

IBM 48X/32X/48X/16X Max CD-RW/DVD-ROM  
Combination Drive



# User's Guide



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Combination Drive



# User's Guide

**Note:** Before using this information and the product it supports, read the information under Appendix F, "IBM Statement of Limited Warranty - Z125-4753-07 - 11/2002," on page F-1 and Appendix G, "Notices," on page G-1.

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## Safety: Read first

Before installing this product, read the Safety Information.

مج، يجب قراءة دات السلامة

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 **Safety Information** (安全信息)。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

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## General safety guidelines

Always observe the following precautions to reduce the risk of injury and property damage.

### Service

Do not attempt to service a product yourself unless instructed to do so by the IBM Support Center. Use only an IBM authorized service provider who is approved to repair your particular product.

**Note:** Some parts can be upgraded or replaced by the customer. These parts are referred to as Customer Replaceable Units, or CRUs. IBM expressly identifies CRUs as such, and provides documentation with instructions when it is appropriate for customers to replace those parts. You must closely follow all instructions when performing such replacements. Always make sure that the power is turned off and that the product is unplugged from any power source before you attempt the replacement. If you have any questions or concerns, contact the IBM Support Center.

### Power cords and power adapters

Use only the power cords and power adapters supplied by the product manufacturer.

Never wrap a power cord around the power adapter or other object. Doing so can stress the cord in ways that can cause the cord to fray, crack or crimp. This can present a safety hazard.

Always route power cords so that they will not be walked on, tripped over, or pinched by objects.

Protect the cord and power adapters from liquids. For instance, do not leave your cord or power adapter near sinks, tubs, toilets, or on floors that are cleaned with liquid cleansers. Liquids can cause a short circuit, particularly if the cord or power adapter has been stressed by misuse. Liquids can also cause gradual corrosion of the power cord terminals and/or the connector terminals on the adapter which can eventually result in overheating.

Always connect power cords and signal cables in the correct order and ensure that all power cord connectors are securely and completely plugged into receptacles.

Do not use any power adapter that shows corrosion at the ac input pins and/or shows signs of overheating (such as deformed plastic) at the ac input or anywhere on the power adapter.

Do not use any power cords where the electrical contacts on either end show signs of corrosion or overheating or where the power cord appears to have been damaged in any way.

## Extension cords and related devices

Ensure that extension cords, surge protectors, uninterruptible power supplies, and power strips that you use are rated to handle the electrical requirements of the product. Never overload these devices. If power strips are used, the load should not exceed the power strip input rating. Consult an electrician for more information if you have questions about power loads, power requirements, and input ratings.

## Plugs and outlets

If a receptacle (power outlet) that you intend to use with your computer equipment appears to be damaged or corroded, do not use the outlet until it is replaced by a qualified electrician.

Do not bend or modify the plug. If the plug is damaged, contact the manufacturer to obtain a replacement.

Some products are equipped with a three-pronged plug. This plug fits only into a grounded electrical outlet. This is a safety feature. Do not defeat this safety feature by trying to insert it into a non-grounded outlet. If you cannot insert the plug into the outlet, contact an electrician for an approved outlet adapter or to replace the outlet with one that enables this safety feature. Never overload an electrical outlet. The overall system load should not exceed 80 percent of the branch circuit rating. Consult an electrician for more information if you have questions about power loads and branch circuit ratings.

Be sure that the power outlet you are using is properly wired, easily accessible, and located close to the equipment. Do not fully extend power cords in a way that will stress the cords.

Connect and disconnect the equipment from the electrical outlet carefully

## Batteries

All IBM personal computers contain a non-rechargeable coin cell battery to provide power to the system clock. In addition many mobile products such as Thinkpad notebook PCs utilize a rechargeable battery pack to provide system power when in portable mode. Batteries supplied by IBM for use with your product have been tested for compatibility and should only be replaced with IBM approved parts.

Never attempt to open or service any battery. Do not crush, puncture, or incinerate batteries or short circuit the metal contacts. Do not expose the battery to water or other liquids. Only recharge the battery pack strictly according to instructions included in the product documentation.

Battery abuse or mishandling can cause the battery to overheat, which can cause gasses or flame to “vent” from the battery pack or coin cell. If your battery is damaged, or if you notice any discharge from your battery or the buildup of foreign materials on the battery leads, stop using the battery and obtain a replacement from the battery manufacturer.

Batteries can degrade when they are left unused for long periods of time. For some rechargeable batteries (particularly Lithium Ion batteries), leaving a battery unused in a discharged state could increase the risk of a battery short circuit, which could

shorten the life of the battery and can also pose a safety hazard. Do not let rechargeable Lithium-Ion batteries completely discharge or store these batteries in a discharged state.

## Heat and product ventilation

Computers generate heat when turned on and when batteries are charging. Notebook PCs can generate a significant amount of heat due to their compact size. Always follow these basic precautions:

- Do not leave the base of your computer in contact with your lap or any part of your body for an extended period when the computer is functioning or when the battery is charging. Your computer produces some heat during normal operation. Extended contact with the body could cause discomfort or, potentially, a skin burn.
- Do not operate your computer or charge the battery near flammable materials or in explosive environments.
- Ventilation slots, fans and/or heat sinks are provided with the product for safety, comfort, and reliable operation. These features might inadvertently become blocked by placing the product on a bed, sofa, carpet, or other flexible surface. Never block, cover or disable these features.

## CD and DVD drive safety

CD and DVD drives spin discs at a high speed. If a CD or DVD is cracked or otherwise physically damaged, it is possible for the disc to break apart or even shatter when the CD drive is in use. To protect against possible injury due to this situation, and to reduce the risk of damage to your machine, do the following:

- Always store CD/DVD discs in their original packaging
- Always store CD/DVD discs out of direct sunlight and away from direct heat sources
- Remove CD/DVD discs from the computer when not in use
- Do not bend or flex CD/DVD discs, or force them into the computer or their packaging
- Check CD/DVD discs for cracks before each use. Do not use cracked or damaged discs

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## About this book

This manual contains instructions for installing and using the IBM<sup>®</sup> 48X/32X/48X/16X Max CD-RW/DVD-ROM Combination Drive. The manual is divided into the following parts:

### Part 1: Installation and user's guide

This guide contains the product description and installation instructions in the following languages:

- Brazilian Portuguese
- Czech
- English
- French
- German
- Italian
- Japanese
- Simplified Chinese
- Slovak
- Spanish
- Traditional Chinese
- Turkish

### Part 2: Appendixes

This section contains device-driver, problem-solving, warranty and support information, and notice information.

**Note:** The illustrations in this manual might be slightly different from your hardware.

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## Registering your option

Thank you for purchasing this IBM product. Please take a few moments to register your product and provide us with information that will help IBM to better serve you in the future. Your feedback is valuable to us in developing products and services that are important to you, as well as in developing better ways to communicate with you. Register your product on the IBM Web site at

<http://www.ibm.com/pc/register>

IBM will send you information and updates on your registered product unless you indicate on the Web site questionnaire that you do not want to receive further information.



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## Installation and user's guide

This section contains the product description, hardware and software installation instructions, and operating information for the IBM 48X/32X/48X/16X Max CD-RW/DVD-ROM Combination Drive.

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### Product description

This product contains a unique multifunction drive that can read and write CD-R and CD-RW discs, and can also read CD-ROM, DVD-ROM, DVD-RAM, DVD-RW, and DVD-R discs. This kit also includes a CD containing an Online User's Guide, DVD playback software and CD recording software for Microsoft® Windows® 2000 Professional, Microsoft Windows Millennium Edition (Me), Microsoft Windows XP Home, and Microsoft Windows XP Professional.

Your option package includes the following:

- One IBM 48X/32X/48X/16X Max CD-RW/DVD-ROM Combination Drive
- One package of four mounting screws (M3 x 5-mm, slotted)
- One 18-inch IDE cable
- One *IBM CD-RW/DVD-ROM Combination Drive Software and User's Guide CD*
- One *Quick Installation Guide*

Contact your place of purchase if an item is missing or damaged. Be sure to retain your proof of purchase; it might be required to receive warranty service. See Appendix F, "IBM Statement of Limited Warranty - Z125-4753-07 - 11/2002," on page F-1 for technical support information.

Your drive can read many DVD and CD formats, including DVD Video, Video CD, and audio CD formats. It can also write most CD-RW rewritable and CD-R recordable formats, including high speed CD-R media. You must install the included DVD playback software to play DVD Videos, and you must install the included CD recording software to write CD-R and CD-RW discs. The drive also reads multi-session, extended architecture (CD-XA) discs, and Kodak Photo CD. This drive delivers data at up to 48 times the standard CD-ROM drive speed (48X) for CD-ROM and CD-R media. This drive delivers data at up to 16 times the standard DVD-ROM drive speed (16X) for DVD media. This drive can read most DVD-RAM, DVD-RW, and DVD-R media types, and is compliant with the DVD-Multi Player compatibility specification. This drive is designed for installation in a personal computer that uses integrated drive electronics (IDE) or enhanced IDE (EIDE) architecture.

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### Software description

The *User's Guide and Software CD* contains the following software:

- **IBM RecordNow:** With RecordNow, you can record your own CDs in a variety of ways. You can use the CD copier function to make backup copies of your CDs, or you can make data CDs from files on your hard disk drive. You can also create audio CDs from MP3 files or from other audio CDs. RecordNow also enables you to save disc images to your hard drive, and burn those images to a CD later. With RecordNow you can also create bootable CDs.

- **IBM Drive Letter Access (DLA):** You can use DLA to access your CD-RW drive using a drive letter. You can copy files to recordable media using the Windows command line or by using the drag-and-drop method.
- **UDF Reader:** You can use the UDF Reader to read CDs you wrote with DLA in other computers.

