ThinkPad® T23
Service and Troubleshooting Guide

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Note

Before using this information and the product it supports, be sure to read the general information under "Appendix A. Important safety instructions" on page 41 and "Appendix B. Product warranties and notices" on page 47 .

DANGER

- **To avoid electric shock hazard, connect and disconnect cables appropriately when installing, moving or opening the covers of this product or attached devices. Use the power cord with a properly grounded outlet.**
- **Do not leave the base of your computer in contact with your lap or any part of your body for an extended period when the computer is functioning or when the battery is charging. Your computer dissipates some heat during normal operation. This heat is a function of the level of system activity and battery charge level. Extended contact with your body, even through clothing, could cause discomfort or, eventually, a skin burn.**
- **To reduce the risk of electric shock, do not use your computer in or near water.**
- **To avoid electric shock, do not use your computer with the telephone cable connection during an electrical storm. Do not connect the cable to or disconnect it from the telephone outlet on the wall during an electrical storm.**
- **Store packing materials safely out of the reach of children to prevent the risk of suffocation from plastic bags.**
- **The battery pack contains a small amount of harmful substances. There is danger of an explosion if the battery pack is incorrectly replaced, exposed to fire or water, short-circuited or disassembled. Keep the battery pack away from children and do not put it in trash that is disposed of in landfills.**
- **To reduce the risk of fire, use only No. 26 AWG or thicker telephone cable.**
- **The fluorescent lamp in the LCD contains mercury. Do not put it in trash that is disposed of in landfills. Rough handling or dropping the computer can cause the LCD to break and the internal fluid to get into your eyes or on your hands. Immediately wash the affected areas with water. If symptoms persist, seek medical care.**
- **Do not open the CD-ROM or DVD drive unit, as this might result in hazardous radiation exposure.**
- **Avoid direct eye exposure with the laser beam contained in some drives.**

First Edition (April 2001)

The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law:

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Finding information with Access ThinkPad

① Your gateway into a comprehensive help system, offering information about all of your ThinkPad computer hardware and software features.

② A quick way to search the help system.

③ Join an interactive community of ThinkPad users to access mobile resources, read tips and true stories, and share your own advice.

④ Customize your ThinkPad with accessories, software and services.

⑤ A one-click guide to service on the Web for your ThinkPad.

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Whenever you have a question about your computer, or wish to view IBM Web sites, simply press the ThinkPad button to open Access ThinkPad.

Access ThinkPad includes a comprehensive, on-board help and information center for your computer. It travels with you, eliminating the need to carry reference manuals.

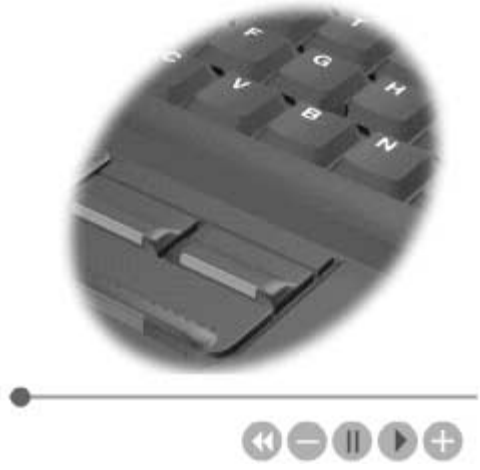
Find information about your ThinkPad computer and its features by using the Quick Search or clicking one of the topics shown. This opens another window, where you can view hundreds of help topics by browsing the table of contents, using the index, or performing a search.

View help topics to learn how to:

- Use your computer hardware features
- Connect to the internet or a local network
- Set up a projector for your presentation
- Use passwords and other security features
- Install, remove and recover software
- Upgrade your system
- Extend the life of your battery
- Troubleshoot problems
- Contact IBM for service and support
- Perform many other tasks

Click one of the Internet buttons to join an interactive ThinkPad Web community, or to directly access information about accessories and software updates, small business offerings, and help and support.

Some of the topics in your help system contain brief video clips that show you how to perform certain tasks, such as replacing your battery, inserting a PC card, or upgrading your memory. Use the controls shown to play, pause, and rewind the video clip.



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Chapter 1. Overview of your new ThinkPad computer

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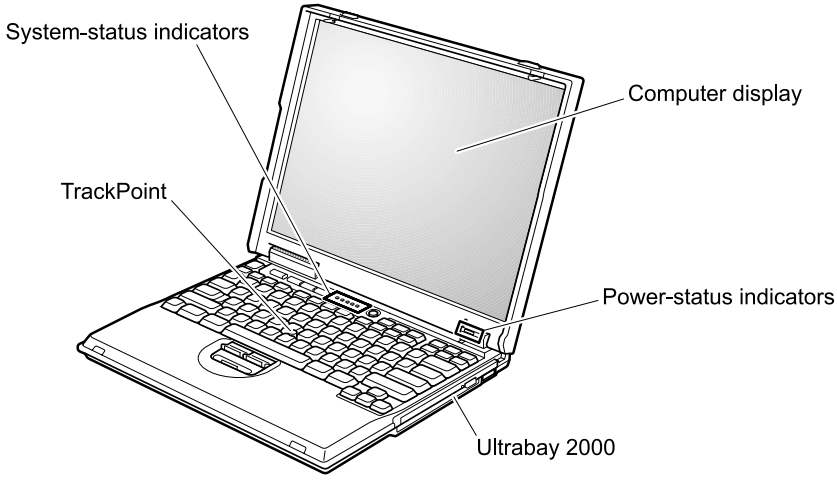
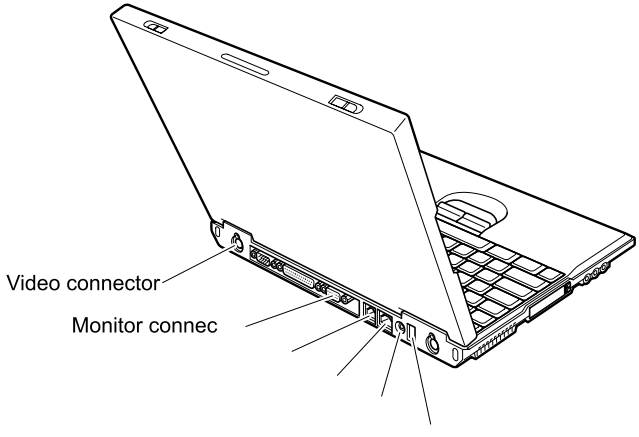
Your ThinkPad at a glance

Front view



Rear view



Features

Processor

- Intel® Pentium® III processor

Memory

- Built-in: 128 MB
- Maximum: 512 MB

Storage device

- 2.5-inch hard disk drive: Up to 32 GB, depending on the model

Display

The color display uses TFT technology:

- Size: 13.3 or 14.1 inch, depending on the model
- Resolution:
  - LCD: Up to 1400-by-1050, depending on the model
  - External monitor: Up to 1600-by-1200
- Brightness control

Keyboard

- 84-key, 85-key, or 89-key
- TrackPoint®
- **Fn** key function
- ThinkPad button
- Volume control buttons
- ThinkLight™

Diskette drive

To get the best performance from your diskette drives, use high-quality diskettes (such as IBM diskettes) that meet or exceed the following standards:

- 1-MB, 3.5-inch, unformatted diskette:
  - ANSI (American National Standards Institute) X3.137
  - ISO (International Standards Organization) 8860
  - ECMA (European Computer Manufacturers Association) 100
- 2-MB, 3.5-inch, unformatted diskette:
  - ANSI X3.171
  - ISO 9529
  - ECMA 125

External interface

- Serial connector (EIA-RS232D)
- Parallel connector (IEEE 1284A)
- External-input-device connector
- External-monitor connector
- PC Card slots (Type I, Type II, or Type III PC Card)
- Headphone jack
- Line-in jack
- Microphone jack
- Video-out connector
- Universal Serial Bus (USB) connector
- Ultraport™ connector
- Infrared port
- RJ11 telephone connector (available if the modem Mini-PCI Card or the Combo Mini-PCI Card is installed)
- RJ45 Ethernet connector (available if the Ethernet Mini-PCI Card or the Combo Mini-PCI Card is installed)
- Ultrabay™ 2000
- Expansion connector

Specifications

Size

- Width: 304.8 mm (12.0 in.)
- Depth: 248.9 mm (9.8 in.)
- Height: 33.0 mm (1.3 in.)

Environment

- Maximum altitude without pressurization: 3048 m (10,000 ft)
- Temperature
  - At altitudes up to 2438 m (8000 ft)
    - Operating with no diskette: 5° to 35°C (41° to 95°F)
    - Operating with a diskette: 10° to 35°C (50° to 95°F)
    - Not operating: 5° to 43°C (41° to 110°F)
  - At altitudes above 2438 m (8000 ft)
    - Maximum operating temperature, 31.3°C (88° F)

  Note: When you charge the battery pack, its temperature must be at least 10°C (50°F).
- Relative humidity:
  - Operating with no diskette in the drive: 8% to 95%
  - Operating with a diskette in the drive: 8% to 80%

Heat output

- 56 W (191 Btu/hr) maximum

Electrical (ac adapter)

- Sin-wave input at 50 to 60 Hz
- Input rating of the ac adapter: 100-240 V ac, 50 to 60 Hz

Battery pack

- Lithium-ion (Li-Ion) battery pack
  - Nominal voltage: 10.8 V dc
  - Capacity: 3.6 AH

Caring for your ThinkPad computer

Though your computer is designed to function reliably in normal work environments, you need to use common sense in handling it. By following these important tips, you will get the most use and enjoyment out of your computer.

