



# ThinkPad X22 Service & Troubleshooting Guide

**note**

Before using this information and the product it supports, be sure to read the general information under “Safety information” on page v, and “Appendix. Product warranty and notices” on page 31.

**First Edition (May 2001)**

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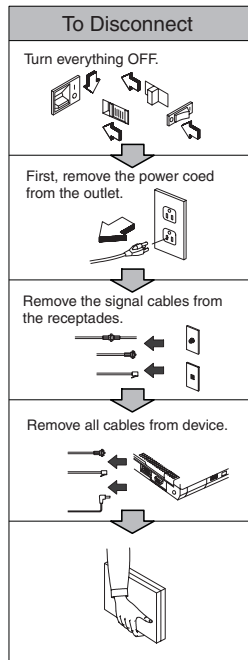
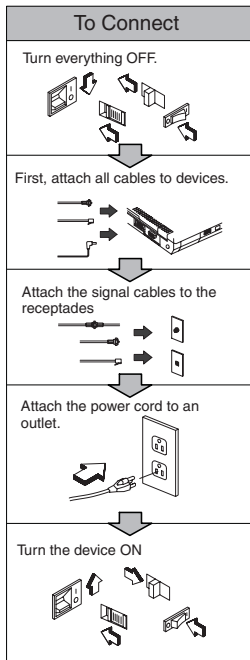


# Safety information



## 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. If a 3-pin power cord is provided with this products, it must be used with a properly grounded outlet.





## 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.
- 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 procedures. In the United States, call IBM at 1-800-IBM-4333 for information on disposal.



## DANGER

There is danger of an explosion if the backup battery is incorrectly replaced. Replace only with a battery of the same type.

The lithium battery (IBM P/N 02K6715 UL-recognized component (file no. MH12566)) contains lithium and can explode if it is not properly handled or disposed of.

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 deg C (212 deg 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 is 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 access cover. Never use the computer with the access cover open.

Before removing or installing a Mini PCI Card or memory card, remove the main battery pack of the computer. Some circuitry in the computer remain powered even if the power seems to be off. Remove the ac adapter before removing the main battery pack.



**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 it as required by local ordinances or regulations.

The LCD is made of glass. 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 adverse symptoms after washing, get medical care.

**CAUTION:**

To reduce the risk of fire, use only No. 26 AWG or cable with a higher rating.

**CAUTION:**

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.



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## Finding information with Access ThinkPad

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

Click one of the Internet images to get help and support, to join an interactive ThinkPad web community, or to directly access information about accessories, software, and upgrades.

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.

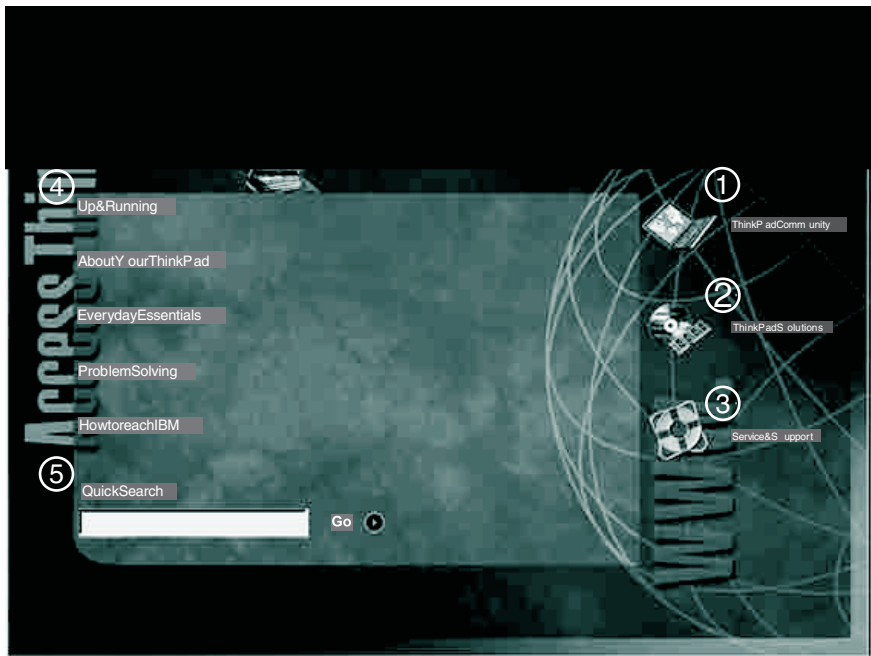
Find information about your ThinkPad computer and its features by using the Quick Search or clicking one of the topics shown. This opens another window, where you can view hundreds of help topics by browsing the table of contents, using the index, or performing a search.

