



# 48X-20X Internal IDE CD-ROM Drive

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*User's Guide*

**First Edition (October 1999)**

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## Registering your option

Thank you for purchasing OPTIONS by IBM . 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 option 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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## About this book

This manual contains information on the 48X-20X Internal IDE CD-ROM Drive. It is divided into the following parts:

**Part 1:** Installation instructions in the following languages:

- English
- German
- French
- Italian
- Spanish
- Brazilian Portuguese
- Japanese

**Part 2:** Instructions for using and caring for the CD-ROM drive

**Part 3:** Device driver special configuration settings, problem solving, help and service information, warranty, and notices

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

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## Part 1: Installation guide

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### Product description

The IBM 48X-20X Internal IDE CD-ROM Drive can read a compact disc (CD) containing approximately 680 MB<sup>1</sup> of information. It is designed for installation in a personal computer that uses the integrated drive electronics (IDE) or the enhanced IDE architecture.

The CD-ROM drive delivers data up to 48 times the standard CD-ROM speed, delivering data at up to 7200 KB<sup>2</sup> per second. The drive reads compact discs meeting the ISO-9660 and High-Sierra Group (HSG) standards. It also reads multiple-session, extended architecture (XA) discs, such as the Kodak Photo CD.

In addition to this book, the option package includes:

- 48X-20X Internal IDE CD-ROM Drive
- Two audio cables
- Four mounting screws (M3 x 5 mm, slotted)
- Two system faceplates
- 48X-20X Internal IDE CD-ROM Drive Option Diskette*
- IDE cable for connecting two IDE devices
- Laser Safety Guide for CD-ROMs*
- Electrical safety 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.

The Option Diskette includes installation and support programs, such as:

- Installation programs for all supported operating systems
- IDE CD-ROM device drivers
- Audio CD-player program for DOS
- READ.ME file with additional installation information
- Diagnostic program

**Note:** Before installing this product, refer to the *Electrical Safety Guide* included in this option package for important safety information.

You can find information on how to get help, technical support, and warranty service in Appendix C, "Help and service" on page 3-16. Before calling for technical support, refer to Appendix B, "Problem solving" on page 3-8.

---

<sup>1</sup> MB equals approximately 1 000 000 bytes when referring to storage capacity.

<sup>2</sup> KB equals approximately 1024 bytes when referring to data transfer speeds.

---

## Before you begin

Read the following information before you start your installation.

You must complete the following steps to install the drive:

1. Determine which IDE port to use and the corresponding configuration setting.
2. Place or change the configuration jumper on the drive (and possibly make changes to the configuration jumpers of other devices).
3. Physically install the drive in a drive bay.
4. Configure the system.
5. Install a device driver.

If you do not understand these procedures or are unsure about your ability to perform all the procedures described, have a qualified computer technician install the CD-ROM drive for you.

## System requirements

Before you begin installing the drive, be sure your computer meets the following system requirements.

Minimum microprocessor: 80486

Minimum RAM: 4 MB<sup>3</sup>

3.5-inch diskette drive

Available IDE connection

Available internal power connection

Available drive bay

One of the following operating systems:

- DOS 6.0 or later
- Microsoft Windows NT Workstation 4.0 or later
- Microsoft Windows 95 or Windows 98
- OS/2 3.0 or later

## Handling instructions

To protect your CD-ROM drive during installation, observe the following precautions:

Handle the drive with care. Dropping or jarring the drive can damage the components inside the drive housing.

Keep the CD-ROM drive in its antistatic bag until you are ready to install the drive in your computer. Limit your movement. Movement can cause static electricity buildup.

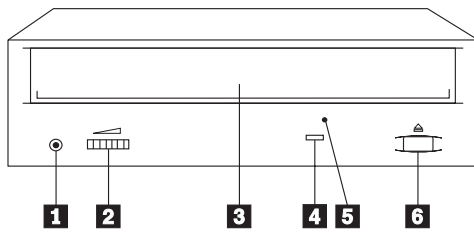
Do not force insertion of the power cable. Doing so might damage the connector or the drive.

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<sup>3</sup> When referring to memory storage capacity, MB means approximately 1 000 000 bytes; total user-accessible capacity may vary depending on operating environment.

## Front view of the drive

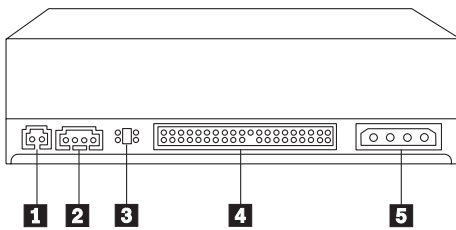
Refer to the illustration to identify parts that might be referred to in the installation instructions.



- 1 **Headphone jack**  
Plug headphones in here for audio output.
- 2 **Volume control**  
Adjust this dial to control volume.
- 3 **CD tray**  
Use the CD tray to load a CD into the drive.
- 4 **Busy indicator**  
This light comes on when the drive reads a data CD or plays an audio CD.
- 5 **Manual-eject hole**  
Use this to eject the CD tray if the Eject/Load button is not operating correctly.
- 6 **Eject/Load button**  
Push this button to open or close the CD tray.

## Back view of the drive

Refer to the illustration to identify parts that might be referred to in the installation instructions.



- 1 **Reserved**
- 2 **Audio-out connector**  
This is used to connect the CD-ROM drive to a sound adapter.
- 3 **Configuration pins**  
The jumper placement on these pins determines the priority of the CD-ROM drive on the IDE bus.
- 4 **IDE connector**  
This is used to connect the CD-ROM drive to the IDE cable.
- 5 **DC power connector**  
This is used to connect the dc power cord to the CD-ROM drive.

---

## Installing the drive

Follow these steps to install the CD-ROM drive into your computer.

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### Step 1. Opening the computer

1. Turn off the computer and all attached devices.
2. Unplug the power cords for the computer and all attached devices.
3. Remove the cover from the computer.

---

### Step 2. Unpacking the drive

1. Before opening the antistatic bag that the drive is packed in, touch it 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. Selecting an IDE port

Newer computers typically have two IDE ports, each of which can support two devices. Typically, the IDE port connected to your hard disk drive is the primary IDE port. The other IDE port is the secondary port. The IDE port and the cable position that you select determine which configuration jumper setting you use for the drive.

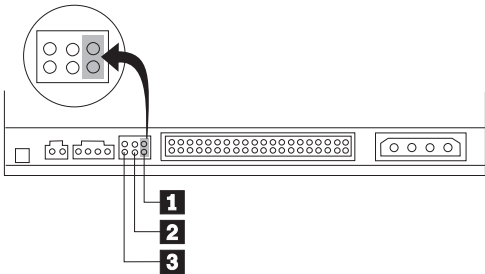
If you have two IDE ports, connect the CD-ROM drive to the secondary IDE port on your system board or IDE adapter. If the CD-ROM drive is the only device on the secondary IDE port, use the master configuration setting. If the CD-ROM drive is the second device on the secondary port, use the subordinate configuration setting.

If you must attach the CD-ROM drive to the primary IDE port (the same port as a hard disk drive or other fast device), use the subordinate setting for the CD-ROM drive and the master setting for the faster device. In some instances, you might need to change the hard disk drive configuration setting to master-with-subordinate-present when attaching a subordinate device on the same cable. For further information on setting configuration jumpers on other devices, refer to the documentation that comes 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 subordinate. See the documentation that comes with your computer to determine if your computer supports this setting.

---

### Step 4. Setting the configuration jumper



The illustration shows the master 1 setting, the subordinate (or slave) 2 setting, and the cable-select 3 setting. Configure the CD-ROM drive by placing the jumper over the set of pins corresponding to the setting you chose in “Step 3. Selecting an IDE port.”

If you are configuring the CD-ROM drive as master, set the jumper to the master 1 device setting. (This is how the drive is set when it is shipped.) If there is a second device on the IDE port, make sure that device is configured as subordinate.

If you are configuring the CD-ROM drive as subordinate, set the jumper to the subordinate 2 device setting. Make sure that the other device on the IDE port is configured as master (or master-with-subordinate-present).

If you are configuring the CD-ROM drive as cable-select, set the jumper to the cable-select 3 device setting. If there is another device on the IDE port, make sure that the second device is also configured for cable-select.

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## Step 5. Mounting the drive in the bay

**Attention:** Be sure to use the M3 x 5 mm mounting screws in the option package. Using screws that are too long might damage the drive.

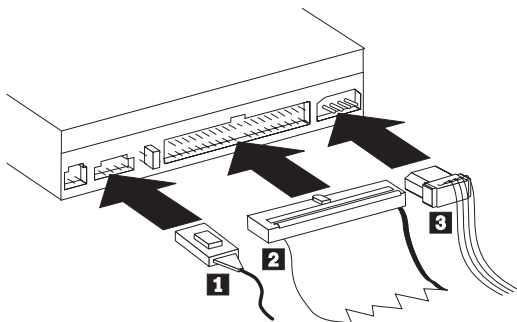
You can mount the CD-ROM drive horizontally or vertically in the computer. If you mount the drive vertically, you must secure any CDs you place into the drive before the drive tray is closed, or the CD-ROM drive will not be able to read the CD properly. For further instructions on securing your CDs in a vertically mounted drive, go to page 2-3.

