



Dell® Inspiron™ 3000

**REFERENCE AND
TROUBLESHOOTING
GUIDE**

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Safety Instructions

Use the following safety guidelines to help protect your computer from potential damage and to help ensure your own personal safety.

When Using Your Computer

As you use your computer, observe the following safety guidelines:

- When setting up the computer for work, place it on a level surface.
- When traveling, do not check the computer as baggage. You can put your computer through an X-ray security machine, but *never* put your computer through a metal detector. If you have the computer checked by hand, be sure to have a charged battery available in case you are asked to turn on the computer.
- When traveling with the hard-disk drive removed from the computer, wrap the drive in a nonconducting material, such as cloth or paper. If you have the drive checked by hand, be ready to install the drive in the computer. You can put the hard-disk drive through an X-ray security machine, but *never* put the drive through a metal detector.
- When traveling, do not place the computer in overhead storage compartments where it could slide around. Do not drop your computer or subject it to other mechanical shocks.
- Do not carry a battery in your pocket, purse, or other container where metal objects (such as car keys) could short-circuit the battery terminals. The resulting excessive current flow can cause extremely high temperatures and may result in damage from burns.

- Protect your computer, battery, and hard-disk drive from environmental hazards such as dirt, dust, food, liquids, temperature extremes, and overexposure to sunlight.
- When you move your computer between environments with very different temperature and/or humidity ranges, condensation may form on or within the computer. To avoid damaging the computer, allow sufficient time for the moisture to evaporate before using the computer.

CAUTION: When taking the computer from low-temperature conditions into a warmer environment or from high-temperature conditions into a cooler environment, allow the computer to acclimate to room temperature before turning on power.

- If using alternating current (AC) power, plug the AC adapter power cable into a properly grounded power source. Be sure that nothing rests on your adapter's power cable and that the cable is not located where it can be tripped over or stepped on.
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. As you pull out the connector, keep it evenly aligned to avoid bending any connector pins. Also, before you connect a cable make sure both connectors are correctly oriented and aligned.
- Do not attempt to service the computer yourself. Always follow installation instructions closely.
- Handle components with care. Hold a component such as a memory module by its edges, not its pins.
- When removing a memory module from the system board or disconnecting a peripheral device from the

computer, wait 5 seconds after turning off the computer before removing the memory module or disconnecting the device to help avoid possible damage to the system board.

- Before you clean your computer, turn it off, unplug it from its power source, and remove the battery.
- Clean your computer with a soft cloth dampened with water rather than with liquid or aerosol cleaners.

Clean the display with a soft, clean cloth and commercial window cleaner that does not contain wax or abrasives. Apply the cleaner to the cloth; then stroke the cloth across the display in one direction, moving from the top of the display to the bottom. If the display contains grease or some other contaminant, use isopropyl alcohol instead of commercial window cleaner.

- If your computer gets wet or is damaged, follow the procedures described in Chapter 3, “Troubleshooting Your Computer.” If, after following these procedures, you confirm that your computer is not operating properly, contact Dell Computer Corporation. (See Chapter 5, “Getting Help,” for the appropriate telephone number.)

- When using an external monitor with your computer, set the monitor at a comfortable viewing distance (usually 510 to 610 millimeters [20 to 24 inches] from your eyes). Make sure the monitor screen is at eye level or slightly lower when you are sitting in front of the monitor.
- Use a chair that provides good lower-back support.
- Keep your forearms horizontal with your wrists in a neutral, comfortable position while using the keyboard, trackball, touch pad, or external mouse.
- Always use the palmrest with the keyboard, touch pad, or trackball. Leave space to rest your hands when using an external mouse.
- Let your upper arms hang naturally at your sides.
- Sit erect with your feet resting on the floor and your thighs level.
- When sitting, make sure the weight of your legs is on your feet and not on the front of your chair seat. Adjust your chair’s height or use a footrest, if necessary, to maintain proper posture.
- Vary your work activities. Try to organize your work so that you do not have to type for extended periods of time. When you stop typing, try to do things that use both hands.

Ergonomic Computing Habits

WARNING: Improper or prolonged keyboard use may result in injury.

For comfort and efficiency, observe the following ergonomic guidelines when setting up and using your computer:

- Position your computer directly in front of you as you work.
- Adjust the tilt of the computer’s display, its contrast and/or brightness settings, and the lighting around you (such as overhead lights, desk lamps, and the curtains or blinds on nearby windows) to minimize reflections and glare on the display.

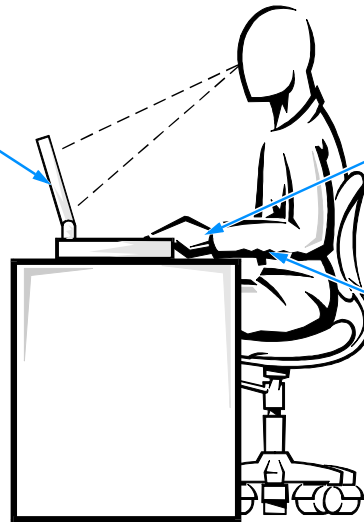
When Removing or Installing Memory Modules

Before removing or installing memory modules, perform the following steps in the sequence indicated.

CAUTION: The only time you should ever access the inside of your computer is when you are installing memory modules.

Wait 5 seconds after turning off the computer before disconnecting a peripheral device or removing a memory module to help prevent possible damage to the system board.

*computer positioned
directly in front of user*



wrists relaxed and flat

arms at desk level

1. **Turn off your computer and any attached peripherals.**
2. **Disconnect your computer and peripherals from AC power to reduce the potential for personal injury or shock. Also, disconnect any telephone or telecommunication lines from the computer.**
3. **Remove the main battery from the battery compartment and, if necessary, the secondary battery from the options bay.**
4. **Ground yourself by touching the unpainted metal surface of the I/O panel on the back of the computer.**

While you work, periodically touch the I/O panel to dissipate any static electricity that might harm internal components.

Protecting Against Electrostatic Discharge

Static electricity can harm electronic components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as a memory module. You can do so by touching an unpainted metal surface on the computer's I/O panel.

As you continue to work inside the computer, periodically touch an I/O connector to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

The following caution may appear throughout this document to remind you of these precautions:

CAUTION: See “Protecting Against Electrostatic Discharge” in the safety instructions at the front of this guide.

Preface

About This Guide

This guide is intended for anyone who uses the Dell Inspiron 3000 portable computer. It can be used by both first-time and experienced computer users who want to learn about the features of the computer. This guide also provides basic troubleshooting procedures and instructions for using the Dell Diagnostics to test your computer and its components.

Summaries of the chapters and appendixes of this guide follow:

- Read Chapter 1, “Introduction,” for an overview of the computer features and a list of available upgrades.
- Read Chapter 2, “Customizing System Features,” to learn how to access the Setup program, which allows you to change system settings, such as your computer’s power conservation features.
- Read Chapter 3, “Troubleshooting Your Computer,” for some initial checks and procedures that can be used to solve basic computer problems and for some general guidelines on analyzing software problems. This chapter also discusses messages and beep codes.
- Read Chapter 4, “Running the Dell Diagnostics,” for hardware-related problems. The Dell Diagnostics checks your computer’s hardware and isolates component problems.
- Chapter 5, “Getting Help,” describes the help tools Dell provides to assist you if you have a problem with the computer. It also explains how and when to call Dell for technical assistance.
- Appendix A, “Technical Specifications,” is intended primarily as reference material if you are interested in learning more about the details of your computer.
- Appendix B, “Diagnostic Video Tests,” provides samples of screens displayed when you run the Video Test Group of the Dell Diagnostics. These screens help you check a particular video function or group of functions on the built-in display or on an external monitor.
- Appendix C, “Regulatory Notices,” is for users who are interested in which regulatory agencies have tested and approved the Dell Inspiron 3000 portable computer.
- Appendix D, “Warranties and Return Policy,” describes the warranty and return policy for your Dell computer.

Warranty and Return Policy Information

Dell Computer Corporation (“Dell”) manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices.

For information about the Dell warranty and return policy, see Appendix D, “Warranties and Return Policy.”

Other Documents You May Need

Besides this *Reference and Troubleshooting Guide*, the following online documentation is included with your computer:



The Windows-based *System User's Guide* contains essential information you need to use your portable computer. Look for the System User's Guide icon in the Dell Accessories folder.



The Dell Program Diskette Maker helps you with one of the most critical parts of setting up your system—creating program diskette sets. Look for the Dell Program Diskette Maker icon in the Dell Accessories folder.



The *Dell Service and Support Policies* provides information about service and support policies, guarantees, and warranties (in the United States only). Look for the Dell Services and Support Policies icon in the Dell Accessories folder.

You may also have one or more of the following documents.

*NOTE: Documentation updates are sometimes included with your computer to describe changes to your computer or software. Always read these updates **before** consulting any other documentation because the updates contain the latest information.*

- The *Dell-Installed Microsoft Windows 95 Setup Guide*, which describes how to set up the Microsoft Windows 95 operating system on your Dell computer.
- Microsoft Windows 95 operating system documentation is included if you ordered your operating system from Dell. This documentation describes how to configure and use your operating system software.
- Documentation is included with any options you purchase separately from your computer. This documentation includes information that you need to configure and install these options in your Dell computer.
- “Readme” files may be installed on your hard-disk drive to provide last-minute updates about technical changes to your computer or advanced technical reference material intended for experienced users or technicians.

Notational Conventions

The following subsections list notational conventions used in this document.

Warnings, Cautions, and Notes

Throughout this guide, there may be blocks of text printed in color or in italic type. These blocks are warnings, cautions, and notes, and they are used as follows:

WARNING: A WARNING indicates the potential for bodily harm and tells you how to avoid the problem.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

NOTE: A NOTE indicates important information that helps you make better use of your computer.

Typographical Conventions

The following list defines (where appropriate) and illustrates typographical conventions used as visual cues for specific elements of text throughout this document:

- *Keycaps*, the labeling that appears on the keys on a keyboard, are enclosed in angle brackets.
Example: <Enter>
- *Key combinations* are series of keys to be pressed simultaneously (unless otherwise indicated) to perform a single function.
Example: <Ctrl><Alt><Enter>
- *Commands* presented in lowercase bold are for reference purposes only and are not intended to be typed at that particular point in the discussion.
Example: “Use the **setup** command to . . .”

In contrast, commands presented in the Courier New font are intended to be typed as part of an instruction.
Example: “Type `format` to format the diskette in drive A.”

- *Filenames* and *directory names* are presented in lowercase bold.

Examples: **autoexec.bat** and **c:\windows**

- *Syntax lines* consist of a command and all its possible parameters. Commands are displayed in lowercase bold; variable parameters (those for which you substitute a value) are displayed in lowercase italics; constant parameters are displayed in lowercase bold. The brackets indicate items that are optional.

Example: **del** [*drive:*] [*[[path]filename]*] [**/p**]

- *Command lines* consist of a command and may include one or more of the command's possible parameters. Command lines are presented in the Courier New font.

Example: `del c:\myfile.doc`

- *Screen text* is text that appears on the screen of your display or external monitor. It can be a system message, for example, or it can be text that you are instructed to type as part of a command (referred to as a *command line*). Screen text is presented in the Courier New font.

Example: The following message appears on your screen:

No boot device available

- *Variables* are symbols for which you substitute a value. They are presented in italics.

Example: module *n* (where *n* represents the memory module number)

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Chapter 1 Introduction



The Dell® Inspiron™ 3000 is an expandable, multi-media portable computer designed around the Intel® Pentium® microprocessor with MMX™ technology and Peripheral Component Interconnect (PCI) technology.

This chapter describes the major hardware and software features of your computer, provides information about accessing the online documentation, and tells you where to find help when needed.

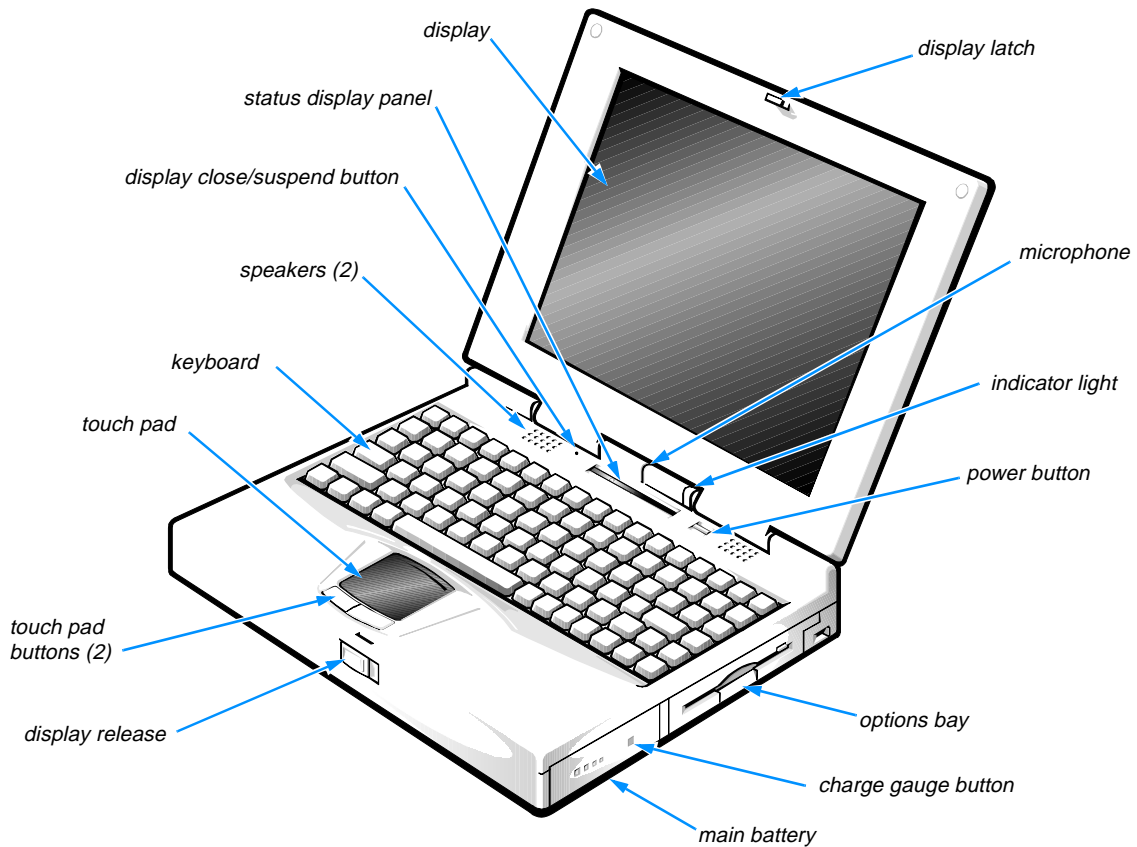


Figure 1-1. Front View of the Portable Computer

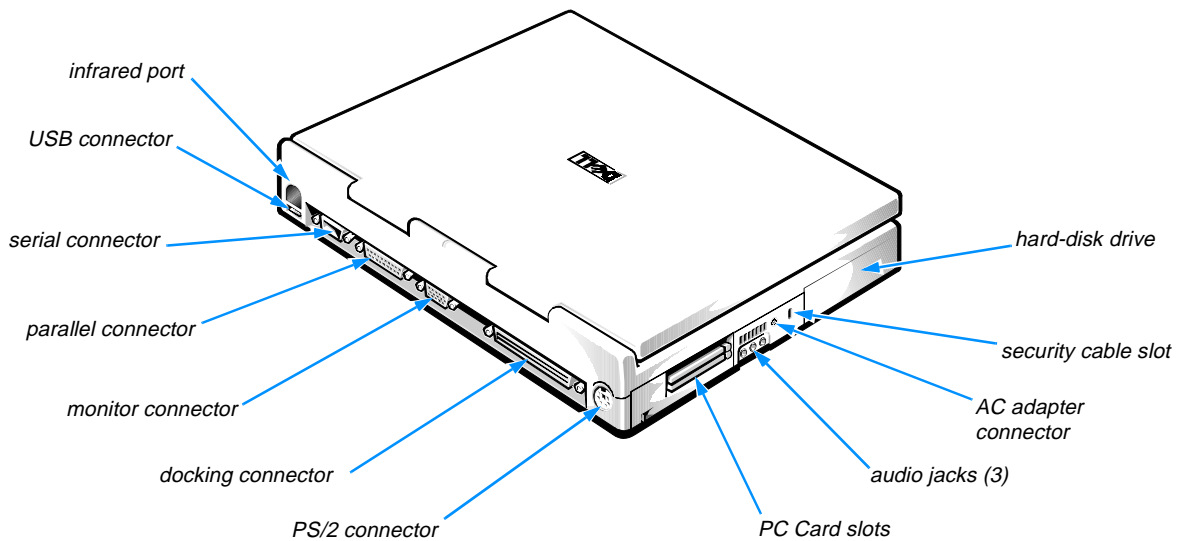


Figure 1-2. Back View of the Portable Computer

Hardware Features

Your Dell computer has the following features:

- An Intel Pentium microprocessor with MMX technology running at 166, 200, or 233 megahertz (MHz).
- Full multimedia capability through the following standard features:
 - A CD-ROM drive that can be used in the options bay. When you unpack your computer, look for the CD-ROM drive in the accessories box of the shipping carton.
 - Built-in microphone and stereo speakers.
 - Jacks for connecting external speakers, headphones, or a microphone to your computer.

NOTE: Your computer was shipped with a diskette drive in the options bay. When you want to use the CD-ROM drive, turn off the computer, remove the diskette drive, and install the CD-ROM drive. For instructions and

more information, see the topic titled “Options Bay” in the online System User’s Guide.

- A 12.1-inch active-matrix super video graphics array (SVGA) color display or a 13.3-inch active-matrix extended graphics array (XGA) color display.
- Extended battery power with a lithium ion main battery, and an optional secondary battery that can be used in the options bay to double battery life.

The battery charges in approximately 1.5 hours, using an alternating current (AC) power source, if the computer is off; the battery charges in approximately 2.5 hours if the computer is on. You can expect 2.5 to 3.5 hours of battery life with a single battery, and 5 to 7 hours of battery life with two batteries.

NOTES: Battery performance features such as charge time, operating time, and life span can vary according to the conditions under which the computer and battery are used.

The battery is designed to work only with Dell Inspiron 3000 computers. Do not attempt to use the battery with other computers.

WARNING: Do not puncture or incinerate the battery. When your battery no longer holds a charge, call your local waste disposal agency or environmental agency for advice on disposing of the computer's lithium ion battery. The lithium ion technology used in the battery is significantly less hazardous to the environment than the lithium metal technology used in some other batteries (such as watch batteries).

- Cache memory that enhances the speed of many microprocessor operations by storing the most recently accessed contents of system memory. Dell Inspiron 3000 M166ST computers have 32 kilobytes (KB) of internal cache on the microprocessor and 256 KB of static random-access memory (SRAM) level 2 (L2) cache. Dell Inspiron 3000 M200ST and M233XT computers have 512 KB of SRAM L2 cache.
- Sixteen megabytes (MB) of nonremovable memory on the system board. Memory on any Dell Inspiron 3000 system can be increased up to 144 MB by installing a combination of 16-, 32-, or 64-MB 3.3-volt (V) small-outline, dual in-line memory modules (SoDIMMs) in the two memory module sockets on the system board.
- Three power conservation modes—*standby mode*, *save-to-RAM suspend mode*, and *save-to-disk suspend mode*—which help you conserve battery power. If the batteries run out of power, *save-to-disk suspend mode* prevents data loss by copying all system data to the hard-disk drive and turning off the computer.
- A special options bay that extends the functionality of your computer by letting you use a CD-ROM drive, a diskette drive, or an optional secondary battery.

- Support for up to two 3.3-V or 5-V PC Cards. The computer supports up to two type I or type II cards (in any combination) or one type III card. Dell-installed device drivers on the hard-disk drive support the operation of many standard PC Cards.
- A basic input/output system (BIOS) that resides in flash memory and can be upgraded by diskette. A BIOS upgrade, if required, can be obtained on diskette from Dell or can be downloaded from Dell's TechConnect BBS. See Chapter 5, "Getting Help," for more information on Dell's online services.
- High-performance parallel and serial ports, and a multipurpose Personal System (PS)/2 connector for attaching external devices. There is also a monitor connector for attaching an external monitor to your computer.

NOTE: If you need to connect an external diskette drive and you did not order a diskette drive cable with your computer, contact Dell to order the appropriate cable. For information on contacting Dell, see Chapter 5, "Getting Help."

- A PS/2-compatible touch pad that gives your computer full mouse functionality.
- An infrared port for use with compatible external devices. The infrared port permits file transfers without using cable connections. Fast infrared technology is also available.
- Universal Serial Bus (USB) capability, which can simplify connecting peripheral devices such as mice, printers, and computer speakers. The USB connector on your computer's back panel provides a single connection point for multiple USB-compliant devices. USB-compliant devices can also be connected and disconnected while the system is running.
- On hard-disk drives with higher capacities, the Ultra DMA/33 data transfer protocol for the advanced technology attachment (ATA)/integrated drive electronics (IDE) hard-disk drive interface. Ultra DMA/33 allows for data transfer rates of up to 33 MB/sec. Lower-capacity hard-disk drives have standard ATA technology.

Software Features

Dell has installed the Microsoft® Windows® 95 operating system on your hard-disk drive. The following software is also included with your Dell computer:

- A Setup program and system utilities that let you customize the operation of your computer. Also included are drivers that tell your computer how to communicate with various types of hardware, such as printers and external monitors. For more information, see Chapter 2, “Customizing System Features,” and the “Software Features” section of the online *System User’s Guide*.

NOTE: The system utilities and drivers are available separately on diskette from Dell for customers who installed their own version of Windows 95. See Chapter 5, “Getting Help,” for the appropriate contact information in your location.

- The Dell Diagnostics for evaluating your computer’s components and devices. For more information, see Chapter 4, “Running the Dell Diagnostics.”

After you turn on your computer the first time, accept the software licenses agreement. Then complete the installation of your operating system.