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

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 mini PCI card, or upgrading your memory. Use the controls shown to play,

pause and rewind the video clip.



1. Join an interactive community of ThinkPad users to access mobile resources, read tips and true stories, and share your own advice.
2. Customize your ThinkPad with accessories, software and services.
3. A one-click guide to service on the Web for your ThinkPad.
4. Your gateway into a comprehensive help system, offering information about all of your ThinkPad computer hardware and software features.
5. A quick way to search the help system.

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# Chapter 1. System overview

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## Features

### Processor

Intel® Mobile Tualafin Processor

### Memory

Built-in: 128MB

Maximum: 640MB

### Storage devices

2.5-inch hard disk drive

### Display

The color display uses TFT technology

#### 1. XGA

- Up to 1024-by-768 resolution on the 12.1-inch LCD
- Up to 1600-by-1200 resolution on an external monitor
- Brightness control

### Keyboard

85-key, 86-key, or 90-key

TrackPoint® pointing device

Fn key function

ThinkPad Button

Volume buttons

## External interface

External-monitor connector

PC Card slot (Type I, Type II, Type II Plus)

Type II Compact Flash slot

Headphone jack, Microphone jack (supports a condenser microphone with the type of connector that is shown circled in the following illustration)



Line-in jack

Universal Serial Bus (USB) connector

Telephone connector (available if the modem Mini-PCI Card or the Combo Mini-PCI Card is installed)

Ethernet connector (available if the Ethernet Mini-PCI Card or the Combo Mini-PCI Card is installed)

UltraPort connector to support an optional IBM digital camera

UltraBase X2 connector

IrDA port

Wireless LAN Interface

---

## Specifications

### Size

With a 12.1-inch display:

- Width: 279.4 mm
- Depth: 226.8 mm
- Height: 24.9-30.2 mm

### Environment

Temperature (at altitudes less than 2438 m (8000 ft.):)

- Operating: 5°C to 35°C (41°F to 95°F)

- Non-operating: -20°C to 60°C (-4°F to 140°F)

**Note:** When you charge the battery pack, its temperature must be at least 10°C (50°F).

Relative humidity:

- Operating: 8% to 90%
- Non-operating: 5% to 95%

Maximum altitude: 3048 m (10,000 ft.) in unpressurized conditions

- Maximum temperature at 3048 m (10,000 ft.): 31°C (88°F)

### **Electrical (AC Adapter)**

Sine-wave input, at 50 to 60 Hz is required

The input rating of the AC Adapter: 100-240 V ac, 50/60 Hz

### **Lithium-ion battery pack**

Nominal voltage	Capacity
14.4 V dc	1.8 AH
10.8 V dc	3.9 AH

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## **Caring for your computer**

### **Be careful about where 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**

- When picking up your open computer, hold it by the bottom. Do not pick up or hold your computer by the display.
- 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.
- Use a quality carrying case that provides adequate cushion and protection. Do not pack your computer in a tightly packed suitcase or bag.
- Before moving your computer, be sure to remove any media, turn off attached devices, and disconnect cords and cables.

### **Handle storage media and drives properly**

- Avoid inserting diskettes at an angle and attaching multiple or loose diskette labels, as these can lodge in the diskette drive.
- Do not touch the surface of a CD or DVD or the lens on the CD- 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 replacing your hard disk drive, or installing an external diskette drive, follow the instructions shipped with your hardware, and apply pressure only where needed on the device. See Access ThinkPad 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 hard disk password, you must have your hard disk drive replaced.**
- If you are an administrator, remember that setting a setup password can prevent unauthorized initialization or changing of hard disk drive passwords.