---

## Installation requirements

Be sure that your computer meets the following system requirements before installing the drive:

- Minimum microprocessor:
  - Intel® Pentium® 133 MHz
  - Intel Pentium II 233 MHz for DVD playback
- Minimum RAM: 32 MB
- Windows 2000, Windows Me, Windows XP Home, or Windows XP Professional operating system
- An available half high drive bay
- An available IDE connection
- 40 MB available hard drive space
- 700 MB available hard drive space for CD copy function
- Audio solution supporting 44.1 or 48 kHz sampling rate
- Optional stereo speakers
- 2X AGP video with overlay support for DVD playback

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## Before you begin

Before you install the CD-RW/DVD-ROM Combination Drive, read the information in this section on handling precautions and on using the drive controls and connectors.

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## Handling precautions

Use the following handling precautions to protect your drive:

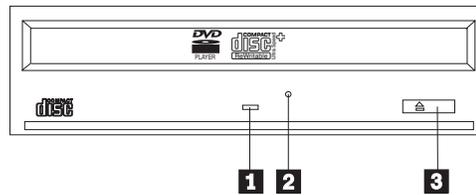
- Keep the CD-RW/DVD-ROM Combination Drive in the antistatic bag until you are ready to install the drive. Limit your movement when installing; movement can cause static electricity buildup.
- Handle the drive with care. Dropping or jarring the drive can damage the components inside the drive housing.
- Do not force insertion of the IDE or power cables. Doing so might damage the connector or the drive.

---

## Drive controls and connectors

The following diagrams show the location and functions of the drive controls and connectors.

Front view of the drive:



**1 Busy indicator**

This light comes on when the drive reads from or writes to a disc.

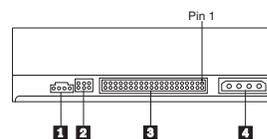
**2 Emergency eject hole**

This hole provides access to the eject mechanism to remove a disc from the drive.

**3 Open/Close button**

This button opens and closes the disc drawer when you push it.

Rear view of the drive



**1 Audio-out connector**

This connector transmits the analog audio signals to an audio adapter.

**2 Configuration pins**

These pins are used to set the drive configuration.

**3 IDE connector**

This connects the CD-RW/DVD-ROM Combination Drive to the IDE cable.

**4 Power connector**

This connects the CD-RW/DVD-ROM Combination Drive to the power cable.

---

## Installing the drive

Follow these steps to install the CD-RW/DVD-ROM Combination Drive:

### Step 1. Opening the computer

1. Turn off the computer and all attached devices.
2. Unplug all power cords from the computer and all attached devices.
3. Remove the cover from the computer. Refer to your computer documentation for instructions on removing the computer cover.

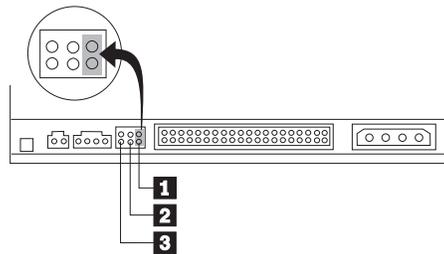
## Step 2. Unpacking the drive

1. Before opening the antistatic bag that the drive is packed in, touch the bag to an unpainted metal surface for at least two seconds. This drains the static electricity from the package and your body.
2. Remove the drive from the bag.

If you must put the drive down, place the antistatic bag on a flat, padded surface, such as a magazine, and place the drive on the antistatic bag.

## Step 3. Setting the configuration jumpers

You can configure your drive as master **1**, slave **2**, or cable-select **3**, by placing the jumper over the configuration pins as shown.



Use the following guidelines to determine the correct configuration for your CD-RW/DVD-ROM Combination Drive.

- Configure the CD-RW/DVD-ROM Combination Drive as a master if it will be the only device that is connected to the IDE cable. This is the preset configuration.
- Configure the CD-RW/DVD-ROM Combination Drive as a slave if it will be the second device on an IDE cable. Be sure to configure the other device as a master. In some cases, a hard disk drive might require a “master with slave present” jumper setting when another device on the same cable is configured as a slave. For more information on setting configuration jumpers on other devices, refer to the documentation that comes with your computer.
- Some non-IBM computers use special ATA cables with two wires reversed in the device connectors so that the drives can be configured by the cable instead of by jumper position. Use the cable-select position only for computers that are equipped with these special cables. See the documentation that comes with your computer to determine if your ATA adapter requires that you place the jumpers in the cable-select position.

If you place the jumper in the cable-select position, the IDE cable automatically assigns the master and slave settings based on the position of the drive on the cable. You must use the cable-select setting for this cabling system whether the CD-RW/DVD-ROM Combination Drive is the only device or the second device connected to the cable. The drive closest to the IDE controller is automatically the master drive. Any other devices on the IDE cable must also be set to cable-select.

## Step 4. Selecting an IDE connector

Newer computers typically have two IDE connectors. If your computer has two IDE connectors, use the secondary IDE connector to connect the CD-RW/DVD-ROM Combination Drive. Typically the secondary IDE connector is adjacent to the primary IDE connector that connects to your hard disk drive. The IDE connector you select and the cable position you select will determine which configuration jumper setting you will use for the drive.

- If you have two IDE connectors, connect the CD-RW/DVD-ROM Combination Drive to the secondary IDE connector with the IDE cable that comes with your drive. If the CD-RW/DVD-ROM Combination Drive is the only device on the secondary IDE connector, you will use the master configuration setting. If there is another device on the secondary connector in addition to the CD-RW/DVD-ROM Combination Drive, you will use the slave configuration setting.
- If you must attach the CD-RW/DVD-ROM Combination Drive to the same IDE connector as a faster device, such as a hard disk drive, use the slave setting for the CD-RW/DVD-ROM Combination Drive and the master setting for the faster device. In some instances, the hard disk drive might require a master-with-slave-present setting when another device on the same cable is configured as a slave. For further information on setting configuration jumpers on other devices, refer to the documentation that came with your computer or with the device in question.
- Some non-IBM computers support the cable-select setting, where the position of the device on the cable determines whether a device is master or slave. See the documentation that comes with your computer to determine if your system supports this setting.

## Step 5. Mounting the drive in the bay

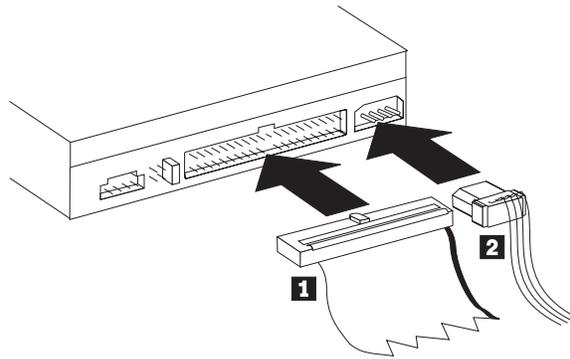
**Attention:** Be sure to use the mounting screws in the option package when you are driving screws directly into the drive. Using screws that are too long might damage the drive.

You can mount the CD-RW/DVD-ROM Combination Drive horizontally or vertically in the computer. If you mount the drive vertically, you must secure any discs that you place into the drive before the drive tray is closed, or the CD-RW/DVD-ROM Combination Drive will not be able to read the disc properly.

1. Slide the drive into the bay. Your computer might have specific required procedures for installing storage devices. For more information on storage devices, refer to the documentation that comes with your computer.
2. Align the drive-bay screw holes with the threaded holes in the drive housing or mounting bracket.
3. Thread the screws in loosely to check their position. Two screws are usually used on each side. Verify that the alignment is correct; then tighten the screws to secure the drive. Do not over tighten.

## Step 6. Attaching the cables to the drive

The following diagram shows where to connect the cables to the drive.



1. Attach a 40-pin IDE-cable connector **1** to the IDE connector on the drive. Align the cable so that the color-coded edge is closest to the power cable connector **2**. Use the 80-conductor high speed IDE cable that is provided with this option **2**. Use the 80-conductor high speed IDE cable that is provided with this option if there is no cable attached to the IDE port, if there is only one device connector on the computer IDE cable, or if the existing cable in your computer is a low-speed 40-conductor type. The IDE cable can have up to three connectors. For the best signal quality when you are connecting only one device to the IDE cable, connect one end of the cable to the IDE connector, and connect the other end of the cable to the device. Do not use the middle connector.

If you are connecting two devices to the IDE cable, connect one end of the cable to the IDE connector, and connect the master and subordinate devices to the remaining connectors on the other end. Many computers have two cables for attaching up to four ATA devices. For best performance, attach fast devices (such as hard disk drives) to the cable that is connected to the primary IDE connector, and connect the CD-RW/DVD-ROM Combination Drive or other slower devices (such as CD-ROM drives, tape drives, and removable media) to the cable that is connected to the secondary IDE connector.

2. Attach a four-pin power cable **2** to the power connector on the CD-RW/DVD-ROM Combination Drive.

Be sure that the cables will not be pinched or crowded by the computer cover and that all other cable and power connections are secure.

## Step 7. Completing the hardware installation

1. Be sure that the CD-RW/DVD-ROM Combination Drive is securely mounted and that the connectors are firmly attached.
2. Be sure that the cables do not interfere with the computer cover and that they do not block the power-supply fan blades or airflow paths.
3. Reinstall the computer cover.
4. Reconnect all external devices.
5. Plug all power cords into the electrical outlets.

## Step 8. Updating your computer configuration

After you have completed the hardware installation, restart your computer. Usually, the configuration-setup information screen is displayed when you turn on your computer. If you do not see this screen, check your computer documentation for information about accessing the configuration or setup utility program.

To see the configuration information for most IBM computers, press F1 during startup when the IBM graphic is displayed in the upper-right corner of the screen. When you have finished reviewing the information, save the changes and exit.

## Step 9. Installing the CD-RW and DVD software

There are three software applications that you must install in order to use the CD-RW and DVD Video functions of your drive. All of these are included on the *IBM CD-RW/DVD-ROM Software and User's Guide CD*.

The *IBM CD-RW/DVD-ROM Software and User's Guide CD* contains the following software applications:

- Intervideo WinDVD, to support DVD video playback
- IBM RecordNow, to support traditional CD authoring
- IBM Drive Letter Access (DLA), to support drag-and-drop CD recording
- UDF Reader Software for reading DLA discs in other computers

Windows XP has built-in drag-and-drop support. This will work with your drive with no additional software. If you install DLA, the operating system built-in support is replaced by the DLA function, but can be enabled from the properties menu on the drive letter.

