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Agilent Technologies

Broadband Series Test System

E4208D SCSI Disk Module Reference Guide

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Product support

Call your local Agilent Technologies representative, or contact Product Support.

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Additional Information for Test and Measurement Equipment

If test and measurement equipment is operated with unscreened cables and/or used for measurements on open setups, the user has to ensure that under operating conditions the Radio Interference Limits are still met at the border of the user's premises.

Warnings

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

Ground the equipment For safety Class 1 equipment (equipment having a protective earth terminal), an uninterruptible safety ground must be provided from the mains power source to the product input wiring terminals or supplied power cable.

DO NOT operate the product in an explosive atmosphere or in the presence of flammable gases or fumes.

For continued protection against fire, replace the line fuse(s) only with fuse(s) of the same voltage and current rating and type. DO NOT use repaired fuses or short-circuited fuse holders.

Keep away from live circuits Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

DO NOT operate damaged equipment Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure the safety features are maintained.

DO NOT substitute parts or modify equipment Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure features are maintained.

CAUTION : This instrument is designed for use in Installation Category 11 and Pollution degree 2 per IEC 1010 and 644 respectively

Statement of Compliance

This instrument has been designed and tested in accordance with IEC Publication 1010-1 + A1:1992 Safety requirements for Electrical Equipment for Measurement, Control and Laboratory Use, and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.

Electromagnetic Compatibility (EMC) Information

This product has been designed to meet the protection requirements of the European Communities Electromagnetic Compatibility (EMC) directive 89/336/EEC. In order to preserve the EMC performance of the product, any cable which becomes worn or damaged must be replaced with the same type and specification.

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Calibration

Agilent Technologies recommends that some equipment be recalibrated two years after first use and at two-yearly intervals thereafter. The on-shelf period prior to first use will not effect the calibration of this equipment.

For information on which products require recalibration, contact your local Agilent Sales representative.

Declarations of Conformity (DoCs)

Product DoCs are no longer part of the user documentation. They are available on the Learning Center CD, or from the Broadband Series Test System Customer Web Site :

http://advanced.comms.agilent.com/go/to?proddoco

Safety Symbols



Instruction manual symbol affixed to product. Indicates that the user must refer to the manual for specific Warning or Caution information to avoid personal injury, or damage to the product



Indicates the field wiring terminal that must be connected to ground before operating the equipment – protects against electrical shock in case of fault



Frame or chassis ground terminal – typically connects to the equipment's metal frame



Alternating current (ac)

Direct current (dc)



Indicates hazardous voltages

WARNING

Calls attention to a procedure, practice, or condition that could cause bodily injury or death

CAUTION

Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data



Indicates that antistatic precautions should be taken



This product meets the requirements of the Australian EMC Framework (AS/NZS 2064.1/2 for ISM:1A), enforced by the Radiocommunications Act 1992,



The CE mark shows that the product complies with all relevant European legal Directives

Das CE-Zeichen zeigt die Übereinstimmung mit allen für das Produkt geltenden Direktiven der Europäischen Union an.



This is the symbol for an Industrial, Scientific, and Medical Group 1 Class A product

Dieses Zeichen steht für ein Produkt der Gruppe 1, Klasse A, für den Einsatz im industriuellen, wissenschaftlichen und medizinischen Bereich.

Avertissement

Cet appareil répond aux normes de la "Classe de sécurité 1" et est muni d'un fil de mise à la terre pour votre protection.

Pour prévenir les risques de choc électrique, la broche de mise à la terre du cordon d'alimentation ne doit pas être désactivée.

Restrictions d'utilisation

L'utilisataur se doit d'observer les mesures de précaution énumérerais-dessous pour toutes les phases d'utilisation, de service et de réparation de cet apparail. Le fait de ne pas s'y conformer équivaut à ne pas respecter les mises en gardes spécifiques contenues dans ce manuel et constitue une violation des normes de sécurité relatives à la conception, la fabrication et l'utilisation prévue de cet appareil. La société Agilent Technologies n'assume aucune responsabilité envers un client qui manquerait de se conformer à ces exigences.

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Mise à la terre

Afin de minimiser les risques de choc électrique, le châssis et le cabinet de l'appareil doivent être mis à la terre. L'appareil est équipé d'un cordon d'alimentation muni d'une fiche homologuée à trois lames, compatible c.a. La prise murale et la prise femelle de la rallonge électrique doivent respecter les normes de sécurité de la "Commission Électrotechnique Internationale" (IEC).

Environnement

Ne faites pas fonctionner cet appareil en présence de gaz inflammables ou de vapeurs dangereuses. L'utilisation de n'importe quel appareil électrique dans ces conditions constitue un risque élevé pour votre sécurité.

Service et ajustement

Des "tensions dangereuses" résident dans cet appareil. Par conséqueot, le service et l'ajustement doivent être effectué uniquement par une personne qualifiée.

Ne remplacez pas de composantes lorsque le cordon d'alimentation est sous tension. Il pourrait y avoir présence de "tension dangereuses" même lorsque l'appareil est déconnecté.

Manipulation du tube cathodique

Une manipulation brusque, ou le fait de secouer l'appareil, peut provoquer le bris du tube cathodique. L'implosion qui s'en suivrait entrainerait la dispersion à grande vélocité d'éclats de verre. Le retrait ou l'installation du tube cathodique ne doit être exécuté que par uo technicien qualifié, portant uo masque et des gants de sécurité homologués.

Service non autorisé

L'installation de pièces étrangères, ou tous modification apportée à l'appareil sans le consentement de Agilent Technologies est formellement interdit. Le fait de procéder à de tels modifications sans autorisation pourrait entrainer l'annulation de la garantie de l'appareil ou de tout contrat de service.

Pour un service et des réparations autorisées, retournez l'appareil à un point de vente et service Agilent Technologies.

Indicates that a laser is fitted. The user must refer to the manual for specific warning or caution information to avoid personal injury or damage to the product.

Symboles des sécurité

Attention (voir documents d'accompagnement)

Borne de terre

Borne de masse, châssis

Courant alternatif

Courant continu



Risque de choc electriqnes

WARNING

Attire l'attention sur une procédure, une pratique, ou des conditions qui peuvent entrainer des blessures corporelles ou la mort.

CAUTION

Attire l'attention sur une procédure, une pratique, ou des conditions qui peuvent endommager l'équipement.



Signale que des précautions antistatique doivent être prises.

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Introduction

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Introduction

The E4208D SCSI (Small Computer Standard Interface) Disk Module is a VXI module that provides both a 4GB hard disk and a 1.44 MB floppy disk drive. Installed into VXI mainframe systems, the SCSI Disk Module can be daisy chained with other SCSI devices used by the system.

Hard disk

The hard disk is used to store the VXI mainframe's operating system and application software. Additional SCSI Disk Modules may be installed for extra disk space.

In a Broadband Series Test System, the hard disk comes pre-installed with the latest versions of the HP-UX operating system and Broadband Series Test System software (the base system software, protocol application software, line interface module software, and online help).

Floppy drive

The floppy disk drive can read standard 1.44 MB floppy disks. These disks may be in UNIX or DOS format. The drive may be used to:

- install application software or other files from floppy disk to hard disk
- back up and restore files on the hard disk
- exchange data between systems

You read from/write to the floppy drive the same way you would other operating system devices. Note however that on an HP-UX system, you need root access to mount and unmount devices.

