note

Before using this information and the product it supports, be sure to read the general information under Chapter 1, “Safety information” on page 1, and “Notices” on page 60.

First Edition (June 2000)

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

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT ANY WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE LIMITED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimers or express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements or changes in the products or the programs described in this publication at any time.

Requests for technical information about IBM products should be made to your IBM Authorized Dealer or your IBM Marketing Representative.

© **Copyright International Business Machine Corporation 2000. All rights reserved.** Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication, or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Contents

Chapter 1. Safety information 1

Chapter 2. Handling the ThinkPad computer 7
ThinkPad do not's 8
ThinkPad do's 11
Cleaning your computer 12
Carrying your computer 13
Extending the usefulness of the battery 14

Chapter 3. System overview 15
Features 16
Specifications 18
Using your Online User's Guide 19
Starting the BIOS Setup Utility 20

Chapter 4. Protecting your computer 23
Using passwords 24
Power-on passwords 24
Screen-saver passwords 24
Hard-disk passwords 25
Windows password 26
Supervisor password 26
Network password 26
Passwords and standby mode 26
Using the locks 28
Attaching the mechanical lock 28

Chapter 5. Solving Computer Problems 29
Troubleshooting 30
Error codes or messages 30
No error codes or messages 33
Power switch problems 34
Input problems 34
Standby or hibernation problems 36
LCD problems 39
Battery problems 40

© Copyright IBM Corporation 2000

Hard disk drive problems 41
Software problems 41
Other problems 43
Testing your computer 45
Backing up your system 46
Backing up your system configuration 46
Backing up your data 46
Recovering lost or damaged software 47
Getting Service 51
ThinkPad Website 51
Recording sheet 52

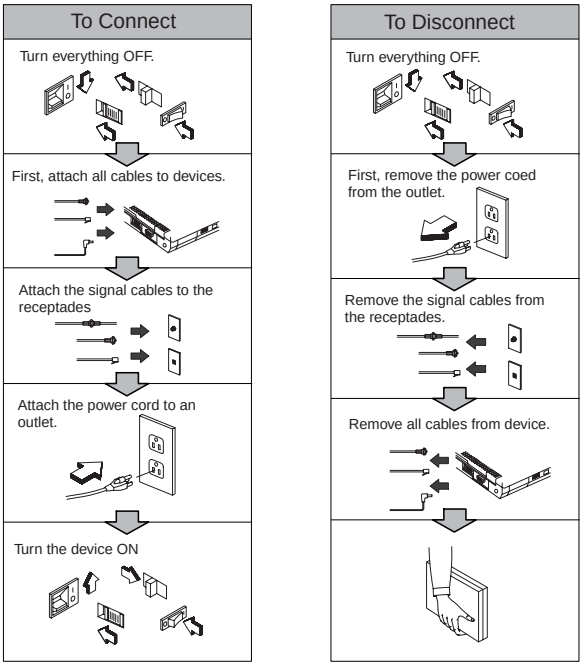
Appendix A. Product warranties and notices 55
Notices 60
Year 2000 readiness and instructions 60
Electronic emission notices 61
Telecommunication notice 62
Trademarks 67

Glossary 69

Index 73

Chapter 1. Safety information

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.



© Copyright IBM Corporation 2000

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.

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.

Replace only with a battery of the same type.

To avoid possible injury or death, do not: (1) throw or immerse the battery into water, (2) allow it to heat to more than 100 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 moving or installing a Mini PCI Card or memory card, remove the main battery pack of the computer. Some circuit in the computer remain closed even if the power seems to be off. Remove the ac adapter before remove 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 may cause the LCD to break.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 ratihg.

Chapter 2. Handling the ThinkPad computer

Notebook computers are precision electronic devices that require careful handling. although your computer is function reliably in normal work environments, you need to use some common sense in handing it.

This section provides tips for handling notebook computers in general. Some descriptions might not suit your situation.

Check your shipping checklist to confirm the items you get with your computer.

By following these handling tips, you will get the most use and enjoyment out of your computer for a long time to come.

© Copyright IBM Corporation 2000

ThinkPad do not's

- Do not subject your computer to physical punishment, such as dropping or bumping.
- Do not place heavy objects on your computer.
- Do not spill or allow liquids into your computer.
- Do not use your computer in or near water (to avoid the danger of electrical shock).
- Do not pack your computer in a tightly packed suitcase or bag. Your LCD might be damaged.

A scratchlike marking on your LCD might be a stain transferred from the keyboard (including from the TrackPoint stick) when the cover was pressed from the outside. Wipe such a stain gently with a dry soft cloth. If the stain remains, moisten the cloth with LCD cleaner and wipe the stain again. Be sure to dry the LCD before closing it.

- Do not disassemble your computer. Only an authorized IBM ThinkPad repair technician should disassemble and repair your computer.
- Do not scratch, twist, hit, or push the surface of your computer display.
- Do not place any objects between the display and the keyboard or under the keyboard.
- Do not pick up or hold your computer by the display. When picking up your open computer, hold it by the bottom (keyboard) half.
- Do not modify or tape the latches to keep the display open or closed.
- Do not turn your computer over while the ac adapter is plugged in. This could break the adapter plug.
- Do not move the computer when the hard disk drive is accessing data (when the indicator is blinking).
- Do not use or store your computer where the temperature is below 5° C or above 35° C (41° F and 95° F).

ThinkPad do not's

- Do not place your computer closer than 13 cm (5 in.) to any electrical appliance that generates a strong magnetic field, such as a motor, a magnet, a TV, a refrigerator, or large audio speakers.
- Do not put an operating cellular phone on the computer. The phone might cause the computer to malfunction.
- Do not hard-mount your computer in a vehicle or anywhere that it is subject to strong vibration.
- Do not crush, drop, or physically punish the external or removable hard disk, diskette, or CD-ROM drive when it is outside your computer.
- Do not press on the middle part of the diskette drive or the CD-ROM drive.
- Do not insert a diskette at an angle. Inserting the diskette at an angle into the drive can damage the drive.
- Do not attach more than one label to a diskette, and do not allow the label to be come loose. Multiple or loose labels can detach or tear and then lodge in the drive.
- Do not touch the lens on the CD-ROM tray.
- Do not close the CD-ROM tray until you hear the CD click into the center pivot of the CD-ROM drive
- Do not touch the surface of a CD; handle the CD only by its edges.
- Do not connect the modem to a PBX (private branch exchange) or other digital telephone extension line. **Your computer can use only a public-switched telephone network (PSTN)**. Use of a phone line other than PSTN can damage your modem. If you are not sure which kind of phone line you are using, contact your telephone company. Many hotels or office buildings use digital telephone extension lines, so check before connecting the telephone cable in such places.
- 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.

ThinkPad do not's

Extended contact with your body, even through clothing, could cause discomfort or, eventually, a skin burn.

ThinkPad do's

Treat your computer like precision electronic machinery.