### **Other important tips**

- **Your computer can 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.



- Press the ThinkPad button to open your help system. Here, you can learn how to extend the life of your battery through power management and other features.
- 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).
- 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.
- If you replace the hard disk drive in your computer, reinstall the plastic cover.
- Store your external diskette drive in an appropriate container or packaging when it is not being used.
- Register your ThinkPad products with IBM (refer to the Web page: <http://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 upgrades.

## **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.



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## Chapter 2. Solving computer problems

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### Replacing 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, or by visiting IBM on the Web.

**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:** Handling a hard disk drive:

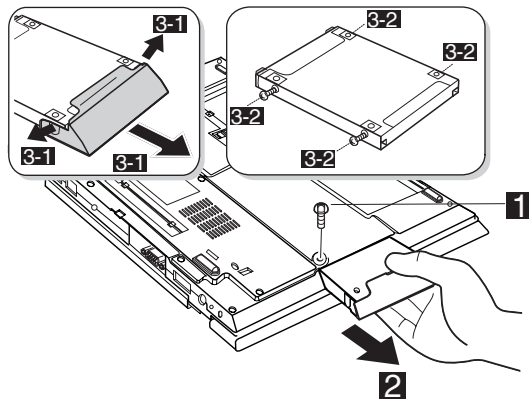
- Do not drop the drive or subject it to physical shocks.
- Do not apply pressure to the cover of the drive.
- Do not touch the connector.

The drive is very sensitive. Incorrect handling can cause damage and permanent loss of data on the hard disk. Before removing the hard-disk drive, make a backup copy of all the information on the hard disk, and then turn the computer off. Never remove the drive while the system is operating, in standby mode, or in hibernation mode.

To replace the hard disk drive, do the following:

1. Turn off the computer; then disconnect the ac adapter and all cables from the computer.
2. Close the computer display, and turn the computer upside down.
3. Remove the battery pack.

4. Remove the screw that secures the hard disk drive (1).



5. Remove the hard-disk drive by pulling the cover away from the computer (2).
6. Detach the hard disk drive cover (3-1).
7. Remove the screws and detach the old hard disk drive from the plate hard disk (3-2).
8. Replace the new hard disk drive to the plate hard disk and reinstall the screws.
9. Attach the cover to the new hard disk drive.
10. Insert the new hard disk drive and its cover into the hard disk drive bay; then secure it firmly into place.

**Note:** Make sure that the label on the hard disk drive is facing the bottom of the computer.

11. Reinstall the screw that secures the hard disk drive.
12. Reinstall the battery pack.
13. Turn the computer right side up. Connect the ac adapter and cables to the computer.

---

## Using the BIOS Setup Utility

Your computer provides a program, called IBM BIOS Setup Utility, that enables you to configure your computer. The windows in this utility are as follows:

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

- **Restart:** Restart the system.

**Note:** Many of these parameters can be set more easily in Windows with the ThinkPad Configuration program. For more information on this program, refer to the on-board help, Access ThinkPad.

You can configure your computer to your needs by using the IBM BIOS Setup Utility. To start the utility, do as follows:

1. To protect against accidental loss of data, back up your registry.
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 area 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; however, you cannot change the parameters that are protected by the supervisor password. For more information, refer to your on-board help, Access ThinkPad.
4. Using the cursor keys, move to the item you want to change. When that item is highlighted, press **Enter**. A submenu is displayed.
5. On that submenu, modify 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 submenu, press **Esc** repeatedly until you reach the **IBM BIOS Setup Utility** menu.

**Note:** If you need to restore the original settings, press **F9** 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. Select the option you want for restarting your computer; then press Enter. Your computer restarts.

---

## Testing your computer

If you have a problem with your computer, you can test it by using PC-Doctor®.

To run PC-Doctor for Windows, do as follows:

- Click **Start**.
- Move the cursor to **Programs** and then to **PC-Doctor for Windows**.
- Click **PC-Doctor for Windows**.
- 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 in PC-Doctor for Windows.

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.

---

## Recovering pre-installed software

If your hard disk drive data 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.

You can restore your pre-installed software using 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<sup>®</sup> 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 ThinkPad 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.

