Drives

6. Set the HP-IB bus address.

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

- a. Take the drive offline by pressing **ONLINE**. The Online indicator light should turn off.
- b. Press **OPTION** to enter the Option Mode. TEST * appears in the display.
- c. Press **NEXT** until ADDR * appears.
- d. Press **ENTER** to select the ADDRESSing Option.
- e. Using **NEXT** or **PREV**, display the address desired (OFF, or 0 to 7).
NOTE: The tape drive is shipped with the Address set to OFF.
- f. Press the **ENTER** button to assign the new address. The address you selected appears as SET<#>. The # will be the HP-IB address (or OFF). This display will last for one second and then return to the ADDR * display.
- g. Exit the Option Mode by pressing **OPTION** or **RESET**.

7. Connect the Tape Drive to Your Computer.

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

HP 10833A 1.0 meter HP-IB cable
HP 10833B 2.0 meter HP-IB cable
HP 10833C 4.0 meter HP-IB cable
HP 10833D 0.5 meter HP-IB cable

- a. Connect one end of an HP-IB cable to the HP-IB connector on the back of the tape drive. Tighten the thumb screws to secure the connection.
- b. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

HP 7979A/7980A/7980XC Tape Drives

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-65. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-66.

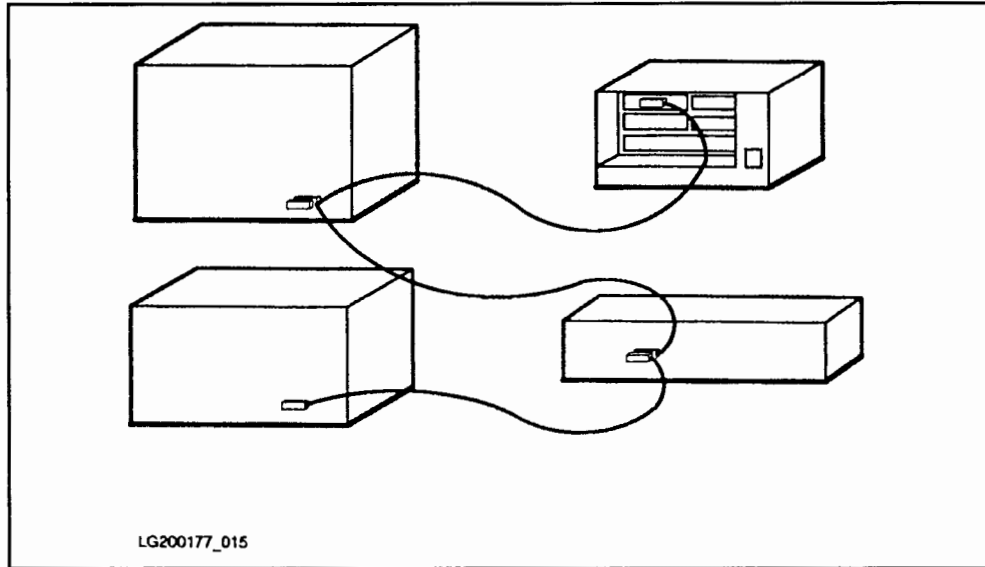
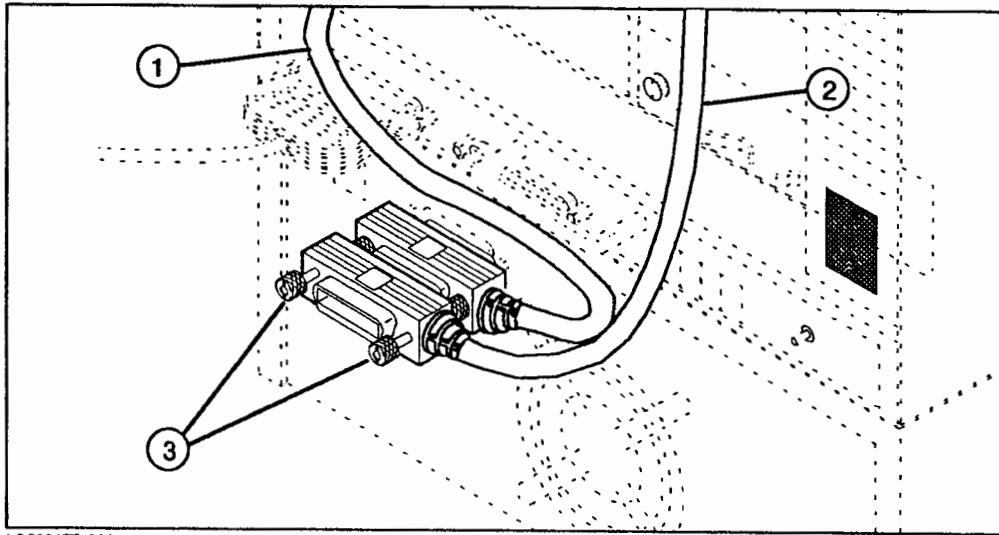


Figure 7-65. Daisy-Chained HP-IB Devices

HP 7979A/7980A/7980XC Tape Drives



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Figure 7-66. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7979A/80A/80XC.
- ③ Thumb screws to be tightened.

7 8. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

HP-UX Setup Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

HP 7979A/7980A/7980XC Tape Drives

Table 7-43.
HP 7979/80A Tape Drive
Connected to HP 98625 Disk Interface (Select Code 14)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²
HP 7979/80A, 6250 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n83
HP 7979/80A, 6250 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n82
HP 7979/80A, 6250 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n81
HP 7979/80A, 6250 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n80
HP 7979/80A, 1600 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n43
HP 7979/80A, 1600 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n42
HP 7979/80A, 1600 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x0e0n41
HP 7979/80A, 1600 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x0e0n40

7

1 # is a number that identifies the magnetic tape drive. Replace # with any unique number (e.g., /dev/rmt/0s0 for the first mag tape).

2 n is a number that identifies the address (set in step 3 of the Installation Procedure). Replace n with a 0 if the address was set to 0, use 2 if the address was set to 2, and so on.

HP 7979A/7980A/7980XC Tape Drives

Table 7-44.
HP 7979/80A Tape Drive
Connected to Built-in HP-IB Interface (Select Code 7)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²
HP 7979/80A, 6250 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x070n83
HP 7979/80A, 6250 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x070n82
HP 7979/80A, 6250 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x070n81
HP 7979/80A, 6250 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x070n80
HP 7979/80A, 1600 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	9	stape	0x070n43
HP 7979/80A, 1600 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	9	stape	0x070n42
HP 7979/80A, 1600 cpi, AT&T, no rewind	/dev/rmt/#s0	c	9	stape	0x070n41
HP 7979/80A, 1600 cpi, AT&T, autorewind	/dev/rmt/#s0	c	9	stape	0x070n40

¹ # is a number that identifies the magnetic tape drive. Replace # with any unique number (e.g., /dev/rmt/0s0 for the first mag tape).

² n is a number that identifies the address. Replace n with a 0 if the address was set to 0, use 2 if the address was set to 2, and so on.

7

HP 7979A/7980A/7980XC Tape Drives

Table 7-45.
HP 7980XC Tape Drive
Connected to HP 98625 Disk Interface (Select Code 14)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²
HP 7980XC, 6250 cpi, Berkeley, no rewind, compressed	/dev/rmt/#s0	c	9	stape	0x0e0nc3
HP 7980XC, 6250 cpi, Berkeley, autorewind, compressed	/dev/rmt/#s0	c	9	stape	0x0e0nc2
HP 7980XC, 6250 cpi, AT&T, no rewind, compressed	/dev/rmt/#s0	c	9	stape	0x0e0nc1
HP 7980XC, 6250 cpi, AT&T, autorewind, compressed	/dev/rmt/#s0	c	9	stape	0x0e0nc0

1 # is a number that identifies the magnetic tape drive. Replace # with any unique number (e.g., /dev/rmt/0s0 for the first mag tape).

2 n is a number that identifies the address (set in step 3 of the Installation Procedure). Replace n with a 0 if the address was set to 0, use 2 if the address was set to 2, and so on.

HP 7979A/7980A/7980XC Tape Drives

Table 7-46.
HP 7980XC Tape Drive
Connected to Built-in HP-IB Interface (Select Code 7)

Device Name	Path Name ¹	File Type	Major Number	Minor Number ²	
HP 7980XC, 6250 cpi, Berkeley, no rewind, compressed	/dev/rmt/#s0	c	9	stape	0x070nc3
HP 7980XC, 6250 cpi, Berkeley, autorewind, compressed	/dev/rmt/#s0	c	9	stape	0x070nc2
HP 7980XC, 6250 cpi, AT&T, no rewind, compressed	/dev/rmt/#s0	c	9	stape	0x070nc1
HP 7980XC, 6250 cpi, AT&T, autorewind, compressed	/dev/rmt/#s0	c	9	stape	0x070nc0

¹ # is a number that identifies the magnetic tape drive. Replace # with any unique number (e.g., /dev/rmt/0s0 for the first mag tape).

² n is a number that identifies the address (set in step 3 of the Installation Procedure). Replace n with a 0 if the address was set to 0, use 2 if the address was set to 2, and so on.

HP 7980S/SX Tape Drives

The HP 7980S is a SCSI 125 ips 1/2 -inch 9-track open-reel tape drive which supports 1600 Phase Encoded (PE) format and 6250 Group Coded Recording (GCR) format.

The HP 7980SX is the same as the 7980S, with the added feature of being able to read and write in compressed format.

There is an orderable option (option 800) to both of these products to support 800 cpi Non-Return to Zero Inverted (NRZI) format.

Refer to Appendix C: "Series 400 Support Matrix" for hardware and software support information.

Note Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.

Note These tape drives are to be installed by an HP Customer Engineer. The installation cost is included in the purchase price of the unit.

Connecting the HP 7980S/SX Tape Drives

Your HP Customer Engineer will unpack and install your tape drive for you. The following procedure describes how to connect your tape drive to your computer.

Caution Do not attempt to operate the unit until your HP Customer Engineer has installed the unit for you.

1. *Play It Safe.*
 - a. Make arrangements with your HP Customer Engineer to have your tape drive installed.
 - b. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
 - c. TURN OFF the computer and unplug the power cord.
2. *Select your interface.*

Select one of the following SCSI interfaces:

 - Built-in SCSI interface
 - HP 98658A SCSI interface card
 - HP 98265A SCSI interface daughter card
3. *Ensure that the power switch is in the OFF position.*
4. *Connect the power cord.*
5. *Turn ON the tape drive.*

HP 7980S/SX Tape Drives

6. Set the SCSI bus address.

Note

You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system's SCSI controller uses address 7.

- a. Take the drive offline by pressing **ONLINE**. The Online indicator light should turn off.
- b. Press **OPTION** to enter the Option Mode. TEST * appears in the display.
- c. Press **NEXT** until ID * appears.
- d. Press **ENTER**.
- e. Using **NEXT** or **PREV**, display the address desired (OFF, or 0 to 7).
NOTE: The tape drive is shipped with the ID set to OFF.
- f. Press the **ENTER** button to assign the new address. The address you selected appears as SET<#>. The # will be the HP-IB address (or OFF). This display will last for one second and then return to the ADDR * display.
- g. Exit the Option Mode by pressing **OPTION** or **RESET**.

7. Connect the Tape Drive to Your Computer.

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

Table 7-47. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

- 1 HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.
- 2 Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.
- 3 Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.
- 4 Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The HP 7980S/SX SCSI tape drives have internal bus lengths of 0 meters.

- a. Attach one end of the SCSI cable to one of the two connectors on the tape drive (it does not matter which one). Press completely in.
- b. Attach the end of the SCSI cable to the SCSI interface card.
- c. Attach the terminator to the unoccupied connector on the disk. If you do not have a terminator, you will need to order one (HP part number 1252-2297).

If you have one or more devices attached to the SCSI interface as in Figure 7-67:

- i. Remove the terminator from the last device on the chain.
- ii. Attach the one end of the new SCSI cable to the connector you removed the terminator from.

A close-up of the SCSI connectors on the previously last device on the chain is provided in Figure 7-68.



HP 7980S/SX Tape Drives

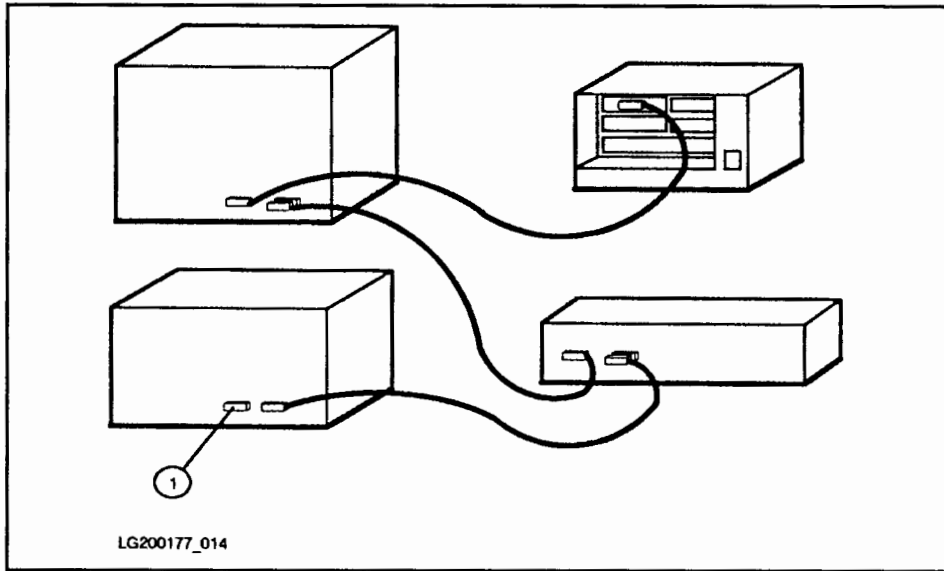
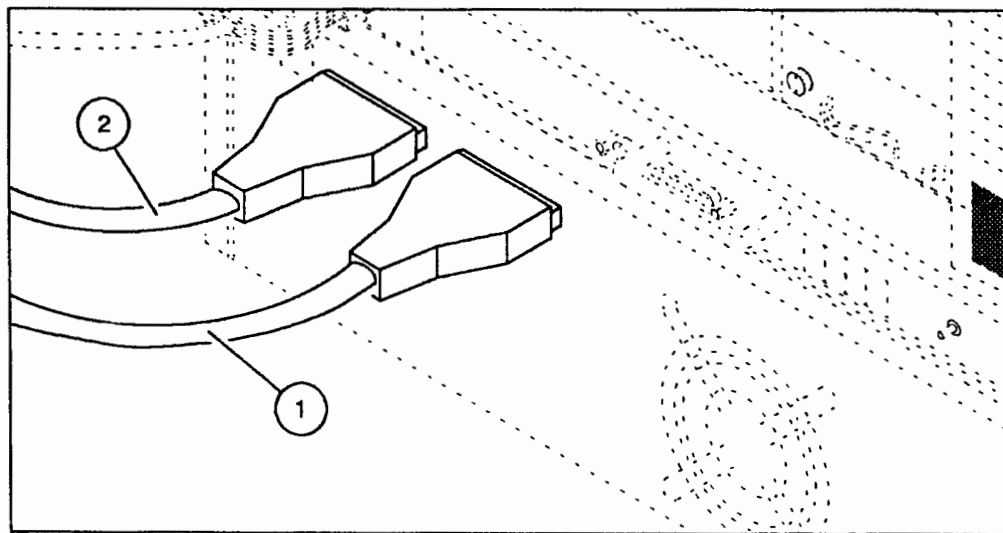


Figure 7-67. Daisy-Chained SCSI Devices

- ① Terminator



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Figure 7-68. SCSI Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP 7980S/SX.

d. Place the terminator (supplied with the SCSI interface card) on the other connector on the back of the disk drive. Press completely in.

8. *Record the SCSI bus address.*

Make a note that the SCSI bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

Hardware Installation Complete!

HP 7980S/SX Tape Drives

HP-UX Setup Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Table 7-48.
HP 7980S Tape Drive
Connected to a SCSI Disk Interface (Select Code 14)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²
HP 7980S, 6250 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n83
HP 7980S, 6250 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n82
HP 7980S, 6250 cpi, AT&T, no rewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n81
HP 7980S, 6250 cpi, AT&T, autorewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n80
HP 7980S, 1600 cpi, Berkeley, no rewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n43
HP 7980S, 1600 cpi, Berkeley, autorewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n42
HP 7980S, 1600 cpi, AT&T, no rewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n41
HP 7980S, 1600 cpi, AT&T, autorewind	/dev/rmt/#s0	c	54	scsitape	0x0e0n40

¹ # is a number that identifies the magnetic tape drive. Replace # with any unique number (e.g., /dev/rmt/0s0 for the first mag tape).

² n is a number that identifies the SCSI bus address. Replace n with a 0 if the address was set to 0, use 2 if the address was set to 2, and so on.



HP 7980S/SX Tape Drives

Table 7-49.
HP 7980SX Tape Drive
Connected to a SCSI Disk Interface (Select Code 14)

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²
HP 7980SX, 6250 cpi, Berkeley, no rewind, compressed	/dev/rmt/#s0	c	54	scsitape	0x0e0nc3
HP 7980SX, 6250 cpi, Berkeley, autorewind, compressed	/dev/rmt/#s0	c	54	scsitape	0x0e0nc2
HP 7980SX, 6250 cpi, AT&T, no rewind, compressed	/dev/rmt/#s0	c	54	scsitape	0x0e0nc1
HP 7980SX, 6250 cpi, AT&T, autorewind, compressed	/dev/rmt/#s0	c	54	scsitape	0x0e0nc0

1 # is a number that identifies the magnetic tape drive. Replace # with any unique number (e.g., /dev/rmt/0s0 for the first mag tape).

2 n is a number that identifies the SCSI bus address. Replace n with a 0 if the address was set to 0, use 2 if the address was set to 2, and so on.

HP C1511A Series 6400 Model 1300H HP-IB DDS-Format Drive

The HP Series 6400 Model 1300H is a tape drive that stores data in a format called Digital Data Storage (DDS) on cassettes that can each hold up to 1.3 gigabytes (1300 megabytes) of data. It is a standalone drive and uses a high-speed HP-IB interface. The Model 1300H is a high-capacity, medium transfer-rate device for offline data storage on tape. It is a streaming tape that has a fast search capability. Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

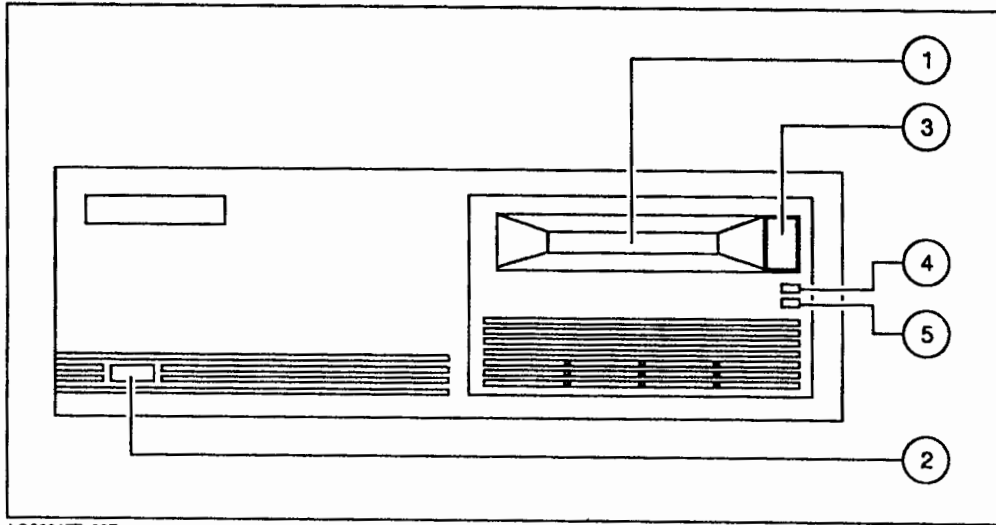
-
- Note**
- Refer to the "HP-IB Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.
 - Use only HP labeled DDS media in HP DDS-format tape drives.
-

A box of five (60m) HP labeled DDS-format tapes is available, HP part number 92283A.

The front and rear panels of the tape drives are contained in Figure 7-69 and Figure 7-70.

C1511A HP-IB DDS-Format Tape Drive

Connecting the C1511A HP-IB DDS-Format Tape Drive

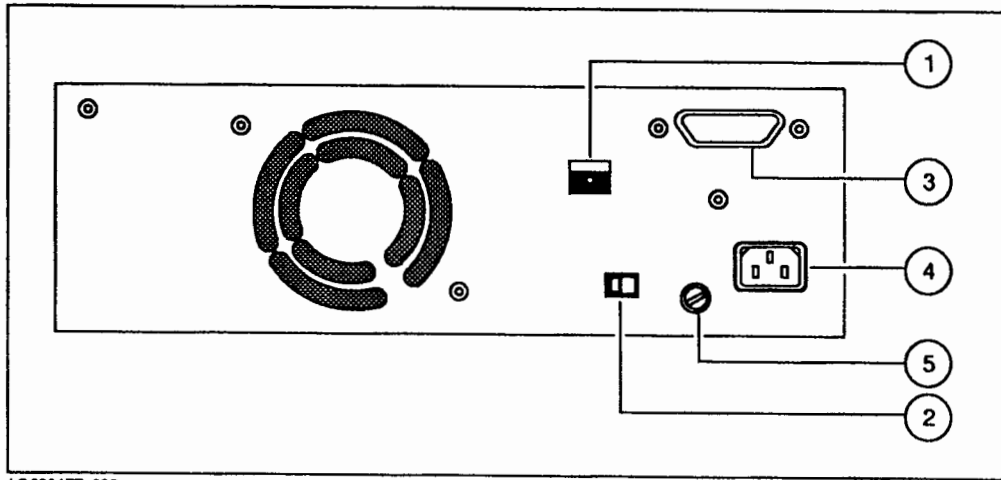


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Figure 7-69. Front Panel Controls and Indicators

- ① Cassette slot - for inserting a cassette.
- ② Line ~ switch - for switching the drive on and off.
- ③ Unload button - for starting the unload sequence.
- ④ Cassette light - see User's Guide for definitions.
- ⑤ Drive light - see User's Guide for definitions.

C1511A HP-IB DDS-Format Tape Drive



LG200177_009

Figure 7-70. Rear Panel Selectors and Connectors

- ① HP-IB address selector
- ② Voltage select switch
- ③ HP-IB connector
- ④ Power connector
- ⑤ Fuse holder and fuse - different outside USA and Canada - see User's Guide Chapter 1.

Refer to the *HP Series 6400 Model 1300H HP-IB DDS-Format Drive User's Guide* (HP part number C1511-90901) for setting up, using, and maintaining this tape drive.

C1511A HP-IB DDS-Format Tape Drive

Note If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*

- a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
- b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following high-speed HP-IB interfaces, listed in order of preference for optimum disk performance:

- HP 98262A high-speed HP-IB daughter board *or* HP 98625B high-speed HP-IB disk interface card
- HP 98625A high-speed HP-IB disk interface card
- Built-in "optional" secondary high-speed HP-IB interface.

Note With a 98625A high-speed HP-IB disk interface card or the "optional" secondary high-speed HP-IB interface, be sure that *no* SCSI bus interface is installed.

3. *Set the HP-IB bus address*

The HP-IB bus address is preset to 3.

Note You should familiarize yourself with the HP-IB addresses that are currently in use on your system. Determine the available HP-IB address(es). Use the foldout worksheet at the end of this book to note already-used addresses.

You are limited to eight devices per HP-IB card, addresses 0 through 7.

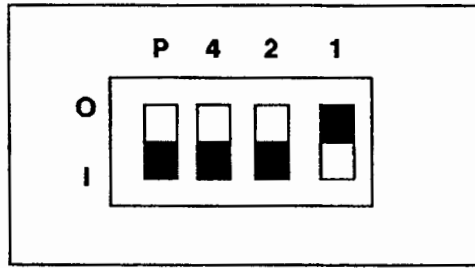
- a. Find the HP-IB address selector.
- b. Set the Parity (P) switch to on (1).
- c. Set the HP-IB address according to Table 7-50. An example of setting the SCSI address to 6 is illustrated in Figure 7-71. In Figure 7-71 the black squares represent the switches.

Table 7-50. HP-IB Address Settings

HP-IB Address	P	4	2	1
0	1	0	0	0
1	1	0	0	1
2	1	0	1	0
3	1	0	1	1
4	1	1	0	0
5	1	1	0	1
6	1	1	1	0
7	1	1	1	1



C1511A HP-IB DDS-Format Tape Drive



LQ200177_011

Figure 7-71. HP-IB Address 6

7

C1511A HP-IB DDS-Format Tape Drive

4. *Connect the tape drive to your computer.*

If you need to replace your HP-IB cable for any reason, the following list contains the available HP-IB cables and their lengths.

- HP 10833A 1.0 meter HP-IB cable
- HP 10833B 2.0 meter HP-IB cable
- HP 10833C 4.0 meter HP-IB cable
- HP 10833D 0.5 meter HP-IB cable

- a. Connect one end of an HP-IB cable to the HP-IB connector on the back of the tape drive. Tighten the thumb screws to secure the connection.
- b. Connect the other end of the HP-IB cable to the interface or the last device on the chain.

If the HP-IB interface already has one or more devices connected to it, connect the cable from your new device to the last device on the chain as in Figure 7-72. A close-up of the “piggy-backed” HP-IB connectors on the last device on the chain is provided in Figure 7-73.

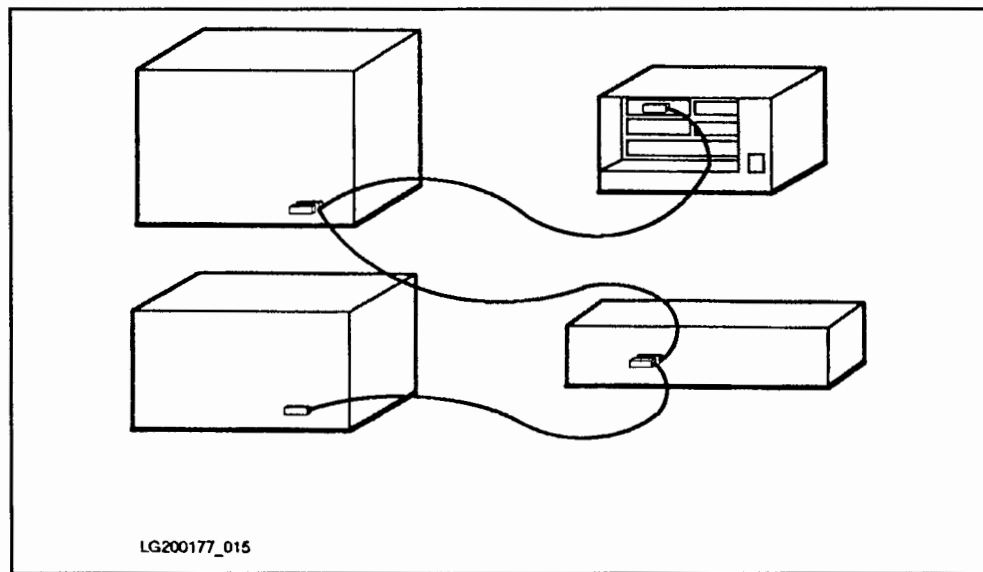
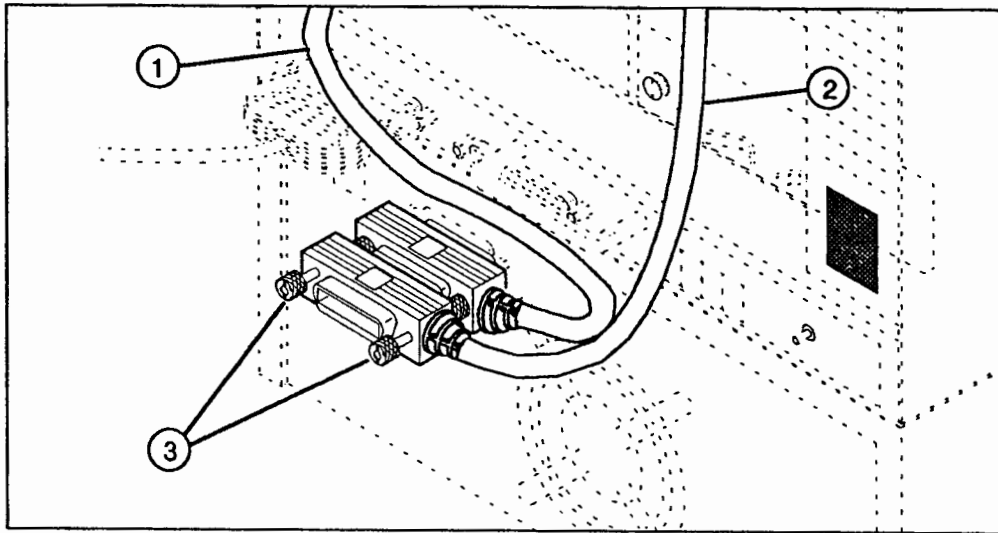


Figure 7-72. Daisy-Chained HP-IB Devices

7

C1511A HP-IB DDS-Format Tape Drive



LG200177_008

Figure 7-73. "Piggy-Backed" HP-IB Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP C1511A.
- ③ Thumb screws to be tightened.

7

5. *Record the HP-IB bus address.*

Make a note that the HP-IB bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

6. *Ensure that all power switches are in the OFF position.*

C1511A HP-IB DDS-Format Tape Drive

7. *Turn on the drive.*

8. *Insert tape.*

Note You must insert the tape *before* turning on the computer. If the DDS-format drive is found on the bus before the root disk during the automatic boot sequence, and no tape is inserted, the system will wait for you to insert a tape.

9. *Turn on the computer.*

Hardware Installation Complete!

C1511A HP-IB DDS-Format Tape Drive

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support tape drive set up.

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

Table 7-51. HP C1511A HP-IB DDS-Format Drive

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Minor Number ²	Interleave Factor	Select Code
HP C1511A HP-IB DDS	/dev/rmt/#s0	c	9	stape	0x0e0n00	-	14
HP C1511A HP-IB DDS	/dev/rmt/#s0	c	9	stape	0x070n00	-	7

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the address (set in step 4 of this installation procedure). Replace n with a 2 if the address was set to 2, use 3 if the address set to 3, and so on.

HP C1512A HP Series 6400 Model 1300S SCSI DDS-Format Drive

The HP Series 6400 Model 1300S is a tape drive that stores data in a format called Digital Data Storage (DDS) on cassettes that can each hold up to 1.3 gigabytes (1300 megabytes) of data. It is a standalone drive and uses a SCSI (Small Computer System Interface) interface. The Model 1300S is a high-capacity, medium transfer-rate device for offline data storage on tape. It is a streaming tape that has a fast search capability.