To install these applications, perform the following steps:

1. Insert the *IBM CD-RW/DVD-ROM Software and User's Guide CD* into your CD-RW/DVD-ROM Combination Drive. A browser automatically starts.
2. In the browser, click **RecordNow**, click **Drive Letter Access**, and then click **WinDVD**.
3. Restart your computer.
4. If the browser does not start, open a command window and enter the following for each application, where e is the drive letter of your CD-RW/DVD Combination Drive:

```
e:\launch.bat
```

## Step 10. Setting up your computer for DVD video playback

This section provides instructions on enabling DMA settings so you can play DVD movies with your CD-RW/DVD-ROM Combination drive.

1. Right click on **My Computer** on the desktop or in the Start Menu.
2. Select Properties from the pop-up menu.
3. Check your operating system, and then follow the appropriate instructions for enabling DMA which are included in Appendix C, "Customizing the device-driver configuration settings," on page C-1.
  - If your operating system is Windows Me, follow the instructions under "Enabling DMA for Windows Me" on page C-1.
  - If your operating system is Windows 2000, follow the instructions under "Enabling DMA for Windows 2000" on page C-1.
  - If your operating system is Windows XP, follow the instructions under "Enabling DMA for Windows XP" on page C-2.

## Step 11. Setting up the System for CD Playback

In order to play audio CDs on your drive, you must enable digital playback. Digital playback uses the IDE data cable to send audio data from the drive to your computer instead of using an analog audio cable. This usually results in better

playback quality, at the cost of your computer working a little harder to convert the digital data to analog audio. There are two parts to setting up to listen to CD audio: configuring the drive and configuring the playback application.

### **Configuring the drive for digital playback**

If you have Windows XP, your drive should be automatically configured for digital playback.

If you have Windows 2000 or Windows Me, you will need to configure your system to use digital playback. Please refer to the instructions in Appendix D for step-by-step procedure on how to enable digital extraction.

### **Configuring the playback application for digital playback**

Your CD playback application must also be configured for digital playback for CD Audio to be heard on your system. If you want to use Windows Media Player as your playback application, follow the instructions in Appendix D to enable this feature in Windows Media Player. If you have a third-party CD Player application, refer to that applications' documentation for details.

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## **Using CD-R and CD-RW discs**

The CD-RW/DVD-ROM Combination Drive can also write to CD-R and CD-RW discs. CD-RW discs can be erased and reused many times; CD-R discs can be written to only once.

RecordNow is used to copy CDs, create new data CDs, and produce new audio CDs that can be read by standard CD-RW drives and CD players. RecordNow can also be used to create CD images in ISO9660 format and burn previously saved images to CD

DLA is used to make file archives and data CDs that can be altered many times. It also provides the convenience of direct drive-letter access. When used with CD-RW media, DLA is very much like using a floppy diskette to store files. If DLA is used with CD-R media, you can write and rewrite until the CD is full, and then the data becomes fixed. DLA-created media can be read only with newer CD-ROM drives and DVD-ROM drives that support multi-read mode.

A UDF reader might be required when using other computers to read unclosed DLA media. Install the provided UDF reader on other systems that need to read the disc, not on yours.

CD-R discs are playable on audio CD players. CD-RW discs are not playable on most audio CD players.

CD-RW media comes in four different types: Multi Speed, High Speed, Ultra Speed, and Ultra Speed+. Multi Speed media is usually designated 2X or 2X-4X. High Speed Media is often listed as 4X-10X or 4X-12X and bears the High Speed logo. Ultra Speed Media is usually listed as 16X-24X and bears the Ultra Speed logo. Ultra Speed+ Media is usually listed as 16X-32X and bears the Ultra Speed+ logo. Your CD-RW can write to all four types of CD-RW media. If you use High Speed, Ultra Speed, or Ultra Speed+ CD-RW media, computers with lower speed CD-RW drives cannot add data to this media. The following table shows the compatibility of different media in different drives, along with the logos that are on the drives and the media.

	Drive type			
				
<b>Media type:</b>  2X - 4X media	Read Write	Read Write	Read Write	Read Write
 4X - 12X media	Read	Read Write	Read Write	Read Write
 16X - 24X media	Read	Read	Read Write	Read Write
 16X - 32X media	Read	Read	Read	Read Write

## Formatting CDs

To drag and drop files using DLA, you must first format the blank CD-R or CD-RW disc.

To format a CD-R or CD-RW disc with the DLA program:

1. Insert a blank disc.
2. Double-click **My Computer**.
3. Right-click on the **CD-RW** icon.
4. Click **Format**.
5. Type the title of your disc in the Volume Label window. The disc name can be up to 11 characters.
6. If you want to use EasyWrite for background format, select the **EasyWrite** check box.
7. Click **Start** to start disc formatting, and click **OK** when formatting is completed.
8. Click **OK** when the format finished box appears. You can now write information to the disc.

**Note:** Normal formatting will take from 4 to 45 minutes, depending on the speed of the media. EasyWrite formatting will take under 2 minutes, but will require an additional minute when the CD is ejected or the computer turned off.

**Note:** You can do other tasks on your computer while the disc is being formatted.

---

## Using the RecordNow software

RecordNow allows you to record DVDs, Audio CDs, Data CDs, and copy existing discs. It also allows you to save images to your hard disk and burn from images that you created earlier. Detailed information about using RecordNow is included in the RecordNow help. You can access RecordNow help by pressing F1 inside the RecordNow menu.

To start RecordNow in Windows Me, or Windows 2000, select **Start** → **Programs** → **IBM RecordNow**.

### RecordNow Projects

Once RecordNow is started, you have the choice of selecting 3 tabs with different functions.

The Audio Project tab allows you to create Audio CDs, MP3 Jukebox disks, or listen to an audio CD or make a CD label.

The Data Project tab allows you to make a data disc, make an exact copy, erase a rewritable disc, or make a CD or DVD label.

The Backup Project menu allows you to archive your files, make an exact copy, save an image of a CD or DVD, burn a saved image to disk, or make a disk label.

For all appendable CD and DVD projects, RecordNow will start from any data that is on the CD or DVD that is in the drive when the project is selected.

### Making a bootable CD or DVD

To make a bootable CD or DVD, begin a data project and press the bootable CD button in the upper right hand corner of the project window. You will be prompted to select a boot image from your hard disc or to make a boot image from a floppy disc.

### About CD and DVD images

RecordNow can save and create CD images of ISO and GI types. ISO images can only be used to save data CDs that have only one data session. You must use the GI format to save Audio CDs, DVDs, multi-session CDs, and hybrid type CDs.

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## Viewing a DVD movie

After you have installed the CD-RW/DVD-ROM Combination Drive, configured DMA, and installed DVD-viewing software, you can view a DVD movie.

WinDVD will start automatically when you insert a DVD. If you want to start WinDVD manually, follow these instructions:

1. Click **Start**, click **Programs**, and click **Intervideo WinDVD**.
2. Click **Intervideo WinDVD**.

The DVD movie player window opens. For more information on how to use the DVD movie player, refer to the WinDVD online help by pressing F1.

### DVD region codes

Region codes help protect the contents of a DVD from unauthorized duplication. The world is divided into six regions, and the MPEG-2 decoding software contains a region-code setting that corresponds to the region in which the drive will be

used. Typically, each DVD is manufactured with a region-code setting so that it can be viewed only on a DVD drive that has that same region-code setting. The region-code setting of the DVD is indicated by a region-code symbol on the back of the packaging. The following table lists the six region codes and their corresponding region-code symbol.

Region code	Region
1	U.S., Canada
2	Europe, Middle East, South Africa, Japan
3	Southeast Asia, Taiwan, Korea
4	Latin America, Australia, New Zealand
5	Former Soviet Union, the rest of Africa, India
6	People's Republic of China

You will be prompted for the initial region selection. If you insert a DVD with a different region code than the initial region-code, WinDVD will ask if you want to change the region code setting. You can change the region code from your initial setting up to four times after setting the initial region code. *After the region code has been changed from its initial setting four times, it is fixed and can no longer be changed.* To change the region code, you must have a DVD with the new region-code settings

To display the region-code status, follow these instructions:

1. In the WinDVD window, click **DVD Options**.
2. Click **DVD Region**.

---

## Care and maintenance

This section includes information on taking care of your CD-RW/DVD-ROM Combination Drive and the CDs and DVDs that you use with the drive.

### CD safety information

Carefully handle and clean discs, especially writable media types such as CD-R and CD-RW discs, so that they remain readable. You can prolong the life of your discs by using the following precautions:

- Always store discs in their original packaging
- Always store discs out of direct sunlight
- Always store discs away from direct heat sources
- Remove discs from the computer when not in use
- Check disc for cracks BEFORE each use
- **DO NOT** force discs into the computer/packaging
- **DO NOT** bend or flex discs

### Caring for a CD or DVD

Digital discs are high-density media that must be handled with care and kept clean to ensure that they remain readable. The following precautions help to prolong the life of your discs.

**Attention:** Wiping a disc using a circular motion can damage the disc and cause data loss.

- Handle the disc by the edges or the center hole. Do not touch the surface of the disc.

- To remove dust or fingerprints, wipe the disc from the center to the edge with a soft, lint-free cloth.
- Do not write on the surface.
- Do not place the disc in direct sunlight.
- Do not use commercial cleaners to clean the disc.
- Do not bend the disc.

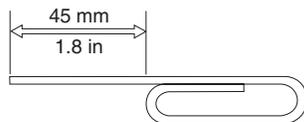
## Caring for the CD-RW / DVD-ROM Combination Drive

To protect your CD-RW/DVD-ROM Combination Drive during operation, observe the following precautions:

- Do not move the drive when it is in use. Doing so might cause data error or might damage the drive or discs.
- Avoid exposing the drive to the following conditions:
  - High humidity
  - High temperature
  - Excessive dust
  - Mechanical vibration
  - Sudden shock or dropping
  - Placement on an inclined surface
  - Direct sunlight
  - Sudden temperature changes
- Do not insert foreign objects into the drive.
- Do not stack objects on the drive.
- Do not remove the drive cover or attempt to service the drive.
- Remove any discs from the disc drawer and make sure that the drawer is closed before moving the drive unit.
- Keep the original packing materials. If you need to ship the drive unit to a different location, use the original packing materials to ensure that the drive is transported safely.