Next, use the Dell Program Diskette Maker in the Dell Accessories folder to create a program diskette set and back up your drivers and utilities. These diskettes can be used to reinstall or reconfigure the software if necessary. The online instructions in the Dell Program Diskette Maker tell you how many blank diskettes are needed.

Using the Power Button

Under normal circumstances, you should only use the power button to turn on the computer or to resume from suspend mode. To shut down the computer, click the Start button in Windows 95, and then click Shut Down.

If the computer is hung and the operating system does not respond, press and hold the power button until the system turns off completely (this may take several seconds).

Accessing Online Documentation

The online *Dell Inspiron 3000 System User’s Guide* installed on your hard-disk drive contains information on the following topics:

- System features
- Traveling with the computer
- Customizing system configuration
- Powering the computer and extending battery life
- Connecting external devices
- Maintaining the system
- Contacting Dell

The guide also contains a glossary of commonly used computer terms and abbreviations.



To access this guide, select the System User’s Guide icon in the Dell Accessories folder.

To print any screen from the online *System User’s Guide*, display the screen you want, and select Print Topic from the File menu.

Available Options

Dell offers the following devices and upgrade options:

- External devices, such as pointing devices, printers, external monitors, external keyboards, and numeric keypads, that connect to ports on the back of the computer
- AC adapters
- Batteries
- Diskette-drive cables
- Hard-disk drives
- Modem PC Cards
- Network PC Cards
- Dell Inspiron Port Replicator I

- Memory modules (16-, 32-, and 64-MB capacities)
- Carrying cases
- Auto adapter
- Microphone
- External speakers
- Headphones

Instructions for connecting or installing these options are contained in the online *System User's Guide* or are included in the upgrade kit you received from Dell.

Getting Help

If at any time you don't understand a procedure described in this guide, or if your computer does not perform as expected, Dell provides a number of tools to help you. For more information, see Chapter 5, "Getting Help."

Chapter 2

Customizing System Features



As your computing environment changes, you may want to customize the configuration of your computer. The system utilities and the Setup program let you control various hardware and software features of your computer and allow you to monitor and reduce power consumption when your computer is running on battery power. This chapter explains how to access and use the system utilities and the Setup program.

System Utilities

If Dell installed your operating system, the system utilities are on the hard-disk drive that came with the computer.

Dell highly recommends that you use the Dell Program Diskette Maker in the Dell Accessories folder to back up the system utilities. If your hard-disk drive becomes corrupted, you can use the program diskettes to reinstall the utilities.

NOTE: The system utilities are available separately on diskettes for those who installed their own version of the Microsoft Windows 95 operating system. To order these diskettes from Dell, see Chapter 5, “Getting Help,” for the appropriate telephone number in your location.

Use system utilities to:

- Configure PC Cards

If you are using Windows 95, use the PC Card utility that comes with the operating system. Click the Start button, point to Settings, and click Control Panel. Double-click the PC Card (PCMCIA) icon.

For more information, see the topic titled “Configuring PC Cards” in the online *System User’s Guide*.

- Change video resolution

In Windows 95, click the Start button, point to Settings, and click Control Panel. Double-click the Display icon and click the Settings tab. To change other video settings, such as the refresh rate or external monitor settings, click the NeoMagic tab.

For more information, see the topic titled “Adjusting Video Resolution and Refresh Rate” in the online *System User’s Guide*.

- Adjust audio properties

In Windows 95, click the Start button, point to Settings, and then click Control Panel. Double-click the Multimedia icon. Alternatively, right-click the Audio icon in the taskbar.

- Customize touch pad and cursor features

In Windows 95, click the Start button, point to Settings, and then click Control Panel. Double-click the Mouse icon.

For more information, see the topic titled “Touch Pad” in the online *System User’s Guide*.

- Check battery status

In Windows 95, see the operating system documentation for instructions on using the battery status utility that comes with the operating system.

- Manage power consumption when using a battery

The Power menu in the Setup program lets you adjust the computer’s power management options to suit your working environment.

For more information about saving battery power, see the topic titled “Conserving Battery Power” in the online *System User’s Guide*.

Setup Program

Your computer retains system configuration information in the nonvolatile random-access memory (NVRAM) maintained by your computer's backup battery. Each time you turn on your computer, the system compares the installed hardware with the system configuration information stored in NVRAM. If the system detects a discrepancy, it generates an error message that identifies the incorrect configuration setting. The system then prompts you to enter the Setup program to correct the setting.

You can use the Setup program as follows:

- To set or change user-selectable features—for example, power management or security features
- To verify information about your computer's current configuration, such as the amount of system memory
- To change your system configuration information after you add, change, or remove hardware connected to or installed inside your computer

Accessing the Setup Program

To access the Setup program, press <F2> when prompted during start-up. The computer reboots automatically when you exit the Setup program.

CAUTION: To avoid data loss, exit any application programs before rebooting the computer to enter the Setup program.

The Main menu of the Setup program shows how the computer is configured. In addition to the Main menu (see Figure 2-1), you can also access the System Devices menu, Security menu, Power menu, Boot menu, and Exit menu.

NOTE: When you press <F9>, the computer resets the default values for each option in that menu. When you press <F10>, the computer saves the current values and exits the Setup program.

Main Menu Options

The following subsections explain each option in the Main menu of the Setup program. The same information is also available in the topic titled "Main Menu" in the online *System User's Guide*.

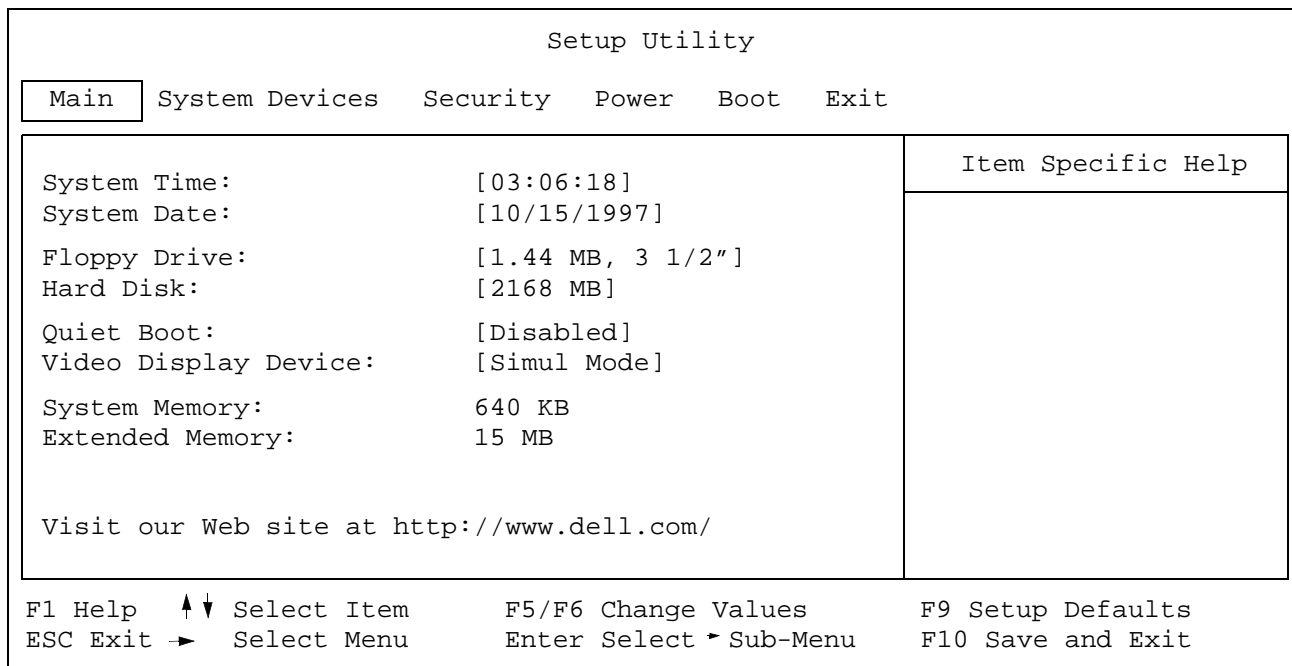


Figure 2-1. Main Menu of Setup Program

System Time

System Time sets the computer to the time you specify (usually the current time). Type in the appropriate information. Use the tab key to move between the hours, minutes, and seconds fields. This option is useful if you travel between time zones.

System Date

System Date sets your system to the date you specify (usually the current date). Type in the appropriate information. Use the tab key to move between the month, day, and year fields.

Floppy Drive

Floppy Drive identifies the type of diskette drive being used by the computer. This option has no user-selectable settings.

1.44 MB, 3 1/2" means there is a diskette drive in the options bay.

External FDD means the diskette drive is being used as an external device.

Hard Disk

Displays the capacity of the computer's hard-disk drive. If you install a drive with a different capacity, the settings under this option change automatically. This option does not have any user-selectable settings.

Quiet Boot

Disabled (the default) indicates that the diagnostic power-on self-test (POST) and summary screen are displayed at system boot. When set to Enabled, the summary screen does not appear.

Video Display Device

Allows you to specify whether video is visible only on the computer's display (LCD Mode), only on an external monitor or projector (CRT Mode), or on both the display

and an external device simultaneously (Simul Mode, the default).

When you are using Windows 95 (rather than the Setup program), press <Fn><F8> to change the video display device.

System Memory

System Memory displays the base amount of dynamic random-access memory (DRAM) installed in the computer. Each computer has 640 KB of base memory. This option has no user-selectable settings.

Extended Memory

Extended Memory displays the total amount of memory above 1 MB. Each computer comes standard with at least 16 MB of memory on the system board. If you install or remove memory, the amount of extended memory displayed changes. This option has no user-selectable settings.

System Devices Menu Options

The following subsections explain each option in the System Devices menu of the Setup program (see Figure 2-2). The same information is also available in the topic titled “System Devices Menu” in the online *System User’s Guide*.

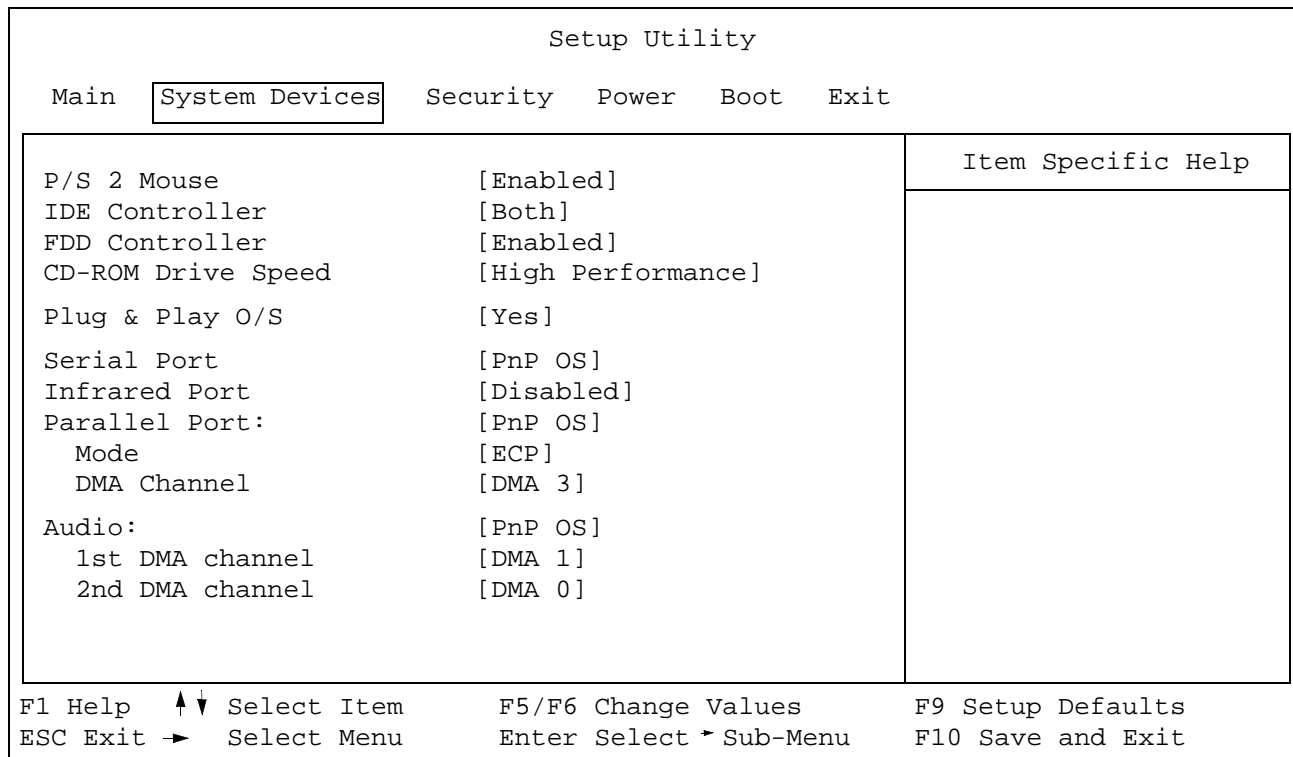


Figure 2-2. System Devices Menu of Setup Program

PS/2 Mouse

The default setting is Enabled. Select Disabled when you want to attach a serial mouse to the computer.

NOTE: Before connecting or disconnecting a PS/2 mouse, turn off your computer. After you connect a PS/2 mouse and turn your computer back on, the external mouse is automatically detected and the touch pad is disabled.

IDE Controller

Enables the integrated local-bus IDE adapter. Available options are Both (the default), Disabled, or Primary. If Both is selected, you can access both the hard-disk drive and the CD-ROM drive. If Primary is selected, only the hard-disk drive is accessible.

FDD Controller

Enables the diskette-drive controller. If this option is set to Disabled, the diskette drive is unavailable.

CD-ROM Drive Speed

CD-ROM Drive Speed allows you to choose between High Performance (the default) and Variable. When this option is set to High Performance, the CD-ROM drive runs at the maximum possible speed. When set to Variable, the CD-ROM drive slows down to avoid vibration caused by unbalanced CDs.

Plug & Play O/S

The Setup program automatically detects whether the computer is running a Plug and Play operating system such as Windows 95.

Serial Port

Serial Port lets you map the address of the serial port to avoid address conflicts with other devices or disable the port for security. The default setting is PnP OS, and the default Base I/O and IRQ address is 3F8 IRQ4. It is recommended that you retain the default setting.

If you are using Windows 95 and this option is set to PnP OS, the operating system can remap the port automatically to avoid address conflicts with other devices. If any

other setting is used, this automatic mapping does not occur.

If for some reason you need to change the serial port address, be careful not to create a conflict with the address of the infrared port.

NOTE: If there is a conflict between two or more addresses, an asterisk appears next to the port type in the System Devices menu.

Infrared Port

Infrared Port lets you map the address of the infrared port to avoid address conflicts with other devices. The default setting is Disabled. It is recommended that you retain the default settings.

If you are using Windows 95 and this option is set to PnP OS, the operating system can remap the port automatically to avoid address conflicts with other devices. If any other setting is used, this automatic mapping does not occur.

If you want to use the high-speed infrared feature, see the **readme.doc** file on the *Fast Infrared Drivers* diskette that you made with the Dell Program Diskette Maker. In the Microsoft Windows 95 operating system, access the Dell Program Diskette Maker through the Dell Accessories folder.

If for some reason you need to change the infrared port address in the Setup program, be careful not to create a conflict with the addresses of the serial port or the parallel port.

NOTE: If there is a conflict between two or more addresses, an asterisk appears next to the port type in the System Devices menu.

Parallel Port

Parallel Port controls whether the computer's parallel port acts as an AT-compatible (unidirectional), PS/2-compatible (bidirectional), EPP-compatible, or ECP-compatible port. Options are PnP OS (the default), Disabled, Enabled, and Auto. The default mode is ECP. Other possible mode settings are Normal, EPP, and Bidirectional.

When set to PnP OS, the operating system automatically configures the parallel port. When set to Auto, the computer's BIOS configures the parallel port.

When set to Disabled, you can disable the port and free its assigned LPT address for another device.

When set to Enabled, you configure the port settings. If for some reason you need to change the parallel port address and/or DMA channel, be careful not to create a conflict with the address or DMA channel of the infrared port.

NOTE: If there is a conflict between two or more addresses, an asterisk appears next to the port type in the System Devices menu.

Audio

Enables the audio controller. Options are PnP OS (the default), Enabled, and Disabled. It is recommended that you retain the default settings.

Security Menu Options

The following subsections explain each option in the Security menu of the Setup program (see Figure 2-3). The same information is also available in the topic titled “Security Menu” in the online System User’s Guide.

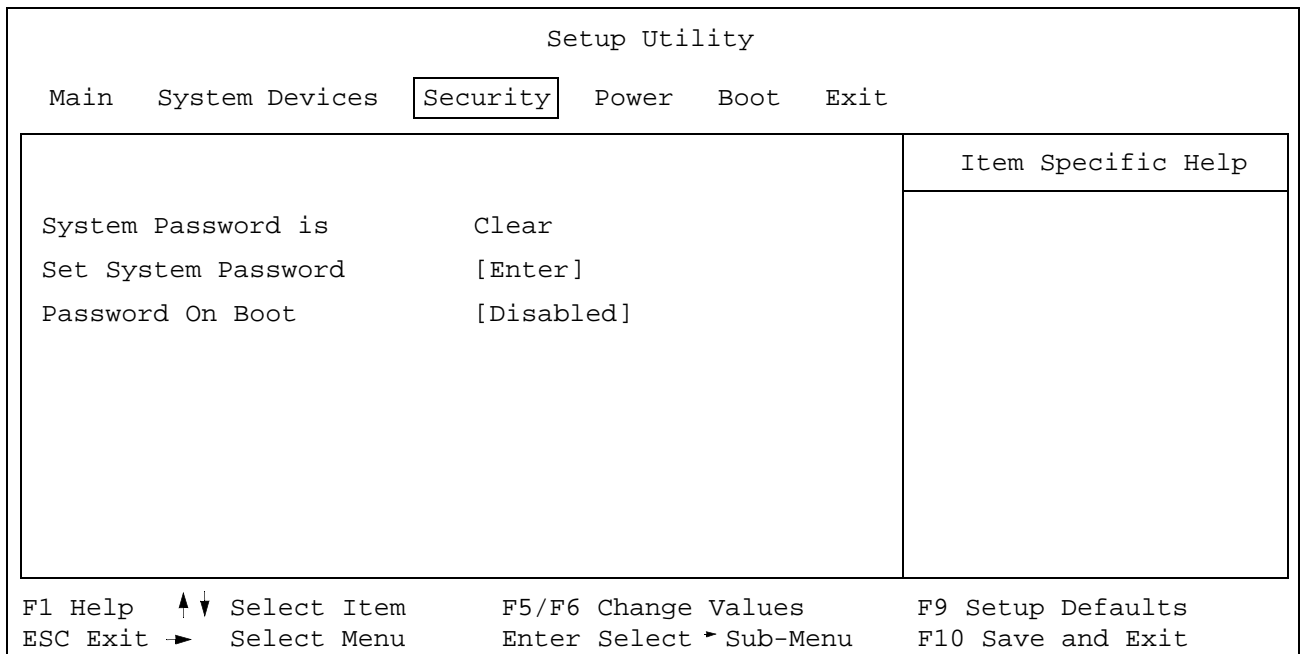


Figure 2-3. Security Menu of Setup Program

System Password

If no system password has been set, the setting for System Password is Clear. Otherwise, the setting displayed is Set.

Set System Password

Press <Enter> to set up a new system password, and then follow the instructions on your screen. This password restricts access to the Setup program settings.

Password on Boot

When the Password On Boot option is enabled, you must enter a password before the computer loads the operating system into memory. To enable this option, the System Password option must be set.

Settings for this option are Disabled (the default) and Enabled.

Power Menu Options

The following subsections explain each option in the Power menu of the Setup program (see Figure 2-4). The same information is also available in the topic titled “Power Menu” in the online *System User’s Guide*.

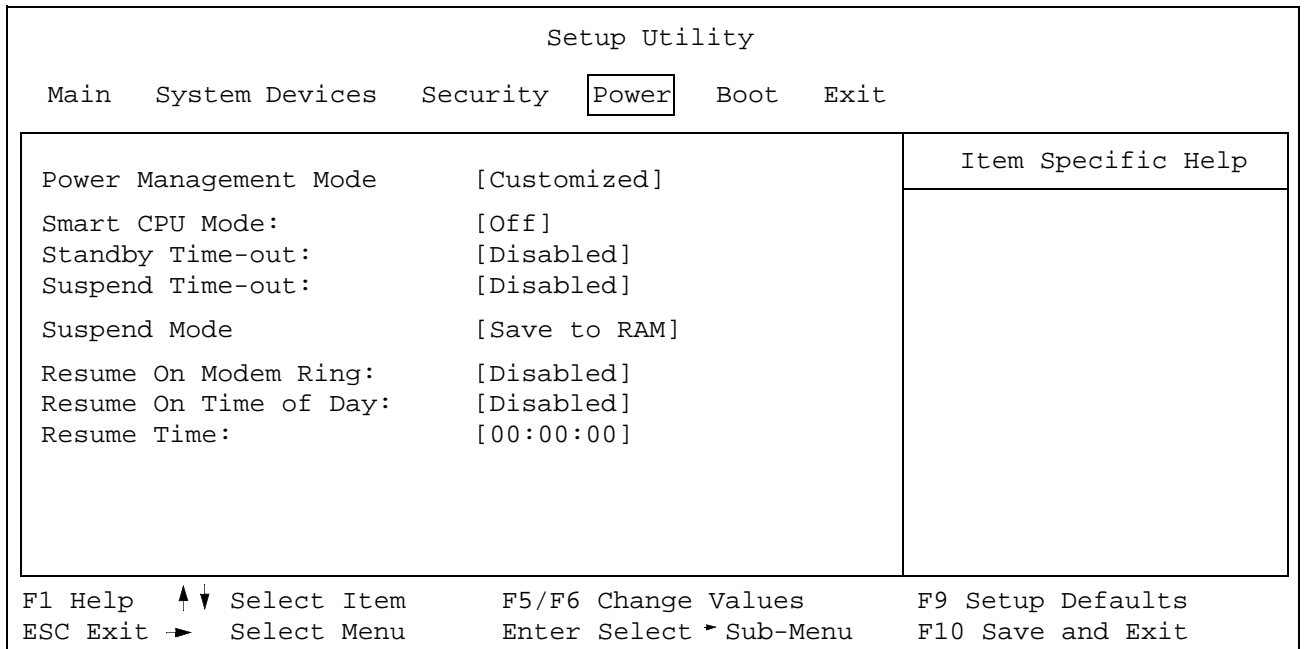


Figure 2-4. Power Menu of Setup Program

Power Management Mode

Customized (the default) allows you to control the power saving time-outs individually.

