



Serial ATA Hard Disk Drive User's Guide



Serial ATA Hard Disk Drive User's Guide

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Safety

Before installing this product, read the Safety Information.

مج، يجب قراءة دات السلامة

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

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

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto produktu si prečítajte bezpečnostné informácie.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

Preface

Thank you for purchasing this IBM product. Take a few moments to register your product and provide us with information that will help IBM 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.

About this book

This book contains instructions for installing, setting up, and using your IBM® Serial ATA Hard Disk Drive. The manual is divided into the following sections:

Part 1: Product and software description, installation requirements, handling instructions, and installation and configuration information in the following languages:

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

Part 2: Troubleshooting, service information, and notices.

Note: The illustrations in this publication might differ slightly from your hardware.

Chapter 1. Product description

The IBM Serial ATA Hard Disk Drive (SATA) can only be installed in computers with Serial ATA architecture. The IBM SATA Hard Disk Drive connects to the SATA interface in a single drive per cable configuration, so there are no jumper settings required for master or slave settings, as with Parallel ATA.

Your hard disk drive can be configured in one of the following ways:

- Single drive
 - To be installed as the only hard disk drive in a computer
 - To replace a hard disk drive
- One of multiple drives to operate with other installed hard disk drives

In addition to this user's guide, your option package contains:

- Serial ATA hard disk drive
- Four drive-mounting screws
- *Software and User's Guide* CD
- Safety information manual
- SATA cable

Contact your place of purchase if parts are missing or damaged. Be sure to retain your proof of purchase. It may be required to receive warranty service.

Software description

The CD that comes with your option contains the Disk Manager drive installation utility program.

Attention: If you are installing your new disk drive on a computer that does not have a CD-ROM drive, you can build an installation diskette on another system that has a CD-ROM drive using a blank formatted diskette and your *Software and User's Guide* CD. To create the installation diskette to use in a computer that does not have a CD-ROM drive, see "Creating a Disk Manager diskette" on page 3.

Disk Manager tests, partitions, formats, and prepares the drive for the installation of an operating system. Disk Manager can be started from the

Software and User's Guide CD, eliminating the need for a system diskette. You must attach the new drive to the computer before installing Disk Manager.

If you are using Windows 2000 or Windows XP, you can use your operating system instead of Disk Manager to partition and format an additional drive.

The Disk Manager utility program contains applications that:

- partition and format your drive
- copy all files from one drive to another, simplifying the task of adding a hard disk drive that will replace your startup drive and will contain your operating system
- modifies your application configuration to access a changed CD-ROM drive letter, if necessary

Installation planning

This section contains detailed information to help you plan your hard disk drive installation.

Installation requirements

To install the disk drive you must have:

- **Documentation**

The documentation that came with your computer and operating system

- **SATA port**

Your computer must have an SATA port on the system board or an SATA bus adapter. If you are not sure about your SATA port, see the documentation that came with your computer.

Configuration planning

The Disk Manager utility program provides information on placing and configuring hard disk drives.

The on-screen instructions provide customized directions on how to place and configure your drives.

To run Disk Manager:

1. Insert the *Software and User's Guide* CD into your CD-ROM drive.
2. Select your language.
3. Click **DiskManager**.
4. Select your language and click **OK**.
5. In the Disk Manager main menu, select **View/Print Online Manual** and then press **Enter**.

6. Select **Before Running Disk Manager**.
7. Select **Adding a Hard Drive - Considerations**.
8. Select **Notes on Adding a Drive** to view information on placing and configuring your drive.

Partition planning

The latest releases of Microsoft operating systems have an option for a 32-bit file allocation table called FAT32. FAT32 supports partitions as large as 2 TB¹ and cluster sizes of 4 KB² for partitions up to 8 GB³. If you have FAT32, you will be able to prepare your drive without concern for partition size limits or storage efficiency. To determine if you have FAT32 installed, select your existing drive under **My Computer** and select **Properties**. If FAT32 is installed, the **General** tab will display "FAT32" under the drive label.

If you use Windows XP, you must use the NT File System (NTFS) to partition your new drive. For more information on partitioning your drive for Windows XP, see "Partitioning and formatting your drive" on page 7.