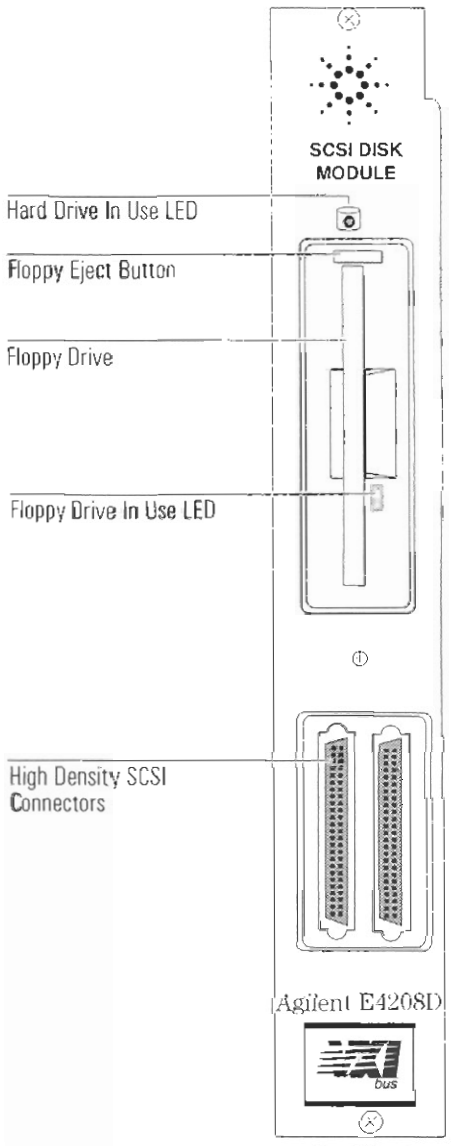
The Broadband Series Test System provides a graphical Disk Manager that facilitates disk reads/writes and can be used by any user. For details, refer to Chapter 3, "Using the Disk Manager". Also provided are customized HP-UX commands that enable any user to read from and write to the floppy drive. These may be used in scripts or programs or by those who prefer using HP-UX level commands. For details, refer to Appendix B, "Using UNIX Commands for the Floppy Drive".

Note

This guide was designed primarily for users of Broadband Series Test Systems with V743 controllers. If you are using a SCSI Disk Module in another application, please ignore all references to special software provided for Broadband Series Test Systems only.
The E4208D SCSI Disk Module is not supported on the V382 controller.

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Front Panel—At a Glance



Front Panel

Drive	Description
Hard	Stores 4 GB. In a Broadband Series Test System, approximately 1.9 GB can be used for user space.
Floppy	Can read from and write to standard 1.44 MB 3.5" floppy disks. Disks may be in UNIX or DOS format.

LED	Description
Hard Drive In Use	Lights when system reads from or writes to hard disk.
Floppy Drive In Use	Lights when system reads from or writes to floppy disk.

Connector	Description
High Density SCSI	Two 50-pin AMPlimite connectors (sockets) allow the SCSI Disk Module to be installed in a daisy chain with other SCSI devices. There is no in or out connector—both are functionally the same. The last SCSI device must be terminated.

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Getting Started

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Getting Started

In Broadband Series Test Systems, the SCSI Disk Modules are pre-configured and installed into the VXI mainframe prior to shipment.

However, if you purchase additional or standalone SCSI Disk Modules, you may need to configure and install them yourself. Follow these steps:

1 Set the module's logical address.

2 Set the SCSI device ID for the floppy and hard drives.

3 Install the module into the VXI mainframe.

4 Use the SCSI cable to connect the module to the controller (either directly or through a SCSI device chain).

The remainder of this chapter provides details.

Adding a SCSI Disk Module to an existing system

If you are using a new SCSI Disk Module to replace an older model (eg. as part of a system upgrade), you will need to transfer custom files (eg. user home directories) from the old hard disk to the new hard disk. If you are using a new SCSI Disk Module for additional hard disk space, you should remove redundant system software from the extra hard disk to free up additional space. For details, refer to Appendix A, "Adding a Disk Module to an Existing System".

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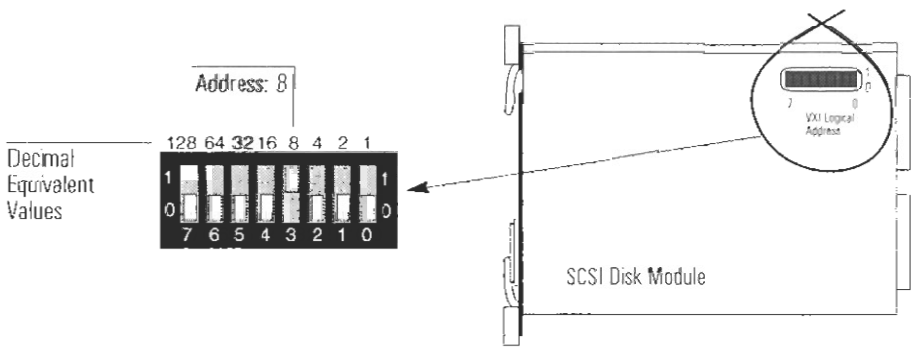
Setting the Logical Address

Each module in the VXI mainframe must have a unique logical address. Before installing a module into the mainframe, set the logical address using the binary switches labelled "VXI Logical Address" located on the right hand shield of the module.

The recommended address for a module is 8 times the module's VXI slot number. The controller, which must be in slot 0, has the reserved logical address of 0.

A SCSI Disk Module can be positioned in any slot except 0, however, it is usually installed in the slot immediately next to the controller (usually slot 1 with the logical address set to 8) to avoid having the SCSI cable cut across other modules.

The logical address is the sum of the decimal equivalent values of the switches in the closed (1) position. For example, if you plan to install the module in slot 1, you would set the binary switches to the address 8, as follows:



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Setting Device IDs

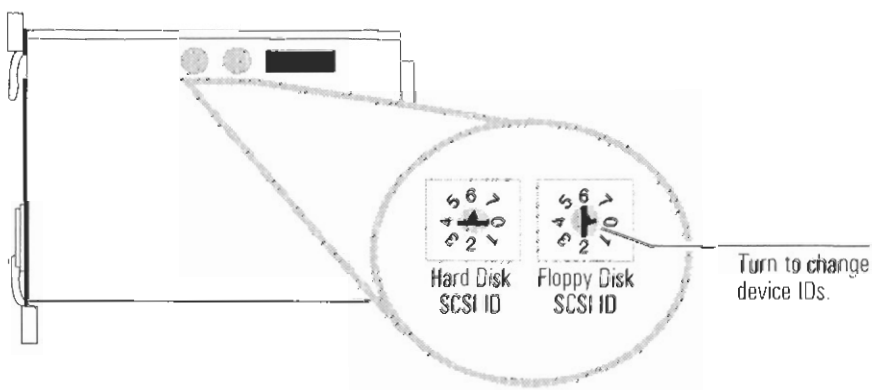
On a SCSI chain, each device must have a unique ID from 0 to 7. The device ID 7 is reserved for the controller and the device ID 6 is used for the boot drive. The device may be a floppy drive or hard drive in a SCSI Disk Module or it may be an external SCSI device. Up to 6 SCSI devices are supported.

CAUTION If several devices are configured with the same device ID, SCSI errors are generated and data corruption may occur.

The SCSI Disk Module is preconfigured in the factory to use a device ID of 0 for the floppy drive and a device ID of 6 for the hard drive. This implies that the hard disk is being used as the system boot disk.