Select Disabled if you want to disable all power savings, regardless of how the time-out options are set.

Select Maximum Performance to configure power saving time-outs as a group to increase the performance of the computer. When this setting is selected, the Standby Time-Out option is set automatically to 4 minutes, and the Suspend Time-Out option is disabled. The Smart CPU Mode option is set automatically to Off.

Select Maximum Power Savings to configure the power saving time-outs as a group to save the most battery power. When this setting is selected, the Standby Time-Out option is set automatically to 1 minute, and the Suspend Time-Out option is set automatically to 5 minutes. The Smart CPU Mode option is set automatically to On.

Smart CPU Mode

Smart CPU Mode allows the computer to slow down the microprocessor automatically if it is not being used. Settings for this option are:

- On — Allows the computer to slow down the microprocessor when it is inactive
- Off (the default) — Keeps the microprocessor running at its normal operating speed regardless of microprocessor inactivity

To increase battery operating time, set the Smart CPU Mode option to On.

When the Smart CPU Mode option is enabled and the microprocessor is inactive, the computer slows the microprocessor to save power.

NOTES: Some communications software may not work properly when Smart CPU Mode is enabled. Dell recommends that you set Smart CPU Mode to Off if you are using communications software.

Interactive application programs should function well when Smart CPU Mode is enabled. (Examples of interactive programs include spreadsheet, text editor, graphics design, entertainment, educational, and utility programs.) However, you may experience performance degradation when recalculating a large spreadsheet or

during an extensive screen redraw in a graphical program. Benchmark utilities may not perform as intended when doing microprocessor speed tests. If the software you use suffers significant performance degradation, set Smart CPU Mode to Off.

Standby Time-Out

Standby mode conserves battery power by stopping some computer activity, but leaves the computer ready to resume operations immediately. Use standby mode when you leave the computer unattended for less than a few minutes. Press <Fn><s> to enter standby mode when you are in Windows 95. Resume normal computer activity by moving the cursor or pressing any key on the built-in keyboard (the computer takes less than a second to return to normal operation).

The Standby Time-Out option lets you determine how long the computer remains idle (no I/O activity) before activating standby mode to conserve battery power. Settings for this option are Disabled, 1 min., 2 min., 4 min., 6 min., 8 min., 12 min., and 16 min.

To increase battery operating time, set this option to a lower number of minutes. Press any key on the built-in keyboard to resume normal computer operation.

If the time delay you set for standby mode is greater than the delay set for suspend mode, the computer enters standby mode first. For instance, if Standby Time-Out is set for 8 minutes and Suspend Time-Out is set for 5 minutes, the computer enters standby mode after 8 minutes of no I/O activity and then enters save-to-disk or save-to-RAM suspend mode 5 minutes later.

NOTE: Set this option to Disabled if it causes compatibility problems with your software.

Suspend Time-Out

Suspend Time-Out lets you determine how long the computer remains idle (no I/O activity) before activating save-to-RAM or save-to-disk suspend mode. Settings for this option are Disabled, 5 min., 10 min., 15 min., 20 min., 30 min., 40 min., and 60 min.

To increase battery operating time, set this option to a lower number of minutes.

If the time delay you set for suspend mode is greater than the delay set for standby mode, the computer enters

save-to-RAM or save-to-disk suspend mode first. For instance, if Suspend Time-Out is set for 10 minutes and Standby Time-Out is set for 4 minutes, the computer enters save-to-RAM or save-to-disk suspend mode after 10 minutes of no I/O activity and then enters standby mode 4 minutes later.

NOTE: Set this option to Disabled if it causes compatibility problems with your software.

If you are not in the Setup program, you can activate save-to-RAM suspend mode at any time by pressing <Fn><Esc>. Alternatively, click the Start button, and then click Suspend. Press the power button to resume normal computer operation.

You can activate save-to-disk suspend mode by pressing <Fn><a> (or <Fn><q> on the French keyboard). Press the power button and hold it down for a second or two to turn on the computer and resume normal operation.

Suspend Mode

The Suspend Mode category has two options—Save to RAM and Save to Disk.

Save-to-RAM suspend mode conserves battery power by stopping almost all computer activity, but leaves the computer ready to resume operations in seconds. Select the Save-to-RAM option whenever you leave the computer unattended for more than a few minutes. Resume normal computer activity by pressing the power button (the computer may take several seconds to return to normal operation).

Save-to-disk suspend mode copies all system data to a reserved area on the hard-disk drive and then turns off all power to the computer. When you resume normal operation, the same programs will be running and the same files will be open that were loaded before you activated

this mode. Use save-to-disk suspend mode to conserve battery power or to preserve system data by quickly saving it to the hard-disk drive if you are about to run out of battery power.

Resume on Modem Ring

Setting this option to Enabled tells the computer to resume normal operation when an incoming call is detected by a modem and the computer is in standby mode or save-to-RAM suspend mode.

Resume on Time of Day

When the Resume on Time of Day option is set to Enabled (the default), the computer resumes normal operation at the time specified in the Resume Time field after being in standby mode or save-to-RAM suspend mode.

Resume Time

Resume Time lets you specify a time when the computer should get out of standby mode or save-to-RAM suspend mode and resume normal operation.

Boot Menu Options

The following subsections explain each option in the Boot menu of the Setup program (Figure 2-5). The selections you make in this menu determine which disk device the computer uses to find the software needed to start the operating system. The same information is also available in the topic titled “Boot Menu” in the online *System User’s Guide*.

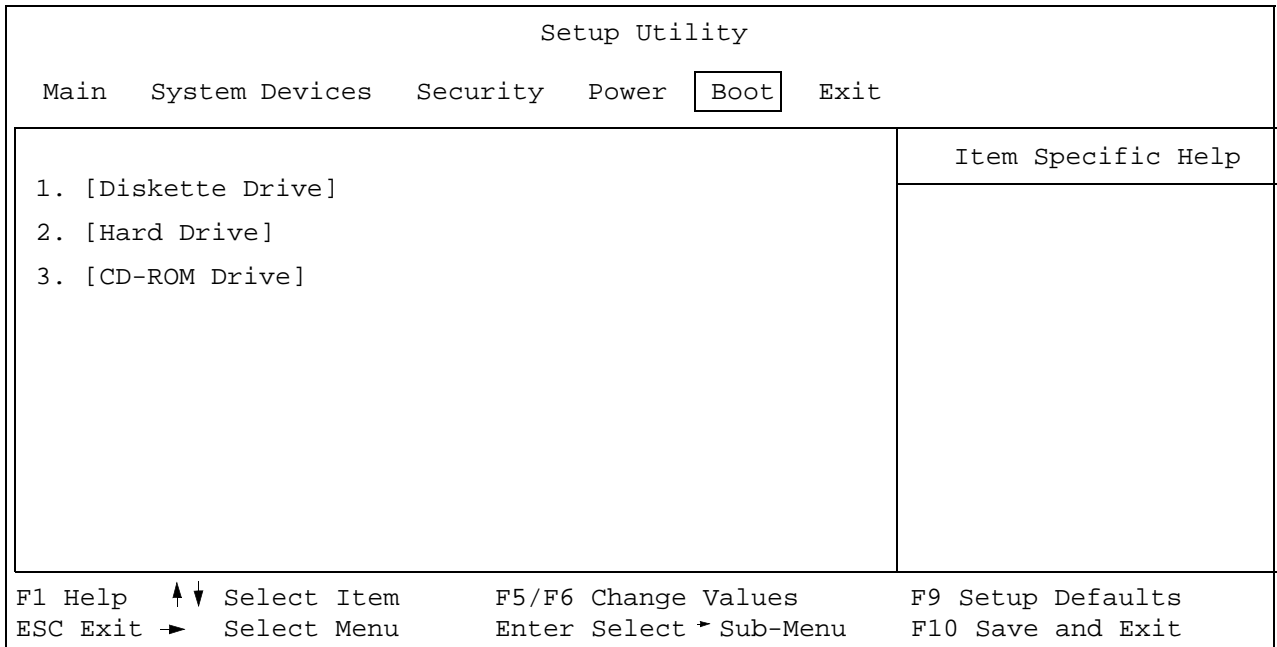


Figure 2-5. Boot Menu of Setup Program

To select the boot device, use the up- or down-arrow key; then press <F6> to move the device up the list or <F5> to move the device down the list.

Diskette Drive first (the default) causes the computer to attempt booting first from a bootable diskette. If it does not detect a diskette in the diskette drive, the computer tries to boot from the hard-disk drive. If there is a diskette in the diskette drive, but the diskette does not have the required boot files, an error message is displayed.

Hard Drive first causes the computer to boot only from the hard-disk drive. If it fails to boot from the hard-disk drive, the computer does not attempt to boot from the diskette drive.

CD-ROM Drive first causes the computer to attempt booting first from a bootable CD-ROM. If it does not detect a bootable CD-ROM in the CD-ROM drive, the computer tries to boot from the hard-disk drive. If there is a CD-ROM in the CD-ROM drive, but the CD-ROM does not have the required boot files, an error message is displayed.

Exit Menu Options

The following subsections explain each option in the Exit menu of the Setup program (Figure 2-6). The selections you make in this menu determine which disk device the computer uses to find the software needed to start the operating system. The same information is also available in the topic titled “Exit Menu” in the online *System User’s Guide*.

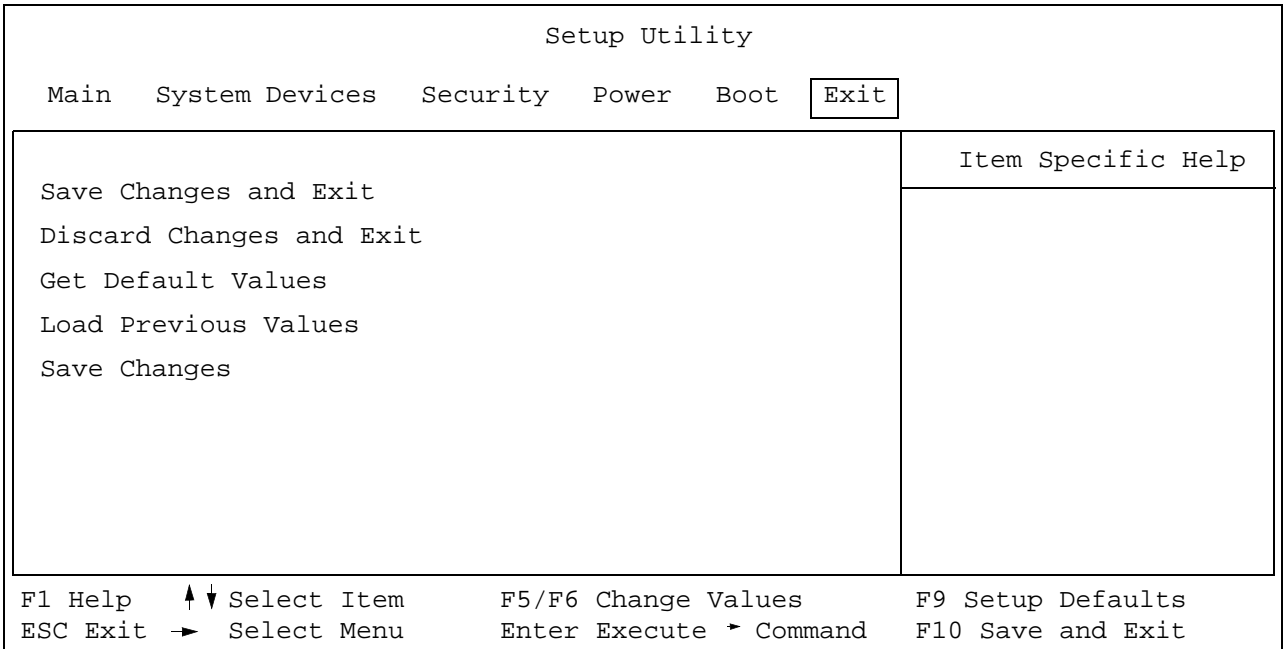


Figure 2-6. Exit Menu of Setup Program

Save Changes and Exit

After you have changed a setting in the Setup program, select this option to save the changes into NVRAM and exit the Setup program.

If you try to exit the Setup program without saving your changes, you are prompted to save.

Discard Changes and Exit

Select this option only if you do not want to save the changes you made in the Setup program.

Get Default Values

Get Default Values lets you select the default settings for each option in the Setup program. Press <Enter> when prompted to continue. Then you can make more changes in the Setup program or select Save Changes and Exit.

Load Previous Values

Load Previous Values lets you discard the settings you have made and restore the settings you previously saved. Press <Enter> when prompted to continue.

Save Changes

Save Changes saves your settings without exiting the Setup program. Press <Enter> when prompted to continue, and then return to other menus to make changes.

Reinstalling Utilities and Drivers

Dell provides software utilities and drivers that help you control certain features of your computer. If Dell installed Windows 95 on your computer, these utilities and drivers are also already installed.

This section explains how to reinstall utilities and drivers on your Dell portable computer with Windows 95. You may need to use these procedures under the following conditions:

- Dell did not install an operating system or other system software on your computer.
- You are reinstalling the version of Windows 95 that came with your computer, and you need to reinstall the drivers and utilities that Dell provides.

NOTE: To reinstall the operating system, you need the Windows 95 installation CD-ROM that came with your computer.

- Some of the drivers and/or utilities that came with your computer are corrupted, and you need to reinstall them individually.
- You have a new hard-disk drive, and you need to install all of the system software.

In any case, you must use the program diskette set you made when you received your computer. If you did not make a program diskette set and you cannot access the Program Diskette Maker in the Dell Accessories folder, you can order a program diskette set separately from Dell. See Chapter 5, “Getting Help,” for more information.

Reinstalling Video Drivers

Video drivers control features such as screen resolution and the number of screen colors.

NOTE: If you need to use extended video modes, check the documentation that came with the application program to determine if the drivers are provided. If not, contact the software manufacturer to get the necessary drivers.

To reinstall the video drivers, follow these steps:

1. **Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.**
2. **Insert the *Video Drivers* diskette into the diskette drive.**

3. **Click the Start button, point to Settings, and then click Control Panel.**

The Control Panel window appears.

4. **Double-click the Display icon.**

The Display Properties window appears.

5. **Click the Settings tab.**

6. **Click the Advanced Properties button.**

The Advanced Display Properties window appears.

7. **In the Adapter Type box, click the Change... button.**

The Select Device window appears.

8. **Click the Have Disk... button.**

9. **Verify that A:\ is displayed in the Copy Manufacturer's Files From: box, and then click OK.**

10. **When the Select Device window appears, verify that the NeoMagic MagicGraph 128XD option is highlighted, and then click OK.**

The Copying Files window appears. A progress bar is shown while the driver files are being copied to your hard-disk drive.

After the drivers are successfully installed, the Advanced Display Properties window reappears.

11. **Click the Close button in the Advanced Display Properties window.**

12. **If you have not specified what type of monitor you use, the Display Properties window appears.**

Click Yes if you want to specify an external monitor now. The Select Device window appears. Select your monitor manufacturer and model name, and then follow the instructions on your screen.

If you do not want to specify an external monitor now or if you have already done so, go to step 13.

13. **Click the Close button in the Display Properties window.**

14. **Remove the *Video Drivers* diskette from the diskette drive.**

15. **Restart your computer to activate the drivers.**

Reinstalling Touch Pad Drivers

Touch pad drivers and associated utilities allow you to customize the operation of your touch pad and cursor features. To reinstall the touch pad drivers, follow these steps:

1. **Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.**
2. **Insert the *Touch Pad Drivers* diskette into the diskette drive.**
3. **Click the Start button, and then click Run...**
The Run dialog box appears.
4. **Type `a:\setup`, and then click OK.**
5. **Follow the instructions on your screen.**
6. **Restart your computer to activate the drivers.**

Reinstalling Audio Drivers

Audio drivers allow you to customize the sound features of your computer. To reinstall the audio drivers, follow these steps:

1. **Save your work in all open application programs, because you will need to restart your computer during this procedure to complete the installation.**
2. **Insert the *Audio Drivers* diskette into the diskette drive.**
3. **Click the Start button, and then click Run...**
The Run dialog box appears.
4. **Type `a:\setup`, and then click OK.**
5. **Follow the instructions on your screen.**
6. **After the computer restarts, reinsert the *Audio Drivers* diskette to complete the installation.**

Reinstalling the Soft Wavetable

The soft wavetable allows you to customize certain audio features. To reinstall the soft wavetable, follow these steps:

1. **Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.**
2. **Insert the *Soft Wavetable Diskette 1* into the diskette drive.**
3. **Click the Start button, and then click Run...**
The Run dialog box appears.
4. **Type `a:\setup`, and then click OK to install the utility on your hard-disk drive.**
5. **Follow the instructions on your screen, and insert the additional *Soft Wavetable* diskettes when prompted.**
6. **After the installation is complete, restart your computer to use the soft wavetable.**

Reinstalling Infrared Drivers

Infrared drivers allow your computer to transfer files to another infrared device without using cable connections.

To reinstall the standard infrared drivers that come with Windows 95, see your operating system documentation. To reinstall the fast infrared drivers provided by Dell, see the instructions in the **readme.doc** file on your *Fast Infrared Drivers* diskette.

Creating the Save-to-Disk Suspend File

If you are installing a new hard-disk drive or if you are rebuilding a hard-disk drive that has corrupted software and you want to be able to use the save-to-disk suspend mode, you must use the **phdisk.exe** utility on your *System Utilities* diskette to create a save-to-disk suspend file. When save-to-disk suspend mode is activated, all system data is stored in this file.

To create the save-to-disk suspend file, follow these steps:

1. **Insert the *System Utilities* diskette into the diskette drive.**
2. **Restart your computer.**
3. **At the MS-DOS® prompt, type a : to ensure that you are accessing files from the diskette drive.**
4. **Type PHDISK /CREATE /FILE and press <Enter>.**

NOTE: Make sure there is a space between PHDISK and /CREATE and between /CREATE and /FILE.

The utility will calculate the size of the file, in kilobytes, based on the amount of system memory in your computer, plus 2 MB to handle video memory and additional system requirements.

5. **Follow the instructions on your screen to create the save-to-disk suspend file.**

To check the size of the save-to-disk suspend file, type PHDISK /INFO at an MS-DOS prompt and press <Enter>.

If you need to delete the save-to-disk suspend file, type PHDISK /DELETE /FILE at an MS-DOS prompt and press <Enter>.

Reinstalling the System User's Guide

If needed, you can download the online *Dell Inspiron 3000 System User's Guide* from Dell's World Wide Web (WWW) site at <http://www.dell.com/>:

1. **Click the Service and Support icon.**

The Service and Support Center main menu appears.

2. **Click Product Line Menu, and then locate the link to the Inspiron 3000 page.**

The Inspiron 3000 Service and Support Center appears.

3. **Click Technical Information, and then click Documentation.**

4. **Click Online System User's Guide.**

5. **When prompted, save the file to your hard-disk drive.**

Chapter 3

Troubleshooting Your Computer



If your Dell Inspiron 3000 is not working as expected, this chapter provides initial checks for solving basic computer problems as well as detailed troubleshooting procedures. It lists system messages and beep codes, their possible causes, and actions you can take to resolve any problems indicated by a message or code. This chapter also offers general guidelines for analyzing some software problems.

NOTES: When you see the question “Is the problem resolved?” in a troubleshooting procedure, repeat the operation that caused the problem to see if it still occurs.

Before you begin any of the troubleshooting procedures, make sure the Quiet Boot option is set to Disabled in the Main menu of the Setup program. See Chapter 2, “Customizing Features,” for information on using the Setup program.

CAUTION: The only time you should ever access the inside of your computer is when you are installing memory modules.

Wait 5 seconds after turning off the computer before disconnecting a peripheral device or removing a memory module to help prevent possible damage to the system board.

CAUTION: See “Protecting Against Electrostatic Discharge” in the safety instructions at the front of this guide.

Backing Up Your Files

You can lose data when a computer failure occurs. If your computer is behaving erratically, back up your files immediately. See your operating system documentation for instructions on backing up files.

Basic Checks

The following procedure leads you through the checks necessary to solve some basic computer problems.

NOTE: Before you begin any of the troubleshooting procedures, make sure the Quiet Boot option is set to Disabled in the Main menu of the Setup program. See Chapter 2, “Customizing System Features,” for information on using the Setup program.

1. Is your computer wet or damaged?

Yes. Go to “Troubleshooting a Wet Computer” or “Troubleshooting a Damaged Computer” found later in this chapter.

No. Go to step 2.

2. Perform the steps in the next subsection, “Checking Connections.”

Is the problem resolved?

Yes. A connection to your computer was loose. The problem is resolved.

No. Go to step 3.

3. Perform the steps found in “Look and Listen” found later in this chapter.

Did your computer complete the boot (start-up) routine?

NOTE: The boot routine is the operating system’s attempt to load its files into memory from the boot-up sector on the hard-disk drive or bootable diskette.

Yes. Go to step 4.

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

4. Did you receive a system message or beep code?

A single beep always sounds during the boot routine when the speaker is tested.

Yes. Go to “Messages and Codes” found later in this chapter.

No. Go to step 5.