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

1. If your 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. Turn on your computer; then wait for the Product Recovery program menu to display on your screen.
5. 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.

**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<sup>®</sup> 2000 Professional or Windows NT<sup>®</sup> 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.

---

## **Solving computer problems**

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 describes problems that might prevent access to this help system.

### **Troubleshooting**

#### **Errors with messages**

##### **Note:**

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

**Message:** 0175: Bad CRC1, stop POST task

**Solution:** The EEPROM checksum is not correct (block #6). Have the computer serviced.

**Message:** 0187: EAIA data access error

**Solution:** The access to EEPROM failed. Have the computer serviced.

**Message:** 0188: Invalid RFID serialization information area or bad CRC2.



**Solution:** 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.

**Message:** 0189: Invalid RFID configuration information area

**Solution:** The EEPROM checksum is not correct (block # 4 and 5). The system board should be replaced, and the UUID needs to be reinstalled. Have the computer serviced.

**Message:** 0190: Critical low-battery error

**Solution:** The computer turned off, because the battery is low. Connect the ac adapter to the computer and charge the battery pack, or replace the battery pack with a fully charged one.

**Message:** 0194: The computer is carried through the security gate

**Solution:** The computer has been carried through the security portal gate. Enter the supervisor password to return your computer to the normal operation.

**Message:** 0200: Hard disk error

**Solution:** 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:** 021x: Keyboard error

**Solution:** 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 by using PC-Doctor.

- If the computer stops during the test, have the computer serviced.

**Message:** 0220: Monitor type error

**Solution:** 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.

**Message:** 0230: Shadow RAM error

**Solution:** The shadow RAM failed. Test your computer's memory with the PC Doctor. If you added a memory module just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.

**Message:** 0231: System RAM error

**Solution:** The system RAM failed. Test your computer's memory with the PC Doctor. If you added a memory module just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.

**Message:** 0232: Extended RAM error

**Solution:** 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.

**Message:** 0250: System battery error

**Solution:** The system battery is dead. Replace the battery and run the BIOS Setup Utility to verify the configuration. If you still have a problem, have the computer serviced.

**Message:** 0251: System CMOS checksum bad

**Solution:** The system CMOS might have been corrupted by an application program. The computer uses the default settings. Run the BIOS Setup Utility (refer to "Using the BIOS Setup Utility" on page 8) to reconfigure the settings. If you still see the same error code, have the computer serviced.

**Message:** 0252: Password checksum bad

**Solution:** The password you have set is cleared. Run the BIOS Setup Utility to set the password.

**Message:** 0260: System timer error

**Solution:** Have the computer serviced.

**Message:** 0270: Real time clock error

**Solution:** Have the computer serviced.

**Message:** 0271: Date and time error

**Solution:** Neither the date nor the time is set in the computer. Set the date and time, using the IBM BIOS Setup Utility.

**Message:** 0280: Previous boot incomplete

**Solution:** Your computer was previously unable to complete the boot process.

Power the computer off; then power it on to start the BIOS Setup Utility. Verify the configuration and then restart the computer by using the **Exit Saving Changes** option under the **Restart** item or by pressing **F10**

If there is still a problem, have the computer serviced.

**Message:** 02D0: System cache error

**Solution:** The cache is disabled. Have the computer serviced.

**Message:** 02F4: EISA CMOS not writable

**Solution:** Have the computer serviced.

**Message:** 02F5: DMA test failed

**Solution:** Have the computer serviced.

**Message:** 02F6: Software NMI failed

**Solution:** Have the computer serviced.

**Message:** 02F7: Fail-safe timer NMI failed

**Solution:** Have the computer serviced.

**Message:** The power-on password prompt



**Solution:** A power-on password or supervisor password is set. Type the correct 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 there is still a problem, have the computer serviced.

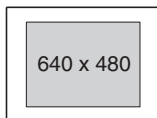
**Message:** The hard disk drive password prompt



**Solution:** A hard disk drive password is set. Type the correct password and press **Enter** to use the computer.

If there is still a problem, have the computer serviced.

**Message:** The DOS full-screen looks smaller.



**Solution:** If you use a DOS application that supports only the 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 look slightly distorted.)