Refer to Appendix C: "Series 400 Support Matrix" for Series 400 hardware and software support information.

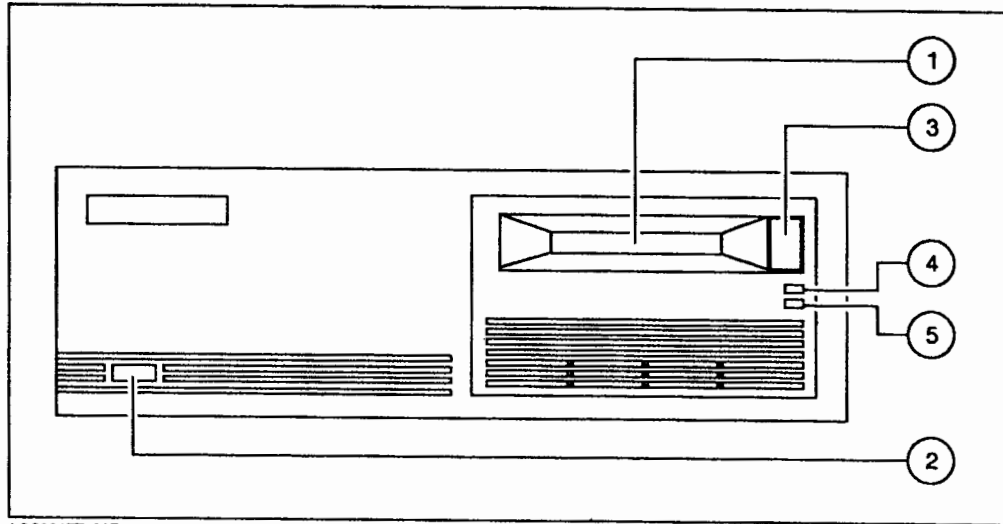
-
- Note**
- Refer to the "SCSI Device Guidelines" section in Chapter 1: "Introduction" before connecting this device to your system.
 - Use only HP labeled DDS media in HP DDS-format tape drives.
-

A box of five (60m) HP labeled DDS-format tapes is available, HP part number 92283A.

C1512A SCSI DDS-Format Tape Drive

Connecting the HP C1512A SCSI DDS-Format Tape Drive

The front and rear panels of the tape drives are contained in Figure 7-74 and Figure 7-75.

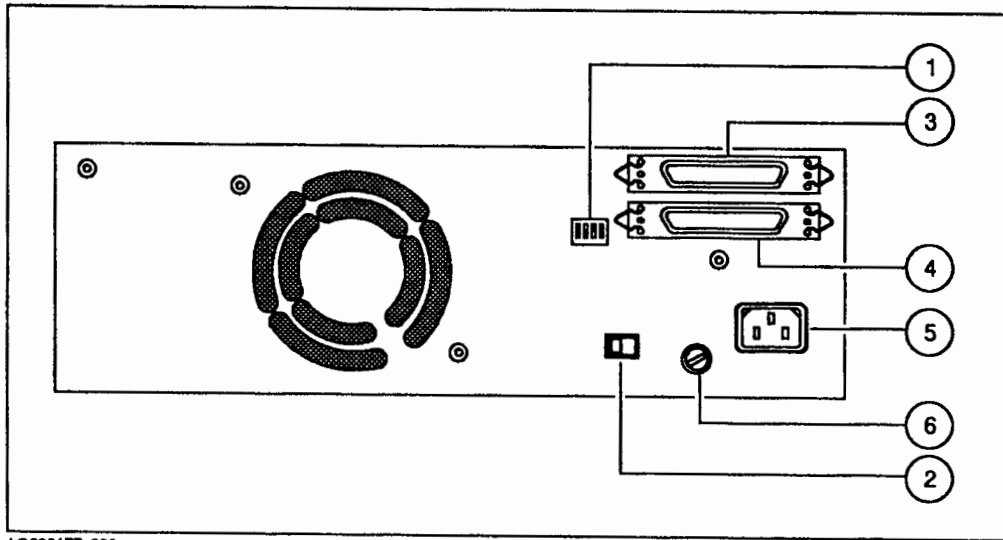


LG200177_007

Figure 7-74. Front Panel Controls and Indicators

- ① Cassette slot - for inserting a cassette.
- ② Line ~ switch - for switching the drive on and off.
- ③ Unload button - for starting the unload sequence.
- ④ Cassette light - see User's Guide for definitions.
- ⑤ Drive light - see User's Guide for definitions.

C1512A SCSI DDS-Format Tape Drive



LG200177_008

Figure 7-75. Rear Panel Selectors and Connectors

- | | |
|-------------------------|--|
| ① SCSI ID selector | ④ SCSI connector 2 |
| ② Voltage select switch | ⑤ Power connector |
| ③ SCSI connector 1 | ⑥ Fuse holder and fuse - see User's Guide. |

Refer to the *HP Series 6400 Model 1300S HP-IB DDS-Format Drive User's Guide* (HP part number C1512-90901) for setting up, using, and maintaining this tape drive.

7

C1512A SCSI DDS-Format Tape Drive

Note

If your system is configured as an HP-UX cluster, please refer to the *Managing Clusters of HP-UX Computers* Chapter 13: "Adding Peripherals to a Cluster" *before* adding this device to your system.

Disks and tape drives may be added in a cluster environment to your client or server.

1. *Play it safe.*

- a. Follow the computer "shut down" procedure. See *System Administration Tasks Manual* Chapter 3: "Starting and Stopping HP-UX" for specific instructions.
- b. TURN OFF the computer and unplug the power cord.

2. *Select your interface.*

Select one of the following SCSI interfaces:

- Built-in SCSI interface
- HP 98658A SCSI interface card
- HP 98265A SCSI interface daughter card

3. *Set the SCSI bus address*

The SCSI bus address is preset to 3.

Note You should familiarize yourself with the SCSI addresses that are currently in use on your system. Determine the SCSI address(es) that are available. You can refer to the fold out worksheet at the end of this book.

You are limited to seven devices per SCSI interface, bus addresses 0 through 6. You cannot use address 7 because the system's SCSI controller uses address 7.

- a. Find the SCSI ID selector.
- b. Set the Parity (P) switch to on (1).
- c. Set the SCSI address according to Table 7-52. An example of setting the SCSI address to 6 is illustrated in Figure 7-76. In Figure 7-76 the black squares represent the switches.

Table 7-52. SCSI Address Settings

SCSI Address	P	4	2	1
0	1	0	0	0
1	1	0	0	1
2	1	0	1	0
3	1	0	1	1
4	1	1	0	0
5	1	1	0	1
6	1	1	1	0

C1512A SCSI DDS-Format Tape Drive

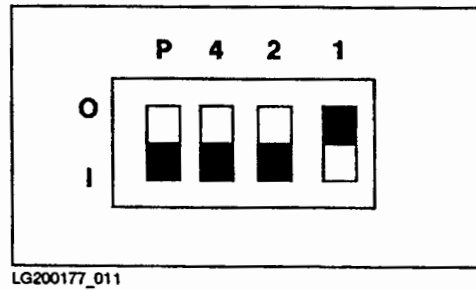


Figure 7-76. SCSI Address 6

4. *Connect the tape drive to your computer.*

The SCSI bus length is limited to a maximum of six meters. This length includes the cable length between devices and the internal bus length for each device on the bus. The following table shows the SCSI cables available for connection to your computer system. The terminators are also included in this table.

C1512A SCSI DDS-Format Tape Drive

Table 7-53. SCSI Cable and Terminator Matrix

↓ TO ⇒	High Density Thumb Screw Connector	Low Density Bail Lock Connector
Device Low Density Bail Lock Connector	K2296 0.9m K2297 1.5m	92222A 0.5m 92222B 1.0m 92222C 2.0m 92222D 1.0m ¹
Terminators	K2291 ²	1252-2297 ³ 1252-3920 ⁴

¹ HP 92222A, 92222B, and 92222C are male to male connectors. The HP 92222D extender cable is a male to female connector.

² Used to terminate High Density SCSI devices. These devices are the internal devices (disk drives) for the Series 400.

³ Used to terminate low density Series 300/400 SCSI devices. All external SCSI devices use low density connectors.

⁴ Used to terminate low density Series 800/600 SCSI devices. Shipped with SCSI interface card. All external SCSI devices use low density connectors.

The HP C1512A DDS-Format drive has an internal bus length of .55 meters.

- a. Attach one end of the SCSI cable to one of the two connectors on the disk drive (it does not matter which one). Press completely in.
- b. Attach the other end of the new SCSI cable to the SCSI interface card.
- c. Attach the terminator to the unoccupied connector on the tape drive. If you do not have a terminator, you will need to order one. Refer to the "SCSI Cable and Terminator Matrix" to determine the terminator part number you need to order. If you have one or more devices attached to the SCSI interface as in Figure 7-77:
 - i. Remove the terminator from the last device on the chain.
 - ii. Attach the end of the new SCSI cable to the connector you removed the terminator from.

A close-up of the SCSI connectors on the previously last device on the chain is provided in Figure 7-78.

C1512A SCSI DDS-Format Tape Drive

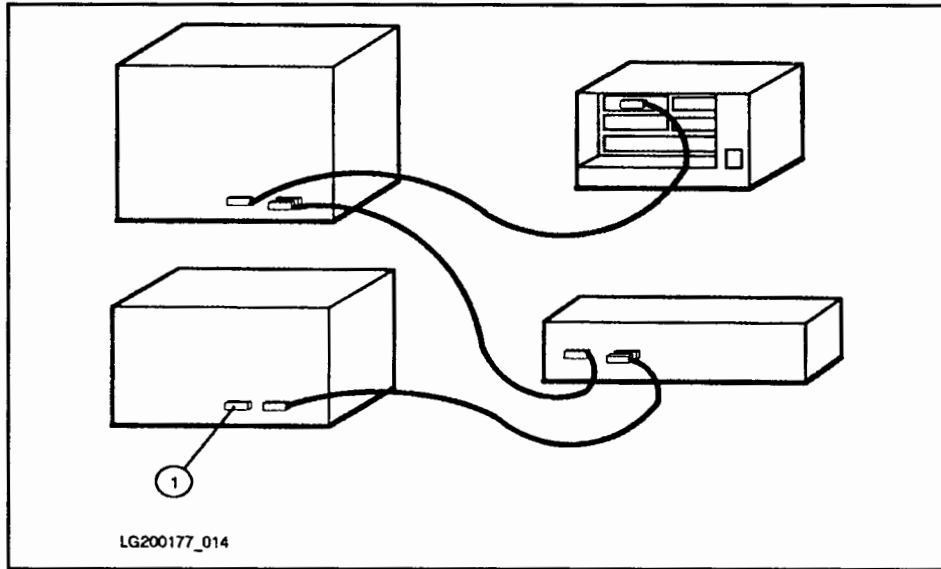
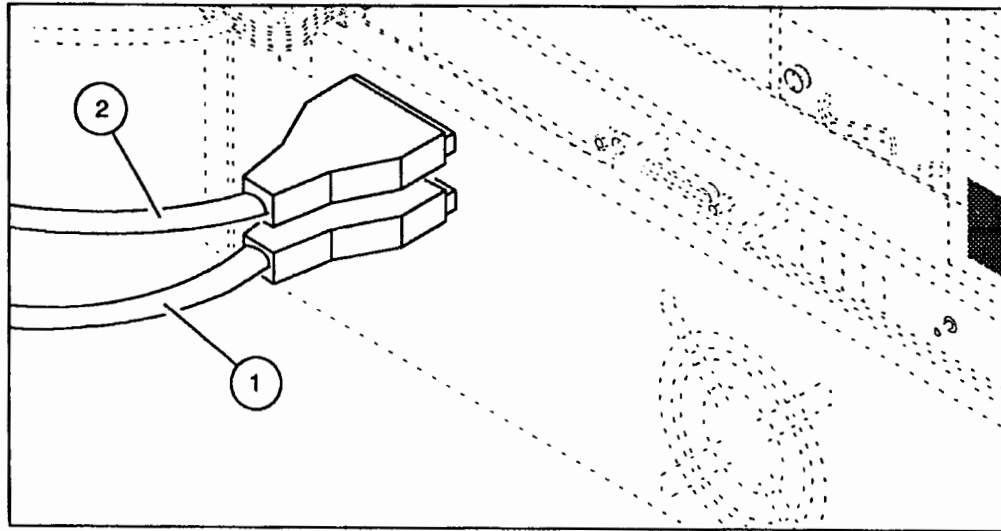


Figure 7-77. Daisy-Chained SCSI Devices

- ① Terminator



LG200177_013

Figure 7-78. SCSI Connectors

- ① Cable to the interface or previous device.
- ② Cable to the HP C1512A DDS-Format drive.

d. You *must* place the terminator (supplied with the SCSI interface card) on the other connector on the back of the tape drive. Press completely in.

5. *Record the SCSI bus address.*

Make a note that the SCSI bus address you selected has been used and is no longer available on the interface you selected. Use the foldout worksheet at the end of this book for this purpose.

C1512A SCSI DDS-Format Tape Drive

6. *Ensure that all power switches are in the OFF position.*
7. *Turn on the drive.*
8. *Insert tape.*

Note You must insert the tape *before* turning on the computer. If the DDS-format drive is found on the bus before the root disk during the automatic boot sequence, and no tape is inserted, the system will wait for you to insert a tape.

9. *Turn on the computer.*

Hardware Installation Complete!

HP-UX Set Up Information

The following table(s) contain detailed HP-UX software set up information. If you are using SAM to set up HP-UX to communicate with your newly-connected device, you will not need to refer to the following table(s). If you are using the HP-UX commands method to set up HP-UX to communicate with your newly-connected device, you may need to refer to the following table(s).

The device file naming conventions, file type specifications, major numbers, minor number format, and device file creation examples are described in Chapter 9: "Setting Up Devices Using HP-UX Commands".

Note SAM does not support tape drive set up.

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for software configuration instructions.

Table 7-54. C1512A SCSI DDS-Format Drive

Device Name	Path Name ¹	File Type	Major Number	Device Driver	Select Code	Minor Number ²
HP C1512A SCSI DDS, no rewind	/dev/rmt/0mn	c	54	scsitape	14	0x0e0n00

1 # is a number that identifies the device (for example, 0 for the root disk, 1 for the next disk installed. Replace # with any unique number, and use the same number in both the /dev/dsk and /dev/rdisk entries (for example, /dev/dsk/1s0 and /dev/rdisk/1s0).

2 n is a number that identifies the bus address. Replace n with a 2 if the bus address was set to 2, use 3 if the address set to 3, and so on.

Setting Up HP-UX for Disk Drives

Introduction

This chapter discusses setting up HP-UX to communicate with your disk drive. Setting up HP-UX for a disk drive consists of:

- creating the device file or verifying the correct device file already exists for communication with the device.
- ensuring the appropriate HP-UX device driver is part of the current kernel configuration.

There are two methods for setting up HP-UX:

- SAM method
- HP-UX Commands method



This chapter focuses on the SAM method to set up HP-UX for disk drives.

Note SAM does not support setting up HP-UX to communicate with tape drives.

Refer to Chapter 9: "Setting Up Devices Using HP-UX Commands" for a description of the HP-UX commands method if:

- you do not have SAM resident on your system.
- you are setting up HP-UX to communicate with a tape drive.

Checking Kernel Configuration

The following sequence of SAM menus selected from the main menu `System Administration Manager` will display the current kernel configuration for disk and tape drives:

```
Kernel Configuration ->
↓
Change I/O Configuration ->
↓
Disk Drivers ... or Tape Drivers ...
```

If the particular driver you are checking for *is* included in the current kernel configuration, Go directly to the “Creating the Device File” section of this chapter skipping the remaining text in this section.

If the particular driver you are checking for is *not* included in the current kernel configuration and has a *n* next to the driver description, change the *n* entry for the particular driver you wish included in the new kernel configuration to a *y* and rebuild the kernel. Use the `Tab` key or `▼` and `▲` keys to move to the driver field on the screen you wish to change.

Setting Up HP-UX for Disk Drives

The following sequence of SAM menus selected from the main menu **System Administration Manager** will rebuild the kernel.

Select **Kernel Configuration ->**

You will be prompted with the following message:

```
The file below provides current kernel values for
viewing or modification. To use a different set
of initial values, specify your own file. In
either case, press "Return" or "Done" to proceed.
```

```
File: /hp-ux
```

Press "Return" or "Done".

Select **Generate a New Kernel (optionally reboot)**

You will be prompted with the following message:

```
This option will build a new kernel in /etc/conf. You will then be asked if
you want to reboot the system. do you want to continue (y or n )
```

Press *y*. A new kernel will be built and the system will reboot. After the system reboots you should login and reenter SAM. You can reenter the **Change I/O Configuration ->** menu to confirm that the newly added disk or tape driver is part of the current kernel configuration.

If the driver you intended to add to the kernel is not part of the current kernel configuration, repeat this section from the beginning.

If the driver you intended to add to the kernel has been successfully added, continue to the next section "Adding the Disk or Tape Drive to Your System."

Adding a Disk Drive to Your System

The following sequence of SAM menus from the main menu `System Administration Manager` will display the screen on which you will enter information specific to your disk drive.

```
Peripheral Devices ->
  ↓
Disk Drives ->
  ↓
Add a Hard Disk Drive ->
```

Enter the following information about the disk drive to be added to the system:

- model number
- select code
- bus address
- usage (file storage or swap space)
- mount (now and/or at every time you reboot)
- mount directory
- new file system (yes or no)
- view/modify additional default file system option (yes or no)

Use the `Tab` key to move from field to field as you fill in information on this screen. If you need additional information about a particular field, position the cursor on the field and press `Help F1`.

When you have filled in all of the information press `Perform Task F4`.

SAM will create the device file needed to communicate with the disk drive.

If the device driver for the disk drive is not part of the current HP-UX kernel configuration, SAM will ask you if you would like the device driver to be added. SAM will tell you that adding the device driver to the kernel will require a reboot of your system.

Setting Up Devices Using HP-UX Commands

Introduction

After you have connected your device, you must set up HP-UX to communicate with your newly connected device. Setting up HP-UX to communicate with devices consists of two steps:

- Creating the device file or verifying that the correct device file already exists for communication with the device.
- Ensuring that the appropriate HP-UX device driver is part of the current kernel configuration.

These tasks can be performed in any order. This chapter focuses on these two tasks.

Creating Device Files

Device files (special files) must be created for every device connected to your system. Interface cards are an exception. The interface card itself does not require a device file associated with it, but the device that is connected to the interface card does need a device file. For interface cards you only need to ensure that the device driver for the interface card is part of the kernel configuration. (See the section entitled “Ensuring the Device Driver is Part of the Kernel” later in this chapter for more information.) Adding a device driver to the current kernel configuration is discussed later in this chapter.

This section contains the following information:

- The `mknod(1M)` command syntax and examples.
- Viewing device file characteristics.
- Disk drive information and examples.
- Tape drive information and examples.
- Terminal and modem information and examples.
- Psuedo terminal information and examples.
- Plotter information and examples.
- Printer information and examples.
- Graphics device information and examples.
- HP-HIL device information and examples.
- GPIO device information and examples.

Using the `mknod` Command

The `mknod(1M)` command is used to create device files. The `mknod(1M)` command has the following syntax:

```
/etc/mknod path_name file_type major minor
```

where:

<i>path_name</i>	The pathname of the device file to be created. Select a name for the device file that easily identifies the associated peripheral. In the following sections, a paragraph for each type of peripheral describes the naming conventions for device files. Use this naming convention to make your system easier to support and maintain. Put all device files into the <code>/dev</code> directory; many commands expect to find device files in <code>/dev</code> and will fail if the required device file is not there.
<i>file_type</i>	File type is represented by a single character: <code>b</code> (block), <code>c</code> (character), <code>n</code> (network) or <code>p</code> (pipe). Refer to the <i>HP-UX Reference Manual</i> <code>mknod(1M)</code> man page for networking and pipe file type information. Disks should have both block and character device file entries. Any cartridge tape or flexible disk drives that will have mounted file systems should have entries for both block and character device files. All other devices should have character device file entries only. Character mode of device access is also referred to as raw mode, thus the naming of the device file directories <code>/dev/dsk</code> and <code>/dev/rdsk</code> .
<i>major</i>	The major number is a pointer to the kernel device driver used to communicate with the peripheral. For devices needing both a character and a block device file, there are different device drivers and therefore different major numbers for block and character device files for the same peripheral.
<i>minor</i>	The minor number specifies the hardware address (location on the I/O bus). It is made up of the select code, bus address or port number, and other driver specific information. It is a 24-bit value represented in hexadecimal on the command line.

Setting Up Devices Using HP-UX Commands

The following examples illustrate several occurrences of the `mknod` command.

```
% mknod /dev/rmt/0mn c 54 0x0e0103 <-- SCSI DDS-format drive
% mknod /dev/ac/1a   b 10 0x0e3001 <-- SCSI optical autochanger
% mknod /dev/crt    c 12 0x000001 <-- Graphics System Console
```

If you make a mistake while creating a device file, delete the device file you want to change and re-create it with `mknod`.

Viewing the Device File Characteristics

To view the device file characteristics execute an `ll` command from the directory containing your device file. For example,

```
crw--w--w-  1 root    other    0 0x000000 May 20 09:30 console
```

where the first character in the entry tells you whether the device file is a character (c) or block (b) device and the next series of characters represent the file's access permissions. The major and minor numbers are located in the fifth and sixth fields, respectively (where the size is displayed for a regular file). In this case, the major number is 0 and the minor number is 0x000000.

Disk Drives

There are three kinds of disk drives:

- Hard Disks
- Flexible Disks
- Optical Disks

You can use your hard disk as part of your swap space, part of the HP-UX file system, or both.

You can use your flexible disk as part of the file system or as miscellaneous storage space (for example, for backups). Flexible (floppy) disks come in two sizes: 5.25 inch and 3.5 inch. The 3.5 inch flexible disks are more common with an HP-UX system than the 5.25, but they are treated in the same manner.

You can use your optical disk setup, standalone or autochanger, as part of the file system or as secondary storage (for example, backups, archives). Additionally, the standalone optical disk drive can be used as part of your swap space.

This section contains the following information:

- Device file location and naming conventions.
- Block and character device file requirements and recommendations.
- Major number.
- Minor number format.
- Other information.
- Examples of creating device file for the following devices:
 - CS80-type Hard Disk Drive
 - Amigo-type Hard Disk Drive
 - 650/A Optical Disk Drive
 - Optical Library System

Setting Up Devices Using HP-UX Commands

Device files for disk drives should reside in the `/dev` directory. Disk drives require both character and block device files. Disks use the `/dev/rdisk` directory for the character device files and the `/dev/dsk` directory for the block device files.

Disk device file names are in the following format:

```
/dev/[r]dsk/[r]c#d##s#
```

where:

- r** indicates a raw interface to the disk; the second **r** should not be used and is reserved for future use
- c#d** indicates the controller number (which is optionally specified by the system administrator)
- #s#** indicates the drive and section numbers, respectively. The assignment of controller, drive, and section numbers is described in the *System Administration Tasks Manual*.

Additional information about disks can be found in `disk(7)` in the *HP-UX Reference Manual*.

Setting Up Devices Using HP-UX Commands

Table 9-1 lists the supported disk drives, their kernel device driver name, block major number, and character major number.

Table 9-1. Kernel Driver & Major Numbers for Disk Drives

Product Number or Name	Kernel Driver	Block Major Number	Character Major Number
HP 1707, HP 7907, HP 7908, HP 7911, HP 7912, HP 7914, HP 7933, HP 7935, HP 7936, HP 7937, HP 7941, HP 7942, HP 7945, HP 7946, HP 7957A/B, HP 7958A/B, HP 7959B, HP 9122, HP 9125, HP 9127, HP 9133D/H/L, HP 9134D/H/L, HP 9144, HP 9145, HP 9153, HP 9154	cs80	0	4
HP 7906, HP 7920, HP 7925, HP 82901, HP 82902, HP 9121, HP 9133A/B/V/XV, HP 9134A/B/XV, HP 9135, HP 9138A, HP 9895	amigo	2	11
HP 7957S, HP 7958S, HP 7959S, HP C2212A/13A, HP 1701	scsi	7	47
HP 1700 Model 20GB/A	autoch, autox	10	55

Setting Up Devices Using HP-UX Commands

The minor number format for disk drives is as follows:

`0xScBaUV`

where:

- `0x` specifies format is in hexadecimal.
- `Sc` specifies the select code of the interface (8 bit value).
- `Ba` specifies the HP-IB or SCSI bus address (4 bit value).
- `U` specifies the unit number.
- `V` specifies the volume number (0 for single file systems).

Permissions for File Systems

You must have restricted access permission on all device files that are associated with mountable file systems, giving read/write permission to the owner (`root`) only. This prevents someone from mounting unauthorized media on your system, and prevents everyone on the system from accidentally overwriting a file system residing on the device associated with this device file.

For example:

```
chown root /dev/dsk/1s0 /dev/rdisk/1s0
chmod 600 /dev/dsk/1s0
chmod 600 /dev/rdisk/1s0
```

CS80-type Hard Disk Drive

If you have a CS80-type hard disk drive at select code 14 using bus address 2, use the following `mknod` command lines:

```
mknod /dev/dsk/1s0 b 0 0x0e0200
mknod /dev/rdisk/1s0 c 4 0x0e0200
```

If this is an integrated device (hard disk drive with either a flexible disk drive or a cartridge tape drive), you would also create device files for the other drive. For example, if you were adding an integrated hard disk and flexible disk drive, you would type, in addition to the above, the following two lines (notice the last two digits are 01 instead of 00 because it is unit 1):

```
mknod /dev/dsk/2s0 b 0 0x0e0101
mknod /dev/rdisk/2s0 c 4 0x0e0101
```

Note To help your users (and yourself) remember the names of the disk drive, you should label the disk drive with the device file path name.

Amigo-type Hard Disk Drive

If you have an Amigo -type hard disk drive at select code 14 using bus address 2, use the following `mknod` command lines:

```
mknod /dev/dsk/      b 2 0x0e0200
mknod /dev/rdisk/    c 11 0x0e0200
```

Note To help your users (and yourself) remember the names of the disk drive, you should label the disk drive with the device file path name.

650/A Optical Drive

If you have an optical disk drive, at select code 14, using bus address 1, use the following `mknod` command lines:

```
mknod /dev/dsk/mo b 7 0x0e0100
mknod /dev/rdisk/mo c 47 0x0e0100
```

Setting Up Devices Using HP-UX Commands

Optical Library System

For the Optical Library System, the minor number format changes to address the many surfaces available for data storage. The minor number for the Optical Library System has the following format:

OxScBISur

where:

Ox specifies format is in hexadecimal.
Sc specifies the select code of the interface (8 bit value).
B specifies the SCSI bus address (4 bit value).
Sur specifies the surface (16 bit value).

If you have a SCSI optical autochanger at select code 14 and address 3, use the following `mknod` command lines for one disk, both sides:

```
mknod /dev/ac/1a b 10 0x0e3001 <-- Side 1a/disk surface 1 - block
mknod /dev/rac/1a c 55 0x0e3001 <-- Side 1a/disk surface 1 - character
mknod /dev/ac/1b b 10 0x0e3002 <-- Side 1b/disk surface 2 - block
mknod /dev/rac/1b c 55 0x0e3002 <-- Side 1b/disk surface 2 - character
```

Continue with `mknod` commands until you end with the thirty-second disk, both sides, as in:

```
mknod /dev/ac/32a b 10 0x0e303f <-- Side 32a/disk 32 surface 63 - block
mknod /dev/rac/32a c 55 0x0e303f <-- Side 32a/disk 32 surface 63 - character
mknod /dev/ac/32b b 10 0x0e3040 <-- Side 32b/disk 32 surface 64 - block
mknod /dev/rac/32b c 55 0x0e3040 <-- Side 32b/disk 32 surface 64 - character
```

Since there are 129 `mknod` commands to execute (32 disks, 64 surfaces, 2 device files per surface, and 1 `ioctl` setup) you should create a script file to reduce the amount of typing.

Note The default SCSI select code is 14 and the default interface set on the optical autochanger controller is 3. If you have other SCSI peripherals set at interface 3, 4, or 5, you should check the optical autochanger installation manual for information on how to change these defaults.

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To ensure timely product performance, you should mount only two surfaces at a time as readable or writable. All of the other surfaces should be read-only.

9-10 Setting Up Devices Using HP-UX Commands

Setting Up Devices Using HP-UX Commands

None of the surfaces should be permanently mounted; therefore, do not include the optical surface file systems in the `/etc/checklist` file.

Tape Drives

There are three kinds of tape drives:

- 9-track Magnetic Tape
- Cartridge Tape
- DDS-Format Tape (DAT)

This section contains the following information:

- Device file location and naming conventions.
- Block and character device file requirements and recommendations.
- Major number.
- Minor number format.
- Other information.
- Examples of creating device file for the following devices:
 - 9-track Magnetic Tape
 - Cartridge Tape
 - DDS-Format Tape (DAT)

Setting Up Devices Using HP-UX Commands

DDS-format drives and 9-track magnetic tape drives are logically very similar. Both belong to the family of streaming tape drives. Most HP-UX commands that are typically associated with 9-track tapes, such as backups, can be used without modification with DDS drives.

9-track magnetic tapes are 1/2 -inch tapes on reels. You can use your magnetic tape for miscellaneous storage space (for example, backups).

Cartridge tapes, such as HP 9144 and HP 9145, are the 1/4 -inch tapes in plastic cartridges. Do not confuse this family of devices with DDS drives; they are quite different. HP-IB cartridge tape drives use the CS80 kernel disk driver. You can use your cartridge tape for miscellaneous storage space (for example, for backups).

DDS-Format tapes are based on Digital Audio Tape (DAT) technology. DAT uses an advanced form of helical scan recording to store 1.3 Gbytes of data on a DDS cassette, approximately the size of a credit card. The tape drive provides for high-capacity, unattended backups.

Note Use only HP-labeled DDS media in HP DDS-format tape drives.

A box of five (60m) HP labeled DDS-format tapes is available, HP part number 92283A.

Device files for tape drives should reside in the /dev directory. 9-track Magnetic and the DDS-Format tape drives use the /dev/rmt directory for the device file, and cartridge tape drives use the /dev/rct directory for the device file.

The following dedicated sections (magnetic tape, cartridge tape, and DDS-format tape), contain the device file naming conventions for each type of tape drive.