Creating a Disk Manager diskette

If your computer has no CD-ROM drive and you would like to create a Disk Manager boot diskette, do the following:

1. Take the installation CD to a computer that has a CD-ROM and Microsoft Windows 95 or later.
2. Start the computer and insert the CD into the CD-ROM drive.
3. Select your language.
4. Click **DiskManager**.
5. Select your language and click **OK**.
6. Click **Next**.
7. Read the License Agreement and click **Yes**.
8. In the "Disk Manager installation is complete" window, be sure the **Check and Run Disk Manager now!** box is checked. Click **Finish**.
9. From the Disk Manager menu, click **Maintenance**.
10. Select **Create a Disk Manager Diskette** in the "Maintenance options" window.
11. Select your language. Click **Continue** twice.
12. Insert a blank, formatted diskette into the diskette drive.

1. When referring to hard disk drive capacity, TB (terabyte) means 1 000 000 000 000 bytes; total user-accessible capacity may vary depending on operating system.

2. When referring to cluster sizes, KB means 1 024 bytes.

3. When referring to hard-disk drive capacity, GB (gigabyte) means 1 000 000 000 bytes; total user-accessible capacity may vary depending on operating system.

13. Read the license agreement and click **Yes**.
14. Click **Start**.
15. When you see the "Disk Manager Diskette created successfully" message, click **Exit**. Remove the diskette from the drive.
16. Click **Cancel** and then **Exit**.

Using a Disk Manager diskette

To use a Disk Manager diskette to install your new hard drive, do the following:

1. Insert the diskette in the diskette drive of the computer in which you wish to install the new hard disk drive.
2. Turn off the computer.
3. Turn on the computer. The computer will start from the diskette.
4. Follow the instructions on the screen.
5. Select **View/Print Online Manual** to read and print the online help.
6. The menu option **Easy Disk Installation** suits most installations.

Installing the drive

If you are using Windows 2000 or Windows XP on your existing drive, you must install your new drive in the computer before using Windows to partition and format your new drive.

The instructions in this section are general guidelines that apply to most computers. For specific information on installing a hard disk drive in your computer, see the documentation that came with your computer.

Step 1. Opening your computer

Before opening your computer, complete the following steps:

1. Turn off the computer.
2. Unplug the cables from the power outlets for your computer and all attached devices.

It is now safe to open your computer. For specific information about opening your computer, see the documentation that came with your computer.

Step 2. Unpacking the drive

Use the following procedure to unpack and handle the drive. To prevent damage and static-electricity discharge, keep handling to a minimum.

1. Do not open the antistatic bag until you are ready to install the drive. Static electricity can damage the drive and other computer components.

2. Touch the inner conductive surface of the antistatic bag containing the drive and your hand to an unpainted metal surface on the computer for two seconds. This drains static electricity from the bag and from your body.
3. Before handling the drive, ground yourself by touching an unpainted surface on the computer. Ground yourself again after leaving and returning to your work area.
4. Always handle the drive by its edges. Do not touch any exposed printed circuitry, components, or connector pins.
5. While installing the drive, avoid all unnecessary handling. Rough handling can damage the heads, rotating disks, and bearings inside the drive housing.
6. If you must put the drive down, place the antistatic bag on a flat, padded surface and place the drive on the bag with the component side facing up.

Note: If you want to install the drive in a 5.25-inch bay, you will need to purchase a conversion kit.

Step 3. Mounting the drive in the bay

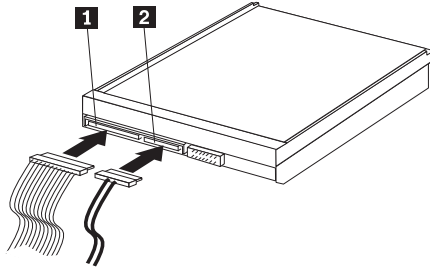
You can mount the drive horizontally or vertically. To mount the drive in the bay:

1. Slide the drive into the bay.
2. If you will be adding your new drive to a system with an existing drive, make sure the new drive is positioned so that it is adjacent to and oriented in the same direction as the existing hard drive so that you will not have to twist the interface cable in order to connect the drives.
3. Align the drive-bay screw holes with the threaded holes in the drive housing or expansion brackets.
4. Hand thread the screws to lightly secure the drive in the bay. For some installations, it might be necessary to use the screw holes on the bottom (circuit board side) of the drive.
5. Check the drive alignment and tighten the screws. Do not overtighten.

Step 4. Attaching the cables to the drive

Use the following procedure to attach the cables.

1. Attach the cable provided with your option to the 7-pin port (**2**) on your drive.
2. Attach the other end to the serial ATA port. The serial ATA port can be on the computer system board or on an adapter installed in an expansion slot.