Important tips:

Be careful about where and how you work

- Do not leave the base of your computer in contact with your lap or any part of your body for an extended period when the computer is functioning or when the battery is charging. Your computer dissipates some heat during normal operation. This heat is a function of the level of system activity and battery charge level. Extended contact with your body, even through clothing, could cause discomfort or, eventually, a skin burn.
- Place liquids away from your computer to avoid spills, and keep your computer away from water (to avoid the danger of electrical shock).
- Store packing materials safely out of the reach of children to prevent the risk of suffocation from plastic bags.
- Keep your computer away from magnets, activated cellular phones, electrical appliances, or speakers (within 13cm/5 in).
- Avoid subjecting your computer to extreme temperatures (below 5°C/41°F or above 35°C/95°F).

Be gentle with your computer

- Avoid placing any objects (including paper) between the display and the keyboard or under the keyboard.
- Do not drop, bump, scratch, twist, hit, vibrate, push or place heavy objects on your computer, display, or external devices.
- Your computer display is designed to be opened and used at an angle slightly greater than 90 degrees. Do not open the display beyond 135 degrees, as this might damage the computer hinge.

Carry your computer properly

- Before moving your computer, be sure to remove any media, turn off attached devices, and disconnect cords and cables.
- Be sure your computer is in standby or hibernation mode, or turned off, before moving it. This will prevent damage to the hard disk drive and data loss.
- When picking up your open computer, hold it by the bottom. Do not pick up or hold your computer by the display.

- Use a quality carrying case that provides adequate cushion and protection. Do not pack your computer in a tightly packed suitcase or bag.

Handle storage media and drives properly

- If your computer comes with a diskette drive, avoid inserting diskettes at an angle and attaching multiple or loose diskette labels, as these can lodge in the drive.
- If your computer comes with a CD-ROM or DVD-ROM drive, do not touch the surface of a CD or the lens on the CD-ROM or DVD-ROM tray.
- Wait until you hear the CD- or DVD-ROM click into the center pivot of the CD- or DVD-ROM drive before closing the CD- or DVD-ROM tray
- When installing your hard disk, diskette, CD-ROM, or DVD-ROM drive, follow the instructions shipped with your hardware, and apply pressure only where needed on the device. See Access ThinkPad, your on-board help system, for information on replacing your hard disk drive (open Access ThinkPad by pressing the ThinkPad button).

Take care in setting passwords

- Remember your passwords. If you forget a supervisor or hard disk password, IBM will not reset it, and you may have to replace your system board or hard disk drive.
- If you are an administrator, remember that setting a supervisor password can prevent unauthorized initialization.

Other important tips

- Your computer modem may use only an analog telephone network, or public-switched telephone network (PSTN). Do not connect the modem to a PBX (private branch exchange) or any other digital telephone extension line because this could damage your modem. Analog phone lines are often used in homes, while digital phone lines are often used in hotels or office buildings. If you are not sure which kind of phone line you are using, contact your telephone company.
- Your computer might have both an Ethernet connector and a modem connector. If so, be sure to connect your communication cable to the correct one, so your connector is not damaged. See Access ThinkPad, your on-board help system, for information on the location of these connectors (press the ThinkPad button to open Access ThinkPad).
- Register your ThinkPad products with IBM (refer to the Web page: **www.pc.ibm.com/register**). This can help authorities return your computer to you if it is lost or stolen. Registering your computer also enables IBM to notify you about possible technical information and upgrades.
- Only an authorized IBM ThinkPad repair technician should disassemble and repair your computer.

- Do not modify or tape the latches to keep the display open or closed.
- Take care not to turn your computer over while the ac adapter is plugged in. This could break the adapter plug.
- Turn off your computer if you are replacing a device in a device bay, or else verify that the device is warm- or hot-swappable.
- If you exchange drives in your computer, reinstall the plastic bezel faces (if supplied).
- Store your external and removable hard disk, diskette, CD-ROM, and DVD-ROM drives in the appropriate containers or packaging when they are not being used.

Cleaning your computer

Occasionally clean your computer as follows:

- Use a soft cloth moistened with nonalkaline detergent to wipe the exterior of the computer.
- Avoid spraying cleaner directly on the display or the keyboard.
- Gently wipe the display with a dry, soft cloth.

Chapter 2. Solving computer problems

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Diagnosing problems

If you have a problem with your computer, you can test it by using PC-Doctor® for Windows. To run PC-Doctor for Windows, do as follows:

1. Click **Start**.
2. Move the cursor to **Programs** and then to **PC-Doctor for Windows**.
3. Click **PC-Doctor for Windows**.
4. Choose either the **Quick Test** or the **Standard Test**.

> **Attention**
> Running the Quick Test set can take 10 minutes or longer. Make sure you have time to run the entire test; do not interrupt the test while it is running.

The Quick Test set runs many tests of critical hardware components, but it does not run all of the diagnostic test in PC-Doctor for Windows. If PC-Doctor for Windows reports that all of the tests in the Quick Test set have been run and that it has found no problems, consider running additional tests.

If you are preparing to contact IBM for support, be sure to print the test log so that you can rapidly provide information to the help technician.

Troubleshooting

If you do not find your problem here, refer to access ThinkPad, your on-board help system. Open Access ThinkPad by pressing the ThinkPad button. The following section only describes problems that might prevent you from accessing this help system.

Error messages

Note:

1. In the charts, x can be any character.
2. The version of PC-Doctor referred to here is PC-Doctor for Windows.

Message	Solution
0175: Bad CRC1, stop POST task	The EEPROM checksum is not correct (block #6). Have the computer serviced.
0187: EAIA data access error	The access to EEPROM is failed. Have the computer serviced.
0188: Invalid RFID serialization information area or bad CRC2.	The EEPROM checksum is not correct (block # 0 and 1, or block # 6). The system board should be replaced, and the box serial number needs to be reinstalled. Have the computer serviced.
0189: Invalid RFID configuration information area	The EEPROM checksum is not correct (block # 4 and 5). The system board should be replace, and the UUID needs to be reinstalled. Have the computer serviced.
0190: Critical low-battery error	The computer turned off, because the battery is low. Connect the ac adapter to the computer and charge the battery, or replace the battery with a fully charged one.
0193: RF antenna has been removed	The RFID antenna that you installed has been removed. Enter the supervisor password to return your computer to the normal operation.
0194: The computer is carried through the security gate	The computer have been carried through the security portal gate. Enter the supervisor password to return your computer to the normal operation.
0200: Hard disk error	The hard disk is not working. Make sure the hard disk drive is attached firmly. Run the BIOS Setup Utility; then make sure the hard disk drive is not disabled in the Startup menu.

Message	Solution
021*x*: Keyboard error	Make sure that no object is placed on the keyboard or on the external keyboard, if you have one. Turn off the computer, and turn off all attached devices. Turn on the computer first; then turn on the attached devices. If you still see the same error code, do the following: If an external keyboard is connected, do the following: • Turn off the computer and disconnect the external keyboard; then turn on the computer. Make sure that the built-in keyboard operates correctly. If it was, have the external keyboard serviced. • Make sure that the external keyboard is connected to the correct connector. Test the computer, using PC-Doctor. • If the computer stops during the test, have the computer serviced.
0220: Monitor type error	The monitor type does not match the type specified in CMOS. Run the IBM BIOS Setup Utility to make sure that your monitor type matches the type specified in the utility.
0230: Shadow RAM error	The shadow RAM failed. Test your computer's memory with PC-Doctor. If you added a memory module just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.
0231: System RAM error	The system RAM failed. Test your computer's memory with PC-Doctor. If you added a memory module just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.
0232: Extended RAM error	The extended RAM failed. Test your computer's memory with PC-Doctor. If you have increased memory just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.
0250: System battery error	The system battery is dead. Replace the battery and run IBM BIOS Setup Utility to verify the configuration. If you still have a problem, have the computer serviced.
0251: System CMOS checksum bad	The system CMOS might have been corrupted by an application program. The computer uses the default settings. Run IBM BIOS Setup Utility to reconfigure the settings. If you still see the same error code, have the computer serviced.
0260: System timer error	Have the computer serviced.
0270: Real time clock error	Have the computer serviced.
0271: Date and time error	Neither the date nor the time is set in the computer. Set the date and time, using the IBM BIOS Setup Utility.

Message	Solution
0280: Previous boot incomplete	Your computer was previously unable to complete the boot process. Turn the computer off; then turn it on to start the IBM BIOS Setup Utility. Verify the configuration and then restart the computer either by choosing the **Exit Saving Changes** option under the **Restart** item or by pressing F10. If you still see the same error code, have the computer serviced.
02D0: System cache error	The cache is disabled. Have the computer serviced.
02F4: EISA CMOS not writable	Have the computer serviced.
02F5: DMA test failed	Have the computer serviced.
02F6: Software NMI failed	Have the computer serviced.
02F7: Fail-safe timer NMI failed	Have the computer serviced.
The power-on password prompt	A power-on password or a supervisor password is set. Type the password and press Enter to use the computer. If the power-on password is not accepted, a supervisor password might have been set. Type the supervisor password and press Enter. If you still see the same error message, have the computer serviced.
The hard disk password prompt	A hard disk password is set. Type the password and press Enter to use the computer. If you still see the same error message, have the computer serviced.
The DOS full-screen looks smaller.	If you use a DOS application that supports only 640x480 resolution (VGA mode), the screen image might look slightly distorted or might appear smaller than the display size. This is to maintain compatibility with other DOS applications. To expand the screen image to the same size as the actual screen, start the ThinkPad Configuration Program and click **LCD**; then select the **Screen expansion** function. (The image might still look slightly distorted.) **Note:** If your computer has screen expansion function, you can use the Fn+F8 keys to expand the screen image.
Hibernation error	The system configuration changed between the time your computer entered hibernation mode and the time it left this mode, and your computer cannot resume normal operation. • Restore the system configuration to what it was before your computer entered hibernation mode. • If the memory size has been changed, re-create the hibernation file.