- When installing your hard disk drive, diskette drive, or CD-ROM drive, follow the instructions in the online book. Apply pressure to the drive only where needed on the device.
- If you exchange drives in your computer, reinstall the plastic bezel faces (if supplied).
- Store your external and removable hard disk, diskette, and CD-ROM drives in the appropriate container or packaging when they are not being used.
- Choose a quality carrying case that will protect your computer.
- Store packing materials safely out of reach of children to prevent the risk of suffocation from plastic bags.
- 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.
- Check the IBM Web page (http://www.ibm.com/thinkpad) periodically to get current information about your computer.

Cleaning your computer

Occasionally clean your computer as follows:

- Use a soft cloth moistened with nonalkaline detergent to wipe the exterior of the computer.
- Don't spray cleaner directly on the display or keyboard.
- Gently wipe the LCD with a dry, soft cloth.

Carrying your computer

When carrying your computer, follow these instructions to prevent possible damage to it and your data:

1. Remove any media from the CD-ROM drive or diskette drive.
2. Turn off all attached devices.
3. Turn off the computer, or enter suspend or hibernation mode; then close the LCD. Make sure the suspend indicator is on when the computer is in suspend mode, or the power indicator is off when it is turned off or in hibernation mode.
4. Unplug all external cables and cords connected to your computer.
5. Make sure all computer doors and covers are closed.
6. Use a quality carrying case that provides adequate cushion and protection.

Do not move the computer when the hard disk drive is accessing data that is, when the indicator is blinking. Make sure the indicator is off before you carry the computer.

Extending the usefulness of the battery

The amount of battery power consumed by your computer depends on such conditions as the frequency of use, the operating temperature, and the period in storage (if unused). The following tips can help you to extend the life of your battery:

- Do not recharge the battery pack until all of its power is used. Recharging a battery pack that is not completely discharged can shorten battery life.
- Once you start charging the battery pack, do not use it until it is fully charged.
- Whenever possible use the ThinkPad battery power-saving modes.
- Decrease the brightness of the LCD.
- Use power management. Each operating system comes with its power management system.
- Whenever the internal serial devices(the modem and the serial port) are not in use, stop the supply of power to them.
- If you will not use the computer for a long period, remove the battery pack and keep it in a cool place.

Chapter 3. System overview

Features 16
Specifications 18
Using your Online User's Guide 19
Starting the BIOS Setup Utility 20

© Copyright IBM Corporation 2000

Features

Processor

Intel® Celeron® processor, or Intel® SpeedStep Mobile Pentium®III processor

Memory

Built-in: 64MB or 128MB depending on model

Maximum: 320MB

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
2. SVGA
   - Up to 800-by-600 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

Specifications

Size

With a 12.1-inch display:

- Width: 279.4 mm
- Depth: 226.8 mm
- Height: 23.9-27.7 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: 11.1 V dc

Capacity: 15 VA, 1.4 AH

Using your Online User's Guide

Your computer offers full information and documentation online. There is no need to carry heavy manuals or other reference books.

Online help is provided by ThinkPad Assistant. You can access ThinkPad Assistant buy pressing the unique ThinkPad Button to open the Access ThinkPad. There, you perform a Quick Search or search the full text of the help system. Alternatively, you can go to ThinkPad Assistant by clicking **Start -> Programs -> ThinkPad Information.**

ThinkPad Assistant has the following sections:

- About your ThinkPad
- Everyday use
- Communicate
- Home and travel
- Enhancements
- Maintenance and upgrades
- Security
- Problem solving
- How to reach IBM

To reach IBM when you are logged onto the Internet, click one of the Internet portal buttons in Access ThinkPad.

- Get help and user support
- Update software
- Find business solutions
- Learn about accessories that can help make you even more productive

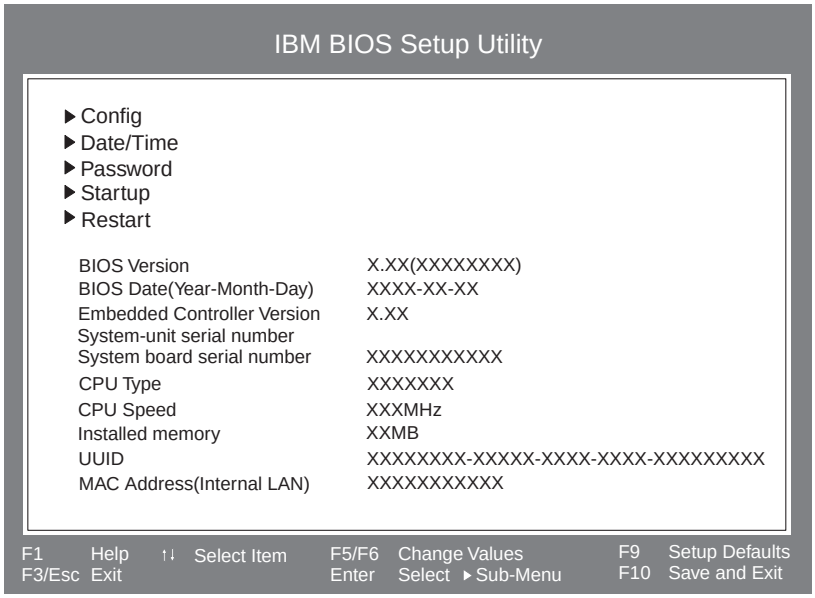
Starting the BIOS Setup Utility

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 Online User's Guide.

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



1. To protect against accidental data of loss, use ConfigSafe to save your current configuration.

2. Remove any diskette from the diskette drive, and then turn off the computer.
3. Turn on the computer; then, while the ″Press F1 for IBM BIOS Setup Utility″ message is displayed at the lower-left 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 the Online User's Guide.
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, change the items you wish to change. To change the value of an item, use the F5 or F6 key. If the item has a submenu, you can display it by pressing **Enter** .
6. Press **F3** or **Esc** to exit from the submenu. If you are in a 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 to the option you want for restarting your computer; then press Enter. Your computer restarts.

Chapter 4. Protecting your computer

Using passwords 24
- Power-on passwords 24
- Screen-saver passwords 24
- Hard-disk passwords 25
- Windows password 26
- Supervisor password 26
- Network password 26
- Passwords and standby mode 26

Using the locks 28
- Attaching the mechanical lock 28

© Copyright IBM Corporation 2000

Using passwords

To make sure only authorized persons can work on your computer, you can set different kinds of passwords. Prospective users will have to know the proper passwords in order to access your computer or data.

You can set the following passwords:

- Power-on passwords
- Screen-saver passwords
- Hard-disk passwords
- Windows password
- Supervisor password
- Network password
- Passwords and standby mode

Power-on passwords

You can set a power-on password to help protect your ThinkPad computer against access by unauthorized users.

If you set a power-on password, the password prompt appears on the screen when you turn on the computer. You must enter the correct password to start using the computer.