Note If you have to change the preconfigured floppy drive or hard drive device IDs, you need to remove the E4208D SCSI Disk Module from the mainframe. For more details, refer to "Installing and Removing Modules", page 2-5.

If your system is using several SCSI devices, you must configure the appropriate device to be the boot disk and configure all other SCSI devices with unique device IDs. Consult with your HP-UX system administrator before changing the switch settings.



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Installing and Removing Modules

WARNING

SHOCK HAZARD. Only service-trained personnel who are aware of the hazards involved should install, remove, or configure any plug-in modules. Before you touch any installed module, disconnect AC power from the mainframe.

To avoid electrical shock and maintain fire containment capability, always use the faceplate panels that came with the mainframe to cover unused slots.

AVERTISSEMENT

RISQUE DE CHOC ÉLECTRIQUE. Seul un technicien qualifié conscient des risques en jeu devrait installer, enlever, ou régler un module enfichable. Avant de toucher à un module installé, coupez l'alimentation c.a. du processeur central.

Pour éviter les chocs électriques et maintenir la capacité de protection contre la propagation des flammes, assurez-vous de couvrir les fentes libres du processeur central au moyen des plaques fournies.

CAUTION

The connectors on the front panel of each module are susceptible to electrostatic discharge (ESD) even while the module is installed in the mainframe. Take necessary precautions to minimize ESD while handling modules.

To Install a Module

The modules fit *very* snugly into the VXI mainframe. To ensure a smooth installation, you should install the leftmost module first, then proceed in order for each module, from left to right. Securely install and fasten each module to facilitate the installation of the one directly adjacent.

(If your VXI mainframe has horizontally positioned modules, install the topmost module first, then proceed from top to bottom.)

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1 Place the module's card edges into the top and bottom module guides at the front of the mainframe chassis.

2 Ensure the two levers at the top (Agilent logo) and bottom (VXI bus logo) of
the module are extended then slide the module until it contacts the backplane; *push firmly* to mate the connectors solidly with the backplane, or if you have a newer mainframe chassis, push in the top and bottom levers to mate the connectors solidly.

3 When the module is seated solidly against the backplane, secure the module's front panel to the mainframe chassis using the mounting screws on the top and bottom of the module's front panel.

To Remove a Module

Remove the rightmost (or bottommost) module first. Then proceed in order for each module, from right to left (or bottom to top).

1 Unscrew the mounting screws at the top and bottom of the module's front panel.

2 Pull out the two levers at the top and bottom of the module's front panel. Use these levers to pull the module from the backplane connectors.

3 Now the module is ready to be removed from the mainframe.

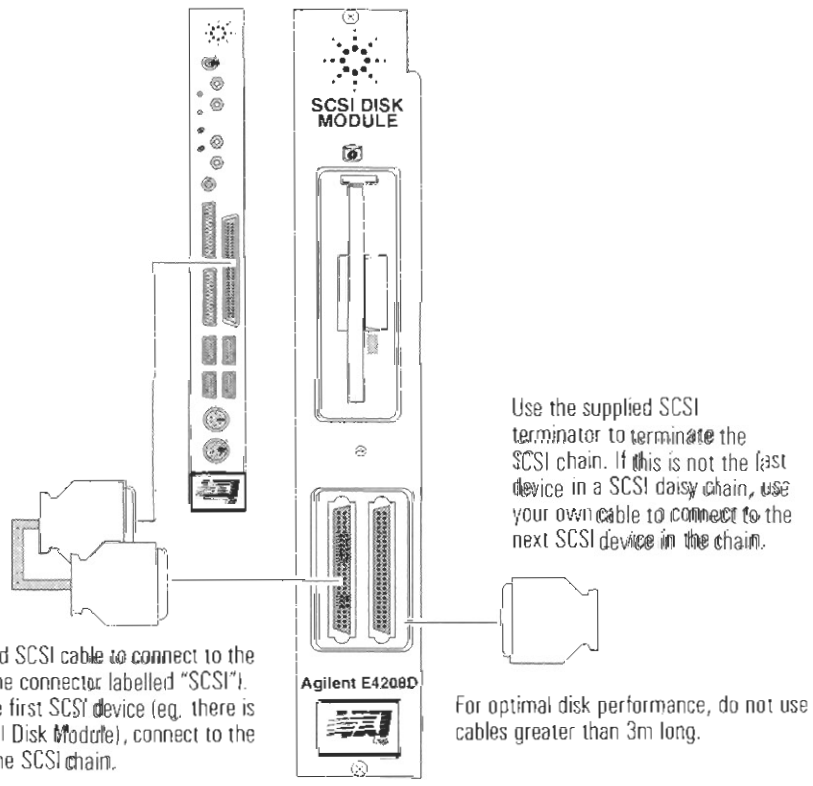
CAUTION If you store modules outside of the mainframe for an extended length of time, place them in the original packaging (or equivalent packaging providing ESD protection). Use the faceplate panels to protect unused slots from dust and also to prevent stray objects from entering the chassis.

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Connecting to the System

CAUTION The front panel connectors are susceptible to electrostatic discharge (ESD) even while installed in the VXI mainframe. Take the necessary precautions to minimize ESD while handling modules.

The two 50-pin connectors allow the SCSI Disk Module to be installed in a daisy chain with other SCSI devices used by the system. There is no in or out connector—both are functionally the same. Ensure that cables and terminators are connected *solidly* with their connectors. To ensure Electromagnetic Compatibility (EMC) of this module, the use of shielded cables is required.



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Adding a Disk Module to an Existing System

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Adding a Disk Module to an Existing System

You may be adding a new SCSI Disk Module to an existing system to:

- replace an older model disk module (E4208A/B/C) with one that has more disk space (E4208D)
- simply add extra disk space to your system (ie. you have an existing controller and SCSI Disk Module and wish to connect another hard disk)

Whichever is the case, you will need to re-configure the new disk, as summarized below. You will need access to the root (ie. superuser) account in order to mount the new hard disk.

Replacing an existing disk module

The SCSI Disk Module comes pre-installed with the HP-UX operating system software as well as the version of Broadband Series Test Software appropriate for your controller module. You must configure the new disk to be the bootup disk and transfer any of your own files (eg. system files that you had modified or tailored, application software that you had installed, data files that you had created, user home directories, etc.) from the old hard disk to the new one. For details, refer to "Using the New Disk as the Bootup Disk", page A-4.

Note

The instructions in this appendix are intended for Broadband Series Test System users. If you are not using the E4208D SCSI Disk Module in a Broadband Series Test System, you need to manually install HP-UX on the SCSI Disk Module. Instructions to do so can be found in the "Installing and Updating HP-UX" manual supplied with your HP-UX Operating System..

The E4208D disk module can only be used on an HP-UX 10.20 and above system. If you are not using the B.14 or above BSTS software release, then your system is running on an HP-UX 9.05.

Adding disk space only

The hard disk in the SCSI Disk Module is factory preset with the SCSI device ID 6, which indicates that it is the boot disk. To simply add the hard disk for extra space, you must reset the SCSI device ID. You should also remove all the files and logical disk volumes from the new hard disk (ie. the HP-UX operating system software and Broadband Series Test System software, which already resides on the boot disk and will become redundant). Your new hard disk module is partitioned into different logical disk volumes that differentiate the system and application space from the user space. For details, refer to "Using the New Disk for Extra Disk Space Only", page A-13.

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If you want to do both (ie. use the new SCSI Disk Module as the boot disk and also use the old SCSI Disk Module for extra disk space), follow both procedures, starting with "Using the New Disk as the Bootup Disk", page A-4.