## Manually ejecting a disc

In case of a power failure, and the drive will not allow the disc to eject, turn off the computer, and straighten a large paper clip to form a tool. The straightened end must extend at least 45 mm (1.8 in.). Insert the extended end into the emergency eject hole on the front of the drive (see “Front view of the drive” on page 1-3). Push the paper clip until the tray opens. Gently pull out the tray until you can remove the disc.



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## Appendix A. Product specifications

This appendix includes the following information:

- Physical specifications
- Power requirements
- Environmental requirements
- Read speeds
- Write speeds

### Physical specifications

The physical specifications<sup>1</sup> of the 48X/32X/48X/16 Max CD-RW/DVD-ROM Combination Drive are listed in the following table.

Physical specification	
Height	41.3 mm (1.62 in.)
Width	146 mm (5.75 in.)
Length	190 mm (7.48 in.)
Weight	900 g (1.98 lb.)

### Power requirements

The following table lists the power specifications by voltage level for the 48X/32X/48X/16 Max CD-RW/DVD-ROM Combination Drive. The power specifications are measured at the drive power connector and are nominal values.

Power specifications	Voltage	Avg	Max
At voltage	5V dc	700 mA	1300 mA
At voltage	12V dc	650 mA	1300 mA

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1. Product-description data represents IBM's design objectives and is provided for comparative purposes; actual results might vary, based on a variety of factors. This product data does not constitute a warranty. Data is subject to change without notice.

## Environmental requirements

Specification	Operational	Nonoperational
Temperature (noncondensing)	+5° C to +45° C (+41° F to +113° F)	-20° C to +60° C (-4° F to 140° F)
Relative humidity (noncondensing)	10% to 80%	5% to 90%

## Read speeds

Media	Sustained data transfer rates
DVD-ROM	(6.5x-16x CAV, 4.7 GB DVD-ROM read): 8.7 to 22.1 MB/s
DVD-ROM	(3.3x-8x CAV, 8.5 GB Dual-layer read): 4.4 to 11.0 MB/s
DVD-R	(2.5x-6x CAV, 4.7 GB DVD-R read): 3.3 to 8.1 MB/s
DVD+R	(2.5x-6x CAV, 4.7 GB DVD+R read): 3.3 to 8.1 MB/s
DVD-R	(2.5x-5x CAV, 3.95 GB DVD-R read): 3.3 to 6.7 MB/s
DVD-RAM	(2x CLV, 4.7 GB DVD-RAM read): 2.7 MB/s
DVD-RW	(2.5x-6x CAV, 4.7 GB DVD-RW read): 3.3 to 8.1 MB/s
DVD+RW	(2.5x-6x CAV, 4.7 GB DVD+RW read): 3.3 to 8.1 MB/s
CD-ROM	(20x-48x CAV, CD-ROM read): 3.0 to 7.2 MB/s
CD-R	(20x-48x CAV, CD-R read): 3.0 to 7.2 MB/s
CD-RW	(18x-40x CAV, CD-RW read): 2.7 to 6.0 MB/s

### Max Burst data transfer rate:

- Ultra DMA Mode 2: 33 MB/s

### Average access times:

- DVD-ROM including latency, single layer: 120 ms
- CD-ROM including latency: 110 ms
- RW including latency: 110 ms
- 2 MB data buffer

## Write speeds

Media	Write speeds
CD-R (48X)	3.0 to 7.2 MB/s CAV
CD-RW	<ul style="list-style-type: none"> <li>• Multi-speed (4X)</li> <li>• High-speed (10X)</li> <li>• Ultra-speed (24X Max)</li> <li>• Ultra Speed+ (32X Max)</li> </ul>

**Note:** You can mount the drive vertically or horizontally.



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## Appendix B. Problem solving

Computer problems can be caused by hardware, software, or user error. Using the information in this section, you might be able to solve problems yourself or gather helpful information that you can pass on to a service technician. You might also need to refer to your computer, operating-system, or sound-adaptor documentation.

Review the following list for any problem description that might fit your situation.

- **Your computer or CD-RW/DVD-ROM Combination Drive does not operate correctly, or the busy indicator light does not come on.**

Take the following actions:

1. Check that the disc is loaded with the label side up.
2. Check that all devices are properly connected to the computer and to the electrical outlet.
3. Turn off the computer, unplug the cables for your computer and all attached devices, and remove the computer cover.
4. Check that all power and IDE cables are securely attached. Disconnect the IDE cable and check for bent or misaligned pins. If you do not find any problems, reconnect the interface cable. Replace the computer cover, and reattach all cables and power cords. Turn on the computer, restart the operating system, and attempt to open the loading tray by pressing the Open/Close button. If the tray fails to open and the Busy indicator does not light, turn off the computer and try using another 4-pin dc power cable.
5. Check that the color-coded edge on the IDE cable aligns with pin 1 on the IDE connector and is closest to the power cable on the CD-RW/DVD-ROM Combination Drive. See "Step 6. Attaching the cables to the drive" on page 1-6.
6. Check the CD-RW/DVD-ROM Combination Drive and any other device on the IDE cable for the proper settings.
7. If the middle connector on the IDE cable is attached to the IDE connector on the system board, remove the connector and reattach the cable. If there is only one device on the IDE connector, attach the connector at one end of the cable to the IDE connector and the connector at the other end to the device, leaving the middle connector (if there is one) open.

If there are two devices on the IDE connector, attach the connector at one end of the cable to the IDE connector. If there is a hard disk drive, attach it to the connector at the other end of the cable, and attach the CD-RW/DVD-ROM Combination Drive to the middle connector.

- **You cannot access the CD-RW/DVD-ROM Combination Drive, or the DVD-ROM (CD-ROM) icon is not displayed.**

When the CD-RW/DVD-ROM Combination Drive is properly installed, a DVD-ROM or CD-ROM icon is displayed in the My Computer window. Double-click **My Computer**. If a CD-ROM icon is not displayed in the window that opens, verify that the drive has been properly installed. Verify that the configuration jumper is set properly. Restart your computer. If a drive icon is still not displayed, continue with the following steps:

1. Click **Start**, click **Settings**, and then click **Control Panel**.
2. Click **System**.

3. Click the **Device Manager** tab.
4. Double-click **View Devices by Type**.
5. Select **Hard Disk Controllers** from the list displayed in the Device Manager window. Verify that there are no conflicts with the controller. The device status indicates whether the controller is working properly.
6. Select **CD-ROM** from the list that is displayed in the Device Manager window. Verify that a CD-ROM device is present in the list and that no conflicts exist. The device status indicates whether the device is working properly.
7. Click **OK**.
8. Close all windows and restart the computer.

If the device icon is still not displayed, check the cable connections and device-jumper settings, and resolve any conflicts that might exist.

- **The CD-RW/DVD-ROM Combination Drive is not recognized by the operating system, or the drive performs erratically.**

Some computers have Compatible and High Performance modes for mass storage devices. Normally, the CD-RW/DVD-ROM Combination Drive functions better under the High Performance mode. However, if your drive is not functioning properly in that mode, you might need to use the Compatible mode. Use the following procedure to check the configuration-setup information for your computer.

1. Access your system configuration utility program. Pressing F1 at system startup does this on most IBM computers.
2. Select **Devices**.
3. Scroll down to the **Mass Storage Devices** section.

Refer to the documentation that comes with your computer for additional details on selecting IDE performance modes.

- **The disc cannot be read.**

Take the following actions:

1. The disc might be dirty; clean it as described in "Caring for a CD or DVD" on page 1-11.
2. The disc might be defective; try another disc.
3. The disc is not ISO-9660, High Sierra Group (HSG), or Universal Disc Format (UDF) compatible. Check with your place of purchase.

- **There is no sound from the disc.**

1. Check that you are not using a data CD.
2. Adjust the audio-adaptor volume control. See the documentation that comes with your audio adapter and audio-CD player program.
3. Enable digital audio as in Appendix D, "Enabling Digital Audio Extraction," on page D-1.

- **Unable to Create Overlay Window message appears when you use WinDVD with Windows 2000.**

1. Your video device driver needs an update to enable overlay support. Contact the manufacturer of your video adapter or your computer for updates. Some device drivers are provided on the *IBM CD-RW/DVD-ROM Software and User's Guide CD*.
2. The resolution of your screen might be too high. Try setting the resolution to 800 x 600 x 16 bpp at 60 Hz.

- **DVD movies do not start automatically when inserted into the CD-RW/DVD-ROM Combination Drive.**

1. Autoplay is turned off. Follow these instructions to turn on Autoplay:
    - a. Click **Start**, then click **Control Panel**, and then click **Device Manager**.
    - b. Check **Auto Insert Notification**.
  2. DVDs that contain both programs and DVD Video content will autoplay the program content. To view the video content, start WinDVD manually. For more information on starting WinDVD manually, see "Viewing a DVD movie" on page 1-10.
- **Video appears to be choppy or is dropping frames.**
    1. Ensure that DMA is enabled on for your computer hard disk drive controller.
    2. The resolution of your screen might be too high. Try setting the resolution to 800 x 600 x 16 bpp at 60 Hz.
    3. If your computer microprocessor has less power than a Pentium II 450 microprocessor, some jerkiness is normal on certain DVDs.
  - **Cannot read CD media (data or audio) on Windows 2000 system without restarting the system.**
    1. IBM Rapid Access II Keyboard device driver might be interfering with the operation of the CD drive.
      - a. Remove the Rapid Access II Keyboard device driver through Add/Remove programs in the Control Panel.
      - b. If you have a Rapid Access II Keyboard and want to restore its function, you will need to go to the IBM Support Web site to download the latest device drivers (Version 1007 or later).