Note: If you forget your power-on password, you cannot reset it. You must take the computer to an IBM reseller or IBM marketing representative to have the password canceled.

Screen-saver passwords

You can set a screen-saver password. Once the screen saver has started, only those who know the password can exit the screen saver and resume operating the computer.

Note: The screen-saver password does not thoroughly protect your computer from unauthorized users. An unauthorized user could turn the computer off and then on to restart Windows without knowing your screen saver password.

To set a screen-saver password, refer to the Online User's Guide.

Hard-disk passwords

Two types of hard-disk password can help protect the information stored on the hard disk.

- User hard-disk password
- Master hard-disk password, which requires a user password

When a user hard-disk password is set, but no master hard-disk password is set, no one can access to files and applications on the hard-disk without first typing that password.

The master password can be set and used only by a system administrator. Like a master key, it enables the administrator to get access to any hard drive in a system. The administrator sets the master password, and no one else knows it. Then the administrator sets a user password for each computer in the network, and tells each user the password for his or her computer. The user can then change the user password as desired; the administrator can still get access by using the master password.

If the user hard-disk password is different from the power-on password, a preset timer or an incoming call will not cause the computer to resume operation. To use the unattended resume function with a hard-disk password, set the same password for both the power-on password and the user hard-disk password.

Attention

If you forget your hard-disk password, there is no way to reset your password or recover data from the hard disk. You must take your computer to an IBM reseller or marketing representative to replace the hard disk drive. A fee will be charged for parts and service.

To set a hard-disk password, refer to the Online User's Guide.

Windows password

When you start your ThinkPad® computer and the Windows® operating system opens, Windows requires you to enter a user ID and a password.

To set a Windows password, refer to the Online User's Guide.

Supervisor password

The supervisor password protects the system information stored in the BIOS Setup Utility so that without knowing the password, nobody can change the configuration of the computer.

Attention

If you forget your supervisor password, there is no way to reset it. You must take your computer to an IBM reseller or marketing representative to replace the system board. A fee will be charged for parts and service.

To establish a supervisor password, refer to the Online User's Guide.

Network password

If you work on a local area network (LAN) with your ThinkPad computer, your LAN administrator may have set passwords to restrict access to various parts of the network.

If you are authorized to access restricted areas of your LAN, you will need to establish network passwords in Windows.

To establish your network password in Windows, refer to the Online User's Guide.

Passwords and standby mode

If you have set passwords and you put your computer into standby mode by pressing Fn + F4, the procedure for resuming operation is as follows:

- Press the Fn key, you will be prompted to type your password. You must enter a power-on password or a supervisor password (if one is set).
- If any hard disk has a hard-disk password, it is unlocked automatically when you resume operation.

If you use a hard-disk password with a hard disk in a docking station, follow these procedures to ensure smooth docking and undocking.

- If you dock your computer to the docking station while the computer is running, make sure that it is in standby mode. (Press Fn + F4 to put it in standby.)
- To resume operation, press the Fn key and type the passwords as you are prompted.

Note: If your computer is running, do not attach it to a docking station without first putting it in standby mode. If you do, you will be unable to access the password-protected hard disk in the docking station.

Using the locks

Attaching the mechanical lock

You can attach a mechanical lock to your computer, to help prevent it from being removed without your permission.

Attach a mechanical lock to the keyhole of the computer; then secure the chain on the lock to a stationary object. Refer to the instructions shipped with the mechanical lock.

Note: You are responsible for evaluating, selecting, and implementing any locking devices and security features you use. IBM makes no comments, judgments, or warranties about the function, quality, or performance of locking devices and security features.

Chapter 5. Solving Computer Problems

Troubleshooting 30
- Error codes or messages 30
- No error codes or messages 33
- Power switch problems 34
- Input problems 34
- Standby or hibernation problems 36
- LCD problems 39
- Battery problems 40
- Hard disk drive problems 41
- Software problems 41
- Other problems 43

Testing your computer 45
Backing up your system 46
- Backing up your system configuration 46
- Backing up your data 46
- Recovering lost or damaged software 47
  - Recovering pre-installed software 48
  - Using the ThinkPad Software Selection CD 49

Getting Service 51
- ThinkPad Website 51
- Recording sheet 52
  - Option list 52
  - Identification numbers 52
  - Problem recording sheet 53

© Copyright IBM Corporation 2000

Troubleshooting

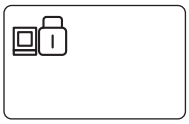
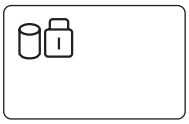
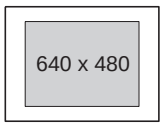
Error codes or messages

Note:

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

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

021x: Keyboard error	Make sure that no object is placed on the keyboard or on the external keyboard, if you have one. Turn off the computer, and turn off all attached devices. Turn on the computer first; then turn on the attached devices. If you still see the same error code, do the following: If an external keyboard is connected, do the following: • Turn off the computer and disconnect the external keyboard; then turn on the computer. Make sure that the built-in keyboard operates correctly. If it was, have the external keyboard serviced. • Make sure that the external keyboard is connected to the correct connector. Test the computer by using PC-Doctor. • If the computer stops during the test, have the computer serviced.
0220: Monitor type error	The monitor type does not match the type specified in CMOS. Run the IBM BIOS Setup Utility to make sure that your monitor type matches the type specified in the utility.
0230: Shadow RAM error	The shadow RAM failed. Test your computer's memory with the PC Doctor. If you added a memory module just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.
0231: System RAM error	The system RAM failed. Test your computer's memory with the PC Doctor. If you added a memory module just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.
0232: Extended RAM error	The extended RAM failed. Test your computer's memory with PC-Doctor. If you have increased memory just before turning the computer on, reinstall it. Then test the memory with PC-Doctor.
0250: System battery error	The system battery is dead. Replace the battery and run the BIOS Setup Utility to verify the configuration. If you still have a problem, have the computer serviced.
0251: System CMOS checksum bad	The system CMOS might have been corrupted by an application program. The computer uses the default settings. Run the BIOS Setup Utility (refer to “Starting the BIOS Setup Utility” on page 20)to reconfigure the settings. If you still see the same error code, have the computer serviced.
0252: Password checksum bad	The password you have set is cleared. Run the BIOS Setup Utility to set the password.
0260: System timer error	Have the computer serviced.
0270: Real time clock error	Have the computer serviced.

0271: Date and time error	Neither the date nor the time is set in the computer. Set the date and time, using the IBM BIOS Setup Utility.
0280: Previous boot incomplete	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.
02D0: System cache error	The cache is disabled. Have the computer serviced.
02F4: EISA CMOS not writable	Have the computer serviced.
02F5: DMA test failed	Have the computer serviced.
02F6: Software NMI failed	Have the computer serviced.
02F7: Fail-safe timer NMI failed	Have the computer serviced.
The power-on password prompt 	A power-on password or 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.
The hard disk drive password prompt 	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.
The DOS full-screen looks smaller. 	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.) **Note:** You can use the **Fn**+**F8** keys to do the same thing if your computer has screen image.
Hibernation error	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.