CAUTION

To avoid corrupting the mainframe's hard disk and file system, always perform a proper HP-UX shutdown before installing/removing modules into/from the mainframe.

WARNING

SHOCK HAZARD. Before you touch any installed module, disconnect AC power from the mainframe.

AVERTISSEMENT

RISQUE DE CHOC ÉLECTRIQUE. Avant de toucher à un module installé, coupez l'alimentation c.a. du processeur central.

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Using the New Disk as the Bootup Disk

There are two methods, depending on how many custom files (ie. system files that you had modified; application software that you had installed; data files that were newly created, user home directories, etc.) are on the old hard disk.

- If there are many custom files, you should connect the two SCSI modules, then copy the (directories of) files from one hard disk to the other. For details, refer to "Transferring Files between Hard Disks" below.
- If there are only a few custom files, a simpler method (which does not require root access) is to use the Disk Manager or HP-UX commands to save these files onto a floppy disk, then copy the files from floppy disk onto the new hard disk. For details, refer to "Transferring Files via Floppy Disk", page A-11.

If the old system had been reconfigured (eg. for a network), the new system should also be reconfigured accordingly by your system administrator.

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Transferring Files between Hard Disks

1 Shut down the HP-UX operating system.

At the HP-UX command line:

```
% bisdn_shutdown -halt
```

Or, if you have root privileges:

```
% su root
Password:
% shutdown -h now
```

2 Power down the system.

When you see the message "Halted, you may now cycle power", turn off the mainframe. (If the monitor is separate and not integrated, also turn off the monitor). Then disconnect the power cord from the mainframe (also disconnect the power cord from the monitor, if separate).

3 Remove the old SCSI Disk Module.

The new SCSI Disk Module will be used as the new boot disk and should now be installed directly next to the controller. First, disconnect any cables or terminators connected to the old SCSI Disk Module, then remove the module. For details, refer to "To Remove a Module", page 2-6.

Note

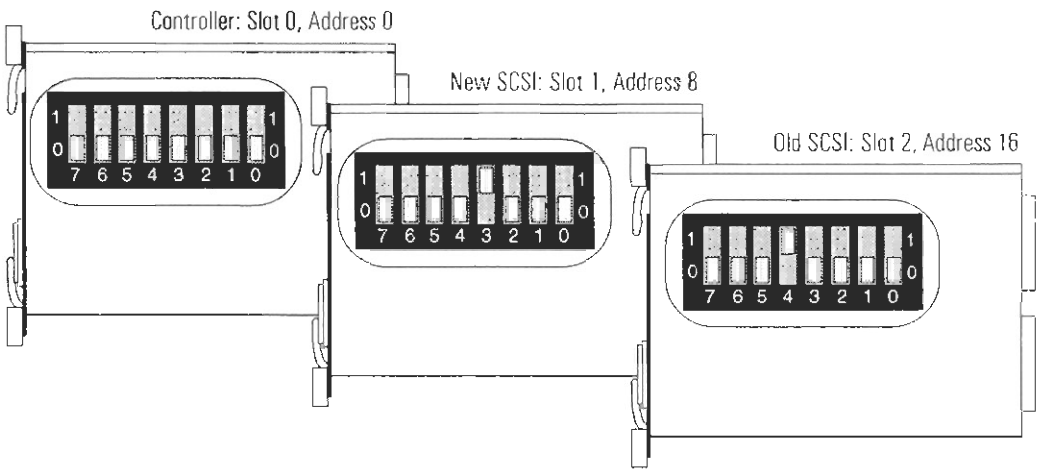
The VXI modules fit very snugly and although removing a module that is currently installed between two modules is possible, re-installing a module into that location may be rather difficult. For this reason, you should remove any other modules currently installed (except the controller module)—temporarily, until the software transfer is complete.

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4 Select unique logical addresses for the two SCSI Disk Modules.

The logical addresses of VXI modules in the mainframe must be unique. We recommend that you set a module's logical address to 8 × the module's VXI slot number. For details about setting the logical address dip switches, refer to "Setting the Logical Address", page 2-3.

For example, if the controller is installed in slot 1, logical address 8 should be set as follows:

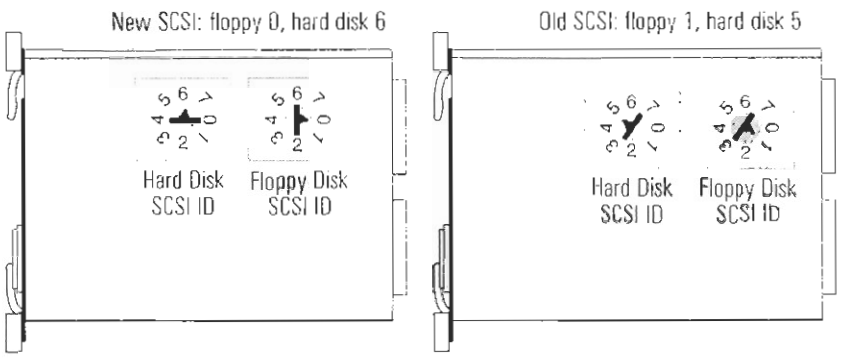


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5 Select unique SCSI device IDs for the two SCSI Disk Modules.

SCSI device IDs range from 0 to 7, with 7 reserved for the controller and 6 used for the boot disk. For details, refer to "Setting Device IDs", page 2-4.

For example, to configure the new SCSI Disk Module's hard disk to be the boot disk, set its SCSI device ID to 6 and the other IDs to other numbers:



6 Install the two SCSI Disk Modules.

Install the new SCSI Disk Module in the slot immediately next to the controller module, then install the old SCSI Disk Module in the slot immediately next to that. For details, refer to "To Install a Module", page 2-5.

Make sure that the modules seat *solidly* against the backplane—the module handles should snap in place and the front panels of all three installed modules should be flush (ie. the SCSI module front panels should not jut out beyond the controller module's front panel).

(After the software transfer, you can then remove the old SCSI Disk Module and re-install the other modules back into their original slot positions. Or, if you are retaining the old SCSI Disk Module for extra disk space, you can install the other modules into the remaining slot positions while ensuring you also change VXI logical addresses if the slot locations of the modules change.)

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7 Daisy chain the SCSI devices.

Use SCSI cables to connect the controller's "SCSI" connector to the new SCSI Disk Module and from the new SCSI Disk Module to the old SCSI Disk Module. Connect a SCSI terminator to the old module's other SCSI connector. Remember, there is no distinction between IN or OUT SCSI connectors—both connectors are functionally the same. If the SCSI cable you are using does not fit easily into one connector on the SCSI module, try the other connector.

Make sure that the SCSI cables and terminator mate solidly with the connectors. Jiggle the plugs from side to side to ensure a solid connection. If any of the connections are loose, this will prevent the system from booting up properly.

8 Power up the system.

Reconnect the power cord(s) and turn on the mainframe. If the mainframe has a separate monitor, turn on the monitor. Wait about 15 seconds for the monitor to warm up.

If the two SCSI Disk Modules are properly installed, they will run through their self tests. The two LEDs on each module should flash momentarily.

When you see the HP CDE login screen, log in as root.