5. Verify the system setup settings as explained in Chapter 2, “Customizing System Features.”

Is the problem resolved?

Yes. The system configuration information was incorrect. The problem is resolved.

No. Go to step 6.

6. Run the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics.”)

Checking Connections

Loose or improperly connected cables are likely sources of problems for your computer, external monitor, or other peripherals (such as a printer, external keyboard, or mouse). A quick check of all cable connections can easily solve these problems. If the connector has two small screws, make sure the screws are tight. In addition, check for damaged or frayed cables, and for bent pins on connectors.

Be sure the following items are properly connected or installed:

- The AC adapter and the AC power cable

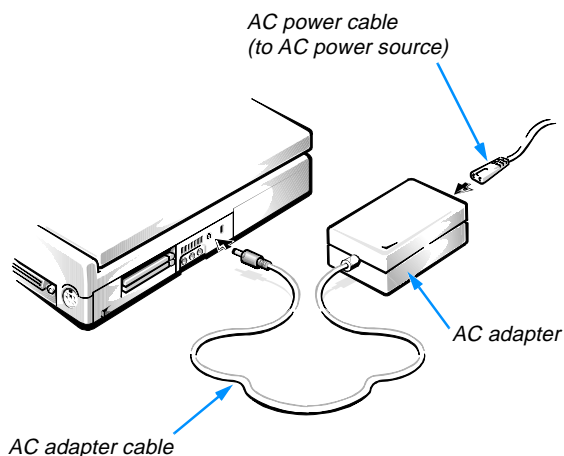


Figure 3-1. AC Adapter and Power Cable

- The main battery

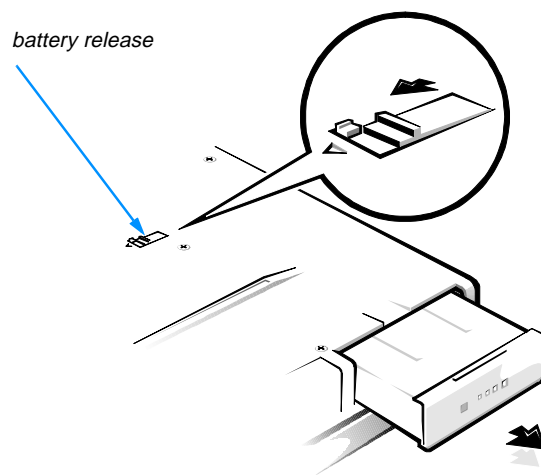


Figure 3-2. Checking the Battery

- The secondary battery or any other optional device installed in the options bay

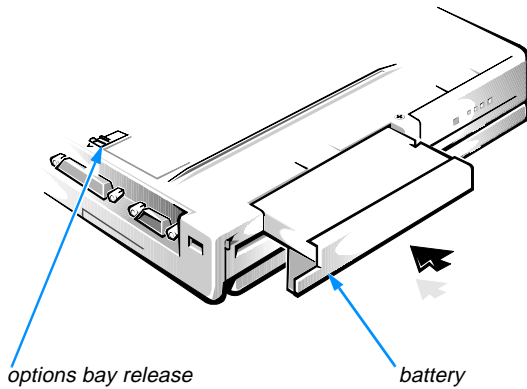


Figure 3-3. Checking an Optional Device

- Cables that connect external devices through the I/O panel on the back of the computer.

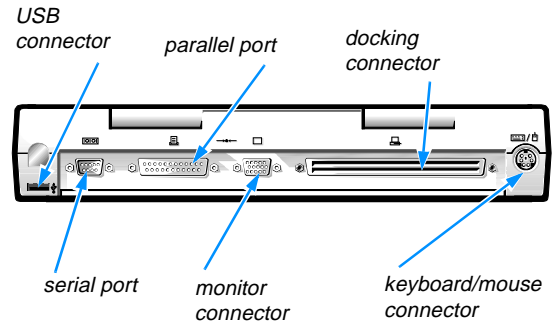


Figure 3-4. I/O Panel Connectors for External Devices

Look and Listen

Looking at and listening to your computer is important in determining the source of a problem. Look and listen for the indications described in Table 3-1.

If the problem is still not resolved, see the next subsection, “Setup Options.”

NOTE: Before you begin any of the troubleshooting procedures, make sure the Quiet Boot option is set to Disabled in the Main menu of the Setup program. See Chapter 2, “Customizing System Features,” for information on using the Setup program.

Table 3-1. Boot Routine Indications

Look for:	Action
An error message	See “Messages and Codes” found later in this chapter.
The power indicator	If the computer’s power indicator does not come on, see “Troubleshooting a Power Failure” found later in this chapter.
The keyboard indicators	Press the <Num Lock> key, the <Caps Lock> key, and the <Scroll Lock> key to toggle their respective indicators on and off in the status display panel. If the indicators do not appear, run the Keyboard test group in the Dell Diagnostics (for instructions, see Chapter 4, “Running the Dell Diagnostics”).
The diskette-drive access indicator	The diskette-drive access indicator should appear in the status display when data is accessed on the diskette drive. You can test this indicator by inserting a diskette into the drive, typing dir a: at an MS-DOS prompt, and pressing <Enter>. If the diskette-drive access indicator does not appear, see “Troubleshooting the Diskette Drive” found later in this chapter.
The CD-ROM/hard-disk drive access indicator	The CD-ROM/hard-disk drive access indicator should appear when data is accessed on the CD-ROM drive or the hard-disk drive. You can test this indicator by typing dir c: at an MS-DOS prompt and pressing <Enter>. If the CD-ROM/hard-disk drive access indicator does not appear, see “Troubleshooting the Hard-Disk Drive” or “Troubleshooting the CD-ROM Drive” found later in this chapter.
Listen for:	Action
A series of beeps	See “Messages and Codes” found later in this chapter.
An unfamiliar constant scraping or grinding sound when a drive is accessed	Make sure the sound is not caused by the application program that is running. The sound could also be caused by a hardware malfunction. See Chapter 5, “Getting Help,” for instructions on obtaining technical assistance from Dell.
The absence of a familiar sound	When you turn on the computer, you can hear the hard-disk drive spin up, and the computer tries to access the boot files from the hard-disk drive or the diskette drive. If your computer does not boot, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.) Otherwise, see Chapter 4, “Running the Dell Diagnostics.”

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User’s Guide.

Setup Options

You can easily correct certain system problems by verifying the settings for setup options. When you boot the computer, it compares the system configuration information with the current hardware configuration. If the computer’s hardware configuration doesn’t match the

information recorded by the system setup options, an error message may appear on the display.

To fix this problem, correct the appropriate options in the Setup program. See Chapter 2, “Customizing System Features,” for detailed information about the Setup program and its options.

If, after checking the setup options, you have not resolved the problem, see Chapter 4, “Running the Dell Diagnostics.”

Messages and Codes

The application programs, operating system, and the computer itself are capable of identifying problems and alerting you to them. When this occurs, a message may appear on the computer’s display or an external monitor (if one is attached), or a beep code may sound.

If an error message appears on the display or external monitor, make a note of the message. See Table 3-2 for an explanation of the message and suggestions for correcting any errors. The system messages are listed alphabetically.

NOTE: If the message is not listed in Table 3-2, check the documentation for the application programs that were running at the time the message appeared and/or the operating system documentation for an explanation of the message and a recommended action.

Table 3-2. System Error Messages

Message	Cause	Action
Diskette drive A error	A connector may be loose or the diskette may be faulty.	If the diskette-drive access indicator appears in the status display panel, try a different diskette. If the problem persists, shut down the computer, remove the diskette drive completely, and then reinsert the diskette drive. Turn the computer back on, and check for the error message. If the problem is still not resolved, see “Troubleshooting the Diskette Drive” found later in this chapter.
Extended RAM failed at off-set: <i>nnnn</i>	Extended memory is not configured properly or has failed at the memory address <i>nnnn</i> .	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Failing bits: <i>nnnn</i>	Memory failed at RAM address <i>nnnn</i> .	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Fixed disk 0 failure	The hard-disk drive failed to initialize.	See “Troubleshooting the Hard-Disk Drive” found later in this chapter.
Fixed disk controller failure	The hard-disk drive controller may be faulty.	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User’s Guide.

Table 3-2. System Error Messages (continued)

Message	Cause	Action
Incorrect drive A type—run Setup	The diskette drive is not identified properly in the Setup program.	Shut down the computer, remove the diskette drive completely, and then reinsert the diskette drive. Turn the computer back on, and check for the error message. If the problem persists, reboot the computer and press <F2> to enter the Setup program. Write down the setting for FDD Controller in the Main menu. Then call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Keyboard controller error	The keyboard controller is faulty.	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Keyboard error	If an external keyboard is being used, a cable or connector may be loose or the keyboard may be faulty. If the built-in keyboard is being used, it may be faulty. A key on the built-in keyboard may have been pressed while the computer was booting.	Run the Stuck Key Test in the Dell Diagnostics. (For instructions, see Chapter 4, “Running the Dell Diagnostics.”)
Operating system not found	The operating system may be corrupted. Or, the operating system cannot be found on the hard-disk drive or on the diskette in the diskette drive.	Reinstall the operating system. See the documentation that came with the operating system. If the problem is still not resolved, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Parity check 1 <i>nnnn</i>	A parity error was found in the system bus at address <i>nnnn</i> .	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Parity check 2 <i>nnnn</i>	A parity error was found in the I/O bus at address <i>nnnn</i> .	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Real time clock error	The CMOS battery that supports data stored in NVRAM may be dead.	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
Shadow RAM failed at off-set: <i>nnnn</i>	Shadow RAM failed at address <i>nnnn</i> .	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User’s Guide.

Table 3-2. System Error Messages (continued)

Message	Cause	Action
CMOS battery is dead— Replace and run Setup	The CMOS battery does not have enough charge to power the computer.	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
System cache error—cache disabled	The primary cache internal to the microprocessor has failed.	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
System CMOS checksum bad— run Setup	The BIOS has been updated. CMOS has been corrupted or modified, possibly by an application program that changes data stored in CMOS.	Reboot the computer and press <F2> to enter the Setup program and reconfigure the system. If the problem persists, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
System RAM failed at off-set: <i>nnnn</i>	System RAM failed at address <i>nnnn</i> in the 64-KB block at which the error was detected.	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
System timer error	A chip on the system board may be malfunctioning.	Run the System Set test group and the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Chapter 4, “Running the Dell Diagnostics.”)

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User’s Guide.

System Beep Codes

When errors occur during the boot routine that cannot be reported on the built-in display or on an external monitor (if attached), the computer may emit a series of beeps that identify the problem. The *beep code* is a pattern of sounds: for example, one beep, followed by a second beep, and then a burst of three beeps (code 1-1-3) means that the computer was unable to read the data in non-volatile random-access memory (NVRAM). This information is important to the Dell support staff if you need to call for technical assistance.

When a beep code is emitted, write it down on a copy of the Diagnostics Checklist found in Chapter 5, and then look it up in Table 3-3. If you are unable to resolve the problem by looking up the meaning of the beep code, use the Dell Diagnostics to identify a more serious cause. (See Chapter 4, “Running the Dell Diagnostics.”) If you are still unable to resolve the problem, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

Table 3-3. Beep Codes

Message	Cause	Action
1-2	Memory module not being properly identified or used	See “Troubleshooting Memory” found later in this chapter.
1-2-2-3	ROM BIOS checksum failure	Run the System Set test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics,” for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
1-3-1-1	DRAM refresh failure	Run the System Set test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics,” for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
1-3-1-3	Keyboard controller test failure	Run the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Chapter 4, “Running the Dell Diagnostics.”)
1-3-4-1	RAM failure on address line <i>nnnn</i>	Run the RAM test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics,” for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
1-3-4-3	RAM failure on data bits <i>nnnn</i> of the high byte on the memory bus	Run the RAM test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics,” for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
1-4-1-1	RAM failure on data bits <i>nnnn</i> of the low byte on the memory bus	Run the RAM test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics,” for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
2-1-2-3	Check ROM copyright notice failure	Run the System Set test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics,” for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)
2-2-3-1	Interrupt mask register failure	Call Dell for technical assistance. (For instructions, see Chapter 5, “Getting Help.”)

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User’s Guide.

Finding Software Solutions

Because most computers have several application programs installed in addition to the operating system, isolating a software problem can be confusing. Software errors can also appear to be hardware malfunctions at first. Software problems can result from the following circumstances:

- Improper installation or configuration of a program
- Input errors
- Drivers that may conflict with certain application programs
- Memory conflicts resulting from the use of terminate-and-stay-resident (TSR) programs, such as drivers
- Interrupt conflicts between devices

You can confirm that a computer problem is caused by software by first running the System Set test group as described in Chapter 4, “Running the Dell Diagnostics.” If all tests in the test group complete successfully, the error condition is most likely caused by software.

The following subsections provide general guidelines for analyzing some software problems. For detailed troubleshooting information on a particular program, see the online documentation that accompanied the software or consult the support service for the software.

Installing and Configuring Software

When you obtain software, check it for viruses using virus-scanning software before installing it on the computer’s hard-disk drive. Viruses can quickly use all available system memory, damage and/or destroy data stored on the hard-disk drive, and permanently affect the performance of the programs they infect. Several commercial virus-scanning programs are available for purchase, and most bulletin board services (BBSs) archive freely distributed virus-scanning programs that you can download with a modem.

Before installing a program, read its documentation to learn how the program works, what hardware it requires, and what its defaults are. A program usually includes installation instructions in its accompanying documentation and a software installation routine on its program diskettes.

The software installation routine assists you in transferring the appropriate program files to the computer’s hard-disk drive. Installation instructions may provide details about how to configure the operating system to successfully run the program. Always read the installation instructions before running a program’s installation routine. If you are instructed to modify the start-up files, see the documentation that came with the operating system for instructions.

When you run the installation routine, be prepared to respond to prompts for information about how the computer’s operating system is configured, what type of computer you have, and what peripherals are connected to the computer.

Start-Up Files

Whenever you start or reboot the computer, the operating system executes commands from its start-up files.

These files contain commands that automatically configure the operating system by setting system parameters, starting memory-resident programs, and loading device driver software. If you experience program conflicts or memory error messages, check the commands for memory-resident programs in the start-up files of the operating system. (For information on start-up files, see the documentation that came with the operating system). If a program or peripheral does not work correctly, check the product’s documentation to see if you need to modify these files.

Using Software

The following subsections discuss errors that can occur while using software.

Error Messages

Error messages can be produced by an application program, the operating system, or the computer. “Messages and Codes,” found earlier in this chapter, discusses the error messages generated by the computer. If you receive an error message not listed in “Messages and Codes,” check the operating system or application program documentation.

Input Errors

If a specific key or set of keys is pressed at the wrong time, a program may give you unexpected results. See the documentation that came with the application program to make sure the values or characters you are entering do not conflict with the application program you are using.

Make sure the operating system is compatible with the programs you use. Keep in mind that whenever you change the parameters of the computer's operating system, you may affect the successful operation of the programs. Sometimes, after modifying the operating system, you may need to reinstall a program that no longer runs properly.

Memory-Resident Programs

There are a variety of utilities and supplementary programs that can be loaded either when the computer boots or from an operating system prompt. These programs are designed to stay resident in system memory and thus always be available for use. Because they remain in the computer's memory, memory conflicts and errors can result when other programs require use of all or part of the memory already occupied by these TSR programs.

Typically, the operating system's start-up files contain commands to start TSR programs when you boot the computer. If you suspect that one of these TSR programs is causing a memory conflict, remove the commands that start them from the start-up file. If the problem you were experiencing does not recur, one of the TSR programs probably created the conflict. Add the TSR commands back into the start-up files one at a time until you identify which TSR program is creating the conflict.

Program Conflicts

Some programs may leave portions of their setup information behind, even though you have exited from them. As a result, other programs cannot run. Rebooting the computer can confirm whether or not these programs are the cause of the problem.

Other programs use specialized subroutines called *drivers* that can cause problems in the computer. For example, a variation in the way the data is sent to an external monitor may require a special screen driver program that *expects* a certain kind of video mode or monitor. In such cases, you may have to develop an

alternative method of running that particular program—for example, the creation of a boot file made especially for that program. For help with this situation, call the support service offered by the manufacturer of the software you are using.

Avoiding Interrupt Assignment Conflicts

Problems can arise if two devices attempt to use the same interrupt request (IRQ) line. To avoid this type of conflict, check the documentation for the default IRQ line setting for each installed device. Then consult Table 3-4 to configure the device for one of the available IRQ lines.

NOTE: Installed devices cannot share the same COM port address. The default address of the computer's serial port is COM1.

Table 3-4. IRQ Line Assignments

IRQ Line	Used/Available
IRQ0	Generated by the system timer
IRQ1	Generated by the keyboard controller to signal that the keyboard output buffer is full
IRQ2	Cascade to second interrupt controller
IRQ3	Reserved
IRQ4	Reserved
IRQ5	Used by the audio controller
IRQ6	Generated by the diskette drive controller to indicate that the diskette drive requires the attention of the microprocessor
IRQ7	Used by the parallel port
IRQ8	Generated by the system RTC
IRQ9	Software redirect to INT0A
IRQ10	Reserved
IRQ11	Reserved

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table 3-4. IRQ Line Assignments (continued)

IRQ Line	Used/Available
IRQ12	Generated by the keyboard controller to indicate that the output buffer of the integrated touch pad or external PS/2 mouse is full
IRQ13	Used by the math coprocessor on the microprocessor
IRQ14	Generated by the hard-disk drive to indicate that the drive requires the attention of the microprocessor
IRQ15	Reserved

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Troubleshooting Procedures

This section provides troubleshooting procedures for built-in components (such as the display) and for external devices that connect to the computer (such as an external monitor). Before performing any of the procedures in this section, see “Basic Checks” found earlier in this chapter and read the safety instructions at the front of this guide. Then perform the appropriate troubleshooting procedure for the component or equipment that is malfunctioning.

NOTES: When you see the question “Is the problem resolved?” in a troubleshooting procedure, perform the operation that caused the problem to see if the problem still occurs.

Before you begin any of the troubleshooting procedures, make sure the Quiet Boot option is set to Disabled in the Main menu of the Setup program. See Chapter 2, “Customizing System Features,” for information on using the Setup program.

Troubleshooting a Wet Computer

Liquids, spills and splashes, rain, and excessive humidity can cause moisture damage to the computer. If the computer gets wet or if condensation forms on the computer because of humid conditions, use the following procedure.

WARNING: Perform step 1 of the following procedure only after you are certain that it is safe to do so. If the computer is connected to an alternating current (AC) power source, Dell recommends turning off AC power at the circuit breaker before attempting to remove the power cables from AC power. Use the utmost caution when removing wet cables from live power.

- 1. Turn off the computer, and disconnect it from the AC adapter. Then disconnect the AC adapter from AC power. Turn off any attached peripherals, and disconnect them from their power sources and then from the computer.**
- 2. Remove any installed batteries.**
Wipe off each battery, and store it in a safe place to dry.
- 3. If the options bay slot is wet, remove the device from the bay. If the PC Card slot is wet, remove any PC Cards. Put the device and cards in a safe place to dry.**
- 4. Ground yourself by touching one of the metal connectors on the back of the computer.**
- 5. Turn the computer over, and remove the two screws securing the hard-disk drive.**
- 6. Pull the hard-disk drive straight out of the computer. The memory module cover will now lift off.**
- 7. Remove any installed memory modules from their sockets on the system board.**

Carefully spread apart the inner metal tabs of the memory module socket just far enough for the memory module to disengage from the socket (the module should pop up slightly). Then lift the memory module away from the socket.

8. **Open the display, and place the computer across two books or similar props to let air circulate all around it. Let the computer dry for at least 24 hours.**

Place the computer in a dry area at room temperature. Do not use artificial means to speed up the drying process.

WARNING: Before continuing with the remainder of this procedure, verify that the computer is thoroughly dry.

9. **Ground yourself by touching one of the unpainted metal connectors on the I/O panel.**
10. **If you removed memory modules in step 7, reinstall them. Replace the memory module cover.**

Align the notch in the edge connector with the slot in the center of the memory module socket. Press the memory module's edge connector firmly into the socket. Pivot the module down until it clicks.

To replace the memory module cover, align the two tabs on the memory module cover with the memory module opening, and slide the cover in place.

NOTE: The memory module cover is not secure until the hard-disk drive is back in place.
11. **Reinstall the hard-disk drive, align the screw holes, and replace the two screws removed in step 5.**
12. **Reinstall the options-bay device or PC Cards that you removed in step 3.**
13. **Replace any batteries that you removed in step 2.**
14. **Reconnect the computer and peripherals to AC power, and turn them on.**
15. **Does the computer work properly?**

Yes. The problem is resolved.

No. If the computer is able to boot, run the Dell Diagnostics to identify computer damage. If the computer is unable to boot, see "Troubleshooting a Power Failure" found later in this section. If you cannot identify the damaged component(s), call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

Troubleshooting a Damaged Computer

If the computer is dropped or damaged, use the following procedure:

1. **Save all your work, exit any open application programs, and remove any installed batteries.**
2. **Turn off the computer, and disconnect it from the AC adapter. Then disconnect the AC adapter from AC power. Turn off any attached peripherals, and disconnect them from their power sources and then from the computer.**
3. **Ground yourself by touching one of the metal connectors on the back of the computer.**
4. **Turn the computer over, and remove the two screws securing the hard-disk drive.**
5. **Pull the hard-disk drive straight out of the computer. The memory module cover will now lift off.**
6. **Remove any installed memory modules from their sockets on the system board.**

Carefully spread apart the inner metal tabs of the memory module socket just far enough for the memory module to disengage from the socket (the module should pop up slightly). Then lift the memory module away from the socket.

7. **Reinstall the memory modules, and then replace the memory module cover.**

Align the notch in the edge connector with the slot in the center of the memory module socket. Press the memory module's edge connector firmly into the socket. Pivot the module down until it clicks.

To replace the memory module cover, align the two tabs on the memory module cover with the memory module opening, and slide the cover in place.

