

**High Speed CD-ROM Drives
Installation and User's Guide**

Note

Before you install this product and use this information, be sure to read the product warranties and notices information included with the system unit into which you are installing the product.

First Edition (November 1996)

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Safety Information

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communication lines.

About This Book

This book provides information about the High Speed CD-ROM Drive, which includes both the 4X- and 8X-speed versions. It describes how to install the drive, plan your SCSI device layout, set the SCSI address (also called a SCSI ID), and update your system configuration. Except where specifically noted, all information applies to both drives.

Use this book together with your specific system unit and operating system documentation.

Related Publications

Refer to your system unit and operating system documentation for information specific to your hardware and software configuration.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Trademarks and Acknowledgments

AIX is a registered trademark of International Business Machines Corporation

PowerPC is a trademark of International Business Machines Corporation

Windows NT is a trademark of Microsoft Corporation

Laser Safety Information

This CD-ROM drive contains an optical laser. The CD-ROM drive has a label that identifies its classification. The label, located on the drive, is shown below.

CLASS 1 LASER PRODUCT LASER KLASSE 1 LUOKAN 1 LASERLAITE KLASS 1 LASER APPARAT APPAREIL À LASER DE CLASSE 1 EN 60825

This CD-ROM drive is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, the drive is certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 (1st edition 1984) and CENELEC EN 60 825:1991 for Class 1 laser products.



CAUTION:

A class 3 laser is contained in this device. Do not attempt to operate the drive while it is disassembled. Do not attempt to open the covers of the drive as it cannot be serviced and is replaced as a unit.

Class 1 laser products are not considered to be hazardous. The optical laser contains internally a Class 3B gallium-arsenide laser that is nominally 30 milliwatts at 830 nanometers. The design incorporates a combination of enclosures, electronics, and redundant interlocks such that there is no exposure to laser radiation above a Class 1 level during normal operation, user maintenance, or servicing conditions.

Chapter 1. Overview

The High Speed CD-ROM Drive is a half-high, 5.25", 8-bit, single-ended, tray-loading drive. This chapter describes the features of both the 4X- and 8X-speed versions. Instructions for handling the drives and CD-ROM discs are also included.

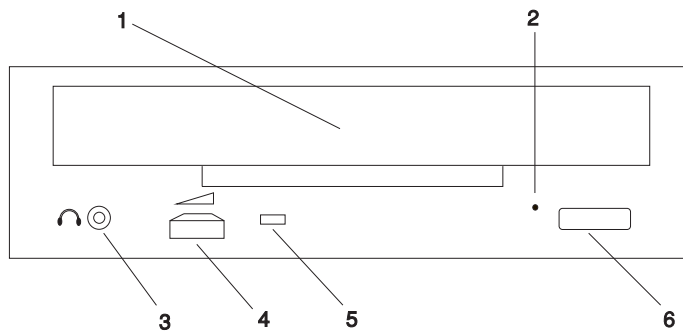
The 8X-Speed CD-ROM Drive's attractive features include the following:

- SCSI-2 interface supports both synchronous and asynchronous data transfer
- High-speed data transfer rate of 1200 KB per second
- High-speed synchronous burst rate of 5 MB per second
- Average random access time of 150 ms
- Can be installed in either a vertical or horizontal orientation
- Loading tray accommodates both 8 cm discs (in the horizontal orientation only) and 12 cm discs
- Reads multi-session discs
- Reads CD-recordable discs
- Supports all major CD-ROM formats: Mode 1, XA, CDDA, audio
- Contains headphone output and line output for audio

The 4X-Speed CD-ROM Drive's features include the following:

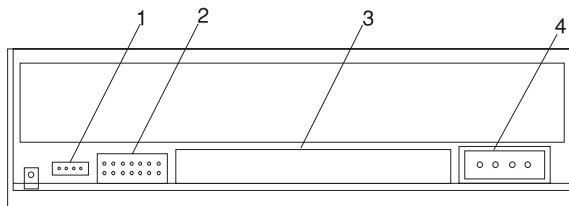
- SCSI-2 interface supports both synchronous and asynchronous data transfer
- High-speed data transfer rate of 600 KB per second
- High-speed synchronous burst rate of 5 MB per second
- Average random access time of 200 ms
- Can be installed in either a vertical or horizontal orientation
- Loading tray accommodates both 8 cm discs (in the horizontal orientation only) and 12 cm discs
- Reads multi-session discs
- Reads CD-recordable discs
- Supports all major CD-ROM formats: Mode 1, XA, CDDA, audio
- Contains headphone output and line output for audio

Front View of CD-ROM Drive



- 1 Compact Disc Tray — Holds the compact disc for insertion into the drive.
- 2 Emergency Eject Hole — Allows access to the emergency eject mechanism.
- 3 Headphone Jack — Provides the connection for headphones. Uses 3.5 mm (1/8") stereo mini-plug.
- 4 Volume Control — Adjusts the audio output level for the headphones.
- 5 Amber Status Light — Indicates the operational status of the drive.
- 6 Load/Unload Button — Opens and closes the compact disc tray.

Rear View of CD-ROM Drive



- 1 Line Out Connector — Connects audio signals to a sound card.
- 2 Jumper Pins — Sets the drive address and other features.
- 3 SCSI Interface Connector — Connects the SCSI interface cable to the drive.
- 4 DC Power Connector — Connects the DC power cable to the drive.

Status Light Operation

The amber status light indicates information about the operational status of the drive. The various conditions are:

If light is:

Condition is:

Off

Drive is in standby mode with or without a disc loaded.

Blinking

Any of the following:

- Drive tray is inserted. The light blinks while the drive completes the initialization checkout.
- Drive is reading data. The light blinks while data is being read.

Note: The light on the 4X-Speed CD-ROM Drive flickers, rather than blinks, during reads.

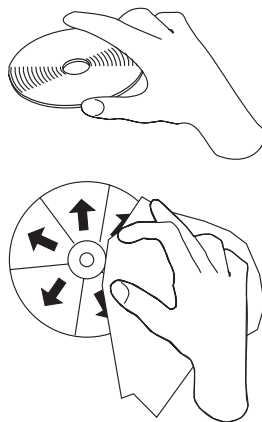
- Drive is in Play Audio Mode. The light blinks while the audio is playing.

On

Hardware error condition found during initialization.

Note: If this occurs, contact your service representative.

Handling Compact Discs



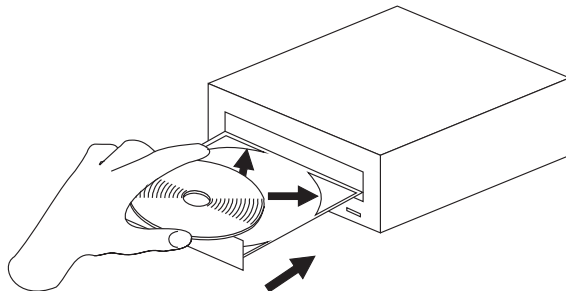
Compact discs are high-density media that must be handled with care and kept clean to ensure that they remain readable. Use the following precautions to ensure reliability:

- Hold the compact disc by the edges. Do not touch the surface of the compact disc.
- To remove dust or fingerprints, wipe the compact disc from the center to the outside of the compact disc, as shown.

Attention: Wiping the compact disc in a circular direction can cause loss of data.

- Do not write on the surface.
- Do not store or place the compact disc in direct sunlight.
- Do not use benzene, thinners, or other cleaners to clean the compact disc.
- Do not bend the compact disc.