**Message:** Hibernation error

**Solution:** The system configuration differs between the time your computer entered hibernation mode and the time it exited 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 was changed, re-create the hibernation file.

**Message:** Operating system not found.

**Solution:** 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 the BIOS Setup Utility.

**Message:** Fan error

**Solution:** Cooling fan is failing. Have the computer serviced.

**Message:** EMM386 Not Installed--Unable to Set Page Frame Base Address.

**Solution:** 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

**Message:** CardBus Configuration Error--Device Disabled.

**Solution:** Press F1 to go to 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:** The screen is blank and you don't hear any beeps.

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

If you are using an external monitor, see the external monitor problems in the *your on-board help*.

**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 key. If the screen still remains blank, make sure that:

- The battery pack 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. (Press the power switch again for confirmation.)

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

**Problem:** The screen is blank and you hear two or more beeps, or a continuous beep.

**Solution:** If you are using Ethernet:

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

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

**Problem:** Only the cursor appears.

**Solution:** Reinstall your operating system, and turn on the computer. If you still see only the cursor on the screen, have the computer serviced.

### **Power switch problems**

**Problem:** The system freezes, 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 pack.

### **Input 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**. Refer to the Software Selection CD for installing the driver.

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

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

**Problem:** The cursor does not move after the computer awakens 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.

### **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.

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

**Solution:** Make sure that:

- The battery pack is charged.
- The operating temperature is within the acceptable range. Refer to Appendix A, "Features and specifications."



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 pack with a fully charged one.

**Problem:** When you take action to return from standby mode, the LCD 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 LCD 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:** 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 95 or Windows NT.

**Solution:**

- **For Windows 95:**

The generic CD-ROM or DVD-ROM driver for Windows 95 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 **Settings** tab.
8. Clear the **Auto insert notification** check box.