1. Slide the drive into the bay. Your computer might have specific required procedures for installing storage devices. Refer to the documentation that comes with your computer for further instructions.
2. Align the drive-bay screw holes with the threaded holes in the drive housing or mounting bracket; then thread the screws in loosely to check their positions. Usually two screws are used on each side.
3. Check to make sure the alignment is correct; then tighten the screws to secure the drive. Do not overtighten.

---

## Step 6. Attaching the cables to the drive

Connect the cables to the CD-ROM drive as follows.



1. If you have a sound adapter, locate the included audio cables and determine which cable best fits the CD audio-in port on your sound adapter. Connect one end of the selected audio cable to the device audio-out connector 1, and the other end of the cable to your sound adapter CD audio-in port. Save the other cable in case you use a different sound adapter in the future.

2. Attach a 40-pin IDE-cable connector 2 to the IDE connector on the drive. Align the cable so that the color-coded edge is closest to the power cable connector 3 . Use the IDE cable provided with this option if there is no cable attached to the IDE port or if there is only one device connector on the IDE cable.
3. Attach a four-pin power cable 3 to the device dc power connector.

---

### Step 7. Completing the hardware installation

1. Be sure that the drive is securely mounted and the connectors are firmly attached.
2. Be sure that the cables do not interfere with the computer cover and do not block the power-supply fan blades or air-flow paths.
3. Reinstall the computer cover.
4. Reconnect all devices and check any devices that might have become disconnected, such as the keyboard, mouse, and monitor.
5. Plug all power cords into electrical outlets.

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### Step 8. Attaching the faceplates

This option package includes two faceplates that conform to the curved design of certain computers. If your computer has a curved design, you can attach one of the included faceplates so that the front of the CD-ROM drive matches the exterior cabinet. Choose the faceplate that best fits your computer, and attach it after you have mounted the CD-ROM drive in the appropriate bay.

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### Step 9. Updating your computer configuration

After you have completed the hardware installation, restart your computer. Usually, the configuration-setup information screen is displayed. If this screen is not displayed, 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 you have finished reviewing the information, save the changes and exit.

**Note:** Some older computers with one IDE port might not display the CD-ROM drive information when you review the configuration-setup information. You still can use the CD-ROM drive in this situation if you have properly completed the installation.

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## Step 10. Installing device drivers

This section contains the instructions for installing device drivers for the CD-ROM drive, based on the operating system you are using. Go to the section which corresponds to your operating system.

**Note:** User requirements vary; if you are using OS/2 as your operating system, the device driver settings for that operating system can be customized. If your computer does not work well with the default settings given in the installation instructions in this section, refer to Appendix A, "Customizing device driver configuration settings" on page 3-1 for information on customizing your device driver configuration settings.

### Installing the device driver for Windows 95 and Windows 98

In most instances, Windows 95 and Windows 98 automatically detect the CD-ROM drive and do not present any installation screens.

If the driver installation screens are displayed after your operating system starts, follow the instructions on the screen to install the device drivers. Consult the documentation that comes with your operating system for more information.

### Installing the device driver for DOS and OS/2

1. Turn on your computer and start your operating system, if you have not already done so.
2. Go to a command line.
3. Insert the Option Diskette into your diskette drive.
4. Type `A:CDSETUP` in the command line; then press Enter.
5. Using your mouse or the arrow keys, select **Setup**; then press Enter.
6. Follow the instructions on the screen to properly install the device driver.
7. When the setup is complete, select **Exit**.
8. When prompted, restart your computer; the changes will not take effect until you do so.

**Note:** To resolve resource conflicts or if you need options that are not found in the CDSETUP device-driver installation program, refer to the READ.ME file on the Option Diskette. If you have problems installing the device driver, refer to the CDSETUP program help information.

## Installing the device driver for Windows NT Workstation 4.0

Windows NT Workstation automatically detects the presence of the CD-ROM drive, and enables existing CD-ROM device drivers. If your operating system does not automatically detect the CD-ROM drive, refer to the documentation that comes with your operating system to see what course of action you need to take.

It is not necessary to install additional device drivers. Windows NT Workstation comes with an ATAPI device driver for CD-ROM drives, which is enabled when the operating system detects your new CD-ROM drive. Some computers that come with Windows NT Workstation already installed also contain a PIIXIDE device driver. This device driver replaces the native ATAPI device driver and provides DMA support. The CD-ROM drive will *not* work if both the ATAPI and PIIXIDE device drivers are enabled at the same time. To determine which device driver is enabled:

1. Click **Start** --> **Settings** --> **Control Panel**.
2. Double-click **Devices**.
3. A list of device drivers appears. Look for the ATAPI device driver in the list. If this device driver is enabled, the words "Started" and "Boot" are next to the name of the device driver. If this device driver is not enabled, the word "Disabled" is next to the name of the device driver.
4. Look for the PIIXIDE device driver in the list. If it is included in the list, determine whether it is enabled or disabled.
5. Enable the device driver you want to use.
6. Shut down and restart your computer.

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## Installation guide (Translated)

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### Product description

The IBM 48X-20X Internal IDE CD-ROM Drive can read a compact disc (CD) containing approximately 680 MB<sup>4</sup> of information. It is designed for installation in a personal computer that uses the integrated drive electronics (IDE) or the enhanced IDE architecture.

The CD-ROM drive delivers data up to 40 times the standard CD-ROM speed, delivering data at up to 6000 KB<sup>5</sup> per second. The drive reads compact discs meeting the ISO-9660 and High-Sierra Group (HSG) standards. It also reads multiple-session, extended architecture (XA) discs, such as the Kodak Photo CD.

In addition to this book, the option package includes:

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The Option Diskette includes installation and support programs, such as:

- Installation programs for all supported operating systems
- IDE CD-ROM device drivers
- Audio CD-player program for DOS
- READ.ME file with additional installation information
- Diagnostic program

**Note:** Before installing this product, refer to the *Electrical Safety Guide* included in this option package for important safety information.

You can find information on how to get help, technical support, and warranty service in Appendix C, "Help and service" on page 3-16. Before calling for technical support, refer to Appendix B, "Problem solving" on page 3-8.

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<sup>4</sup> MB equals approximately 1 000 000 bytes when referring to storage capacity.

<sup>5</sup> KB equals approximately 1024 bytes when referring to data transfer speeds.

---

## Before you begin

Read the following information before you start your installation.

You must complete the following steps to install the drive:

1. Determine which IDE port to use and the corresponding configuration setting.
2. Place or change the configuration jumper on the drive (and possibly make changes to the configuration jumpers of other devices).
3. Physically install the drive in a drive bay.
4. Configure the system.
5. Install a device driver.

If you do not understand these procedures or are unsure about your ability to perform all the procedures described, have a qualified computer technician install the CD-ROM drive for you.

## System requirements

Before you begin installing the drive, be sure your computer meets the following system requirements.

Minimum microprocessor: 80486

Minimum RAM: 4 MB<sup>6</sup>

3.5-inch diskette drive

Available IDE connection

Available internal power connection

Available drive bay

One of the following operating systems:

- DOS 6.0 or later
- Microsoft Windows NT Workstation 4.0 or later
- Microsoft Windows 95 or Windows 98
- OS/2 3.0 or later

## Handling instructions

To protect your CD-ROM drive during installation, observe the following precautions:

Handle the drive with care. Dropping or jarring the drive can damage the components inside the drive housing.

Keep the CD-ROM drive in its antistatic bag until you are ready to install the drive in your computer. Limit your movement. Movement can cause static electricity buildup.

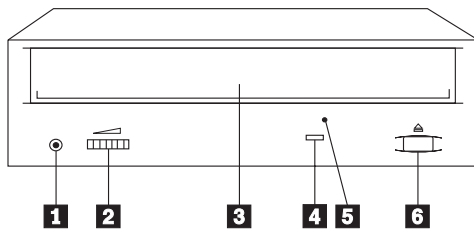
Do not force insertion of the power cable. Doing so might damage the connector or the drive.

---

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## Front view of the drive

Refer to the illustration to identify parts that might be referred to in the installation instructions.

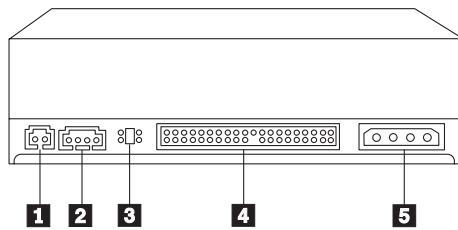


- 1 **Headphone jack**  
Plug headphones in here for audio output.
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Adjust this dial to control volume.
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Use the CD tray to load a CD into the drive.
- 4 **Busy indicator**  
This light comes on when the drive reads a data CD or plays an audio CD.
- 5 **Manual-eject hole**  
Use this to eject the CD tray if the Eject/Load button is not operating correctly.
- 6 **Eject/Load button**  
Push this button to open or close the CD tray.