Operating system not found.	Verify the following: • The hard disk drive is correctly installed. • A startable diskette is in the diskette drive If you still see the same error message, check the boot sequence using the BIOS Setup Utility.
Fan error	Cooling fan is failing. Have the computer serviced.
EMM386 Not Installed--Unable to Set Page Frame Base Address.	Edit C:\CONFIG.SYS and change a line from device=C:\WINDOWS\EMM386.EXE RAM to device=C:\WINDOWS\EMM386.EXE NOEMS and save this file
CardBus Configuration Error--Device Disabled.	Press F1 to go to IBM BIOS Setup Utility. Press F9 and then Enter to load the default setting. Press F10 and then Enter to restart the system.

No error codes or messages

Problem	**Action**
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 *Online user's guide*.	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.

The screen is blank and you hear two or more beeps, or a continuous beep.	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.
Only the cursor appears.	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	Cause and action
The system freezes, and you cannot turn off the computer	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	Action
The cursor drifts when the computer is turned on or after it resumes normal operation.	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.
The cursor does not work for a while after the settings in the Mouse Properties window have been changed.	This is a normal characteristic of the cursor. Wait several seconds until the cursor returns to the normal state.

The mouse or pointing device does not work.	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.
The mouse buttons do not work.	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.
The scrolling or magnifying glass function does not work.	See the mouse driver in Device Manager, and make sure that the **IBM PS/2 TrackPoint** driver is installed.
The cursor does not move after the computer awakens from one of the power management modes.	Make sure you followed the instructions correctly when you installed Windows with the Advanced Power Management (APM) option.
Some or all keys on the keyboard do not work.	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.
A number appears when you type a letter.	The numeric lock function is on. To disable it, press and hold **Shift**; then press **NumLk**.
All or some keys on the external numeric keypad do not work.	Make sure that the external numeric keypad is correctly connected to the computer.

All or some keys on the external keyboard do not work.	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	Cause and action
The computer enters standby mode automatically.	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.
The computer enters suspend mode immediately after POST (the suspend indicator turns on).	Make sure that: • The battery pack is charged. • The operating temperature is within the acceptable range. Refer to “Features” on page 16 and “Specifications” on page 18 If these items are correct, have the computer serviced.
A message *"critical low-battery error"* appears, and the computer immediately turns off.	The battery power is getting low. Connect the ac adapter to the computer, or replace the battery pack with a fully charged one.
When you take action to return from standby mode, the LCD remains blank.	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.**
The computer does not return from standby mode, or the standby indicator stays on and the computer does not work.	The computer automatically enters standby or hibernation mode when the battery is depleted. Connect the ac adapter to the computer; then press **Fn**.

Your computer does not enter standby or hibernation mode.	Check whether any option has been selected that would disable your computer from entering standby or hibernation mode.
The computer does not enter standby mode as set by the timer under Windows 98 or Windows NT.	**For Windows 98:** The generic CD-ROM or DVD-ROM driver for Windows 98 accesses the internal CD-ROM or DVD-ROM drive every 3 seconds to see whether a CD-ROM is inserted in the UltraBase X2 or the docking station. 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 98 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**

The Fn + F12 key combination does not cause the computer to enter hibernation mode.	Enable hibernation mode as follows: **For Windows 2000:** 1. Start the ThinkPad Configuration program. 2. Click **Power Management**. 3. Click the **Hibernation** tab. 4. Mark the **Enable hibernate support** check box. 5. Click **OK**. **For Windows ME, Windows 98 or Windows 95:** 1. Start the ThinkPad Configuration program. 2. Click **Power Management**. 3. Click the **Hibernation** tab. 4. Click the **Enable hibernation**... button. 5. Click the **Create Now** button. If you are using one of the IBM communication PC Cards, the computer cannot enter hibernation mode. To enter hibernation mode, stop the communication program, and then remove the PC Card or disable the PC Card slot, using the Control Panel.
	For Windows NT: **Note:** To use hibernation mode in Windows NT, you must format your hard disk with the FAT format system. If you format your hard disk with NTFS, the default format in Windows NT, you cannot use hibernation mode. 1. Start the ThinkPad Configuration program. 2. Click **Power Management**. 3. Click **Suspend/Resume Options**. 4. Click **Enable Hibernation**. 5. Click **OK**. If you are using one of the IBM communication PC Cards, the computer cannot enter hibernation mode. To enter hibernation mode, stop the communication program, and then remove the PC Card or disable the PC Card slot, using the Control Panel.

LCD problems

Problem	Cause and action
The screen is blank.	Press Fn + Home key to make the screen brighter. If problem still persists, do the "Cause and action" in the problem below.
The screen is unreadable or distorted.	1. Open the Display Properties window. **For Windows 2000, Windows ME, Windows 98, Windows95:** a. Click the **Settings** tab. b. Check if the color depth and resolution are correctly set. 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 if the color depth and resolution are correctly set. 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.
Incorrect characters appear on the screen.	Did you install the operating system or application program correctly? If they are installed and configured correctly, have the computer serviced.
The screen stays on even after you turn off your computer.	Press and hold the power switch for 4 seconds or over to turn off your computer; then turn it on again.
Missing, discolored, or bright dots appear on the screen every time you turn on your computer.	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.

"Unable to create overlay window" message appears when you try to start DVD playback. *or* You may get poor playback or none at all while running video playback, DVD playback, or game applications.	Do either of the following: • If you are using LCD and external monitor simultaneously with 32-bit color mode, change the color depth to 16-bit mode. • If you are using a desktop size of 1280x1024 or larger, reduce the desktop size and the color depth.

Battery problems

Problem	Cause and action
The battery pack cannot be fully charged by the power-off method in the standard charge time for your computer.	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.
Your computer shuts down before the battery status indicator shows empty, ***-or-***Your computer operates after the battery status indicator shows empty.	Discharge and recharge the battery pack.
The operating time for a fully charged battery pack is short.	Discharge and recharge the battery pack. If your battery's operating time is still short, use a new battery pack.
The computer does not operate with a fully charged battery pack.	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.
The battery pack cannot be charged.	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	Cause and action
The hard disk drive makes a rattling noise intermittently.	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.
The hard disk drive does not work.	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.

Software problems

Problem	Cause and action
An application does not run correctly.	Make sure that the problem is not being caused by the application: Check that your computer has the minimum required memory to run the application. Refer to the manuals supplied with the application. Check that the application is designed to operate with your operating system. Check that other applications run correctly on your computer. Check that the necessary device drivers are installed. Check that the application works when it is run on some other computer. If an error message appears when you are using the application program, refer to the manuals supplied with the application. If the application still does not run correctly, contact your place of purchase or a service representative for help.