Message	Solution
Operating system not found.	Verify the following: • The hard disk drive is correctly installed. • A startable diskette is in the diskette drive If you still see the same error message, check the boot sequence, using IBM BIOS Setup Utility.
Fan error	The cooling fan is failing. Have the computer serviced.

EMM386 Not Installed—Unable to Set Page Frame Base Address.	Edit C:\CONFIG.SYS and change a line from
	`device=C:\WINDOWS\EMM386.EXE RAM`
	
	to
	`device=C:\WINDOWS\EMM386.EXE NOEMS`
	
	and save this file.

CardBus Configuration Error—Device Disabled	Press F1 to go to the IBM BIOS Setup Utility. Press F9 and then Enter to load the default setting. Press F10 and then Enter to restart the system.

Errors without messages

Problem: When I turn on the machine, nothing appears on the screen and the machine does not beep while starting up.

Note: If you are not sure whether you heard any beeps, turn off the computer; then turn it on again, and listen again.

Solution: If a power-on password is set, press any key to display the power-on password prompt, and then type the correct password and press **Enter**.

If the power-on password prompt does not appear, the brightness control lever might be set to minimum brightness. Adjust the brightness level by pressing the Fn+Home.

If the screen still remains blank, make sure that:

- The battery is installed correctly.
- The ac adapter is connected to the computer and the power cord is plugged into a working electrical outlet.
- The computer power is on. (Turn on the power switch again for confirmation.)

If these items are properly set, and the screen remains blank, have the computer serviced.

Problem: When I turn on the machine, nothing appears on the screen, but I hear two or more beeps or a continuous beep while starting up.

Solution: If you are using Ethernet:

- Make sure that the Ethernet cable is connected firmly.
- Contact your network administrator.

If you are not using Ethernet:

- Make sure that Alert on LAN2 is disabled in the IBM BIOS Setup Utility.

If the screen is still blank, and beeps are not stopped, have the computer serviced.

Problem: When I turn on the machine, only a white cursor appears on a blank screen

Solution: First, reboot your system by pressing Ctrl+Alt+Del. If that does not work, hold down the power switch for more than 4 seconds. If this does not resolve the problem, you may need to reinstall your operating system.

Problem: My screen goes blank while the computer is on.

Solution: Your screen saver or power management may be enabled. Move the TrackPoint or press a key to exit the screen saver, or press the power switch to resume from standby or hibernation.

Password problems

Problem: I forgot my password.

Solution: If you forgot your power-on password, you have to take your computer to an IBM reseller or marketing representative to have the password canceled.

If you forgot your hard disk password, IBM will not reset your password or recover data from the hard disk. You must take your computer to an IBM reseller or an IBM marketing representative to have the hard disk drive replaced. Proof of purchase is required, and an additional charge might be required for the service.

If you forgot your supervisor password, IBM will not reset your password. You must take your computer to an IBM reseller or IBM marketing representative to have the system board replaced. Proof of purchase is required, and an additional charge might be required for the service.

A power switch problem

Problem: The system does not respond, and you cannot turn off the computer.

Solution: Turn off the computer by pressing and holding the power switch for 4 seconds or more. If the system is still not reset, remove the ac adapter and the battery.

Keyboard problems

Problem: The cursor does not move after the computer returns from one of the power management modes.

Solution: Make sure you followed the instructions correctly when you installed Windows with the Advanced Power Management (APM) option.

Problem: Some or all keys on the keyboard do not work.

Solution: If the problem occurred immediately after the computer returned from standby mode, enter the power-on password if any is set.

If an external keyboard is connected, the numeric keypad on your computer does not work. Use the numeric keypad on the external keyboard.

If an external numeric keypad or a mouse is connected:

1. Turn off the computer.
2. Remove the external numeric keypad or the mouse.
3. Turn on the computer and try using the keyboard again.

If the keyboard problem is resolved, carefully reconnect the external numeric keypad, external keyboard, or mouse, making sure that you have seated the connectors properly.

If any keys on the keyboard still do not work, have the computer serviced.

Problem: A number appears when you type a letter.

Solution: The numeric lock function is on. To disable it, press and hold **Shift**; then press **NumLk**.

Problem: All or some keys on the external numeric keypad do not work.

Solution: Make sure that the external numeric keypad is correctly connected to the computer.

Problem: All or some keys on the external keyboard do not work.

Solution: To use an external keyboard, you need to attach the keyboard / mouse cable or dock the ThinkPad Dock to the computer. Make sure that:

- The keyboard/mouse cable is correctly connected to the computer.
- The keyboard cable is connected to the correct side of the keyboard/mouse cable or the ThinkPad Dock.

If these connections are correct, disconnect the keyboard/mouse cable from the computer and make sure that the keyboard operates properly. If the built-in keyboard works, there is a problem with either the cable or the keyboard. Try using a different keyboard/mouse cable or external keyboard.

TrackPoint problems

Problem: The cursor drifts when the computer is turned on or after it resumes normal operation.

Solution: The cursor might drift when you are not using the TrackPoint® during normal operation. This is a normal characteristic of the TrackPoint and is not a defect. Cursor drifting might occur for several seconds under the following conditions:

- When the computer is turned on.
- When the computer resumes normal operation.
- When the TrackPoint is pressed for a long time.
- When the temperature changes.

Problem: The cursor does not work for a while after the settings in the Mouse Properties window have been changed.

Solution: This is a normal characteristic of the cursor. Wait several seconds until the cursor returns to the normal state.

Problem: The mouse or pointing device does not work.

Solution: Make sure that the pointing-device cable is enabled in the ThinkPad Configuration Program.

Make sure that the mouse or pointing-device cable is securely connected to the computer.

Try using the TrackPoint. If the TrackPoint works, the error might be due to the mouse.

If your mouse is incompatible with the IBM® PS/2® mouse, disable the TrackPoint, using the ThinkPad Configuration Program.

Note: For more information, see the manual supplied with the mouse.

Problem: The mouse buttons do not work.

Solution: Change the mouse driver to **Standard PS/2 Port Mouse**, and then reinstall **IBM PS/2 TrackPoint**. Drivers are provided in the C:\IBMTOOLS\DRIVERS directory on your hard disk drive. If your hard disk drive does not contain device drivers, refer to the ThinkPad Service & Support Web site. To access this Web site, open Access ThinkPad by pressing the ThinkPad button, then click the Service & Support image on the right of the screen.

Problem: The scrolling or magnifying glass function does not work.

Solution: Check the mouse driver in Device Manage window, and make sure that the **IBM PS/2 TrackPoint** driver is installed.

Standby or hibernation problems

Problem: The computer enters standby mode automatically.

Solution: If the processor reaches a temperature that is too high, the computer automatically enters standby mode to allow the computer to cool and to protect the processor and other internal components.

Check the power management settings.

Problem: The computer enters standby mode immediately after POST (the standby indicator turns on).

Solution: Make sure that:

- The battery is charged.
- The operating temperature is within the acceptable range. Refer to "Specifications" in this Guide.

If these items are correct, have the computer serviced.

Problem: A message `critical low-battery error` appears, and the computer immediately turns off.

Solution: The battery power is getting low. Connect the ac adapter to the computer, or replace the battery with a fully charged one.

Problem: When you take action to return from standby mode, the computer display remains blank.

Solution: Check whether an external monitor was disconnected while the computer was in standby mode. Do not disconnect the external monitor while the computer is in standby mode or hibernation mode. If no external monitor

is attached when the computer resumes, the computer display remains blank and output is not displayed. This restriction does not depend on the resolution value.

Problem: The computer does not return from standby mode, or the standby indicator stays on and the computer does not work.

Solution: The computer automatically enters standby or hibernation mode when the battery is depleted. Connect the ac adapter to the computer; then press Fn.

Problem: When you are using the port replicator, resuming normal operation from hibernation or standby mode takes a long time.

Solution: If the Ethernet port is enabled, but the port replicator is not connected to a network, resuming operation can take a long time. The computer queries the Ethernet until the timeout timer stops the query. If you want to access an Ethernet, connect the network cable. If you are not using the network, disable the Ethernet port as follows:

For Windows 98:

1. Double-click the **System** icon in the **Control Panel**.
2. Click the **Device Manager** tab.
3. Double-click **Network Adapter**.
4. Double-click **Intel EtherExpress PRO PCI Adapter**.
5. Mark the **Disable in this hardware profile** check box.
6. Click **OK**.
7. Close all windows.
8. Restart the computer.

For Windows NT:

1. Double-click the **System** icon in the **Control Panel**.
2. Select **Intel EtherExpress PRO Adapter**, and click **Startup...**
3. Select **Disabled**.
4. Click **OK**.
5. Click **Close**.
6. Close all windows.
7. Restart the computer.

Problem: Your computer does not enter standby or hibernation mode.

Solution: Check whether any option has been selected that would disable your computer from entering standby or hibernation mode.

Problem: The computer does not enter standby mode as set by the timer under Windows 98 or Windows NT®.