## Back view of the drive

Refer to the illustration to identify parts that might be referred to in the installation instructions.



- 1 **Reserved**
- 2 **Audio-out connector**  
This is used to connect the CD-ROM drive to a sound adapter.
- 3 **Configuration pins**  
The jumper placement on these pins determines the priority of the CD-ROM drive on the IDE bus.
- 4 **IDE connector**  
This is used to connect the CD-ROM drive to the IDE cable.
- 5 **DC power connector**  
This is used to connect the dc power cord to the CD-ROM drive.

---

## Installing the drive

Follow these steps to install the CD-ROM drive into your computer.

---

### Step 1. Opening the computer

1. Turn off the computer and all attached devices.
2. Unplug the power cords for the computer and all attached devices.
3. Remove the cover from the computer.

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### Step 2. Unpacking the drive

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

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### Step 3. Selecting an IDE port

Newer computers typically have two IDE ports, each of which can support two devices. Typically, the IDE port connected to your hard disk drive is the primary IDE port. The other IDE port is the secondary port. The IDE port and the cable position that you select determine which configuration jumper setting you use for the drive.

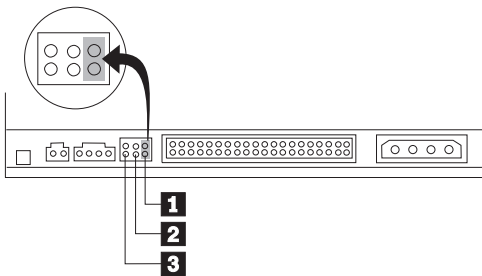
If you have two IDE ports, connect the CD-ROM drive to the secondary IDE port on your system board or IDE adapter. If the CD-ROM drive is the only device on the secondary IDE port, use the master configuration setting. If the CD-ROM drive is the second device on the secondary port, use the subordinate configuration setting.

If you must attach the CD-ROM drive to the primary IDE port (the same port as a hard disk drive or other fast device), use the subordinate setting for the CD-ROM drive and the master setting for the faster device. In some instances, you might need to change the hard disk drive configuration setting to master-with-subordinate-present when attaching a subordinate device on the same cable. For further information on setting configuration jumpers on other devices, refer to the documentation that comes 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 subordinate. See the documentation that comes with your computer to determine if your computer supports this setting.

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### Step 4. Setting the configuration jumper



The illustration shows the master 1 setting, the subordinate (or slave) 2 setting, and the cable-select 3 setting. Configure the CD-ROM drive by placing the jumper over the set of pins corresponding to the setting you chose in “Step 3. Selecting an IDE port.”

If you are configuring the CD-ROM drive as master, set the jumper to the master 1 device setting. (This is how the drive is set when it is shipped.) If there is a second device on the IDE port, make sure that device is configured as subordinate.

If you are configuring the CD-ROM drive as subordinate, set the jumper to the subordinate 2 device setting. Make sure that the other device on the IDE port is configured as master (or master-with-subordinate-present).

If you are configuring the CD-ROM drive as cable-select, set the jumper to the cable-select 3 device setting. If there is another device on the IDE port, make sure that the second device is also configured for cable-select.

---

## Step 5. Mounting the drive in the bay

**Attention:** Be sure to use the M3 x 5 mm mounting screws in the option package. Using screws that are too long might damage the drive.

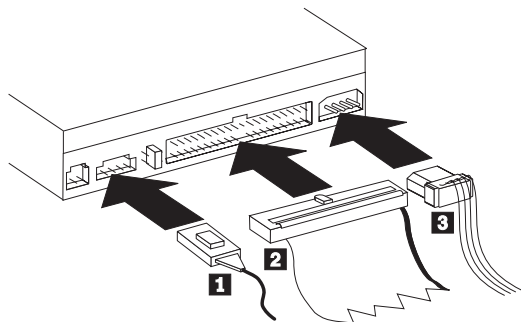
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1. Slide the drive into the bay. Your computer might have specific required procedures for installing storage devices. Refer to the documentation that comes with your computer for further instructions.
2. Align the drive-bay screw holes with the threaded holes in the drive housing or mounting bracket; then thread the screws in loosely to check their positions. Usually two screws are used on each side.
3. Check to make sure the alignment is correct; then tighten the screws to secure the drive. Do not overtighten.

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## Step 6. Attaching the cables to the drive

Connect the cables to the CD-ROM drive as follows.



1. If you have a sound adapter, locate the included audio cables and determine which cable best fits the CD audio-in port on your sound adapter. Connect one end of the selected audio cable to the device audio-out connector 1, and the other end of the cable to your sound adapter CD audio-in port. Save the other cable in case you use a different sound adapter in the future.

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### Step 7. Completing the hardware installation

1. Be sure that the drive is securely mounted and the connectors are firmly attached.
2. Be sure that the cables do not interfere with the computer cover and do not block the power-supply fan blades or air-flow paths.
3. Reinstall the computer cover.
4. Reconnect all devices and check any devices that might have become disconnected, such as the keyboard, mouse, and monitor.
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### Step 8. Attaching the faceplates

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---

### Step 9. Updating your computer configuration

After you have completed the hardware installation, restart your computer. Usually, the configuration-setup information screen is displayed. If this screen is not displayed, 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 you have finished reviewing the information, save the changes and exit.

**Note:** Some older computers with one IDE port might not display the CD-ROM drive information when you review the configuration-setup information. You still can use the CD-ROM drive in this situation if you have properly completed the installation.

---

## Step 10. Installing device drivers

This section contains the instructions for installing device drivers for the CD-ROM drive, based on the operating system you are using. Go to the section which corresponds to your operating system.

**Note:** User requirements vary; if you are using OS/2 as your operating system, the device driver settings for that operating system can be customized. If your computer does not work well with the default settings given in the installation instructions in this section, refer to Appendix A, "Customizing device driver configuration settings" on page 3-1 for information on customizing your device driver configuration settings.

### Installing the device driver for Windows 95 and Windows 98

In most instances, Windows 95 and Windows 98 automatically detect the CD-ROM drive and do not present any installation screens.

If the driver installation screens are displayed after your operating system starts, follow the instructions on the screen to install the device drivers. Consult the documentation that comes with your operating system for more information.

### Installing the device driver for DOS and OS/2

1. Turn on your computer and start your operating system, if you have not already done so.
2. Go to a command line.
3. Insert the Option Diskette into your diskette drive.
4. Type `A:CDSETUP` in the command line; then press Enter.
5. Using your mouse or the arrow keys, select **Setup**; then press Enter.
6. Follow the instructions on the screen to properly install the device driver.
7. When the setup is complete, select **Exit**.
8. When prompted, restart your computer; the changes will not take effect until you do so.

**Note:** To resolve resource conflicts or if you need options that are not found in the CDSETUP device-driver installation program, refer to the READ.ME file on the Option Diskette. If you have problems installing the device driver, refer to the CDSETUP program help information.

## Installing the device driver for Windows NT Workstation 4.0

Windows NT Workstation automatically detects the presence of the CD-ROM drive, and enables existing CD-ROM device drivers. If your operating system does not automatically detect the CD-ROM drive, refer to the documentation that comes with your operating system to see what course of action you need to take.

It is not necessary to install additional device drivers. Windows NT Workstation comes with an ATAPI device driver for CD-ROM drives, which is enabled when the operating system detects your new CD-ROM drive. Some computers that come with Windows NT Workstation already installed also contain a PIIXIDE device driver. This device driver replaces the native ATAPI device driver and provides DMA support. The CD-ROM drive will *not* work if both the ATAPI and PIIXIDE device drivers are enabled at the same time. To determine which device driver is enabled:

1. Click **Start** --> **Settings** --> **Control Panel**.
2. Double-click **Devices**.
3. A list of device drivers appears. Look for the ATAPI device driver in the list. If this device driver is enabled, the words "Started" and "Boot" are next to the name of the device driver. If this device driver is not enabled, the word "Disabled" is next to the name of the device driver.
4. Look for the PIIXIDE device driver in the list. If it is included in the list, determine whether it is enabled or disabled.
5. Enable the device driver you want to use.
6. Shut down and restart your computer.

---

## Product registration

Thank you for purchasing OPTIONS by IBM . 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 option 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.

---

## Product service and warranty information

For technical support, support hours, and warranty terms and conditions, see the enclosed inserts, or contact your IBM reseller or IBM marketing representative.

---

## Part 2: User's guide

---

### Using the drive

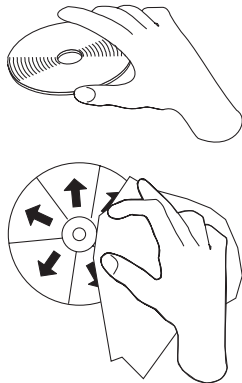
This section includes instructions for the proper care of CDs and the care and operation of your CD-ROM drive.