1 15-pin SATA power connector

2 7-pin cable

3. Find an unused 15-pin SATA power connector coming from the computer power supply and attach it to the DC power connector on the drive (**1**). The power connector is keyed so that it attaches one way only. Do not force it. If the connector does not attach using reasonable pressure, recheck the orientation of the cable connector to the drive connector and try again.

Note: Connect only one power cable.

Step 5. Completing the installation of the drive

To complete the installation of the drive:

1. Verify that the hard disk drive is securely mounted and the cables are firmly attached.
2. Verify that the cables do not interfere with the computer cover and do not block the power supply fan blades or air flow paths.
3. Replace the computer cover.
4. Reconnect all devices. Make sure that the keyboard, mouse, and monitor cables are firmly connected.
5. Reconnect all AC power cords.

Preparing the drive for use

When you restart your computer, the configuration setup information screen displays because you changed the hardware in your computer. Some computers require you to make configuration choices the first time you restart after installing a new device. If the screen does not display, see your computer documentation for information about how to access it. For most IBM computers, you can see the configuration information during computer startup by pressing F1 when the configuration graphic displays in the upper right corner of your screen.

Check your configuration setup information for one of the following:

- If the configuration setup program reports the size of your new drive as what you expected, save your changes, close the configuration program, and continue with "Partitioning and formatting your drive" on page 7.
- If your computer seems to stop responding or if it does not restart successfully, go to Chapter 2, "Problem solving," on page 9.

Partitioning and formatting your drive

If you are adding your drive to a computer that has Windows 2000 installed on an existing drive, follow the instructions below to partition and format your new SATA drive.

1. Turn on your computer.
2. Click **Start -> Programs -> Control Panel**.
3. Double-click **Administrative Tools**.
4. Double-click **Computer Management**.
5. Double-click **Storage**.
6. Double-click **Disk Management**.
7. From the menu bar, click **Action -> All Tasks -> Create Volume**. The **Create Volume Wizard** opens.
8. Follow the on-screen instructions to partition and format the drive.

If you are adding your drive to a computer that has Windows XP installed on an existing drive, follow the instructions below to partition and format your new SATA drive.

Note: When installing an IBM ThinkAccessories Hard Disk Drive under Windows XP to be able to access capacities above 137GB, a minimum of Service Pack 1a (SP1a) is required.

1. Turn on your computer.
2. Click **Start -> My Computer**.
3. Right click **My Computer**.

4. Click **Manage**. The Computer Management window opens.
5. From the left side menu, single click **Disk Management**.
6. From the menu bar, click **Action -> All Tasks -> Format**.
7. The Format window opens. Follow the onscreen instructions to format and partition the drive.

Note: If you are installing the drive in a computer that has no hard disk drive, follow the instructions below to partition and format the new hard disk drive for the Windows 2000 or Windows XP operating system using NTFS:

1. Insert the first Windows 2000 or Windows XP installation diskette (*Setup Disk #1*) in the diskette drive or insert the Windows 2000 or Windows XP installation CD into your CD-ROM drive.
2. Restart your computer.
3. Use the instructions in the Windows 2000 or Windows XP user's guide to partition and format your drive.

Managing your hard disk drive

Disk Manager, included on the *IBM Serial ATA Software and User's Guide CD*, provides tools for hard disk management that allow you to:

- partition and format your hard disk drive
- update CD-ROM drive letters, if necessary
- copy files from your old hard disk drive to the new drive without changing directory or file names
- run diagnostic programs to test and manage the drive

For more information on these tools, please click on the Help button inside the Maintenance Options section of the Disk Manager software.

Chapter 2. Problem solving

If you install your new hard disk drive and the startup program seems to stop responding or does not report the new drive correctly, there might be a hardware problem. See the following sections for more information on these issues.

Correcting hardware problems

To isolate and correct a hardware problem, try the following:

1. Use the following procedures to check the cable connections.
 - a. Turn off the computer.
 - b. Unplug the cables from the power outlets for your computer and all attached devices.
 - c. Remove the computer cover and disconnect the interface cable from the drive.
 - d. Confirm connections to the hard disk drive interface and power connector. See “Step 4. Attaching the cables to the drive” on page 6.
 - e. Verify that the power cable is correctly attached to the drive.
 - f. Replace the computer cover.
 - g. Reconnect the power cord to the computer.
 - h. Restart your computer.