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## Appendix C. Customizing the device-driver configuration settings

Windows Me has two device-driver configuration parameters: Auto Insert Notify and DMA.

The Auto Insert Notify parameter enables the computer to start playing or accessing the disc automatically after being inserted in the drive.

The DMA parameter improves computer performance by having the computer DMA controller handle data transfers from the CD to memory, freeing the computer microprocessor to perform more important tasks. For example, activating DMA might make movies and games run more smoothly because the microprocessor will be allocating more processing time to video.

---

### Enabling DMA for Windows Me

To change the DMA parameter settings from the Windows Me desktop, do the following:

1. Click **Start --> Settings --> Control Panel**.
2. Click on **view all control panel options**.
3. Double-click **System**.
4. Click the **Device Manager** tab.
5. Double-click **CD-ROM**.
6. Click on the drive that you want to modify.
7. Click the **Settings** tab.
8. Click to select the **DMA** check box.
9. Click **OK**.

---

### Enabling DMA for Windows 2000

To change the DMA parameter setting for Windows 2000, do the following:

1. Click **Start --> Settings --> Control Panel**.
2. Double-click **System**.
3. Click the **Hardware** tab.
4. Click **Device Manager**.
5. Click the **IDE ATA/ATAPI** controller to open up the tree.
6. Double-click the device that corresponds to your CD-ROM port. It is either **Primary IDE** or **Secondary IDE**.
7. Click the **Advanced Settings** tab.
8. Click the **Transfer Mode** menu and select **DMA if available**.
9. Click **OK**.
10. Click **Close** to close the System Properties window. A message is displayed, informing you that the system settings have changed.
11. Click **OK** to restart the computer.

---

## Enabling DMA for Windows XP

To change the DMA parameter setting from the Windows XP desktop, do the following:

1. Click **Start --> Control Panel**.
2. Click **Switch to classic view**.
3. Double-click **System**.
4. Click the **Hardware** tab.
5. Click the **Device Manager** button.
6. Click on the **IDE ATA/ATAPI** controller to expand the tree.
7. Double-click on the controller that corresponds to where your CD-RW is located (**Primary IDE** or **Secondary IDE**).
8. Click on the **Advanced Settings** tab.
9. Select the appropriate **Transfer Mode** pull-down that corresponds to the CD-RW location, (**Device 0** for Master, **Device 1** for Slave).
10. Select **DMA** if it is available.
11. Click **OK**.

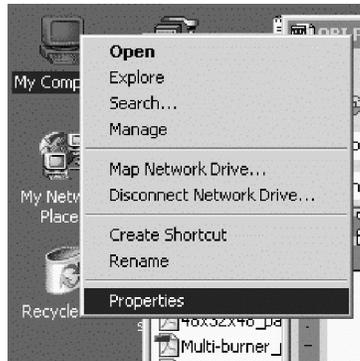
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## Appendix D. Enabling Digital Audio Extraction

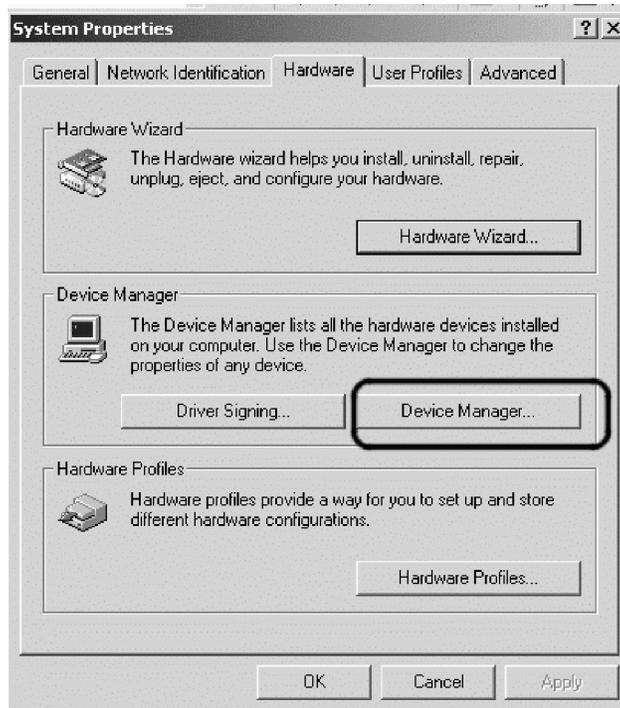
Your system must be properly configured to play back digital audio from this drive. There are two settings that must be configured. One setting is in the device properties, and a second setting is in Windows Media Player.

To set the device properties, use the following procedure:

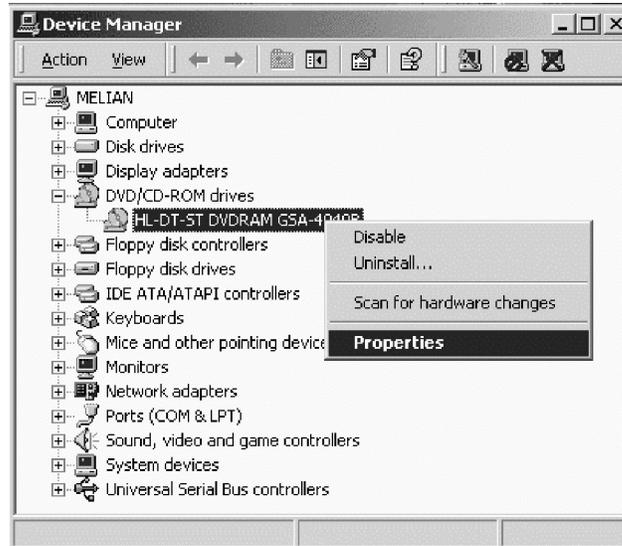
1. Right click on **My Computer**, and select Properties.



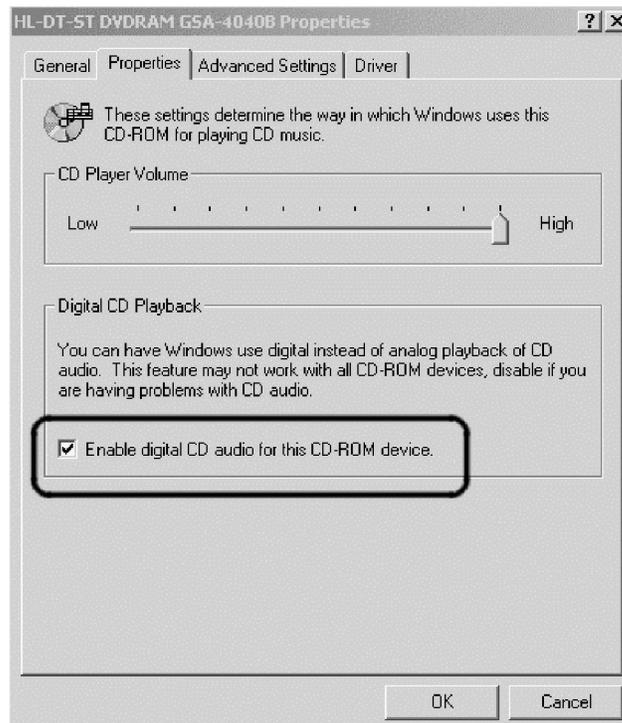
2. Select Device Manager from the Hardware Tab. In Windows Me the Hardware tab shows the Device Manager directly without clicking the button.



3. In the Device Manager, click on the + for DVD/CD-ROM drives, right click on your drive, and select Properties.

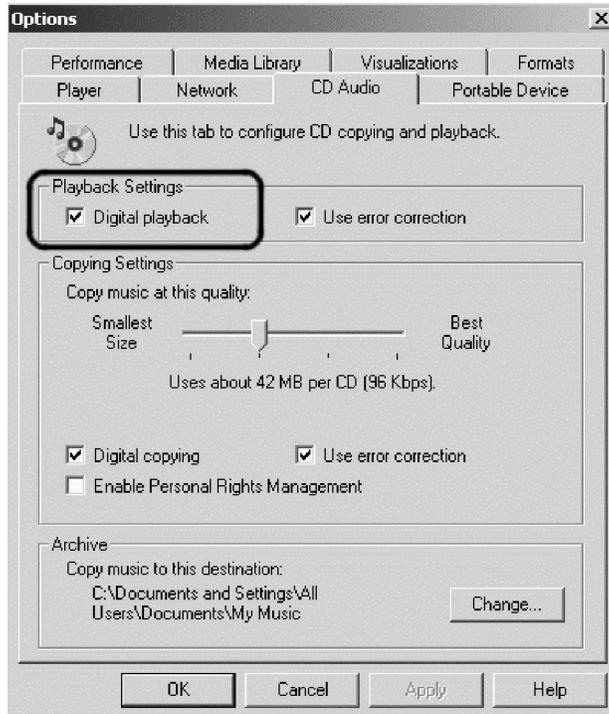


4. Select the Properties tab and check the Enable Digital Audio checkbox.



To enable Digital Audio Playback in Windows Media Player, take the following steps:

- a. Open Windows Media Player.
- b. Select **Tools** → **Options...** from the Media Player menu
- c. Select the CD Audio tab and check the Digital Playback box





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## Appendix E. Service and Support

The following information describes the technical support that is available for your product, during the warranty period or throughout the life of the product. Refer to your IBM Statement of Limited Warranty for a full explanation of IBM warranty terms.

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### Online technical support

Online technical support is available during the life of your product through the Personal Computing Support Web site at:

[www.ibm.com/pc/support](http://www.ibm.com/pc/support)

During the warranty period, assistance for replacement or exchange of defective components is available. In addition, if your IBM option is installed in an IBM computer, you might be entitled to service at your location. Your technical support representative can help you determine the best alternative.

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### Telephone technical support

Installation and configuration support through the IBM HelpCenter<sup>®</sup> will be withdrawn or made available for a fee, at IBM's discretion, 90 days after the option has been withdrawn from marketing. Additional support offerings, including step-by-step installation assistance, are available for a nominal fee.