---

#### Caring for a CD

CDs are high-density media that must be handled with care and kept clean to insure that they remain readable. These precautions will help to prolong the life of your CDs.

**Attention:** Wiping a CD using a circular motion might cause loss of data.



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

To remove dust or fingerprints, wipe the CD from the center to the edge with a soft, lint-free cloth.

Do not write on the surface.

Do not place the CD in direct sunlight.

Do not use commercial cleaners to clean the CD.

Do not bend the CD.

---

## Caring for the CD-ROM drive

To protect your CD-ROM drive during operation, observe the following precautions.

Remove any CD in the drive before moving the drive.

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.

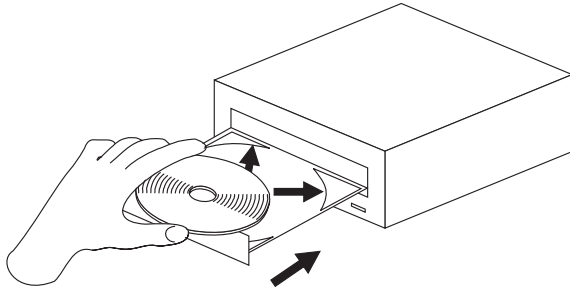
Do not operate the drive under any of the following conditions:

- High temperature, high humidity, or direct sunlight
- Excessive vibration, sudden shock, or inclined surface
- Excessive dust

---

## Loading a CD

To load a CD into a horizontally mounted CD-ROM drive:

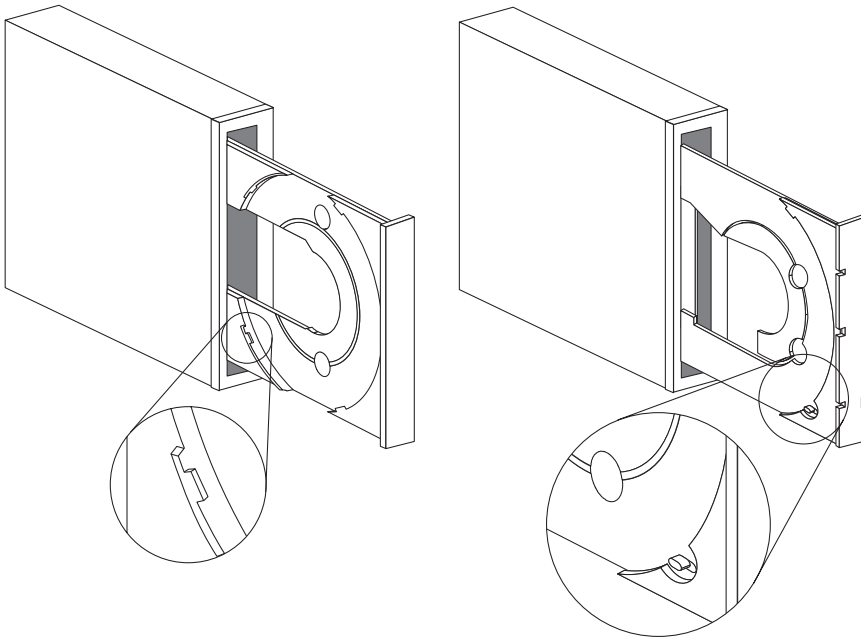


1. Press the Eject/Load button. The tray slides out of the drive.
2. Insert the CD into the loading tray with the label facing up.
3. Close the loading tray by pressing the Eject/Load button, or by gently pushing the tray in.

**Attention:** Do not force the tray to open; do not insert foreign objects into the CD tray.



To load a CD into a vertically mounted CD-ROM drive:



1. Press the Eject/Load button.
2. Look at the illustrations and compare them to your loading tray.

If your loading tray looks like the left illustration, insert the CD carefully so that the edges of the CD are underneath the tabs on the loading tray. These plastic tabs cover the edges of the CD-ROM or audio CD and hold it in place. The tabs are attached to the tray itself and cannot be moved.

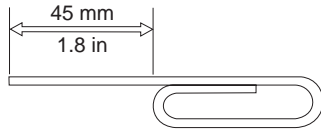
If your loading tray looks like the right illustration, insert the CD into the tray, and gently push the movable tab forward to hold the CD in place.

3. Close the loading tray by pressing the Eject/Load button, or by gently pushing the tray in.

---

## Manually ejecting a CD

If you press the Eject/Load button and the tray does not slide out, turn off the computer and straighten a large paper clip to form a tool, as shown in the illustration. The straightened end must extend at least 45 mm (1.8 in.). Insert the extended end into the manual-eject hole on the front of the drive (see “Front view of the drive” on page 1-3). Push the paper clip into the hole until the tray opens. Gently pull out the tray until you can remove the CD.



---

## Playing an audio CD

To play an audio CD, you must have an audio-CD program installed in your computer. If you are using the 48X-20X Internal IDE CD-ROM Drive with DOS, there is a program included on the Option Diskette that will allow you to play audio CDs. Windows 3.x, Windows 95, Windows 98, Windows NT, and OS/2 all come with multimedia extensions that include audio CD player programs.

Follow the procedures below that correspond to your operating system. For more information on using your audio playback software, see the documentation that comes with your operating system or your computer.

### Windows 95

To use the Windows 95 audio utility:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert an audio CD into the CD-ROM drive.
3. Click **Start --> Programs --> Accessories --> Multimedia --> CD Player**.
4. The CD begins playing. If the CD does not start playing, or if you have problems with the sound, check the documentation that comes with your sound adapter or computer for problem-solving information.

## Windows 98

To use the Windows 98 audio utility:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert an audio CD into the CD-ROM drive.
3. Click **Start --> Programs --> Accessories --> Entertainment --> CD Player**.
4. The CD begins playing. If the CD does not start playing, or if you have problems with the sound, check the documentation that comes with your sound adapter or computer for problem-solving information.

## DOS

The DOS operating system does not have a built-in program for playing audio CDs. In order for you to listen to audio CDs using DOS, you must use the program called IBMCDPLY.EXE which is provided on your Option Diskette. Use the following instructions to use the program.

1. Turn on your computer and start your operating system, if you have not already done so.
2. Make sure that you have correctly installed the device drivers for the 48X-20X Internal IDE CD-ROM Drive. For further instructions on installing the device drivers, refer to "Step 10. Installing device drivers" on page 1-8. After you have installed the device drivers, the DOS audio playback software will also be installed on your hard disk drive.
3. Insert an audio CD into the CD-ROM drive.
4. Go to a command prompt.
5. Type IBMCDPLY and press Enter. When the program begins, a graphic will appear that looks like the control panel of a CD player. The controls are labeled with text below each icon.
6. Use your mouse to select the control you want to use.
7. To exit from the program, press the F3 key.

## OS/2 Warp

To use the OS/2 audio utility:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert an audio CD into the CD-ROM drive.
3. Double-click **Programs**.
4. Double-click **Multimedia**.
5. Double-click **Compact Disc**.

6. The CD begins playing. If the CD does not start playing, or if you have problems with the sound, check the documentation that comes with your sound adapter or computer for problem-solving information.

## Windows NT Workstation 4.0

To use the Windows NT Workstation audio utility:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert an audio CD into the CD-ROM drive.
3. Click **Start --> Programs --> Accessories --> Multimedia --> CD Player**.
4. The CD begins playing. If the CD does not start playing, or if you have problems with the sound, check the documentation that comes with your sound adapter or computer for problem-solving information.

---

## Using a data CD

Data CDs can contain data files, games, or applications. The instructions for using a data CD depend on your operating system.

## Windows 95 or Windows 98

To read a data CD:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert a data CD into the CD-ROM drive.
3. Double-click **My Computer**.
4. Verify that the CD-ROM icon is displayed.
5. Double-click the CD-ROM icon.
6. Verify that you can view files on the CD.

## DOS

To read a data CD:

1. Turn on your computer and start your operating system, if you have not already done so.

The operating system displays the following messages (drive D is the CD-ROM drive in this example):

```
MSCDEX Version 2.2.3  
Copyright (c) Microsoft Corp. 1986-1993
```

```
Drive D:=Driver IBMCD1 unit
```

2. Insert a data CD into the CD-ROM drive.
3. At the DOS prompt, type `dir d:`, and press Enter.

4. Verify that you can view the files on the CD.

## **OS/2 Warp**

To read a data CD:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert a data CD into the CD-ROM drive.
3. Double-click **OS/2 System**; then double-click **Drive**.
4. Verify that the CD-ROM icon is displayed.
5. Double-click the CD-ROM icon.
6. Verify that you can view files on the CD.

## **Windows NT Workstation 4.0**

To read a data CD:

1. Turn on your computer and start your operating system, if you have not already done so.
2. Insert a data CD into the CD-ROM drive.
3. Double-click **My Computer**.
4. Verify that the CD-ROM icon is displayed.
5. Double-click the CD-ROM icon.
6. Verify that you can view files on the CD.