Setting Up Devices Using HP-UX Commands

All tape drives require only character device files.

Table 9-2 lists the supported tape drives, their kernel device driver name, and character major number.

Table 9-2. Tape Drive Kernel Drivers and Major Device Numbers

Product Number or Name	Kernel Driver	Character Major Number
HP 7970	tape	5
HP 7971	tape	5
HP 7974	stape	9
HP 7978	stape	9
HP 7979	stape	9
HP 7980	stape	9
Cartridge Tape	cs80	4
HP C1511	stape	9
HP C1512A	scsitape	54

Setting Up Devices Using HP-UX Commands

9-Track Magnetic Tape Drive

The following naming convention is recommended for magnetic tape devices because it connects most of the mode flags with the device name:

```
/dev/[r]mt/c#d#[hml][c][n]
```

where:

- r** indicates a raw (character) device
- c#d** indicates the controller number (optionally specified by the system administrator)
- #** is the device number
- hml** indicates the density:
 - h (high) for 6250 bpi
 - m (medium) for 1600 bpi
 - l (low) for 800 bpi
- c** indicates data compression
- n** indicates no rewind on close

For example, `/dev/rmt/2mn` is raw device 2 at 1600 bpi with no rewind and no compression.

Additional information about 9-track magnetic tape is available in *mt(7)* of the *HP-UX Reference Manual*.

Setting Up Devices Using HP-UX Commands

For the 9-track magnetic tape drives, the minor number format changes to address the different recording densities: 800 bpi, 1600 bpi, 6250 bpi, and compressed 6250 bpi. The minor number format for the 9-track magnetic tape is as follows:

0xScBaUV

- 0x** This prefix indicates the number is hexadecimal.
- Sc** This field is a two-digit hexadecimal representation of the select code. The select code is determined from the switch settings on the tape drive's interface card.
- Ba** This field is a two-digit hexadecimal representation of the bus address. It is determined from the switch settings on the tape drive.
- U** The single hexadecimal unit number (**U**) represents a four-bit binary value. Setting and clearing the bits of this binary value affect the manner in which the tape drive operates, as indicated in Table 9-3.
- V** The volume number (**V**) field of the minor number also has special meaning when creating device files for magnetic tape drives. The single hexadecimal volume number represents a four-bit binary value. Setting and clearing the bits of this binary value affect the manner in which the tape drive operates, as indicated in Table 9-4 .

Setting Up Devices Using HP-UX Commands

Table 9-3 indicates the special meanings of each bit in the unit number portion of the magnetic tape minor number. Bits 6 and 7 select the tape density, while bits 4 and 5 represent the unit number, and “x”s represent “don’t care”:

Table 9-3. Tape Density and Unit Number Bit Settings

Hex Value	7	6	5	4	Selects
c	1	1	x	x	Density = 6250 bpi compressed (HP 7980XC and HP 7980SX)
8	1	0	x	x	Density = 6250 bpi (HP 7978, HP 7980A and HP 7980S)
4	0	1	x	x	Density = 1600 bpi (All mag tapes)
0	0	0	x	x	Density = 800 bpi (HP 7974, opt 800 only)
0	x	x	0	0	Select Unit 0
1	x	x	0	1	Select Unit 1, etc.

Table 9-4 indicates the special meaning each bit has in the volume number of the magnetic tape minor number:

Table 9-4. Magnetic Tape Operation Bit Settings

Bit Order	When Clear (0)	When Set (1)
3	Industry Standard mode	HP-UX 2.0 compatibility mode
2	Immediate report on (ignored by HP 7970/7971)	Immediate report off
1	AT&T-style compatibility mode	Berkeley-style compatibility mode
0	Rewind on close	No rewind on close

Setting Up Devices Using HP-UX Commands

If you connected an HP 7978 tape drive to select code 14, HP-IB bus address to 3, use the following `mknod` commands:

```
mknod /dev/rmt/0mn c 9 0x0e0343
mknod /dev/rmt/0h c 9 0x0e0382
```

You could access the same drive as a 6250 bpi device using the “0h” device and as a 1600 bpi device using the “0mn” name. You could also use the “mt” command to do various positioning operations on the tape without having to provide a device name because `mt` uses the default device `/dev/rmt/0mn`. Since `tar` defaults to `/dev/rmt/0m`, you may also want to create this file.

Setting Up Devices Using HP-UX Commands

Cartridge Tape Drive

Cartridge tape device file names have the following format:

```
/dev/(r)ct/(r)c#(d#)(s#)
```

where:

- r** indicates a raw interface to the cartridge tape; the second **r** is reserved to indicate that this cartridge tape is on a remote system.
- c#** indicates the controller number
- d#** optionally indicates the drive
- s#** optionally indicates a section number

The assignment of controller, drive, and section numbers is described in the *System Administration Tasks Manual*.

Additional information about cartridge tapes is in *ct(7)* of the *HP-UX Reference Manual*.

The minor number format for cartridge tape drives is as follows:

```
0xScBaUV
```

where:

- 0x** specifies format is in hexadecimal.
- Sc** specifies the select code of the interface (8 bit value).
- Ba** specifies the HP-IB bus address (4 bit value).
- U** specifies the unit number.
- V** specifies the volume number (0 for single file systems).

Setting Up Devices Using HP-UX Commands

If you have a CS80 cartridge tape drive at select code 14, HP-IB bus address 1, your `mknod` command line would be:

```
mknod /dev/rct/0s0 c 4 0x0e0100
```

If this is an integrated device (both hard disk and cartridge tape drive in the same unit), the hard disk drive is unit 0 and the cartridge tape drive is unit 1. You would create three device files: one block device file for the hard disk, and one character device file for each unit. For example, if you have a CS80 drive at select code 14, bus address 1, your `mknod` command lines would be:

```
mknod /dev/dsk/1s0 b 0 0x0e0100
mknod /dev/rdsk/1s0 c 4 0x0e0100
mknod /dev/rct/0s0 c 4 0x0e0110
```

Note To help your users (and yourself) remember the names of the drive, you should label the drive with the device file path name.

Setting Up Devices Using HP-UX Commands

DDS-Format Tape Drive (DAT)

The following naming convention is recommended for DDS-format tape drives:

```
/dev/[r]mt/c#d#m[n]
```

where:

- r** indicates a raw (character) device
- c#d** indicates the controller number (optionally specified by the system administrator)
- #** is the device number
- m** indicates the density *m* (medium) for 1600 bpi
- n** indicates no rewind on close

Additional information about magnetic tape can be found in *mt(7)* of the *HP-UX Reference Manual*.

Setting Up Devices Using HP-UX Commands

Encoded in the minor number of the DDS-Format Tape Drive (DAT) are its various modes of operation. The minor number for the DDS-Format Drive has the following format:

0xScBaUV

where:

- Ox specifies format is in hexadecimal.
- Sc specifies the select code of the interface (8 bit value).
- Ba specifies the SCSI bus address (4 bit value).
- U specifies the unit number. (0 for SCSI Drive, 4 for HP-IB Drive, 4 bit value)
- V specifies the volume number (4 bit value). Most significant bit (bit 3) is always zero (0). The other three bits have the following meaning:

Table 9-5.

Bit	Clear(0)	Set(1)
2	Immediate Report on	Immediate Report off
1	AT&T-style close	Berkeley-style close
0(lsb)	Rewind on close	No rewind on close

An HP-IB DDS-format drive is connected to the high-speed disk interface at select code 14. The tape drive's bus address is set to 3. Your mknod command lines are the following:

```
% mknod /dev/rmt/Omn c 9 0x0e0343 <--IR on, Berkeley-close, no rewind
% mknod /dev/rmt/Om c 9 0x0e0342 <--IR on, Berkeley-close, rewind
```

Setting Up Devices Using HP-UX Commands

A SCSI DDS-format drive is connected to the SCSI interface at select code 14. The tape drive's bus address is set to 1. Your `mknod` command lines are as follows:

```
% mknod /dev/rmt/0mn c 54 0x0e0103 <--IR on, Berkeley-close, no rewind
% mknod /dev/rmt/0m c 54 0x0e0102 <--IR on, Berkeley-close, rewind
```

Note To help your users (and yourself) remember the names of the drive, you should label the drive with the device file path name.

Terminals and Modems

This section contains the following terminal and modem information:

- Process overview for setting up HP-UX to communicate with terminals and modems.
- Device file location and naming conventions.
- Block and character device file requirements and recommendations.
- Major number
- Minor number format.
- Examples of creating device files.
- Other information.

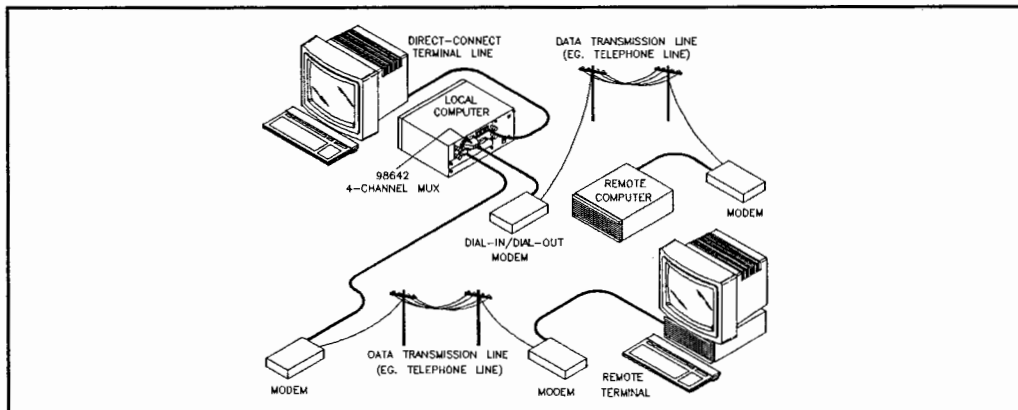


Figure 9-1. Terminal and Modem Connections

You should already have the terminal and modem physically connected to your system as in Figure 9-1. If you do not have the terminal and/or modem connected to your system, refer to *Installing Peripherals, Volume 1, Chapter 5: "Installing Terminals and Modems"*.

Communication ports (user terminals as well as modems) need to be identified by one or more device file, depending on the intended use of the port. Device file naming conventions vary, depending on the device's use. Terminal (tty) files are required for terminals (hard-wired ports). Ports that receive incoming

Setting Up Devices Using HP-UX Commands

signals (“dial in” modems) require a special naming convention, `ttyd`, for device files. Ports that transmit signals (“dial out”) require both `cua` and `cul` device files.

Use the following procedure to set up a terminal or a modem.

1. Create the device files required. If the terminal uses both dial-in and dial-out access, you will need three files.
2. Add the necessary `getty` entries to the `/etc/inittab` file.
3. Add the necessary entries to the `/etc/ttytype` file.
4. When using the terminal, set the `TERM` environment variable and execute the `tset` command.

Note If you are on an HP-UX cluster, `/dev` is a context-dependent file. This means you must create the device file from the cnode where the terminal is located.

Setting Up Devices Using HP-UX Commands

The following list contains RS-232-C driver names associated with several types of serial connections. The drivers listed must be included in the `dfile` for the specified serial connection type.

Device Driver	Connection Type
98626	Series 300 Built-in RS-232-C port and HP 98626A RS-232-C Interface
98628	HP 98628A Datacomm Interface
98644	HP 98644A Asynchronous Serial Interface
apci	Series 400 Built-in RS-232-C port
98642	HP 98642A 4-Channel Multiplexer Interface or HP 98638A 8-Channel Multiplexer Interface

All serial drivers require a major number of 1.

Setting Up Devices Using HP-UX Commands

The minor number format for terminals and modems is as follows:

0xScPa0X

where:

- 0x* This indicates the number is hexadecimal.
- Sc* The select code, which is a two-digit hexadecimal number determined by switches set on the terminal or modem's interface card.
- Pa* The port address for each port.
- This two-digit hexadecimal number is set by switches on the device. Port address is always 00 if your terminal was connected to an HP 98626 or HP 98644 interface card, and can be 00, 01, 02, or 03 if the terminal was connected to an HP 98642 interface card.
- 0* Four bits of 0.
- X* The hexadecimal representation of a 4-bit binary number as defined below:

Bit	Value
3	Always 0
2	1=direct connect, 0=modem
1	1=CCITT protocol (Europe), 0=Simple protocol (U.S.)
0	1=dialout modem, 0=dial-in modem

Setting Up Devices Using HP-UX Commands

Table 9-6 shows a general `mknod` template for ports where `xx` is a two-digit line identifier in the device file name:

Table 9-6. General Template for Ports

Device	Notes
<code>ttyxx</code>	hardwired ports (terminals)
<code>ttydxx</code>	dial-in modems
<code>cuaxx</code>	autodial-out ports
<code>culxx</code>	dial-out ports

Modems require two device files and possibly three. The “dial-in modems” device file `ttydxx` and the “dial-out ports” device file `culxx` are required. If you are using a non-HoneyDanBear `uucp`, the system dials its connection using `/usr/lib/dialit.c`, which requires you to create a third modem device file `cuaxx` with the same minor number as the `culxx` device file.

Assume that you want to create device files for a modem at select code 20 (decimal 20 = hexadecimal 14), using an HP 98626 card, and associate it with line 20 (that is, `/dev/ttyd20`). Because the modem will be used as a dial-in and dial-out port, the X term of the minor number on the `cul` file must be 1, and on the `ttyd` file must be 0. The following `mknod` command lines are needed:

```
mknod /dev/cul20 c 1 0x140001
mknod /dev/cua20 c 1 0x140001
mknod /dev/ttyd20 c 1 0x140000
```

There are now three device files associated with the dial-in and dial-out modem at select code 20. Similarly, the `mknod` command lines for an HP 98642 four port mux with port 0 attached to a modem and terminals attached to ports 1 to 3 are:

```
mknod /dev/tty01 c 1 0x0d0004
mknod /dev/cul01 c 1 0x0d0001
mknod /dev/cua01 c 1 0x0d0001
mknod /dev/tty02 c 1 0x0d0100
mknod /dev/tty03 c 1 0x0d0200
mknod /dev/tty04 c 1 0x0d0300
```


Setting Up Devices Using HP-UX Commands

The following example will set up a direct-connect port for an HP 98642 on line 13 at select code 13 (13 decimal = hexadecimal d). The minor number ends with a four since this is a direct-connect port:

```
mknod /dev/tty13 c 1 0x0d0004
```

When a terminal is added to the system, you must add entries to the `/etc/ttytype` and `/etc/inittab` files. This allows a user to login from the terminal.

Adding an Entry to the `/etc/ttytype` File

The `/etc/ttytype` file is a data base that contains the terminal type of the terminal associated with each port on the system. It is used by the `tset` and `login` commands. Based on the information in this file, `tset` will perform terminal-dependent processing, such as setting erase and kill characters, setting or resetting delays, and sending sequences needed to properly initialize the terminal. `login` uses this file to set the `TERM` variable.

The `/etc/ttytype` entries have the form:

model_number location

where:

model_number is the product number of the terminal or computer (as defined in `/usr/lib/terminfo`). For more information on the model number to use here, refer to the *terminfo(4)* entry in the *HP-UX Reference Manual*

location is the device file associated with the terminal/computer and contained in the `/dev` directory (not the full path name, just the file name).

Here is a sample `/etc/ttytype` file:

```
300h    console    # Frodo's (administrator) system console
2622    tty00      # Bilbo's terminal
2622    tty01      # Gandalf's terminal
2623    tty02      # Strider's terminal
dialup  ttyd03      # Greybeard's dialup modem
```

If the entry is for a dialup port, the *model_number* should be `dialup`. This causes `tset` to request the proper terminal type during the login sequence.

Note If you are on an HP-UX cluster, this file is a context-dependent file. There must be one subfile for each cluster node.

Setting Up Devices Using HP-UX Commands

Adding an Entry to the `/etc/inittab` File

The `/etc/inittab` file is described in Chapter 3, section “System Startup Functions”. For terminals, `/etc/inittab` entries contain the `/etc/getty` command. This section discusses entries specific to terminals.

Most `/etc/inittab` entries for terminals have the form:

```
id:rstate:respawn:/etc/getty -t xxx device_file_name N # comment field
```

where:

<code>id</code>	is a unique two-character string. The value of the two-character string is arbitrary but must be unique for each entry. It is used to refer to the same entry/process in other states.
<code>rstate</code>	indicates the <code>getty</code> run-levels. This field typically equals two, meaning the terminal can be used in run-level two only.
<code>respawn</code>	Specifies that the command in the command field (such as <code>getty</code>) is re-invoked once the process terminates (typically, when a user logs off the system).
<code>/etc/getty</code>	This is the command to execute. The fields of the <code>/etc/getty</code> command are described below.

The fourth field, the `process` field, must contain the `/etc/getty` command; it is immediately followed by three parameters for a `getty` command, as follows:

<code>-t xxx</code>	is the optional time-out option for use with modems.
<code>device_file_name</code>	is the file name (<code>tty04</code>)—not the complete path name (<code>/dev/tty04</code>)—of the terminal’s or modem’s character device file. The named file must reside in the <code>/dev</code> directory.
<code>N</code>	specifies a speed indicator for <code>getty</code> . A value of H is common for “hardwired” (9600 baud terminal) lines; a value of three is common for dial-up (300/1200 baud modem) lines.

Setting Up Devices Using HP-UX Commands

For more information, refer to the `getty(1M)` and `gettydef(4)` entries in the *HP-UX Reference Manual*.

On a multi-user system, each terminal connected to the system must have an entry in `/etc/inittab`. For example, to add a terminal on `/dev/tty04` for run-level 2 the `/etc/inittab` is the following:

```
04:2:respawn:/etc/getty tty04 H #terminal at rob's desk
```

Note that the `id` field `04` corresponds to the last two digits of the terminal's device file (`tty04`). This convention is often used with "continuous" (respawn) `getty` processes that get killed in the single-user run-level but is *not* required syntax: any two-character string will suffice. After a user logs out, `getty` is "respawned", and the "login:" prompt is redisplayed. Refer to Chapter 3 in this manual, and to the `getty(1M)`, `gettydef(4)`, and `inittab(4)` entries in the *HP-UX Reference Manual* for further details.

If you are on an HP-UX cluster, this file is a context-dependent file. There must be one subfile for each cluster node.

You must configure your kernel to support the terminal or modem's interface card. The interface card kernel drivers to choose from are: `98628`, `98642`, or `98626`. The HP `98644` interface card requires the `98626` kernel device driver. For example, if your terminal is connected to an HP `98642` Mux Card, you need kernel driver `98642`.

If you haven't reconfigured your kernel to include the new interface card, you will receive a message on your console similar to:

```
Unable to access ttyxx
```

If you don't know what interface your terminal or modem is connected to, or can't decide which interface to connect it to, read the information for your peripheral in *Installing Peripherals, Volume 1* Chapter 5: "Installing Terminals and Modems".

Setting Up Devices Using HP-UX Commands

Removing A Terminal

If you remove a remote terminal from your system, you must clean up your system by performing the following steps:

1. Find the system's name for the terminal. If you have been receiving messages on your console that are similar to:

```
Unable to access ttyxx
```

the system's name for the terminal is the `ttyxx` name.

If you do not receive the message, determine the name of the remote terminal by the following method:

- a. type `cd /dev`
- b. type `ls -l tty*`

You will see lines similar to:

```
crw--w--w-  1 ryk   axe      1 0x000000 1986   /dev/ttyxx
```

If you have only one `tty` file, that is the terminal you are removing.

If you have several, determine which one to remove by using the information you used to set up the terminal. Refer to the section "Minor Number for Ports".

2. Edit the file `/etc/inittab`.

Delete the line that has a field with the words:

```
id:rstate:respawn:/etc/getty ttyxx
```

where *ttyxx* is the port you identified in Step 1.

3. Notify the `init` process that `/etc/inittab` has changed by typing:

```
telinit q
```

4. Remove the device file associated with the terminal you removed.

Pseudo Terminals

This section contains the following information:

- Process overview for setting up HP-UX to communicate with pseudo terminals.
- Device file location and naming conventions.
- Block and character device file requirements and recommendations.
- Major number.
- Minor number format.
- Other information.
- Examples of creating device files.

Some applications need a form of software support that enables them to act as though they are connected to a terminal. This implementation is called a **pseudo terminal**. A pseudo terminal is a pair of character devices: a **master** device and a **slave** device.

The pseudo terminal is structured so that output from either process acts as input to the other. The slave device interacts with the application process. It provides processes (in this case, user applications) and an interface identical to that described in *termio(4)* of the *HP-UX Reference Manual*. The master device interacts with the server process controlling the application process. It interacts through the device as though it were a hardware terminal interface.

The difference between an HP-UX pseudo terminal and the interface described in *termio* is that the latter always has a hardware device behind it—like an HP 2623 terminal. A slave device has another process manipulating it through the master half of the pseudo terminal. Anything written on the master device is given to the slave device as input, and anything written on the slave device is presented as input on the master device.

According to HP-UX naming conventions, all pseudo terminal devices are located in the directories `/dev/pty` (slaves), and `/dev/ptym` (masters). The master device file should be called `/dev/ptym/ptyXX`, and the slave side `/dev/pty/ttyXX`, where *XX* is an identifying letter from *p* to *w*, and a hexadecimal digit. *Do not change these naming conventions because some programs depend on them.*

Setting Up Devices Using HP-UX Commands

For example, `/dev/ptym/ptyp0` (master) and `/dev/pty/ttyp0` (slave) would be the lowest numbered pseudo terminal pair; `/dev/ptym/ptywf` and `/dev/pty/ttywf` would be the highest ordered pair.

All pseudo terminals must be character device files.

The master pseudo terminal device driver must have a major number of 16. The slave pseudo terminal device driver must have a major number of 17.

The minor number for both master and slave pseudo terminal device files is:

```
0x00 YYYY
```

where `YYYY` is a unique hexadecimal value, in the range of 0 to `npty-1`, where `npty` is a configurable system parameter. (Refer to “Configuring Operating System Parameters” in Chapter 6 and to Appendix D in Volume 2 of this manual if you want to read about this parameter.) This value is used to identify the relationship between master and slave.

Using the lowest numbered pair, a sample `mknod` command would be:

```
mknod /dev/ptym/ptyp0 c 16 0x000000
mknod /dev/pty/ttyp0 c 17 0x000000
```

These commands would create a master and slave pair called `ptyp0` and `ttyp0`. The minor numbers, shown above as zeros, must be in the range of 0 to `npty-1` where `npty` is a configurable system parameter.

Your application’s documentation will tell you how many pseudo terminals you need. For example, HP Windows/9000 needs three master/slave pairs per window.

For more information on pseudo terminals, refer to both the *termio(5)* and *pty(5)* sections of the *HP-UX Reference Manual*.

Plotters and Digitizers

This section contains the following plotter and digitizer information:

- Device file location and naming convention.
- Block and character device file requirements and recommendations.
- Major number.
- Minor number format.
- Other information.
- Examples of creating device files.



Plotter and digitizer device files should be located in the `/dev` directory. Device file naming conventions use `plt` followed by the product number for plotters and `dig` followed by the product number for digitizers. If more than one device with the same product number is present, be certain not to duplicate their special file names. For example, to differentiate between two HP 7580 plotters, name the first one `plt7580.1` and the second `plt7580.2`. You can also use the `.#` prefix to distinguish plotters and digitizers based on their HP-IB bus address.

The file type for plotters and digitizers is always character.

Note For HP-HIL plotter and digitizers, refer to the “HP-HIL Devices” section of this chapter for configuration information.

The device driver required for HP-IB and parallel plotters and digitizers is `hpib` (major number 21). For parallel plotters the `parallel` driver is also required.

Note The `parallel` requires the `hpib` driver. Both of these drivers must be part of the kernel configuration for the parallel driver to operate.

Setting Up Devices Using HP-UX Commands

The following list contains RS-232-C driver names associated with several types of serial connections. The drivers listed must be included in the `dfile` for the specified serial connection type.

Device Driver	Connection Type
98626	Series 300 Built-in RS-232-C port and HP 98626A RS-232-C Interface
98628	HP 98628A Datacomm Interface
98644	HP 98644A Asynchronous Serial Interface
<code>apci</code>	Series 400 Built-in RS-232-C port
98642	HP 98642A 4-Channel Multiplexer Interface or HP 98638A 8-Channel Multiplexer Interface

All serial drivers require a major number of 1.

Refer to the `/etc/master` file to determine which driver you need for your plotter. There is a section in this file with the heading:

```
* field 1: product #      field 2: driver name.
```

Look for your plotter model in the first column; the associated driver is listed in the second column.

Setting Up Devices Using HP-UX Commands

The minor number for HP-IB plotters and digitizers has the following format:

`0xScBa00`

where:

`0x` specifies format is in hexadecimal.
`Sc` specifies the select code of the interface (8 bit value).
`Ba` specifies the HP-IB bus address (4 bit value).
`00` indicates last two hexadecimal digits are both zero (0).

For example, several HP 7580 plotters attached at HP-IB bus addresses 3, 4, and 5 to the same interface at select code 7 would require the following command lines to create the device files:

```
mknod /dev/plt7580.1 c 21 0x070300
mknod /dev/plt7580.2 c 21 0x070400
mknod /dev/plt7580.3 c 21 0x070500
```

Setting Up Devices Using HP-UX Commands

The minor number for RS-232-C plotters has the following format:

`0xScPo0A`

where:

- `0x` specifies format is in hexadecimal.
- `Sc` specifies the select code of the interface (8 bit value).
- `Po` specifies the RS-232-C port number, values 0 - 3 (8 bit value).
- `0` indicates value of zero (4 bit value).
- `A` indicates access type. The hexadecimal representation of a 4-bit binary number as defined below:

Bit	Value
3	Always 0
2	1=direct connect, 0=modem
1	1=CCITT protocol (Europe), 0=Simple protocol (U.S.)
0	1=dialout modem, 0=dial-in modem

For example, consider an HP 7550A plotter attached at the built-in RS-232-C port and an another HP 7550A plotter connected an HP 98628A Datacomm Interface at select code 20. Use the following command lines to create the device files for the two plotters:

```
mknod /dev/plt7580.1 c 1 0x090004
mknod /dev/plt7580.2 c 1 0x140004
```

Printers

This section contains the following printer information:

- Device file location and naming convention.
- Block and character device file requirements and recommendations.
- Major number.
- Minor number format.
- Other information.
- Examples of creating device files.

Printer device files should be located in the `/dev` directory. Device file naming conventions use `ptr` followed by the product number. If more than one device with the same product number is present, be certain not to duplicate their special file names. For example, to differentiate between two HP 2567C printers, name the first one `ptr2567C.1` and the second `ptr2567C.2`. You can also use the `“.#”` prefix to distinguish printers based on their HP-IB bus address.

The file type for printers is always character.

There are three HP-IB device drivers, one parallel, and five RS-232-C drivers for printers. The following list contains the device driver name and the associated major number:

Major Number	Driver Name
21	hpib (HP-IB)
26	ciper (HP-IB)
7	printer (HP-IB)
21	parallel

Note The `parallel` requires the `hpib` driver. Both of these drivers must be part of the kernel configuration for the parallel driver to operate.

Setting Up Devices Using HP-UX Commands

The following list contains RS-232-C driver names associated with several types of serial connections. The drivers listed must be included in the `dfile` for the specified serial connection type.

Device Driver	Connection Type
98626	Series 300 Built-in RS-232-C port and HP 98626A RS-232-C Interface
98628	HP 98628A Datacomm Interface
98644	HP 98644A Asynchronous Serial Interface
apci	Series 400 Built-in RS-232-C port
98642	HP 98642A 4-Channel Multiplexer Interface or HP 98638A 8-Channel Multiplexer Interface

All serial drivers require a major number of 1.

Refer to the `/etc/master` file to determine which driver you need for your printer. There is a section in this file with the heading:

```
* field 1: product #      field 2: driver name.
```

Look for your printer model in the first column; the associated driver is listed in the second column.

Setting Up Devices Using HP-UX Commands

The HP-IB minor number for HP-IB printers has the following format:

`OxScBaOM`

where:

- Ox** specifies format is in hexadecimal.
- Sc** specifies the select code of the interface (8 bit value).
- Ba** specifies the HP-IB bus address (4 bit value).
- O** indicates 1 hexadecimal digit with value zero (4 bit value).
- M** indicates mode of operation with the following settings:

Printer **Driver Bits**

Bit	Value
3 Auto FF	1=NO-EJECT
2 Case Fold	1=Upper
1 Overprint	1=NOCR
0 Cooked/Raw	1=non-protocol (raw), 0= Amigo (cooked) protocol

Setting Up Devices Using HP-UX Commands

Ciper Driver Bits

Bit	Value
3 Auto FF	1=NO-EJECT
2 Case Fold	0=Upper
1 Overprint	0=NOCR
0 Cooked/Raw	1=non-protocol (raw),

For example, several HP 2563B printers attached at HP-IB bus addresses 3, 4, and 5 to the same interface at select code 7 would require the following command lines to create the device files:

```
mknod /dev/ptr2563B.1 c 7 0x070300
mknod /dev/ptr2563B.2 c 7 0x070400
mknod /dev/ptr2563b.3 c 7 0x070500
```

Setting Up Devices Using HP-UX Commands

The RS-232-C minor number for RS-232-C printers has the following format:

`0xScPo0A`

where:

- `0x` specifies format is in hexadecimal.
- `Sc` specifies the select code of the interface (8 bit value).
- `Po` specifies the RS-232-C port number, values 0 - 3 (8 bit value).
- `0` indicates value of zero (4 bit value).
- `A` indicates access type. The hexadecimal representation of a 4-bit binary number as defined below:

Bit	Value
3	Always 0
2	1=direct connect, 0=modem
1	1=CCITT protocol (Europe), 0=Simple protocol (U.S.)
0	1=dialout modem, 0=dial-in modem

For example, consider an HP 2567C printer attached at the built-in RS-232-C port and another HP 2567C printer connected an HP 98628A Datacomm Interface at select code 20. Use the following command lines to create the device files for the two plotters:

```
mknod /dev/ptr2567C.1 c 1 0x090004
mknod /dev/ptr2567C.2 c 1 0x140004
```


Setting Up Devices Using HP-UX Commands

The parallel minor number for parallel printers has the following format:

`0xScPo0A`

where:

`0x` specifies format is in hexadecimal.
`Sc` specifies the select code of the interface (8 bit value).
`Po` specifies the RS-232-C port number, values 0 - 3 (8 bit value).
`000` indicates value of zero (12 bit value).