To assist the technical support representative, have available as much of the following information as possible:

- Option name
- Option number
- Proof of purchase
- Computer manufacturer, model, serial number (if IBM), and manual
- Exact wording of the error message (if any)
- Description of the problem
- Hardware and software configuration information for your system

If possible, be at your computer. Your technical support representative might want to walk you through the problem during the call.

For the support telephone number and support hours by country, refer to the following table. If the number for your country or region is not listed, contact your IBM reseller or IBM marketing representative. Response time may vary depending on the number and nature of the calls received.

Phone numbers are subject to change without notice. For the latest phone number list, go to [www.ibm.com/pc/support](http://www.ibm.com/pc/support) and click **Support Phone List**.

Country or Region	Telephone Number	Country or Region	Telephone Number
Argentina	0800-666-0011	Malaysia	03-7727-7800
Australia	1300-130-426	Mexico	001-866-434-2080

Country or Region	Telephone Number	Country or Region	Telephone Number
Austria	01-24592-5901	Netherlands	020-514-5770
Belgium	Dutch 02-210-9820 French 02-210-9800	New Zealand	0800-446-149
Bolivia	0800-0189	Norway	66 81 11 00
Brazil	55-11-3889-8986	Peru	0-800-50-866
Canada	1-800-565-3344 Toronto 416-383-3344	Philippines	632-995-2225
Chile	800-224-488	Portugal	21-791 51 47
China (PRC)	800-810-1818	Russia	095-940-2000
China (Hong Kong S.A.R.)	852-2825-7799	Singapore	1800-840-9911
Columbia	980-912-3021	Spain	91-662 49 16
Denmark	45 20 82 00	Sweden	08-477 4420
Ecuador	1-800-426911 (option #4)	Switzerland	058-333-09-00
Finland	09-459 69 60	Taiwan	886-2-2725-9799
France	02 38 55 74 50	Thailand	66-2-273-4000
Germany	07032-1549 201	Turkey	00-800-446-32-041
Indonesia	021-523-8535	United Kingdom	0-1475-555 055
Ireland	01-815-9202	United States	1-800-426-7378
Italy	02-7031-6101	Uruguay	000-411-005-6649
Japan	Consumer customers 0120-887-870  Business customers 0120-887-874	Venezuela	0-800-100-2011
Luxembourg	298-977 5063	Vietnam	848-8295-160

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## Appendix F. IBM Statement of Limited Warranty - Z125-4753-07 - 11/2002

### Part 1 - General Terms

*This Statement of Limited Warranty includes Part 1 - General Terms, Part 2 - Country-unique Terms, and Part 3 - Warranty Information. The terms of Part 2 replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Nothing in this Statement of Limited Warranty affects any statutory rights of consumers that cannot be waived or limited by contract.*

### What this Warranty Covers

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications ("Specifications") which are available on request. The warranty period for the Machine starts on the original Date of Installation and is specified in Part 3 - Warranty Information. The date on your invoice or sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part. Unless IBM specifies otherwise, these warranties apply only in the country or region in which you purchased the Machine.

**THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.**

### What this Warranty Does not Cover

This warranty does not cover the following:

- any software programs, whether pre-loaded or shipped with the Machine, or installed subsequently;
- failure resulting from misuse (including but not limited to use of any Machine capacity or capability, other than that authorized by IBM in writing), accident, modification, unsuitable physical or operating environment, or improper maintenance by you;
- failure caused by a product for which IBM is not responsible; and

- any non-IBM products, including those that IBM may procure and provide with or integrate into an IBM Machine at your request.

The warranty is voided by removal or alteration of identification labels on the Machine or its parts.

IBM does not warrant uninterrupted or error-free operation of a Machine.

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, is provided **WITHOUT WARRANTIES OF ANY KIND**.

### **How to Obtain Warranty Service**

If the Machine does not function as warranted during the warranty period, contact IBM or your reseller to obtain warranty service. If you do not register the Machine with IBM, you may be required to present proof of purchase as evidence of your entitlement to warranty service.

### **What IBM Will Do to Correct Problems**

When you call for service, you must follow the problem determination and resolution procedures that IBM specifies. A technician will attempt to make an initial diagnosis of your problem and help you resolve it over the telephone.

The type of warranty service applicable to your Machine is specified in Part 3 - Warranty Information.

You are responsible for downloading and installing designated Machine Code (microcode, basic input/output system code (called "BIOS"), utility programs, device drivers, and diagnostics delivered with an IBM Machine ) and other software updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

If your problem can be resolved with a Customer Replaceable Unit ("CRU") (e.g., keyboard, mouse, speaker, memory, hard disk drive and other easily replaceable parts), IBM will ship these parts to you for replacement by you.

If the Machine does not function as warranted during the warranty period and your problem cannot be resolved over the telephone, through your application of Machine Code or software updates, or with a CRU, IBM or your reseller, if approved by IBM to provide warranty service, will either, at its discretion, 1) repair it to make it function as warranted, or 2) replace it with one that is at least functionally equivalent. If IBM is unable to do either, you may return the Machine to your place of purchase and your money will be refunded.

IBM or your reseller will also manage and install selected engineering changes that apply to the Machine.

### **Exchange of a Machine or Part**

When the warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least

functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

### **Your Additional Responsibilities**

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to:

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided:
  - a. follow the service request procedures that IBM or your reseller provides;
  - b. backup or secure all programs, data, and funds contained in the Machine;
  - c. IBM or your reseller with sufficient, free, and safe access to your facilities to permit IBM to fulfill its obligations; and
  - d. inform IBM or your reseller of changes in the Machine's location.
4. (a) ensure all information about identified or identifiable individuals (Personal Data) is deleted from the Machine (to the extent technically possible), (b) allow IBM, your reseller or an IBM supplier to process on your behalf any remaining Personal Data as IBM or your reseller considers necessary to fulfill its obligations under this Statement of Limited Warranty (which may include shipping the Machine for such processing to other IBM service locations around the world), and (c) ensure that such processing complies with any laws applicable to such Personal Data.

### **Limitation of Liability**

IBM is responsible for loss of, or damage to, your Machine only while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller are responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM for any reason. You should remove all such information from the Machine prior to its return.

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

**UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING EVEN IF INFORMED OF THEIR POSSIBILITY: 1) THIRD PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, DATA; 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR 4) LOST PROFITS, BUSINESS REVENUE, GOODWILL OR ANTICIPATED SAVINGS. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.**

### Governing Law

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Statement of Limited Warranty, without regard to conflict of law principles.

**THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.**

### Jurisdiction

All of our rights, duties, and obligations are subject to the courts of the country in which you acquired the Machine.

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## **Part 2 - Country-unique Terms**

### AMERICAS

#### ARGENTINA

**Governing Law:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Ordinary Commercial Court of the city of Buenos Aires.

#### BRAZIL

**Governing Law:** *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the court of Rio de Janeiro, RJ.

#### Peru

**Limitation of Liability:** *The following is added at the end of this section:*

In accordance with Article 1328 of the Peruvian Civil Code the limitations and exclusions specified in this section will not apply to damages caused by IBM's willful misconduct ("dolo") or gross negligence ("culpa inexcusable").

#### NORTH AMERICA

**How to Obtain Warranty Service:** *The following is added to this Section:*  
To obtain warranty service from IBM in Canada or the United States, call 1-800-IBM-SERV (426-7378).

#### CANADA

**Limitation of Liability:** *The following replaces item 1 of this section:*

1. damages for bodily injury (including death) or physical harm to real property and tangible personal property caused by IBM's negligence; and

**Governing Law:** *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*  
laws in the Province of Ontario.

#### UNITED STATES

**Governing Law:** *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*  
laws of the State of New York.

#### ASIA PACIFIC

#### AUSTRALIA

**What this Warranty Covers:** *The following paragraph is added to this Section:*

The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other similar legislation and are only limited to the extent permitted by the applicable legislation.

**Limitation of Liability:** *The following is added to this Section:*

Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

**Governing Law:** *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*  
laws of the State or Territory.

#### CAMBODIA, LAOS, AND VIETNAM

**Governing Law:** *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*  
laws of the State of New York, United States of America.

#### CAMBODIA, INDONESIA, LAOS, AND VIETNAM

*Arbitration: The following is added under this heading:*

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Singapore in accordance with the Arbitration Rules of Singapore International Arbitration Center ("SIAC Rules") then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the SIAC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

#### **HONG KONG S.A.R. OF CHINA AND MACAU S.A.R. OF CHINA**

**Governing Law:** *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*

laws of Hong Kong Special Administrative Region of China.

#### **INDIA**

**Limitation of Liability:** *The following replaces items 1 and 2 of this Section:*

1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence; and
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Limited Warranty, , the charge paid by you for the individual Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

**Arbitration:** *The following is added under this heading :*

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Bangalore, India in accordance with the laws of India then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Bar Council of India. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

## **JAPAN**

**Governing Law:** *The following sentence is added to this section:*

Any doubts concerning this Statement of Limited Warranty will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

## **MALAYSIA**

**Limitation of Liability:** *The word "SPECIAL" in item 3 of the fifth paragraph is deleted.*

## **NEW ZEALAND**

**What this Warranty Covers:** *The following paragraph is added to this section:*

The warranties specified in this section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

**Limitation of Liability:** *The following is added to this section:*

Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this section are subject to the limitations in that Act.

## **PEOPLE'S REPUBLIC OF CHINA (PRC)**

**Governing Law:** *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*

laws of the State of New York, United States of America (except when local law requires otherwise).

## **PHILIPPINES**

**Limitation of Liability:** *Item 3 in the fifth paragraph is replaced by the following:*

**SPECIAL (INCLUDING NOMINAL AND EXEMPLARY DAMAGES), MORAL, INCIDENTAL, OR INDIRECT DAMAGES FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR**

**Arbitration:** The following is added under this heading

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Metro Manila, Philippines in accordance with the laws of the Philippines then in effect. The

arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Philippine Dispute Resolution Center, Inc.. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

## **SINGAPORE**

**Limitation of Liability:** The words "SPECIAL" and "ECONOMIC" in item 3 in the fifth paragraph are deleted.

## **EUROPE, MIDDLE EAST, AFRICA (EMEA)**

### ***THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:***

The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

**How to Obtain Warranty Service:** If you purchase a Machine in Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, Norway, Portugal, Spain, San Marino, Sweden, Switzerland, United Kingdom or Vatican State, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM, provided the Machine has been announced and made available by IBM in the country in which you wish to obtain service. If you purchased a Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchase a Machine in a Middle Eastern or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM approved service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM approved service provider.