---

## Part 3: Appendixes

---

### Appendix A. Customizing device driver configuration settings

This section contains optional device driver configuration information for DOS with Windows, OS/2, Windows 95, and Windows 98. Use the online help during the installation and refer to the READ.ME file on the *48X-20X Internal IDE CD-ROM Drive Option Diskette* for additional information.

---

#### DOS with Windows 3.x, Windows 95 and Windows 98

Requirements vary, and you might need to customize the configuration that the CDSETUP program installs on your computer. This section provides information and describes the parameters that you might need to change or add.

#### Changing device-driver parameters for DOS and Windows

Most computers will function adequately with the default settings for the IBMIDECD.SYS device-driver file. However, there are some parameters that can be changed if necessary. This section explains the function of each parameter. Use a text editor to modify the appropriate line in your CONFIG.SYS file. For the IBMIDECD.SYS device driver, the line in CONFIG.SYS is in the following format:

```
DEVICE=[drive:][path]IBMIDECD.SYS /D:devicename  
      [/P:xxx,yy] [/A:n] [/U:n]  
      [/L:xx] [/T:n] [/I:n]
```

(Do not truncate the actual device-driver entry. Place the complete DEVICE= statement on one line in the CONFIG.SYS file.)

```
[drive:][path]IBMIDECD.SYS
```

The above parameter specifies the location (drive and directory) and name of the device-driver file.

Use the following options to configure the device driver.

#### ***/D:devicename***

Specifies the device name of the CD-ROM drive. This must be identical to the device name specified in the MSCDEX.EXE parameters; for example:

```
DEVICE=C:\IBMIDECD.SYS /D:IBMCD1
```

#### ***/P:xxx,yy***

Specifies the address and interrupt level of the port to which the IDE CD-ROM drive is connected.

The device driver automatically checks the industry-standard primary IDE port (address 1F0, interrupt 14) and secondary IDE port (address 170, interrupt 15).

The /P parameter is not needed if your CD-ROM drive is on either of these ports. However, if your computer (or IDE adapter) uses different IDE port addresses or interrupts, you must use this option. Refer to the instructions that come with your computer or IDE adapter to understand how your computer or adapter is configured.

*xxx* is the base address of the IDE port.

1F0 for the primary IDE port (Port 1)  
170 for the secondary IDE port (Port 2)

*yy* is the interrupt (IRQ) level.

14 for the primary IDE port (Port 1)  
15 for the secondary IDE port (Port 2)

As an example, when four drives have been connected, the syntax in the CONFIG.SYS file would be:

```
DEVICE=C:IBMIDECD.SYS /D:IBMCD1 /P:1F ,14  
/P:17 ,15 /P:1E ,12 /P:16 ,1
```

(Do not truncate the actual device driver entry. Place the complete DEVICE= statement on one line in the CONFIG.SYS file.)

#### **/A:n**

Specifies the audio play mode. For a stereo CD, /A:0 or /A:1 is acceptable. For a monaural CD (left or right channel only), /A:1 will play the monaural audio signal from both the right and left channels. The default is *n*=0.

#### **/U:n**

Initialize with the tray locked or unlocked. /U:0 is *unlock*. /U:1 is *lock*. The default is *n*=0. This command might be used if you wish to secure your CD in the drive.

#### **/L:xx**

Specifies the message language where *xx* designates the language.

|           |                                                  |
|-----------|--------------------------------------------------|
| <b>US</b> | English (default, does not need to be specified) |
| <b>GR</b> | German                                           |
| <b>FR</b> | French                                           |
| <b>SP</b> | Spanish                                          |
| <b>IT</b> | Italian                                          |
| <b>JP</b> | Japanese                                         |

#### **/T:n**

Initializes with time delays built into the IDE read loop. Use this parameter only in computers that do not support the IOCHRDY signal on the IDE bus and that read from the IDE port faster than the CD-ROM can provide data. This is a very uncommon situation, and normally this parameter is not required in most computers.

*n* is a relative-timing parameter that depends on microprocessor speed. The larger the value of *n*, the more slowly the drive will transfer data. Valid values for *n* are 0 through 99. The default for *n* is 0, and the /T parameter is not required.



***/I:n***

Enables interrupt sharing. If  $n=1$ , interrupt sharing is enabled. If  $n=0$ , interrupt sharing is disabled. The default value is  $0$ . Enable this parameter when the IDE interrupt must be shared with another device.

**Using Microsoft CD-ROM Extensions**

Microsoft CD-ROM Extensions (MSCDEX.EXE) is an executable program that works in conjunction with the device driver (IBMIDECD.SYS) to allow your computer to access CDs as if they were DOS-formatted disks. MSCDEX is specifically designed to work with DOS and Windows.

CDSETUP automatically adds an MSCDEX statement to your AUTOEXEC.BAT file. You can modify the default MSCDEX parameters to customize your installation. This section explains the function of each parameter. A text editor can be used to modify the MSCDEX statement in your AUTOEXEC.BAT file.

The following is the syntax of the MSCDEX.EXE entry in AUTOEXEC.BAT where *[drive:][path]MSCDEX.EXE* specifies the location (drive and directory) of the MSCDEX.EXE file.

```
[drive:] [path]MSCDEX.EXE
/D:devicename [/M:n] [/E]
[/V] [/L:driveletter] [/K][/S]
```

(Do not truncate the actual device-driver entry. Place the complete entry on one line in the AUTOEXEC.BAT file.)

Use the following options to configure the device driver.

***/D:devicename***

Specifies the name of the CD-ROM drive (eight characters maximum). This must be identical to the device name specified in the device-driver statement in the CONFIG.SYS file. For example:

```
C:\MSCDEX.EXE /D:IBMCD1
```

You might support multiple CD-ROM drives (of different types) by installing each of their device drivers (naming them different names) and placing a */D:devicename* in the MSCDEX line for each drive. For example, if you want to support an IBM IDE CD-ROM drive and an IBM SCSI CD-ROM drive, your CONFIG.SYS file would have these statements:

```
DEVICE=C:\IBMIDECD.SYS /D:IDE_CD
DEVICE=C:\IBMCDROM.SYS /D:SCSI_CD
```

and your AUTOEXEC.BAT file would have this statement:

```
C:\MSCDEX /D:IDE_CD /D:SCSI_CD
```

***/M:m***

Specifies the number of sector buffers for temporary storage of the most recent CD data. For example, to specify 12 sector buffers, you would use:

```
C:\MSCDEX.EXE /D:IBMCD1 /M:12
```

CDSETUP will set this value to 10. The default value for MSCDEX with no /M parameter is 4.

The greater this value, the better the CD-ROM drive will perform. However, each buffer uses about 2 KB of memory, and specifying too many buffers might slow down your computer or interfere with other programs that have large memory-usage requirements. By using expanded memory (see the /E option in this section) or loading MSCDEX.EXE into high memory (refer to your DOS user manual or memory manager user manual), you might be able to specify a larger number of buffers to enhance CD-ROM performance without adversely affecting programs that have large memory-usage requirements.

#### **/E**

Instructs the computer to use expanded memory, if available. For example:

```
C:\MSCDEX.EXE /D:IBMCD1 /E
```

**Note:** An expanded memory device driver must be loaded in order to use this option. If no expanded-memory device driver is loaded, the following error message appears:

```
Expanded Memory not present or not usable.
```

#### **/V**

Instructs the computer to display a summary of RAM allocation and expanded memory usage at startup time.

#### **/L:driveletter**

Specifies the drive letter to be assigned to the first CD-ROM drive. Do not assign a letter already used by an existing drive, or your computer will be unable to access the CD-ROM drive. For example, you might use:

```
C:\MSCDEX.EXE /D:IBMCD1 /L:F
```

Normally, the CD-ROM drive is assigned to the next available drive letter after devices such as diskette drives and hard disk drives. Therefore, use this option only if you wish to assign a drive letter beyond the last letter previously assigned by DOS.

#### **/K**

Instructs MSCDEX.EXE to use Kanji (Japanese) file structures, if present, rather than the default alphanumeric file structures.

#### **/S**

Instructs MSCDEX.EXE to allow sharing of CD-ROM drives on networked computers.

## Conserving DOS conventional memory

If the CD-ROM support software is loaded in DOS conventional memory (below 640 KB RAM), there might be insufficient memory to run some DOS applications. The CDSETUP program attempts to load the IDE CD-ROM device driver and MSCDEX into upper memory, when possible, to avoid this problem.

See the following topics in your DOS user's guide for more information on techniques to conserve conventional memory:

DOS=UMB, DOS=HIGH,UMB (CONFIG.SYS entry)

This loads DOS high and enables the use of upper memory. This is essential to effectively load MSCDEX and the IDE CD-ROM device driver in upper memory.