The main window bitmap in the ThinkPad Configuration program is distorted (Windows NT only).	Installing the **Active Desktop**, bundled with Internet Explorer Version 4.0 on Windows NT, might cause this problem. Do one of the following: • Uninstall the **Active Desktop**. (Merely disabling the **Active Desktop** is not effective to avoid the problem.) • Close the ThinkPad Configuration program and start it again. (This is a temporary recovery.)
While you are installing Windows 95, screen color becomes abnormal. Also the system halts after rebooting the system, and complete "Getting ready to run Windows 95 for the first time..." message	If you install the Windows 95 as Typical (default) in Setup Option, you may encounter this problem. To recover, do as follows: 1. Reboot the system by pressing Ctrl+Alt+Del. 2. After you reboot, the Startup screen appears with "Safe mode" selected. Press Enter. 3. When you see the screen message "Windows is running in Safe mode," press **OK**. 4. On the desktop, click the right mouse button to show the Display Properties window. 5. Click **Property**. 6. Click the **Settings** tab. 7. Click the **Change Display Type**... button. 8. Under Adapter Type, click the **Change** button. 9. In the Select Device list, click **Show All devices**. 10. Click **Standard Display Types** and **Standard Display Adapter (VGA)**. 11. Click **Close**. 12. At the System Setting change window, click **Yes**. 13. Reboot the system

	If you are installing Windows 95 OSR 2.0, 2.1, or 2.5, do as follows: 1. Reboot the system by pressing Ctrl+Alt+Del. 2. After you reboot, the Startup screen appears with "Safe mode" selected. Press Enter. 3. When you see the screen message "Cannot detect devices in Safe Mode," click **OK**. 4. When you see the screen message "Windows is running in Safe mode," press **OK**. 5. On the desktop, click the right mouse button to show the Display Properties window. 6. Click **Advanced Properties**. 7. Click the **Adapter** tab. 8. Click the **Change** button. 9. In the Select Device list, click **Show All devices**. 10. Click **Standard Display Types and Standard Display Adapter (VGA)**. 11. Click **OK**. 12. Click **Close**. 13. In the System Settings change window, click **Yes**. 14. Reboot the system.

Other problems

Problem	Cause and action
The computer locks or does not accept any input.	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.
The computer does not turn off with the power switch.	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.

The computer does not start from a device you want, such as a diskette drive.	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.
The computer does not respond.	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 Online user's guide

Testing your computer

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

To run PC-Doctor, 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 test of critical hardware components, but it does not run all of the diagnostic test in PC-Doctor. If PC-Doctor 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.

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.

Backing up your system

Backing up your system configuration

When you add software applications or devices to your computer, the installation process can change the computer Registry and configuration.

If your computer does not work properly after you add applications or devices, you need to restore the previous configuration.

Use ConfigSafe to save the configuration before you make changes. If something goes wrong, use ConfigSafe to restore the system Registry and configuration files.

To capture a snapshot of your system configuration with ConfigSafe:

1. Click **Start**.
2. Move the cursor to **Programs**, **ConfigSafe**, and then **ConfigSafe**.
3. Double-click ConfigSafe.
4. Click the **camera** icon.
5. Type a name for the snapshot. For example, before installing a word processor, you might type, "Before installing word processor."
6. Click **OK**.
7. After a few moments, the main ConfigSafe window will return. The snapshot is complete.

If you need to restore a configuration snapshot, open ConfigSafe and follow the on-screen instructions.

Backing up your data

Hard disks are reliable data storage devices. Even so, it is wise to protect yourself against accidental data loss or the unlikely event of a hard-disk malfunction by backing up your important files regularly.

To back up data, start the backup application as follows:

1. Click **Start**.
2. Move the cursor to **Programs**, **Accessories**, **System Tools**, and **Backup**.
3. Click **Backup**.

Make sure that the **Create a new backup job** button is marked in the Microsoft Backup window.

Click **OK**. The Backup Wizard will guide you through backing up some or all of the files on your hard disk.

Recovering lost or damaged software

This section describes how to recover lost or damaged software. The following table shows what is needed to recover your system.

Problem	Tools Provided	For More Information
Windows 98, Windows 95, Windows NT and Windows 2000		
You need to recover a lost or damaged device driver.	Use the ThinkPad Software Selection CD.	See “Using the ThinkPad Software Selection CD” on page 49 for general information. The CD-ROM also contains online help for detailed instructions.
You need to recover (reinstall) a lost or damaged software application.	Use the ThinkPad Software Selection CD.	See “Using the ThinkPad Software Selection CD” on page 49 for general information. The CD-ROM also contains online help for detailed instructions.

You need to recover your entire hard disk.	Use the Recovery CD (Windows 98 and Windows 95 only). See “Recovering pre-installed software” on page 48 for general information.	

Recovering pre-installed software

You have the ability to restore the software that was shipped with your computer, if your hard disk drive data is damaged or accidentally erased. This software includes your pre-installed operating system, applications and device drivers.

Depending on the model of your ThinkPad(R) computer, you can restore your pre-installed software using either a Recovery CD or Disk-to-Disk Recovery.

If a Recovery CD was not provided with your computer, your computer will contain the Disk-to-Disk Recovery tool. This tool is located in a section of your hard disk drive that is not displayed when using Windows(R) Explorer.

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

Attention

All 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.

To use Disk-to-Disk Recovery 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 displays on the screen: "To start the Product Recovery program, press F11". This message displays for only a few seconds.

4. Select the operating system to recover from the list displayed on the screen.
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. Save all your files and shut down your desktop.
2. Turn off your computer.
3. If you are using an Ultrabase(R) X2, insert the Recovery CD into the CD-ROM or DVD-ROM drive. If not, attach a CD-ROM drive or DVD-ROM drive to the USB connector on your computer, then insert the Recovery CD into the drive.
4. Turn on your computer; then wait for the Product Recovery program menu to display on your screen.
5. Select the operating system to recover from the list displayed on the screen.
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.

Using the ThinkPad Software Selection CD

The Software Selections CD contains all the software applications and device drivers for your computer. You can customize your computer with this CD.

If you need to reinstall software, or install a driver for a hardware device, put the Software Selections CD in your CD-ROM drive, DVD-ROM drive or CD-RW drive. The Features menu appears automatically.

The Software Selections CD offers the following functions:

- **Welcome**This page displays the model and serial number of your computer, and a menu from which you can select an item by clicking it
- **Install Software** Use this page for doing the following:
  - Reinstalling a software application
  - Installing a hardware device driver
  - Installing software that was not preinstalled on your computer
- **Uninstall Software** You can uninstall any application program or device driver that was installed from the Software Selections CD and that has an uninstall entry in the **Add/Remove Program** list.
- **Advanced Functions**
  - Change Settings

    You can select options such as where to access the Software Selections CD and how to display information about software.
  - Install Device Drivers

    Go to this page to view a list of the device drivers on the system and install the ones you want. The page may also contain a readme for the driver you are installing; if so, be sure to read it before starting installation.
  - Create a Diskette Image

    Some applications or devices require a diskette for installation. With this function, you create a diskette image.
  - Create a Software Selections CD image

    You can copy the entire Software Selections CD and program onto your hard disk, and then install software and drivers without the CD.
  - Read the License Agreement

    This page presents the license agreements for the software programs on the Software Selections CD.
  - Help

    This page introduces the Software Selections CD and explains each item.