Solution:

For Windows 98:

The generic CD-ROM or DVD-ROM driver for Windows 98 accesses the internal CD-ROM or DVD-ROM drive every 3 seconds to see whether a CD-ROM is inserted there. This prevents your computer from entering standby mode even after a timeout. To enable the computer to enter standby mode, do the following:

1. Click **Start**.
2. Move the cursor to **Settings** and **Control Panel**.
3. Click **Control Panel**, and then double-click **System**.
4. Click the **Device Manager** tab.
5. Click the **+** mark of **CD-ROM**.
6. Double-click the name of the CD-ROM or DVD-ROM.
7. Click the **Setting** tab.
8. Clear the **Auto insert notification** check box.

Windows 98 no longer detects the insertion of a CD-ROM or a DVD-ROM automatically.

For Windows NT:

If you enable the CD-ROM AutoRun feature, the timer cannot triggers the computer to enter standby mode. To enable the timer in this situation, edit the configuration information in the registry as follows:

```
HKEY_LOCAL_MACHINE\SYSTEM\
CurrentControlSet\Services\Cdrom\
Autorun: 0x1 > Autorun: 0
```

Problem: The Fn+F12 key combination does not cause the computer enter hibernation mode.

Solution: Enable hibernation mode as follows:

For Windows 98:

1. Start the ThinkPad Configuration program.
2. Click **Power Management** .
3. Click the **Hibernation** tab.
4. Click the **Enable hibernation...** button.
5. Click the **Create Now** button.

If you are using one of the IBM communication PC Cards, the computer cannot enter hibernation mode. To enter hibernation mode, stop the communication program, and then remove the PC Card or disable the PC Card slot, using the Control Panel.

For Windows NT:

Note: To use hibernation mode in Windows NT, you must format your hard disk with the FAT format system. If you format your hard disk with NTFS, the default format in Windows NT, you cannot use hibernation mode.

1. Start the ThinkPad Configuration program.
2. Click **Power Management**.
3. Click **Suspend/Resume Options**.
4. Click **Enable Hibernation**.
5. Click **OK**.

If you are using one of the IBM communication PC Cards, the computer cannot enter hibernation mode. To enter hibernation mode, stop the communication program, and then remove the PC Card or disable the PC Card slot, using the Control Panel.

Computer screen problems

Problem: The screen is blank.

Solution: Press Fn+Home key to make the screen brighter. If you still have the problem, do the "Solution" in the problem below.

Problem: The screen is unreadable or distorted.

Solution: Make sure that:

- The display device driver is installed correctly.
- The display resolution and color depth are correctly set.
- The monitor type is correct.

To check these settings, do as follows:
Open the Display Properties window.

For Windows 98:

1. Click the **Settings** tab.
2. Check if the color depth and resolution are correctly set.
3. Click **Advanced...**
4. Click the **Adapter** tab.
5. Make sure ″S3_Inc. Savage/IX w/MV″ is shown in the adapter information window.
6. Click the **Monitor** tab.
7. Make sure the information is correct.

For Windows NT:

1. Click the **Settings** tab.
2. Check if the color depth and resolution are correctly set
3. Click **Display Type...**
4. Make sure ″S3 Inc. Savage/IX Display Driver″ is shown in the Display Type window.
5. Click **OK**.
6. Click the **Test** button in the Settings window.
7. Make sure the output is displayed correctly.

Problem: Incorrect characters appear on the screen.

Solution: Did you install the operating system or application program correctly? If they are installed and configured correctly, have the computer serviced.

Problem: The screen stays on even after you turn off your computer.

Solution: Press and hold the power switch for 4 seconds or over to turn off your computer; then turn it on again.

Problem: Missing, discolored, or bright dots appear on the screen every time you turn on your computer.

Solution: This is an intrinsic characteristic of the TFT technology. Your computer's display contains multiple thin-film transistors (TFTs). A small number of missing, discolored, or bright dots on the screen might exist all the time.

Problem: "Unable to create overlay window" message appears when you try to start DVD playback.
or
You may get poor playback or non at all while running video playback, DVD playback, or a game applications.

Solution: Do either of the following:

- If you are using the computer display and an external monitor simultaneously with 32-bit color mode, change the color depth to 16-bit mode.
- If you are using TV with 32-bit color, change the color depth to 16-bit mode.
- If you are using a desktop size of 1280x1024 or larger, reduce the desktop size and the color depth.

Battery problems

Problem: The battery cannot be fully charged by the power-off method in the standard charge time for your computer.

Solution: The battery might be over-discharged. Do the following:

1. Turn off the computer.
2. Make sure that the over-discharged battery is in the computer.
3. Connect the ac adapter to the computer and let it charge.

If the battery cannot be fully charged in 24 hours, use a new battery.

If the optional Quick Charger is available, use it to charge the over-discharged battery.

Problem: Your computer shuts down before the battery status indicator shows empty, ***-or-*** Your computer operates after the battery status indicator shows empty.

Solution: Discharge and recharge the battery.

Problem: The operating time for a fully charged battery is short.

Solution: Discharge and recharge the battery. If your battery's operating time is still short, use a new battery.

Problem: The computer does not operate with a fully charged battery.

Solution: The surge protector in the battery might be active. Turn off the computer for one minute to reset the protector; then turn on the computer again.

Problem: The battery cannot be charged.

Solution: You cannot charge the battery when it is too hot. If the battery feels hot, remove it from the computer and allow it to cool to room temperature. After it cools, reinstall it and recharge the battery. If it still cannot be charged, have it serviced.

Hard disk drive problems

Problem: The hard disk drive makes a rattling noise intermittently.

Solution: The rattling noise might be heard when:

- The hard disk drive starts accessing the data or when it stops.
- You are carrying the hard disk drive.
- You are carrying your computer.

This is a normal characteristic of a hard disk drive and is not a defect.

Problem: The hard disk drive does not work.

Solution: In the startup menu in IBM BIOS Setup Utility, make sure that there is no exclamation point ! to the left of the hard disk drive. If there is such a mark, the hard disk drive is disabled. Clear the mark to enable the drive.

Other problems

Problem: The computer locks or does not accept any input.

Solution: Your computer might lock when it enters standby mode during a communication operation. Disable the standby timer when you are working on the network.

To turn off the computer, press and hold the power switch for 4 seconds or more.

Problem: The computer does not turn off with the power switch.

Solution: If the standby indicator is on and you are working under battery power, replace the battery with a fully charged one or change your power source to ac power.

If you still have a problem, press and hold the power switch for 4 seconds or more; this forces the computer to turn off.

Problem: The computer does not start from a device you want, such as a diskette drive.

Solution: Refer to the Startup menu of the **IBM BIOS Setup Utility**. Make sure that the startup sequence in the IBM BIOS Setup Utility is set so that the computer starts from the device you want.

Make sure that the device from which the computer starts is enabled by checking there is no ! mark preceding the device name.

Problem: The computer does not respond.

Solution: IRQs for the PCI are all set as 11. The computer does not respond because it cannot share the IRQ with other devices. Refer to the **ThinkPad Configuration Program**.

Problem: Windows NT does not start; however, the message saying that Windows NT is loading remains on the screen.

Solution: The USB setting may have been changed to Enabled. If so, it may cause a conflict in allocating memory resources during startup. Disable the setting, using the BIOS Setup Utility as follows:

1. Turn your computer off and then on again; then, while the message, “Press F1 for IBM BIOS Setup Utility,” is displayed at the lower left of the screen, press the F1 key to start the BIOS Setup Utility. The BIOS Setup Utility menu appears.

2. With the cursor key, select **Config**; then press Enter.
3. Select **USB** by pressing Enter.
4. With the cursor key, select **Disable**; then press Enter.
5. Press F10 and Enter to save this setting and exit this utility.

Starting BIOS Setup Utility

Your computer provides a program, called IBM BIOS Setup Utility, that enables you to select various setup parameters. The panels in this utility are as follows:

- **Config:** Change the configuration of your computer.
- **Date/Time:** Set the date and time.
- **Password:** Set a password.
- **Startup:** Set the startup device.
- **Restart:** Restart the system.

Note: You can set many of these parameters more easily by using the ThinkPad Configuration Program. For more information on this program, refer to the on-board help.

To start IBM BIOS Setup Utility, do as follows:

1. To protect yourself against accidental loss of data, refer to “Backing up your registry” in Access ThinkPad. Open Access ThinkPad by pressing the ThinkPad button. Backing up your registry will save your computer’s current configuration.
2. Remove any diskette from the diskette drive, and then turn off the computer.
3. Turn on the computer; then, while the “ Press F1 for IBM BIOS Setup Utility” message is displayed at the lower-left of the screen, press F1.

   If you have set a supervisor password, the “IBM BIOS Setup Utility” menu appears after you enter the password. You can start the utility by pressing Enter instead of the supervisor password; then, however, you cannot change any parameters that are protected by the supervisor password. For more information, refer to the on-board help.
4. Using the cursor keys, move to an item you want to change. When that item is highlighted, press Enter. A submenu is displayed.
5. Change the items you wish to change. To change the value of an item, use the F5 or F6 key. If the item has a submenu, you can display it by pressing Enter.
6. Press F3 or Esc to exit from the submenu.

   If you are in a nested submenu, press Esc repeatedly until you reach the IBM BIOS Setup Utility menu.

   Note: If you need to restore the settings to their original state at the time of purchase, press the F9 key to load the default settings. You can also select an option in the Restart submenu to load the default settings or discard the changes.
7. Select **Restart**; then press Enter. Move to the option you want for restarting your computer; then press Enter. Your computer restarts.