Troubleshooting

If the controller module's Sys Fail or Fail LED lights continually and the system seems to hang (ie. does not boot up as normal), this may indicate one of the following:

- The logical address of the installed modules are not unique. Power down the system and check these addresses before trying again.
- The modules are not seated properly against the backplane or the SCSI cables or terminator are not mated solidly with their connectors. Power down the system and try again.
- The new hard disk does not contain software appropriate for your controller module. You can test this by powering down the system, switching the SCSI device IDs on the two hard disks, then seeing if the system boots up properly. If this is the case (ie. the old disk boots but the new one doesn't), contact your local Agilent Technologies representative.

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9 Mount the source hard disk.

Mount the hard disk in the *old* SCSI Disk Module onto a temporary mount point (/mnt) so that you can copy files from that hard disk to the new disk. The device file to mount depends on the model of controller you are using:

If you are using the ...	use the device file ...
V/382 controller (Agilent E1499)	Not Supported
V743 controller (Agilent E1497)	/dev/dsk/c0tnd0 (where *n* is the hard disk's SCSI device ID)

For example, if you are using a V743 controller module and have given the hard disk a SCSI device ID of 5:

```
% mkdir -p /mnt
% mount /dev/dsk/c0t5d0 /mnt
```

The -p option is used in case the /mnt directory already exists on your system. (It does not display an error message if the directory already exists.)

Once mounted, you can refer to files on the old hard disk by prefixing their directory paths and file names with /mnt. The mount point /mnt is meant to be used temporarily only. To verify that the old hard disk has been mounted:

```
% bdf
Filesystem          kbytes    used   avail capacity Mounted on
/dev/dsk/c0t6d0     825629   275712   467354   37%   /
/dev/dsk/c0t5d0      364752    301646   26630    92%   /mnt
```

(The values displayed for your hard disks may vary.)

10 Copy custom files from the source disk to new disk.

The new hard disk will already contain the latest operating system software and Broadband Series Test System software appropriate for your controller module. You need to copy over only the files you had created (eg. user home directories) or installed (eg. application software, which must be compatible with the new controller if you have upgraded your system) and any existing system or Broadband Series files that you had modified or tailored (eg. /etc/passwd, data files).

```
% cp /mnt/<pathname_on_source_disk>/<file> <pathname_on_new disk>
```


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If your system administrator had reconfigured your system (eg. for a network), your system administrator should reconfigure the new system accordingly.

11 Re-install the other modules.

First, shut down the operating system and power down the system as described in Steps 1 and 2. Then, remove the old SCSI Disk Module and re-install the other modules into their original slot positions. Finally, power up the system as described in Step 8.

Note

If you are keeping the old SCSI Disk Module for extra disk space, reset the logical addresses of the other modules to reflect their new slots before re-installing them. Then, power up the system, use sam to permanently mount the hard disk, and remove redundant software from the old hard disk. For details, resume at Step 9, "Mount the new hard disk.", page A-15.

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Transferring Files via Floppy Disk

1 Copy files from the old SCSI Disk Module onto a floppy disk.

Format the floppy disk if necessary, then copy files from the hard disk onto the floppy disk. Use one of the following methods:

- Disk Manager: For information about how to use the graphical Disk Manager, refer to Chapter 3, "Using the Disk Manager".
- HP-UX commands: If you prefer using the HP-UX commands (eg. you are programming a script to transfer the files), refer to Appendix B, "Using UNIX Commands for the Floppy Drive". Remember to unmount UNIX-formatted floppy disks before ejecting them.

Record the directory paths of the files so that you can re-install them into the correct location on the new hard disk.

2 Shut down the HP-UX operating system.

From the HP-UX command line:

```
% bisdn_shutdown -halt
```

Or, if you have root privileges:

```
% su root
Password:
% shutdown -h now
```

3 Power down the system.

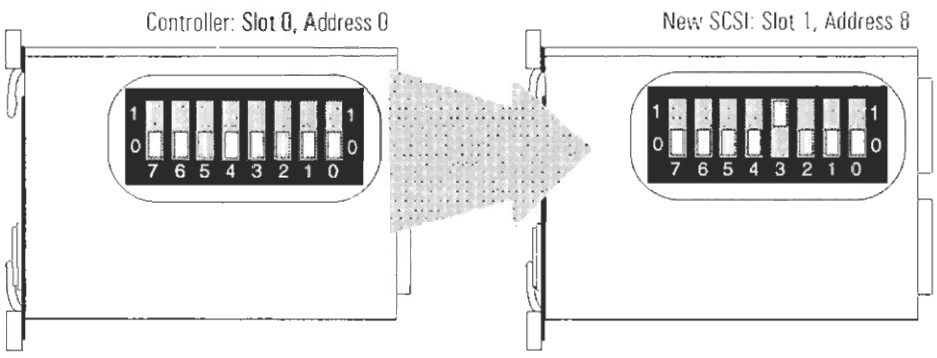
When you see the message "Halted, you may now cycle power", turn off the mainframe. (If the monitor is separate and not integrated, also turn off the monitor). Then disconnect the power cord from the mainframe (also disconnect the power cord from the monitor, if separate).

4 Replace the old SCSI Disk Module with the new one.

The new SCSI Disk Module will be used as the new boot disk and should now be installed directly next to the controller. Remove the old SCSI Disk Module and install the new SCSI Disk Module in its place. You will first need to remove any other modules currently installed (except the controller module). For details, refer to "Installing and Removing Modules", page 2-5.

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Before installing the new SCSI Disk Module, check whether the factory preset logical address is appropriate. The logical address should be 8 × the module's VXI slot number. Set the new SCSI Disk Module's address to 8, as follows:



For details about setting the logical address, refer to "Setting the Logical Address", page 2-3. Also check that the factory preset SCSI device ID for the hard disk is set to 6. For details, refer to "Setting Device IDs", page 2-4.

When installing modules, make sure that the modules seat solidly against the backplane. The module handles should snap in place and the front panels of all installed modules should be flush. Also make sure that the SCSI cable and terminator mate solidly with their connectors.

5 Power up the system.

Reconnect the power cord(s) and turn on the mainframe. If the mainframe has a separate monitor, turn on the monitor. Wait about 15 seconds for the monitor to warm up.

If the controller module's Sys Fail or Fail LED lights continually and the system seems to hang (ie. does not boot up as normal), power down the system and check the modules and cables again.

6 Copy files from the floppy disk to the new hard disk.

Again, use either the graphical Disk Manager or the HP-UX commands to copy files between the hard disk and a floppy disk. If your system administrator had reconfigured your system (eg. for a network), your system administrator should now reconfigure the new system accordingly.

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Using the New Disk for Extra Disk Space Only

1 Shut down the HP-UX operating system.

At the HP-UX command line:

```
% bisdn_shutdown -halt
```

Or, if you have root privileges:

```
% su root
Password:
% shutdown -h now
```

2 Power down the system.

When you see the message "Halted, you may now cycle power.", turn off the mainframe. (If the monitor is separate and not integrated, also turn off the monitor). Then disconnect the power cord from the mainframe (also disconnect the power cord from the monitor, if separate).