NOTE: The memory module cover is not secure until the hard-disk drive is back in place.

8. **Reinstall the hard-disk drive, align the screw holes, and replace the two screws removed in step 4.**
9. **Install the diskette drive in the options bay.**
10. **Verify that any installed PC Cards are properly seated in the PC Card connectors.**

11. **Replace any batteries that you removed in step 1.**
12. **Reconnect the computer and peripherals to AC power, and turn them on.**
13. **Run the Dell Diagnostics to verify that the computer is operating properly.** (See Chapter 4, “Running the Dell Diagnostics,” for instructions.)
14. **If the computer does not operate properly, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out. Then call Dell for technical assistance.** (See Chapter 5, “Getting Help,” for instructions.)

Troubleshooting a Power Failure

Occasionally, you may experience a power failure in all or part of the computer. A total power failure is indicated by the absence of electrical activity (such as status indicators and sounds) from the keyboard, display, hard-disk drive, and diskette drive. In a partial power failure, one or more of these indicators shows that there is power to a part of the computer.

To determine if there is any power to the computer, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Remove all peripherals, including internal devices such as a CD-ROM drive, hard-disk drive, and battery.**
2. **Try turning on the computer.**
3. **Does the computer turn on properly?**
Yes. The problem is resolved.
No. Go to Step 4.
4. **Turn off the computer. Do the power indicator and battery indicator(s) appear on the status display panel?**
Yes. Go to step 5.
No. Go to step 6.
5. **Remove any installed batteries, and disconnect the AC adapter. Then reinstall the batteries, reconnect the AC adapter, and turn on the**

computer. Do the power indicator and battery indicator(s) appear on the status display panel?

Yes. Go to step 7.

No. Go to step 6.

6. **Turn off the computer, wait a few seconds, and then turn on the computer again. Do the indicators appear on the status display panel?**
Yes. Your computer is receiving power. Go to step 7.
No. Your computer is not receiving power. Go to step 8.
7. **Does the computer boot successfully?**
Yes. The problem is resolved.
No. Go to step 8.
8. **Reseat (remove and reinstall) any installed batteries, and check the AC adapter connection. Do the indicators appear in the status display panel?**
Yes. The problem is resolved.
No. If the computer is powered by the AC adapter, see the next subsection, “Total Power Failure When Using the AC Adapter.” If the computer is using battery power, see “Total Power Failure When Using a Battery” found later in this section.

Total Power Failure When Using the AC Adapter

If no signs of power are present in the computer when using the AC adapter, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Turn off the computer and peripherals, and disconnect them from AC power. If you are using a surge protector, remove it.**
2. **Make sure the AC adapter is connected to the computer, and verify that the power cable is firmly attached to the AC adapter and to the AC power source.**

See “Checking Connections” found earlier in this chapter.

3. Does the light-emitting diode (LED) on top of the AC adapter turn on?

Yes. Go to step 4.

No. The AC adapter may be defective. Go to step 5.

4. Turn on the computer. Does the power indicator appear in the status display panel?

Yes. The problem is resolved.

No. Go to step 5.

5. Call Dell for technical assistance.

See Chapter 5, “Getting Help,” for instructions.

5. Does the battery status indicator remain steady, and does the AC power indicator appear in the status display panel?

Yes. Go to step 6.

No. The battery is defective. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

6. Is there a single bar on the far left of the battery status indicator?

Yes. The battery is too hot. Turn off the computer, remove the battery, and then let it cool to room temperature. Then reinstall the battery, reboot the computer, and go back to step 3. (If you return to step 6 the second time you perform this procedure, call Dell for technical assistance. See Chapter 5, “Getting Help,” for instructions.)

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

7. Use the AC adapter to fully charge the battery.

For instructions, see the topic titled “Charging the Battery” in the online *System User’s Guide*. The battery charges in approximately 1.5 hours, using an AC power source, if the computer is off; the battery charges in approximately 2.5 hours if the computer is on.

8. Does the battery status indicator in the status display panel indicate that the battery is fully charged?

Yes. The problem is resolved. Turn on the computer.

No. You may have a defective battery. Go to step 9.

9. If a fully charged spare battery is available, install it in the computer.

10. Turn on the computer. Does the battery status indicator appear in the status display panel?

Yes. Your original battery is defective. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

Total Power Failure When Using a Battery

If an AC adapter is not connected to your computer, the computer’s power source is its battery. If the battery status indicator does not appear in the status display panel when you turn on the computer, the battery’s charge may be depleted. If the battery status indicator is empty, the battery may be nearly out of charge or defective. To troubleshoot this problem, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. Turn off the computer and peripherals. Disconnect the peripherals from AC power.

2. Reseat each installed battery by first removing and then replacing the battery in its compartment.

3. Turn on the computer. Does the battery status indicator appear in the status display panel?

Allow one minute for the computer to initialize its components before checking for signs of power.

Yes. Go to step 4.

No. Use the AC adapter to connect your computer to AC power. If the computer operates normally when using AC power, go to step 7. If the computer does not boot when using the AC adapter, see the previous subsection, “Total Power Failure When Using the AC Adapter.”

4. Is the battery status indicator blinking?

Yes. Go to step 7.

No. Go to step 5.

No Power to a Part of the Computer

If the power indicator shows that your computer is receiving power, but the display remains blank, part of your computer is probably not receiving power. To troubleshoot this problem, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Turn off the computer and peripherals, and disconnect them from AC power. Disconnect any attached peripherals from the computer.**
2. **Make sure that the AC adapter is connected to the computer and to AC power, or confirm that a fully charged battery is properly seated in its compartment.**
3. **Turn on the computer. Is the display on?**

Allow one minute for the computer to initialize its components before checking for signs of power.

Yes. The entire computer is receiving power; the problem is resolved.

No. Adjust the brightness of the display. If the display still does not show an image, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

NOTE: Contrast cannot be adjusted on an active-matrix color display.

Troubleshooting the Diskette Drive

During the power-on self-test (POST), the computer checks the diskette drive, comparing its characteristics with the system configuration information. (The diskette-drive access indicator appears in the status display panel as the computer performs this check on a diskette drive in the options bay.)

If the drive fails POST or if the access indicators do not appear, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Remove the diskette drive from the options bay.**
2. **Save your work in any open application programs, and then shut down the computer.**

3. **Reinstall the diskette drive.**
4. **Reboot the computer. Does the diskette-drive access indicator appear in the status display panel during the boot routine?**

Yes. Go to step 6.

No. Go to step 5.

5. **Remove and reinsert the diskette drive (or disconnect and reconnect the drive if used externally). Reboot the computer. Does the diskette-drive access indicator appear in the status display panel during the boot routine?**
- Yes.* Go to step 6.
- No.* Go to step 9.
6. **Does the computer display a drive error message?**
- Yes.* See Table 3-2 for an explanation of the message, and then go to step 7.
- No.* Go to step 9.
7. **Insert a bootable 1.44-MB diskette into the drive, and reboot the computer.**
 8. **Does the diskette-drive access indicator appear in the status display panel (or on the front of the drive if it is being used externally) during the boot routine, and does the drive boot the operating system?**

Yes. The diskette drive problem has probably been resolved. If you continue to experience trouble, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Go to step 9.

9. **Call Dell for technical assistance.**

See Chapter 5, “Getting Help,” for instructions.

Troubleshooting the CD-ROM Drive

During POST, the computer checks the CD-ROM drive, comparing its characteristics with the system configuration information. (The CD-ROM/hard-disk drive access indicator blinks as the computer performs this check.)

If a failure occurs with the drive, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Remove the CD-ROM drive from the options bay.**
2. **Save your work in any open application programs, and then shut down the computer.**
3. **Reinstall the CD-ROM drive.**
4. **Reboot the computer. Does the CD-ROM/hard-disk drive access indicator appear in the status display panel during the boot routine.**

Yes. Go to step 6.

No. Go to step 5.

5. **Remove and reinsert the CD-ROM drive. Reboot the computer. Does the CD-ROM/hard-disk drive access indicator appear in the status display panel during the boot routine?**

Yes. Go to step 6.

No. Go to step 10.

6. **Remove the hard-disk drive, and boot the computer. Does the CD-ROM/hard-disk drive access indicator appear in the status display panel?**

Yes. Go to step 7.

No. Go to step 10.

7. **Reinstall the hard-disk drive. Then check the config.sys file (in Windows 95, check the CD-ROM configuration in the Settings folder). Is the CD-ROM driver (tsycdrom.sys) installed?**

Yes. Go to step 8.

No. Load the driver, and return to step 1 to begin this procedure again. (To load the driver, use the program diskette sets you made when you first received your Dell computer.)

8. **Insert a bootable diskette into drive A, and reboot the computer.**

9. **Type d: and press <Enter>. Then type dir and press <Enter>. Does MS-DOS display the root directory contents for drive D?**

Yes. The problem is resolved.

No. Go to step 10.

10. **Insert your Dell Diagnostics diskette into drive A, and reboot the computer. Then run the IDE CD-ROM Drives test group. Does your CD-ROM drive pass all the tests?**

Yes. Return to step 1, and perform this troubleshooting procedure again. If you continue to experience trouble, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Go to step 11.

11. **Call Dell for technical assistance.**

See Chapter 5, “Getting Help,” for instructions.

Troubleshooting the Hard-Disk Drive

During POST, the computer checks the hard-disk drive, comparing its characteristics with the system configuration information. (The CD-ROM/hard-disk drive access indicator blinks as the computer performs this check.) If a failure occurs with the drive, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Shut down the computer.**
2. **Reboot the computer. Does the CD-ROM/hard-disk drive access indicator appear in the status display panel during the boot routine, and does the drive boot the operating system?**

Yes. If a message appears on the display, see Table 3-2 for an explanation of the message and possible corrective actions. Then go to step 7.

No. Go to step 3.

3. **Insert a bootable diskette into drive A, and reboot the computer.**

4. **Type c: and press <Enter>. Then type dir and press <Enter>. Does MS-DOS display the root directory contents for drive C?**

Yes. Go to step 6.

No. Go to step 5.

5. **If your hard-disk drive has more than one logical drive, type d: and press <Enter>. Then type dir**

and press <Enter>. Does MS-DOS display the root directory contents for drive D?

Yes. You may have a corrupted boot sector or file allocation table (FAT) on drive C. Go to step 9.

No. Go to step 8.

- 6. Rename your autoexec.bat and config.sys files, remove the operating system diskette from drive A, and reboot the computer. Does the operating system load now?**

Yes. You have an error in your **autoexec.bat** or **config.sys** file. Use a text editor to examine the contents of these files and locate the error. For information on the correct syntax for commands in these files, see the documentation that accompanied your operating system.

No. Go to step 7.

- 7. Insert your diagnostics diskette into drive A, and reboot the computer. Then run the Hard-Disk Drives (Non-SCSI) test group. Does your drive pass all the tests?**

Yes. Go to step 8.

No. Go to step 9.

- 8. Replace your diagnostics diskette with the operating system diskette, and reboot the computer. Does the operating system load now?**

Yes. The hard-disk drive may contain a corrupted operating system or it may have bad sectors. Reinstall the operating system as described in the documentation that came with it. If reinstalling the operating system does not correct the problem, go to step 9.

No. Go to step 9.

- 9. Call Dell for technical assistance.**

See Chapter 5, “Getting Help,” for instructions.

Troubleshooting an External Keyboard

When you attach an external keyboard, the built-in keyboard remains fully functional except for the embedded numeric keypad. During POST, the computer checks whether an external keyboard is connected; if it is, the computer recognizes both the built-in keyboard and the external keyboard. If an attached external keyboard does not work when you boot the computer, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

- 1. Turn off the computer, and then remove the keyboard cable and check it for bent pins.**
- 2. Reboot the computer.**
- 3. Make sure the cable from the external keyboard is firmly connected to the keyboard/mouse connector on the back of the computer. (See “Checking Connections” found earlier in this chapter.)**
- 4. If you are using a keyboard that can be configured with various switch settings, make sure the switch is set to PS/2, Enhanced XT/AT, or PC/AT.**

The switch settings are usually on the bottom of the keyboard, sometimes behind a panel tab.

- 5. Turn off the computer, wait one minute, and then turn it on again. During the boot routine, do the Num Lock, Caps Lock, and Scroll Lock indicators on the external keyboard blink momentarily?**

Yes. Go to step 6.

No. You may have a defective keyboard. Go to step 9.

- 6. Does the computer recognize the external keyboard?**

Use the external keyboard to type some characters. Do they appear on the display?

Yes. The problem is resolved.

No. Go to step 7.

7. **Turn off the computer, and disconnect the external keyboard from the computer.**
8. **Turn on the computer. Does the computer recognize the built-in keyboard?**

Allow one minute for the computer to initialize its components. Then use the computer's built-in keyboard to type some characters. Do the characters appear on the display?

Yes. The external keyboard may be defective. Run the Keyboard test group in the Dell Diagnostics. If you cannot isolate the problem after running the diagnostics, call Dell for technical assistance.

No. Go to step 9.

9. **Call Dell for technical assistance.**

See Chapter 5, "Getting Help," for instructions.

6. **Pull the hard-disk drive straight out of the computer. The memory module cover will now lift off.**
7. **Remove any installed memory modules from their sockets on the system board.**

Carefully spread apart the inner metal tabs of the memory module socket just far enough for the memory module to disengage from the socket (the module should pop up slightly). Then lift the memory module away from the socket.

8. **Reseat the memory modules, and then replace the memory module cover.**

A loose or disconnected memory module may cause intermittent memory problems. Removing and re-installing, or *reseating*, a memory module often corrects the problem.

Align the notch in the edge connector with the slot in the center of the memory module socket. Press the memory module's edge connector firmly into the socket. Pivot the module down until it clicks.

To replace the memory module cover, align the two tabs on the memory module cover with the memory module opening, and slide the cover in place.

NOTE: The memory module cover is not secure until the hard-disk drive is back in place.

Troubleshooting Memory

During POST, the computer checks the computer's memory, and then writes to and reads from the number of available bytes to ensure proper operation. If the memory count displayed is less than the amount installed, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. **Reboot the computer. Does the random-access memory (RAM) count displayed correctly match the actual amount of memory installed in the computer?**

Yes. The computer needed to update the memory; the memory check phase is OK now.

No. Go to step 2.

2. **Save all your work, exit any open application programs, and remove any installed batteries.**
3. **Turn off the computer, and disconnect it from the AC adapter. Then disconnect the AC adapter from AC power. Turn off any attached peripherals, and disconnect them from their power sources and then from the computer.**
4. **Ground yourself by touching one of the metal connectors on the back of the computer.**
5. **Turn the computer over, and remove the two screws securing the hard-disk drive.**

9. **Reinstall the hard-disk drive, align the screw holes, and replace the two screws removed in step 5.**
10. **Reboot the computer, and press <F2> when prompted to enter the Setup program.**
11. **In the Main menu of the Setup program, make sure that the value in the Extended Memory field is at least 15 MB.**

Yes. A memory module was loose; the memory check phase is OK now.

No. Go to step 12.

12. **Call Dell for technical assistance.**

See Chapter 5, "Getting Help," for instructions.

Troubleshooting the Built-In Display

If the computer is receiving power, but nothing appears on your display (such as light, text, or graphics) or the display image does not appear as you would expect,

make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure.

NOTE: The highest video resolution supported by a 12.1-inch SVGA built-in display is 800 x 600 pixels. A 13.3-inch XGA built-in display supports 1024 x 768 pixels. If your application program uses a higher resolution, you must attach an external video graphics array (VGA) monitor to your computer.

1. If the computer is running, press any key on the built-in keyboard. Is the full display readable?

Yes. The computer was in standby or suspend mode. The problem is resolved.

No. Go to step 2.

2. Is an external monitor connected to the computer?

Yes. Go to step 3.

No. Go to step 4.

3. Press the <Fn><F8> key combination. Is the full display readable?

Yes. The Video Mode option in the Setup program was set to CRT Mode.

No. Go to step 4.

4. Turn off the computer and any attached peripherals. Disconnect all peripherals from the computer.

5. Make sure the AC adapter is firmly connected to the computer and to an AC power source, or verify that a fully charged battery is properly seated in its compartment.

6. Turn on the computer. Is the display on?

Allow one minute for the computer to initialize its components.

Yes. Go to step 7.

No. Go to step 9.

7. Use the <Fn> down-arrow or <Fn> up-arrow key combination to adjust the brightness. Is the full display readable?

Yes. Go to step 8.

No. Go to step 9.

8. Has an error message appeared on the display, or has a beep code sounded?

Yes. Refer to Table 3-2 or Table 3-3 to find the message or beep code, respectively, along with its explanation. If you can't find the message or code, call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

No. If you still have a display problem but the display is not completely blank, run the Video test group in the Dell Diagnostics. Then call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

9. Turn off your computer, and connect an external monitor to the computer.

10. Turn on the computer and the monitor, and adjust the monitor's brightness and contrast controls. Is the monitor readable?

Yes. The computer's display may be defective. Call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

No. The computer's video controller on the system board may be defective. Call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

Troubleshooting an External Monitor

During POST, the computer checks to see if an external monitor is attached to the computer. If no image appears on the external monitor when the computer boots, make a copy of the Diagnostics Checklist found in Chapter 5 and fill it out as you complete the following procedure:

1. Is the Video Display Device option in the Setup program set to LCD Mode?

Yes. If the Video Display Device option is set to LCD Mode, the computer ignores the presence of an external monitor at start-up. Go to step 2.

No. Go to step 2.

2. Press the <Fn><F8> key combination on the built-in keyboard several times. Does an image appear on the external monitor?

Yes. The problem is resolved.

No. Go to step 3.

3. **Make sure the external monitor's video cable is firmly connected to the computer's external-monitor connector, and verify that the monitor's power cable (if it has one) is firmly plugged into an AC power source. Make sure the monitor is turned on.**
4. **Check the monitor cable for bent pins.**
5. **Turn off the computer, wait a minute, and then turn the computer back on. Adjust the monitor's brightness and contrast controls. Is the monitor readable?**

Allow one minute for the computer to initialize its components.

Yes. The problem is resolved.

No. Go to step 6.

6. **Raise your computer's display into viewing position, if necessary, and press <Fn><F8> to switch the video image from the external monitor to the display.**
7. **Use the <Fn> down-arrow or <Fn> up-arrow key combination to adjust the brightness. Is the full display readable?**

Yes. The external monitor may be defective. Go to step 8.

No. The video controller on the system board may be defective. Call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

8. **Turn off the computer and any attached peripherals. Disconnect all peripherals from the computer. Attach another external monitor to the computer.**

If you do not have another external monitor, call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

9. **Reboot the computer, and adjust the monitor's brightness and contrast. Is the monitor readable?**

Allow one minute for the computer to initialize its components.

Yes. The original monitor is defective. Call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

No. Call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

Troubleshooting the Serial and Parallel Ports

This section provides a procedure for troubleshooting the computer's serial and parallel ports (shown in Figure 3-4) and any attached peripheral devices.

If a system error message indicates a port problem or if equipment connected to a port seems to perform incorrectly or not at all, the source of the problem may be any of the following:

- A faulty connection between the I/O port and the peripheral device
- Incorrect settings for system setup options
- Incorrect settings in the operating system's configuration files
- A faulty cable between the I/O port and the peripheral device
- A faulty peripheral device
- Faulty I/O port logic on the system board
- Conflicting COM port settings
- Lack of drivers

Troubleshooting the Basic I/O Functions

Make a copy of the Diagnostics Checklist found in Chapter 5, and fill it out as you complete the following procedure:

1. **Check the settings for the Serial Port and Parallel Port Mode options in the System Devices menu of the Setup program.**

For information on the Setup program, see Chapter 2, "Customizing System Features." Are the communication port options set correctly for the peripheral devices connected to the computer?

Yes. Go to step 3.

No. Go to step 2.

2. **Change the Serial Port and Parallel Port Mode options to the appropriate settings, and then reboot the system.**

Is the problem resolved?

Yes. The problem is resolved.

No. Go to step 3.

- 3. Check the contents of your initialization and start-up files.** (See “Installing and Configuring Software” found earlier in this chapter.)

Are the port configuration commands correct?

Yes. Go to step 5.

No. Go to step 4.

- 4. Change the necessary statements in the start-up files.**

If the port problem is confined to a particular application program, see the application program’s documentation for specific port configuration requirements.

Is the problem resolved?

Yes. The problem is resolved.

No. Go to step 5.

- 5. Insert your diagnostics diskette into drive A, reboot the computer, and run the Serial/Infrared Ports test group and/or the Parallel Ports test group in the Dell Diagnostics.** (See Chapter 4, “Running the Dell Diagnostics.”)

The Serial/Infrared Ports test group and the Parallel Ports test group check the basic functions of the system board’s I/O port logic. Also, if a parallel printer is connected to the parallel port, the Parallel Ports test group tests the communication link between the system board’s I/O port logic and the printer.

Do the tests complete successfully?

Yes. Go to step 6.

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

- 6. If the problem persists, go to “Troubleshooting a Parallel Printer” or “Troubleshooting a Serial I/O Device” found later in this chapter.**

Troubleshooting a Parallel Printer

If the preceding procedure, “Troubleshooting the Basic I/O Functions,” indicates that the problem is with a parallel printer, use the following procedure:

- 1. Turn off the parallel printer and computer.**
- 2. Swap the parallel printer’s interface cable with a known working cable.**

- 3. Turn on the parallel printer and computer.**
- 4. Attempt a print operation on the parallel printer.**

Does the print operation complete successfully?

Yes. You probably need a new interface cable. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Go to step 5.

- 5. Run the parallel printer’s self-test.**

Does the self-test complete successfully?

Yes. Go to step 6.

No. The printer is probably defective. If you bought the printer from Dell, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.) If you purchased the printer elsewhere, take it to one of the manufacturer’s authorized service centers for repair.

- 6. Attempt another print operation on the parallel printer.**

Does the print operation complete successfully?

Yes. The problem is resolved.