Recover pre-installed software

If the data on your hard disk drive is damaged or accidentally erased, you can restore the software that was shipped with your computer. This software includes your pre-installed operating system, applications, and device drivers.

To restore your pre-installed software, you can use either the Product Recovery program or a Recovery CD.

The Product Recovery program is in a section of your hard disk drive that is not displayed by Windows Explorer. You may use a Recovery CD if it was provided with your computer.

In case of a hard disk drive failure, or if the Product Recovery program is accidentally deleted or becomes damaged, you can order a Product Recovery CD from IBM.

Note: The recovery process might take up to 2 hours.

Attention

All of the files on the C:\ drive will be lost in the recovery process. Be sure to back up copies of the files you have saved on your C:\ drive before you begin.

Note: You might need to use a CD-ROM drive or a diskette drive in the recovery process. Use a drive that is compatible with your computer.

To use the Product Recovery program to restore your pre-installed software, do the following:

1. Save all your files and shut down your desktop.
2. Turn off your computer.
3. Turn on your computer. Quickly press F11 when this message is displayed on the screen: ″To start the Product Recovery program, press F11.″ This message is displayed for only a few seconds.

   Note: If this message does not appear, you can use a **Recovery Repair diskette** to get access to the Product Recovery program.
4. From the list displayed on the screen, select the operating system you want to recover.
5. Select the recovery options you want, and follow the instructions on the screen.

6. Restart the system by pressing Ctrl+Alt+Del or by turning the computer off and then on again. Your computer will restart with the pre-installed operating system, drivers, and software.

   Note: Network drivers are not automatically restored with Windows NT 4.0; you will need to reinstall them.

To use a Recovery CD to restore your pre-installed software, do the following:

1. If you computer has a CD-ROM or DVD-ROM drive, connect it.
2. Insert the Recovery CD into the CD-ROM or DVD-ROM drive.
3. Save all your files, and turn off your computer.
4. Change the boot sequence as follows:
   a. Turn on your computer; then while the Press F1 for IBM BIOS Setup Utility message is displayed at the lower left of the screen, press the F1 key to start the BIOS Setup Utility.
   b. With the cursor key, select Startup; then press Enter.
   c. Select Boot by pressing Enter.
   d. With the cursor key, select ATAPI CD-ROM Drive .
   e. Press F6 repeatedly until the ATAPI CD-ROM Drive item has moved to the top of the device listing.
   f. Press F10 and Enter to save this setting and exit this utility.
5. The Product Recovery program menu opens. From the list displayed on the screen, select the operating system you want to recover.
6. Select the recovery options you want, and follow the instructions on the screen.
7. Restart the system by pressing Ctrl+Alt+Del or by turning the computer off and then on again. Your computer will restart with the pre-installed operating system, drivers, and software.

   Note: Network drivers are not automatically restored with Windows NT 4.0; you will need to reinstall them.

To create a Recovery Repair diskette

The Recovery Repair diskette is used to recover the prompt that is needed to access the Product Recovery program, if the prompt does not appear. Make a Recovery Repair diskette and save it for future use. To make a Recovery Repair diskette:

1. Shut down and restart your computer.
2. At the prompt, press **F11**. (The option to press **F11** appears for only a few seconds. You must press **F11** quickly.) The Product Recovery program main menu appears.
3. If you are using Windows 2000 Professional or Windows NT Workstation, you will be prompted to select the appropriate operating system setting. This menu does not appear for Windows 98 SE.
4. Select **System Utilities** from the main menu. Press Enter.
5. Select **Create a Recovery Repair** diskette. Press Enter.
6. Follow the on-screen instructions.
7. When the process is completed, label your diskette as the Recovery Repair diskette and save it for future use.

To use the Recovery Repair diskette:

1. Shut down and turn off your computer.
2. Insert the Recovery Repair diskette into the drive; then turn on the computer.
3. Follow the on-screen instructions.

Upgrading the hard disk drive

You can increase the storage capacity of your computer by replacing the hard disk drive with one of greater capacity. You can purchase a new hard disk drive from your IBM reseller or IBM marketing representative.

Note: Replace the hard disk drive only if you upgrade it or have it repaired. The connectors and bay of the hard disk drive were not designed for frequent changes, or drive swapping.

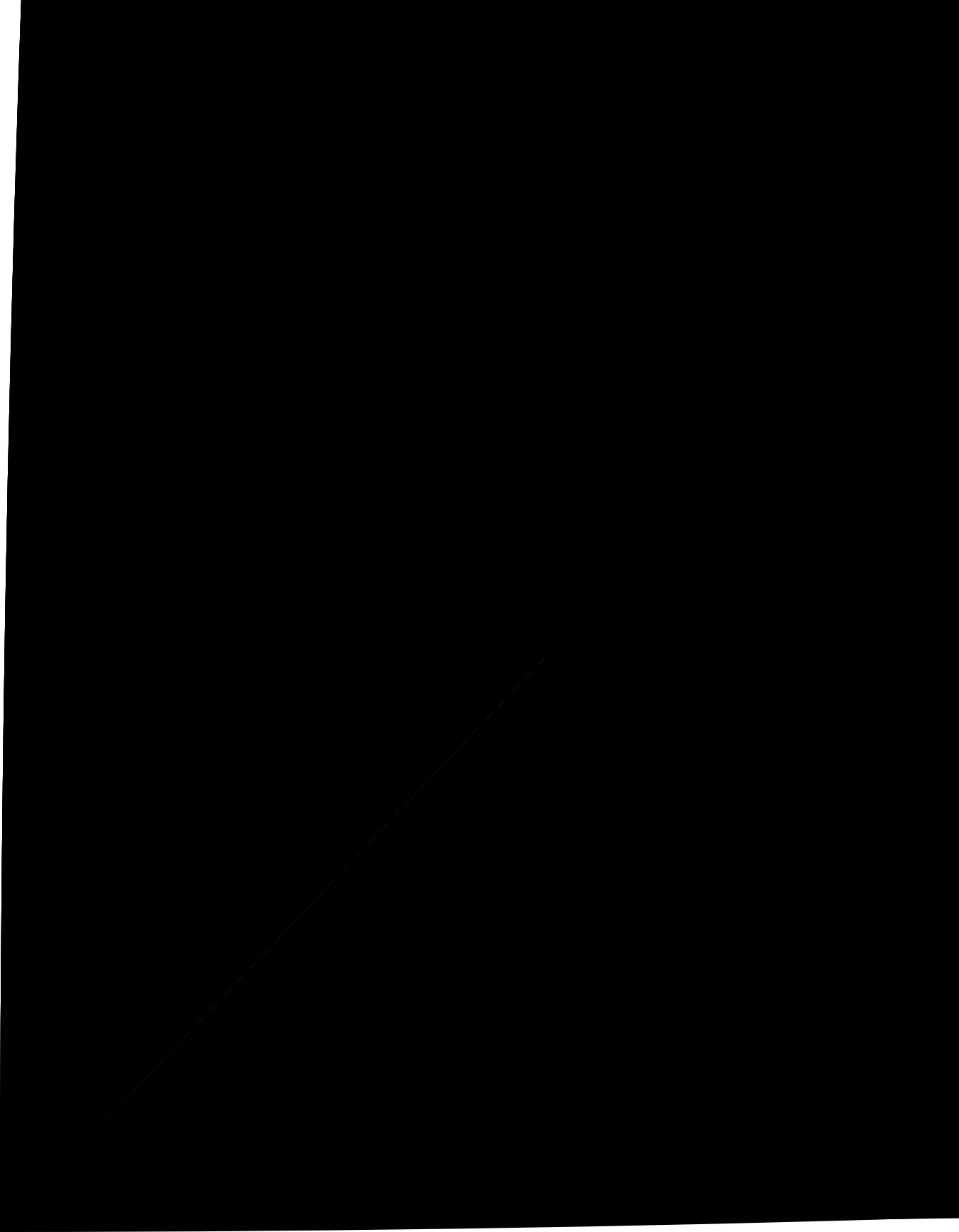
Attention

H2.9453.679.a(the)-332.9(hard)-332.9(disk)-332.9(drive)]T1/F10 1 Tf1.5-2.4 ote:e not fr
d,9(of)-33makchase aThebay of theThe hard ,rage 9(d)]TJTt[nwithThe computeror

9. T e computer over so that its bottom side is up. Reinstall the screw.

   Note: You can replace the coin screw with a security screw to prevent the hard disk drive from being removed easily. The security screw may not be included in your ship group. You can, however, purchase screw directly from NABS at **www.nabsnet.com.**

10. Reinstall the battery.
11. Turn the computer over again. Connect the ac adapter and the cables to the computer.



Chapter 3. Getting help and service from IBM

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Getting help and service

If you need help, service, technical assistance, or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your computer, and whom to call for service should it be necessary.

Information about your IBM computer and preinstalled software, if any, is available in the documentation that comes with your computer. That documentation includes printed books, online books, README files, and help files. In addition, information about IBM products is available on the World Wide Web and through the IBM Automated Fax System.

For technical assistance with the installation of, or questions related to, Service Packs for your preinstalled Microsoft Windows product, refer to the Microsoft Product Support Services Web site at support.microsoft.com/directory/, or you can contact the IBM HelpCenter®. Some fees might apply.