*Add the following paragraph in **Western Europe** (Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Norway, Portugal, Spain, San Marino, Sweden, Switzerland, United Kingdom, Vatican State):*

The warranty for Machines acquired in Western Europe shall be valid and applicable in all Western Europe countries provided the Machines have been announced and made available in such countries.

**Governing Law:**

*The phrase "the laws of the country in which you acquired the Machine" is replaced by:*

1) "the laws of Austria" in **Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia;** 2) "the laws of France" in **Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna;** 3) "the laws of Finland" in **Estonia, Latvia, and Lithuania;** 4) "the laws of England" in **Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, the United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe;** and 5) "the laws of South Africa" in **South Africa, Namibia, Lesotho and Swaziland.**

**Jurisdiction:** *The following exceptions are added to this section:*

1) In **Austria** the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the competent court of law in Vienna, Austria (Inner-City); 2) in **Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, West Bank/Gaza, Yemen, Zambia, and Zimbabwe** all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) in **Belgium and Luxembourg**, all disputes arising out of this Statement of Limited Warranty or related to its interpretation or its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) in **France, Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna** all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) in **Russia**, all disputes arising out of or in relation to the interpretation, the violation, the termination, the

nullity of the execution of this Statement of Limited Warranty shall be settled by Arbitration Court of Moscow; 6) **in South Africa, Namibia, Lesotho and Swaziland**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 7) **in Turkey** all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 8) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for **Greece**, b) Tel Aviv-Jaffa for **Israel**, c) Milan for **Italy**, d) Lisbon for **Portugal**, and e) Madrid for **Spain**; and 9) **in the United Kingdom**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the English courts.

**Arbitration:** *The following is added under this heading:*

**In Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia** all disputes arising out of this Statement of Limited Warranty or related to its violation, termination or nullity will be finally settled under the Rules of Arbitration and Conciliation of the International Arbitral Center of the Federal Economic Chamber in Vienna (Vienna Rules) by three arbitrators appointed in accordance with these rules. The arbitration will be held in Vienna, Austria, and the official language of the proceedings will be English. The decision of the arbitrators will be final and binding upon both parties. Therefore, pursuant to paragraph 598 (2) of the Austrian Code of Civil Procedure, the parties expressly waive the application of paragraph 595 (1) figure 7 of the Code. IBM may, however, institute proceedings in a competent court in the country of installation.

**In Estonia, Latvia and Lithuania** all disputes arising in connection with this Statement of Limited Warranty will be finally settled in arbitration that will be held in Helsinki, Finland in accordance with the arbitration laws of Finland then in effect. Each party will appoint one arbitrator. The arbitrators will then jointly appoint the chairman. If arbitrators cannot agree on the chairman, then the Central Chamber of Commerce in Helsinki will appoint the chairman.

#### **EUROPEAN UNION (EU)**

##### ***THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:***

Consumers have legal rights under applicable national legislation governing the sale of consumer goods. Such rights are not affected by the warranties provided in this Statement of Limited Warranty.

**How to Obtain Warranty Service:** *The following is added to this section:*

To obtain warranty service from IBM in EU countries, see the telephone listing in Part 3 - Warranty Information.

You may contact IBM at the following address:

IBM Warranty & Service Quality Dept.

PO Box 30

Spango Valley

Greenock

Scotland PA 16 OAH

**AUSTRIA, DENMARK, FINLAND, GREECE, ITALY, NETHERLANDS,  
PORTUGAL, SPAIN, SWEDEN AND SWITZERLAND**

**Limitation of Liability:** *The following replaces the terms of this section in its entirety:*

Except as otherwise provided by mandatory law:

1. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty or due to any other cause related to this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault) or of such cause, for a maximum amount equal to the charges you paid for the Machine. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

2. **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.**

**FRANCE AND BELGIUM**

**Limitation of Liability:** *The following replaces the terms of this section in its entirety:*

Except as otherwise provided by mandatory law:

1. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault), for a maximum amount equal to the charges you paid for the Machine that has caused the damages. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

2. **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE**

CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES;  
OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED  
SAVINGS.

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

#### AUSTRIA

**What this Warranty Covers:** *The following replaces the first sentence of the first paragraph of this section:*

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

*The following paragraphs are added to this Section:*

The minimum warranty period for Machines is 12 months from the date of delivery. . The limitation period for consumers in action for breach of warranty is the statutory period as a minimum. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

*The second paragraph does not apply.*

**What IBM Will Do to Correct Problems:** *The following is added to this section:*

During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

**Limitation of Liability:** *The following paragraph is added to this section:*

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

*The following sentence is added to the end of item 2:*

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

#### EGYPT

**Limitation of Liability:** *The following replaces item 2 in this section:*

as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code (LIC).

*Applicability of suppliers and resellers (unchanged).*

#### FRANCE

**Limitation of Liability:** *The following replaces the second sentence of the first paragraph of this section:*

In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: *(items 1 and 2 unchanged).*

## GERMANY

**What this Warranty Covers:** *The following replaces the first sentence of the first paragraph of this section:*

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

*The following paragraphs are added to this section:*

The minimum warranty period for Machines is twelve months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

*The second paragraph does not apply.*

**What IBM Will Do to Correct Problems:** *The following is added to this section:*

During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

**Limitation of Liability:** *The following paragraph is added to this section:*

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

*The following sentence is added to the end of item 2:*

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

## HUNGARY

**Limitation of Liability:** *The following is added at the end of this section:*

The limitation and exclusion specified herein shall not apply to liability for a breach of contract damaging life, physical well-being, or health that has been caused intentionally, by gross negligence, or by a criminal act.

The parties accept the limitations of liability as valid provisions and state that the Section 314.(2) of the Hungarian Civil Code applies as the acquisition price as well as other advantages arising out of the present Statement of Limited Warranty balance this limitation of liability.

## IRELAND

**What this Warranty Covers:** *The following is added to this section:*

Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

**Limitation of Liability:** *The following replaces the terms of this section in its entirety:*

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default occurring on the date of occurrence of the last such Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM's liability and your sole remedy.

1. IBM will accept unlimited liability for death or personal injury caused by the negligence of IBM.
2. Subject always to the Items for Which IBM is Not Liable below, IBM will accept unlimited liability for physical damage to your tangible property resulting from the negligence of IBM.
3. Except as provided in items 1 and 2 above, IBM's entire liability for actual damages for any one Default will not in any event exceed the greater of 1) EUR 125,000, or 2) 125% of the amount you paid for the Machine directly relating to the Default.

#### **Items for Which IBM is Not Liable**

Save with respect to any liability referred to in item 1 above, under no circumstances is IBM, its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

1. loss of, or damage to, data;
2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.

#### **SLOVAKIA**

**Limitation of Liability:** *The following is added to the end of the last paragraph:*

The limitations apply to the extent they are not prohibited under §§ 373-386 of the Slovak Commercial Code.

#### **SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND**

**Limitation of Liability:** *The following is added to this section:*

IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

#### **UNITED KINGDOM**

**Limitation of Liability:** *The following replaces the terms of this section in its entirety:*

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally

liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM's liability and your sole remedy.

1. IBM will accept unlimited liability for:
  - a. death or personal injury caused by the negligence of IBM; and
  - b. any breach of its obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982, or any statutory modification or re-enactment of either such Section.
2. IBM will accept unlimited liability, subject always to the Items for Which IBM is Not Liable below, for physical damage to your tangible property resulting from the negligence of IBM.
3. IBM's entire liability for actual damages for any one Default will not in any event, except as provided in items 1 and 2 above, exceed the greater of 1) Pounds Sterling 75,000, or 2) 125% of the total purchase price payable or the charges for the Machine directly relating to the Default.

These limits also apply to IBM's suppliers and resellers. They state the maximum for which IBM and such suppliers and resellers are collectively responsible.

#### **Items for Which IBM is Not Liable**

Save with respect to any liability referred to in item 1 above, under no circumstances is IBM or any of its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

1. loss of, or damage to, data:
2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.

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## **Part 3 - Warranty Information**

This Part 3 provides information regarding the warranty applicable to your Machine, including the warranty period and type of warranty service IBM provides.

#### **Warranty Period**

The warranty period may vary by country or region and is specified in the table below. NOTE: "Region" means either Hong Kong or Macau Special Administrative Region of China.

#### **48X/32X/48X/16X Max CD-RW/DVD-ROM Combination Drive**

<b>Country or Region of Purchase</b>	<b>Warranty Period</b>	<b>Type of Warranty Service</b>
Worldwide	1 year	1, 4

A warranty period of 1 year on parts and 1 year on labor means that IBM provides warranty service without charge for parts and labor during the 1 year warranty period.

### **Types of Warranty Service**

If required, IBM provides repair or exchange service depending on the type of warranty service specified for your Machine in the above table and as described below. Warranty service may be provided by your reseller if approved by IBM to perform warranty service. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations, additional charges may apply outside IBM's normal service area, contact your local IBM representative or your reseller for country and location specific information.

#### **1. Customer Replaceable Unit ("CRU") Service**

IBM will ship CRU parts to you for your replacement. If IBM instructs you to return the replaced CRU, you are responsible for returning it to IBM in accordance with IBM's instructions. If you do not return the defective CRU, if IBM so instructs, within 30 days of your receipt of the replacement CRU, IBM may charge you for the replacement.

#### **2. On-site Service**

IBM or your reseller will either repair or exchange the failing Machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit and suitable for the purpose. **For some Machines, certain repairs may require sending the Machine to an IBM service center.**

#### **3. Courier or Depot Service<sup>1</sup>**

You will disconnect the failing Machine for collection arranged by IBM. IBM will provide you with a shipping container for you to return your Machine to a designated service center. A courier will pick up your Machine and deliver it to the designated service center. Following its repair or exchange, IBM will arrange the return delivery of the Machine to your location. You are responsible for its installation and verification.