An HP 2567C printer, parallel interface, is connected to your system at select code 23. The `mknod` command line to create the device file would be:

```
mknod /dev/ptr2567C c 21 0x170000
```

Graphics Display Devices

This section contains the following graphic display device information:

- Device file location and naming convention.
- Block and character device file requirements and recommendations.
- Major Number.
- Minor number format.
- Other information.
- Examples of creating device files.

The device files for graphics displays should be located in the `/dev` directory. Device file naming conventions use `/dev/graphics` or `/dev/crt` for graphic displays. To address graphic display overlay planes, use the naming convention of prepending the device file name with the letter “o”, for example, `/dev/graphics` and `/dev/ographics` and `/dev/crt` and `/dev/ocrt`. If your graphic display is to be your system console, the naming convention is `/dev/console`.

The file type for graphic display devices is always character.

The major number is 12 for graphic display devices.

Setting Up Devices Using HP-UX Commands

The minor number for graphic devices has the following format:

0xSTXXXX

where:

- Ox** specifies hexadecimal format.
- S** specifies select code (4 bit value).
- T** specifies the following values (4 bit value) :
- 0 Configures automatically to one of the following:
 - Low-resolution graphics device at physical address 0x520000 (if present).
 - High-resolution graphics device at physical address 0x560000 if low resolution device at 0x520000 not present.
 - 1 High-resolution graphics device at physical address 0x560000 (unless there is no low resolution device at 0x520000, in which case type 1 is invalid).
 - 2 High- or low-resolution graphics device at the select code specified by the select code field in the minor number.
- XXXX** is zero or contains device-specific information as defined in the appropriate Starbase Device Drivers Library.

Additional information about graphics can be found in *graphics(7)* of the *HP-UX Reference Manual*.

HP-HIL Devices

HP-HIL devices include the HP Touch Bezel, keyboards, mouse, digitizers, and control knobs.

To set up HP-HIL devices, there must be one device file with a major number 23 and for each HP-HIL device a device file with major number 24.

The minor number format is as follows:

0x0000B0

where:

- 0x specifies hexadecimal format.
- 0000 specifies 16 bit value of 0.
- B specifies position on the HP-HIL bus (4 bit value).
- 0 specifies 4 bit value of 0.

The following `mknod` commands create the necessary device file with major number 23 and 24 HP-HIL device files for devices.

```
mknod /dev/raw_8042 c 23 0x000000
mknod /dev/hil1 c 24 0x000010
mknod /dev/hil2 c 24 0x000020
```

The HP-HIL kernel driver is not an optional kernel driver so you never need to configure it into your kernel.

Additional information about the HP-HIL interface can be found in *hil(7)* of the *HP-UX Reference Manual*.

Setting Up Devices Using HP-UX Commands

GPIO Devices

GPIO devices include HP 98622. This is a protocol used mostly for instruments.

The gpio driver only operates in character mode.

The major number for gpio is 22.

The minor number format is as follows:

```
0xSc0000
```

where:

0x specifies hexadecimal format.

Sc specifies the select code (8 bit value).

0000 specifies a 16 bit value of zero.

Assuming you have an HP 98622A GPIO interface card at select code 12, default select code for interface card, the `mknod` command to access a device connected to the device is as follows:

```
mknod /dev/gpio c 22 0x0C0000
```

You also must verify that your kernel contains the `gpio` kernel driver, and configure it if it does not.

Ensuring the Device Driver is Part of the Kernel

The `/etc/conf/dfile` is used as input to generate a kernel. Look in `/etc/conf/dfile` to see if your kernel includes the appropriate kernel driver for the peripheral you want to add to your system.

Caution Your `/etc/conf/dfile` reflects the current kernel configuration if it was used to generate your current kernel. It is possible that the currently executing kernel was generated from a template other than `/etc/conf/dfile`. In this case, `/etc/conf/dfile` may not reflect the configuration found in the currently executing kernel.

If the `dfile` does not contain the driver you need to operate your peripheral, you must add the driver to `/etc/conf/dfile` and remake the kernel (this involves a reboot of the system). Regenerating the kernel is discussed in the *System Administration Tasks Manual* Chapter 11: "Reconfiguring the HP-UX Kernel".

The following table lists the drivers that must be present for specific peripheral types and additional information.

Setting Up Devices Using HP-UX Commands

Table 9-7. Device Drivers

Driver Name	Used For:
cs80	most mass storage devices (included in all sample configuration files)
scsi	SCSI direct access storage devices
amigo	Amigo mass storage devices
ciper	Ciper printers
printer	Non-ciper printers
hpib	Plotters; also needed for Device I/O Library (DIL)
tape	9-Track magnetic tape drives
stape	9-Track streaming tape drives
scsitape	SCSI tape drives
autoch autox	Optical autochanger drivers (require scsi driver)
apci	Advanced Serial driver for Series 400
dos	HP 98686 DOS Coprocessor driver
vme	HP 98646 VME card
vme2	HP 98577A VME expander
98624	Internal Standard-speed HP-IB disk controller (always included—other drivers depend on it)
parallel	Parallel interface for plotters and printers.
98625	High-speed HPIB disk controller
98626	HP 98626, HP 98644 RS-232 serial interface, or Series S300 RS-232-C built-in interface.
98628	HP 98628A RS-232 datacomm card
98642	HP 98624 RS-232 4-channel and HP 98638A 8-channel MUX card
98265	HP 98265 SCSI interface card
gpio	GPIO card; also include for Device I/O Library (DIL)
srm	Shared Resource Manager (SRM)
rje	Remote Job Execution (RJE)
ptymas ptyslv	pseudo terminal drivers (required for HP Windows/9000, Xwindows, and other software). Included in all sample configuration files.

CS/80 and AMIGO Drives

The `cs80` and/or `amigo` device drivers must be in the `dfile`.

In addition to the `cs80` or `amigo` device driver (as shown in Table 9-1), you must also include the appropriate interface driver. If your drive is connected to the internal HP-IB, you need the kernel driver `98624`. If your drive is connected to the high-speed HP-IB, you need the kernel driver `98625`. Some of the Amigo drives can only be used with the `98624` kernel driver.

If you don't know to what interface your peripheral device is connected, or can't decide to which interface to connect it, read the information for your peripheral in previous chapters of this book.

SCSI Drives

Any SCSI drive should be connected to a SCSI interface card. The SCSI disk drives require the `scsi` kernel driver. The kernel code for the SCSI interface card is automatically included when you include the `scsi` driver. To use SCSI tape drives, include the `scsitape` kernel driver (in addition to the `scsi` driver).

Optical Drives

The `autoch`, `autox`, and the `scsi` drivers must be present in the `dfile`. The kernel code for the SCSI interface card is automatically included when you include the `scsi` driver.

Tape Drives

The tape driver `stape` or `scsitape` for your tape drive listed in Table 9-2 must be present in the `dfile`.

Setting Up Devices Using HP-UX Commands

Plotters and Digitizers

There are three interface for plotters. The following list contains the interface type and the associated driver:

HP-IB requires the `hpib` driver
Parallel requires the `parallel` and `hpib` driver.

The following list contains RS-232-C driver names associated with several types of serial connections. The drivers listed must be included in the `dfile` for the specified serial connection type.

Device Driver	Connection Type
98626	Series 300 Built-in RS-232-C port and HP 98626A RS-232-C Interface
98628	HP 98628A Datacomm Interface
98644	HP 98644A Asynchronous Serial Interface
<code>apci</code>	Series 400 Built-in RS-232-C port
98642	HP 98642A 4-Channel Multiplexer Interface or HP 98638A 8-Channel Multiplexer Interface

All serial drivers require a major number of 1.

Printers

There are three interface for printers. The following list contains the interface type and the associated driver:

HP-IB requires the `printer`, `ciper`, or `hpib` driver depending on the printer HP-IB protocol. The `ciper` driver supports `ciper` protocol, the `printer` driver supports `amigo` and `non-protocol`, and `hpib` driver is strictly `non-protocol`.

Parallel requires the `parallel` and `hpib` driver.

The following list contains RS-232-C driver names associated with several types of serial connections. The drivers listed must be included in the `dfile` for the specified serial connection type.

Device Driver	Connection Type
98626	Series 300 Built-in RS-232-C port and HP 98626A RS-232-C Interface
98628	HP 98628A Datacomm Interface
98644	HP 98644A Asynchronous Serial Interface
<code>apci</code>	Series 400 Built-in RS-232-C port
98642	HP 98642A 4-Channel Multiplexer Interface or HP 98638A 8-Channel Multiplexer Interface

All serial drivers require a major number of 1.

Graphic Devices

All graphics interfaces require the `graphics` driver present in the `dfile`. This includes the interfaces that directly connect to the graphic displays and those interfaces that connect to a graphic display controller.

HP-HIL Devices

HP-HIL devices require the `hil` driver present in the `dfile`.

GPIO Devices

GPIO devices require the `gpio` driver present in the `dfile`.

Using Boot ROM Revision D Configuration Mode

Introduction

Configuration Mode allows you to set your SPU's built-in interface's select codes, addresses and interrupt levels. These built-in interfaces are on the system board. As they do not have physical configuration switches like other interface cards, their configurations are set by keyboard entry while in the Boot ROM's Configuration Mode before booting the operating system. SPU's that have a configuration mode available are identified by the message:

Configuration EEPROM

appearing in the power-up display right after the MC68882 Co-processor message and just before the HP-HIL.Keyboard message.

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BOOTROM Rev. D
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HIL.Keyboard
HP-IB
DMA-CO
RAM 4194080 Bytes
HP98644 (RS-232) at 9
HP98265 (SCSI S 32) at 14
HP98625 (HS HP-IB) at 15
HP98643 (LAN) at 21 080009AAAAAA
HP PARALLEL at 23

System Search Mode
RESET to Power-up

Figure A-1. Power-Up and Self-Test Display

If the configuration information in the EEPROM could not be accessed or correctly applied to the built-in interfaces, the message would read:

`Configuration EEPROM Failed`

which means something failed and one of three situations may exist:

- All the built-in interfaces have been set to default values.
- Some default and some changed settings have been set.
- All the built-in interfaces have been set to their changed values. Some minor error occurred that shouldn't affect the configuration.

When that message appears, you should check your computer built-in interfaces' configurations and verify they are correct for your application.

Configurable Interfaces

You should enter configuration mode and find out what each built-in interface configuration values are set. Interfaces that have their configurations controlled by configuration mode are:

- HP-IB.
- RS-232.
- Small Computer Systems Interface.
- High-Speed HP-IB.
- Local Area Network.
- HP Parallel.

After you have set your built-in interface select codes and addresses, these values are stored in Electrically Erasable Programmable Read-Only Memory, or EEPROMS. If you turn your SPU off, then back on, your configuration values are still set. You may change them to suit your applications whenever you want by resetting your SPU and entering the Configuration Mode.

In the following sections, using the menus and user responses are shown in order. This is done to show you what the menus look like. Menu items may be selected in any order.

Note that menu changes will not be shown in the self-test results on the left side of the screen until the changes effected by the menus are saved and the self-test re-run.

Entering Configuration Mode

When you see this display show the memory size in RAM (RAM 4194080 Bytes):

```
Copyright 1989,  
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All Rights Reserved.  
  
BOOTROM Rev. D  
Bit-Mapped Video  
MC68030 Processor  
MC68882 Coprocessor  
Configuration EEPROM  
HP-HIL.Keyboard  
HP-IB  
DMA-CO  
RAM 4194080 Bytes  
HP98644 (RS-232) at 9  
HP98265 (SCSI S 32) at 14  
HP98625 (HS HP-IB) at 15  
HP98643 (LAN) at 21 080009AAAAAA  
HP PARALLEL at 23  
  
System Search Mode  
RESET to Power-up
```

Figure A-2.

type **C** **Return**.

Your display changes to indicate your SPU has entered Configuration Mode as shown in Figure A-3.


```

Copyright 1989,
Hewlett-Packard Company,
All Rights Reserved.

BOOTROM Rev. D
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HIL.Keyboard
HP-IB
DMA-CO
RAM 4194080 Bytes
HP98644 (RS-232) at 9
HP98265 (SCSI S 32) at 14
HP98625 (HS HP-IB) at 15
HP98643 (LAN) at 21 080009AAAAAA
HP PARALLEL at 23

Configurable Interfaces
Keys Interface  Select Code
-----
1  HP-IB
2  RS-232          9
3  SCSI           14
4  HS HP-IB       15
5  LAN            21
6  HP PARALLEL    23

N store New values
D store Default values
  (then cycle SPU power)
A Abort without changes
-----
Type [key] RETURN ?

System Search Mode
RESET to Power-UP, SPACE to clear input          ? C

```

Figure A-3.

Note the Configuration Menu in the upper-right corner. Depending on how your specific computer lists the interfaces, they may be in different order. Interface key numbers may also be different. Be sure you use the correct key number for the interface you want to configure.

A-6 Using Boot ROM Revision D Configuration Mode

If an error message appears in the mode line at the bottom, for example:

```
Configure Mode Failed
RESET to Power-UP, SPACE to clear input          ? C
```

or the Configuration EEPROM Failed error message appears at power up, a hardware problem with the Boot ROM or its memory probably exists. Refer to the following table for possible error messages you may see when entering Configuration Mode.

Table A-1. Configuration Mode Entry Error Messages

Error Message	Meaning and What To Do
(no message)	Configure Mode could not start. Error messages can not be displayed. Hardware failure.
Configure Mode Failed	Configure Mode started but something failed.
EEPROM has bad information	Configuration Mode started, menu may have appeared, but something failed.
Too much data to save	Re-configure computer with fewer interfaces.
EEPROM Load section missing	Could not load new configuration data. Hardware failure.
EEPROM Defaults section missing	Default settings could not be found. Hardware failure.

Configuration Menu

The Configuration Menu's user actions are explained below:

- **Keys** - the keyboard's number keys representing the built-in interface you want to configure. Letter keys N, D, and A are control keys. You may select one or more keyboard configurable interfaces in any order.
- **Interface** - built-in interfaces listed in the display's left column that do not have configuration switches are listed by their name.
- **Select Code** - lists select code for interfaces that can have one. The built-in standard-speed HP-IB interface has a select code, but it cannot be changed. When you turn ON the SPU, each interface's default select code is listed.

Below the menu, the prompt line:

Type [key] RETURN ?

means:

- ? - waiting for keyboard input.
- Type [key] RETURN - type the key for the interface you want to configure, then type Return.

Example Interface Menu

You may select one or more keyboard configurable interfaces in any order. For each interface, you're able to go to its Interface Menu. An example Interface Menu for the RS-232 Interface is:

```

          RS-232
Key Feature          Value
-----
 1 Select Code      9
 2 Interrupt Level  5
 3 Remote/Local    L
 4 Fast/Normal     N
 5 Modem Enable    Y

X to eXit menu
-----
Type [key] RETURN ?

```

Three columns have this information for you to use:

- **Key** - the keyboard number keys represent the interface function you want to configure. Type **X** **Return** to exit and return to the Configuration Menu.
- **Feature** - Lists the interface's function. The menu control features are at the bottom.
- **Value** - Lists state or value of that interface function.

Note that all Interface Menus are not the same. Each has its own functions available for configuration.

Below the menu, the prompt line:

```
Type [key] RETURN ?
```

means:

- **?** - waiting for keyboard input.
- **Type [key] RETURN** - type the key for the interface you want to configure, then type **Return**.
- You may just type **Return** exit the Interface Menu and return to the Configuration Menu.

When you select an interface's function, the prompt line changes. An example is the RS-232's Select Code. After you have selected the RS-232 interface to configure, and you want to change its select code you would type **1** **Return**. The RS-232 Menu's prompt would change to:

```
1  Select Code          9
used select codes are :
14 15 21 23
Type 0.. 31 except used RETURN ?
```

Note the select code function line appears like it does in the main part of the RS-232 Menu. The current select code appears at the right. Select codes already used in your SPU are listed in the line:

```
used select codes are :
14 15 21 23
```

The bottom prompt line:

```
Type 0.. 31 except used RETURN ?
```

tells you to type in a select code number between 0 and 31 except for those codes already used. In this case, codes 14, 15, 21, and 23 are already used by other interfaces.

Recommended Procedures

A good way for you to use the Configuration Mode is explained below:

1. Find out and write down what interface configurations your application and peripherals need for:
 - Select Codes.
 - Interrupt Levels.
 - Addresses.
 - Fast or Normal Speed.
 - DMA bus width.
 - System Controller.
 - Remote or Local.
 - Modem Enable.
2. Turn ON your SPU and get it into Configuration Mode.
3. Determine what interface you will configure first.
4. Go to that section in this chapter for instructions.
5. Read the instructions and change that interface's configuration.
6. Return to the main Configuration Menu.
7. Go to the following section titled 'Using the Control Functions.'
8. Do those steps and exit Configuration Mode.

Using the Control Functions

The last three lines of the Configuration Menu are control functions.

```

Configurable Interfaces
Keys Interface Select Code
-----
 1 HP-IB
 2 RS-232          9
 3 SCSI           14
 4 HS HP-IB       15
 5 LAN            21
 6 HP PARALLEL   23

N store New values
D store Default values
  (then cycle SPU power)
A Abort without changes
-----
Type [key] RETURN ?

```

Here's how they work:

Typing **(N)** **(Return)** saves all listed interfaces reconfigured values in non-volatile memory. You can turn OFF your SPU, then turn it back ON and the values you configured the interfaces to will be used. Then the self-test will run.

Typing **(D)** **(Return)** exits the Configuration Mode and resets the default configurations. You must cycle SPU power to then reconfigure the interfaces to these default values.

Typing **(A)** **(Return)** causes the Boot ROM to reset and run the self-test without saving any of the changes.

If the Boot ROM has problems as you exit configuration mode, the mode lines provide you with one or more of these error messages:

Table A-2. Configuration Mode Exit Error Messages

Keys Typed	Error Message	Meaning and What To Do
(M) (Return), or (D) (Return)	Too many configuration saves	More than 64000 saves.
	Can not save new configuration	Something prevented saving new configuration. Hardware failure.
	EEPROM can not save information	EEPROM may not save all of the new configuration information. Hardware failure.
(A) (Return)	(no message)	No messages should be seen when you abort the configure mode and reset your SPU.

Configuring Interfaces

HP-IB

When you type (1) (Return), the Configuration Menu changes to the HP-IB Menu:

```

      HP-IB
Key Feature          Value
-----
 1 Sys. Controller  Y

```



```

X to eXit menu
-----

```

```

Type [key] RETURN ?

```

The (1) key now changes definition to mean when typed, you want to change the built-in HP-IB interface's system controller function. System controller

is the only function this interface has. A Y in the value column means 'yes', built-in HP-IB is the system controller.

If you want to change your built-in HP-IB interface's system controller function to 'no':

1. Type **1** **Return** and the HP-IB Menu prompt changes to:

```
1 Sys. Controller   Y
Type Y or N RETURN ?
```

2. Type **N** **Return** and the HP-IB Menu prompt changes to:

```
HP-IB
Key Feature          Value
-----
1 Sys. Controller   N

X to eXit menu
-----
Type [key] RETURN ?
```

To go back to the Configuration Menu, type **X** **Return**:

```
Configurable Interfaces
Keys Interface Select Code
-----
1 HP-IB
2 RS-232          9
3 SCSI            14
4 HS HP-IB        15
5 LAN             21
6 HP PARALLEL    23

N store New values
D store Default values
  (then cycle SPU power)
A Abort without changes
-----
Type [key] RETURN ?
```

RS-232

Enter the RS-232 Menu by typing **2** **(Return)**. The Configuration Menu changes to the RS-232 Menu:

```

          RS-232
Key Feature          Value
-----
 1 Select Code      9
 2 Interrupt Level  3
 3 Remote/Local     L
 4 Fast/Normal      N
 5 Modem Enable     Y

X to eXit menu
-----
Type [key] RETURN ?

```

Five RS-232 functions are explained in the next five sections.

Select Codes

Typing **1** **(Return)** changes the prompt line to:

```

 1 Select Code      9
used select codes are :
14 15 21 23
Type 0.. 31 except used RETURN ?

```

The RS-232's current select code (9) appears to the right. Select codes set for other interfaces are identified. In the above example, select codes 14, 15, 21, and 23 are currently used. The bottom prompt tells you to enter a select code between 0 and 31 except those already used. If you enter a select code that's already used, the prompt line won't change.

For example, to set the RS-232 select code to 10, type **1** **0** and the bottom prompt line will show:

```

Type 0.. 31 except used RETURN ? 10

```

Then type **(Return)** and the RS-232 Menu changes to:

```
      RS-232
Key Feature          Value
-----
 1 Select Code      10
 3 Interrupt Level   3
 2 Remote/Local     L
 4 Fast/Normal      N
 5 Modem Enable     Y

X to eXit menu
-----
Type [key] RETURN ?
```

Interrupt Level

To enter the Interrupt Level Menu, type **(2)** **(Return)**. You'll see these lines appear:

```
 2 Interrupt Level  3
Type 3, 4, 5 or 6 RETURN ?
```

Your two options are to type:

(Return) if the listed interrupt level will be used.

One key, **(3)** through **(6)**, then **(Return)**, to set the interrupt level to 3 through 6.

The RS-232 Menu appears and the interrupt level's value shows what you set it to.

Remote/Local

Typing **3** **Return** changes the prompt line to:

```
3 Remote/Local L
Type L or R RETURN ? L
```

The local (L) mode is the default setting. To change the remote/local function, type:

R **Return** to change to remote.

L **Return** to change to local.

Then your RS-232 Menu reappears and the value for the remote/local function shows up in the Value column.

Fast/Normal

If you are in the RS-232 Menu and type **4** **Return**, the prompt lines change to:

```
4 Fast/Normal N
Type N or F RETURN ? F
```

Type the indicated to set the RS-232 speed:

F **Return** to change to Fast speed from Normal.

N **Return** to change to Normal speed from Fast.

When the main RS-232 menu appears, its speed line indicates what it's set to.

Modem Enable

While in the RS-232's main menu, go to the Modem Enable Menu by typing **5** **Return**, then the prompt lines display:

```
5 Modem Enable Y
Type Y or N RETURN ?
```

If the Modem Enable function shows Y, you can disable it by typing **N** **Return**.

Typing **Return** gets you back to the RS-232 Menu without changing the Modem Enable's value.

After you have set your built-in RS-232 interface functions, return to the Configuration Menu from the RS-232 menu by typing **X** **Return**.

Small Computer Systems Interface

Enter the SCSI Menu by typing **3** **Return**. The Configuration Menu changes to the SCSI Menu:

```

      SCSI
Key Feature          Value
-----
 1 Select Code      14
 2 Interrupt Level   3
 3 Parity            Y
 4 Bus Address       7

X to eXit menu
-----
Type [key] RETURN ?

```

Select Code

Like the other interface menus, to choose the select code function to change, type **1** **Return**. The prompt changes to:

```

 1 Select Code      14
used select codes are :
 9 15 21 23
Type 0.. 31 except used RETURN ?

```

As before, used select codes are listed. Your options are to type:

Return if the current select code will be used; no changes.

0 through **3** **1** then **Return**, except for used codes, to change select code.

In either case, the SCSI menu returns.

```

      SCSI
Key Feature          Value
-----
 1 Select Code      14
 2 Interrupt Level   3
 3 Parity            Y
 4 Bus Address       7

X to eXit menu
-----
Type [key] RETURN ?

```

Interrupt Level

Your SCSI Interrupt Level control is entered by typing **2** **Return**. Prompt lines then appear as:

```

 2 Interrupt Level   3
Type 3, 4, 5, or 6 RETURN ?

```

As before, your options are to type:

Return if the current interrupt level will be used; no changes.

3 through **6** then **Return** to change interrupt level.

In either case, the SCSI menu returns.

Parity

Your SCSI parity control is entered by typing **3** **Return**. Prompt lines then appear as:

```
    4 Parity                Y
    Type Y or N RETURN ?
```

Your options are to type:

Return if the current parity state will be used; no changes.

N **Return** to change from 'yes' to 'no.' Parity checking will not be done by your SCSI interface. Each peripheral may have its own control.

Y **Return** to change from 'no' to 'yes.' Parity checking will be done by your SCSI interface.

In either case, the SCSI menu returns.

```
      SCSI
Key Feature          Value
-----
 1 Select Code      14
 2 Interrupt Level   3
 3 Parity            Y
 4 Bus Address       7

X   to eXit menu
-----
Type [key] RETURN ?
```

Bus Address

Your SCSI bus address is entered by typing **4** **Return**. Prompt lines then appear as:

```
    3 Bus Address          7
    Type 0.. 7 RETURN ?
```

Your options are to type:

Return if the current bus address will be used; no changes.

0 through **7** then **Return** to change bus address.

In either case, the SCSI menu returns.

After all SCSI functions have been configured to your application, you may type **X** **Return** to go back to the main Configuration Menu.

High-Speed HP-IB

Type **4** **Return** to enter high-speed HP-IB Mode and see this Menu:

```

      HP-IB
Key Feature          Value
-----
 1 Select Code      15
 2 Interrupt Level   4
 3 Sys. Controller   Y
 4 Fast/Normal       N
 5 98625B mode      16

X to eXit menu
-----
Type [key] RETURN ?

```

Select Code

By typing **1** **Return**, the HS HP-IB menu's prompt changes to:

```

 1 Select Code      15
used select codes are :
10 14 21 23
Type 0.. 31 except used RETURN ?

```

Remember you cannot use a select code already used. Choices available are:

Return if the current select code will be used; no changes.

0 through **3** **1** then **Return**, except for used codes, to change select code.

After making your choice, the HS HP-IB menu returns.

Interrupt Level

Your HS HP-IB Interrupt Level control is entered by typing **2** **Return**. Prompt lines then appear as:

```
2  Interrupt Level    4
   Type 3, 4, 5 or 6 RETURN ?
```

As before, your options are to type:

Return if the current interrupt level will be used; no changes.

3 through **6** then **Return** to change interrupt level.

In either case, the HS HP-IB menu returns.

System Controller

If you want to change your HS HP-IB interface's system controller function, type **3** **Return** and the HS HP-IB Menu prompt changes to:

```
3  Sys. controller    Y
   Type N or Y RETURN ?
```

Your options are to type one of these:

Return if the current system controller state will be used; no changes.

Y **Return** to change from 'no' to 'yes.' Your SPU's HS HP-IB interface will be the system controller.

N **Return** to change from 'yes' to 'no.' Your SPU's HS HP-IB interface will not be the system controller.

Then your HS HP-IB menu returns.

Fast/Normal

If you are in the HS HP-IB Menu and type **4** **Return**, the prompt lines change to:

```
4  Fast/Normal      F
Type N or F RETURN ? F
```

Type one of these to set the HS HP-IB speed:

F **Return** to change to Fast speed from Normal.

N **Return** to change to Normal speed from Fast.

When the HS HP-IB menu appears, its speed line indicates what it's set to.

98625B Mode

Your HS HP-IB interface's direct memory addressing (DMA) emulates the HP 98265B Interface Card. Its bus width can be set to either 16- or 32-bit mode.

If your SPU's HS HP-IB interface has 32-bit DMA width set, the self-test will identify it as HP-IB (HS 32) in the power-up display.

Note Operating systems cannot boot on the high-speed HP-IB interface when in 32-bit mode. Nor will the interface be tested in test mode. If software requires the 32-bit DMA mode, it will change the interface from 16-bit to 32-bit mode as needed. Then the software will reset it to the 16-bit mode.

From the HS HP-IB Menu, type to change the prompt to:

```
5 98625B mode          Y
Type Y or N RETURN ?
```

Set the DMA width by:

to change from 32-bit wide to 16-bit wide.

to change from 16-bit wide to 32-bit wide.

You may type to go back to the HS HP-IB Menu.

Then the HS HP-IB Menu appears with the 98625B mode indicated in the value column.

After your HS HP-IB Menu shows the configuration you need, type to get back to the main Configuration Menu.

Local Area Network

To enter the LAN Menu, get the main Configuration Menu, then type **5** **Return**. The LAN Menu appears:

```

      LAN
Key Feature          Value
-----
 1 Select Code      21
 2 Interrupt Level   5

X to eXit menu
-----
Type [key] RETURN ?

```

Select Code

Typing **1** **Return** makes the prompt change to:

```

 1 Select Code      21
used select codes are :
10 14 15 23
Type 0.. 31 except used RETURN ?

```

Remember you cannot use a select code already used. Choices available are:

Return if the current select code will be used; no changes.

0 through **3** **1** then **Return**, except for used codes, to change select code.

After making your choice, the LAN menu returns.

Interrupt Level

Enter your LAN Interrupt Level control by typing **2** **Return**. Prompt lines then appear as:

```
  2  Interrupt Level    5
Type 3, 4, 5 or 6 RETURN ?
```

As before, your options are to type:

Return if the current interrupt level will be used; no changes.

3 through **6**, then **Return** to change interrupt level.

In either case, the LAN Menu returns.

When your LAN Menu shows the configuration you need, type **X** **Return** to get back to the main Configuration Menu.

HP Parallel Interface

Enter the HP Parallel Menu by typing **6** **Return**. Its menu looks like:

```

      HP PARALLEL
Key Feature          Value
-----
 1 Select Code      23
 2 Interrupt Level   3

X to eXit menu
-----
Type [key] RETURN ?

```

Select Code

Typing **1** **Return** makes the prompt change to:

```

 1 Select Code      23
used select codes are :
10 14 15 21
Type 0.. 31 except used RETURN ?

```

Remember you cannot use a select code already used. Choices available are:

Return if the current select code will be used; no changes.

0 through **3** **1** then **Return**, except for used codes, to change select code.

After making your choice, the HP Parallel Menu returns.

Interrupt Level

Your HP Parallel Interrupt Level control is entered by typing **2** **Return**.
Prompt lines then appear as:

```
  2  Interrupt Level  3  
Type 3, 4, 5 or 6 RETURN ?
```

As before, your options are to type:

Return if the current interrupt level will be used; no changes.

3 through **6** then **Return** to change interrupt level.

In either case, the HP Parallel Menu returns.

When your HP Parallel Menu shows the configuration you need, type **X**
Return to get back to the main Configuration Menu.

Using Boot ROM Revision 400 Configuration Mode

Workstation Configurations

Your workstation may be configured with one of several combinations of system console, type of operating systems and internal interface settings. If these configurations are matched the correct displays will appear and the desired operating system can be booted. If there is a mismatch, you have to enter Configuration Control Mode and change the EEPROM configuration. lists typical matched configurations. lists typical mismatched configurations and what you need to do to enable the system console and boot the desired operating system.