Loading a Compact Disc Horizontally

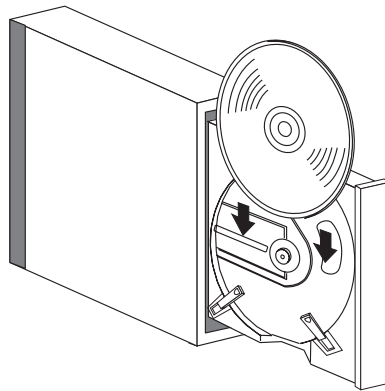


To load a compact disc into a horizontally mounted drive:

1. Press the Load/Unload button to open the tray. The tray slides out of the drive.
2. Place the compact disc in the tray with the label facing up.
3. Press the Load/Unload button, or gently push in the tray, to close the tray.

Note: Be sure that none of the vertical retaining tabs are extended when you use the drive in the horizontal position. See “Extending the Vertical Retaining Tabs” on page 3-5.

Loading a Compact Disc Vertically



To load a compact disc into a vertically mounted drive:

1. Press the Load/Unload Button to open the tray. The tray slides out of the drive. Make sure the lower vertical retaining tabs are extended. See “Extending the Vertical Retaining Tabs” on page 3-5.
2. Insert the compact disc behind the tabs, label side out.
3. Press the Load/Unload button, or gently push in the tray, to close the tray.

Opening the Tray Manually

The tray should automatically open when you press the Load/Unload button. If it does not automatically open, follow these steps to force it open manually:

1. Shut down and turn the power off to your system unit.
2. Insert the straightened end of a paper clip into the emergency eject hole until you feel some resistance. See “Front View of CD-ROM Drive” on page 1-2 if you are not sure where the emergency eject hole is located.
3. Continue to push in the paper clip while you pull out the tray with your fingernail.
4. Pull the tray completely open and remove the disc. It is normal for the tray to make a clicking sound while you are pulling it open.

Playing an Audio CD

To play an audio CD, you must either have headphones connected to the headphone jack located on the front of the drive or an audio card connected to the line out connector located on the back of the drive. You must also have an audio application.

Chapter 2. Preparing to Install the CD-ROM Drive

This chapter covers all the things you need to do before you can install your High Speed CD-ROM Drive. The instructions in this book are for AIX. If you use another operating system, see your operating system documentation for additional information and instructions.

Preparing to install the drive involves the following tasks:

- Verifying your hardware and software requirements
- Making sure your package is complete
- Gathering the tools you need for installing the drive
- Planning your SCSI device layout
- Determining your SCSI device address

Verifying Your Hardware Requirements

The High Speed CD-ROM Drive requires the following hardware:

- ___ An available bay large enough to hold a 5-1/4 inch half-high device
- ___ A SCSI-2 adapter, which is either *built into* or *on a separate adapter card inside* your system unit
- ___ A SCSI interface cable

Verifying Your Software Requirements

The High Speed CD-ROM Drive is supported on several operating systems, including the following:

- ___ AIX 3.2.5 or later
- ___ Windows NT (PowerPC Edition) 3.51 or later

Please ensure that your operating system supports this CD-ROM drive before you install it. Contact your support representative for assistance.

Checking Your CD-ROM Drive Package

Make sure your package contains the following items:

- The High Speed CD-ROM Drive (4X- or 8X-speed)
- Mounting screws
- An 8- to 16-bit interposer (to connect the drive to a 16-bit bus)
- A CD-ROM test disc
- A registration card

Contact the place of purchase if an item is missing or damaged.

Important: Be sure to retain your proof of purchase as it might be required to receive warranty service.

Gathering Your Tools

To install the drive, you need the following items:

- A small, flat-blade screwdriver
- Your system unit documentation

Planning Your SCSI Device Layout

SCSI devices are attached in a daisy-chain configuration to a SCSI adapter installed inside the system unit. SCSI devices include such hardware as disk drives, tape drives, scanners, printers, and CD-ROM drives.

Each device in the chain has a unique SCSI address (also called a SCSI ID). When you connect more than one SCSI device, it is important that you plan the location and address of each device in the chain. You must also be sure to connect a terminator at the end of the chain. The SCSI adapter is at one end of the chain, which provides termination for that end. The last attached device must terminate the other end of the chain. In some instances you might have to connect an external terminator.