Getting Service

With the original purchase of an IBM hardware product, you have access to extensive support under warranty. Be sure to retain your proof of purchase to obtain warranty service.

For hardware product assistance covered under the terms of the IBM Statement of Limited Warranty, you may call the IBM Personal Computer HelpCenter (1-800-772-2227 in the U.S.)

The following services are available during the warranty period:

- **Problem determination:**Trained personnel are available to assist you in determining whether 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 service.
- **Engineering change management:** Occasionally, changes may be required after a product has been sold. IBM or, if authorized by IBM, your reseller will make Engineering Changes (ECs) available that apply to your hardware.

To prepare for your call, fill in the blanks of the recording sheets (refer to “Recording sheet” on page 52) with information about your computer. If possible, be at your computer when you call.

The following items are not covered:

- Replacement or use of non-IBM parts or nonwarranted IBM parts
- Configuration of BIOS as part of an installation to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of application programs

ThinkPad Website

You can also contact us on the Internet for answers to your technical support questions. If you link to our support home page, you can

search for technical tips, download update drivers, and find out about many other things. You can visit the site at the following URL:

http://www.pc.ibm.com/thinkpad

Personalized web-based site PC support provides PC users easy access to online support, including personalized IBM website tailored to their machine type, computing environment, and individual interests such as business applications or games. Customers profile once with IBM and are thereafter greeted by name and presented targeted information selected specifically to meet their particular needs. For example, a corporate ThinkPad user might receive information on Microsoft Windows NT and remote connectivity. IBM customers can also elect to receive proactive e-mail, alerting them to time-saving hints and tips and product-specific update such as modem speed and BIOS files. Interactive web-based forums are monitored around the clock by IBM specialists, complementing its support on all the major Internet service providers. You can set up your profile at:

http://www.pc.ibm.com/support

Recording sheet

Option list

□ DIMM _____MB
□ Hard disk drive _____GB
□ PC Cards
□ PC Card
□ Battery pack
□ Docking station _____model
□ Port replicator
□ Other

Identification numbers

The serial number label is on the bottom of your computer. Write the machine **Type** and the serial number (**S/N**) below:

IBM product name _____

Machine type _____

Serial number _____

Problem recording sheet

Collect this needed information before you call for help. Then you will be able to get help as quickly as possible.

- Type of problem:

□ Continuous □ Intermittent

- Error code:

  _____

- Operating system and version, if available:

□ Windows Version_____

- Application programs running at the time of the problem:

  _____

  _____

- Problem symptom:

  _____

  _____

  _____

- Can the problem be reproduced?

□ Yes □ No

If yes, describe how it can be reproduced:

_____

_____

Getting Service

Appendix A. Product warranties and notices

International Business Machines Corporation — Armonk, New York 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or an IBM authorized reseller. The term "Machine" means an IBM machine, its features conversions, upgrades, elements, or accessories, or any combination of them. Machines are subject to these terms only if purchased in the United States or Puerto Rico, or Canada, and located in the country of purchase. If you have any questions, contact IBM or your reseller.

Machine: IBM ThinkPad X20 and the Battery Pack

Warranty Period*:

Model 2661: One Year
Model 2662: Three years except in some countries
Battery Pack: One Year

**Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information.*

Production Status

Each Machine is manufactured from new parts, or new and serviceable used parts (which perform like new 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 warranty terms apply.

The IBM Warranty

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Spec-

© Copyright IBM Corporation 2000

ifications. IBM calculates the expiration of the warranty period from the Machine's Date of installation. The date on your receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period, IBM or your reseller will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine. IBM or your reseller will specify the type of service.

For a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Some of these transactions (called "Net-Priced" transactions) may include additional parts and associated replacement parts that are provided on an exchange basis. All removed parts become the property of IBM and must be returned to IBM.

Replacement parts assume the remaining warranty of the parts they replace.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it (with a Machine that is at least functionally equivalent) without charge. If IBM or your reseller is unable to do so, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user.

Warranty Service

To obtain warranty service for the Machine, you should contact your 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.

Depending on the Machine, the service may be 1) a "Repair" service at your location (called "On-site") or at one of IBM's or a reseller's

service locations (called "Carry-in") or 2) an "Exchange" service, either On-site or Carry-in.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced.

Product Warranty

It is your responsibility to:

1. obtain authorization from the owner (for example, your lessor) to have IBM or your reseller service a Machine that you do not own;
2. where applicable, before service is provided —
   a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
   b. secure all programs, data, and funds contained in a Machine,
   c. inform IBM or your reseller of changes in a Machine's location, and
   d. for a Machine with exchange service, remove all features, parts, options, alterations, and attachments not under warranty service. Also, the Machine must be free of any legal obligations or restrictions that prevent its exchange;
3. be responsible for loss of, or damage to, a Machine in transit when you are responsible for the transportation charges.

Extent of Warranty

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

Unless IBM specifies otherwise, IBM provides non-lBM machines on an "AS IS" basis. However, non-lBM manufacturers may provide their own warranties to you.

Misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, removal of product labels or parts identification labels, or failure caused by a product for which IBM is not responsible may void the warranties.

THESE WARRANTIES REPLACE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. HOWEVER, SOME LAWS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES. IF THESE LAWS APPLY, THEN ALL EXPRESS AND IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

In Canada, warranties include both warranties and conditions.

Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part (including fundamental breach) or other liability (including negligence and misrepresentation), you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages, IBM is liable only for:

1. bodily injury (including death), and damage to real property and tangible personal property; and
2. the amount of any other actual loss or damage, up to the greater of $100,000 or the charge for the Machine that is the subject of the claim.

Under no circumstances is IBM liable for any of the following:

1. third-party claims against you for losses or damages (other than those under the first item listed above);
2. loss of, or damage to, your records or data; or
3. economic consequential damages (including lost profits or savings) or incidental damages, even if IBM 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.

This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Notices

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

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, North Castle Drive, Armonk, NY 10504-1784, U.S.A.

Year 2000 readiness and instructions

This is a Year 2000 Readiness Disclosure.

A product is Year 2000 Ready if the product, when used in accordance with its associated documentation, is capable of correctly processing, providing and/or receiving date data within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with the product properly exchange date data with it.

This IBM PC hardware product has been designed to process four-digit date information correctly within and between the 20th and 21st centuries. If your IBM computer is on when the century changes, you should turn it off and then back on again once, or restart the operating system, to ensure that the internal clock resets itself for the new century.