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

Troubleshooting a Serial I/O Device

If the procedure titled “Troubleshooting the Basic I/O Functions” found earlier in this section indicates that the problem is with a device connected to one of the serial ports, use the following procedure:

- 1. Save any open application programs, and then turn off the computer and the serial device.**
- 2. Swap the device’s interface cable with a known working cable.**
- 3. Turn on the computer and the serial device.**

Is the problem resolved?

Yes. You probably need a new interface cable. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Go to step 4.

4. Turn off the computer and the serial device, and swap the device with a comparable working device.

For example, if your serial mouse has a problem, swap it with a serial mouse you know is working properly.

5. Turn on the computer and the serial device.

Is the problem resolved?

Yes. You probably need a new device. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

Troubleshooting the Infrared Port

This section provides a procedure for troubleshooting the computer’s infrared (IR) port.

Make a copy of the Diagnostics Checklist found in Chapter 5, and fill it out as you complete the following procedure:

1. Check the setting for the Infrared Port option in the System Devices menu of the Setup program.

For information on the Setup program, see Chapter 2, “Customizing System Features.” Is the Infrared option set correctly for the external device with which you are communicating?

Yes. Go to step 3.

No. Go to step 2.

2. Change the Infrared Port option to the appropriate setting, and then reboot the system.

Is the problem resolved?

Yes. The problem is resolved.

No. Go to step 3.

3. Insert your diagnostics diskette into drive A, reboot the computer, and run the Serial/IR Ports test group in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics.”) Do the tests complete successfully?

The Serial/Infrared Ports test group checks the basic functions of the computer’s infrared logic.

Yes. The infrared port is functioning properly. There may be a problem with the infrared application program or with the external device. Check the documentation that came with the application program and with the external device.

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

Troubleshooting the Touch Pad

This section provides a procedure for troubleshooting the computer’s built-in touch pad.

Make a copy of the Diagnostics Checklist found in Chapter 5, and fill it out as you complete the following procedure:

1. Check the setting for the PS/2 Mouse option in the System Devices menu of the Setup program.

For information on the Setup program, see Chapter 2, “Customizing System Features.” Is the PS/2 Mouse option set to Enabled?

Yes. Go to step 3.

No. Go to step 2.

2. Change the PS/2 Mouse option to Enabled, and then reboot the system. Does the touch pad work properly?

Yes. The problem is resolved.

No. Go to step 3.

3. Insert your diagnostics diskette into drive A, reboot the computer, and run the Mouse Test in the Dell Diagnostics. (See Chapter 4, “Running the Dell Diagnostics.”) Do the tests complete successfully?

The Mouse test checks the functionality of the mouse controller (which affects the ability to move the pointer around the screen) and the operation of the touch pad buttons.

Yes. The controller is functioning properly. If the problem persists, call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

No. Call Dell for technical assistance. (See Chapter 5, “Getting Help,” for instructions.)

Troubleshooting Audio Functions

This section provides a procedure for troubleshooting the computer's sound functions.

Make a copy of the Diagnostics Checklist found in Chapter 5, and fill it out as you complete the following procedure:

Insert your diagnostics diskette into drive A, reboot the computer, and run the Audio test group in the Dell Diagnostics. (See Chapter 4, "Running the Dell Diagnostics.")
Do the tests complete successfully?

The Audio test group checks the functionality of the audio controller.

Yes. The controller is functioning properly. If the problem persists, call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

No. Call Dell for technical assistance. (See Chapter 5, "Getting Help," for instructions.)

Chapter 4

Running the Dell Diagnostics



Unlike many diagnostic programs, the Dell Diagnostics allows you to check the computer's hardware without any additional equipment and without destroying any data. By using the Dell Diagnostics, you can have confidence in the computer's operation. If you find a problem you cannot solve by yourself, the Dell diagnostic tests can provide you with important information you will need when talking to Dell's service and support personnel.

CAUTION: Use the Dell Diagnostics to test *only* your Dell computer. Using this program with other computers may cause incorrect computer responses or result in misleading error messages.

NOTE: If the computer does not boot, call Dell for technical assistance. See Chapter 5, "Getting Help," for instructions.

Features of the Dell Diagnostics

To troubleshoot components or devices, run the appropriate test (test group or subtest) in the diagnostics on your *Dell Diagnostics Diskette*. The diagnostics program exercises the functional components and devices of the computer more vigorously and thoroughly than they are exercised during normal operation.

The Dell Diagnostics provides a series of menus and options from which you choose particular test groups or subtests. Each diagnostic test group or subtest allows you to control important testing parameters. You can also control the sequence in which the tests are run. The

diagnostic test groups or subtests also have these helpful features:

- Options that let you run tests individually or collectively
- An option that allows you to choose the number of times a test group or subtest is repeated
- The ability to display test results, print them, or save them in a file
- Options to suspend testing when an adjustable error limit is reached
- A menu option called About that briefly describes each test and its parameters
- Status messages that inform you whether test groups or subtests were completed successfully
- Error messages that appear if any problems are detected

When to Use the Dell Diagnostics

Whenever a major component or device in the computer does not function properly, the component or device may have failed. As long as the microprocessor and input/output (I/O) components of the computer (the display, keyboard, and diskette drive) are working, use the Dell Diagnostics. If you are experienced with computers and know what component(s) you need to test, select the appropriate diagnostic test group(s) or subtest(s). If you are unsure about how to begin diagnosing a problem, read the rest of this chapter.

Before You Start Testing

Follow these steps to safeguard your master copy of the *Dell Diagnostics Diskette*:

1. Make a working copy of the Dell Diagnostics Diskette on a blank diskette.

Refer to your operating system's documentation for information on how to duplicate diskettes. Put the original diskette away for safekeeping.

2. Disconnect any attached printers.

3. Set default values in the Setup program.

- In the Exit menu, choose Get Default Values.
- Choose Yes when prompted to load the default configuration.

For additional instructions, see the topic titled "Setup Program" in the online *System User's Guide*.

4. In the Setup program, confirm the following settings in the System Devices menu:

Plug & Play OS = [No]
Serial Port = [Auto]
Infrared Port = [Auto]
Parallel Port = [Auto]
Audio = [Enabled]
1st DMA Channel = [DMA 1]
2nd DMA Channel = [DMA 3]

5. In the Power menu of the Setup program, confirm that the Power Management Mode option is set to Disabled.

6. Press <F10> to save the settings and exit the Setup program.

7. Attach an AC adapter to the computer.

Although it is possible to run the Dell Diagnostics on a computer using battery power, connecting the computer to AC power helps ensure that power will not be lost during the tests.

Starting the Dell Diagnostics

After you complete the preliminary instructions specified in the previous section, follow these steps to start the diagnostics:

NOTE: You must have a diskette-drive cable to perform the following procedure. If you do not have a diskette-drive cable, you can order one from Dell. See Chapter 5, "Getting Help," for information on contacting Dell.

1. Install a CD-ROM drive in the options bay.

For instructions, see the topic titled "Options Bay" in the online *System User's Guide*.

2. Attach the diskette drive to the parallel port connector on the back of the computer.

For instructions, see the topic titled "Parallel Devices" in the online *System User's Guide*.

3. Turn off the computer.

4. Place the Dell Diagnostics Diskette in the diskette drive, and boot the computer.

NOTE: Before you read the rest of this chapter, you may want to start the Dell Diagnostics so you can see the menus on your display.

When you start the diagnostics, the Dell logo screen appears, and a program tests the random-access memory (RAM) that will be used by the diagnostics.

If a failure in RAM is detected, a message appears on the screen telling you the memory address of the defective memory module. Write down the memory address and see Chapter 5, "Getting Help," for instructions on obtaining technical assistance.

If no errors are found in RAM, the diagnostics loads and the Diagnostics Menu appears (see Figure 4-1). The menu allows you to exit to the MS-DOS prompt.

How to Use the Dell Diagnostics

When you select Run All Tests or Run Specific Tests from the Diagnostics Menu, the main screen of the diagnostics appears (see Figure 4-2). The main screen lists the diagnostic test groups, gives information about the configuration of the computer, and allows you to select options from a menu.

To select an option from the Diagnostics Menu, highlight the option and press <Enter>, or press the key that corresponds to the highlighted letter in the option.

Information on the main screen of the diagnostics is presented in the following five areas:

- Two lines at the top of the screen identify the diagnostics and give its version number.
- On the left side of the screen, the Available test groups area lists the diagnostic test groups in the order they will be run if you select the Run menu option and then the All menu option. Press the up- or down-arrow key to highlight a test group.
- On the right side of the screen, the System Configuration area lists the computer's current hardware settings.
- At the bottom of the screen is the menu area. The first line lists the options you can select; press the left- or right-arrow key to highlight a menu option. The second line gives information about the option currently highlighted.

CAUTION: While the diagnostic tests are running, do not interrupt the tests, do not unplug the AC adapter (or plug one in if you are running the tests from battery power), and do not reboot the computer. Interrupting the tests in any of these ways could lead to the loss of system data.

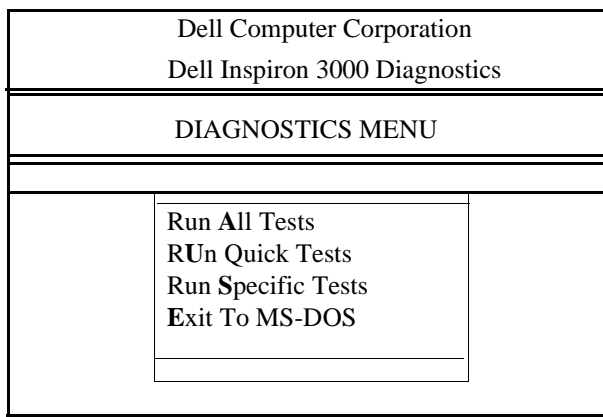


Figure 4-1. Diagnostics Menu

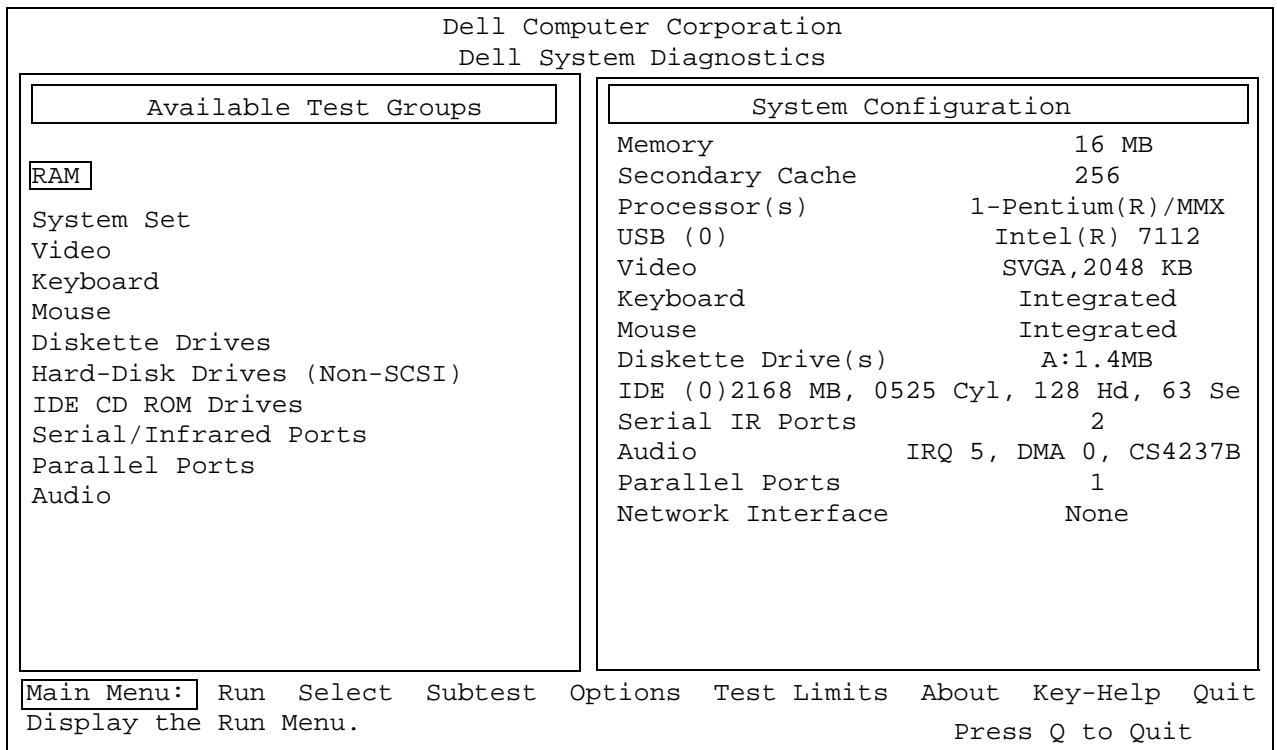
For a quick check of your system, select the Run Quick Tests option. This option runs only the subtests that do not require user interaction and that do not take a long time to run. Dell recommends that you choose this option first to increase the odds of tracing the source of the problem quickly. For a complete check of your system, select the Run All Tests option. To check a particular area of your system, select the Run Specific Tests option.

Completing the Dell Diagnostics

After you complete the Dell Diagnostics, use the Setup program to restore the computer's previous configuration.

In the Exit menu of the Setup program, select Reset to Factory Default Values or Reset to Previous Values.

Selecting Reset to Factory Default Values restores the Setup configuration to its original state. Selecting Reset to Previous Values restores the last user-specified configuration.



* On the Dell Inspiron 3000, a CD-ROM drive installed in the options bay is recognized as IDE Drive 1.

Figure 4-2. Main Screen of the Dell Diagnostics

Confirming the System Configuration Information

When you boot the computer from your diagnostics diskette, the diagnostics checks your system configuration information and displays it in the System Configuration area on the main screen.

The following sources supply this configuration information for the diagnostics:

- The system configuration information that you selected through the system setup options
- Identification tests of the microprocessor, the video controller, the keyboard controller, and other key components

- Basic input/output system (BIOS) configuration information temporarily saved in RAM

Do not be concerned if the System Configuration area does not list the names of all the components or devices you know are part of the computer. For example, you may not see a printer listed, although you know one is attached to the computer. Instead, the printer is listed as a parallel port. The computer recognizes the parallel port as LPT1, which is an address that tells the computer where to send outgoing information and where to look for incoming information. Because your printer is a parallel communications device, the computer recognizes the printer by its LPT1 address and identifies it as a parallel port.

How to Use the Menu

One of the menu options is already highlighted at the bottom of the screen. You can move the highlighting from one option to another by pressing the left- or right-arrow key. As you move from one menu option to another, a brief explanation of the currently highlighted option appears on the bottom line of the screen.

If you want more information about a test group or subtest, move the highlight to the About option and press <Enter>. After reading the information, press <Esc> to return to the previous screen.

Main Menu Options

The Main menu of the diagnostics main screen lists eight options: Run, Select, Subtest, Options, Test Limits, About, Key-Help, and Quit.

NOTE: Before running any test groups or subtests (by selecting Run and then All), you should consider setting global parameters within the Options option. They offer you greater control over how the test groups or subtests are run and how their results are reported.

There are two ways to select a menu option:

- Type the capitalized letter in the option (for example, type **r** to select the Run option).
- Use the left- or right-arrow key to highlight the option, and then press <Enter>.

Whenever one of the eight options is selected, additional choices become available.

The following subsections explain the menu options as listed from left to right in the Main menu.

Run

Run displays five options: One, Selected, All, Key-Help, and Quit Menu. If you select One, only the highlighted test group is run. If you choose Selected, the computer runs the test groups, or the selected subtests within the test groups that you selected. (Select test groups or subtests within test groups with the Select or Subtest options, as described in the following subsections.) If you select All, all of the subtests in all of the test groups are run.

(The test groups or subtests are run in the order they are listed.)

The Key-Help option displays a list of key controls available for the selected option. The Quit Menu option returns you to the Main menu.

Select

Select allows you to select individual test groups to tailor the testing process to your particular needs. You can choose one or more test groups and run them sequentially or individually. When you choose Select, five options are displayed: All, One, Clear All, Key-Help, and Quit Menu.

To select all the test groups, highlight All in the Select menu, and press <Enter>. To select an individual test group, either press the up- or down-arrow key to highlight the test group and then press the <Spacebar>, or highlight One in the Select menu and press <Enter>.

To reverse a test group selection, highlight the test group and press the <Spacebar>. To clear all selected test groups, select Clear All.

The Key-help option displays a list of key controls available for the selected option. The Quit Menu option returns you to the Main menu.

Subtest

Most of the test groups consist of several subtests. Use the Subtest option to select individual subtests within the test group(s).

When you select Subtest, many of the same options as those on the Main menu are displayed: Run, Select, Options, Test Limits, About, Key-Help, and Quit Menu. Each of these options is explained in the following subsections.

Run (Under Subtest)

Run in the Subtest menu displays five options: One, Selected, All, Key-Help, and Quit Menu. If you select One, only the highlighted subtest is run. If you choose Selected, only the selected subtests are run. If you select All, every subtest in the selected test group is run. (The subtests are run in the order they are listed.)

The Key-Help option displays a list of available key controls. The Quit Menu option returns you to the previous menu.

Select (Under Subtest)

Select in the Subtest menu allows you to select individual subtests to tailor the testing process to your particular needs. You can choose one or more subtests from the list. When you choose Select, five options are displayed: All, One, Clear All, Key-Help, and Quit Menu.

To select all the test groups, highlight All in the Select menu, and then press <Enter>. To select an individual subtest, either highlight the subtest and press the <Spacebar> or highlight One and press <Enter>.

To reverse a subtest selection, highlight the subtest and press the <Spacebar>. To clear all selected subtests, select Clear All.

The Key-Help option displays a list of available key controls. The Quit Menu option returns you to the previous menu.

Options (Under Subtest)

The Options option in the Subtest menu functions in the same manner as the Options option in the Main menu. For information on this option, see “Options” found later in this section.

Test Limits (Under Subtest)

The Test Limits option in the Subtest menu functions in the same manner as the Test Limits option in the Main menu. For information on this option, see “Test Limits” found later in this section.

About (Under Subtest)

The About option in the Subtest menu displays information about the highlighted subtest, such as its limits and parameters and how to set them.

Key-Help (Under Subtest)

The Key-Help option in the Subtest menu displays a list of available key controls.

Quit Menu (Under Subtest)

The Quit Menu option in the Subtest menu returns you to the Main menu.

Options

Table 4-1 lists all possible values for each global parameter of Options. A brief description of each parameter follows the table. To select a parameter, press the up- or down-arrow key. To change the values within fields, use the left- or right-arrow key, the <Spacebar> key, or the plus (+) and minus (–) keys. If the value within a field is numeric, you can type in the number. (If you make a mistake, type in zeros until the field is filled with zeros and then start again.)

Table 4-1. Option Parameters

Option Limit	Possible Values
Number of Times to Repeat Test(s)	0001 through 9999, or 0000, which loops indefinitely until you press the <Ctrl> and <Break> keys. The default is 0001.
Maximum Errors Allowed	0000 through 9999, where 0000 means that there is no error limit. The default is 0001.
Pause for User Response	Yes, No Allows you to decide whether tests will wait for user input. The default is Yes (to wait for user input).
Output Device for Status Messages	Display, Printer, File If you have a printer attached to the computer, you can use it to print the <i>status</i> messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select File, the status messages are printed to a file named result on the diagnostics diskette. The default is Display.
Output Device for Error Messages	Display, Printer, File If you have a printer attached to the computer, you can use it to print the <i>error</i> messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select File, the error messages are printed to a file named result on the diagnostics diskette. The default is Display.

Number of Times to Repeat Test(s)

This parameter specifies the number of times the tests run when you select Run. To change the default, type in the desired value. If you type 0 (zero), the test is run until you press <Ctrl><Break>.

Maximum Errors Allowed

This parameter specifies the maximum number of errors that can occur before testing is suspended. The error count begins from zero each time you run a subtest or test group individually or each time you select All to run all of them. To change the default, type in the desired value. If you type 0 (zero), testing continues, regardless of the number of errors found, until you press <Ctrl><Break>.

Pause for User Response

If this parameter is set to Yes, the diagnostics pauses when one of the following occurs:

- Your interaction is needed to verify the Video test group screens, the Keyboard test group key functions, or other types of interaction such as inserting a diskette.
- The maximum error limit is reached.

To continue testing, press any key.

If the Pause for User Response parameter is set to No, the diagnostics ignores subtests that require your interaction; certain subtests can run only if this option is set to Yes because they require user interaction. Set this parameter to No when you want to bypass subtests that require user interaction—such as when you run the diagnostics overnight.

Output Device for Status Messages

Ordinarily, all status messages appear only on the display. This parameter allows you to direct status messages to either a printer or a file, in addition to the display. Use the right-arrow key to select the option you want. If you choose the Printer option, status messages print as they occur. If you choose the File option, status messages are written to a file named **result**. This file is automatically created on the diagnostics diskette when you run the diagnostics. If the **result** file already exists on the diskette, new status messages are added to it.

The result file is an ordinary American Standard Code for Information Interchange (ASCII) text file. You can access the **result** file through Windows Notepad by performing the following steps:

1. **Select Quit Menu to exit the diagnostics and return to the MS-DOS prompt.**
2. **Remove the *Dell Diagnostics Diskette* from the diskette drive.**
3. **Use the <Ctrl><Alt> key combination to reboot the computer.**
4. **If necessary, start your operating system.**
5. **Insert the *Dell Diagnostics Diskette* into the diskette drive.**
6. **Double-click The Notepad Icon. Then Select Open from the File menu.**
7. **In the File Name text box, type a:\result and press <Enter>.**

The contents of the file appear on the display.

You can also access the **result** file with the MS-DOS **type** command:

1. **Select Quit Menu to exit the diagnostics and return to the operating system prompt.**
2. **At the operating system prompt, type the following command and press <Enter>:**

```
type result
```

The contents of the file appear on the display.

After running particular diagnostic tests and viewing the status messages generated by the tests in the **result** file, you can delete the contents of the file so that it is empty

for the next set of messages generated. Otherwise, the next messages are added to the end of the previous ones in the file.