If you have a configuration that includes both internal and external devices, you must connect a terminator to the last external device and ensure that you also terminate the internal SCSI cable. The adapter terminates one end of the chain and the last device terminates the other end.

Determining Your SCSI Device Address

Before you install the High Speed CD-ROM Drive, you must set the SCSI address on the drive. First, you must determine which SCSI addresses are available to use. Then you choose an address and install jumpers on the drive to set the selected address. You can use any available SCSI address for any device, as long as you make sure that no two SCSI devices on the same chain use the same address. No device can use address 7, which is reserved for the SCSI adapter.

SCSI addresses are in sequential order from highest to lowest priority. Refer to Table 2-1 below for the priority associated with each SCSI address. For the best performance, choose the highest unused SCSI address between 6 and 0.

Priority	SCSI Address	SCSI Device Name
Highest Priority	7	Adapter
↓	6	
↓	5	
↓	4	
↓	3	
↓	2	
↓	1	
Lowest Priority	0	

To find an available SCSI address on an AIX system:

1. At a system prompt, type:

```
lsdev -Cs scsi
```

then press Enter. The following information displays:

Column 1: device name (for example, scsi0)

Column 2: device status (for example, Available)

Column 3: SCSI information (the format is: nn-nn-nn-a,b)

Column 4: device type (for example, CD-ROM drive,
2.3GB tape drive)

The *a* in the *nn-nn-nn-a,b* string displayed in Column 3 is the SCSI address of the device name displayed in column 1. The *b* is the SCSI bus number for that device.

2. Find an available SCSI address for the CD-ROM drive and choose the highest-priority unused address for yours. On Table 2-1 on page 2-3, record the

address you picked for your CD-ROM drive and the names and addresses of any other installed SCSI devices. Save this information for future reference.

Chapter 3. Installing the CD-ROM Drive

This chapter takes you through the steps to install and connect your High Speed CD-ROM Drive. Installing the drive involves the following tasks:

- Setting the jumpers to the SCSI address you previously selected
- Installing the drive in your system unit
- Connecting the drive
- Setting the vertical retaining tabs for a vertically mounted drive

Attention

Static electricity can damage the CD-ROM drive. Before you remove it from its static-protective bag, be sure that you read the following handling precautions.

Handling Precautions

Be sure to take the following precautions before and while you are installing the CD-ROM drive:

1. Remove compact discs from the tray before you move the drive anywhere.
2. Do not place the drive where any of the following conditions exist:
 - High temperature
 - High humidity
 - Excessive dust
 - Excessive vibration or sudden shock
 - Inclined surface
 - Direct sunlight
3. Do not insert foreign objects into the drive.
4. Do not stack objects on the drive.
5. Do not remove the drive covers or attempt to service the drive yourself.

CAUTION:

A class 3 laser is contained in this device. Do not attempt to operate the drive while it is disassembled. Do not attempt to open the covers of the drive as it cannot be serviced and is replaced as a unit.

Setting the SCSI Address on the Drive

After you choose an available SCSI address for your drive, you can install the jumpers on the drive to match the selected address. The SCSI address can be set from 0 to 6. Address 7 is reserved for the adapter. Refer to “Determining Your SCSI Device Address” on page 2-3 if you need instructions for selecting the SCSI address.

To set a SCSI address, you install jumpers onto pin positions 1, 2, and 3, located on the jumper block, to set each position to *On* or *Off*. (See Table 3-1 below.) To set a position to *On*, insert a jumper into both the top and bottom pins. To set a position to *Off*, insert the jumper into the top pin only.

Note: Jumpers are also installed in other positions on the jumper block to enable or disable other functions.