Windows 95 no longer detects the insertion of a CD-ROM or 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
```

### **LCD problems**

**Problem:** The screen is blank.

**Solution:** Press Fn + Home key to make the screen brighter. If problem still persists, do the "Cause and action" 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:

1. Open the Display Properties window.

**For Windows Millennium Edition (Windows ME) or Windows 2000, Windows 98, Windows 95:**

- a. Click the **Settings** tab.
- b. Check whether the color depth and resolution are set correctly.
- c. Click **Advanced...**
- d. Click the **Adapter** tab.
- e. Make sure "RAGE MOBILITY-M AGP" is shown in the adapter information window.
- f. Click the **Monitor** tab.
- g. Make sure the information is correct.

**For Windows NT:**

- a. Click the **Settings** tab.
- b. Check whether the color depth and resolution are set correctly.
- c. Click **Display Type...**
- d. Make sure "RAGE MOBILITY-M AGP" is shown in the Display Type window.
- e. Click **OK**.
- f. Click the **Test** button in the Settings window.
- g. 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 longer 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.

### **Battery problems**

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

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

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

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

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

**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 pack.

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

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

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

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

**Problem:** The battery pack 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.

### **Passwords**

**Problem:** I forgot my password.

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

If you forgot your hard-disk password or supervisor password, you cannot reset your password. You have to take your computer to an IBM reseller or an IBM marketing representative to have the system board replaced. A fee will be charged for parts and service. Proof of purchase is required, and an additional charge might be required for the service.

Consult the on-board help system, Access ThinkPad, for information about setting and changing passwords. (Access ThinkPad can be opened by pressing the ThinkPad button.)

### **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 your on-board help



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## Chapter 3. Getting 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/](http://support.microsoft.com/directory/), or you can contact the IBM HelpCenter. Some fees might apply.

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### 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](http://www.ibm.com/pc)

IBM provides an extensive Web site dedicated to mobile computing and to ThinkPad computers at [www.ibm.com/pc/support](http://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.ibmmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi](http://www.elink.ibmmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi)

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## 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.

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## 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 (except as part of the warranty problem determination process)
- 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](http://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	02-714 35 70
	French	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
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

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## Appendix. Product warranty and notices

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### Warranty Statements

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

- **United States, Puerto Rico and Canada (Z125-4753-05 11/97)**(Part 1 — General Terms on page 31)
- **Worldwide except Canada, Puerto Rico, Turkey and United States (Z125-5697-01 11/97)**(Part 1 — General Terms on page 34)
- **Worldwide Country-Unique Terms**(Part 2 — Country-Unique Terms on page 38)

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

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

<b>Machine</b> - IBM ThinkPad X22 and the Battery
<b>Warranty Period*</b> - Model 2661 - One year Model 2662 - Three years except in some countries Battery pack - One year
<i>*Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.</i>

**The IBM Warranty for Machines** IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official

Published Specifications. The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

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

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

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

**THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.**

**Items Not Covered by Warranty** IBM does not warrant uninterrupted or error-free operation of a Machine.

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

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

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

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

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

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

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

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
  - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
  - b. secure all programs, data, and funds contained in a Machine,
  - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations, and
  - d. inform IBM or your reseller of changes in a Machine's location.

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

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

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

**Limitation of Liability** Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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

**UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

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

*This Statement of Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 may replace or modify those of Part 1. The warranties provided by IBM in this Statement of Warranty apply only to*

*Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.*

<b>Machine</b> - IBM ThinkPad X22 and the Battery
<b>Warranty Period*</b> -
Model 2661 - One year
Model 2662 - Three years except in some countries
Battery pack - One year
<i>*Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.</i>

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

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

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

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

**THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.**

**Items Not Covered by Warranty** IBM does not warrant uninterrupted or error-free operation of a Machine.

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

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

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

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

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.



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

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
  - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
  - b. secure all programs, data, and funds contained in a Machine,
  - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations, and
  - d. inform IBM or your reseller of changes in a Machine's location.

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

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

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

**Limitation of Liability** Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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

**UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

## **Part 2 - Worldwide Country-Unique Terms**

### **ASIA PACIFIC**

**AUSTRALIA: The IBM Warranty for Machines:** The following paragraph is added to this Section: The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other legislation and are only limited to the extent permitted by the applicable legislation.

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

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

**PEOPLE'S REPUBLIC OF CHINA: Governing Law:** The following is added to this Statement: The laws of the State of New York govern this Statement.

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

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

**NEW ZEALAND: The IBM Warranty for Machines:** The following paragraph is added to this Section: The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

**Limitation of Liability:** The following is added to this Section: Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

**EUROPE, MIDDLE EAST, AFRICA (EMEA)**  
**The following terms apply to all EMEA countries.**

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

**Warranty Service:** If you purchased an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchased an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

The applicable laws, Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being

provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