HIMEM.SYS (CONFIG.SYS entry)

This is a device driver that manages extended memory (RAM memory above 1 MB). Windows automatically loads this device driver.

EMM386.EXE (CONFIG.SYS entry)

This is a device driver that allows the extended memory made available by HIMEM.SYS to be used as expanded memory. The MSCDEX /E parameter might be used with this device driver to move the cache allocated by MSCDEX into this memory, thus freeing some conventional memory.

MEM /C /P (use from DOS prompt)

This is a useful DOS utility that will display the current memory allocation in your computer to help you understand where device drivers and programs are located. To display the MEM parameters available, at the DOS prompt type mem/?

## Enhancing performance in DOS and Windows

Following are two ways to enhance CD-ROM performance on your computer when using the CD-ROM drive with DOS or Windows:

1. Allocate more MSCDEX cache (see /M parameter for MSCDEX).
2. Allow SMARTDRV to cache CD-ROM accesses.

The CDSETUP utility disables the cache CD-ROM data function. Multisession CDs are not compatible with the SMARTDRV caching method. If you do not plan to use PhotoCD or multisession CDs, you can reenabling caching by removing the /U parameter from the SMARTDRV line in your AUTOEXEC.BAT or CONFIG.SYS file. This might improve the performance of some CD-ROM applications. You must have SMARTDRV 5.0 or higher to cache CD-ROM data.

## Updating the device driver for a DOS network server

If you are using the CD-ROM drive in a DOS network server, you need to make the following changes:

1. Add the /S parameter to the MSCDEX line in the AUTOEXEC.BAT file.
2. Verify that the MSCDEX line is located after the line that loads the network services (NET START for IBM PC LAN program).
3. Do one of the following, depending on your operating system:

If you are using DOS 3.3, be sure you have *PC Local Area Network (LAN) Program Corrective Service Diskette* level IP00755 or later installed.

If you are using DOS 4.0, be sure you have *DOS Corrective Service Diskette* level UR 29015 or later installed. (The computer cannot be configured as an Extended Services Domain Controller for the IBM PC LAN Program.)

Contact your IBM reseller for more information about the *PC LAN Program Corrective Service Diskette* or the *DOS Corrective Service Diskette*.

---

## OS/2 software

User requirements vary, and you might need to customize the setup that DDINSTALL has installed on your computer. This section provides information and describes parameters that you might need to change or add for your installation.

### Device-manager driver

OS/2 uses the OS2CDROM.DMD device driver

```
DEVICE=OS2CDROM.DMD [Options]
```

to control all CD-ROM devices. The following options are available:

**/V** Instructs the computer to display the installation details.

**/Q** Suppresses messages during initialization.

### Device-driver filter

OS/2 uses the device-driver filter IBMIDECD.FLT for ATAPI (IDE) CD-ROM drives.

```
BASEDEV=IBMIDECD.FLT [Options]
```

The following option is available:

**/V** Instructs the computer to display installation details.

### Installable file-system driver

The file-system driver for OS/2 is CDFS.IFS. The following options are available:

**/C:n** Indicates how many 64 KB RAM segments will be used for the sector cache. The default is two 64 KB RAM segments.

**/M:n** Indicates the maximum number of file sectors to be read at a time. The default is eight sectors.

**/K** Uses Kanji supplementary volume descriptor.

**/Q** Suppresses messages during initialization.

### **IDE adapter device driver**

The following IDE device driver is available:

```
BASEDEV=IBM1S5 6 .ADD
```

This device driver (available for ISA computers) controls IDE hard disk drives and IDE CD-ROM drives. From the OS/2 command prompt, type `HELP IBM1S5 6` to see the optional parameters that are available for ISA computers.

Special parameters are required if your computer has an IDE controller that does not use a standard interrupt. Check the `/A` and `/IRQ` parameters in the OS/2 help utility.

For IBM Micro Channel computers, an IDE device driver is available on the IBM Web site. Use the Web site search feature, and look for `IBM2IDE .ADD`.

---

### **Changing the Windows 98 and Windows 95 device drivers**

Windows 98 and Windows 95 have two device-driver configuration parameters: Auto Insert Notify and DMA.

The Auto Insert Notify parameter enables the computer to start audio CD software as soon as a CD is inserted into the CD-ROM drive.

The DMA parameter improves computer performance by having the computer DMA controller handle moving data 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 have more time to perform video tasks.

To change these parameter settings from the Windows 95 or Windows 98 desktop:

1. Click **Start** --> **Settings** --> **Control Panel**.
2. Double-click **System**.
3. Click the **Device Manager** tab; double-click **CD-ROM**; select the CD-ROM driver listed; then click the **Properties** button.
4. Click the **Settings** tab.
5. Under Options, click the box next to either **Auto Insert Notification** or **DMA**.
6. Click **OK**.

---

## 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 you can pass on to a service technician. You might also need to refer to your computer, operating-system, or sound-adaptor publications.

---

### Problem descriptions

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

---

#### **Your computer or CD-ROM drive does not operate correctly, or the Busy indicator light does not come on.**

Take the following actions.

1. Make sure that the CD is inserted with the label side up.
2. Make sure that all devices are properly connected to the computer and the electrical outlet.
3. Turn off the computer, unplug the cables from the electrical outlets for your computer and all attached devices, and remove the computer cover.
4. Make sure 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 and attempt to open the CD tray by pressing the Eject/Load button. If the tray fails to open and the Busy indicator light does not display, turn off the computer and try replacing the 4-pin dc power cable.
5. Make sure that the color-coded edge on the IDE cable aligns with pin 1 on the IDE port and is closest to the power cable on the CD-ROM drive. See “Step 6. Attaching the cables to the drive” on page 1-6.
6. Make sure that the IDE cable is connected to the correct IDE port connection. See “Step 3. Selecting an IDE port” on page 1-5 for more information.
7. Check the CD-ROM drive and any other device on the IDE cable for the proper jumper configuration settings. See “Step 4. Setting the configuration jumper” on page 1-5 for more information.
8. Check to see if the middle connector on the IDE cable is attached to the IDE port on the system board. If it is, remove the connector and reattach the cable correctly. The middle port is used only if you are connecting two devices to the IDE port. If there are two devices on the IDE port, attach the connector at one end of the cable to the IDE port. Attach the CD-ROM drive or any other slower device to the middle connector, and attach the other end connector to your hard disk drive or other fast device. If you are connecting only one device to an IDE

port, attach one end of the cable to the IDE port and the other end connector to the device; leave the middle connector open.

---

**You cannot access the CD-ROM drive (DOS and Windows 3.X), or the CD-ROM icon (Windows 3.X) does not display.**

Your CD-ROM device driver might not be loaded or cannot be found. Before checking the CONFIG.SYS and AUTOEXEC.BAT files, make a backup copy of these files in a convenient directory.

1. At the DOS prompt:
  - a. Type `COPY CONFIG.SYS CONFIG.IBM`, and press Enter.
  - b. Type `COPY AUTOEXEC.BAT AUTOEXEC.IBM`, and press Enter.
2. Use a text editor such as E or Edit. At the DOS prompt, type `E CONFIG.SYS` (or use your editor name instead of E) and press Enter.
3. Insert the following line at the top of the CONFIG.SYS file to allow for more than five drive letters, if needed.

```
LASTDRIVE=Z
```

4. Check for the line that refers to the device driver.

```
DEVICEHIGH=C:\IBMIDECD.SYS /D:IBMCD1
```

If this line is not present, add it.

5. Save the CONFIG.SYS file, and exit.
6. Type `E AUTOEXEC.BAT` (or use your editor name instead of E), and press Enter.
7. Check for the line that refers to the device driver.

```
LH C:\MSCDEX /D:IBMCD1 /M:1
```

If this line is not present, add it.

8. If the Windows screen automatically displays when you start your computer, check that the line

```
LH C:\MSCDEX /D:IBMCD1 /M:1
```

comes before the line that starts Windows (that line reads WIN). If it does not, move the MSCDEX statement above this line in the file.

9. Save the AUTOEXEC.BAT file and exit.
10. Make sure that the device drivers are on the hard disk and in the correct directory.

```
C:\IBMIDECD.SYS  
C:\MSCDEX
```

If the device drivers are not present, reinstall them. See the READ.ME file on the *48X-20X Internal IDE CD-ROM Drive Option Diskette* for more information.

---

**You cannot access the CD-ROM drive, or the CD-ROM icon does not display (Windows 95, Windows 98, Windows NT 4.0).**

When the CD-ROM drive is properly installed, a CD-ROM icon will be found in the My Computer window. To verify that the icon is there:

1. Double-click **My Computer**.
2. Look for an icon for the CD-ROM drive.

If a CD-ROM icon is not present in the window that displays:

1. Make sure that the drive has been properly installed.
2. Make sure that the configuration jumper is set properly. See "Step 4. Setting the configuration jumper" on page 1-5.
3. Restart your computer.

If the device icon is still not present, check cable connections and configuration jumper settings on other devices, and resolve any conflicts that might exist.