**Table B-1.
System Unit, System Console, and Operating System Mismatch
Situations at Power-Up**

System Console	RS-232 Mode	Boot Mode	Display	Seen	What to Do
Monitor & Kbd.	Local	HP-UX	HP-UX	Power Up	Configure internal I/O if needed
Monitor & Kbd.	Local	Domain	Domain	Blank Screen	Configure internal I/O if needed
Monitor & Kbd.	Remote	HP-UX	HP-UX	Power Up	Configure internal I/O if needed
Monitor & Kbd.	Local	Undetermined	Don't Care	Config Menu	Configure internal I/O if needed Change Boot Mode to Op. Sys. installed.
Monitor & Kbd.	Local	HP-UX	Domain	Power Up	Configure internal I/O if needed Change Boot Mode to Domain.
Monitor & Kbd.	Local	Domain	HP-UX	Blank Screen	Configure internal I/O if needed Change Boot Mode to HP-UX.
Monitor & Kbd.	Remote	Undetermined	Don't Care	Remote at 9	Change RS-232 to Local Configure internal I/O if needed Change Boot Mode to Op. Sys. installed.
Monitor & Kbd.	Remote	HP-UX	Domain	Remote at 9	Change RS-232 to Local Configure internal I/O if needed Change Boot Mode to Domain.
Monitor & Kbd.	Remote	Domain	HP-UX	Blank Screen	Change RS-232 to Local Configure internal I/O if needed Change Boot Mode to HP-UX Select operating system,if needed.
Terminal	Local	Undetermined	Don't Care	Blank Screen	Change RS-232 to Local Configure internal I/O if needed Change Boot Mode to Op. Sys. installed.
Terminal	Local	HP-UX	Domain	Blank Screen	Set SERVICE Mode and push Reset Configure internal I/O if needed Change Boot Mode to Domain.
Terminal	Local	Domain	HP-UX	Blank Screen	Set RS-232 to Remote Configure internal I/O if needed Change Boot Mode to HP-UX Select operating system, if needed.

B-2 Using Boot ROM Revision 400 Configuration Mode

System Console and System Unit Configurations

Either a keyboard with a monitor or a terminal may be used as your workstation's system console. When a keyboard is connected to the system unit's HP-HIL connector, it may always be used for inputting keyboard commands. Depending on the system console used, one several types of information will be displayed at the first power-up.

Keyboard and Monitor as System Console

When your workstation uses a keyboard and monitor as the system console and there are no pre-installed operating systems, at the first power-up after installation of a new system unit, one of these situations should happen:

- This Configuration Control Main Menu will appear in the upper right-hand corner. If it does, you may continue configuring your system unit by referring to the section titled Using Configure Mode.

```

Configuration Control
  Keys Control Class
-----
1  I/O Configuration
2  Boot Mode Selection

A  Abort without changes
-----
Type [key] RETURN ?

```

- This message will appear:

```

Remote Console at 9
After beeps, type L RETURN to use the local monitor as console.

```

If the above message appears, that means the system unit's internal RS-232 interface or another accessory DIO-II RS-232 interface has been set to Remote.

If the indicated select code is 9, it's the internal RS-232 interface. To temporarily use the HP-HIL/Video interfaces so the keyboard and monitor may be used as the system console, listen for two beeps (about 5 seconds after the message appears) then type L Return within 10 seconds of hearing the two beeps.

B

To permanently change the internal RS-232 to local, you must enter I/O Configuration Mode and change the interface configuration to Local.

If the select code is any other number, it's an accessory DIO-II RS-232 interface and you must remove the RS-232 accessory card and change its configuration switches to make a permanent change to the accessory card. Refer to the interface card's documentation. Then power up the system unit.

The system unit will reset and the Configure Mode Main Menu should appear in the display's upper right-hand corner. Go on to the section titled Using Configuration Control Mode to continue configuring your system unit.

Terminal as System Console

When your workstation uses a terminal as the system console and has no pre-installed operating systems, at the first power-up one of these situations should happen:

- This Configuration Mode Main Menu will appear on the right-hand side. If it does, you may continue configuring your system unit by referring to the section titled Using Configuration Control Mode.

```
Configuration Control
  Keys Control Class
-----
1  I/O Configuratioin
2  Boot Mode Selection

A  Abort without changes
-----
Type [key] RETURN ?
```

- If nothing appears on the display, the system unit's internal RS-232 interface has been set to Local mode. You must reconfigure your system unit's RS-232 interface to Remote mode. The next section explains how to do this.

Reconfiguring the RS-232 Interface to Remote Mode

Follow these steps to temporarily reconfigure your system unit's RS-232 interface to Remote mode when you power-up the system unit and no display appears on your terminal:

1. Refer to Figure B-1. On the system unit, find the Service/Normal switch and set it to Service.

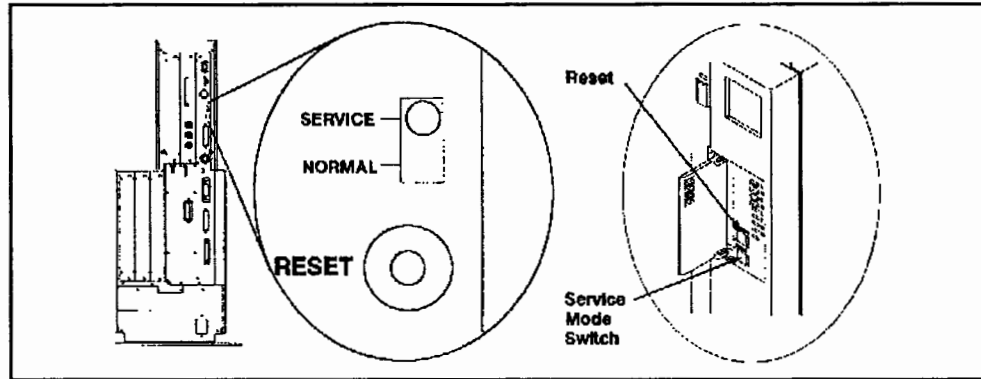


Figure B-1. System Unit Service/Normal Switch and Reset Button

2. Refer to Figure B-1. On the system unit, press the RESET button to reset the system unit.
3. To temporarily change the internal RS-232 interface to Remote so the terminal may be used as the system console, listen for two beeps (about 5 seconds after the message appears) then type this command on the terminal's keyboard:

R

The system unit will reset and the Configuration Control Main Menu should appear in the terminal display's right-hand side. Go on to the section titled Using Configuration Control Mode to continue configuring your system unit.

Terminal as System Console With Monitor

If your workstation uses a terminal as the system console and also has a monitor connected to the video board but no keyboard connected to the HP-HIL connector, one of these situations should happen:

- This Configuration Control Main Menu will appear on the right-hand side. If it does, you may continue configuring your system unit by referring to the section titled Using Configuration Control Mode.

```
Configuration Control
  Keys Control Class
-----
1  I/O Configuratioin
2  Boot Mode Selection

A  Abort without changes
-----
Type [key] RETURN ?
```

- This power-up display will appear on the monitor. If it does, type the command:

R

on the terminal and the system unit will reset. The Configuration Control Mode Main Menu should appear. You may continue configuring your system unit by referring to the section titled Using Configuration Control Mode.

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Series 400 Rev. 1, 5 Jun 90
md 12 rev 0.20, 1990/03/12.16:31:17
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor

Configuration EEPROM

HP-HIL.Keyboard

Type R RETURN for internal RS-232 console

HP-IB

DMA-CO

RAM 4194080 Bytes

HP98644 (RS-232) at 9

HP98265 (SCSI S 32) at 14

HP98643 (LAN) at 21, THIN, 080009AAAAAA

HP PARALLEL at 12

Configuration Mode

RESET to Power-up SPACE clears input

?

Note the line about in the middle that reads:

Type R RETURN for internal RS-232 console

That line means to type the command:

R Return

on the terminal's keyboard to change the internal RS-232 interface to Remote so you can use the terminal as the system console. Depending on when you type the command, some of the display may not appear.

Configuration Control
Keys Control Class

-
- 1 I/O Configuration
 - 2 Boot Mode Selection

A Abort without changes

Type [key] RETURN ?

B



Using Configuration Control Mode

Before you use Configuration Control Mode, ensure your system console interface has been properly configured. Refer to the earlier section titled 'System Console and System Unit Configurations' for that procedure.

New System Unit First Turn-On

Your system unit's Boot Mode determines whether it runs Domain compatible or HP-UX compatible operating systems. New system units display their Boot Mode selection in two ways:

- A special LED pattern will appear a few seconds after the system unit gets powered up. The pattern will appear after the power up display has completed on the left side of the screen and before the Configuration Control Menu appears.
- The power-up display has a Configuration Control Menu that may be accessed to find out what the Boot Mode selection is and you can change it if required.

Boot Mode LED Patterns

When you first power-up your system unit, the middle eight front panel LEDs will all turn on, then ripple off. After the left side of the power-up display appears, the fourth yellow LED down, or to the right if the LED display is horizontal, will blink at a high rate for about three seconds. During the time the fourth LED blinks, the top, or left, two yellow LEDs will indicate the current Boot Mode selection. Table lists these LED patterns


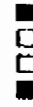
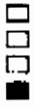
Undetermined	HP-UX	Domain
		

Figure B-2.
Boot Mode Selection Top/Left Four Amber LED Patterns

Power-Up Display

This Configuration Control Mode screen appears when you first turn a new system unit on:

```

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Series 400 Rev. 1, 5 Jun 90
md 12 rev 0.20, 1990/03/12.16:31:17
Bit-Mapped Video
MC68030 Processor

Configuration EEPROM
HP-HIL.Keyboard
RAM 4194080 Bytes

Configuration Control
Keys Control Class
-----
1 I/O Configuration
2 Boot Mode Selection
A Abort without changes
-----
Type [key] RETURN ?

```

```

Configuration Mode
RESET to Power-up

```

In the upper right-hand corner you'll see the Configuration Control Menu. The next to the last line at the bottom identifies the system unit as being in the Configuration Mode.

Note the line on the left side that reads Configuration EEPROM. If the configuration information in the EEPROM could not be accessed or correctly applied, the line would read:

```

Configuration EEPROM Failed

```

That means something wasn't quite right and one or more of the Configuration Control Classes has not worked correctly. You may have to replace the CPU board.

Boot Mode Selection

With the Configuration Control Mode menu displayed, type the number key command:

2

and this Boot Mode Selection menu should appear:

```

      Boot Mode Selection
    Keys Mode           Status
-----
      1 Domain Compatible
      2 HP-UX Compatible
      3 Undefined             P

      C Clear temporary
      E Execute
      A Abort without changes
-----
Type [key] RETURN ?

```

The number keys are used to select one of the compatibility modes. Letter keys are the control keys for the menu. A C is used to clear any mode's temporary status that's indicated by a T in the status column. The E key is used to execute the menu and store the status information in the EEPROM. If the status is correct, you may type the A key to abort the Boot Mode Selection without changing it.

Below the menu, you'll see a prompt line:

```
Type [key] RETURN ?
```

The question mark means the system unit is waiting for a keyboard input.

"Type [key] RETURN" means type the key, either letter or number key, then press to complete the command.

Type the number key command to select the Boot Mode you want to use:

1 to select Domain compatible mode

2 to select HP-UX compatible mode

B-10 Using Boot ROM Revision 400 Configuration Mode

This menu appears below the Boot Mode Selection menu. If you selected HP-UX compatible, the menu would look like this:

```
      Boot Mode Selection
Keys Mode                Status
-----
  1 Domain Compatible
  2 HP-UX Compatible
  3 Undefined                P

  C Clear temporary
  E Execute
  A Abort without changes
-----
Type [key] RETURN ?
```

```
  2 HP-UX Compatible
Temporary or Permanent
Type T or P RETURN ?
```

Type the letter key command to select either permanent or temporary use of the selected boot mode:

- T to temporarily select the boot mode. If you execute this selection, then cycle power or reset the system unit, the permanently select boot mode will be used.
- P to permanently select the boot mode selection. If you execute this selection, then cycle power or reset the system unit, the permanently select boot mode will be used.

B

The menu would look like this if you typed the command P:

```
      Boot Mode Selection
Keys Mode                Status
-----
  1  Domain Compatible
  2  HP-UX Compatible      P
  3  Undefined

  C  Clear temporary
  E  Execute
  A  Abort without changes
-----
Type [key] RETURN ?
```

Type one of these letter key commands for your selection:

E to execute the menu selections.

C to clear any temporary selection.

If you set the Boot Mode Selection to Domain compatible, the system unit would reset with no apparent change on the screen. You would then boot the Domain operating system if the system unit was in normal mode.

After executing the Boot Mode Selection menu with HP-UX compatible mode selected, the system unit would reset and this power-up display would appear:

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Series 400, Rev. 1, 5 Jun 90
md 12 rev 0.20, 1990/03/12.16:31:17
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HIL.Keyboard
HP-IB
DMA-CO
RAM 4194080 Bytes
HP98644 (RS-232) at 9
HP98265 (SCSI S 32) at 14
HP98643 (LAN) at 21, THIN, 080009AAAAAA
HP PARALLEL at 12

System Search Mode
RESET to Power-up SPACE clears input

?

B

As soon as you see this display for HP-UX compatible mode, you have three options:

- Do nothing and the Boot ROM will search for an HP-UX compatible operating system. If one is found, it will be booted. For system units that have pre-installed operating systems, this should be the correct procedure.
- Type any key to stop the Boot ROM functions and place the system unit in an attended mode.

While in attended mode, you may do one of the following as soon as the keyboard line appears in the power-up display

- Type any key to stop the Boot ROM process and put the system unit in attended mode. From attended mode, you may also do the next two options.
- Type C **Return** to enter Configuration Control Mode to change the Boot Mode Selection, Auto System Select, or I/O Configuration.
- Type T **Return** to enter Test Mode and run the Boot ROM diagnostics.

If you are turning on a new system unit for the first time and need to change the internal interface configurations or change the Auto System Select Mode, you should type the command C **Return** to enter Configuration Control Mode. Then you may select either the I/O Configuration or Auto System Select Mode. These modes are explained in the following sections.

I/O Configuration Mode

These procedures are used for interfaces that are configured under Boot ROM control using keyboard inputs. If your system unit has interfaces with switches or jumpers to configure it, refer to their documentation for instructions.

Entering I/O Configuration Mode

After you have selected the HP-UX compatibility mode from the Boot Mode Selection Menu, executed that menu, then type C from the power-up display, you should see this menu in the power-up display:

```
Configuration Control
Keys Control Class
-----
 1 I/O Configuratioin
 2 Auto System Selection
 3 Boot Mode Selection

A Abort without changes
-----
Type [key] RETURN ?
```


B

From the Configuration Control Menu, type 1 **Return** and this menu appears:

```
Configurable Interfaces
Keys Interface  Select Code
-----
 1 LAN          21
 2 SCSI         14
 3 HP Parallel  12
 4 RS-232       9
 5 HP-IB

N store New values
D store Default values
  (then cycle SPU power)
A Abort without changes
-----
Type [key] RETURN ?
```

The order that interfaces appear and their respective number keys may be different than the above example. Only interfaces that are configurable from Boot ROM control will be listed. Interfaces in the system unit that have switches to set their configuration will not be listed.

If the one of the following error messages appear in the display:

Configure Mode Failed

Configuration EEPROM Failed

one or more of these situations exists with the I/O Configuration Mode:

- All of the configurations have been set to default values.
- Some default and some changed values have been set.
- All the configurations have been set to their changed values. Some minor error occurred that shouldn't affect the system unit's configuration.

When that message appears, you should check your system unit's Boot Mode Selection and I/O Configuration Mode selections and verify they are correct for your application.

If an error message appears in the mode line at the bottom, for example:

```
Configure Mode Failed
RESET to Power-UP, SPACE to clear input          C?
```

or the Configuration EEPROM Failed message appears at power-up, a hardware problem with the Boot ROM or its associated circuits probably exists. Refer to Figure B-3 for possible error messages you may see when entering Configuration Mode.

Error Message	Meaning and What To Do
(No error message)	If Configuration Mode does not start and no error message appears, a hardware failure probably occurred. Replace CPU board.
EEPROM Has Bad Information	Configuration Mode started, main menu may appear, but something failed. Try again. Replace CPU board.
EEPROM Load Section Missing	Could not load new configuration data. Hardware failure. Replace CPU board.
EEPROM Defaults Section Missing	Default configurations could not be found. Hardware failure. Replace CPU board.
Too much data to save	Too many interfaces for EEPROM to manage. Reconfigure system unit with fewer interfaces.

Figure B-3. Configuration Mode Entry Error Messages

Only the interfaces select codes are listed in the main Configurable Interfaces menu. HP-IB is fixed at select code 7 and cannot be changed. Most built-in interfaces have several configurable features. Interface default values are listed in Figure B-4.

Interface	Configuration Function	Default	Options
Optional HP-IB	Select Code (cannot be changed)	7	None
	System Controller	Yes	No
RS-232	Select Code	9	0 to 31
	Remote/Local		
	sys. unit shipped with keyboard	Local	Remote
	sys. unit shipped without keyboard	Remote	Local
SCSI	Interrupt Level	3	3 to 6
	Modem Enable	Yes	No
	Select Code	14	0 to 31
	Interrupt Level	3	3 to 6
Thin/AUI LAN	Bus Address	7	0 to 7
	Parity	Yes	No
	Select Code	21	0 to 31
HP Parallel	Interrupt Level	5	3 to 6
	Select Code	12	0 to 31
	Interrupt Level	3	3 to 6

Figure B-4. Built-In Interface Default Configurations

If your system unit is using Domain operating systems, the internal RS-232 interface will not be used. Instead, a different internal SIO interface will be used with the RS-232 connector.

If the default configurations will be used, you should exit the menu by typing the **A** command. If you want to change any of the configuration functions, go to the section titled Configuring the Built-In Interfaces.

There are three columns of information:

Keys	the keyboard number keys represent the interface you want to select to configure. Letter keys are for control functions. You may select any key in any order.
Interface	the built-in configurable interfaces. If an interfaces listed in your screen's left-hand side does not appear in the Main Configuration Menu, that interface cannot be configured from I/O Configure Mode.
Select Code	shows the listed interfaces select code. Note the standard-speed HP-IB interface is fixed at select code 7. When you get the power-up display in HP-UX compatible mode or enter I/O Configuration Mode, default select codes are listed. If you change an interface select code, then save the new configuration, the next time you turn on your system unit, the new select code will be listed. You may also revert back to the default settings.

Example Interface Menu

You may select one or more keyboard configurable interfaces in any order. For each interface, you're able to go to its Interface Menu. In this example, the RS-232 Interface Menu will be used. To select the RS-232 Interface, type the command key for the RS-232 interface:

[key]

The Configurable Interfaces Menu gets replaced with this RS-232 Menu:

```

          RS-232
Key Feature          Value
-----
 1 Select Code      9
 2 Interrupt Level  5
 3 Remote/Local     L
 4 Modem Enable     Y

X to eXit menu
-----
Type [key] RETURN ?

```

B

Three columns are similar to the Configurable Interfaces Menu:

Feature	lists each configurable function for the selected interface.
Value	shows the current value, or mode for each function.
Key	indicates the feature you want to select. To exit the interface menu, type X Return .

Note that all Interface Menus are not the same. Each has its own features available for configurations.

When you select an interface's function, the prompt line changes. An example is the RS-232's Select Code. After you have selected the RS-232 interface to configure, and you want to change its select code you would type the command:

1 **Return**

Then the command line would change to:

```
1  Select Code      9
   used select codes are :
   12 14 15 21
Type 0.. 31 except used RETURN ?
```

Note the select code function line appears like it does in the main part of the RS-232 Menu. The current select code appears at the right. Select codes already used in your system unit are not available and are listed in the third line.

At the bottom, you'll see the prompt line. This example means you would enter a select code between 0 and 31, except for select codes 12, 14, 15 and 21. If you want to use select code 23, you would enter the command:

23 **Return**

Other features would be selected and changed the same way. After you have made all the changes to the RS-232 Interface your system unit needs, exit the RS-232 Menu by entering the command:

X **Return**

Using the Control Functions

Your Configurable Interfaces Menu has three control functions:

- N store New values
- D store Default values
(then cycle SPU power)
- A Abort without changes

Each of the three commands are explained below:

- N saves all listed interfaces reconfigured values in the EEPROM. You can turn OFF your system unit, then turn it back ON and the values you configured the interfaces to will be used. Then the self-test will run.
- D exits the Configuration Mode and resets the factory default configurations. You must cycle system unit power to then reconfigure the interfaces to these default values.
- A causes the Boot ROM to reset and run the self-test without saving any new interface configurations you may have made. The interfaces' existing configurations will be used.

If the Boot ROM or EEPROM has problems after you enter one of these commands, the mode lines display one of the error messages shown in the following table.

B

Command	Error Message	Meaning and What To Do
N or D	Too many configuration saves	More than 64,000 saves was tried. Unlikely to occur.
N or D	Can not save new configuration	Something prevented saving the new configuration. Hardware failure. Replace CPU board.
N or D	EEPROM can not save information	EEPROM may not save any or all of the new configuration information. Hardware failure. Replace CPU board.
A	(no message should appear)	No error messages should appear when you abort configuration mode and reset you system unit.

Figure B-5. Configuration Mode Exit Error Messages

HP-IB Configuration

When your display has the Configurable Interfaces Menu and you enter the command for the HP-IB interface:

[key] **Return**

this HP-IB Menu takes its place:

```

      HP-IB
Key Feature          Value
-----
 1 Sys. Controller  Y

X to eXit menu
-----
Type [key] RETURN ?

```



The '1' key now changes definition to mean when typed, you want to change the built-in HP-IB interface's system controller function. System controller is the only function this interface has. A Y in the value column means 'yes', built-in HP-IB is the system controller.

If you want to change your built-in HP-IB interface's system controller function to 'no:'

1. Type the command 1 and the HP-IB Menu prompt changes to:

```

 1 Sys. Controller  Y
Type Y or N RETURN ?

```

2. Type the command N and the HP-IB Menu changes to:

```

      HP-IB
Key Feature          Value
-----
 1 Sys. Controller  N

X to eXit menu
-----
Type [key] RETURN ?

```

3. Return to the Configurable Interfaces Menu by typing the command:

X **Return**

RS-232 Configuration

From the Configurable Interfaces Menu, type the command key for the RS-232 interface menu and this RS-232 Menu appears:

```

      RS-232
Key Feature           Value
-----
 1 Select Code       9
 2 Interrupt Level   3
 3 Remote/Local      L
 4 Modem Enable      Y

X to eXit menu
-----
Type [key] RETURN ?

```

Each feature is explained in the following sub-sections.

RS-232 Select Code

From the RS-232 Menu, type the command 1 and the prompt line changes to:

```

 1 Select Code       9
   used select codes are :
 12 14 15 21
Type 0.. 31 except used RETURN ?

```

Note the select code function line appears like it does in the main part of the RS-232 Menu. The current select code appears at the right. Select codes already used in your system unit are not available and are listed in the third line.

At the bottom, you'll see the prompt line. Enter a select code between 0 and 31, except for select codes already used for other interfaces. If you want to use select code 20, you would enter the command 20. Then the RS-232 Menu would change to:

```
      RS-232
Key Feature          Value
-----
 1 Select Code      20
 3 Interrupt Level   3
 2 Remote/Local     L
 4 Modem Enable     Y

X to eXit menu
-----
Type [key] RETURN ?
```

RS-232 Interrupt Level

Typing the command 2 from the RS-232 Menu changes the prompt line to:

```
 2 Interrupt Level   3
Type 3, 4, 5 or 6 RETURN ?
```

You can change the interrupt level to one of three other levels. If you want to use level 4, you would type the command 4. The RS-232 Menu reappears with the new interrupt level shown. If you do not want to change the interrupt level, type .

RS-232 Remote/Local Mode

Typing the command 3 from the RS-232 Menu changes the prompt line to:

```
 3 Remote/Local     L
Type L or R RETURN ?
```

Change the mode by typing the command L (local) if a keyboard and monitor will be used as the system console, or R (remote) if a terminal will be used as the system console. The RS-232 Menu changes and the new mode is identified in the Value column.

B**RS-232 Modem Enable Mode**

Typing the command 4 from the RS-232 Menu changes the prompt line to:

```
4 Modem Enable      Y
Type Y or N RETURN ?
```

Change the mode by typing the command N (no, you do not) or Y (yes, you do) want modem enable. The RS-232 Menu changes and the new mode is identified in the Value column.

After you have reviewed the RS-232 Menu and made the required changes, return to the Interface Menu by typing the command X.

Small Computer Systems Interface Configuration

Enter the SCSI Menu by typing the command key for the SCSI interface. The Configurable Interfaces Menu changes to the SCSI Menu:

```
SCSI
Key Feature          Value
-----
1 Select Code       14
2 Interrupt Level   3
3 Parity            Y
4 Bus Address       7

X to eXit menu
-----
Type [key] RETURN ?
```

SCSI Select Code

From the SCSI Menu, type the command 1 and the prompt line changes to:

```
1 Select Code          14
used select codes are :
9 12 15 21
Type 0.. 31 except used RETURN ?
```

Note the select codes already used Type the command for the select code you want to use. After you have entered the select code, the SCSI Menu changes to show your change.

SCSI Interrupt Level

From the SCSI Menu, type the command 2 and the prompt line changes to:

```
2 Interrupt Level     3
Type 3, 4, 5, or 6 RETURN ?
```

Type the command for the interrupt level you want to use. After you have entered the new interrupt level, your SCSI Menu changes to show your change.

SCSI Parity Mode

From the SCSI Menu, type the command 3 and the prompt line changes to:

```
3 Parity              Y
Type Y or N RETURN ?
```

Type the command Y if you do want parity checking done by the system unit's SCSI interface. Type the command N if you do not want parity checking done. After you have made your choice, your SCSI Menu changes to show your change.

B**SCSI Bus Address**

From the SCSI Menu, type the command 4 and the prompt line changes to:

```
    3 Bus Address      7
Type 0.. 7 RETURN ?
```

Type the command for your new SCSI bus address. After you have made your choice, your SCSI Menu changes to show you choice.

After all SCSI features have been changed as you need them, from the SCSI Meny type the command X to return to the Interface Menu.

Local Area Network Configuration

Enter the LAN Menu by typing the command key for the LAN and this menu appears:

```

LAN
Key Feature          Value
-----
1  Select Code       21
2  Interrupt Level   5

X  to eXit menu
-----
Type [key] RETURN ?

```

LAN Select Code

From the LAN Menu, type the command 1 to change the prompt to:

```

1  Select Code       21
   used select codes are :
10 14 15 23
Type 0.. 31 except used RETURN ?

```

You may change the LAN select code to any number except those already used. Just type the number for the select code you want, then type **Return**. The LAN Menu will change to show the new select code. Then exit the menu.

LAN Interrupt Level

Enter the LAN Menu's interrupt level by typing the command 2. Then the prompt line changes to

```

2  Interrupt Level   5
Type 3, 4, 5 or 6 RETURN ?

```

Type the command to change the LAN interrupt level, then exit the LAN Menu.

HP Parallel Interface Configuration

Enter the HP Parallel Interface Menu from the Interface Menu by typing the command key for the HP Parallel Interface. This menu will appear:

```
      HP PARALLEL
Key Feature          Value
-----
 1 Select Code      23
 2 Interrupt Level  3

X to eXit menu
-----
Type [key] RETURN ?
```

HP Parallel Select Code

Type the command 1 to get this select code prompt:

```
 1 Select Code      23
  used select codes are :
 10 14 15 21
Type 0.. 31 except used RETURN ?
```

You can type the command for any unused select code. The menu changes to reflect the new select code.

HP Parallel Interrupt Level

Your HP Parallel interrupt level is accessed by typing the command 2. Then the prompt changes to:

```
2 Interrupt Level 3
Type 3, 4, 5 or 6 RETURN
```

Type the command for the new select code. Then exit the menu.

Note After you have made the required changes to your system unit's built-in interface configurations, you must use the Interface Menu and make the changes permanent. Otherwise, if you turn the system unit off, then back on again, the original interface configurations will be in effect.

Configuring Internal Interfaces

1. If you have already booted an operating system, log out and stop any user processes. Otherwise, go on to step 2.
2. Reset the system unit and get the power-up display, then when the keyboard is identified, type the command
C
3. From the Configuration Control Menu, type this command to get the I/O Configuration Menu:
1
4. From the I/O Configuration Menu, type the number command for the interface you want to configure:
key
5. Type the number command for the feature you want to change:
key
6. Type the number or letter key(s) command to change the feature:
key(s)
7. Exit the selected interface menu by typing:
X
8. Type the letter key command to store the new values, store the default values or abort and not make any changes:
key
9. When the Configuration Control Menu appears and the system unit was turned on for the first time, you should type the following command to enter the Auto System Select Mode:
2
10. If you have already selected an operating system, you should abort the menu without changing it by typing this command:
A

Auto System Select Mode

After configuring the system unit's Boot Mode Selection for HP-UX and I/O Configuration, you should use the Auto System Select Mode to determine what operating system will be automatically booted when you turn on your workstation. If you have selected Domain Compatible for the Boot Mode Selection, this section does not apply.

From this Configuration Control menu:

```

Configuration Control
Keys Mode Class
-----
 1 I/O Configuration
 2 Auto System Selection
 3 Boot Mode Selection

A Abort without changes
-----
Type [key] RETURN ?

```

typing 2 **Return** causes this Auto System Select menu to appear:

```

Auto System Select
Keys Option          Status
-----
 1 Scan for System   Y
 2 Selected System   N
 3 Store Selected Sys. N

E Execute menu
A Abort without changes
-----
Type [key] RETURN ?

```

The status column has letters indicating yes (Y) or no (N). When you type a number key command, you change the status for that option.

Each option is explained in the next three subsections.

Scan for System

Mass storage devices are searched for operating systems determined by the priority shown below:

1. SCSI interface, select codes 0 - 31, bus address 7 - 5, unit 0.
2. HP-IB interface, select codes 0 - 31, bus address 0, unit 0.
3. SRM interface at select code 21.
4. LAN at select code 21.
5. SCSI interface, select codes 0 - 31, bus address 4 - 0, all units.
6. HP-IB interface, select code 0 - 31, bus address 1 - 7, all units.
7. SRM interface at select code other than 21.
8. LAN at select code other than 21.

The boot priority list was designed to make it easy to change and control which operating system will be booted in the 'Search for System' mode. The guidelines used to establish the boot list are:

- High priority addresses before low priority addresses.
- Local systems before remote systems (Local refers to dedicated devices and remote refers to shared devices, i.e. a server).