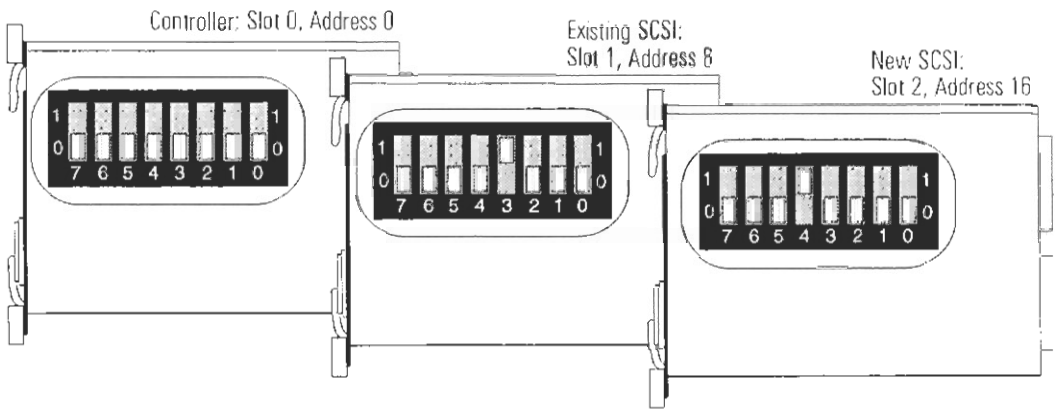
3 Remove all modules except the controller and SCSI Disk Module.

For details, refer to "To Remove a Module", page 2-6.

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4 Set the logical address of the new SCSI Disk Module.

A module's logical address should be 8 × the module's VXI slot number. For details, refer to "Setting the Logical Address", page 2-3. The addresses of the SCSI Disk Modules should be set to:



Set the logical addresses of the other modules to reflect their new slots.

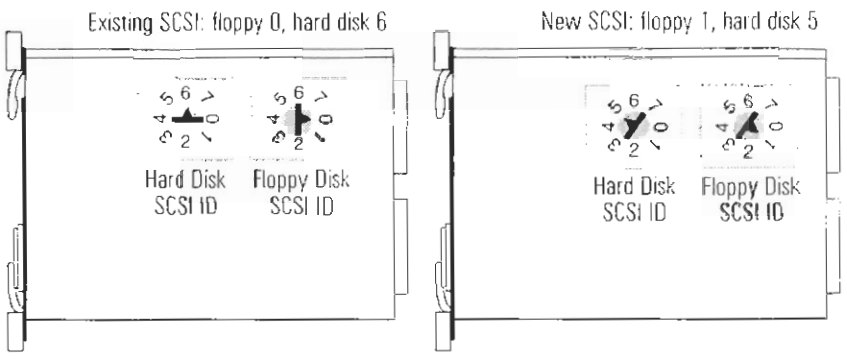
5 Install the modules.

For details, refer to "To Install a Module", page 2-5.

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6 Select unique SCSI device IDs for the new SCSI Disk Module.

SCSI device IDs range from 0 to 7, with 7 reserved for the controller and 6 used for the boot disk. For details, refer to "Setting Device IDs", page 2-4. To configure the existing SCSI Disk Module's hard disk to be the boot disk, set its SCSI device ID to 6 and the other IDs to other numbers:



7 Daisy chain the new SCSI Disk Module.

Use a SCSI cable to connect the existing SCSI Disk Module to the new SCSI Disk Module. Connect a SCSI terminator to the new SCSI Disk module's other SCSI connector. (Or, to chain other SCSI devices, connect the new SCSI Disk Module to the next SCSI device and terminate the last device.)

8 Power up the system.

Reconnect the power cord(s) and turn on the mainframe. If the mainframe has a separate monitor, turn on the monitor. Wait about 15 seconds for the monitor to warm up. Log in as root.

Troubleshooting

If the controller module's Sys Fail or Fail LED lights continually and the system seems to hang (ie. does not boot up as normal), power down the system, check the modules' logical addresses and cables, then try again.

9 Mount the new hard disk.

To automatically mount the new hard disk each time the system boots up, use sam (HP-UX's System Administration Manager) to add the new disk to /etc/checklist.

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Note

If you are using a small screen such as the integrated monitor in the E4200B Transportable VXI Mainframe, use the ASCII version of sam to ensure that the bigger sam windows can display (ie. `unset DISPLAY` before running sam).

Run SAM and take the path:

- Disks and File Systems-> File Systems

1 Display the Actions menu and select Add Local File System -> Not Using the Logical Volume Manager.

2 Select the disk that you want to add from the list of available disks, for example, Hardware path 2/0/1.4.0 (SCSI address set to 4).

3 Enter the mount directory, for example, disk2. If the mount directory does not exist it will be created for you.

4 Click the Modify Defaults button. It is recommended that you choose the Non Journaled (HFS) FS Type when creating a new file system.

5 Uncheck the Create New File System option. Uncheck this option so that SAM does not clear what is currently on the hard disk. If it is a new disk you are mounting and you want to use it for additional space, do not uncheck this option.

6 Click OK and proceed with mounting the file system.

7 Exit SAM and verify that the new hard disk is mounted:

```
% bdf
Filesystem          kbytes    used   avail capacity Mounted on
/dev/dsk/c0t6d0     364752  301729   26547    92%   /
/dev/dsk/c0t4d0     825629  275712  467354    37%   /disk2
```

(The values displayed for your hard disks may vary.)

You can now access directories and files on the new hard disk by prefixing their names with the specified mount point (eg. /disk2 in the above example).

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Removing Unwanted Files from an Additional Hard Disk

The hard disk on all SCSI Disk Modules that are shipped to Broadband Series Test Systems contain the HP-UX operating system as well as the Broadband Series Test System software. If you already have a SCSI Disk Module configured with a boot disk, you may reformat this disk to use as additional work space.

CAUTION

To avoid system bootup failure, follow the instructions below to prepare your system for any hard disk removal. You should be performing regular backups of your system hard disks. If you have not recently performed a backup of your system boot disk, do so now before proceeding.

Removing an Unwanted Hard Disk from your System

Before removing any hard disk module from your BSTS system, perform the following steps to prepare your system for the removal.

1 Run the System Administration Maintenance (SAM) utility.

2 Select the File System from the list that you want to remove.

3 From the Actions menu, choose Remove.

4 Exit Sam.

Shutdown your system in the recommended way before removing the hard disk from the VXI mainframe.

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B

- Accessing UNIX-Formatted Disks B-3
- Accessing DOS-Formatted Disks B-6

Using UNIX Commands for the Floppy Drive

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Using UNIX Commands for the Floppy Drive

Although you can use the graphical Disk Manager to read from and write to disks in the floppy drive, you may prefer to use UNIX level commands or you may want to be able to manage disks from within a script or program.

Regular UNIX commands

The floppy drive is treated the same as other UNIX devices. You can mount and access the floppy drive using regular UNIX commands (ie. mount, cd, ls, cp, mv, rm, umount) available with the HP-UX operating system. Both UNIX as well as DOS-formatted disks may be accessed. For DOS disks, use the appropriate set of DOS commands (ie. dosls, dosep, dosrm, etc.).

To find out more about the mount command, read the online manual pages by typing "man mount". Manual pages are also provided for some of the DOS commands. For a summary of these DOS commands and examples of how to use them, refer to "Accessing DOS-Formatted Disks", page B-6.

Customized UNIX commands

In order to use the mount command on the floppy device file, however, you need root access. For those who do not have root access, you can use a set of customized UNIX commands provided with the Broadband Series Test System (in /usr/broadband/util) to facilitate disk management. These commands, described on the facing page, let you bypass the root privilege requirements for mounting and unmounting a file system from the floppy drive.

Using UNIX Commands

There is also a set of customized UNIX commands that you can use to manage SCSI devices. These customized commands are variations of the regular UNIX commands (eg. mount, ls, cp, mv, rm, umount). The customized versions can be used by anyone (ie. not just root) and can be used in scripts or programs. These UNIX commands are also supplied for non-Broadband Series Test System users on the *HP-UX Floppy Utilities, Version 1.3* disk (attached to the inside of the front cover of this guide). To install these customized UNIX commands, follow the instructions on the disk label. For more details, refer to Appendix B, "Using UNIX Commands for the Floppy Drive".