Getting help on the Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM Personal Computer products and support. The address for the IBM Personal Computing home page is **www.ibm.com/pc**

IBM provides an extensive Web site dedicated to mobile computing and to ThinkPad computers at **www.ibm.com/pc/support**

Research this Web site to learn how to solve problems, find new ways to use your computer, and learn about options that can make working with your ThinkPad computer even easier.

If you select **Profile** from the support page, you can create a customized support page that is specific to your hardware, complete with Frequently Asked Questions, Parts Information, Technical Hints and Tips, and Downloadable Files. In addition, you can choose to receive e-mail notifications whenever new information becomes available about your registered products.

You also can order publications through the IBM Publications Ordering System at
www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi

Getting help by fax

If you have a touch-tone telephone and access to a fax machine, in the U.S. and Canada you can receive by fax marketing and technical information on many topics, including hardware, operating systems, and local area networks (LANs).

You can call the IBM Automated Fax System 24 hours a day, 7 days a week. Follow the recorded instructions, and the requested information will be sent to your fax machine. In the U.S. and Canada, to access the IBM Automated Fax System, call 1-800-426-3395.

Calling IBM

If you have tried to correct the problem yourself and still need help, during the warranty period, you can get help and information by telephone through the IBM PC HelpCenter. The following services are available during the warranty period:

- Problem determination - Trained personnel are available to assist you with determining if you have a hardware problem and deciding what action is necessary to fix the problem.
- IBM hardware repair - If the problem is determined to be caused by IBM hardware under warranty, trained service personnel are available to provide the applicable level of service.
- Engineering change management - Occasionally, there might be changes that are required after a product has been sold. IBM or your reseller, if authorized by IBM, will make selected Engineering Changes (ECs) available that apply to your hardware.

The following items are not covered:

- Replacement or use of non-IBM parts or nonwarranted IBM parts

  Note: All warranted parts contain a 7-character identification in the format IBM FRU XXXXXXX
- Identification of software problem sources
- Configuration of BIOS as part of an installation or upgrade
- Changes, modifications, or upgrades to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of application programs

Refer to your IBM hardware warranty for a full explanation of IBM warranty terms. Be sure to retain your proof of purchase to obtain warranty service.

If possible, be near your computer when you make your call in case the technical assistance representative needs to help you resolve a computer problem. Please ensure that you have downloaded the most current drivers and system updates, run diagnostics, and recorded information before you call. When calling for technical assistance, please have the following information available:

- Machine Type and Model
- Serial numbers of your computer, monitor, and other components, or your proof of purchase
- Description of the problem
- Exact wording of any error messages
- Hardware and software configuration information for your system

Telephone numbers

Note: Telephone numbers are subject to change without notice. For the latest list of IBM HelpCenter telephone numbers and hours of operation, visit the Support Web site at **www.ibm.com/pc/support.**

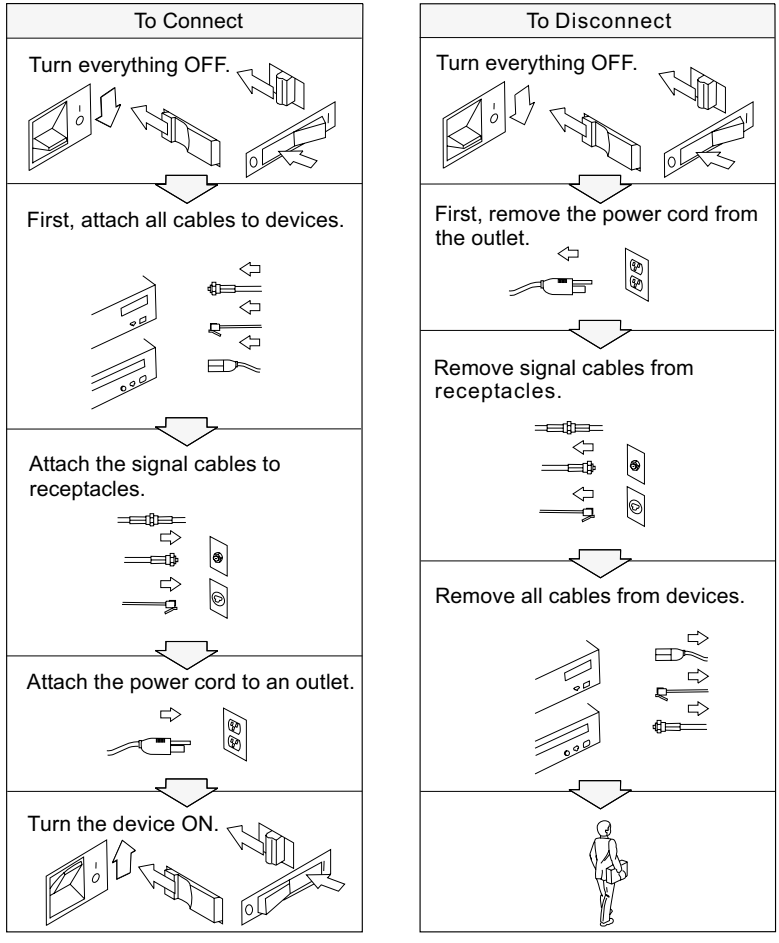
Country or region	Language	Telephone Number
Argentina	Spanish	11-4717-4357
Australia	English	1300-130-426
Austria	German	01-54658-5060
Belgium	Dutch French	02-714 35 70 02-714 35 15
Brazil	Portuguese	55-0800 78 48 31
Canada	English / French	1-800-565-3344 416-383-3344
Chile	Spanish	800-203300
China	Mandarin	800-810-1818
Colombia	Spanish	9-800-18811 623-2300
Denmark	Danish	35 25 02 91
Ecuador	Spanish	2-565-130
Finland	Finnish	9-22 931 840
France	French	01-69 32 40 40
Germany	German	069-6654 9040

Country or region	Language	Telephone Number
Hong Kong	Cantonese	2825-6900
Ireland	English	01-815 9202
Italy	Italian	02-482 9202
Japan	Japanese	0120-887-870
Luxembourg	French	298-977 5063
Mexico	Spanish	01-800-426-1000 387-5991
Netherlands	Dutch	020-504 0501
New Zealand	English	0800-446-149
Norway	Norwegian	23 05 32 40
Peru	Spanish	349-0050
Portugal	Portuguese	21-791 51 47
Spain	Spanish	91-662 4916
Sweden	Swedish	08-751 52 27
Switzerland	German / French / Italian	0848-80 52 52
Taiwan	Mandarin	886-2-2725-9799
United Kingdom	English	01475-555 055
United States	English	1-800-772-2227

Appendix A. Important safety instructions

DANGER

Electric current from power, telephone, and communication cables is hazardous. To avoid shock hazard, connect and disconnect cables as shown below when installing, moving, or opening the covers of this product or attached devices. The 3-pin power cord must be used with a properly grounded outlet.



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DANGER

Reduce the risk of fire and electric shock by always following basic safety precautions, including the following:

- **Do not use your computer in or near water.**
- **During electrical storms:**
  - **Do not use your computer with the telephone cable connection.**
  - **Do not connect the cable to or disconnect it from the telephone outlet on the wall.**

DANGER

If the rechargeable battery pack is incorrectly replaced, there is danger of an explosion. The battery pack contains a small amount of harmful substances. To avoid possible injury:

- **Replace only with a battery of the type recommended by IBM, or an equivalent.**
- **Keep the battery pack away from fire.**
- **Do not expose it to water or rain.**
- **Do not attempt to disassemble it.**
- **Do not short-circuit it.**
- **Keep it away from children.**

Do not put the battery pack in trash that is disposed of in landfills. When disposing of the battery, comply with local ordinances or regulations and your company's safety standards.

DANGER

If the backup battery is incorrectly replaced, there is danger of explosion.

The lithium battery contains lithium and can explode if it is not properly handled or disposed of.

Replace only with a battery of the same type.

To avoid possible injury or death, do not: (1) throw or immerse the battery into water, (2) allow it to heat to more than 100 °C (212 °F), or (3) attempt to repair or disassemble it. Dispose of it as required by local ordinances or regulations and your company's safety standards.

DANGER

Follow the instruction below when installing or reconfiguring the Mini PCI option.

To avoid shock hazard, disconnect all the cables and the ac adapter when you install the Mini PCI option or open the covers of the system or attached devices. Electrical current from power, telephone, and communication cables in hazardous.

CAUTION:

When you have added or upgraded a Mini PCI Card or a memory card, do not use your computer until you have closed the cover. Never use the computer when the cover is open.

CAUTION:

The fluorescent lamp in the liquid crystal display (LCD) contains mercury. Do not put it in trash that is disposed of in landfills. Dispose of it as required by local ordinances or regulations.

The LCD is made of glass, and rough handling or dropping the computer can cause the LCD to break. If the LCD breaks and the internal fluid gets into your eyes or on your hands, immediately wash the affected areas with water for at least 15 minutes; if any symptoms are present after washing, get medical care.

CAUTION:

To reduce the risk of fire, use only No. 26 AWG or larger (thicker) telephone cable.

Modem safety information

To reduce the risk of fire, electrical shock, or injury when using telephone equipment, always follow basic safety precautions, such as:

Never install telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

Do not use the telephone to report a gas leak in the vicinity of the leak.

Laser compliance statement

The CD-ROM or DVD-ROM drive, which can be installed in the IBM ThinkPad computer is a laser product. The drive's classification label (shown below) is on the surface of the drive.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
APPAREIL ALASER DE CLASSE 1
KLASS 1 LASER APPARAT

The drive is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class I laser products.

In other countries, the drive is certified to conform to the requirements of EN60825.