Selected System

If you want to boot a specific operating system and more than one exists on your mass storage devices, set the Selected System status to yes (Y), then type the E (execute) command. The system unit resets and the power-up display changes to list mass storage devices with operating systems mounted on them and should look something like this:

```
Copyright 1990,                               :HP7958S, 1405, 0
Hewlett-Packard Company,                       1H SYSTEM_HPUX
All Rights Reserved.
```

```
Series 400, Rev. 1, 5 Jun 90                   :RODIME, 1404, 0
md 12 rev 0.20, 1990/03/12.16:31:17          2H SYSTEM_HPUX
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HIL.Keyboard
HP-IB
DMA-C0
RAM 4194080 Bytes
HP98644 (RS-232) at 9
HP98265 (SCSI S 32) at 14
HP98643 (LAN) at 21, THIN, 080009AAAAAA
HP PARALLEL at 12
```

System Search Mode, will store selected system
RESET to Power-up SPACE clears input Select system, Type RETURN ?

For example, if you wanted to select the HP-UX operating system on the Rodime Disk Drive, you would type the command:

```
2H 
```

and the HP-UX operating system would start booting. That operating system would be stored and automatically booted the next time you turned on the system unit.

Store Selected Sys.

If you have set the Store Selected Sys. option to Y by typing the command:

3 **Return**

the Auto System Select menu changes to:

```
          Auto System Select
Keys Option          Status
-----
 1 Scan for System   N
 2 Selected System   Y
 3 Store Selected Sys. Y

E Execute
A Abort without changes
-----
Type [key] RETURN ?
```

You may store either a selected operating system, or the operating system found when the Boot ROM searches for an operating system.



When you execute this menu, the system unit resets and the following power-up display appears:

```
Copyright 1990,                               :HP7958,123, 4
Hewlett-Packard Company,                       1H  SYSTEM_HPUX
All Rights Reserved.
```

```
Series 400, Rev. 1, 5 Jun 90                 :HP7959, 567, 8
md 12 rev 0.20, 1990/03/12.16:31:17         2H  SYSTEM_HPUX
Bit-Mapped Video
MC68030 Processor
MC68882 Coprocessor
Configuration EEPROM
HP-HIL.Keyboard
HP-IB
DMA-CO
RAM 4194080 Bytes
HP98644 (RS-232) at 9
HP98265 (SCSI S 32) at 14
HP98643 (LAN) at 21 080009AAAAAA (T)
HP PARALLEL at 12
```

```
System Search Mode, will store selection
RESET to Power-up SPACE clears input Select System Type RETURN ?
```

The path to the selected operating system will be stored in the EEPROM when you execute the Auto System Select menu. If your workstation or system environment changes and the operating system you previously selected as the default one has moved to another mass storage device, you must reconfigure the EEPROM. To reconfigure for the new path to the operating system you want, enter Configuration Control Mode, select Auto System Select and reselect the operating system.

From this point on, the selected and stored operating system will automatically boot each time the system unit is turned on. You may prevent that by entering Attended Mode when you turn the system unit on. At this time, you may temporarily select another operating system to boot.

HP Apollo 9000 Series 400 Support Matrix*

Series

400

Wed Jan 23 14:15:18 MST 1991

This document summarizes the compatibility of the optional products available for the Series 400. For detailed support information, consult the **HP Apollo 9000 Workstation Configuration Guide** (HP pub. no. <T.B.A.>) and **Installing Peripherals** (HP part no. 97005-90002).

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SPUs Covered by this Document

The phrase "all SPUs" denotes Models 400dl, 400s, 400t, 425s, 425t and 433s. A separate matrix exists for the compatible Series 300 family.

Host SPU Slots

The following table lists the slot types available on specific SPU Models. Not all slots listed as "Yes" are standard on all Models. Some slot capabilities may be optional at extra cost. On SPUs with DIO-II slots, two of those slots are individually convertible to a single DIO-I I/O slot via the A1401A adaptor. DIO-System cards may be used in DIO-II slots.

Processor Model	Slot Types Supported		
	ISA	EISA	DIO-II
400dl	None	None	None§
400t	1	None	None§
425t	1	None	None§
400s	4 Opt.	4 Opt.	2 std. 3 Opt.
425s	4 Opt.	4 Opt.	2 std. 3 Opt.
433s	4 Opt.	4 Opt.	2 std. 3 Opt.

Operating System Support

SPU Model	Operating System	Stand-alone	Diskless	
			Server	Client
400dl	HP-UX	7.03	7.03	7.03
400dl	DOMAIN	SR10.2+	SR10.2+	SR10.2+
400t	HP-UX	7.0	7.0	7.0
400t	DOMAIN	SR10.2+	SR10.2+	SR10.2+
400s	HP-UX	7.0	7.0	7.0
400s	DOMAIN	SR10.2+	SR10.2+	SR10.2+
425s	HP-UX	T.B.A.	T.B.A.	T.B.A.
425s	DOMAIN	T.B.A.	T.B.A.	T.B.A.
425t	HP-UX	T.B.A.	T.B.A.	T.B.A.
425t	DOMAIN	T.B.A.	T.B.A.	T.B.A.
433s	HP-UX	T.B.A.	T.B.A.	T.B.A.
433s	DOMAIN	T.B.A.	T.B.A.	T.B.A.

* Information subject to change without notice.

§ Graphics video board uses one internal DIO-II slot.

Support Status

To be supported, a device must be **qualified** on the computer model being considered **and** have **software support** on the operating system being considered. This means the device must appear in the appropriate column under "Hardware Support" and "Earliest Operating System Version". For software support, the tables show the earliest system version available for the Series 400. Earlier systems may support the device on an Apollo DN-Series or HP 9000 Series 300 system. All later versions of the system also support the device.

The status of configurations "planned" and "under investigation" may change within 30 days. Contact your HP Sales Representative for current peripheral support information. Users may send comments and corrections to:

HPDESK: MATRIX (HPFCRJN) /HP4000/UX,
Internet: matrix@hpfcrjn.FC.HP.COM,
UUCP: hpfcse!matrix.

This document is available to HP internal users as a PCL data object; directory `ftp/misc/Matrix` on system `hpfcse`. System `hpfcse` is not an open subnet host. Customer access via anonymous ftp is under investigation.

Support Status Glossary

"10.2+, 7.03" -

Denotes the earliest version of Series 400 software which might support the device. Note: many devices show software support, but **no** hardware support. This implies that this same software supports the device on a DN-Series or Series 300 system. The software revision is listed as a convenience to those customers who already own the device, and wish to use it at their own risk on the Series 400.

Revision "2.0c" under *SoftPC* implies the 2.0 version

as supplied in media&manuals product 98870C. The earlier 98870A and 98870B versions are not supported on Series 400.

"ID"

(In the boot ROM column) the device (typically an interface or accessory card) is merely identified by the boot ROM and is not used as a system load device. A **number** (such as 7.0) in a software support column indicates the earliest version of the operating system for which device-supporting software exists and in which the peripheral has been tested. "NOP" in the boot ROM column indicates that the device is ignored by the boot ROM.

"Inves." or "Under Investigation"

Planned, contingent on resolution of outstanding technical issues.

"NA"

"not applicable". "___" (underscores) indicate that information was not available at time of publication.

"No." or "Does not function"

Indicates that the device is not supported by the mainframe or operating system shown in that column **and does not work**. "Does not function" in a hardware column indicates that the device has no interface or cable. "Does not function" in a software column indicates that the device either has no supporting software or cannot perform all functions required for support.

"Planned"

Testing was in progress at time of publication and that HP plans to support the configuration indicated by that entry. Contact your HP Sales Representative for current information. "Under Investigation" and "Inv." represent a configuration that HP would like to support, but outstanding qualification or technical issues must first be resolved.

"Qualified"

(under "Hardware Support") the peripheral is not formally supported by Hewlett-Packard, but that a representative sample was tested for EMI/RFI and functionality. An entry of "Vendor Qualified" under "Hardware Support" means that the peripheral is supported on the Series 400 by the peripheral vendor. Qualified peripherals may be distributed by Hewlett-Packard.

"Supported"

(under "Hardware Support") the peripheral complies with at least FCC Class A and at least VDE/FTZ Level A in a system configuration. These classifications refer to the electromagnetic interference (EMI/RFI) properties of the system. It also means that a diagnostic or exerciser program exists for that mainframe and HP offers on-site service of the system.

"T.B.A."

To Be Announced

"Unsupported" and "Uns."

the device is untested and no testing is planned. They are, however, "not known to not work". These devices should not be purchased for use with the

mainframe/operating system under which the "Unsupported" appears. Many of these devices are Apollo DN-Series and HP9000 Series 300 accessories and peripherals. Although Series 400 software is essentially identical to earlier MC68xxx-series DOMAIN and HP-UX, not all peripherals supported by the earlier systems have been qualified on the Series 400. This means it is possible for a device to be supported by the software but not by the hardware.

"Vendor Supported"

Although distributed by HP/Apollo, this product is supported by the original equipment vendor, and not by HP/Apollo.

"Via O.S." (Via Operating System) -

The DOS emulation software has no specific code for support of this device. Ordinary operations from DOS may use the device subject to normal DOS/DOMAIN and/or DOS/HP-UX I/O and filesystem mapping.

A vertical bar in the margin indicates changes and additions since the edition of 08 Oct 90.

Series 400 System Processor Compatibility

Unlisted Options are either transparent to software (e.g. localization) or are supported by all software (e.g. RAM).

Product Number	Description	Type	Min. Boot ROM	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
A1421A	Model 400s, base SPU	68030	1.0	SR10.2+	7.03	2.0c
A1421B	Model 425s, base SPU	68040	2.0	SR10.3+	7.05	T.B.A.
A1630E	Model 425r, base SPU	68040	2.0	SR10.3+	7.05	T.B.A.
T.B.A.	Model 433s, base SPU	68040	T.B.A.	T.B.A.	T.B.A.	T.B.A.
A1630A	Model 400r, base SPU	68030	1.0	SR10.2+	7.03	2.0c
A1630B	Model 400dl, Mono VRX	68030	1.0	SR10.2+	7.03	2.0c
A2000A	Model 400r Mono VRX	HP-UX	1.0	Unsup.	7.03	2.0c
A2001A	Color VRX	HP-UX	1.0	Unsup.	7.0	2.0c
A2002A	Personal VRX P2	HP-UX	1.0	Unsup.	7.03	2.0c ^x
A2010A	Model 400r Mono VRX	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2011A	Color VRX	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2012A	Personal VRX P2	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2040A	Model 425r Upgrade from Model 400r	68040	T.B.A.	Unsup.	T.B.A.	T.B.A.
A2041A	from Model 400r	68040	T.B.A.	T.B.A.	Unsup.	Unsup.
A2020A	Model 400s, Mono VRX	HP-UX	1.0	Unsup.	7.03	2.0c
A2021A	Model 400s, Color VRX	HP-UX	1.0	Unsup.	7.0	2.0c
A2022A	Model 400s, Personal VRX P3	HP-UX	1.0	Unsup.	7.03	2.0c ^x
A2023A	Model 400s, Turbo VRX T2	HP-UX	1.0	Unsup.	7.03	2.0c ^x
A2024A	Model 400s, Server	HP-UX	1.0	Unsup.	7.03	2.0c
A2030A	Model 400s, Mono VRX	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2031A	Model 400s, Color VRX	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2032A	Model 400s, Personal VRX P3	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2033A	Model 400s, Server	Domain	1.0	SR10.2+	Unsup.	Unsup.
A2042A	Model 433s Upgrade from Model 400s	68040	T.B.A.	Unsup.	T.B.A.	T.B.A.
A2043A	from Model 400s	68040	T.B.A.	T.B.A.	Unsup.	Unsup.
A2044A	Model 425s Upgrade from Model 400s	68040	T.B.A.	Unsup.	T.B.A.	T.B.A.
A2045A	from Model 400s	68040	2.0	Unsup.	7.05	T.B.A.
A2046A	Model 433s Upgrade from Model 425s	68040	T.B.A.	Unsup.	T.B.A.	T.B.A.
A2047A	from Model 425s	68040	T.B.A.	T.B.A.	Unsup.	Unsup.
A2100A	Model 425r Mono VRX, diskless	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2101A	Mono VRX, 200 Mb	HP-UX	2.0	Unsup.	7.05	T.B.A.

Series 400 SPU Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
A2102A	Model 425r, continued... Color VRX, 16", diskless	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2103A	Color VRX, 19", diskless	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2104A	Color VRX, 16", 200 Mb	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2105A	Color VRX, 19", 200 Mb	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2106A	Personal VRX P3	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2108A	Model 425r Mono VRX, diskless	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2109A	Mono VRX, 200 Mb	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2110A	Color VRX, 16", diskless	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2111A	Color VRX, 19", diskless	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2112A	Color VRX, 16", 200 Mb	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2113A	Color VRX, 19", 200 Mb	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2114A	Personal VRX P3	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2116A	Model 425s Mono VRX	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2117A	Color VRX, 19"	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2118A	Color VRX, 19", DIO-II	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2119A	Personal VRX P3	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2120A	Turbo VRX T2	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2121A	Server	HP-UX	2.0	Unsup.	7.05	T.B.A.
A2123A	Model 425s Mono VRX	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2124A	Color VRX, 19"	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2125A	Personal VRX P3	Domain	2.0	SR10.3+	Unsup.	Unsup.
A2126A	Server	Domain	2.0	SR10.3+	Unsup.	Unsup.
T.B.A.	Model 433s, Mono VRX	HP-UX	T.B.A.	Unsup.	T.B.A.	T.B.A.
T.B.A.	Model 433s, Color VRX	HP-UX	T.B.A.	Unsup.	T.B.A.	T.B.A.
T.B.A.	Model 433s, Personal VRX P3	HP-UX	T.B.A.	Unsup.	T.B.A.	T.B.A.
T.B.A.	Model 433s, Turbo VRX T2	HP-UX	T.B.A.	Unsup.	T.B.A.	T.B.A.
T.B.A.	Model 433s, Mono VRX	Domain	T.B.A.	T.B.A.	Unsup.	Unsup.
T.B.A.	Model 433s, Color VRX	Domain	T.B.A.	T.B.A.	Unsup.	Unsup.
T.B.A.	Model 433s, Personal VRX P3	Domain	T.B.A.	T.B.A.	Unsup.	Unsup.
#ADA†	Series 400 Options Personal VRX P1 (98705C§)	DIO-II	1.0	SR10.2+	7.03	2.0c ^x
#ADB†	Personal VRX P2 (98705A)	DIO-II	1.0	SR10.2+	7.03	2.0c ^x
#ADC†	Personal VRX P3 (98705B)	DIO-II	1.0	Unsup.	7.03	2.0c ^x
#ADD†	Turbo VRX T1 (98735A)	DIO-II	1.0	Unsup.	7.03	2.0c ^x
#ADE†	Turbo VRX T2 (98736A)	DIO-II	1.0	Unsup.	7.03	2.0c ^x
#ADF†	Turbo VRX T3 (98736B)	DIO-II	1.0	Unsup.	7.03	2.0c ^x
#ADG	Monitor, 19-inch mono. (98774A)	1280	1.0	SR10.2+	7.03	2.0c
#ADH†	Monitor, 16-inch color (98789A)	1280	1.0	SR10.2+	7.03	2.0c
#ADJ†	Monitor, 19-inch color (98754A)	1280	1.0	SR10.2+	7.03	2.0c

Series 400 SPU Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
#ADK	Mono VRX for Server	DIO-II	1.0	SR10.2+	7.03	Via O.S.
#ADL	Color VRX for Server	DIO-II	1.0	SR10.2+	7.0	Via O.S.
#ADM	Personal VRX P3	DIO-II	1.0	SR10.2+	Unsup.	Unsup.
#AD7	Monochrome VRX (A1096A)	DIO-II	1.0	SR10.2+	7.03	2.0c
#AD8†	Color VRX (A1416A)	DIO-II	1.0	SR10.2+	7.0	2.0c
#AL0	Add 3 DIO-II slots	DIO-II	1.0	No	7.03	Via O.S.
#AL1	Add 4 ISA slots	ISA	1.0	SR10.2+	Planned	Via O.S.
#AL3†	Apollo Token Ring i/f (A-NET-ATR)	ISA	1.0	SR10.2+	No	No
#AL4†	IBM Token Ring i/f (A-NET-ITR)	ISA	1.0	SR10.2+	No	No
#AL5†	IEEE-488 i/f, std. speed	HP-IB	1.0	No	7.03	2.0c
#AL6	1-3 serial i/f cable (K2292)	RS-232C	1.0	SR10.2+	7.05 ¹	No
#AL7	ID Module (46084A)	HP-HIL	NOP	No	7.03	Via O.S.
#AL8†	Parallel i/f driver	-	NOP	No	7.03	Via O.S.
#AL9	Disable ThinLAN, enable AUI	802.3	1.0	SR10.2+	7.03	Via O.S.
#AMA	Add 2nd A1444A 660 Mb disk	SCSI	1.0	SR10.2+	No	No
#AM0	Add A1440A 200 Mbyte int. disk	SCSI	1.0	No	7.03	Via O.S.
#AM1	Add A1440A 200 Mbyte int. disk	SCSI	1.0	SR10.2+	No	No
#AM2	Add 2nd A1440A 200 Mbyte disk	SCSI	1.0	SR10.2+	7.03	Via O.S.
#AM2	Add A1442A 330 Mbyte int. disk	SCSI	1.0	Unsup.‡	7.0	Via O.S.
#AM3	Add A1442A 330 Mbyte int. disk	SCSI	1.0	SR10.2+	No	No
#AM4	Add A1443A 660 Mbyte int. disk	SCSI	1.0	Unsup.‡	7.0	Via O.S.
#AM5	Add A1444A 660 Mbyte int. disk	SCSI	1.0	SR10.2+	No	No
#AM6	Add 2nd A1443A 660 Mb disk	SCSI	1.0	Unsup.‡	7.0	Via O.S.
#AM7§	Add A1447A DDS (4mm DAT) drive	SCSI	1.0*	Inves.	T.B.A.	Via O.S.
#AM8	Add A1448A CD-ROM drive	SCSI	1.0*	Unsup.	7.03	Via O.S.
#AM9	Add A1449A QIC-24 ctg. tape	SCSI	1.0*	SR10.2+	Inves.	Unsup.
#ANB	Subs. 16 Mbytes RAM	SIMM	1.0	SR10.2+	7.0	2.0c
#ANC	Subs. 32 Mbytes RAM	SIMM	1.0	SR10.2+	7.0	2.0c
#AN1	Subs. 32 Mbytes RAM	SIMM	1.0	SR10.2+	7.0	2.0c
#AN2	Add 4 Mbytes ECC RAM	SIMM	1.0	SR10.2+	7.03	2.0c
#AN4	Add 8 Mbytes ECC RAM	SIMM	1.0	SR10.2+	7.03	2.0c
#AN4	Add 8 Mbytes RAM	SIMM	1.0	SR10.2+	7.0	2.0c
#AN6	Add 32 Mbytes RAM	SIMM	1.0	SR10.2+	7.0	2.0c
#AN8	Add 16 Mbytes RAM	SIMM	1.0	SR10.2+	7.0	2.0c
#AN9	Add 128 Kbytes cache	PGA	1.0	SR10.2+	7.0	2.0c

* Boot ROM support does not imply support by install/update processes or availability of software in this media format.

§ This Option or product listed for reference, and not currently orderable as shown.

† Not available on Model 400dl.

‡ The current combination of drive firmware and DOMAIN operating system software does not provide optimum performance. These configurations will be fully supported in a future release.

X SoftPC supported only within an X-window at this time.

Series 400 Support Matrix C-6

Series 400 Disk Compatibility

This table includes disk and disk/tape drives. The "Min. Boot ROM" column shows the earliest ROM capable of loading an operating system from the device.

"CS/80" and "SS/80" disks all use the HP-IB interface. All AMIGO disks are unsupported. See Series 300 Support Matrix for information on AMIGO disks and HP-UX. Disks known to not work on contemporary HP MC 68000-based HP-UX systems also do not work on the Series 400.

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
A-200EF	200 Mb hard disk & 5¼-inch floppy, external	SCSI	1.0	Models 400r & 425r only	Unsup.	Unsup.	Unsup.
A-660E	660 Mb external	SCSI	1.0	All except 400dl	10.2+	Unsup.	Unsup.
A-697	External disk cluster	SCSI	Unsup.	Unsupported	Unsup.	Unsup.	Unsup.
AADDSFLP	1.2Mb 5¼-inch flex.	SCSI	Inves.	All except 400dl	SR10.2+	Unsup.	Unsup.
A1440A	200 Mbyte internal	SCSI	1.0	Models 400r/425r only	SR10.2+	7.0	Via O.S.
A1442A	330 Mbyte internal	SCSI	1.0	400s/425s/433s only	SR10.2+	7.0	Via O.S.
A1443A	660 Mbyte internal	SCSI	1.0	400s/425s/433s only	Unsup.‡	7.0	Via O.S.
A1444A	660 Mbyte internal	SCSI	1.0	400s/425s/433s only	SR10.2+	Unsup.	Via O.S.
A1448A	CD-ROM drive, internal	SCSI	1.0*	400s/425s/433s only	Planned	7.0	Via O.S.
C1700A	Series 6300 Magneto-Optic Model 20GB/A MO autochanger	SCSI	Unsup.	All except 400dl (400s/425s/433s only on DOMAIN)	SR11	7.0	Via O.S.
C1701A	Model 650/A MO ctg drive	SCSI	1.0	All except 400dl	SR10.2+	7.0	Via O.S.
C1707A	Series 6100 Model 600/A CD-ROM, stand-alone	HP-IB CS/80	1.0	All except 400dl	No	7.0	Via O.S.
C2200A	Series 6000 Model 335H 335 Mbyte hard disk	HP-IB CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
C2201A	Model 670FL 670 Mbyte hard disk	HP-FL	NA	No HP-FL i/f on 400	NA	NA	NA
C2202A	Model 670XP 670 Mbyte hard disk with cache	HP-IB CS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
C2203A	Model 670H 670 Mbyte hard disk	HP-IB CS/80	Unsup.	Unsupported	No	7.0	Unsup.
C2204A	Model 1.34FL 1.34 Gbyte hard disk	HP-FL	NA	No HP-FL i/f on 400	NA	NA	NA

° This symbol is used throughout this document to denote discontinued products listed for reference. Discontinued° devices may still be available as used, refurbished or remanufactured products from HP's Finance and Remarketing Division. Add an "R" to the product number, e.g. 7935HR.

‡ The current combination of drive firmware and operating system software does not provide optimum performance.

Series 400 Disk Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
C2212A	Series 6000 for HP-UX Model 330/S 330 Mbyte hard disk	SCSI	1.0	All except 400dl	Unsup.‡	7.0	Via O.S.
C2213A	Model 660/S 660 Mbyte hard disk	SCSI	1.0	All except 400dl	Unsup.‡	7.0	Via O.S.
#001	<see C2290A>						
#002,022	<see C2291A>						
#003	<see C2292A in Tapes>						
#004,024	<see C2293A>						
#005	<see C2294A>						
C2212D	Series 6000 for DOMAIN Model 330/D 330 Mbyte hard disk	SCSI	1.0	All except 400dl	SR10.2+	Unsup.‡	Unsup.
C2213D	Model 660/D 660 Mbyte hard disk	SCSI	1.0	All except 400dl	SR10.2+	Unsup.‡	Unsup.
#A01	<see C2290D>						
#A02,A22	<see C2291D>						
#005	<see C2294A>						
C2269A	Network Mass Storage System	SCSI	→	Under investigation	←	←	←
C2290A	C2212/13A/D Upgrades 332 Mbyte upgrade	SCSI	1.0	All except 400dl	Unsup.‡	7.0	Via O.S.
C2290D	332 Mbyte upgrade	SCSI	1.0	All except 400dl	SR10.2+	Unsup.‡	Unsup.
C2291A	664 Mbyte upgrade	SCSI	1.0	All except 400dl	Unsup.‡	7.0	Via O.S.
C2291D	664 Mbyte upgrade	SCSI	1.0	All except 400dl	SR10.2+	Unsup.‡	Unsup.
C2293A	CD-ROM upgrade	SCSI	1.0*	All except 400dl	Unsup.	7.0	Via O.S.
C2294A	Magneto-Optic upgrade	SCSI	1.0	All except 400dl	SR10.2+	7.0	Via O.S.
°7907A	20/20 Mb Fxd/Rem ctg	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7908P	16 Mb Fxd w/ctg tape	CS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°7911P/R	28 Mb Fxd w/ctg tape	CS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°7912P/R	65 Mb Fxd w/ctg tape	CS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°7914CT	132 Mb Fxd w/ctg tape	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7914P/R	132 Mb Fxd w/ctg tape	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7914TD	<see 7914R & 7971A>						
°7914ST	<see 7914R & 7974A>						
°7933H	404 Mbyte fixed disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7933XP	404 Mbyte fixed disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7935H	404 Mbyte remv pack	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7935XP	404 Mbyte remv pack	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7936FL	308 Mbyte fixed disk	HP-FL	NA	No interface	No	No	No
7936H	308 Mbyte fixed disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7936XP	308 Mbyte fixed disk	CS/80	Unsup.	Unsupported	No	Unsup.	Unsup.

Series 400 Disk Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
7937FL	571 Mbyte fixed disk	HP-FL	NA	No interface	No	No	No
7937H	571 Mbyte fixed disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7937XP	571 Mbyte fixed disk	CS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°7941/45A	24/55 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7942A	7941A+9144A pkg.	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7946A	7945A+9144A pkg.	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7957A	80 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7957B	80 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7957S	107 Mbyte disk	SCSI	Unsup.	Unsupported	Unsup.	7.0	Via O.S.
°7958A	131 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7958B	152 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7958S	161 Mbyte disk	SCSI	Unsup.	Unsupported	Unsup.	7.0	Via O.S.
7959B	304 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
7959S	323 Mbyte disk	SCSI	Unsup.	Unsupported	Unsup.	7.0	Via O.S.
°7962B	152 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7963B	304 Mbyte disk	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°97962B	152 Mbyte add-on	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
97963B	304 Mbyte add-on	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
9122C	1.6Mb 3½-in. flex.	SS/80	Unsup.	All except 400dl	No	7.0	2.0c
°9122D/S	788Kb 3½-in. flex.	SS/80	Unsup.	Unsupported	No	7.0	Unsup.
°9125S	360Kb 5¼-in. flex.	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
9127A	360Kb 5¼-in. flex.	SS/80	Unsup.	All except 400dl	No	7.0	2.0c
°9133D	9134D+9122S pkg.	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9133H	9134H+9122S pkg.	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9133L	9134L+9122S pkg.	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9134D	14.8 Mbyte disk	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9134H	19.9 Mbyte disk	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9134L	39.9 Mbyte disk	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9153A	9154A+9122S pkg.	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9153B	9154B+9122S pkg.	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
°9154A/B	10/20 Mbyte disk	SS/80	Unsup.	Unsupported	No	Unsup.	Unsup.
9153C/M	10-40 Mb Modular	SS/80	Unsup.	Unsupported	No	7.0	2.0c
°9262B	Secure 7962B	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°9263B	Secure 7963B	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
97902B	152 Mbyte add-on	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
97903B	304 Mbyte add-on	CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
98433D	Model 345 200 Mb internal	SCSI	-	Supported only as A1440A	--	--	--

Series 400 Tape Compatibility

The "Min. Boot ROM" column shows the earliest ROM capable of loading an operating system from the device.

"797X" and "AMIGO" tape drives listed here are all HP-IB interfaced. All AMIGO tapes are unsupported. See **Series 300 Support Matrix** for information on AMIGO tapes known to not work on contemporary HP MC 68000-based HP-UX systems.

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
A-6250	½" 9-trk (LMS) 1600/6250 bpi	SCSI	Unsup.	Unsupported	SR10.2+	No	No
AADESTC	¼" 9-trk 60Mb QIC-24 ctg., external	SCSI	1.0	All except 400 <i>dl</i>	SR10.2+	Unsup.	Unsup.
A-EX- A-XT-	8mm 2.3Gb External 8mm 2.3Gb Internal	SCSI SCSI	Unsup. Unsup.	All except 400 <i>dl</i> Unsupported	10.2+ [‡] Unsup.	Unsup. Unsup.	Unsup. Unsup.
A1447A	4mm 1.3Gb DDS (DAT), internal	SCSI	1.0*	Model 400 <i>s</i> /433 <i>s</i> only	Planned	7.0	Via O.S.
A1449A	¼" 9-trk 60Mb QIC-24 ctg., internal	SCSI	1.0	Model 400 <i>s</i> /433 <i>s</i> only	SR10.2+	Unsup.	Unsup.
C1511A C1512A	1.3Gb DDS (DAT) 1.3Gb DDS (DAT)	HP-IB SCSI, ext.	NOP 1.0*	All except 400 <i>dl</i> All except 400 <i>dl</i>	No Planned	7.0 7.0	Via O.S. Via O.S.
C2212/13A #003 C2292A	Series 6000 <see C2292A> 1.3Gb DDS (DAT)						
		SCSI	1.0*	All except 400 <i>dl</i>	Planned	7.0	Via O.S.
°35401A	¼" 16-trk 536Mbyte ctg. autochanger	HP-IB CS/80	Unsup.	Unsupported	No	7.0	Via O.S.
°7970E °7971A °7974A °7978A/B	½-inch 9-track 800/1600 bpi 1600 bpi 1600/800 bpi 1600/6250 bpi	AMIGO AMIGO HP-IB, 797x HP-IB, 797x	NOP NOP NOP NOP	Unsupported Unsupported Unsupported Unsupported	No No No No	Unsup. Unsup. Unsup. Unsup.	Unsup. Unsup. Unsup. Unsup.
7979A 7980A #800 7980XC	½-inch 9-track 1600/800 bpi 1600/6250 [§] bpi 800 bpi NRZI 7980A w/L-Z data compression [§]	HP-IB, 797x HP-IB, 797x HP-IB, 797x HP-IB, 797x	NOP NOP NOP NOP	All except 400 <i>dl</i> 400 <i>s</i> /425 <i>s</i> /433 <i>s</i> only 400 <i>s</i> /425 <i>s</i> /433 <i>s</i> only 400 <i>s</i> /425 <i>s</i> /433 <i>s</i> only	No No No No	7.0 7.0 7.0 7.0	Via O.S. Via O.S. Via O.S. Via O.S.
9144A 9145A	¼-inch cartridge 16-track, 67Mb 16/32-track, 134Mb	CS/80 CS/80	1.0 1.0	All except 400 <i>dl</i> All except 400 <i>dl</i>	No No	7.0 7.0	Via O.S. Via O.S.

* Boot ROM functionality does not imply install/update process support, nor availability of software on this media type.