Output Device for Error Messages

Ordinarily, all error messages appear only on the display. This parameter allows you to direct error messages to either a printer or a file, in addition to the display. Use the right-arrow key to select the option you want. If you choose the Printer option, error messages print as they occur. If you choose the File option, error messages are written to the **result** file used for status messages. This file is automatically created on your diagnostics diskette when you run the diagnostics. If the **result** file already exists on the diskette, new error messages are added to it.

The **result** file is an ordinary ASCII text file. You can access and review the **result** file in Windows Notepad or with the MS-DOS **type** command as described in the previous subsection, "Output Device for Status Messages."

After running particular diagnostic tests and viewing the error messages generated by the tests in the **result** file, you can delete the contents of the file so that it is clear for the next set of messages generated. Otherwise, the next messages are added to the end of the previous ones in the file.

Test Limits

NOTE: The diagnostics program sets default limits on all tests. The only reason to change the defaults would be to limit the amount of testing done. An exception is the default limit for testing super video graphics array (SVGA) modes. If you are testing an external monitor, change the default to Yes.

The RAM test group, the Video test group, the Serial/Infrared Ports test group, the Diskette Drives test group, the Parallel Ports test group, and the Hard-Disk Drives (Non-SCSI) test group allow you to designate limits. Whether you select Test Limits for a highlighted test group (from the Main menu) or a subtest (from the Sub-test menu), you set the limits for all the subtests in that test group. When you select Test Limits, a new screen appears and the Key Help area lists keys to use with the new screen.

How you change a value for the limits of a test group or subtest depends on the type of parameter associated with it. Different keys are used to change values for different types of parameters. For example, memory address limits specified for the RAM test group are changed by typing in numbers over the digits of a given limit or by pressing the plus (+) or minus (-) key to increase or decrease the given limit. In contrast, to set limits for the Serial Ports test group, use the <Spacebar> to toggle between Yes and No.

After you are satisfied with the limits, return to the main screen of the diagnostics by pressing the <Esc> key. The values you selected under Test Limits remain in effect until you change them or exit the diagnostics. The values are reset to their defaults when you restart the diagnostics.

Press <Page Down> to select the next menu for the test limits in a category.

About

About in the Main menu displays information about the highlighted test group, such as limits and parameters and how to set them.

Key-Help

Key-Help displays a list of key controls available for the selected option.

Quit

Select Quit from the Main menu to exit the diagnostics and return to an MS-DOS prompt. Remove your diagnostics diskette from drive A, and reboot the computer by pressing <Ctrl><Alt>.

CAUTION: It is important that you quit the diagnostics program correctly, because the program writes data to the computer's memory that can cause problems unless properly cleared.

Tests in the Dell Diagnostics

The diagnostics is organized by components into test groups and subtests within each test group. Each subtest is designed to detect any errors that may interfere with the normal operation of a specific device of the computer.

NOTE: Any subtest requiring hardware not listed in the System Configuration area appears to run, but the subtest concludes with a status message stating Component not available.

Table 4-2 lists the diagnostic test groups, their subtests, and comments concerning their use.

Table 4-2. Dell Diagnostics Tests

Test Groups	Subtests	Description
RAM	Quick Test Comprehensive Test	Tests the RAM.
System Set	CMOS Confidence Test DMA Controller Test Real-Time Clock Test System Speaker Test Secondary Cache Test System Timers Test Interrupt Controller Test Coprorocessor Calculation Test Coprorocessor Error Exception Test PC Card Controller Test USB Register Test	Tests the system board's support chips, DMA controller, computer timer, NVRAM, speaker controller, and, if appropriate, the external cache and the thermal-control device. Tests the math coprocessor that is internal to the microprocessor. Tests the PC Card controller on the system board. Checks the built-in registers of the USB interface. This subtest does not test USB peripherals.
Video	Video Memory Test Video Hardware Test Text Mode Character Test Text Mode Color Test Text Mode Pages Test Graphics Mode Test Color Palettes Test Solid Colors Test	Tests the monitor by checking various aspects of video output.
Keyboard	Keyboard Controller Test Keyboard Key Sequence Test Keyboard Interactive Test Stuck Key Test	Tests the keyboard by checking the keyboard controller and by finding keys that <i>stick</i> or respond incorrectly.
Mouse	Mouse Test	Tests the electronic pointing device (integrated touch pad, external serial or PS/2 mouse).
Diskette Drives	Change Line Test Seek Test Read Test Write Test	Tests a drive that uses removable diskettes. Also tests the associated controlling devices and important parts of the cabling.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table 4-2. Dell Diagnostics Tests (continued)

Test Groups	Subtests	Description
Hard-Disk Drives (Non-SCSI)	Disk Controller Test Seek Test Read Test Write Test	Tests a drive that uses fixed, internal disks. Also tests the associated controlling devices.
IDE CD ROM Drives	Drive Controller Test Seek Test Read Test Audio Output Test Eject Removable Media	Tests an IDE drive that uses removable CD media. Also tests the associated controlling devices.
Serial/Infrared Ports	Serial/Infrared Baud Rate Test Serial/Infrared Interrupt Test Serial/Infrared Internal Transmission Test Serial External Transmission Test	Tests the components through which peripherals that use the serial or infrared port, such as communications devices, send and receive data.
Parallel Ports	Parallel Internal Test Parallel External Loopback Test Parallel External Interrupt Test Parallel Printer Pattern Test	Tests the components through which peripherals that use the parallel port, such as printers, send and receive data.
Audio	Software Reset Test Interrupt Test DMA Test FM Sound Playback Test Analog Sound Playback Test Record and Playback Test	Tests the operation of the audio chip set. Tests the record and playback ability of the internal microphone and speakers.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Error Messages

When you run a test group or subtest in the diagnostics, error messages may result. These particular error messages are not covered in this guide because the errors that generate these messages can be resolved only with a technician's assistance. Record the messages on a copy of the Diagnostics Checklist found in Chapter 5, and read that chapter for instructions on obtaining technical assistance.

RAM Test Group

The RAM test group subtests check all the directly addressable RAM.

Why Run a RAM Test?

Faulty memory can cause a variety of problems that may not, at first glance, appear to be happening in RAM. If the computer is displaying one or more of the following symptoms, run both the subtests in the RAM test group to verify that the memory is not at fault:

- A program is not running as usual, or a proven piece of software appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is functioning properly by moving it to another computer and running it there.)
- The computer periodically locks up (becomes unusable and must be rebooted), especially at different places and times in different programs.

Subtests

Two subtests are available for RAM: the Quick Test and the Comprehensive Test. The Quick Test performs an address check to determine whether the computer is properly setting and clearing individual bits in RAM, and whether the RAM read and write operations are affecting more than one memory address location at one time. This subtest checks all available RAM. The Comprehensive Test also performs an address check, as well as the following:

- Data pattern checks, to look for RAM bits that are stuck high or low, short-circuited data lines, and

some data pattern problems that are internal to the memory chips

- A parity check that verifies the ability of the memory subsystem to detect errors
- A refresh check, to verify that the dynamic RAM (DRAM) is being recharged properly

System Set Test Group

The subtests in the System Set test group check the computer's basic system board components and verify their related functions.

Why Run a System Set Test?

The System Set subtests double-check many system board components, such as the computer's I/O circuitry, that are tested by other test groups or subtests in the diagnostics. You should run the System Set test group if you are having a problem and cannot isolate the failure or malfunction to a particular system board component.

The System Set test group also verifies the proper operation of other computer components, such as the speaker, that are not tested elsewhere in the diagnostics.

The following symptoms usually suggest a problem with a component or subassembly that warrants running a System Set subtest:

- A program is not running as usual, or a proven piece of software appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is functioning properly by moving it to another computer and running it there.)
- A PC Card you previously accessed can no longer be accessed.
- The computer periodically locks up, especially at different places and times in different programs.
- Parity errors or page fault failures (any error message that contains the word parity or page fault) occur at any time during operation. These errors are usually accompanied by a reference to an address, which you should record on a copy of the Diagnostics Checklist found in Chapter 5.

- Correcting errors in the system configuration information does not resolve a problem.
- The computer's clock/calendar stops.
- The speaker no longer functions. The problem could be a failure of the system timers as well as a failure of the speaker itself. Run the System Timers Test, followed by the System Speaker Test.
- If a peripheral device appears to malfunction, run the Interrupt Controllers Test. If the computer fails the test, the problem lies with the interrupt controller; if the computer passes, then the problem lies with the peripheral device.
- A spreadsheet program or other type of mathematical application runs abnormally slow, generates error messages concerning calculations or operations, runs incorrectly, or generates incorrect results; or a proven piece of the program appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is not at fault by moving the program to another computer and running it there.)
- The computer halts in the middle of performing calculations or complex mathematical operations.

Subtests

The subtests that constitute the System Set test group and the computer functions they confirm follow:

- **CMOS Confidence Test**
Checks the nonvolatile RAM (NVRAM) for accessibility and reliability of data storage by performing a data pattern check and verifying the uniqueness of memory addresses.
- **DMA Controller Test**
Tests the direct memory access (DMA) controller and verifies the correct operation of its page and channel registers by writing patterns to the registers.
- **Real-Time Clock Test**
Confirms the functionality and accuracy of the computer's real-time clock (RTC).
- **System Speaker Test**
Checks the functionality of the speaker by generating eight tones.

- **Secondary Cache Test**
Confirms the functionality of the secondary (external) cache on the system board.
- **System Timers Test**
Checks the timers used by the microprocessor for event counting, frequency generation, and other functions. Only the functions that can be activated by software are tested.
- **Interrupt Controller Test**
Generates an interrupt on each interrupt request (IRQ) line to verify that devices using that line can communicate with the microprocessor and that the interrupt controller sends the correct memory addresses to the microprocessor.
- **Coprocessor Calculation Test**
Checks the use of different types of numbers and the math coprocessor's ability to calculate correctly.
- **Coprocessor Error Exception Test**
Verifies the math coprocessor's ability to handle errors and to send IRQs to the microprocessor.
- **PC Card Controller Test**
Checks the functionality of the PC Card controller on the system board.
- **USB Register Test**
Checks the onboard registers of the USB interface. This subtest does not test USB peripherals.

Video Test Group

The subtests in the Video test group verify the proper operation of the video controller and the video control circuitry installed in the computer. These subtests check for the correct operation of the readable registers in the video circuitry and the controller. They write, read, and verify data patterns in the cursor registers of the controller. The Video test group also provides additional subtests to test the color features of the color display or an external color monitor.

NOTE: The video subsystem of your computer's display may support video resolutions that are not supported on an external monitor. When the video subtests are run on

an external monitor, some of the test screens may flicker and appear to malfunction. This condition does not affect the accuracy of the video subtests or indicate a hardware problem.

Why Run a Video Test?

Many of the symptoms that would prompt you to run a subtest in the Video test group are obvious, because the display is the visual component of the computer. Before you run the Video test group or any of its subtests, you should make sure that the problem is not occurring in the software or caused by a hardware change.

If the following symptoms still occur, run the appropriate test(s) as follows:

- If your display or external monitor shows a partially formed or distorted image, run *all* of the subtests in the Video test group.
- If the alignment of text or images is *off*, regardless of the program you are running, run the Text Mode Character Test, Text Mode Pages Test, and Graphics Mode Test.
- If the color on the display or external monitor is intermittent or not displayed at all, run the Text Mode Color Test, Color Palettes Test, and Solid Colors Test.
- If your display or external monitor malfunctions in one mode but works fine in another (for example, text is displayed correctly, but graphics are not), run the Text Mode Character Test, Text Mode Color Test, Text Mode Pages Test, and Graphics Mode Test.

Subtests

The eight subtests in the Video test group confirm the following video functions:

- Video Memory Test
Checks the read/write capability of the video memory in various video modes
- Video Hardware Test
Checks the cursor registers and the horizontal and vertical retrace bit registers in the video controller

- Text Mode Character Test
Checks the video subsystem's ability to present data in text modes
- Text Mode Color Test
Checks the video subsystem's ability to present color in text modes
- Text Mode Pages Test
Checks the video subsystem's ability to map and present all available video pages on the screen, one page at a time
- Graphics Mode Test
Checks the video subsystem's ability to present data and color in graphics modes
- Color Palettes Test
Checks the video subsystem's ability to display all of the available colors
- Solid Colors Test
Checks the video subsystem's ability to show screens full of solid colors, and allows you to check for missing color pixels

Many of these tests display characters or graphics on the screen for you to verify. Samples of these screens are shown in Appendix B, "Diagnostic Video Tests."

NOTE: The default limit for testing SVGA modes is No. If you are testing an external monitor, change the default to Yes.

Keyboard Test Group

The subtests in the Keyboard test group verify the correct operation of your keyboard and the keyboard controller chip.

NOTE: If you test the <Fn> key, use either the Microsoft Windows logo or the menu keys near the spacebar when prompted to press the <----> key.

Why Run a Keyboard Test?

Keyboard problems are not always caused by the keyboard. For example, a complete lockup of the computer, rendering the keyboard inoperable, is probably not caused by a problem with the keyboard. There are two

symptoms that are likely to be keyboard-related. Sometimes, the configuration of a program changes the function of a key or key combination. Similarly, key configuration programs like ProKey can change a key's function. Because these programs are memory resident, be sure to clear them out of the computer's memory before running a subtest in the Keyboard test group. (Clear them from memory by booting the computer from the *Dell Diagnostics Diskette*.) When these possibilities have been eliminated, and if the following symptoms occur, you should run one or more of the subtests in the Keyboard test group:

- When you press a key, the character represented by that key appears repeatedly; the key seems to be stuck. Run the Stuck Key Test.
- When you press a key and the response is different from the usual response or the response you anticipated, the key contact may be damaged. Run the Keyboard Interactive Test.
- When a key does not work at all, run *all* of the subtests in the Keyboard test group.

Subtests

The four keyboard subtests confirm the following keyboard functions:

- **Keyboard Controller Test**
Confirms the ability of the keyboard controller chip to communicate with the keyboard and confirms the programming of the controller chip
- **Keyboard Key Sequence Test**
Verifies that the keys on the keyboard function correctly when you press them in a predefined order
- **Keyboard Interactive Test**
Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a malfunctioning key
- **Stuck Key Test**
Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a repeating key signal

Mouse Test

The Mouse test checks the functionality of the mouse controller (which affects the ability to move the touch pad/mouse pointer around the screen with its corresponding movement on your desk or pad) and the operation of the touch pad/mouse buttons.

Why Run the Mouse Test?

Touch pad or mouse problems are as likely to be caused in RAM as they are to be caused by a faulty touch pad or mouse. Three sources of problems include the configuration of a program (which changes the function of the touch pad or mouse), memory-resident programs like Sidekick or ProKey, and failure of a device driver (the software that controls the functions of a touch pad or mouse). If these possibilities have been eliminated and the following symptoms persist, run the Mouse test:

- When you press a touch pad or mouse button, the function of the button continues; the button seems to be stuck.
- If the response when you press a touch pad or mouse button is different from the usual response or the response you anticipated, the button contact may be damaged.
- A touch pad or mouse button does not work at all.
- The cursor does not respond on the screen in accordance with the movements you make with the touch pad or external mouse.

Subtests

There are no subtests for the Mouse test.

Diskette Drives Test Group

The subtests in the Diskette Drives test group allow you to test diskette drives of all capacities.

NOTES: Before running the Diskette Drives test group, install a CD-ROM drive in the options bay and attach the diskette drive to the parallel connector on the back of the computer. The subtests in the test group will fail if you do not have a diskette drive attached to the parallel connector.

You must have a diskette-drive cable to perform the following procedure. If you do not have a diskette-drive cable, you can order one from Dell. See Chapter 5, “Getting Help,” for information on contacting Dell.

Why Run a Diskette Drives Test?

Very often, a diskette drive problem may first appear to be a diskette problem. A box of defective diskettes might produce faulty-drive error messages. The test results can be confusing, so you should run the subtests in the Diskette Drives test group more than once using diskettes from different sources.

Another possible cause of diskette drive problems is human error—for example, typing a command in an incorrect form (usually called a *syntax* error). Be sure you have entered the command properly.

When the diskette and command syntax are eliminated as causes, the following symptoms usually suggest a drive problem and warrant running a subtest in the Diskette Drives test group:

- An error message appears on the screen stating that the computer cannot *read* from or *write* to a diskette.
- A diskette cannot be properly formatted, or format error messages appear on the screen.
- Data on diskettes is corrupted or lost; these problems may be intermittent.

Subtests

The four diskette drive subtests available in the Diskette Drives test group confirm the following drive functions:

- **Change Line Test**
Checks for bent pins on the diskette drive controller and for defective lines on the diskette cable
- **Seek Test**
Checks the drive’s ability to search for a specified track on the diskette and to position the read/write heads of the drive to all tracks
- **Read Test**
Positions the read/write heads at each cylinder of the diskette and verifies that all tracks on the diskette can be read correctly

- **Write Test**

Positions the read/write heads at each cylinder of the diskette and verifies that all tracks on the diskette can be written to correctly

Hard-Disk Drives (Non-SCSI) Test Group

The subtests in the Hard-Disk Drives (Non-SCSI) test group check the functionality of up to two hard-disk drives of any capacity. The subtests check the storage capability of a drive as well as the hard-disk drive controller (which affects the ability to read from and write to the drive).

Why Run a Hard-Disk Drives Test?

If you check your hard-disk drive to determine the amount of available space, your operating system will probably report problem areas. Problem areas on hard-disk drives are common, because most hard-disk drives have a small amount of space that is not usable. The hard-disk drive keeps a record of this space so that the computer will not attempt to use it. Identification of unusable disk space, unless it is an unusually large amount (over five percent of the possible total), should not be regarded as a cause for testing the hard-disk drive.

These are the most common symptoms that might prompt you to test the hard-disk drive:

- The hard-disk drive fails during the boot routine.
- *Seek* errors are reported by the operating system or application programs.
- An error message appears on the screen stating that the computer cannot *read* from or *write* to the hard-disk drive.
- Data on the hard-disk drive is corrupted or lost; these problems may be intermittent. Once saved by a program, files cannot be properly recalled.

Subtests

The four subtests in the Hard-Disk Drives (Non-SCSI) test group confirm the following drive functions:

- **Disk Controller Test**
Checks the internal microcode of the hard-disk drive controller
- **Seek Test**
Checks the drive's ability to search for a specified track on the drive and to position the read/write heads of the drive to all tracks
- **Read Test**
Positions the read/write heads at each cylinder of the drive and verifies that all tracks on the drive can be read correctly
- **Write Test**
Positions the read/write heads at each cylinder of the drive and verifies that all tracks on the drive can be written to correctly

IDE CD ROM Drives Test Group

The subtests in the IDE CD ROM Drives test group check the functionality of the integrated drive electronics (IDE) CD-ROM drive when it is installed in the options bay. Before conducting an IDE CD ROM test, insert into the CD-ROM drive a CD with audio and data tracks (such as a multimedia CD).

NOTES: Before running the IDE CD ROM Drives test group, install the CD-ROM drive in the options bay and attach the diskette drive to the parallel connector on the back of the computer. If you do not have a CD-ROM drive in the options bay and the diskette drive attached to the parallel port, the subtests fail.

You must have a diskette-drive cable to perform the following procedure. If you do not have a diskette-drive cable, you can order one from Dell. See Chapter 5, "Getting Help," for information on contacting Dell.

The Audio Output Test requires a CD with audio tracks; all other subtests in this test group require a CD with data tracks. If the CD-ROM drive contains a CD that does not have the required data or audio tracks, the subtest fails.

Why Run an IDE CD ROM Drives Test?

If you encounter a problem while using an application program on a CD, the problem could result from the disc or from the drive. When you encounter problems, first try using a different CD. If the problem recurs, run the IDE CD ROM Drives test group.

These are the most common symptoms that might prompt you to test an IDE CD-ROM drive:

- *Seek* errors are reported by the operating system or application programs.
- An error message appears on the screen stating that the computer cannot read from an IDE CD-ROM drive.

Subtests

The five subtests in the IDE CD ROM Drives test group confirm the following drive functions:

- **Drive Controller Test**
Causes the drive to execute its internal self-test.
- **Seek Test**
Checks the drive's ability to search for each block on the device.
- **Read Test**
Positions the read heads at each block of the device for reading data and verifies that all blocks on the device can be read correctly.
- **Audio Output Test**
Causes the drive to begin playing the first audio track on an audio CD. (To determine if the test passed, listen to the audio output of the drive.)
NOTE: The Audio Output Test does not run automatically as part of the IDE CD ROM Drives test group; you must select the subtest individually.
- **Eject Removable Media**
Checks the drive's ability to eject the CD tray.

Serial/Infrared Ports Test Group

The subtests in the Serial/Infrared Ports test group check the computer's interface with external devices (such as a serial mouse or a printer). The subtests in this test group are not intended as a diagnostic test for the external device itself.

Why Run a Serial/Infrared Ports Test?

It may not be immediately evident whether the port or the external device is faulty. In both cases, the external device (such as a serial mouse or a printer) might behave erratically or not operate at all. Eliminate incorrect system configuration information settings, peripheral malfunctions, and software errors as potential causes of infrared (IR) port problems, before you run the subtests in the Serial/Infrared Port test group to check your hardware.

If the diagnostics do not recognize the computer's serial or infrared port, check the Serial Port or Infrared Port option in the System Devices menu of the Setup program to see if the port has been disabled. (See Chapter 2, "Software Features," for information on using the Setup program.) The subtests in the Serial/Infrared Ports test group cannot test a port unless it is enabled.

Another possible cause for errors is a problem with the external device itself. Use the documentation that came with the peripheral to troubleshoot it and confirm that it is working properly.

If the external device is not properly installed through software, the device also may not function properly. Try operating the device from different programs or through the operating system. If it still does not work, you can eliminate the software configuration as the cause of the problem.