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Accessing UNIX-Formatted Disks

The customized UNIX commands for accessing UNIX-formatted disks are:

To ...	Use ...
format the disk—takes a few minutes for a floppy	fd_format
mount the file system on the disk onto /floppy (a mount point which appears as a UNIX directory)—use -r to mount the disk as read-only	fd_mount [-r]
unmount the file system mounted on /floppy (Do this *before* ejecting the disk.)	fd_umount

The following commands automatically mount the file system on the disk, perform a regular UNIX operation (ls, cp, mv, rm), then unmount the file system. These commands use the same arguments and options as their regular UNIX counterparts.

To ...	Use ...
list the contents of the floppy disk	fd_ls
copy files between the floppy disk and hard disk—prefix names of floppy disk files with either /floppy or fd:	fd_cp
move files between the floppy disk and hard disk—prefix names of floppy disk files with either /floppy or fd:	fd_mv
remove a file on the floppy disk	fd_rm

Viewing manual pages

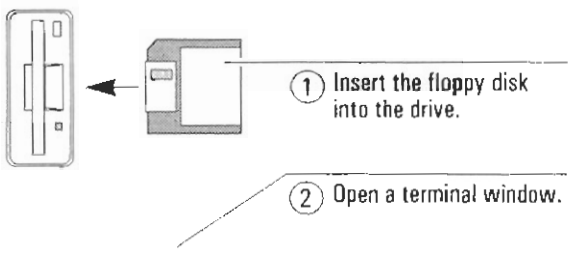
The customized commands have manual pages in "/usr/broadband/man". Add this directory path to your MANPATH so that you can easily invoke them (eg. `setenv MANPATH ${MANPATH}:/usr/broadband/man`). Manual pages are provided for fd_format, fd_mount (also covers fd_umount), and fd_cp (also covers fd_ls, fd_mv, and fd_rm).

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Selecting a different device file

By default, the commands access the SCSI device with the SCSI device ID 0. The device file used is /dev/rdsk/c0t0d0. The second last 0 in each file name indicates the SCSI device ID. If you are using another SCSI device ID, set the environment variable FD_DEV to the appropriate device file prior to using the commands. For example, if you wish to access the floppy drive with the SCSI device ID 1, set the variable as follows: `setenv FD_DEV /dev/rdsk/c0t1d0`.

Example



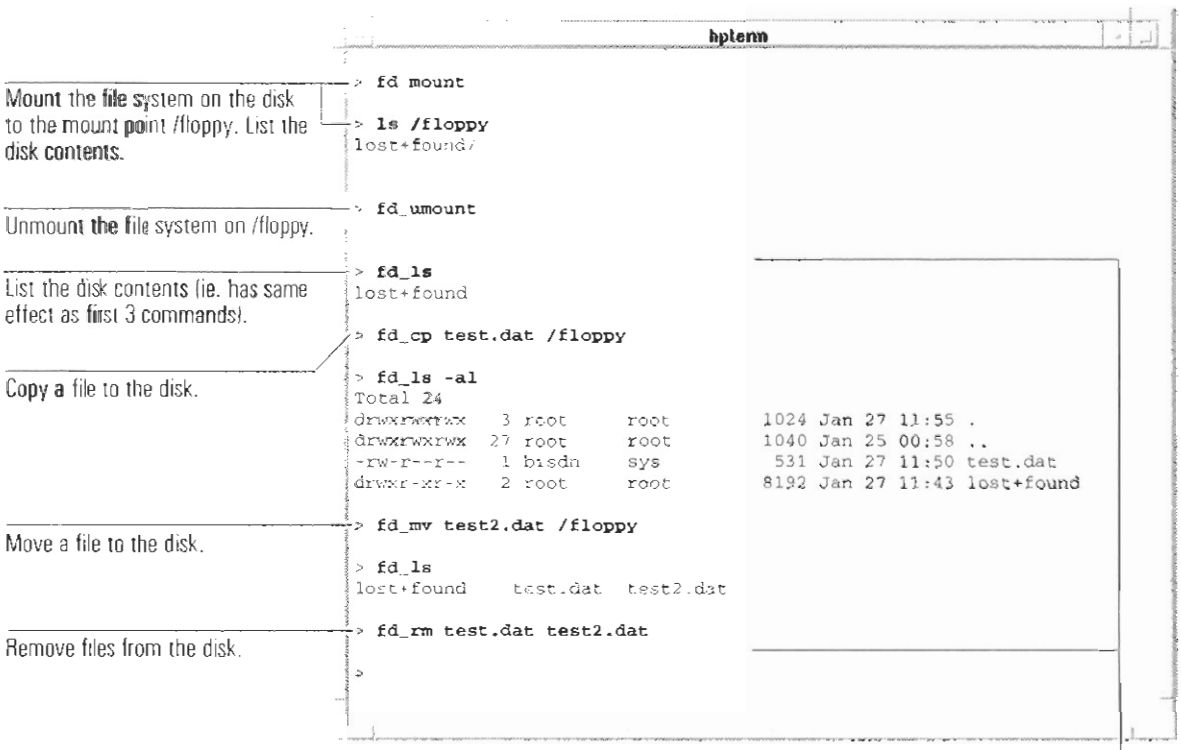

```
> fd_format floppy
              ....................
              .     WARNING      .
              ....................

This program will erase all data on device /dev/rdsk/c0t0d0 (SCSI ID 0:
continue (y/n) [n]? y
formatting disk (this may take a long time...)
creating new file system on disk
/dev/rdsk/c0t0d0:1440 sectors in 80 cylinders of 2 tracks, 9 sectors
        1.5Mb in 5 cyl groups (16 c/g, 0.29Mb/g, 64 i/g)
super-block backups (for fsck -b#) at:
 16, 320, 592, 896, 1168,
fsck'ing disk
** /dev/rdsk/c0t0d0
** Last Mounted on
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Cyl groups
2 files, 0 icont, 9 used, 1294 free (14 frags, 160 blocks)
done
>
```

To format a floppy disk (may take a few minutes).

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CAUTION After you insert a disk, wait at least 10 seconds before mounting it (using "mount" or any of the custom commands). Otherwise, the operating system displays an error message and you must try again.



CAUTION Always unmount a mounted UNIX floppy disk (using "umount" or any of the custom commands which automatically unmount) before ejecting it from the drive. Otherwise, you will corrupt the file system or the operating system.

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Accessing DOS-Formatted Disks

UNIX provides the following set of commands for reading from and writing to DOS-formatted disks.

To ...	Use ...
list a DOS directory's contents (short or long)	dosls, dosll
display free disk clusters	dosdf
make a DOS directory	dosmkdir
copy DOS files	doscp
remove a DOS file or directory	dosrm, dosrmdir
change access mode of DOS file	doschmod
convert between DOS/UNIX format	dos2ux, ux2dos

By default, writing to the floppy drive (and other device files) requires root privilege. Unlike the customized fd_ commands which let you bypass these requirements, the DOS commands require that you either log in as root to use them or have the system administrator to change the write access for the floppy drive so that others can write to it.

Also, whereas the customized fd_ commands use a default device file, /dev/rdsk/c0t0d0, the DOS commands do not—you must specify the device file in each command. (You could change to the /dev/rdsk directory first to avoid specifying the path each time.)