#### **4. Customer Carry-In or Mail-In Service**

You will deliver or mail as IBM specifies (prepaid unless IBM specifies otherwise) the failing Machine suitably packaged to a location IBM designates. After IBM has repaired or exchanged the Machine, IBM will make it available for your collection or, for Mail-in Service, IBM will return it to you at IBM's expense, unless IBM specifies otherwise. You are responsible for the subsequent installation and verification of the Machine.

The IBM Machine Warranty worldwide web site at [http://www.ibm.com/servers/support/machine\\_warranties/](http://www.ibm.com/servers/support/machine_warranties/) provides a worldwide overview of IBM's Limited Warranty for Machines, a Glossary of IBM

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1. This type of service is called ThinkPad EasyServ or EasyServ in some countries.

definitions, Frequently Asked Questions (FAQs) and Support by Product (Machine) with links to Product Support pages. **The IBM Statement of Limited Warranty is also available on this site in 29 languages.**

To obtain warranty service contact IBM or your IBM reseller. In Canada or the United States, call 1-800-IBM-SERV (426-7378). For other countries, see the telephone numbers below.

Phone numbers are subject to change without notice. For the latest phone number list, go to [www-3.ibm.com/pc/support/site.wss/](http://www-3.ibm.com/pc/support/site.wss/) and click **Support Phone List**.

Country or Region	Telephone Number	Country or Region	Telephone Number
Argentina	0800-666-0011	Malaysia	03-7727-7800
Australia	1300-130-426	Mexico	001-866-434-2080
Austria	01-24592-5901	Netherlands	020-514-5770
Belgium	Dutch 02-210-9820 French 02-210-9800	New Zealand	0800-446-149
Bolivia	0800-0189	Norway	66 81 11 00
Brazil	55-11-3889-8986	Peru	0-800-50-866
Canada	1-800-565-3344 Toronto 416-383-3344	Philippines	632-995-2225
Chile	800-224-488	Portugal	21-791 51 47
China (PRC)	800-810-1818	Russia	095-940-2000
China (Hong Kong S.A.R.)	852-2825-7799	Singapore	1800-840-9911
Columbia	980-912-3021	Spain	91-662 49 16
Denmark	45 20 82 00	Sweden	08-477 4420
Ecuador	1-800-426911 (option #4)	Switzerland	058-333-09-00
Finland	09-459 69 60	Taiwan	886-2-2725-9799
France	02 38 55 74 50	Thailand	66-2-273-4000
Germany	07032-1549 201	Turkey	00-800-446-32-041
Indonesia	021-523-8535	United Kingdom	0-1475-555 055
Ireland	01-815-9202	United States	1-800-426-7378
Italy	02-7031-6101	Uruguay	000-411-005-6649
Japan	Consumer customers 0120-887-870  Business customers 0120-887-874	Venezuela	0-800-100-2011
Luxembourg	298-977 5063	Vietnam	848-8295-160



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## Appendix G. Notices

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### 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 IBM 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 IBM authorized dealers. IBM is not 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.

Responsible party:

International Business Machines Corporation  
New Orchard Road  
Armonk, NY 10504  
Telephone: 1-919-543-2193



Tested To Comply  
With FCC Standards

FOR HOME OR OFFICE USE

### Industry Canada Class B emission compliance statement

This Class B digital apparatus complies with Canadian ICES-003.

### Avis de conformité a la réglementation d'Industrie Canada

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## **Deutsche EMV-Direktive (electromagnetische Verträglichkeit)**

Zulassungsbefreiung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richtlinie 89/336):

Dieses Gerät ist berechtigt in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die:

IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024:1998 und EN 55022:1998 Klasse B.

EN 55022 Hinweis:

“Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 55022:B festgelegt), dann kann es dabei eventuell gestört werden. In solch einem FA11 ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern.”

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

## **European Union - emission directive**

This product is in conformity with the protection requirements of EU Council Directive 89/336/ECC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

IBM can not accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to 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.

## **Union Européenne - Directive Conformité électromagnétique**

Ce produit est conforme aux exigences de protection de la Directive 89/336/EEC du Conseil de l'UE sur le rapprochement des lois des États membres en matière de compatibilité électromagnétique.

IBM ne peut accepter aucune responsabilité pour le manquement aux exigences de protection résultant d'une modification non recommandée du produit, y compris l'installation de cartes autres que les cartes IBM.

Ce produit a été testé et il satisfait les conditions de l'équipement informatique de Classe B en vertu de Standard européen EN 55022. Les conditions pour l'équipement de Classe B ont été définies en fonction d'un contexte résidentiel ordinaire afin de fournir une protection raisonnable contre l'interférence d'appareils de communication autorisés.

#### **Unione Europea - Directiva EMC (Conformidad electromagnética)**

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la legislatura de los Estados Miembros sobre compatibilidad electromagnética se refiere.

IBM no puede aceptar responsabilidad alguna si este producto deja de satisfacer dichos requisitos de protección como resultado de una modificación no recomendada del producto, incluyendo el ajuste de tarjetas de opción que no sean IBM.

Este producto ha sido probado y satisface los límites para Equipos Informáticos Clase B de conformidad con el Estándar Europeo EN 55022. Los límites para los equipos de Clase B se han establecido para entornos residenciales típicos a fin de proporcionar una protección razonable contra las interferencias con dispositivos de comunicación licenciados.

#### **Union Europea - Normativa EMC**

Questo prodotto è conforme alle normative di protezione ai sensi della Direttiva del Consiglio dell'Unione Europea 89/336/CEE sull'armonizzazione legislativa degli stati membri in materia di compatibilità elettromagnetica.

IBM non accetta responsabilità alcuna per la mancata conformità alle normative di protezione dovuta a modifiche non consigliate al prodotto, compresa l'installazione di schede e componenti di marca diversa da IBM.

Le prove effettuate sul presente prodotto hanno accertato che esso rientra nei limiti stabiliti per le apparecchiature di informatica Classe B ai sensi della Norma Europea EN 55022. I limiti delle apparecchiature della Classe B sono stati stabiliti al fine di fornire ragionevole protezione da interferenze mediante dispositivi di comunicazione in concessione in ambienti residenziali tipici.

이 기기는 가정용으로 전자파 적합등록을 한 기기로서  
주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

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取扱説明書に従って正しい取り扱いをして下さい。

#### **Japanese statement of compliance for products less than or equal to 20 A per phase**

# 高調波ガイドライン適合品

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## Electronic emission notices

**Machine** - 48X/32X/48X/16X Max CD-RW/DVD-ROM Combination Drive

### 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not 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.

### Industry Canada Class B emission compliance statement

This Class B digital apparatus complies with Canadian ICES-003.

### Avis de conformité a la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

### **Deutsche EMV-Direktive (electromagnetische Verträglichkeit)**

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

Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese Klasse von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3. Abs.4)

<b>Hinweis:</b> Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.
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### **European Union - EMC directive**

This product is in conformity with the protection requirements of EU Council Directive 89/336/ECC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

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 commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

<b>Warning:</b> This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
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### **Union Européenne - Directive Conformité électromagnétique**

Ce produit est conforme aux exigences de protection de la Directive 89/336/EEC du Conseil de l'UE sur le rapprochement des lois des États membres en matière de compatibilité électromagnétique.

IBM ne peut accepter aucune responsabilité pour le manquement aux exigences de protection résultant d'une modification non recommandée du produit, y compris l'installation de cartes autres que les cartes IBM.

Ce produit a été testé et il satisfait les conditions de l'équipement informatique de Classe A en vertu de CISPR22/Standard européen EN 55022. Les conditions pour l'équipement de Classe A ont été définies en fonction d'un contexte d'utilisation commercial et industriel afin de fournir une protection raisonnable contre l'interférence d'appareils de communication autorisés.

**Avvertissement :** Ceci est un produit de Classe A. Dans un contexte résidentiel, ce produit peut causer une interférence radio exigeant que l'utilisateur prenne des mesures adéquates.

### Union Europea - Normativa EMC

Questo prodotto è conforme alle normative di protezione ai sensi della Direttiva del Consiglio dell'Unione Europea 89/336/CEE sull'armonizzazione legislativa degli stati membri in materia di compatibilità elettromagnetica.

IBM non accetta responsabilità alcuna per la mancata conformità alle normative di protezione dovuta a modifiche non consigliate al prodotto, compresa l'installazione di schede e componenti di marca diversa da IBM.

Le prove effettuate sul presente prodotto hanno accertato che esso rientra nei limiti stabiliti per le apparecchiature di informatica Classe A ai sensi del CISPR 22/Norma Europea EN 55022. I limiti delle apparecchiature della Classe A sono stati stabiliti al fine di fornire ragionevole protezione da interferenze mediante dispositivi di comunicazione in concessione in ambienti commerciali ed industriali.

**Avvertimento:** Questo è un prodotto appartenente alla Classe A. In ambiente domestico, tale prodotto può essere causa di interferenze radio, nel qual caso l'utente deve prendere misure adeguate.

### Unione Europea - Directiva EMC (Conformidad electromagnética)

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la legislatura de los Estados Miembros sobre compatibilidad electromagnética se refiere.

IBM no puede aceptar responsabilidad alguna si este producto deja de satisfacer dichos requisitos de protección como resultado de una modificación no recomendada del producto, incluyendo el ajuste de tarjetas de opción que no sean IBM.

Este producto ha sido probado y satisface los límites para Equipos Informáticos Clase A de conformidad con el Estándar CISPR22 y el Estándar Europeo EN 55022. Los límites para los equipos de Clase A se han establecido para entornos comerciales e industriales a fin de proporcionar una protección razonable contra las interferencias con dispositivos de comunicación licenciados.

**Advertencia:** Este es un producto de Clase A. En un entorno doméstico este producto podría causar radiointerferencias en cuyo caso el usuario deberá tomar las medidas adecuadas.

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