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

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

2. as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

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

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

**GERMANY: The IBM Warranty for Machines:** The following replaces the first sentence of the first paragraph of this Section:

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

The following paragraphs are added to this Section:

The minimum warranty period for Machines is six months.

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

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

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

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

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

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

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

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

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

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

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

**IRELAND: Extent of Warranty:** The following is added to this Section:

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

**Limitation of Liability:** The following replaces items one and two of the first paragraph of this Section:

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

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:

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

**ITALY: Limitation of Liability:** The following replaces the second sentence in the first paragraph:

In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than: (item 1 unchanged) 2) as to any other actual damage

arising in all situations involving non-performance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the second paragraph of this Section:

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

**SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND: Limitation of Liability:** The following is added to this Section:

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

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

IBM fulfills customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

**UNITED KINGDOM: Limitation of Liability:** The following replaces items 1 and 2 of the first paragraph of this Section:

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
2. the amount of any other actual direct damages or loss, up to the greater of Pounds Sterling 150,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

The following item is added to this paragraph:

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

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:

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

**NORTH AMERICA**

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

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

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

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

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## Notices

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## **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.

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Other company, product, and service names, which may be denoted by a double asterisk (\*\*), may be trademarks or service marks of others.

## **Electronic emission notices**

### **Federal Communications Commission (FCC) statement**

ThinkPad X22, model number 2661 and 2662

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a

residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:


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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment.

Unauthorized changes or modifications could void the user's authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Responsible party:

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

 TestedTo Comply  
With FCC Standards  
FOR HOME OR OFFICE USE

**Industry Canada Class B Emission Compliance Statement**

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

**Avis de conformité à la réglementation d'Industrie Canada**

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

### **European Community Directive conformance statement**

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

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 notice**

#### **Federal Communications Communication (FCC) and telephone company requirements**

1. This device complies with Part 68 of the FCC rules. A label is affixed to the device that contains, among other things, the FCC registration number, USOC, and Ringer Equivalency Number (REN) for this equipment. If these numbers are requested, provide this information to your telephone company.

**Note:** If the device is an internal modem, a second FCC registration label is also provided. You may attach the label to the exterior of the computer in which you install the IBM modem, or you may attach the label to the external DAA, if you have one. Place the label in a location that is easily accessible, should you need to provide the label information to the telephone company.

2. 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). To be certain of the number of devices you may connect to your line, as determined by the REN, you should call your local telephone company to determine the maximum REN for your calling area.
3. If the device causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance; if advance notice is not practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
4. 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 to give you an opportunity to maintain uninterrupted service.

5. If you experience trouble with this product, contact your authorized reseller, or call IBM. In the United States, call IBM at **1-800-772-2227**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase. The telephone company may ask you to disconnect the device from the network until the problem has been corrected, or until you are sure the device is not malfunctioning.
6. No customer repairs are possible to the device. If you experience trouble with the device, contact your Authorized Reseller or see the Diagnostics section of this manual for information.
7. This device 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.
8. When ordering network interface (NI) service from the local Exchange Carrier, specify service arrangement USOC RJ11C.

**Canadian Department of Communications certification label**

**NOTICE:** The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications networks protective, operational, and safety requirement. 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.**

**NOTICE:** The **Ringer Equivalent Number** (REN) 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.

**Étiquette d'homologation du ministère des Communications du Canada**

**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'empêchent 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 particuliers 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 un électricien, selon le cas.

**AVIS :** L'indice de charge (IC) assigné à chaque dispositif terminal indique, 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 New Zealand Users

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.

## **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 WirelessLAN 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 X22.

## Wireless Regulatory information

The ThinkPad X22 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)

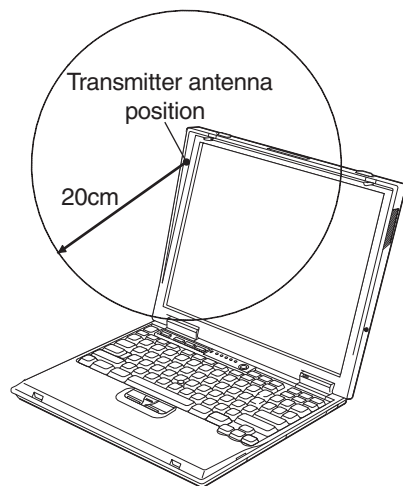
This product complies with FCC Part 15. The operation of Wireless LAN Mini-PCI Adapter integrated in the product is subject to the following two conditions.

- 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 X22 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.



- In principle the FCC certification does not permit the use of any other wireless PCMCIA card in your ThinkPad X22 in order to restrain the RF Exposure to human body. However some PCMCIA cards conform to the limit of the requirement and are admitted safe to use together with the Wireless LAN Mini-PCI Adapter in your ThinkPad notebook. Please visit IBM's web site for the latest certifications granted to check the available option wireless adapters.



## 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 45 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.

## Notice to EMEA users

- 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 autorisée 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 l'IBPT.
- 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 Télécommunications ( <a href="http://www.art-telecom.fr">http://www.art-telecom.fr</a> ) 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 notwendig, aber nicht genehmigungspflichtig. Bitte mit Händler die Vorgehensweise abstimmen.
- Germany D:	License required for outdoor installations. Check with reseller for procedure to follow
- Italia I:	E' necessaria la concessione ministeriale anche per l'uso interno. Verificare con i rivenditori la procedura da seguire. L'uso per installazione in esterni non e' permessa.
- Italy I:	License required for indoor use. Use with outdoor installations not allowed
- the Netherlands NL	License required for outdoor installations. Check with reseller for procedure to follow
- Nederland NL	Licentie verplicht voor gebruik met buitenantennes. Neem contact op met verkoper voor juiste procedure

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