Refer to the figure on page 3-3 and to Table 3-1 below as you go through the following steps to set the SCSI address on this drive:

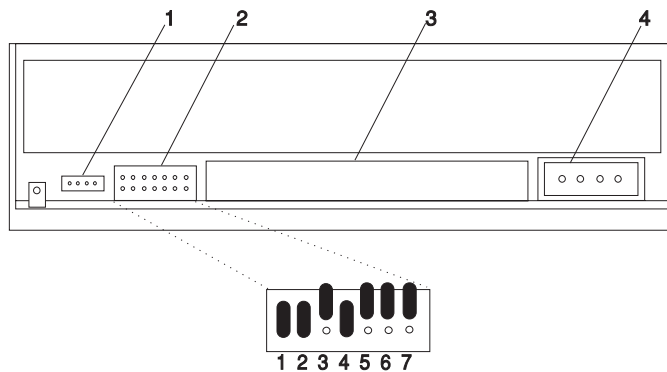
- ___ 1. Remove the drive from its static-protective bag.
- ___ 2. Place the drive on top of the bag on a flat surface.
- ___ 3. Remove all the jumpers.
- ___ 4. Refer to the figure on page 3-3. The SCSI address in this example is set to 3. Locate positions **1**, **2**, and **3** on the drive. They are the first three positions on the left-hand side of the jumper block as you view the drive from the back. Using Table 3-1 below as your guide, install jumpers in the correct positions to set the SCSI address you previously chose.

SCSI Address	Position 1	Position 2	Position 3
0	Off	Off	Off
1	On	Off	Off
2	Off	On	Off
3	On	On	Off
4	Off	Off	On
5	On	Off	On
6	Off	On	On

- ___ 5. Install a jumper on position **4** to On. This position enables proper parity.
 - ___ 6. Install a jumper in position **5** to Off. This sets the drive's default sector size to 2K bytes. (Setting this position to On would make the default sector size 512 bytes.)
 - ___ 7. Install a jumper in position **6** to Off. This position enables or disables the terminator.
- Note:** The terminator is not provided in the 8X-Speed CD-ROM Drive.
- ___ 8. Install a jumper in position **7** to Off. This position enables or disables power to the SCSI bus *TERM PWR* line. *TERM PWR* is usually supplied from the adapter onto the SCSI bus.

Save any unused jumpers in a safe place or install them in the Off position on any unused pin position.

Jumper Pin Positions on the Drive



- 1 Audio Connector
- 2 Jumper Block
- 3 50-pin SCSI Interface Connector
- 4 Power Connector

Installing and Connecting the Drive

After you set the SCSI address on your drive, you can install it in your system unit. The High Speed CD-ROM Drive must be installed in an available system unit bay connected to a SCSI cable and power cable. Refer to “Jumper Pin Positions on the Drive” on page 3-3 as you go through the following steps.

Important: Be sure to use the screws provided with this drive. Using the wrong size screws might cause damage to the drive.

To install and connect the drive:

- ___ 1. Follow your operating system instructions for shutting down your system, then turn off the power to your system unit. On an AIX system, type:
shutdown -F

at the system prompt, then press Enter. When halt completed displays, turn the system unit power off and unplug the power cord from the wall outlet.
- ___ 2. Plug the interposer into the SCSI connector on the back of the drive.
- ___ 3. Remove the covers of your system unit. Follow the instructions provided in your system unit documentation.
- ___ 4. Install the drive in an available bay in your system unit. See the instructions in your system unit documentation for installing an internal device. Use the screws provided with the drive.

Note: If you are installing the drive in a vertical bay, see “Extending the Vertical Retaining Tabs” on page 3-5 for important additional instructions.
- ___ 5. Plug the SCSI interface cable into the SCSI interface connector located on the back of the drive.
- ___ 6. Plug the power cable into the power connector located on the back of the drive.
- ___ 7. If an audio card is installed in your system unit, plug the audio cable into the audio connector located on the back of the drive.
- ___ 8. Follow the directions provided in your system unit documentation to reinstall the covers of your system unit.
- ___ 9. Plug the power cord back into the wall outlet.
- ___ 10. Turn the power on to your system unit so that the operating system can update the system configuration.

Save this book and store any extra parts in a safe place in case you ever change your configuration.