If the problem does not occur again, go back to “Preparing the drive for use” on page 7. If the problem occurs again, continue with step 2.

2. Check for a conflict with another device and restart the computer with only the new hard disk drive connected.
 - a. Turn off the computer.
 - b. Unplug the cables from the power outlets for your computer and all attached devices.
 - c. Remove the computer cover and disconnect all devices from the IDE and SATA ports.
 - d. Connect the new hard disk drive to a Serial ATA port.
 - e. Replace the computer cover.
 - f. Recheck all external cables.
 - g. Restart the computer and check the drive size reported by the configuration setup program. If the hard disk drive is now correctly detected, you have a compatibility problem with one of the disconnected devices.

- h. To isolate an incompatibility problem:
- Refer to the user's guides for the attached devices.
 - Use the *Disk Manager Online Manual* for additional information. To open the Disk Manager Online Manual, use the following steps:
 - 1) Insert the *Software and User's Guide* CD into your CD-ROM drive.
 - 2) Select your language.
 - 3) On the left side of the window, click **DiskManager**.
 - 4) Select your language and click **OK**.
 - 5) In the Disk Manager main menu, select **View/Print Online Manual** and then press **Enter**.
 - If the conflicting device is a hard disk drive that is not an IBM product, check the Web site for the drive manufacturer or call the manufacturer's help desk.
 - When you have corrected the compatibility problem, go back to "Preparing the drive for use" on page 7 to complete the disk drive preparation process.

Appendix A. Warranty information

This section contains the warranty period for your product, information about obtaining warranty service and support, and the IBM Statement of Limited Warranty.

Warranty period

Contact your place of purchase for warranty service information.

Machine - Serial ATA Hard Disk Drive

Warranty period	Service delivery method
Parts - 1 year, labor - 1 year	Customer carry-in or mail-in

Service and support

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

Warranty information on the World Wide Web

The IBM Machine Warranties Web site at http://www.ibm.com/servers/support/machine_warranties/ contains a worldwide overview of the IBM Limited Warranty for IBM Machines, a glossary of terms used in the Statement of Limited Warranty, Frequently Asked Questions (FAQ), and links to Product Support Web pages. The IBM Statement of Limited Warranty is available from this Web site in 29 languages in Portable Document Format (PDF).

Online technical support

Online technical support is available during the life of your product through the Personal Computing Support Web site at <http://www.ibm.com/pc/support/>.

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

Telephone technical support

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

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

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

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

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

Support 24 hours a day, 7 days a week	
Canada (Toronto only)	416-383-3344
Canada (all other)	1-800-565-3344
U.S.A. and Puerto Rico	1-800-IBM-SERV
All other countries and regions	Go to http://www.ibm.com/pc/support/ , and click Support Phone List .

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, 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 Limited 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.

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 ("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.

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.

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. 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 a Machine, contact IBM or your reseller. If you do not register your Machine with IBM, you may be required to present proof of purchase.

During the warranty period, IBM or your reseller, if approved by IBM to provide warranty service, provides without charge certain types of repair and exchange service 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. At its discretion, IBM or your reseller will 1) either repair or exchange the failing Machine and 2) provide the service either at your location or a service center. IBM or your reseller will also manage and install selected engineering changes that apply to the Machine.

Some parts of IBM Machines are designated as Customer Replaceable Units (called “CRUs”), e.g., keyboards, memory, or hard disk drives. IBM ships CRUs to you for replacement by you. You must return all defective CRUs to IBM within 30 days of your receipt of the replacement CRU. You are responsible for downloading designated Machine Code and Licensed Internal Code updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

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. 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.

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), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than

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

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, LOST PROFITS OR LOST 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.

Governing Law

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

Part 2 - Country-unique Terms

AMERICAS

BRAZIL

Governing Law: *The following is added after the first sentence:* Any litigation arising from this Agreement will be settled exclusively by the court of Rio de Janeiro.

NORTH AMERICA

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

CANADA

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

UNITED STATES

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

ASIA PACIFIC

AUSTRALIA

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 similar legislation and are only limited to the extent permitted by the applicable legislation.

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

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

CAMBODIA, LAOS, AND VIETNAM

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

The following is added to this Section: Disputes and differences arising out of or in connection with this Agreement shall be finally settled by arbitration which shall be held in Singapore in accordance with the rules of the International Chamber of Commerce (ICC). The arbitrator or arbitrators designated in conformity with those rules shall have the power to rule on their own competence and on the validity of the Agreement to submit to arbitration. The arbitration award shall be final and binding for the parties without appeal and the arbitral award shall be in writing and set forth the findings of fact and the conclusions of law.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator.