This IBM PC product cannot prevent errors that might occur if software you use or exchange data with is not ready for the Year 2000. IBM software that comes with this product is Year 2000 Ready. However, software from other companies might come with this IBM

PC product. IBM cannot take responsibility for the readiness of that software. You should contact the software developers directly if you wish to verify readiness, understand limitations, or look for any software updates.

To learn more about IBM PC products and the Year 2000, visit our Web site at http://www.pc.ibm.com/year2000. The information and tools there can help you with your Year 2000 transition plan, especially if you have multiple IBM PCs. IBM encourages you to check periodically for updated information.

Electronic emission notices

Federal Communications Commission (FCC) Statement

ThinkPad T20, model number 2647, 2648, or 2649

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 unau-

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

Responsible Party:

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

Industry Canada Class B Emission Compliance Statement

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

Avis de conformite a la re glementation d'Industrie Canada

Cet appareil numerique de la classe B est conform a la norme NMB-003 du Canada.

European Community Directive Conformance Statement

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

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

This product satisfies the Class B limits of EN 55022.

Telecommunication notice

Federal Communications Commission (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 telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements documents. 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 connection. 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 coordinated by a representative designated by the supplier.

NOTICE: The Ringer Equivalence 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 Numbers of all the devices does not exceed 5

etiquette d'homologation du ministere des Communications du Canada

AVIS:L'etiquette d'Industrie Canada identifie le materiel homologue.

Avant d'installer ce materiel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de telecommu-

nications. Le materiel doit egalement etre installe en suivant une methode acceptee de raccordement. L'abonne ne doit pas oublier qu'il est possible que la conformite aux conditions enoncees ci-dessus n'empeche pas la degradation du service dans certaines situations.

Les reparations de materiel homologue doivent etre coordonnees par un representant designe par le fournisseur. L'entreprise de telecommunications peut demander a l'utilisateur de debrancher un appareil a la suite de reparations ou de modifications effectuees par l'utilisateur ou a cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise a la terre de la source d'energie electrique, des lignes telephoniques et des canalisations d'eau metalliques, s'il y en a, sont raccordes ensemble. Cette precaution est particulierement importante dans les regions rurales.

Avertissement : L'utilisateur ne doit pas tenter de faire ces raccordements lui-meme; il doit avoir recours a un service d'inspection des installations electriques ou a un electricien, selon le cas

AVIS : L'indice d'equivalence de la sonnerie (IES) assigne a chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent etre raccordes a une interface. La terminaison d'une interface telephonique peut consister en une combinaison de quelques dispositifs, a la seule condition que la somme d'indices d'equivalence de la sonnerie de tous les dispositifs n'excede pas 5.

Product notice requirements

The following notice applies to machines equipped with both a DVD and a TV-out function:

This product incorporates copyright protection technology that is protected by method claims of U.S. patent numbers 4631603, 4577216, 4819098, 4907093, and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation and is intended for home and other limited viewing use only,

unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notice for Australia

The following notice applies when using the telephony functions:

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

Notice for Users in New Zealand

The modem in this ThinkPad is set up for Tone Dialing. Users should only select Pulse Dialing if they are connecting to the Telecom NZ network via a PBX or other systems which requires Pulse Dialing. Pulse Dialing is required only for a small number of obsolescent PBX or similar systems.

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.

This equipment is not capable, under all operating conditions, of correct operation at the higher speeds for which it is designed. Telecom will accept no responsibility should difficulties arise in such circumstances.

This device is equipped with pulse dialling while the Telecom standard is DTMF tone dialling. There is no guarantee that Telecom lines will always continue to support pulse dialling.

Use of pulse dialling, when this equipment is connected to the same line as other equipment, may give rise to bell tinkle or noise and may also cause a false answer condition. Should such problems occur, the user should NOT contact the Telecom Faults Service.

This equipment shall not be set to make automatic calls to the Telecom '111' Emergency Service.

This equipment should not be used under any circumstances which may constitute a nuisance to other Telecom customers.

Notice for European Union countries

The equipment described here has been approved in accordance with Council Decision 98/482/EC for pan-European single-terminal connection to the Public Switched Telephone Network (PSTN). However, because of differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance that the equipment will operate successfully on every PSTN network termination point. In the event of problems, you should contact your equipment supplier first. The modem integrated in this equipment is designed to work on the following country or regional networks: Austria, Belgium, Denmark, France, Finland, Germany, Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Republic of Ireland, United Kingdom. Operation in pulse dialing mode is supported only for PBXs. To operate with the networks listed above, the modem should be set as explained in the chapter headed "Use the built-in modem" in the online user's guide.

For Spain: A change in the polarity of the dc voltage can cause the connection to be broken.

Trademarks

The following terms, in this publication, are trademarks of the IBM Corporation in the United States or other countries or both:

IBM
MMPM/2
Multimedia Presentation Manager/2
PC Card Director
PS/2
RediSafe
ThinkPad
TrackPoint IV

Notices

Microsoft, Windows, Windows NT, and the Windows 95 flag logo are trademarks or registered trademarks of Microsoft Corporation.

Pentium and Celeron™ are trademark or registered trademark of Intel Corporation in the U.S. and other countries.

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

Glossary

This glossary includes terms and definitions from the *IBM Dictionary of Computing* (New York: McGraw-Hill, 1994)

ac (AC). Alternating current.

ac power. Power that is supplied to the computer through an electrical outlet.

Advanced Power Management (APM). A facility consisting of one or more layers of software that support power management in computers with power manageable hardware. The APM software interface allows applications, operating systems, device drivers, and the APM BIOS to work together to reduce power consumption, without reducing system performance.

ANSI. American National Standards Institute.

APM. Advanced Power Management.

application program. A program that performs specific tasks on your computer, such as word processing or creating spreadsheets.

ASCII. American National Standard Code for Information Interchange.

ATA PC Card. A PC Card with an AT attachment hard disk drive interface such as a storage device PC Card.

AUTOEXEC.BAT. A file that contains a startup procedure of DOS. Each time you start your system, DOS performs the commands that are stored in this file.

backup copy. A copy, usually of a file or group of files, that is kept in case the original file or files are unintentionally changed or destroyed.

batch. A process method in which a program or programs records with little or no operator action.

bay. The ThinkPad X20 compartment for installing device modules.

BIOS (Basic Input/Output System). Microcode that contains such basic hardware operations as interactions with diskette drives, hard disk drives, and the keyboard.

bitmap graphics. (1) A form of graphics in which all points on the display are directly addressable, (2) In multimedia applications, a form of graphics in an area of computer memory or storage that can be displayed as an image.

boot. To prepare a computer system for operation by loading an operating system.

bps. Bits per second. In serial transmission, the instantaneous bit speed with which a device or channel transmits a character.

bus. A facility for transferring data between several devices located between two end points, only one device being able to transmit at a given moment.

cache memory. A special memory, smaller and faster than main memory, that is used to hold a copy of instructions and data in main memory that is likely to be needed next by the processor, and that have been obtained automatically from main memory.