When specifying files on the DOS disk, use the format "<device file>:<file>". For more information about the DOS interchange format, refer to the manual page for "dosif".

Note

You must format DOS disks on another system—there is no UNIX command to do so.

You do not need to mount or unmount DOS-formatted disks.

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Example

Check that you have read/write access to the drive.

Display the contents of the DOS disk (short and long listing) and the free clusters on the disk.

Make a DOS directory on the disk.

Convert a text file from UNIX format to DOS format and copy it to the DOS disk. Then copy a file from the DOS disk to a UNIX directory.

Remove a directory and a file from the DOS disk.

```
hpterm

> cd /dev/rdsk
> ls -al
Total 8
drwxr-xr-x   2 root      root         1024 Jun 30  1993 ./
drwxr-xr-x  10 root      root         3072 Jan 26 14:52 ../
crw-rw-rw-   1 root      sys        188 0x000000 Jul 10 13:46  c0t0d0
crw-rw----   1 root      sys        188 0x001000 Jul 10  1998  c0t1d0
crw-rw----   1 root      sys        188 0x002000 Jul 10  1998 c0t2d0
crw-rw----   1 root      sys        188 0x003000 Jul 10  1998 c0t3d0
crw-rw----   1 root      sys        188 0x004000 Jul 10  1998 c0t4d0
crw-rw---   1 root     sys        188 0x005000 Jul 14:28   c0t5d0
crw-rw----   1 root     sys        188 0x006000 Jul 10 1998 c0t6d0

> dosls c0t0d0:
dev/rdsk/c0t0d0:/TEST.DAT

> dosll -a c0t0d0:
The DOS Volume Label is  DISK1
 40      640 Jan   27 1994  12:09  /dev/rdsk/c0t0d0:/TEST.DAT

> dosdf c0t0d0:
disc capacity = 1474560 bytes
cluster size = 512 bytes
2 clusters allocated.
2845 clusters free.

> dosmkdir c0t0d0:tmpdir
> dosls c0t0d0:
/dev/rdsk/c0t0d0:/TEST.DAT
/dev/rdsk/c0t0d0:/TMPDIR/

> ls ~
test1.dat
> ux2dos ~/test1.dat > ~/test2.dat
> doscp ~/test2.dat c0t0d0:tmpdir
> dosls c0t0d0:tmpdir
dev/rdsk/flop:TMPDIR/TEST2.DAT
> doscp c0t0d0:test.dat ~/test3.dat
> ls ~
test1.dat           test2.dat           test3.dat

> dosrm -r c0t0d0:tmpdir
> dosls c0t0d0:
/dev/rdsk/c0t0d0:/TEST.DAT
> dosrm c0t0d0:test.dat
```


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C

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Specifications

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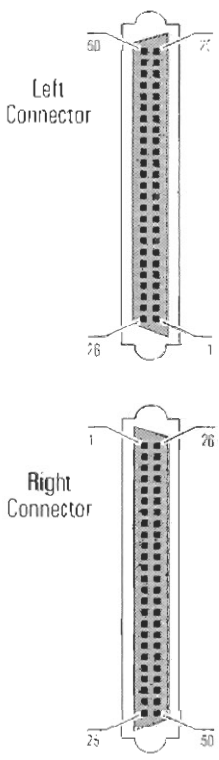
Interface Specifications

For details about the SCSI interface, refer to the ANSI Small Computer Interface System Interface-2 Specification (ANSI X3T9.2/86-109, Revision 10h, October 17, 1991).

Compatibility	The SCSI Disk Module is compatible with HP 9000 Series 700 host computers and controllers that provide a SCSI or SCSI-2 interface.
SCSI Connectors	The two SCSI connectors are AMPlimite .050 Series 50 Position Vertical Receptacle Headers with Latch Blocks, Series III (AMP Part # 749721-5).
Mating Plug	The front panel SCSI connectors mate with cables equipped with AMP .050 Series 50 Pin Plugs, Series III (AMP Part # 750913-5) with Spring Latch Backshells (AMP Part # 749202-2) or equivalent.
SCSI Terminator	The module comes with an active Terminator Plug (AMP Part #750381-1).

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Connector Pinouts



Pin #	Description
1 to 11	GROUND
12	RESERVED
13	NOT USED
14	RESERVED
15 to 25	GROUND
26 to 33	-DB(0 to 7)
34	-DB(P)
35 to 36	GROUND
37	RESERVED
38	TERMPWR
39	RESERVED
40	GROUND
41	-ATN
42	GROUND
43	-BSY
44	-ACK
45	-RST
46	-MSG
47	-SEL
48	-C/D
49	-REQ
50	-I/O

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Electrical and Mechanical Specifications

Power Requirements

DC Volts	DC Current	Dynamic Current
5 V	0.9 A	0.9 A
12 V	0.6 A	1.2 A

Safety Conditions

Installation Category: I

Pollution Degree: 2

Altitude Range: < 2000m

Environmental Operating Conditions

Operating Temperature	5 to 45 C
Storage Temperature	-40 to 60 C
Humidity Operating (non-condensing)	20% to 80% relative humidity at 30 C, 80% at 45 C
Humidity Non-operating (non-condensing)	5% to 90% relative humidity at 40 C
Orientation	Hard Disk orientation is permissable in any orientation, however the floppy may only be used when the module is +- 25 degrees to vertical or +- 25 degrees to horizontal with the Agilent logo to the right.
Cooling Requirements	For 10°C rise, 1.5 l/s 0.25mm H_2O

Shock and Vibration

Shock (1/2 sine wave, 11 ms duration, 10 hits maximum)	5 G operating 40 G non-operating
Vibration (5-400 Hz sine wave zero-to-peak, 1.0 octave/minute sweep)	0.25 G operating 1.0 G non-operating

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Reliability

	Hard Drive	Floppy Drive
Mean Time Between Failures (MTBF)	800,000 Power On Hours (POH), typical usage	30,000 Power On Hours (POH), typical usage
Preventive Maintenance (PM) Required	None	None
Mean Time To Repair (MTTR)	30 minutes	30 minutes
Start/Stop Cycles	Minimum 20,000 cycles	Minimum 15,000 cycles

Physical Specifications

Size	1 C size VXI slot
Weight	1.9 kg (4.2 lb)
VXI Keying	none

Default Switch Settings

VXI Logical Address	10 hex
Floptical Drive SCSI Device ID	0
Hard Drive SCSI Device ID	6

VXIbus Characteristics

Device Type	A16 D16 Slave
Backplane Connectors	P1, P2
Local Bus Connection	none
Module Keying	none

SCSI Disk Fuses (not user-serviceable)

Location	Amps (A)	Volts (V)	Type
F101	5	125	very quick acting
F102	5	125	very quick acting

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D

Servicing

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Servicing

CAUTION

The SCSI Disk Module does not contain any user serviceable parts. Because of the danger of introducing hazards, do not install substitute parts or perform any unauthorized modification to the module.

If you encounter a problem with the module, call one of the Product Support numbers shown on the back of the title page. You may need to return the module to a Agilent Technologies service facility for repair or replacement. The product support representative will provide you with complete instructions.

The only replaceable parts on the SCSI disk module are:

- SCSI terminator
- SCSI cable

If needed, you may use other Agilent Technologies approved cabling to connect the SCSI module to the rest of the system. Consult with your product support representative for details about available parts. Agilent Technologies cannot guarantee that non-approved cabling is fault-free and thus cannot warrant against malfunctions resulting from this cabling.

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