The two arbitrators appointed by the parties shall appoint a third arbitrator before proceeding upon the reference. The third arbitrator shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the ICC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

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

The English language version of this Agreement prevails over any other language version.

HONG KONG AND MACAU

Governing Law: *The following replaces “laws of the country in which you acquired the Machine” in the first sentence: laws of Hong Kong Special Administrative Region.*

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

JAPAN

Governing Law: *The following sentence is added to this Section: Any doubts concerning this Agreement will be initially resolved between us in good faith and in accordance with the principle of mutual trust.*

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.*

PEOPLE’S REPUBLIC OF CHINA (PRC)

Governing Law: *The following replaces this Section: Both you and IBM consent to the application of the laws of the State of New York (except when local law requires otherwise) to govern, interpret, and enforce all your and IBM’s rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Agreement, without regard to conflict of law principles.*

Any disputes arising from or in connection with this Agreement will first be resolved by friendly negotiations, failing which either of us has the right to

submit the dispute to the China International Economic and Trade Arbitration Commission in Beijing, the PRC, for arbitration in accordance with its arbitration rules in force at the time. The arbitration tribunal will consist of three arbitrators. The language to be used therein will be English and Chinese. An arbitral award will be final and binding on all the parties, and will be enforceable under the Convention on the Recognition and Enforcement of Foreign Arbitral Awards (1958).

The arbitration fee will be borne by the losing party unless otherwise determined by the arbitral award.

During the course of arbitration, this Agreement will continue to be performed except for the part which the parties are disputing and which is undergoing arbitration.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES: The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

Warranty Service: If you purchase 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 purchase 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.

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

Governing Law: The applicable laws that govern, interpret and enforce rights, duties, and obligations of each of us arising from, or relating in any manner

to, the subject matter of this Statement, without regard to conflict of laws principles, as well as Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided, except that in 1) Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Hungary, Former Yugoslav Republic of Macedonia, Romania, Slovakia, Slovenia, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan, the laws of Austria apply; 2) Estonia, Latvia, and Lithuania, the laws of Finland apply; 3) Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Djibouti, Democratic Republic of Congo, Equatorial Guinea, France, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Mali, Mauritania, Morocco, Niger, Senegal, Togo, and Tunisia, this Agreement will be construed and the legal relations between the parties will be determined in accordance with the French laws and all disputes arising out of this Agreement or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 4) Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe, this Agreement will be governed by English Law and disputes relating to it will be submitted to the exclusive jurisdiction of the English courts; and 5) in Greece, Israel, Italy, Portugal, and Spain any legal claim arising out of this Statement will be brought before, and finally settled by, the competent court of Athens, Tel Aviv, Milan, Lisbon, and Madrid, respectively.

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND 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 is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

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.

Limitation of Liability: *The following paragraph is added to this Section:* The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

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

EGYPT

Limitation of Liability: *The following replaces item 2 in this Section:* as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code.

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).

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 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: 1. (unchanged) 2. as to any other actual damage arising in all situations involving nonperformance 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 third 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.*

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 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 shall be limited to damages.

Appendix B. Notices

IBM may not offer the products, services, or features discussed in this document in all countries. Consult your local IBM representative for information on the products and services currently available in your area. 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. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

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Electronic emission notices

Serial ATA Hard Disk 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 a la réglementation d'Industrie Canada

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

Deutsche EMV-Direktive (electromagnetische Verträglichkeit)

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

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

IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

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

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

EN 55022 Hinweis:

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

Anmerkung:

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

European Union - emission directive

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

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

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

Union Européenne - Directive Conformité électromagnétique

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

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

Ce produit a été testé et il satisfait les conditions de l'équipement informatique de Classe B en vertu de Standard européen EN 55022. Les

conditions pour l'équipement de Classe B ont été définies en fonction d'un contexte résidentiel ordinaire afin de fournir une protection raisonnable contre l'interférence d'appareils de communication autorisés.

Unione Europea - Directiva EMC (Conformidad electromagnética)

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la 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 Europeo EN 55022. Los límites para los equipos de Clase B se han establecido para entornos residenciales típicos a fin de proporcionar una protección razonable contra las interferencias con dispositivos de comunicación licenciados.

Union Europea - Normativa EMC

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

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

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

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

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