Verifying the Installation

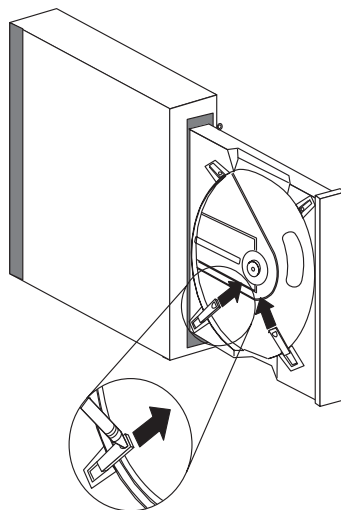
See the instructions provided in your system unit documentation for verifying the successful installation of the drive and device driver software. To verify the installation on an AIX system, type:

```
lsdev -Cs scsi
```

at the system prompt, then press Enter. A list of SCSI devices displays. An *Available* status indicates that the drive is installed and ready to use.

Extending the Vertical Retaining Tabs

You can install the drive so that it operates in either a horizontal or vertical orientation. When the drive is operated in a vertical orientation, two retaining tabs on the CD-ROM tray must be extended to hold the compact disc during loading and unloading.



To extend the retaining tabs:

- ___ 1. Press the Load/Unload button on the drive to eject the tray. The system unit power should be on when you do this.
- ___ 2. Extend the two lower vertical retaining tabs with a ball point pen or similar object.

Note: Do not extend the two upper tabs when you operate the drive in the vertical position. Do not extend *any* of the tabs when you operate the drive in the horizontal position.

Chapter 4. Installing and Configuring the Device Driver Software

Device driver software is provided in AIX, Windows NT (PowerPC Edition), and other operating systems that support this CD-ROM drive. After you install the High Speed CD-ROM Drive, reboot your system unit. Your operating system should recognize the drive and should automatically update your system unit configuration.

If you must install device driver software, follow the installation procedures provided in your operating system documentation. Instructions for installing device driver software on an AIX system are provided in this chapter.

Installing the Device Driver on an AIX System

To install the device driver software:

1. At the system prompt, log in as **root**.
2. Insert the device driver software media into the media device.
3. To start SMIT, type:

```
smit devinst
```

at the prompt, then press Enter. The Install Additional Device Software panel displays. The **INPUT device/directory for software** option is highlighted for selection.
4. Press F4 to display a list of input devices from which you can select. The cursor is already positioned on the input device entry field.
5. Either type the name of the input device in the entry field or select the appropriate device, then press Enter. The Install Additional Device Software panel displays the device you selected in the **INPUT device/directory for software** field. The **SOFTWARE to install** option is highlighted.
6. Press F4 to display a list of the device packages you can install.
7. To display a Find dialog box, type:

```
/
```

in the field where the cursor is positioned.
8. Type the following device package name:

```
devices.scsi.disk.rte
```

then press Enter.

9. Press F7 to select the device package name, then press Enter. The Install Additional Device Software panel displays the completed required fields.
10. Press Enter. The **ARE YOU SURE** list displays.
11. Press Enter. The COMMAND STATUS panel displays. The term RUNNING is highlighted, indicating that the software is being installed and configured.
12. When RUNNING changes to OK, scroll down to the bottom of the panel and locate the Installation Summary. If the installation was successful, SUCCESS appears at the bottom of the panel in the Result column of the Installation Summary.
13. Remove the device driver software media from the media device.
14. Press F10 to exit SMIT.
15. To shut down and restart your system, type:
shutdown -Fr
then press Enter.

If you want to verify the installation, follow the steps provided in "Verifying the Installation" on page 3-5.

Appendix A. Communications Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying documentation.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from authorized dealers. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. The manufacturer cannot accept responsibility for any

failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of option cards supplied by third parties. Consult with your dealer or sales representative for details on your specific hardware.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

VCCI Statement

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

The following is a summary of the VCCI Japanese statement in the box above.

This equipment is in the Class 2 category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Außsteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

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