§ Requires A1401A and 98625B high-speed HP-IB for 6250 GCR or compressed operation.

‡ Requires *Omniback*.

Series 400 Support Matrix C-10

Series 400 Terminal and Console Compatibility

The "Min. Boot ROM" column shows the earliest ROM capable of using the device as system console.

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SofiPC
A1096A	Monochrome VRX	DIO-II	1.0	All Models	SR10.2+	7.03	2.0c
A1416A	Color VRX	DIO-II	1.0	All except 400dl	SR10.2+	7.0	2.0c
	700 Family Alpha-Numeric Terminals						
C1001	Model 700/92	term0	1.0	All Models	Unsup.	7.0	2.0c
C1002	Model 700/94	term0	1.0	All Models	Unsup.	7.0	2.0c
°C1003	Model 700/41	ASCII	1.0*	Unsupported	Unsup.	7.0*	Unsup.
°C1004	Model 700/22	ANSI	1.0*	Unsupported	Unsup.	7.0*	Unsup.
C1006	Model 700/43	ASCII	1.0*	Unsupported	Unsup.	7.0*	Unsup.
C1007	Model 700/44	ANSI/PC	1.0*	All Models	Unsup.	7.0*	2.0c
	Localized 700/92						
C1010C	Simplified Chinese	term0	1.0	All Models	Unsup.	7.0	Unsup.
C1010J	Japanese	term0	1.0	All Models	Unsup.	7.0	Unsup.
C1010K	Korean	term0	1.0	All Models	Unsup.	7.0	Unsup.
C1010T	Traditional Chinese	term0	1.0	All Models	Unsup.	7.0	Unsup.
C1017	Model 700/32	ANSI	1.0*	All Models	Unsup.	7.0*	Unsup.
	X-terminals						
C2301A°/B	Base unit	X-11	No	All Models	SR10.2+	7.0	Unsup.
°C2302A	Monochrome, 17"	X-11	No	All Models	SR10.2+	7.0	Unsup.
C2303A°/B	VGA color, 14"	X-11	No	All Models	SR10.2+	7.0	Unsup.
C2304A°/B	Hi-res color, 16"	X-11	No	All Models	SR10.2+	7.0	Unsup.
C2305A°/B	Grey Scale, 19"	X-11	No	All Models	SR10.2+	7.0	Unsup.
C2307B	Color, Japan, 19"	X-11	No	All Models	SR10.2+	7.0	Unsup.
	Monitors: multi-sync						
D1187A	19-inch	Color	-	Unsupported	Unsup.	Unsup.	--
D1188A	15-inch	Color	-	Unsupported	Unsup.	Unsup.	--
<i>Vectra</i>	w/Advancelink-2392	term0	1.0	All Models	Unsup.	7.0	Unsup.
<various>	Monitors: all bearing older Apollo part numbers	-	-	No supporting i/f	--	--	--
°2392A	Alphanumeric terminal	term0	1.0	Unsupported	Unsup.	7.0	2.0c
2393A	Graphics terminal	term0	1.0	Unsupported	Unsup.	7.0	2.0c
°2394A	Data entry terminal	term0	1.0	Unsupported	Unsup.	7.0	2.0c
2397A	Color terminal	term0	1.0	Unsupported	Unsup.	7.0	2.0c
°3082B	Industrial terminal	term0	1.0	Unsupported	Unsup.	7.0	Unsup.

* Although the Boot ROM supports non-HP terminal commands, key system tools such as *install*, *update* and *sam* presently require an HP *term0* console.



Series 400 Terminal and Console Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
35731A/B	Monitor: 12" 512×400(390) 50/60 Hz for 2393A, 98204B, 98542A and 98546A	Mono.	-	No supported i/f	Unsup.	Unsup.	←
35741A/B	Monitor: 12" 512×400(390) 50/60 Hz for 2397A, 98543A	Color	-	No supported i/f	Unsup.	Unsup.	←
45711A °45850	<i>Portable Plus</i> (as 2622A) HP 150-II (as 2623A)	term0 term0	1.0 1.0	Unsupported Unsupported	Unsup. Unsup.	7.0 7.0	Unsup. Unsup.
°9666A	Ruggedized 2397A	term0	1.0	Unsupported	Unsup.	7.0	2.0c
°98287A	"CX" 1024×768×8 98700 MADbus	DIO-I/O	Unsup.	Unsupported	No	7.0	No
98542A	Video interfaces 512×400×1	DIO-Sys.	1.0	Unsupported	No	7.0	No
98543A	512×400×4	DIO-Sys.	1.0	Unsupported	No	7.0	No
°98544A	1024×768×1	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98544B	1024×768×1	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
°98545A	1024×768×4	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98546A	512×390×2	DIO-I/O	1.0	Unsupported	No.	7.0	No
98547A	1024×768×6	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98548A	Video interfaces "MH" 1280×1024×1	DIO-II	1.0	Unsupported	No	7.0	2.0c
98549A	"C+" 1024×768×6	DIO-II	1.0	Unsupported	No	7.0	2.0c
98550A	"CH" 1280×1024×8	DIO-II	1.0	400s/425s/433s only	No	7.0	2.0c
98556A	"CHX" Accelerator	DIO-II	1.0	400s/425s/433s only	No	7.0	2.0c
°98700	"CX" Controller	M.A.D.	Unsup.	< see °98287A >			
98702A§	Personal VRX LGB i/f	DIO-II	1.0	Supported on Models w/avail. DIO-II slot.	SR10.2+	7.03	2.0c ^x
98705A	Personal VRX P2	LGB	1.0	< see 98702A >	←	←	←
98705B	Personal VRX P3	LGB	1.0	< see 98702A >	←	←	←
98705C§	Personal VRX P1	LGB	1.0	< see 98702A >	←	←	←
98720A	SRX Processor	LGB	1.0	< see 98724/25A >			
°98724A	LGB Interfaces for 98720A SRX	DIO-I/O	1.0	Unsupported	No	7.0	2.0c
98725A	for 98720A SRX	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98726A	for 98730A TurboSRX	DIO-II	1.0	Unsupported	No	7.0	2.0c ^x
98730A	TurboSRX Processor	LGB	1.0	< see 98726A >			

Series 400 Terminal and Console Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
98735A 98727A§	Turbo VRX products T1 Processor PDMA interface	G-Bus DIO-II	1.0 1.0	< see 98727/28A> Supported on Models w/avail. DIO-II slot.	Inves.	7.03	2.0c ^x
98728A§	VDMA interface	DIO-II	1.0	Supported on Models w/avail. DIO-II slot.	Inves.	7.03	2.0c ^x
98736A 98736B	T2 Processor T3 Processor	G-Bus G-Bus	1.0 1.0	< see 98727/28A> < see 98727/28A>			
°98751A °98752A	Monitors 19" 1024×768 60 Hz 19" 1280×1024 60 Hz for 98550/720/30	Color Color	- -	No supported i/f Unsupported	Unsup. Unsup.	Unsup. Unsup.	- -
98753A 98754A	19" 1024×768 60 Hz 19" 1280×1024 60 Hz for A1416A, 98550, 98705/06, 98720/30, 98735/36	Color Color	- -	No supported i/f All except 400dl	Unsup. < see i/f>	Unsup. < see i/f>	- -
98774A	19" 1280×1024 72 Hz for A1096A	Mono.	-	All Models	< see i/f>	< see i/f>	-
98785A 98786A 98788A	Monitors 16" 1024×768 60 Hz 17" 1024×768 60 Hz 19" 1280×1024 60 Hz for 98548	Color Mono. Mono.	- - -	No supported i/f No supported i/f Unsupported	Unsup. Unsup. Unsup.	Unsup. Unsup. Unsup.	- - -
98789A	16" 1280×1024 60 Hz for A1416A, 98550, 98705/06, 98720/30, 98735/36	Color	-	All except 400dl	< see i/f>	< see i/f>	-

§ This component product number is listed for reference and is not separately orderable at present.

X SoftPC supported only within an X-window at this time.

Series 400 Human Interface

The "Min. Boot ROM" column shows the earliest ROM capable of using the device as system console.

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
A-LPFK-	32-button pad	Serial	No	All Models	SR10.2+	Unsup.	Unsup.
A1098A	Keyboard/local kits	Serial	1.0	All Models	SR10.2+	No	No
A1099A	DOMAIN HP-UX (ITF)	HP-HIL	1.0	All Models	No	7.0	2.0c
C1027A#ABA	Keyboard, 700/44 AT/2-style (aka C1408A, see 98016A)	MITF-5	1.0	All Models	No	7.0	Unsup.
K1388	8 knob Dial Set	Serial	No	Under investigation	SR10.2+	Unsup.	Unsup.
K1410	Mouse, 3-button (see also 46094A)	Quad.	NOP	All Models	SR10.2+	7.0*	2.0*
K1422	Spaceball XYZ, 8-button	Serial	No	Vendor supported	SR10.2+	Unsup.	Unsup.
K1424	Summagraphics tablets	Serial	No	Vendor supported	SR10.2+	Unsup.	Unsup.
K1432	<i>Bit Pad Two</i> B-size tablet	Serial	No	Vendor supported	SR10.2+	Unsup.	Unsup.
K1434	Trackballs	Quad.	NOP	Under investigation	SR10.2+	Unsup.*	Unsup.*
K1435	3-button Marconi RB2	Quad.	NOP	Vendor supported	SR10.2+	Unsup.*	Unsup.*
M1309A	3-button Itac	HP-HIL	NOP	All Models	Unsup.	7.0	2.0c
35723A	12-inch touch bezel	HP-HIL	No	Unsupported	No	7.0	—
45911A°/C	11x11" tablet	HP-HIL	NOP	All Models	No	7.0	—
46021A	Keyboard, "ITF"	HP-HIL	1.0	All Models	No	7.0	2.0c
46060A	Mouse, 2 button	HP-HIL	NOP	All Models	No	7.0	2.0c
46060B	Mouse, 3 button	HP-HIL	NOP	All Models	No	7.0	2.0c
46080A	HP-HIL Extensions	HP-HIL	NOP	All Models	No	7.0	2.0c
46081A	2.4m	HP-HIL	NOP	All Models	SR10.2+ ^a	7.0	2.0c
46082A	2.4m with audio	HP-HIL	NOP	All Models	No	7.0	2.0c
46082B	15m w/RGB & audio	HP-HIL	NOP	All Models	No	7.0	2.0c
46082B	30m w/RGB & audio	HP-HIL	NOP	All Models	No	7.0	2.0c
46083A	1-Knob dial set	HP-HIL	NOP	Unsupported	No	7.0	—
46084A	ID Module	HP-HIL	NOP	All Models	No	7.0	2.0c
46085A	9-Knob dials set	HP-HIL	NOP	All Models	No	7.0	2.0c
46086A	32-button pad	HP-HIL	NOP	All Models	No	7.0	2.0c
46087	Digitizer, A-size	HP-HIL	NOP	All Models	No	7.0	—
46090C	Digitizer, A-size	HP-HIL	NOP	All Models	No	7.0	—
46088	Digitizer, B-size	HP-HIL	NOP	All Models	No	7.0	—
46091C	Digitizer, B-size	HP-HIL	NOP	All Models	No	7.0	—

Series 400 Human Interface, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
46094A	Adaptor, quadrature	HP-HIL	NOP	All Models	No	7.0	2.0c
°46095A	Mouse, 3-button (Replaced by K1410)	Quad.	NOP	All Models	Unsup.	7.0	2.0c
°92915A	Barcode Readers For HP 2390-series terminals and HP 150 PCs	MITF-12	->	<support via terminal>			
°92916A	For HP 9000 workstations and HP 150-II PCs	HP-HIL	NOP	All Models	No	7.0	2.0c
92917A	For HP 700 family terminals	MITF-5	->	<support via terminal>			
98016A§	MITF-5 keyboard adaptor	HP-HIL	1.0	All Models	No	7.0	Unsup.
98203C	Large Keyboard	HP-HIL	Unsup.	Unsupported	No	Unsup.	No

* Connection requires 46094A HP-HIL quadrature adaptor.

° Supported limited to audio port only.

§ "Special"; consult factory for availability.

Series 400 Text Printer Compatibility

This table refers only to simple text printing capability of the printer. Refer to the **Graphics Device Compatibility** table (next) for information on support of vector/raster printing. DOS applications are usually device-dependent. Also, unless they support HP-PCL, they may require that the printer be switch-configured for IBM/Epson emulation.

Legend: cps - characters per second, lpm - lines per minute, ppm - pages per minute

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
C1200A	Asian System Printer Serial interface	APCL RS232	All Models All Models	Unsup. Unsup.	7.0 7.0	via O.S. via O.S.
C1202A #1AA #1A8 #1A9	Asian Serial Printer Parallel interface IEEE-488 interface Serial interface	APCL Par. HP-IB RS232	All Models Unsupported All except 400dl All Models	Unsup. Unsup. Unsup. Unsup.	7.0 Unsup. 7.0 7.0	via O.S. Unsup. via O.S. via O.S.
C1602A Opt.1AX Opt.1AX Opt.1A8 C1608A	<i>PaintJet</i> XL, B-size color inkjet Serial/parallel interface Serial/parallel interface IEEE-488/serial interface HP-GL/2 cartridge	PCL Par. RS232 HP-IB HP-GL/2	- All except 400dl All except 400dl All except 400dl All Models	w/C1608A SR10.2+ SR10.2+ No SR10.2+	7.0 Inves. 7.0 7.0 7.0	Via O.S. Via O.S. Via O.S. Via O.S. Via O.S.
C2106A	<i>DeskJet</i> 500, 300 dpi, A-size	Serial Par.	All Models All except 400dl	— —	Planned Planned	Via O.S. Via O.S.
HCD-MMP	(Genicom) impact	RS232	Unsupported	SR10.2+	Unsup.	Unsup.
K1626 K1627	"PTR-2106" PostScript, 6ppm "PTR-2115" PostScript, 15ppm	RS232 RS232	Vendor Supported Vendor Supported	SR10.2+ SR10.2+	Unsup. Unsup.	Unsup. Unsup.
K2132	<i>Tek Phaser Ps</i>	RS232	Vendor supported	SR10.2+	Unsup.	Unsup.
LP26-SPE LP26-S	LP/26 PostScript LP/26 PostScript	ISA RS232 Par.	Unsupported Unsupported Unsupported	SR10.2+ SR10.2+ SR10.2+	Unsup. Unsup. Unsup.	Unsup. Unsup. Unsup.
LP80010	LP 800 PostScript	Par.	Unsupported	SR10.2+	Unsup.	Unsup.
2225A 2225C/P 2225D	<i>ThinkJet</i> , 150 cps, 6.5" <i>ThinkJet</i> <i>ThinkJet</i>	HP-IB Par. Serial	Unsupported Unsupported Unsupported	No Unsup. Unsup.	7.0 Unsup. Unsup.	2.0c Unsup. Unsup.
2227A 2227B 2228A	<i>QuietJet Plus</i> , 192 cps, 14" <i>QuietJet Plus</i> , 14" <i>QuietJet</i> , 8"	Serial Par. HP-IB Serial Par.	Unsupported Unsupported Unsupported Unsupported Unsupported	No Unsup. No No Unsup.	7.0 Unsup. 7.0 7.0 Unsup.	2.0c Unsup. 2.0c 2.0c Unsup.
2235A/C 2235B/D	<i>RuggedWriter</i> , 480 cps, 14" <i>RuggedWriter</i>	Serial Par. HP-IB Serial	Unsupported Unsupported Unsupported Unsupported	No Unsup. No No	7.0 Unsup. 7.0 7.0	2.0c Unsup. 2.0c 2.0c

Series 400 Support Matrix C-16

Series 400 Text Printer Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
°2276A	<i>DeskJet</i> , 300 dpi, A-size	Serial	All Models	Unsup.	7.0	2.0c
		Par.	All except 400dl	Unsup.	7.0*	2.0c
°2277A	<i>DeskJet Plus</i> , 300 dpi, A-size	Serial	All Models	Unsup.	7.0	2.0c
		Par.	All except 400dl	Unsup.	7.0*	2.0c
2562C	300 lpm impact, 16"	PCL	Unsupported	Unsup.	7.0	Via O.S.
2563	300 lpm impact, 16"	PCL	Unsupported	Unsup.	7.0	Via O.S.
2564	600 lpm impact, 16"	PCL	Unsupported	Unsup.	7.0	Via O.S.
°2565A	600 lpm impact, 18"	PCL	All Models	Unsup.	7.0	Via O.S.
2566	900 lpm impact, 18"	PCL	All Models	Unsup.	7.0	Via O.S.
2567	1200 lpm impact, 18"	PCL	All Models	Unsup.	7.0	Via O.S.
#046	CIPER (aka #290,850)	HP-IB	Unsupported	No	7.0	Via O.S.
#046	Simple (aka #200)	HP-IB	Unsupported	No	7.0	Via O.S.
#049	RS-232C interface	RS232	All Models	Unsup.	7.0	Via O.S.
#050	RS-422 Interface	422	Unsupported	Unsup.	Unsup.	Unsup.
#053	Parallel Interface	Par.	Unsupported	Unsup.	Unsup.	Unsup.
°2603A	45 cps daisywheel	RS232	Unsupported	Unsup.	Unsup.	Unsup.
2684	<i>LaserJet/2000</i> printer	PCL	Unsupported	Unsup.	7.0	2.0c
26843A	Serial interface	RS232	Unsupported	Unsup.	7.0	2.0c
26843B	Parallel interface	Par.	Unsupported	Unsup.	Unsup.	Unsup.
°2686A	<i>LaserJet</i> , 8 ppm	RS232	Unsupported	Unsup.	7.0	2.0c
		Par.	Unsupported	Unsup.	Unsup.	Unsup.
°2686D	<i>LaserJet 500</i>	RS232	Unsupported	Unsup.	7.0	2.0c
		Par.	Unsupported	Unsup.	Unsup.	Unsup.
°2932A	200 cps impact	RS232	Unsupported	Unsup.	7.0	2.0c
°2933A	200 cps "Factory Printer"	RS232	Unsupported	Unsup.	7.0	2.0c
°2934A	200 cps "Office Printer"	RS232	Unsupported	Unsup.	7.0	2.0c
#046	HP-IB interface	HP-IB	Unsupported	No	7.0	2.0c
33439P	PostScript cartridge for <i>LaserJet-II</i> D, -IIP and -III	Font slot	All Models	SR10.2+	Planned	—
°33440A	<i>LaserJet-II</i> , 8 ppm single	PCL	All Models	SR10.2+	7.0	2.0c
	Parallel interface	Par.	All except 400dl	SR10.2+	7.0*	2.0c
	Serial interface	RS232	All Models	SR10.2+	7.0	2.0c
33447A	<i>LaserJet-II</i> D, 8 ppm double	PCL	All Models	SR10.2+	7.0	2.0c
	Parallel interface	Par.	All except 400dl	SR10.2+	7.0*	2.0c
	Serial interface	RS232	All Models	SR10.2+	7.0	2.0c
33449A	<i>LaserJet-III</i> , 8 ppm single	PCL	All Models	SR10.2+	7.0	2.0c
	Parallel interface	Par.	All except 400dl	SR10.2+	7.0*	2.0c
	Serial interface	RS232	All Models	SR10.2+	7.0	2.0c
33459A	<i>LaserJet-III</i> D, 8 ppm double	PCL	All Models	SR10.2+	Planned	Via O.S.
	Parallel interface	Par.	All except 400dl	SR10.2+	Planned	Via O.S.
	Serial interface	RS232	All Models	SR10.2+	Planned	Via O.S.

Series 400 Text Printer Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
33471A	LaserJet-IIP, 4 ppm single	PCL	All Models	SR102.+	7.0	2.0c
	Parallel interface	Par.	All except 400dl	SR102.+	7.0*	2.0c
	Serial interface	RS232	All Models	SR102.+	7.0	2.0c
3630A #001	PaintJet color graphics	PCL	All Models	Unsup. No —	7.0	2.0c
	Serial interface	RS232	All Models		7.0	2.0c
	#002 IEEE-488 interface	HP-IB	All except 400dl		7.0*	2.0c
#002	Parallel interface	Par.	All except 400dl			
41063A #040	Asian Workstation, PCL	HP-IB	All except 400dl	No	7.0	Via O.S.
	Serial interface	RS232	All Models	No	7.0	Via O.S.
°82906A	160 cps impact	HP-IB	Unsupported	No	7.0	Via O.S.
°9876A	480 lpm thermal	HP-IB	Unsupported	No	7.0	Via O.S.

* Use in systems prior to 8.0 is not transparently configurable with *sam*. Use *sam* to create the lp spooler and printer device file (as either HP-IB or serial). Then replace the */dev/lp.* and */dev/rtp.* device files with identically named device files with major number 21 and minor number 0xsc0000. The kernel must also contain the *gpio* and *dil* drivers ('sam' can install these and re-build the kernel).

Series 400 Graphics Compatibility

For printers, this table refers only to the graphics capability. Refer to the **Printer Compatibility** table (previous) for information on support of text printing. DOS applications are usually device-dependent. Also, unless they support HP-PCL, they may require that the printer be switch-configured for IBM/Epson emulation.

Legend: cps - characters per second, lpm - lines per minute, ppm - pages per minute

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support	
				DOMAIN O.S.	HP-UX
A-LPFK	32-button pad	Serial	All Models	SR10.2+,GPR	Unsup.
A1096A	Monochrome VRX board	DIO-II	All Models	SR10.2+	7.0, X, Starbase
A1416A	Color VRX board	DIO-II	All except 400dl	SR10.2+	7.0, X, Starbase
CGP	CP300 (Tek 4693DX)	Par.*	All except 400dl	SR10.2+,cpscr	No
CGP10AT	CP300 (Tek 4693DX)	ISA	All except 400dl	SR10.2+,cpscr	No
CGP9-AT	CP300 (Tek 4693DX)	ISA	All except 400dl	SR10.2+,cpscr	No
C1200A	Asian System Printer Serial interface	APCL RS232	All Models All Models	Unsup. Unsup.	7.0, pcltrans 7.0, pcltrans
C1202A # 1AA # 1A8 # 1A9	Asian Serial Printer Parallel interface IEEE-488 interface Serial interface	APCL Par. HP-IB RS232	All Models Unsupported All except 400dl All Models	Unsup. Unsup. Unsup. Unsup.	7.0, pcltrans Unsup. 7.0, pcltrans 7.0, pcltrans
°C1600A °C1601A	7600 Model 240D plotter 7600 Model 240E plotter IEEE-488 interface Serial interface Parallel interface	HP-GL/2 HP-GL/2 HP-IB RS232 par.	- All except 400dl Unsupported Unsupported	Unsup. Unsup. - - -	7.0, Starbase 7.0, Starbase - - -
C1602A Opt.1AX Opt.1AX Opt.1A8 C1608A	PaintJet XL, B-size color inkjet Serial/parallel interface Serial/parallel interface IEEE-488/serial interface HP-GL/2 cartridge	PCL Par. RS232 HP-IB HP-GL/2	- All except 400dl All except 400dl All except 400dl All Models	w/C1608A SR10.2+ SR10.2+ No SR10.2+	7.0, pcltrans Inves. 7.0, pcltrans 7.0, pcltrans 7.0, Starbase
C1620A	Series 7600 Model 355, E-size color electrostatic plotter/printer IEEE-488 Interface Serial Interface Parallel Interface	HP-GL/2 PCL HP-IB RS232 Par.	- All except 400dl Unsupported All except 400dl	SR10.2+ No - SR10.2+	7.0, Starbase, pcltrans - - -

* The CP-300 (Tektronix 4693DX) is incompatible with the built-in parallel interface. A "KIT-CENT-CP" ISA card is required.

Series 400 Graphics Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support	
				DOMAIN O.S.	HP-UX
C1625A C1629A	Series 7600 Model 250, D-size monochrome electrostatic plotter/printer IEEE-488 Interface Serial Interface Parallel Interface	HP-GL/2 PCL HP-IB RS232 Par.	- All except 400dl Unsupported Unsupported	SR10.2+ No - SR10.2+	7.0, Starbase, <i>pcltrans</i> - - -
C1627A C1631A	Series 7600 Model 255, E-size monochrome electrostatic plotter/printer IEEE-488 Interface Serial Interface Parallel Interface	HP-GL/2 PCL HP-IB RS232 Par.	- All except 400dl Unsupported Unsupported	SR10.2+ No - SR10.2+	7.0, Starbase, <i>pcltrans</i> - - -
C2106A	<i>Deskjet</i> 500, 300 dpi A-size	RS232 Par.	All Models All except 400dl	Unsup. Unsup.	Planned Planned
C2301A°/B	X-terminal base unit	X-11	All Models	Planned	7.0
°C2302A	Monochrome X-terminal, 17"	X-11	All Models	Planned	7.0
C2303A°/B	VGA color X-terminal, 14"	X-11	All Models	Planned	7.0
C2304A°/B	Hi-res color X-terminal, 16"	X-11	All Models	Planned	7.0
C2305A°/B	Grap Scale X-terminal, 19"	X-11	All Models	Planned	7.0
C2307B	Color X-terminal, Japan, 19"	X-11	All Models	Planned	7.0
HCD-MMP	(Genicom) impact	RS232	Unsupported	SR10.2+, <i>cpscr</i>	Unsup.
K1388	8 knob Dial Set	Serial	All Models	SR10.2+,GPR	Unsup.
K1410	Mouse, 3-button	Quad.	All Models	SR10.2+,GPR	7.0, X, Starbase
K1422	Spaceball XYZ, 8-button	Serial	Vendor supported	Vendor sup.	Unsup.
K1424	Summagraphics <i>Bit Pad Two</i>	Serial	Vendor supported	SR10.2+,GPR	Unsup.
K1432	Summagraphics B-tablet	Serial	Vendor supported	SR10.2+,GPR	Unsup.
K1434	3B Trackball, Marconi RB2	Quad.	All Models	SR10.2+,GPR	Unsup.
K1435	3B Trackball, Itac	Quad.	Vendor supported	SR10.2+,GPR	Unsup.
K1603	Shinko CHC-335, 200 dpi color	Par.	Vendor supported	Vendor sup.	Unsup.
K1604	Shinko CHC-336, 200 dpi color, HP-GL, CGI/CGM Parallel interface	↓ Par.	Vendor supported Vendor supported	Vendor sup. Vendor sup.	Unsup. Unsup.
K1605	Shinko CHC-345, 300 dpi color Serial interface	RS232	Vendor supported	Vendor sup.	Unsup.
K1606	Shinko CHC-645B, 300 dpi color Parallel i/f	Par.	Vendor supported	Vendor sup.	Unsup.
LP26-SPE	LP/26 PostScript	Par.	Unsupported	SR10.2+,GPR	Unsup.
LP26-S	LP/26 PostScript	RS232	Unsupported	SR10.2+,GPR	Unsup.
LP80010	LP 800 PostScript Serial interface Parallel i/f	↓ RS232 Par.	Unsupported Unsupported Unsupported	SR10.2+,GPR - -	Unsup. - -

Series 400 Support Matrix C-20

Series 400 Graphics Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support	
				DOMAIN O.S.	HP-UX
M1309A	3-button trackball	HP-HIL	All Models	Unsup.	7.0, X, Starbase
2225A	<i>ThinkJet</i> , 150 cps, 6.5"	HP-IB	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2225C/P	<i>ThinkJet</i>	Par.	Unsupported	Unsup.	Unsup.
2225D	<i>ThinkJet</i>	Serial	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2227A	<i>QuietJet Plus</i> , 192 cps, 14"	Serial	Unsupported	Unsup.	7.0, <i>pcltrans</i>
		Par.	Unsupported	Unsup.	Unsup.
2227B	<i>QuietJet Plus</i> , 14"	HP-IB	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2228A	<i>QuietJet</i> , 8"	Serial	Unsupported	Unsup.	7.0, <i>pcltrans</i>
		Par.	Unsupported	Unsup.	Unsup.
2235A/C	<i>RuggedWriter</i> , 480 cps, 14"	Serial	Unsupported	Unsup.	7.0, <i>pcltrans</i>
		Par.	Unsupported	Unsup.	Unsup.
2235B/D	<i>RuggedWriter</i>	HP-IB	Unsupported	Unsup.	7.0, <i>pcltrans</i>
		Serial	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2276A	<i>DeskJet</i> , 300 dpi, A-size	Serial	All Models	Unsup.	7.0, <i>pcltrans</i>
		Par.	All except 400 <i>dl</i>	Unsup.	Planned
2277A	<i>DeskJet Plus</i> , 300 dpi, A-size	Serial	All Models	Unsup.	7.0, <i>pcltrans</i>
		Par.	All except 400 <i>dl</i>	Unsup.	Planned
2393A	Graphics terminal, term0	RS232	Unsupported	Unsup.	7.0, Starbase
2397A	Color terminal, term0	RS232	Unsupported	Unsup.	7.0, Starbase
2562C	300 lpm impact, 16"	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2563	300 lpm impact, 16"	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2564	600 lpm impact, 16"	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
°2565A	600 lpm impact, 18"	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2566	900 lpm impact, 18"	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
2567	1200 lpm impact, 18"	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
#046	CIPER i/f (aka #290,850)	HP-IB	Unsupported	Unsup.	7.0, <i>pcltrans</i>
#046	Simple protocol (aka #200)	HP-IB	Unsupported	Unsup.	7.0, <i>pcltrans</i>
#049	RS232 interface	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
#050	RS-422 Interface	422	Unsupported	Unsup.	Unsup.
#053	Parallel Interface	Par.	Unsupported	Unsup.	Unsup.
2684	<i>LaserJet/2000</i> printer	PCL	Unsupported	Unsup.	7.0, <i>pcltrans</i>
26843A	Serial interface	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
26843B	Parallel interface	Par.	Unsupported		
°2686A	<i>LaserJet</i> , 8 ppm	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
		Par.	Unsupported		
°2686D	<i>LaserJet 500</i>	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
		Par.	Unsupported		
°2932A	200 cps impact	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
°2933A	200 cps "Factory Printer"	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
°2934A	200 cps "Office Printer"	RS232	Unsupported	Unsup.	7.0, <i>pcltrans</i>
#046	HP-IB interface	HP-IB	Unsupported	Unsup.	7.0, <i>pcltrans</i>
33439P	PostScript cartridge for <i>LaserJet</i> -IID, -IIP and -III	Font slot	All Models	SR10.2+,GPR	Unsup.