Appendix B. Product warranties and notices

Warranty Period

The warranty period varies by machine type and country or region.

Note:

- Contact your place of purchase for warranty service information. Some IBM Machines are eligible for on-site warranty service depending on the country or region where service is performed.
- A warranty period of 3 years on parts and 1 year on labor means that IBM will provide warranty service without charge for:
  1. parts and labor during the first year of the warranty period
  2. parts only, on an exchange basis, in the second and third years of the warranty period.
     IBM will charge you for any labor it provides in performance of the repair or replacement.

Machine type

Country or region	Warranty period
All	Parts - year, labor - year

IBM Statement of Limited Warranty

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.

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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

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 disputeOF CHINA (PRC)acoomic, and rbitrcation
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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.

Notices

This publication was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other 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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IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

Processing date data

This IBM hardware product and IBM software products that might be packaged with it have been designed, when used in accordance with their associated documentation, to process date data correctly within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with these products properly exchange accurate date data with them.

IBM cannot take responsibility for the date data processing capabilities of non-IBM products, even if those products are preinstalled or otherwise distributed by IBM. You should contact the vendors responsible for those products directly to determine the capabilities of their products and update them if needed. This IBM hardware product cannot prevent errors that might occur if software, upgrades, or peripheral devices you use or exchange data with do not process date data correctly.

The foregoing is a Year 2000 Readiness Disclosure.

References to the Web site addresses

Any references in this publication to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those

Web sites. The materials at those Web sites are not part of the materials for this IBM product, and use of those Web sites is at your own risk.

Electronic emission notices

Federal Communications Commission (FCC) Statement

ThinkPad T23, machine type

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 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

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 la classe B est conform à la norme NMB-003 du Canada.

European Community Directive Conformance Statement
This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electro-magnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

A declaration of Conformity with the requirements of the Directive has been signed by IBM United Kingdom Limited, PO BOX 30 Spango Valley Greenock Scotland PA160AH.

This product satisfies the Class B limits of EN 55022.

Telecommunication notices

Federal Communications Commission (FCC) and Telephone Company Requirements (Part 68 of the FCC Rules)

1. The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

   In order to program this information into your computer, you should be sure to follow the installation instructions for your fax software package.
2. The built-in modem is built into the ThinkPad computer. It complies with Part 68 of the FCC Rules. A label is affixed to the bottom of the computer that contains, among other things, the FCC registration number, USOC, and Ringer Equivalency Number (REN) for this equipment. If these numbers are requested, look at the label and provide this information to your telephone company.

3. The REN is useful to determine the quantity of devices you may connect to your telephone line and still have those devices ring when your number is called. In most, but not all, areas, the sum of the RENs of all devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN (REN:0.7), you should call your local telephone company to determine the maximum REN for your calling area.
4. If the built-in modem causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But, if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
5. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.
6. If you experience trouble with this built-in modem, contact your IBM Authorized Seller, or the IBM Corporation, 500 Columbus Avenue, Thornwood, NY 10594, 1-800-772-2227, for repair/warranty information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected, or until you are sure the equipment is not malfunctioning.
7. No customer repairs are possible to the modem. If you experience trouble with this equipment, contact your Authorized Seller or the IBM Corporation for information.
8. The modem may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.
9. When ordering network interface (NI) service from the Local Exchange Carrier, specify service arrangement USOC RJ11C.

Fax Branding

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top of or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

Industry Canada requirements

Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications networks protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of communication. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs of alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The **Ringer Equivalent Number** (REN:0.3) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Number of all the devices does not exceed 5.

Avis

L'étiquette du ministère de l'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme à certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. Dans certains cas, les fils intérieurs de l'entreprise utilisés pour un service individuel à ligne unique peuvent être prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne). L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empechent pas la dégradation du service dans certaines situations. Actuellement, les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel à des jacks d'abonné, sauf dans les cas précis prévus par les tarifs paticuliers de ces entreprises.

Les réparations de matériel homologué doivent être effectuées par un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement
L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à électricien, selon le cas.

L'indice de charge (IC) assigné à chaque dispositif terminal indique (REN:0.3), pour éviter toute surcharge, le pourcentage de la charge totale qui peut être raccordée à un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut être constituée de n'importe quelle combinaison de dispositifs, pourvu que la somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 5.

Notice for Australia

The following notice applies when using the telephony functions:

WARNING: FOR SAFETY REASONS, ONLY CONNECT EQUIPMENT WITH A TELECOMMUNICATIONS COMPLIANCE LABEL. THIS INCLUDES CUSTOMER EQUIPMENT PREVIOUSLY LABELLED PERMITTED OR CERTIFIED.

Notice for Users in New Zealand

1. The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of

the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

2. This equipment is not capable under all operation conditions of correct operation at the higher speeds for which it is designed. The 33.6 kbit/s and 56 kbit/s connections are likely to be restricted to lower bit rates when connected to some PSTN implementations. Telecom will accept no responsibility should difficulties arise in such circumstances.
3. This equipment may not provide for the effective hand-over of a call to another device connected to the same line.
4. Under power failure conditions, this telephone may not operate. Please ensure that a separate telephone, not dependent on local power is available for emergency use.
5. Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. The associated equipment shall be set to operate within the following limits for compliance with Telecom's specifications:
   - There shall be no more than 10 call attempts to the same number within any 30-minute period for any single manual call initiation.
   - The equipment shall go on-hook for a period of not less than 30 seconds between the end of one attempt and the beginning of the next attempt to the same number.
6. Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. In order to operate within the limits for compliance with Telecom's specifications, the associated equipment shall be set to ensure that automatic calls to different numbers are spaced such that there is no less than 5 seconds between the end of one call attempt and the beginning of another.
7. This equipment shall not be set up to make automatic calls to Telecom's '111' emergency service.
8. Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. In order to operate within the limits for compliance with Telecom's specifications, the associated equipment shall be set to ensure that calls are answered between 3 and 30 seconds of receipt of ringing.

Notice for European Union countries

Hereby Ambit declares that this ″J07M041.00″ modem is in conformity with the essential requirements and other relevant provisions of Directive

1999/5/EC.

AMBIT®

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Declaration of Conformity

We,

AMBIT MICROSYSTEMS CORPORATION.
5F-1, 5 Hsin-An Road, Hsinchu Science-Based
Industrial Park, Taiwan, R.O.C
Contact Person: Miss Rio Chen
Tel: 886-3-5784975 Fax: 886-3-6799178, 5775100
E-mail:rio.chen@ambit.com.tw

Herewith declare that the product:

Equipment : 56K Internal Modem Module
Model : J07M041.00

Is in conformity with the provisions of the following EC directive(s)
meets the requirements of the council of the European communities relating to and.

Reference NO.	**Title**
1999/5/EC	Radio & Telecommunications Terminal Equipment Dircetive (R&TTE)
73/23/EEC	Low Voltage Directive (LVD)
89/336/EEC	Electromagnetic Compatibility (EMC-Directive)

and that standards and/or technical specifications referenced overleaf have been applied.

Allen Lai
R&D Supervisor
Ambit Microsystems Corporation
Date: Otc., 16, 2000

Wireless Interoperability

IBM ThinkPad 802.11b Wireless LAN Mini-PCI Adapter (P/N 26P8056) (hereafter called Wireless LAN Mini-PCI Adapter) is designed to be interoperable with any wireless LAN product that is based on Direct Sequence Spread Spectrum (DSSS) radio technology, and is compliant to:

- The IEEE 802.11 Standard on Wireless LANs (Revision B), as defined and approved by the Institute of Electrical and Electronics Engineers.
- The Wireless Fidelity (WiFi) certification as defined by the WECA (Wireless Ethernet Compatibility Alliance).

Usage environment and your Health

Wireless LAN Mini-PCI Adapter emits radio frequency electromagnetic energy like other radio devices. However, the level of energy emitted is far much less than the electromagnetic energy emitted by wireless devices like for example mobile phones.

Because Wireless LAN Mini-PCI Adapter operates within the guidelines found in radio frequency safety standards and recommendations, IBM believes it is safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situation or environment, the use of Wireless LAN Mini-PCI Adapter may be restricted by the proprietor of the building or responsible representatives of the organization. These situations may for example include:

- Using Wireless LAN Mini-PCI Adapter on board of airplanes, or
- In any other environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies on the use of wireless devices in a specific organization (e.g. airport), you are encouraged to ask for authorization to use Wireless LAN Mini-PCI Adapter prior to turning on the ThinkPad T23.

Wireless Regulatory Information

The ThinkPad T23 must be installed and used in strict accordance with the instructions as described hereafter. This product complies with the following radio frequency and safety standards.

USA - Federal Communications Commission (FCC)

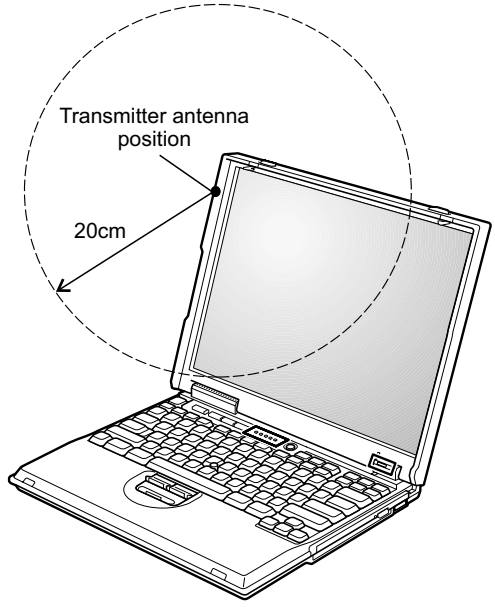
This product complies with FCC Part 15. The operation of Wireless LAN Mini-PCI Adapter integrated in the product is subject to the following two conditions:

- It may not cause harmful interference.
- It accepts any interference that may cause undesired operation.