If a drive icon is still not found after you try the above procedures, continue with the following steps.

**Windows 95 or Windows 98** Follow these instructions:

1. Click **Start --> Settings --> Control Panel**.
2. Double-click **System**.
3. Click the **Device Manager** tab.
4. At the top of the box, click **View Devices by Type**.
5. Double-click **Hard Disk Controllers** to list the available controllers. Make sure that there are no conflicts with the controller. To do so:
  - a. Click to select a controller from the list.
  - b. Click the **Properties** button.
  - c. On the **General** tab, under Device Status, there is a statement that indicates whether that controller is working properly. Click **OK** to return to the **Device Manager** tab in the System Properties window.
6. Check to see if there is a conflict between devices. To do so:
  - a. In the System Properties window, double-click **CD-ROM** to list the available devices, and click to select one from the list.
  - b. Click the **Properties** button.
  - c. Under Device Status, there is a statement indicating whether the CD-ROM device is working properly. If there is a conflict and one or both of the devices have a nonworking status, refer to Appendix C, "Help and service" on page 3-16.
7. Click **OK** in the System Properties window.
8. Shut down and restart the computer.

**Windows NT Workstation** Follow these instructions:

1. Click **Start --> Settings --> Control Panel**.
2. Double-click **SCSI Adapters**.
3. Click the **Device** tab.
4. Check to see that neither controller has conflicts. To do so:



- a. Click to select a controller.
- b. Click **Properties**.
- c. Click the **Card Info** tab; under the Device Status section, there is a statement indicating whether the controller is working properly.
- d. Click **OK** to return to the SCSI Adapter window.
- e. Click to select another controller.
- f. Click the **Card Info** tab; under the Device Status section, check the statement to see whether the controller is working properly.
- g. If you have more than two SCSI controllers, use the above steps to check the device status of the other controller(s).
- h. If you discover a conflict and one or more of the controllers has a non-working status, refer to Appendix C, "Help and service" on page 3-16.

**You cannot access the CD-ROM drive, or the CD-ROM icon does not display (OS/2).**

Your CD-ROM device driver might not be loaded or cannot be found. Before checking the CONFIG.SYS file, make a backup copy of this file in a convenient directory.

1. At the DOS prompt:
  - a. Type `copy CONFIG.SYS CONFIG.IBM`, and press Enter.
  - b. Type `copy AUTOEXEC.BAT AUTOEXEC.IBM`, and press Enter.
2. Use a text editor such as EPM or E from the OS/2 prompt. The following instructions use the EPM editor. Type `EPM CONFIG.SYS`, and press Enter.
3. Check for the lines that refer to the device driver.

```
DEVICE=C:\OS2\BOOT\OS2CDROM.DMD /Q
IFS=C:\OS2\BOOT\CDFS.IFS /Q
DEVICE=C:\OS2\MDOS\VCDROM.SYS
BASEDEV=IBMIDECD.FLT
```

If these lines are not present, add them.

4. Save any changes and exit from the CONFIG.SYS file.
5. Check that the device drivers are on the hard disk drive and in the correct directory.

```
C:\OS2\BOOT\OS2CDROM.DMD
C:\OS2\BOOT\CDFS.IFS
```

If the device drivers are not present, reinstall them. See the READ.ME file on the *48X-20X Internal IDE CD-ROM Drive Option Diskette* for more information.

**The CD-ROM drive is not recognized by the operating system, or the drive performs erratically.**

Some computers, such as IBM PS/ValuePoint models 6472, 6482, 6484, 6492, and 6494, have a *compatible* mode and a *high performance* mode for mass storage devices. Normally, the CD-ROM drive functions better under *high performance* mode.

However, if your drive is not functioning properly in that mode, you might need to use *compatible* mode.

Check the configuration-setup information for your computer.

1. Access your configuration utility program.
2. Select **Devices**.
3. Scroll down to the Mass Storage Devices section.
4. Mass Storage Devices contains the entries Primary IDE Mode and Secondary IDE Mode. These entries are used to set the performance mode of each IDE port. Set the mode to **Compatible** for the port on which you installed your CD-ROM drive.

Other IBM and non-IBM computers might have similar settings. Check to see if your BIOS or configuration-setup utility provides for *compatible* and *high performance* modes for IDE performance. For these computers, use the *compatible* mode for slower IDE devices, such as this CD-ROM drive. Refer to the documentation that comes with your computer for additional details on selecting IDE performance modes. Many older computers will not have a selection of IDE performance modes.

---

#### **The computer does not recognize the CD-ROM drive after the device drivers are loaded.**

Check for incompatibilities among the CD-ROM device driver and other device drivers or other hardware in your computer. Create a System Diskette with minimum CONFIG.SYS and AUTOEXEC.BAT system files.

1. Before creating special CONFIG.SYS and AUTOEXEC.BAT files, make a backup copy of these files in a convenient directory, (if you have not already done so).
  - Type `COPY CONFIG.SYS CONFIG.IBM` and press Enter.
  - Type `COPY AUTOEXEC.BAT AUTOEXEC.IBM` and press Enter.
2. Create a System Diskette, and copy the device drivers onto it. For DOS and Microsoft Windows 3.X:
  - a. Insert a blank diskette into drive A.
  - b. At the DOS prompt, type `FORMAT A: /S` and press Enter. The `/S` parameter creates the System Diskette. Follow the instructions on the screen.
  - c. When the format process completes, copy the `C:\IBMIDECD.SYS` and `C:\MSCDEX` files from the hard disk to the System Diskette.
  - d. Using a text editor, create a minimum CONFIG.SYS system file on the System Diskette to support only a CD-ROM drive. The following procedure uses the E text editor to create the CONFIG.SYS file from the A prompt.
    - 1) Type `E CONFIG.SYS` and press Enter.
    - 2) In the editor, type `LASTDRIVE=Z` and press Enter.
    - 3) Type `DEVICE=A:\IBMIDECD.SYS /D:IBMCD1` and press Enter.
    - 4) Save the CONFIG.SYS file, and exit from the editor.
  - e. Create a System Diskette to support only a CD-ROM drive. The following procedure uses the E text editor to create the AUTOEXEC.BAT file from the A prompt.
    - 1) Type `E AUTOEXEC.BAT` and press Enter.
    - 2) Type `A:\MSCDEX /D:IBMCD1 /M:1` and press Enter.

- 3) Save the AUTOEXEC.BAT file, and exit from the editor.
3. Turn off the computer and check that the System Diskette is in the diskette drive.
4. Restart the computer (the computer will start up from the System Diskette).
5. Observe the startup messages and check that the device driver, IBMIDECD.SYS, loads. When MSCDEX loads, observe the drive letter that the computer assigns to the CD-ROM drive.
6. Load a data CD into the CD tray; then wait until the Busy indicator is not lit.
7. Attempt to read the CD by typing `DIR x:` where *x* is the CD-ROM drive assigned after the MSCDEX message.

If the computer is able to read the CD, a conflict probably exists among the device drivers loaded in either the CONFIG.SYS or AUTOEXEC.BAT file. You need to resolve this device conflict. You might have to set some configuration parameters for your installation; refer to Appendix A, "Customizing device driver configuration settings" on page 3-1 for more information.

If you are unable to access the CD, you might have a hardware problem. If you are unable to read the CD or a drive letter is not assigned by MSCDEX, go to the next step.

8. Turn off the computer, unplug the cables from the electrical outlets for your computer and all attached devices, and remove the computer cover.
9. Disconnect the IDE and power cable for all IDE devices except the CD-ROM drive.
10. Configure the CD-ROM drive as a master and connect it to the last IDE connector on the primary IDE port.
11. Reinstall the computer cover. Reconnect the keyboard; plug the power cords into electrical outlets.
12. Place the System Diskette in the diskette drive and a data CD in the CD-ROM drive.
13. Restart the computer.
14. Attempt to read the CD by typing `DIR C:`. (The CD-ROM drive is drive C because it is the only device connected to the IDE port.)

If the computer is able to read the CD, a conflict probably exists with one of the devices that was installed in your computer. You need to resolve this device-driver conflict. Check the configuration jumper settings for the other devices or refer to your device documentation.

If you are unable to access the CD, you might have a hardware problem. If the CD-ROM drive still does not read the data CD, the CD-ROM drive might be defective. Go to Appendix C, "Help and service" on page 3-16.

---

### **The CD cannot be read.**

Consider the following actions.

The CD might be dirty; clean it as described in "Caring for a CD" on page 2-1.

The CD might be defective; try another CD.

The CD is not ISO-9660 or High Sierra Group (HSG) compatible. Check with your place of purchase.

---

### **There is no sound from the CD.**

Consider the following actions.

Check that you are using an audio CD and not a data CD.

Adjust the volume control on the drive. See "Front view of the drive" on page 1-3 if headphones are connected to the front of the drive.

Adjust the sound-adaptor volume control. See the documentation that comes with your sound adapter and audio-CD player program.