Series 400 Graphics Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support	
				DOMAIN O.S.	HP-UX
°33440A	<i>LaserJet-II</i> , 8 ppm single Parallel interface Serial interface	PCL Par. RS232	Unsupported All except 400 <i>dl</i> All Models	Unsup. SR10.2+ SR10.2+	7.0, <i>pcltrans</i> Planned 7.0, <i>pcltrans</i>
°33447A	<i>LaserJet-IIID</i> , 8 ppm double Parallel interface Serial interface	PCL Par. RS232	All Models All except 400 <i>dl</i> All Models	Inves. SR10.2+ SR10.2+	7.0, <i>pcltrans</i> Planned 7.0, <i>pcltrans</i>
33449A	<i>LaserJet-III</i> , 8 ppm single Parallel interface Serial interface	PCL Par. RS232	All Models All except 400 <i>dl</i> All Models	Inves. SR10.2+ SR10.2+	7.0, <i>pcltrans</i> Planned 7.0, <i>pcltrans</i>
33459A	<i>LaserJet-IIID</i> , 8 ppm double Parallel interface Serial interface	PCL Par. RS232	All Models All except 400 <i>dl</i> All Models	— — —	Planned Planned Planned
33471A	<i>LaserJet-IIP</i> , 4 ppm single Parallel interface Serial interface	PCL Par. RS232	All Models All except 400 <i>dl</i> All Models	w/33439P SR10.2+ SR10.2+	7.0, <i>pcltrans</i> Planned 7.0, <i>pcltrans</i>
35723A	12-inch touch bezel	HP-HIL	Unsupported		
3630A #001 #002 #002	<i>PaintJet</i> color graphics Serial interface IEEE-488 interface Parallel interface	PCL RS232 HP-IB Par.	All Models All Models All except 400 <i>dl</i> All except 400 <i>dl</i>	Unsup. Unsup. Unsup. Unsup.	7.0, <i>pcltrans</i> 7.0, <i>pcltrans</i> 7.0, <i>pcltrans</i> Unsup.
41063A #040	Asian Workstation, PCL Serial interface	HP-IB RS232	All except 400 <i>dl</i> All Models	Unsup. Unsup.	7.0, <i>pcltrans</i> 7.0, <i>pcltrans</i>
°45850	HP 150-II term0 terminal	RS232	Unsupported	Unsup.	7.0, Starbase
45911A°/C	11×11" tablet	HP-HIL	All Models	Unsup.	7.0, Starbase
46060A 46060B	Mouse, 2 button Mouse, 3 button	HP-HIL HP-HIL	All Models All Models	Unsup. Unsup.	7.0, X, Starbase 7.0, X, Starbase
46083A	1-Knob dial set	HP-HIL	Unsupported		
46085A 46086A	9-Knob dials set 32-button pad	HP-HIL HP-HIL	All Models All Models	Unsup. Unsup.	7.0, Starbase 7.0, Starbase
46087 46090C 46088 46091C	Digitizer, A-size Digitizer, A-size Digitizer, B-size Digitizer, B-size	HP-HIL HP-HIL HP-HIL HP-HIL	All Models All Models All Models All Models	Unsup. Unsup. Unsup. Unsup.	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase
46094A °46095A	Quadrature adaptor 3-button mouse	HP-HIL HP-HIL	All Models <see K1410>	Unsup.	7.0, X, Starbase
7440A #001 #002 7440Bx	<i>ColorPro</i> 8-pen A-size plotter Serial interface IEEE-488 interface <i>ColorPro</i> (HP-IB only)	HP-GL RS232 HP-IB HP-GL	- Unsupported Unsupported -	Unsup. Unsup. No Unsup.	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase

Series 400 Graphics Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support	
				DOMAIN O.S.	HP-UX
7475A #001 #002 7475Bx	B-size, 6-pen plotter Serial interface IEEE-488 interface (HP-IB only)	HP-GL RS232 HP-IB HP-GL	- Unsupported Unsupported -	Unsup. Unsup. No Unsup.	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase
°7550A	B-size, 8-pen plotter Serial interface IEEE-488 interface	HP-GL RS232 HP-IB	- All Models Unsupported	Unsup. - No	7.0, Starbase 7.0, Starbase 7.0, Starbase
7550B #005 #005 #006	B-size, 8-pen plotter Serial interface IEEE-488 interface Parallel interface	HP-GL RS232 HP-IB Par.	- All Models All except 400dl Under investigation	Unsup. Unsup. No No	Planned Planned Planned Inves.
7570A 17570A	<i>DraftPro</i> C/D-size, 8-pen ptr Serial interface IEEE-488 Interface	HP-GL RS232 HP-IB	All Models All Models All except 400dl	Unsup. Unsup. No	7.0, Starbase 7.0, Starbase 7.0, Starbase
7575A 7576A 17570A	<i>DraftPro</i> DXL A..D-size, 8-pen plotter <i>DraftPro</i> EXL A..E-size, 8-pen plotter Serial interface IEEE-488 interface	HP-GL HP-GL RS232 HP-IB	- - All Models All except 400dl	Unsup. Unsup. Unsup. No	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase
7580B 7585B 7586B	D-size, 8-pen plotter E-size, 8-pen plotter E-size, 8-pen, roll-feed Serial interface IEEE-488 interface	HP-GL HP-GL HP-GL RS232 HP-IB	- - - Unsupported Unsupported	Unsup. Unsup. Unsup. Unsup. No	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase
°7595A °7596A	<i>DraftMaster</i> E-size, 8-pen plotter <i>DraftMaster</i> E-size, 8-pen, roll-feed Serial interface IEEE-488 interface	HP-GL HP-GL RS232 HP-IB	- - All Models All except 400dl	Unsup. Unsup. — No	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase
7595B 7596B	<i>Draftmaster</i> SX E-size, 8-pen plotter <i>Draftmaster</i> RX E-size, 8-pen, roll-feed Serial interface IEEE-488 interface	HP-GL/2 HP-GL/2 RS232 HP-IB	- - All Models All except 400dl	SR10.2+ SR10.2+ SR10.2+ No	7.0, Starbase 7.0, Starbase 7.0, Starbase 7.0, Starbase
7599A	<i>DraftMaster</i> MX E-size, 8-pen, roll-feed, spooled Serial interface IEEE-488 interface	HP-GL/2 RS232 HP-IB	- All Models All except 400dl	SR10.2+ SR10.2+ No	7.0, Starbase 7.0, Starbase 7.0, Starbase

Series 400 Graphics Compatibility, continued...

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support	
				DOMAIN O.S.	HP-UX
°82906A	160 cps impact	HP-IB	Unsupported	Unsup.	Unsup.
°9190A	ScanJet monochrome scanner, SCL	Par.	Unsupported	No	Unsup.
9195A	ScanJet Plus monochrome scanner, SCL	Par.	All except 400dl	Inves.	Inves.
°9666A	Ruggedized 2397A	RS232	Unsupported	Unsup.	7.0, Starbase
°98287A	1024×768×8 M.A.D.bus	DIO-I/O	Unsupported	No	Unsup.
98542A	512×400×1 video i/f	DIO-Sys.	Unsupported	No	7.0, X, Starbase
98543A	512×400×4 video i/f	DIO-Sys.	Unsupported	No	7.0, X, Starbase
°98544A	1024×768×1 video i/f	DIO-Sys.	Unsupported	No	7.0, X, Starbase
98544B	1024×768×1 video i/f	DIO-Sys.	Unsupported	No	7.0, X, Starbase
°98545A	1024×768×4 video i/f	DIO-Sys.	Unsupported	No	7.0, X, Starbase
98546A	512×390×2 compat. i/f	DIO-I/O	Unsupported	No	Unsup.
98547A	1024×768×6 video i/f	DIO-Sys.	Unsupported	No	7.0, X, Starbase
98548A	"MH" 1280×1024×1 video i/f	DIO-II	Unsupported	No	7.0, X, Starbase
98549A	"C+" 1024×768×6 video i/f	DIO-II	Unsupported	No	7.0, X, Starbase
98550A	"CH" 1280×1024×8 video i/f	DIO-II	400s/425s/433s only	No	7.0, X, Starbase
98556A	"CHX" Accelerator	DIO-II	400s/425s/433s only	No	7.0, Starbase
°98700	"CX" Controller	M.A.D.	Unsupported	No	Unsup.
98702A§	Personal VRX LGB i/f	DIO-II	All except 400dl	Inves.	7.03, X, PHIGS, Starbase
98705A	Personal VRX P2 processor	LGB	All except 400dl	Inves.	7.03, X, PHIGS, Starbase
98705B	Personal VRX P3 processor	LGB	All except 400dl	Inves.	7.03, X, PHIGS, Starbase
98705C§	Personal VRX P1 processor	LGB	All except 400dl	Inves.	7.03, X, PHIGS, Starbase
98720A	SRX Processor	LGB	Unsupported	No	7.0, X, Starbase
°98724A	98720A SRX LGB interface	DIO-I/O	Unsupported	No	7.0, X, Starbase
98725A	98720A SRX LGB interface	DIO-Sys.	Unsupported	No	7.0, X, Starbase
98726A	98730A TurboSRX LGB i/f	DIO-II	Unsupported	No	7.0, X, Starbase
98727A§	Turbo VRX PDMA i/f	DIO-II	400s/425s/433s only	Inves.	7.03, X, PHIGS, Starbase
98728A§	Turbo VRX VDMA i/f	DIO-II	400s/425s/433s only	Inves.	7.03, X, PHIGS, Starbase
98730A	TurboSRX Processor	LGB	Unsupported	No	7.0, X, Starbase
98735A	Turbo VRX T1 Processor	G-Bus	400s/425s/433s only	Inves.	7.03, X, PHIGS, Starbase
98736A	Turbo VRX T2 Processor	G-Bus	400s/425s/433s only	Inves.	7.03, X, PHIGS, Starbase
98736B	Turbo VRX T3 Processor	G-Bus	400s/425s/433s only	Inves.	7.03, X, PHIGS, Starbase
°9876A	480 lpm thermal	HP-IB	Unsupported	Unsup.	Unsup.

§ Product number listed for reference, orderable only as part of supporting graphics processor.

Series 400 Support Matrix C-24

Series 400 Datacomm Compatibility

The "Min. Boot ROM" column refers to the computer's ability to load a remote system via the datacomm device. "Transp." means the device is transparent to software.

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
K1095	"ETH-RPTR-FIBER" AFR-1 Fiber Optic Repeater; 2 SMA, 1 AUI/f	LAN	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1096	"ETH-RPTR-MR2" MR-2000C Multiport Thinnet repeater; 2 BNC	LAN	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1097	"ETH-RPTR-2C" AMR-9C Multiport repeater; 2 AUI/f	LAN	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1098	"ETH-RPTR-9C" AMR-9C Multiport repeater; 8 BNC, 1 AUI/f	LAN	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1112	"ETH-XCVR-MP8" AMT-8 Multiport MAU; 8 AUI/m, 1 AUI/m?	LAN	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1115	"ETH-XCVR-TMS3" MAU, 10Base2; 1 AUI/m, 1 BNC	AUI/m	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1116	"ETH-XCVR-03DIAG" MAU, 10Base2; 1 AUI/m, 1 BNC	AUI/m	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1117	"ETH-XCVR-02DIAG" MAU, 10Base5; 1 AUI/m, 1 N-type	AUI/m	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1118	"ETH-XCVR-3C" MAU, 10Base5; 1 AUI/m, 1 N-type	AUI/m	Transp.	Vendor supported	SR10.2+	Unsup.	Via O.S.
K1489	MultiTech modems MT212AH3 1200 bps	RS232,AT	NOP	Vendor supported	SR10.2+	Unsup.	Via.Appl.
K1492	MT224AH 2400 bps	RS232,AT	NOP	Vendor supported	SR10.2+	Unsup.	Via.Appl.
K1494	MT224EH (MNP5)	RS232,AT	NOP	Vendor supported	SR10.2+	Unsup.	Via.Appl.
K1498	MT932EA V.32	RS232,AT	NOP	Vendor supported	SR10.2+	Unsup.	Via.Appl.
K1769	"RNS-ATR" Rem. Net. Switch	ATR	Transp.	All except 400d/	SR10.2+	Unsup.	Unsup.

Series 400 Datacomm Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
°2334A 2335A	X.25 Cluster controller X.25 Cluster controller	RS232 RS232	NOP NOP	All Models All Models	Unsup. Unsup.	7.0 7.0	Via O.S. Via O.S.
2342A 2345A	TS-8 terminal controller DTC LAN Terminal Server	LAN LAN,___	NOP NOP	All Models All Models	SR10.2+ Unsup.	7.0 ___	Via O.S. Via O.S.
28641A	10Base2 ThinLAN MAU	AUI/m	Transp.	All Models	SR10.2+	7.0	Via O.S.
28645A	Multiport repeater, 1 AUI/f, 3 10Base2/m	LAN	Transp.	All Models	SR10.2+	7.0	Via O.S.
28648B	LAN Bridge, 2 AUI/f	LAN	Unsup.	All Models	SR10.2+	7.0	Via O.S.
28649A	IEEE 802.3 LAN to 802.5 Token Ring bridge; 1 AUI/f, 1 ___	LAN	Unsup.	_____	?__?	?__?	Via O.S.
28663A	StarLAN-10 Hub; 1 AUI/f, 12 RJ-45	LAN	Transp.	_____	Unsup.	7.0	Via O.S.
28664A	StarLAN-10 MAU, RJ-45	AUI/m	Transp.	_____	Unsup.	7.0	Via O.S.
28684A	EtherTwist Hub; 1 ___, 12 RJ-45	LAN	Transp.	All Models	SR10.2+	7.0	Via O.S.
28685A	10BaseT EtherTwist MAU	AUI/m	Transp.	All Models	SR10.2+	7.0	Via O.S.
30241A	10Base5 ThickLAN MAU	AUI/m	Transp.	All Models	SR10.2+	7.0	Via O.S.
°37212A 37212B	1200 baud HP modem 2400 baud HP modem	RS232 RS232	NOP NOP	Unsupported Unsupported	Unsup. Unsup.	7.0 7.0	Via O.S. Via O.S.
°39301A	Optical 8/16-channel repeater	RS232	Transp.	Unsupported	Unsup.	7.0	Via O.S.
50759A	Remote Support modem	RS232,AT	NOP	Under investigation	Unsup.	7.0	Via.Appl.
92178S	ABC switch	RS232	Transp.	Unsupported	Unsup.	Unsup.	Transp.
92203A	Codex 2264 V.32 modem	RS232	NOP	Under investigation	___	Inves.	Via.Appl.
92205A/C 92205B	Hayes modems Smartmodem 1200 Smartmodem 2400	RS232,AT RS232,AT	NOP NOP	Unsupported Unsupported	___ ___	7.0 Unsup.	Via.Appl. Via.Appl.
°98028A	SRM Multiplexer	50-pin	Unsup.	Unsupported	No	7.0	Unsup.
<none> <none> <none> <none> <none>	3rd-party modems Telebit T2500 PEP/V.32 Telebit <i>TrailBlazer</i> USR HST/V.32 dual std. USR <i>Courier</i> 2400 USR <i>Courier</i> HST	RS232,AT RS232,AT RS232,AT RS232,AT RS232,AT	NOP NOP NOP NOP NOP	Unsupported Unsupported Unsupported Unsupported Unsupported	___ ___ ___ ___ ___	7.0 7.0 7.0 7.0 7.0	Via.Appl. Via.Appl. Via.Appl. Via.Appl. Via.Appl.

Series 400 Miscellaneous Device Compatibility

Product Number	Description	Type	Hardware Qualification and Support	Operating Environment Support		
				DOMAIN O.S.	HP-UX	SoftPC
A1401A	DIO-II to DIO-I/O adaptor	DIO-II	400s/425s/433s only. Maximum of two per SPU.	Inves.	7.0	2.0c
26075A	ABC Switch	HP-IB	All Models except 400dl	No	7.0	Transp.
37201A	HP-IB Extenders	HP-IB	Unsupported	No	7.0	Unsup.
37204A	Serial/twisted-pair Coax/Fibre Optic	HP-IB	Unsupported	No	7.0	Transp.
82169A	HP-IL Converter	HP-IB	Unsupported	No	Unsup.	Unsup.
92203J/K	HP-IB → Centronics converter	HP-IB	All Models except 400dl	N.A.	7.0	Via HP-UX
98242A	Add-on DIO-I kits Two slot pairs	DIO-Sys/II	Incompatible with Series 400	N.A.	N.A.	N.A.
98242B	Single slot pair	DIO-Sys/II	Incompatible with Series 400	N.A.	N.A.	N.A.
98568A	Series 300 DIO-I Expander	DIO-I	Incompatible with Series 400	N.A.	N.A.	N.A.
#132	DIO-II version	DIO-II	Incompatible with Series 400	N.A.	N.A.	N.A.
98570A	Series 300 DIO-II Expander	DIO-II	Incompatible with Series 400	N.A.	N.A.	N.A.
98577A	Series 300 VME Expander	DIO-II	Incompatible with Series 400	N.A.	N.A.	N.A.
9888A	Series 200 Bus Expander	DIO-I/O	Unsupported	Unsup.	Unsup.	Unsup.

Series 400 Interface & Plug-in Accessory Compatibility

The "Min. Boot ROM" column refers to the computer's ability to identify (ID), test, use the device as console port and/or load a system via the device. "Transp." means the device is transparent to software.

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
A-ADD-PCC	DOS co-processor	ISA	NOP	400s/425s/433s only	SR10.2+	No	Via O.S.
A-ADD-SPE	Apollo serial/par i/f	ISA	NOP	400s/425s/433s only	SR10.2+	Unsup.	No
A-ADD-SWFC	SCSI controller	ISA	Unsup.	Unsupported	Unsup.	No	No
A-ADD-WFC	ESDI controller	ISA	Unsup.	Unsupported	Unsup.	No	No
APLR-386	386 Co-processor	ISA	NOP	400s/425s/433s only	SR10.2+	7.05	No
A-NET-ATR	Apollo token ring i/f	ISA	1.0	All except 400dl	SR10.2+	No	No
A-NET-ETH	IEEE-802.3 i/f	ISA	Unsup.	Under investigation	Inves.	No	No
A-NET-ITR	IBM token ring i/f	ISA	1.0	All except 400dl	SR10.2+	No	No
A1096A	Monochrome VRX	DIO-II	1.0	All Models	SR10.2+	7.03	2.0c
A1401A	DIO-II to DIO-I/O adaptor	DIO-II	1.0	400s/425s/433s only	Inves.	7.0	2.0c
A1416A	Color VRX	DIO-II	1.0	All except 400dl	SR10.2+	7.0	2.0c
A1450A	Add std.spd HP-IB	400	1.0	Models 400t/425t only	No	7.0	2.0c
A1451A	Add std.spd HP-IB	400	1.0	400s/425s/433s only	No	7.0	2.0c
A1460A	Add 4 EISA slots	400	1.0	400s/425s/433s only	T.B.A.	T.B.A.	T.B.A.
D1180A	VGA card w/256 Kb	ISA	NOP	Unsupported	No	No	No
D1677A	ESDI controller	ISA	NOP	Unsupported	No	No	No
K1015°	Convert 1→3 port	RS232	1.0	All Models	SR10.2+	Unsup.	T.B.A.
K2292	Convert 1→3 port	RS232	1.0	All Models	SR10.2+	7.05 ¹	T.B.A.
K1094	"ETH-LINK-II" 3COM i/f	ISA	NOP	Unsupported	Unsup.	No	No
°K1493	MultiTech Modems						
°K1496	224PC + MNP5 compr. 2400/1200/300 bps	ISA	Unsup.	Unsupported	Unsup.	Unsup.	Unsup.
K1623	"PTR-PAR-BOARD"	ISA	NOP	Unsupported	Unsup.	Unsup.	Unsup.
KIT-CENTx	Parallel interface	ISA	NOP	400s/425s/433s only	SR10.2+	Unsup.	Unsup.
SCAT10N/R-	X.25 interface	ISA	NOP	400s/425s/433s only	SR10.2+	No	Via O.S.
24540B	Serial/parallel i/f	ISA	NOP	Unsupported	Unsup.	No	No
24541B	Dual Serial interface	ISA	NOP	Unsupported	Unsup.	No	No
24550A	1200 bps modem	ISA	NOP	Unsupported	Unsup.	No	No
24551B	2400 bps modem	ISA	NOP	Unsupported	Unsup.	No	No
°27209A	HP-IB (aka 88990A)	ISA	NOP	Unsupported	Unsup.	No	No
27210B	ThinLAN interface	ISA	NOP	Unsupported	No	No	No
27236A	StarLAN 10 interface	ISA	NOP	Unsupported	No	No	No
27245A	EtherTwist interface	ISA	NOP	Unsupported	No	No	No
27250A	ThinLAN interface	ISA	NOP	Unsupported	No	No	No
28672A	8-channel MUX daughter card	SBX	NOP	400s/425s/433s only	No	7.0	Via O.S.
36592/93A	SNALink (includes 98649A card)	DIO-I/O	ID	400s/425s/433s only	No	7.0	Via O.S.
36941A	X.25/300 Link	DIO-I/O	ID	400s/425s/433s only	No	7.0	Via O.S.

Series 400 Interface & Plug-in Accessory Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
50955A	IBM 3278 Coax i/f	DIO-I/O	Unsup.	Unsupported	No	No	No
°50961A	SRM Coax interface	DIO-I/O	Unsup.	Unsupported	No	Unsup.	No
50962A	SRM Coax interface	DIO-I/O	Unsup.	Unsupported	No	Unsup.	No
82300B	BASIC Lang. proc.	ISA	Unsup.	Unsupported	No	No	No
82328A	Intelli. Graphics card	ISA	NOP	Unsupported	Unsup.	No	No
82329A	EGA Emulation card	ISA	NOP	Unsupported	Unsup.	No	No
82335A	HP-IB-II interface	ISA	NOP	Unsupported	Unsup.	No	No
#002							
°88141A	JetScript i/f for LaserJet-II	ISA	NOP	Unsupported	Unsup.	No	No
88295A	ScanJet interface	ISA	NOP	Unsupported	Unsup.	No	No
88500A	CS/80 HP-IB interface	ISA	NOP	Unsupported	Unsup.	No	No
98171A	LAN interface	DIO-I/O	1.0	400s/425s/433s only	No.	7.0	Via O.S.
°98201A	Custom Keypad i/f	DIO-I/O	NOP	Unsupported	No	No	No
°98204A/B	Video Output i/f	DIO-I/O	Unsup.	Unsupported	No	Unsup.	No
98229A	ECC RAM pairs 4 Mbytes, 1 Mbit	Short	-	Phys. incompatible	-	-	-
98229B	8 Mbytes, 1 Mbit	Tall	1.0	All Models	SR10.2+	7.0	2.0c
98229C	4 Mbytes, 1 Mbit	Tall	1.0	Models 400t/425t only	SR10.2+	7.0	2.0c
98229D	16 Mbytes, 4 Mbit	Tall	1.0	Models 425s/425t only	SR10.3+	7.05	2.0c
98229E	32 Mbytes, 4 Mbit	Tall	1.0	400s/425s/433s only	SR10.2+	7.0	2.0c
98229S	16 Mbytes, 1 Mbit	Short	-	Phys. incompatible	-	-	-
98235A	AUI daughter board	340	Unsup.	Incompatible w/S400	No	No	No
98237A	ThinMAU daughter bd.	340	Unsup.	Incompatible w/S400	No	No	No
98248A°/B	Fltg. pt. accel.	DIO-II	Unsup.	Unsupported	No	Unsup.	No
98253A	EPROM Progr. i/f	DIO-Acc.	Unsup.	Unsupported	No	Unsup.	No
°98254A	64 Kbyte RAM card	DIO-Acc.	No	Incompatible w/S400	No	No	No
98255A	EPROM memory card	DIO-Acc.	Unsup.	Unsupported	No	Unsup.	No
98256A	256 Kbyte RAM card	DIO-Acc.	Unsup.	Incompatible w/S400	No	No	No
98257A	1.0 Mbyte RAM card	DIO-Acc.	Unsup.	Incompatible w/S400	No	No	No
98258A	4 Mbyte DIO-II RAM	DIO-II	Unsup.	Incompatible w/S400	No	No	No
98258B,C	4,12 Mbyte RAM	s300	Unsup.	Incompatible w/S400	No	No	No
98259A	128K Bubble memory	DIO-Acc.	Unsup.	Unsupported	No	No	No

Series 400 Interface & Plug-in Accessory Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
98262A	HP-IB daughter i/f	s300	Unsup.	Incompatible w/S400	No	No	No
98264A	8 Mbyte ECC RAM	DIO-II	Unsup.	Incompatible w/S400	No	No	No
98264B	16 Mbyte ECC RAM	DIO-II	Unsup.	Incompatible w/S400	No	No	No
98265A	SCSI daughter i/f	s300	Unsup.	Incompatible w/S400	No	No	No
98266	4,8 Mbyte RAM	s300	Unsup.	Incompatible w/S400	No	No	No
98267	4,8,12 Mbyte RAM	s300	Unsup.	Incompatible w/S400	No	No	No
98268A	4 Mbyte RAM	s300	Unsup.	Incompatible w/S400	No	No	No
98269A,B	1,4 Mbyte RAM	s300	Unsup.	Incompatible w/S400	No	No	No
98286	DOS Coprocessor	DIO-Acc.	ID	Unsupported	No	Unsup.	N.A.
*98287A	CX 1024×768×8 M.A.D.bus	DIO-I/O	Unsup.	Malfunction likely	No	Unsup.	No
98297A	RTI/SBX interface	2×DIO-Sys	NOP	400s/425s/433s only	Unsup.	7.0	Via O.S.
	Video interfaces						
98542A	512×400×1	DIO-Sys.	1.0	Unsupported	No	7.0	No
98543A	512×400×4	DIO-Sys.	1.0	Unsupported	No	7.0	No
*98544A	1024×768×1	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98544B	1024×768×1	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
*98545A	1024×768×4	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98546A	512×390×2	DIO-I/O	1.0	Unsupported	No.	7.0	No
98547A	1024×768×6	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
	Video interfaces						
98548A	MH 1280×1024×1	DIO-II	1.0	Unsupported	No	7.0	2.0c
98549A	C+ 1024×768×6	DIO-II	1.0	Unsupported	No	7.0	2.0c
98550A	CH 1280×1024×8	DIO-II	1.0	400s/425s/433s only	No	7.0	2.0c
98556A	CHX Accelerator	DIO-II	1.0	400s/425s/433s only	No	7.0	NOP
98561-6653x	320 Human i/f	DIO-I/O	No	Select code conflicts	No	No	No
98562-6653x	DIO-II System i/f	DIO-II	No	Select code conflicts	No	No	No
98603	BASIC 5.1 ROM	DIO-Acc.	Unsup.	Unsupported	No	Unsup.	Unsup.
98620A°/B	DMA controller	DIO-Acc.	Unsup.	Incompatible w/S400	No	No	No
98622A	GPIO interface	DIO-I/O	Unsup.	400s/425s/433s only	No	7.0	Via O.S.
98623A	BCD interface	DIO-I/O	Unsup.	Unsupported	No	Unsup.	No
98624A	HP-IB interface	DIO-I/O	1.0	400s/425s/433s only	No	7.0	Via O.S.
*98625A	Hi-speed HP-IB i/f	DIO-I/O	Unsup.	Unsupported	No	Unsup.	Unsup.
98625B	Hi-speed HP-IB i/f	DIO-I/O	1.0	400s/425s/433s only	No	7.0	Via O.S.
98626A	RS-232C Serial i/f	DIO-I/O	1.0	Unsupported	No	7.0	Via O.S.
98627A	512×474×3 RGB	DIO-I/O	Unsup.	Malfunction likely	No	Unsup.	Unsup.
98628A	Datacomm i/f	DIO-I/O	1.0	400s/425s/433s only	No	7.0	Via O.S.
*98629A	SRM interface	DIO-I/O	1.0	Unsupported	No	Unsup.	No
98630A	Breadboard i/f	DIO-I/O	Unsup.	User supported	No	Unsup.	No
98633A	HP 6944A i/f	DIO-I/O	ID	Unsupported	No	Unsup.	No
98635A	Model 310 FPA	DIO-Acc.	ID	Unsupported	No	Unsup.	No
98638A	8-ch. MUX	DIO-Sys.	1.0	400s/425s/433s only	No	7.0	2.0c

Series 400 Interface & Plug-in Accessory Compatibility, continued...

Product Number	Description	Type	Min. Boot ROM	Hardware Qualification and Support	Operating Environment Support		
					DOMAIN O.S.	HP-UX	SoftPC
98640A	ADC input i/f	DIO-I/O	ID	Unsupported	No	7.0	Via O.S.
98641A	RJE 2780/3780 i/f	DIO-I/O	ID	400s/425s/433s only	No	7.0	No
98642A	4-port RS-232C Mux	DIO-I/O	1.0	Under investigation	No	7.0	2.0c
*98643A	LAN interface	DIO-I/O	→	<see 98171A>	←	←	←
98644A	RS-232C Serial i/f	DIO-I/O	Unsup.	Unsupported	No	7.0	Via O.S.
98646A	VMEbus interface	DIO-I/O	NOP	Qualified	No	7.0	No
*98647A	PC-IB interface	DIO-I/O	Unsup.	Unsupported	No	Unsup.	No
98658A	SCSI interface	DIO-I/O	1.0	400s/425s/433s only	Unsup.	7.0	Via O.S.
98659A	High speed Serial i/f	DIO-I/O	ID	?____?	No	Via Appl.	No
98691A	PDI interface	DIO-I/O	ID	User supported	No	Unsup.	No
*98695A	IBM 3270 Coax i/f	DIO-I/O	ID	Unsupported	No	No	No
98702A§	Personal VRX LGB i/f	DIO-II	1.0	All except 400d/	SR10.2+	7.03	2.0c ^x
*98724A	LGB Interface 98720A SRX	DIO-I/O	1.0	Unsupported	No	7.0	2.0c
98725A	98720A SRX	DIO-Sys.	1.0	Unsupported	No	7.0	2.0c
98726A	98730A TurboSRX	DIO-II	1.0	Unsupported	No	7.0	2.0c
98727A§	Turbo VRX PDMA i/f	DIO-II	1.0	400s/425s/433s only	Planned	7.03	2.0c ^x
98728A§	Turbo VRX VDMA i/f	DIO-II	1.0	400s/425s/433s only	Planned	7.03	2.0c ^x
<none>	DigiChannel C/X 16-ch MUX	EISA	NOP	Qualified on 400s/425s/433s	Unsup.	Contrib.	Via O.S.

1 Only Port 1 supported on 7.0 and 7.03. Ports 2 & 3 require 7.05 or later. An unsupported patch is available for 7.0 and 7.03.

X *SoftPC* supported only within an X-window at this time.

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