Exposure to Radio Frequency Radiation

The radiated output power of Wireless LAN Mini-PCI Adapter is far below the FCC radio frequency exposure limits. Nevertheless, the ThinkPad T23 shall be used in such a manner that the potential for human contact during normal operation is minimized as follows:

- **Caution**: To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm (8 inches) must be maintained between the antenna of this device and all persons.



- FCC certification of this device prohibits the use of any other Radio Frequency wireless device in conjunction with your ThinkPad T23 notebook wireless LAN. Do not use any other wireless PCMCIA card in your ThinkPad notebook while operating Wireless LAN Mini-PCI Adapter.

Interference Statement

An improper installation or unauthorized use may cause harmful interference to radio communications. Also any tampering of the internal antenna will void the FCC certification and your warranty. Refer to the “Electronic emission notices” on page 60 for more detail.

Canada - Industry Canada (IC)

Low Power License-Exempt Radiocommunication Devices (RSS-210)

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Permis d’émission à faible puissance - Cas des appareils de communications radio (CNR-210)

Le fonctionnement de ce type d’appareil est soumis aux deux conditions suivantes : (1) Cet appareil peut perturber les communications radio, et (2) cet appareil doit supporter toute perturbation, y compris les perturbations qui pourraient provoquer un dysfonctionnement.

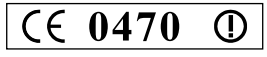
CE - Declaration of Conformity

- Hereby IBM Japan declares that the RLAN device integrated in this product is in conformity with the essential requirements and other relevant provisions of Directive 1999/5/EC.

  IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product.
- IBM Japan déclare par la présente que le dispositif RLAN intégré à ce produit est en conformité avec les prescriptions essentielles et autres dispositions appropriées de la Directive 1999/5/EC.

  IBM décline toute responsabilité en cas de non-respect de cette directive résultant d'une modification non recommandée du produit
- IBM Japan erklärt hiermit, dass die in diesem Produkt integrierte drahtlose RLAN-Einheit die Voraussetzungen sowie alle wichtigen Anforderungen der Richtlinie 1999/5/EC erfüllt.

  IBM übernimmt keine Verantwortung für Fehler, die sich aus einer nicht empfohlenen, unsachgemäßen Modifizierung an diesem Produkt zur Erfüllung der Sicherheitsanforderungen ergeben.



CE Declaration of Conformity

We, IBM Japan Ltd
1623-14
Shimotsuruma
Yamato-shi
Kanagawa-ken
242-8502
Japan

Declare under our sole responsibility that the **IBM model 08K3310** is in conformity with the relevant requirements of Directive 1999/5/EC

The conformity has been assessed through the procedure detailed in Annex IV of the directive.

The standards tested are:

EN 60950:1992 + A1:1993, A2:1993, A3:1995, A4:1997, A11:1997
ETS 300 826, Nov 1997
ETS 300 328, Nov 1996 second edition + A1, July 1997 second edition

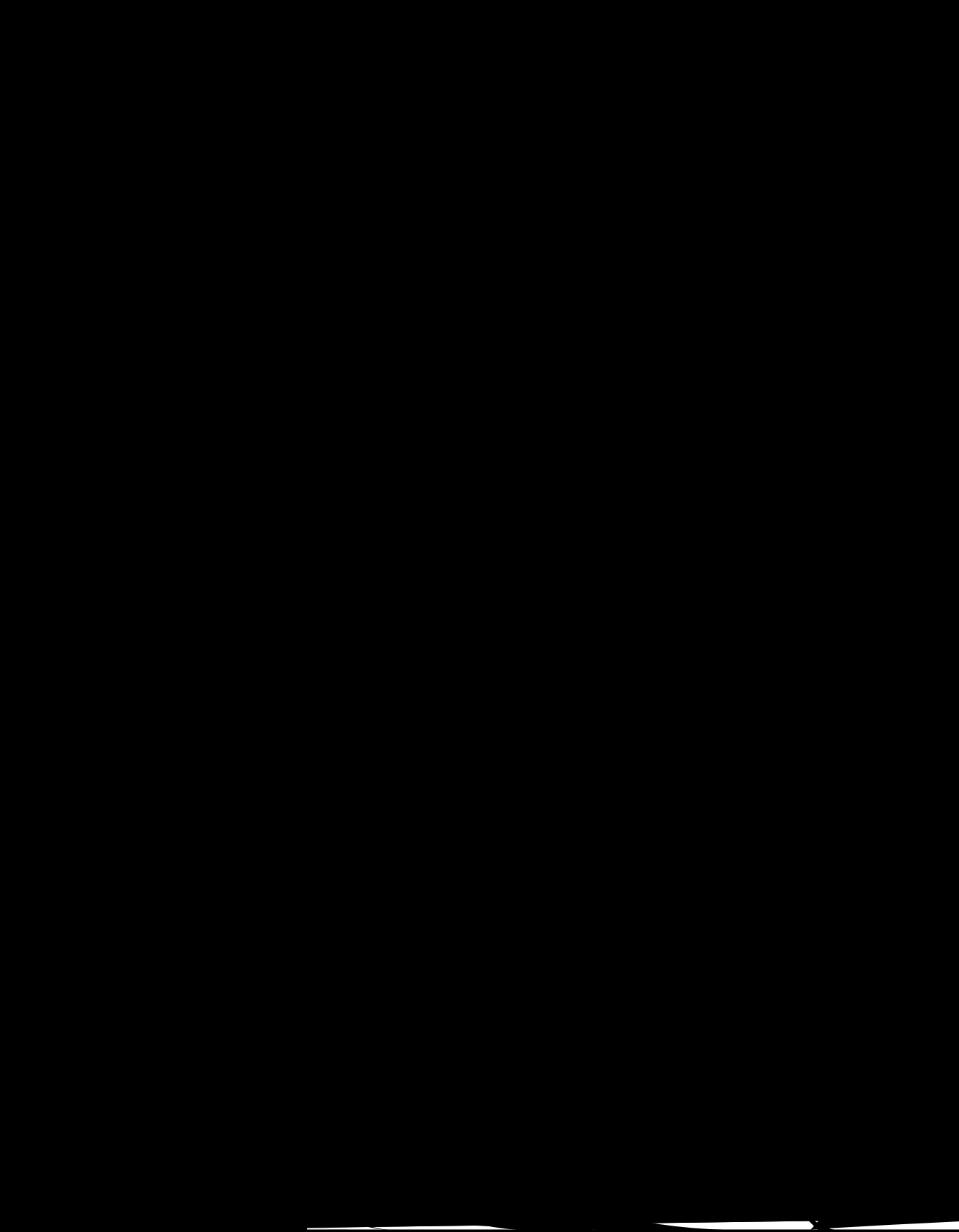
The technical documentation relevant to the above equipment is held at:

CER IBM France
Homologation and Type Approval department
Le plan du bois
06610 La Gaude
France

Satoshi Tsutsui
Technical Project Manager, Portable Systems

(date) Jan. 08, 2001 *(signature)*

- Belgie B	Gebruik buiten gebouw alleen op kanalen 10 (2462 MHz) en 11 (2467 MHz). Voor privé-gebruik buiten gebouw over publieke grond over afstand kleiner dan 300m geen registratie bij BIPT/IBPT nodig; voor gebruik over afstand groter dan 300m is wel registratie bij BIPT/IBPT nodig. Voor publiek gebruik buiten gebouwen is licentie van BIPT/IBPT verplicht. Voor registratie of licentie kunt u contact opnemen met BIPT.
- Belgium B	For outdoor usage only channel 10 (2462 MHz) and 11 (2467 MHz) is allowed. For private usage outside buildings across public grounds over less than 300m no special registration with IBPT/BIPT is required. Registration to IBPT/BIPT is required for private usage outside buildings across public grounds over more than 300m. An IBPT/BIPT licence is required for public usage outside building. For registration and license please contact IBPT/BIPT.
- Belgique B	L'utilisation en extérieur est autorisé sur le canal 10 (2462 MHz) et 11 (2467 MHz). Dans le cas d'une utilisation privée, à l'extérieur d'un bâtiment, au-dessus d'un espace public, aucun enregistrement n'est nécessaire pour une distance de moins de 300m. Pour une distance supérieure à 300m un enregistrement auprès de l'IBPT est requise. Pour une utilisation publique à l'extérieur de bâtiments, une licence de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter lÆIBPT.
- France F:	Bande de fréquence restreinte : seuls les canaux 10 à 11 (2457 et 2462 MHz respectivement) doivent être utilisés en France. Toute utilisation, qu'elle soit intérieure ou extérieure, est soumise à autorisation. Vous pouvez contacter l'Autorité de Régulation des Télécommuniations (http://www.art-telecom.fr) pour la procédure à suivre.
- France F:	Restricted frequency band: only channels 10 and 11 (2457 MHz and 2462 MHz respectively) may be used in France. License required for every installation, indoor and outdoor installations. Please contact ART for procedure to follow.
- Deutschland D:	Anmeldung im Outdoor-Bereich notwending, aber nicht genehmigungspflichtig. Bitte mit Händler die Vorgehensweise abstimmen.



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