Turn off the computer, unplug the cables from the electrical outlets for your computer and all attached devices, and remove the computer cover. Check that the audio-signal cable connects the CD-ROM drive with the sound adapter.

---

### **You receive a common error message.**

These are actions for some common error messages.

#### **CDR-103**

The CD in the CD-ROM drive is not a High Sierra or ISO 9660 format. The CD-ROM drive does not support this format.

#### **CDR-101**

The `Not ready reading the drive` situation occurs if you try to access the CD-ROM drive before the drive is ready. The Busy indicator light comes on when you attempt to access the drive after loading a CD into the CD tray. Wait until the Busy indicator light turns off before attempting to access the drive.

---

### **The connectors on the audio cables provided do not fit the connector on your sound adapter.**

Some sound adapters might require a special cable. See the documentation that comes with your sound adapter.

You might have to separately purchase an audio cable for the CD-ROM drive. The audio-out connector on the CD-ROM drive requires a MPC-2 compliant Molex 70066-G connector. (Refer to "Back view of the drive" on page 1-4 to locate the audio connector.) If you are using an IBM computer or IBM sound adapter, refer to Appendix C, "Help and service" on page 3-16 for assistance.

---

## **Diagnostics**

To help you solve CD-ROM drive problems, the *48X-20X Internal IDE CD-ROM Drive Option Diskette* contains a general purpose diagnostic program. The CD-ROM drive device drivers must be loaded successfully before you begin the diagnostics program. The program can be run only from a real DOS prompt. You cannot run the diagnostic program in a DOS session under OS/2 or in DOS under Windows or Windows 95.

To start the diagnostic program, go to the DOS prompt and change to drive A. Then insert the *48X-20X Internal IDE CD-ROM Drive Option Diskette*, type CDDIAG and press Enter.

---

## **Additional help**

The READ.ME file on the *48X-20X Internal IDE CD-ROM Drive Option Diskette* includes troubleshooting hints. If you follow these instructions and still have a problem, go to Appendix C, “Help and service” on page 3-16.

---

## Appendix C. Help and service

See Appendix B, "Problem solving" on page 3-8 before requesting help or service.

This section contains information on how to obtain online and telephone technical support.

---

### Online technical support

Online technical support is available during the life of your product. Online assistance can be obtained through the Personal Computing Support Web site, the PSG Electronic Bulletin Board System, and the IBM Automated Fax System.

| <i>Online technical support</i>         |                                                                           |
|-----------------------------------------|---------------------------------------------------------------------------|
| IBM Personal Computing Support Web Site | <a href="http://www.pc.ibm.com/support">http://www.pc.ibm.com/support</a> |
| IBM PSG BBS                             | 1-919-517-0001                                                            |
| IBM Automated Fax System                | 1-800-426-3395<br>1-800-465-3299 (in Canada)                              |

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.

---

### Telephone technical support

Marketing, installation, and configuration support through the HelpCenter 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:

1. Option name
2. Option number
3. Proof of purchase
4. Computer manufacturer, model, serial number (if IBM), and manual
5. Exact wording of the error message (if any)
6. Description of the problem
7. 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 or to the enclosed technical support insert. If the number is not provided, contact your IBM reseller or IBM marketing representative. Response time may vary depending on the number and nature of the calls received.

|                                              |                |
|----------------------------------------------|----------------|
| <i>Support 24 hours a day, 7 days a week</i> |                |
| Canada                                       | 1-800-565-3344 |
| U.S.A./Puerto Rico                           | 1-800-772-2227 |

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## Appendix D. Warranty and notices

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### Warranty statements

The warranty statements consist of two parts: Part 1 and Part 2. Part 1 varies by country. Part 2 is the same for both statements. Be sure to read both the Part 1 that applies to your country and Part 2.

**United States, Puerto Rico, and Canada (Z125-4753-05 11/97)**

(Part 1 - General Terms on page 3-17)

**Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**

(Part 1 - General Terms on page 3-20)

**Worldwide Country-Unique Terms**

(Part 2 - Country-Unique Terms on page 3-23)

### IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (Part 1 - General Terms)

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*This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. **The terms of Part 2 may 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, from IBM or your reseller. 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. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.*

**Machine** - 48X-20X Internal IDE CD-ROM Drive

**Warranty Period\*** - One Year

*\*Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.*

### The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

#### **Extent of Warranty**

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

**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. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.**

#### **Items Not Covered by Warranty**

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

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

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, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

#### **Warranty Service**

To obtain warranty service for the Machine, contact your reseller or IBM. In the United States, call IBM at 1-800-772-2227. In Canada, call IBM at 1-800-565-3344. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.



When 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.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. 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.

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 problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
  - b. secure all programs, data, and funds contained in a Machine,
  - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations, and
  - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine 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 is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

### **Production Status**

Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

### **Limitation of Liability**

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), 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 greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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 LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

## **IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States (Part 1 - General Terms)**

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*This Statement of Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 may replace or modify those of Part 1. The warranties provided by IBM in this Statement of Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. 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. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.*

**Machine** - 48X-20X Internal IDE CD-ROM Drive

**Warranty Period\*** - One Year

*\*Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.*

### **The IBM Warranty for Machines**

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

### **Extent of Warranty**

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or

failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

**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. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.**

#### **Items Not Covered by Warranty**

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

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#### **Warranty Service**

To obtain warranty service for the Machine, contact your reseller or IBM. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When 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.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. 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.

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 problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
  - b. secure all programs, data, and funds contained in a Machine,
  - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfil their obligations, and
  - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine 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 is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

#### **Production Status**

Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

#### **Limitation of Liability**

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), 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 greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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 LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

## Part 2 - Worldwide Country-Unique Terms

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### ASIA PACIFIC

**AUSTRALIA: The IBM Warranty for Machines:** 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 legislation and are only limited to the extent permitted by the applicable legislation.

**Extent of Warranty:** The following replaces the first and second sentences of this Section: The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, operation in other than the Specified Operating Environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible.

**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, 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.

**PEOPLE'S REPUBLIC OF CHINA: Governing Law:** The following is added to this Statement:

The laws of the State of New York govern this Statement.

**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;
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 Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

**NEW ZEALAND: The IBM Warranty for Machines:** 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.

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

**The following terms apply to all EMEA countries.**

The terms of this Statement of Warranty apply to Machines purchased from an IBM reseller. If you purchased this Machine from IBM, the terms and conditions of the applicable IBM agreement prevail over this warranty statement.

**Warranty Service**

If you purchased an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland or United Kingdom, 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 purchased an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, 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.

The applicable laws, Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

**The following terms apply to the country specified:**

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

2. 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.

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: The IBM Warranty for Machines:** 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 six months.

In case IBM or your reseller are 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.

**Extent of Warranty:** The second paragraph does not apply.

**Warranty Service:** 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.

**Production Status:** The following paragraph replaces this Section:

Each Machine is newly manufactured. It may incorporate in addition to new parts, re-used parts as well.

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

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

In item 2, replace “U.S. \$100,000” with “1.000.000 DEM.”

The following sentence is added to the end of the first paragraph of item 2:  
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

**IRELAND: Extent of Warranty:** 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 items one and two of the first paragraph of this Section:

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and 2. the amount of any other actual direct damages, up to the greater of Irish Pounds 75,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:  
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

**ITALY: Limitation of Liability:** The following replaces the second sentence in the first paragraph:  
In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than: (item 1 unchanged) 2) as to any other actual damage arising in all situations involving non-performance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the second paragraph of this Section:  
Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: (items 1 and 2 unchanged) 3) indirect damages, even if IBM or your reseller is informed of their possibility.

**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.

**TURKIYE: Production Status:** The following replaces this Section:  
IBM fulfils customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

**UNITED KINGDOM: Limitation of Liability:** The following replaces items 1 and 2 of the first paragraph of this Section:  
1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;  
2. the amount of any other actual direct damages or loss, up to the greater of Pounds Sterling 150,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

The following item is added to this paragraph:

3. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982.

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:

IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default will be limited to damages.

#### **NORTH AMERICA**

**CANADA: Warranty Service:** The following is added to this Section:

To obtain warranty service from IBM, call **1-800-565-3344**.

**UNITED STATES OF AMERICA: Warranty Service:** The following is added to this Section:

To obtain warranty service from IBM, call **1-800-772-2227**.

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## **Notices**

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Subject to IBM's valid intellectual property or other legally protectable rights, any functionally equivalent product, program, or service may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the responsibility of the user.

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## Electronic emission notices

48X-20X Internal IDE CD-ROM 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 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 à la réglementation d'Industrie Canada**

Cet appareil numérique de classe B 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 B.

## **European Union - emission directive**

This product is in conformity with the protection requirements of EU Council Directive 89/366/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 CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

## **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 CISPR22 / 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 - Direttiva EMC (Conformidad electromagnética)**

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la legislación 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 CISPR22 y 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 del CISPR 22 / 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.

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Part Number: P00N7830

Printed in U.S.A.

P N783