CD. Compact disc.

CD-I. Compact disc-interactive.

© Copyright IBM Corporation 2000

CD-ROM. Compact disc read-only memory.

combination keys. Keys that have specific functions when you hold them down at the same time.

CONFIG.SYS. A file that contains a group of commands to load installable device drivers and reserve space in system memory for information processing. This file is referred to by DOS during system startup.

configuration. (1) The manner in which hardware and software of an information processing system are organized and interconnected, (2) The physical and logical arrangement of devices and programs that make up a data processing system, (3) The devices and programs that make up a system, subsystem, or network.

CRT. Cathode ray tube display.

device driver. (1) A file that contains the code needed to use an attached device. Operating system loads device drivers for screens. (2) A program that enables a computer to communicate with a specific peripheral device—for example, a printer, a video disc player, or a CD drive. (3) A collection of subroutines that control the interface between I/O device adapters and processors.

DIMM. Dual inline memory module.

directory. A type of file containing the names and controlling information for other files or other directories.

DMA. Direct memory access. The transfer of data between memory and input/output units without processor intervention.

double-click. To press and release a mouse button twice within a time frame defined by the user, without moving the pointer off the choice.

DRAM. Dynamic random access memory.

ECP. Extended Capability Port.

EDO DRAM. Enhanced data output dynamic random access memory.

EGA. Enhanced graphics adapter.

EIA. Electronics Industries Association.

EIA-232D. An EIA interface standard that defines the physical, electronic, and functional characteristics of an interface line that connects a communication device and associated workstation. It uses a 25-pin connector and an unbalanced line voltage.

EMS. Expanded memory specification.

FAQ. Frequently asked questions.

fax. (1) Facsimile machine. (2) A transmitted document from a facsimile machine.

FDD. Floppy disk drive.

fixed disk. In personal computing, fixed disk is synonymous with hard disk.

Flash memory. Electrically rewritable storage.

folder. A file used to store and organize documents.

fuel gauge. An indicator on the screen that constantly shows the current power status of the battery pack.

HDD. Hard disk drive.

HHR. Half-horizontal resolution.

hibernation mode. One of the power-saving methods that stores data and applications running in the computer's memory on the hard disk. During hibernation, the computer is automatically

turned off to save power. When power is turned on again, the computer immediately restores the same data and applications as when hibernation mode started, without restarting the operating system.

high-resolution mode. Video resolutions that are greater than 640 x 480 pels.

HPA. High performance addressing.

icon. A graphic symbol, displayed on a screen, that a user can point to with a pointing device such as a TrackPoint or mouse to select a particular function or software application.

IDE. Integrated device electronics.

IR. Infrared.

IRQ. Interrupt request.

ISA. Industry standard architecture.

ISO. International Organization for Standardization.

JEIDA. Japan Electronics Industry Development Association.

kilobyte (KB). 1024 bytes.

LAN. Local area network.

LCD. Liquid crystal display.

LPT1 or LPT2. The name you can assign a parallel port to specify its address. See also parallel port.

mAh. Milliampere hours.

MCI. Media Control Interface.

megabyte (MB). 1024 kilobytes. About 1 million bytes.

memory. Often referred to as random-access memory (RAM), measured in kilobytes (KB) or megabytes (MB) of information.

MHz. Megahertz.

microcode. One or more microinstructions used in a product as an alternative to hard-wired circuitry to implement functions of a processor or other system component.

MIDI. Musical Instrument Digital Interface.

modem. A device that connects your computer to a telephone line, allowing it to communicate with another computer at another location.

parallel port. A port used to attach such devices as dot-matrix printers and input/output units; it transmits data 1 byte at a time.

partial suspend mode. A kind of suspend mode where only a part of the system components use power.

parity check. A redundancy check by which a recalculated parity bit is compared with the pregiven parity bit.

password. A series of letters or numbers that you designated to restrict access to your computer.

PC Card. A card that is based on the PCMCIA standard.

PCMCIA. Personal Computer Memory Card International Association.

pel. Picture element.

picture element. In computer graphics, the smallest element of a display surface that can be independently assigned color and intensity.

pixel. Picture element.

pointing device. An instrument, such as a mouse, TrackPoint, or joystick, that is used to move a pointer on the screen.

pop-up menu. On the display screen, a menu that emerges in an upward direction from a particular point or line on a display screen.

POST. Power-on self-test.

power mode. The ThinkPad has three battery operation power modes, such as maximum performance, maximum battery life, and customized.

prompt. A visual or audible message sent by a program to request the user's response.

PSTN. Public-switched telephone network.

pull-down menu. On the display screen, a menu that emerges in an downward direction from a particular point or line at or near the top of the screen.

reboot. To restart all operations of the computer as if the power were just turned on.

resume. To begin computer operations again from standby mode.

ROM. Read-only memory.

SDRAM. Static dynamic random access memory.

serial port. A port used to attach such devices as display devices, letter-quality printers, modems, plotters, and such pointing devices as light pens and mice; it transmits data 1 bit at a time.

standby mode. A kind of suspend mode where only a part of the system components use power.

suspend. To stop all operations of the computer to reduce power drain and restrict access to the files.

SVGA. Super video graphics adapter, a video mode that produces up to 1024-by-768 resolution.

TFT. Thin-film transistor.

TSRs. Terminate-and-stay-resident programs, memory-resident programs that are loaded into memory and stay there so you can conveniently access them whenever you need to.

USB. Universal serial bus.

vertical expansion. A video display technique in character- display mode to fit video images on the whole LCD screen by adjusting the number of character dots vertically.

VESA. Video Electronics Standards Association.

VGA. Video graphics adapter, a video mode that produces up to 640-by-480 resolution.

VSYNC. Vertical synchronization frequency.

XMS. Extended memory specification.

Index

B
backup 46
battery problems 40
BIOS Setup Utility 20
  starting 20

C
configuration 46

D
display 16

F
FAQ 30
features 16
Frequently Asked Questions 30

H
hardware specifications 18
hibernation mode
  problems 36

K
keyboard, specifications 16

L
LCD
  problems 39

M
memory
  specifications 16

N
notices and warranties
  product 55

O
online user's guide 19

P
password
  types 24
  using 24
problems, recording 52

R
Recovery CD, using 48

S
security
  passwords 24
size, machine specifications 18
specifications 16, 18
  environment 18
  input voltage 18
  size 18
  temperature 18

T
temperature, machine specifications 18
ThinkPad Software Selection CD,
  using 49
troubleshooting
  battery problems 40
  Hard disk drive problems 41
  hibernation problems 36

© Copyright IBM Corporation 2000

troubleshooting *(continued)*
LCD problems 39
no error codes 33
no error messages 33
other problems 43
Power switch problems 34
software problems 41
standby problems 36

W

warranty
product 55
website 51