Although the following symptoms can be caused by faulty peripherals or software errors, these symptoms might also suggest a port problem:

- If a peripheral works intermittently, or produces intermittent errors, the port may be faulty.
- If the computer displays an error message that is related to the external device connected to a port, but corrections to the device do not resolve the error, run the appropriate subtest in the Serial/Infrared Ports test group.

Subtests

The four subtests in the Serial/Infrared Ports test group confirm the following port functions:

- **Serial/Infrared Baud Rate Test**
Checks the baud rate generator in each serial communications chip against the computer's clock
- **Serial/Infrared Interrupt Test**
Checks the serial port's ability to send IRQs to the microprocessor
- **Serial/Infrared Internal Transmission Test**
Checks several internal functions of the serial port using the internal loopback mode of the serial communications chip
- **Serial External Transmission Test**
If a loopback device is attached, checks the line control bits of the serial port and sends a test pattern at several baud rates, checking the returned values

Parallel Ports Test Group

The subtests in the Parallel Ports test group check the computer's interface with external devices, such as a printer, that are connected to the computer through the parallel port. The subtests in this test group are not intended as a diagnostic test for the actual peripheral attached to each port.

Why Run a Parallel Ports Test?

If the diagnostics does not recognize the computer's parallel port, check the Parallel Port option in the System Devices menu of the Setup program to see if the port has been disabled. (See Chapter 2, "Customizing System Features," for information on using the Setup program.) The subtests in the Parallel Ports test group cannot test a port unless it is enabled.

When a port is faulty, it may not be immediately evident that the port, and not the device connected to the port, is faulty. Instead, the peripheral (such as a printer) might behave erratically or not operate at all. If the external device is not properly installed through software, it also may not function properly. Try operating the peripheral from different programs or through the operating system.

If it still does not work, you can eliminate the software setup as the cause of the problem.

Another possible cause for errors is a problem with the external device itself. Use the documentation that came with the peripheral to troubleshoot it and confirm that it is working properly. (Most printers have a self-test.)

After you eliminate incorrect system configuration information settings, peripheral malfunctions, and software errors as potential causes of port problems, you can run the subtests in the Parallel Ports test group to check your hardware. Although the following symptoms can be caused by faulty peripherals or software errors, they might also suggest a port problem:

- If a peripheral works intermittently, or produces intermittent errors, the port may be faulty.
- If the computer displays an error message that is related to the external device connected to a port, but corrections to the device do not resolve the error, run the appropriate subtest in the Parallel Ports test group.
- If your software and the diagnostics do not recognize that you have a parallel port, you should check the Parallel Port option in the System Devices menu of the Setup program, and if necessary, run the appropriate subtest in the Parallel Ports test group.

Subtests

The four subtests in the Parallel Ports test group confirm the following port functions:

- **Parallel Internal Test**
Checks several internal functions of the parallel port
- **Parallel External Loopback Test**
Tests the functionality of the control lines through an external loopback connector, if an external loopback connector is available
- **Parallel External Interrupt Test**
Tests the parallel port's ability to generate interrupts from all possible sources, if an external loopback connector is available
- **Parallel Printer Pattern Test**
Tests whether the port(s) can retain data, print text on a printer, and generate interrupts

Audio Test Group

The subtests in the Audio test group check the functions of the audio controller and the computer's recording and playback features.

Why Run an Audio Test?

If you do not hear sounds from your built-in speakers when you expect to, it is possible that your operating system or sound application uses resource settings different than those of the audio controller in the computer. In the absence of an expected sound, first check the documentation that accompanied your operating system or sound application to see if the sound features are correctly configured to work with the computer. The default resource settings for the audio controller are:

- DMA channel: 1
- IRQ line: 5
- Port address: 220h

If necessary, change the resource settings in your operating system or sound application to match these default settings.

If you still do not hear sound when you expect to, run the Audio test group.

NOTE: Before running the Audio test group, make sure to enable the built-in speaker(s), and make sure that the speaker volume has not been muted.

Subtests

The six subtests in the Audio test group confirm the following functions:

- **Software Reset Test**
Checks for the presence of an active audio controller in your system
- **Interrupt Test**
Checks whether the audio controller is generating an interrupt on the IRQ line configured for that controller
- **DMA Test**
Tests for the presence of a DMA channel on the system chip set, and determines if the DMA controller and the audio controller can exchange signals

- **FM Sound Playback Test**
Tests whether the system can synthesize sounds and play them through the built-in speaker(s)
- **Analog Sound Playback Test**
Tests whether the system can play sampled sounds through the built-in speaker(s)
- **Record and Playback Test**
Checks the ability of the audio controller to generate a sampled sound from signals received from the built-in microphone

The last three Audio subtests are interactive. In both the FM Sound Playback Test and the Analog Sound Playback test, a series of musical tones is played through the computer's built-in speaker(s). A message on the display asks if you hear the tones. Type *y* if you hear the tones; otherwise, type *n*.

The third interactive test, the Record and Playback Test, checks the computer's built-in microphone and speaker(s). When prompted, press any key on the built-in keyboard and say your name in a normal tone of voice.

NOTE: After you press the key, you have only a few seconds to speak your name.

When prompted again, hit any key on the built-in keyboard to play back your voice through the built-in speaker(s). Type *y* if you hear your voice; otherwise, type *n*. If you press *n*, you are given another opportunity to run the Record and Playback Test. When prompted, type *y* if you want to try the test again (for instance, if you did not speak quickly enough after pressing a key to begin the test). Otherwise, press *n*.

Chapter 5

Getting Help



This chapter describes the tools Dell provides to help you when you have a problem with your computer. It also tells you when and how to call Dell Computer Corporation for technical or customer assistance in the following situations:

- *If you have a technical problem*, read the next section, “Technical Assistance.”
- *If you are looking for information about a specific subject or about Dell’s services*, read “Help Tools” found later in this chapter.
- *If you have a problem with your order*, read “Problems With Your Order” found later in this chapter.
- *If you need to return an item for warranty repair or credit*, read “Returning Items for Warranty Repair or Credit” found later in this chapter.
- *If you would like to place an order or need information about additional products available from Dell*, call Dell at the appropriate telephone number listed in “Dell Contact Numbers” found later in this chapter.

Technical Assistance

If you need assistance with a technical problem, perform the following steps:

1. Review the Dell Q&A.



Look for the Dell Q&A icon in the Dell Accessories folder.

2. Review the remaining documentation that accompanied your Dell computer.

To decide which document has the answers you need, consult the Preface of your *Reference and Troubleshooting Guide*.

3. Run the diagnostics for your Dell computer.

See Chapter 4, “Running the Dell Diagnostics,” for instructions on using the Dell Diagnostics program.

4. Make a copy of the Diagnostics Checklist (found later in this chapter), and fill it out.

NOTE: Save the Diagnostics Checklist in this chapter as a master so you can use it to make copies as needed.

On your copy of the Diagnostics Checklist, document any error messages or beep codes as they occur so you can inform the Dell technician of them. Describe what you were doing when the error occurred. Note the steps you have taken to solve the problem.

5. Use the AutoTech service for help with installation and troubleshooting procedures.

For instructions on using the AutoTech service, see “AutoTech Service” found later in this chapter.

6. If the preceding steps have not resolved the problem and you need to talk to a Dell technician, you can call Dell’s customer technical support service.

Before you call Dell, have your express service code ready. Your express service code is printed at the bottom of the regulatory label on the underside of your computer.

NOTE: If for some reason you cannot read the express service code on the label, you can convert your service tag number into an express service code

before you call Dell for technical assistance. Find the Express Service Code icon in the Dell Accessories folder. Double-click the icon and follow the directions.

When prompted by Dell’s automated telephone system, enter the express service code to route your call directly to the proper support personnel.

NOTE: Dell’s Express Service may not be available in all countries.

For instructions on using the technical support service, see “Technical Support Service” and “Before You Call” found later in this chapter.

Help Tools

Dell provides a number of tools to assist you. Table 5-1 lists subjects you may want information about, tasks you may want to perform, and the tool(s) you can use for help. Each tool is described later in this section.

Table 5-1. Help Tools

Subject or Task	Tool
BIOS revisions	TechConnect BBS
Frequently asked questions	<i>Dell Q&A</i> , AutoTech service
Information about Dell, its products, and its service and support policies	TechFax service, TechConnect BBS, World Wide Web on the Internet
Installation instructions	<i>Online System User’s Guide, Reference and Troubleshooting Guide</i> , technical support service, AutoTech service
Interrupt maps	TechFax service
Ordering parts	Technical support service, TechConnect BBS
Software update information	TechFax service
Technical notes on system compatibility and revisions	TechFax service
Technical training class information	TechFax service
Technical specifications	TechFax service, online <i>System User’s Guide, Reference and Troubleshooting Guide</i>
Troubleshooting, step-by-step instructions	<i>Reference and Troubleshooting Guide</i> , Dell Diagnostics program, AutoTech service
Unresolved problems requiring assistance from a Dell technician	Technical support service, TechConnect BBS

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User’s Guide.

Dell Q&A

The *Dell Q&A*, a Windows-based online help file that answers questions that are often asked by Dell computer users, is included with certain Dell systems that were purchased with the Dell-installed Microsoft Windows 95 operating system.

To view the *Dell Q&A*, open the Dell Accessories folder and double-click the Dell Q&A icon. If you need further instructions on using the *Dell Q&A*, click Help from the *Dell Q&A* button bar.

System User's Guide

The Windows-based online *System User's Guide* includes information about traveling with your portable computer, installing and using batteries, conserving battery power, and attaching external devices to the computer. This document is installed on your hard-disk drive for easy reference wherever you take the computer.

Reference and Troubleshooting Guide

The *Reference and Troubleshooting Guide* includes information about system features, customizing the operation of the computer, and diagnosing and troubleshooting computer problems.

World Wide Web on the Internet

Dell can be accessed electronically on the Internet via a World Wide Web site, a file transfer protocol (FTP) site, and electronic mail (e-mail) using the following addresses:

- World Wide Web
http://www.dell.com/
http://www.dell.com/intl/apcc/ (for Asian/Pacific countries only)
http://www.dell.com/euro/ (for Europe only)
- Anonymous FTP
ftp.dell.com/
Log in as `user: anonymous`, and use your e-mail address as your password.
- Electronic Support Service
support@us.dell.com

apsupport@dell.com (for Asian/Pacific countries only)

- Electronic Quote Service

sales@dell.com

apmarketing@dell.com (for Asian/Pacific countries only)

- Electronic Information Service

info@dell.com

Commercial Online Service

Dell can be accessed electronically via CompuServe® by typing `GO DELL`.

Dell Diagnostics Program

Every Dell computer comes with the Dell Diagnostics, a program that can help you determine what is wrong with the computer when it does not operate correctly. This program provides valuable information for you and for Dell technicians should you need to call Dell.

See Chapter 4, "Running the Dell Diagnostics," for instructions on using the diagnostics. You can use this diagnostic program to test major components or devices in the computer, if the computer can boot.

AutoTech Service

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers.

When you call AutoTech, you use your touch-tone telephone to select the subjects that correspond to your questions. You can even interrupt an AutoTech session and continue the session later. The code number that the AutoTech service gives you allows you to continue your session where you ended it.

The information available through AutoTech includes:

- Specifications and prices for Dell computers currently on sale
- Installation instructions for Dell computers and peripherals
- Answers to questions about Windows 95
- Help in troubleshooting your Dell computer

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, see “Dell Contact Numbers” found later in this chapter.

NOTE: AutoTech is not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

TechFax Service

Dell takes full advantage of fax technology to serve you better. Twenty-four hours a day, seven days a week, you can call the Dell TechFax line toll-free for all kinds of technical information.

Using a touch-tone phone, you can select from a full directory of topics. The technical information you request is sent within minutes to the fax number you designate.

TechFax information includes:

- Interrupt maps and specifications.
- Technical notes on system compatibility and revisions.
- News on updates for operating systems and application programs.
- Descriptions of available technical training classes. For Dell-certified technicians, TechFax offers information such as parts lists, drawings, and maintenance and repair data.

For the TechFax telephone number, see “Dell Contact Numbers” found later in this chapter.

NOTE: TechFax is not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

TechConnect BBS

Use your modem to access Dell’s TechConnect Bulletin Board Service (BBS) 24 hours a day, seven days a week. The service is menu-driven and fully interactive. The modem settings for the BBS are 8 bit, no parity, 1 stop bit.

You can use the BBS to do the following:

- Send questions to a Dell technician
- Request a follow-up call or leave a message for a Dell technical support specialist

- Order parts
- Download basic input/output system (BIOS) and video driver upgrades
- Download updates

For the BBS telephone number, see “Dell Contact Numbers” found later in this chapter.

NOTE: The TechConnect BBS is not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

Automated Order-Status System

You can call this automated service to check on the status of any Dell products that you have ordered. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, see “Dell Contact Numbers” found later in this chapter.

NOTE: The Automated Order-Status System is not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

Technical Support Service

Dell’s industry-leading hardware technical support service is open 24 hours a day, seven days a week. At any hour of any day, a Dell technical expert is ready with the answers to your questions about Dell hardware.

Our technical support staff pride themselves on their track record: more than 90 percent of all problems and questions are taken care of in just one toll-free call, usually in less than ten minutes. When you call, our experts can refer to records we keep on your specific Dell system to better understand your particular question. Our technical support staff use computer-based diagnostics to provide fast, accurate answers to your questions.

To contact Dell’s technical support service, first refer to the section titled “Before You Call” and then call the number for your country as listed in “Dell Contact Numbers” found later in this chapter. (For information about receiving technical assistance in the U.K., refer to the *Placing a Service Call* card that came with your computer.)

NOTE: Technical support services may vary outside the continental U.S. Contact your local Dell representative for more information.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell Computer Corporation for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call, see “Dell Contact Numbers” found later in this chapter.

Product Information

If you need information about additional products available from Dell Computer Corporation, or if you would like to place an order, a sales specialist will be glad to help. For the telephone number to call, see “Dell Contact Numbers” found later in this chapter.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. **Call Dell to obtain an authorization number, and write it clearly and prominently on the outside of the box.**

For the telephone number to call, see “Dell Contact Numbers” found later in this chapter.

2. **Include a copy of the invoice and a letter describing the reason for the return.**
3. **Include a copy of the Diagnostics Checklist indicating the tests you have run and any error messages reported by the Dell Diagnostics.**
4. **Include any accessories that belong with the item(s) being returned (power cables, software diskettes, guides, and so on) if the return is for credit.**
5. **Pack the equipment to be returned in the original (or equivalent) packing materials.**

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during

shipment to Dell Computer Corporation. Collect on delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at our receiving dock and returned to you.

Before You Call

Keep a record of your diagnostic and troubleshooting activities by photocopying the Diagnostics Checklist in Figure 5-1 and filling it out whenever you experience a problem with the computer.

NOTE: Be sure to save the checklist in Figure 5-1 as a master, so you can use it to make copies as needed. The checklist can also be accessed in “Diagnostics Checklist” in the online System User’s Guide.

If you need to call Dell Computer Corporation for assistance, you will be able to inform the support technician of the actions you have taken to resolve the problem. If you must return a piece of hardware to Dell, a technician will assign a Return Material Authorization Number. Record the number on the checklist, and include the completed checklist in the shipping box.

Dell’s technical support staff uses computer-based diagnostics to provide fast, accurate answers to your questions. When you call, the technical support staff refers to records regarding your specific Dell computer to better understand your particular question.

NOTES: Have your express service code ready when you call. The code helps Dell’s automated support telephone system direct your call more efficiently.

Your express service code is printed at the bottom of the regulatory label on the underside of your computer.

If possible, turn your system on before you call Dell for technical assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer itself.

Make sure the computer’s user documentation is available.

Diagnostics Checklist

Name: _____ Date: _____

Address: _____ Phone number: _____

Service tag (bar code on the back of the computer): _____

Express service code: _____

Return Material Authorization Number (if provided by Dell support technician): _____

Operating system and version: _____

Peripherals: _____

PC Cards or expansion cards: _____

Are you connected to a network? yes no

Network, version, and network card: _____

Programs and versions: _____

See your operating system documentation to determine the contents of the system's start-up files. If the computer is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.

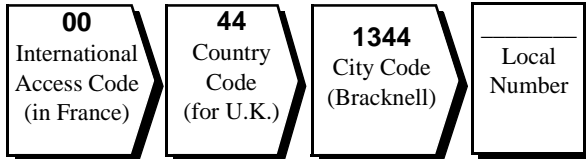
Error message or beep code: _____

Description of problem and troubleshooting procedures you performed: _____

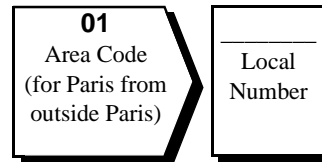
Figure 5-1. Diagnostics Checklist

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers and codes provided in Tables 5-2 and 5-3. Table 5-2 provides the various codes required to make long-distance and international calls. Table 5-3 provides local telephone numbers, area codes, and toll-free numbers, if applicable, for each department or service available in various countries around the world. If you are making a direct-dialed call to a location outside of your local telephone service area, determine which codes to use (if any) in Table 5-2 in addition to the local numbers provided in Table 5-3. For example, to place an international call from Paris, France to Bracknell, England, dial the international access code for France followed by the country code for the U.K., the city code for Bracknell, and then the local number as shown in the following illustration.



To place a long-distance call within your own country, use area codes instead of international access codes, country codes, and city codes. For example, to call Paris, France from Montpellier, France, dial the area code plus the local number as shown in the following illustration.



The codes required depend on where you are calling from as well as the destination of your call; in addition, each country has a different dialing protocol. If you need assistance in determining which codes to use, contact a local or an international operator.

NOTE: Toll-free numbers are for use only within the country for which they are listed. Area codes are most often used to call long distance within your own country (not internationally)—in other words, when your call originates in the same country you are calling.

Table 5-2. International Dialing Codes

Country (City)	International Access Code	Country Code	City Code
Australia (Sydney)	0011	61	2
Austria (Vienna)	900	43	1
Belgium (Brussels)	00	32	2
Brunei	—	673	—
Canada (North York, Ontario)	011	—	Not required
Chile (Santiago)	—	56	2
China (Beijing)	—	86	10
Czech Republic (Prague)	00	420	2
Denmark (Horsholm)	009	45	Not required
Finland (Helsinki)	990	358	9
France (Paris) (Montpellier)	00	33	(1) (4)
Germany (Langen)	00	49	6103
Hong Kong	001	852	Not required
Ireland (Bray)	16	353	1
Italy (Milan)	00	39	2
Japan (Kawasaki)	001	81	44
Korea (Seoul)	001	82	2
Luxembourg	00	352	—
Macau	—	853	Not required
Malaysia (Penang)	00	60	4
Mexico (Colonia Granada)	95	52	5
Netherlands (Amsterdam)	00	31	20
New Zealand	00	64	—
Norway (Lysaker)	095	47	Not required
Poland (Warsaw)	011	48	22
Singapore (Singapore)	005	65	Not required
South Africa (Johannesburg)	09/091	27	11

Table 5-2. International Dialing Codes (continued)

Country (City)	International Access Code	Country Code	City Code
Spain (Madrid)	07	34	1
Sweden (Upplands Vasby)	009	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

Table 5-3. Dell Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Australia (Sydney)	Customer Technical Support (Dell Dimension [®] systems only)		1-300-65-55-33
	Customer Technical Support (Other systems)		toll free: 1-800-808-378
	Customer Care		toll free: 1-800-819-339
	Corporate Sales		toll free: 1-800-808-385
	Transaction Sales		toll free: 1-800-808-312
	Fax		toll free: 1-800-818-341
Austria* (Vienna)	Switchboard		491 04 0
	Technical Support		0660-8779
Belgium* (Brussels)	Customer Technical Support	02	4819288
	Sales		toll free: 0800 16884
	SalesFax	02	4819299
	Switchboard	02	4819100
	Fax	02	4819299

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Brunei <i>NOTE: Customers in Brunei call Malaysia for sales, customer, and technical assistance.</i>	Customer Technical Support (Dell Dimension systems only) (Penang, Malaysia) Customer Technical Support (Other systems) (Penang, Malaysia). Customer Service (Penang, Malaysia) Transaction Sales (Penang, Malaysia)		810 4946 810 4966 810 4949 810 4955
Canada (North York, Ontario) <i>NOTE: Customers in Canada call the U.S.A. for access to TechConnect BBS.</i>	Automated Order-Status System AutoTech (Automated technical support) Customer Care (From outside Toronto) Customer Care (From within Toronto) Customer Technical Support Sales (Direct Sales—from outside Toronto) Sales (Direct Sales—from within Toronto) Sales (Federal government, education, and medical) Sales (Major Accounts) TechConnect BBS (Austin, Texas, U.S.A.) TechFax . . . . .	. . . . . toll free: toll free: toll free: 416 toll free: 416 toll free: toll free: 512 toll free:	1-800-433-9014 1-800-247-9362 1-800-387-5759 758-2400 1-800-847-4096 1-800-387-5752 758-2200 1-800-567-7542 1-800-387-5755 728-8528 1-800-950-1329
Chile (Santiago) <i>NOTE: Customers in Chile call the U.S.A for sales, customer, and technical assistance.</i>	Sales, Customer Support, and Technical Support		toll free: 1230-020-4823
China (Beijing) <i>NOTE: Customers in China call Malaysia for customer assistance.</i>	Customer Service (Penang, Malaysia) Sales		810 4949 6846 1122 (extensions 8309 to 8314)
Czech Republic* (Prague)	Technical Support Customer Service and Sales. TechConnect BBS	02 02 02	8728 221 879250 66710274

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Denmark* (Horsholm)	Customer Care, Technical Support, and Sales		toll free: 800 171 62
Finland* (Helsinki)	Customer Support and Technical Support		toll free: 0800-534 55
	Sales		toll free: 0800-33 55
France* (Paris/Montpellier)	Technical Support (Paris)	01	47 62 68 90
	Technical Support (Montpellier)	04	67 06 62 86
	Customer Care (Major Accounts) (Paris)	01	47 62 69 39
	Customer Care (VAR Accounts) (Paris)	01	47 62 69 26
	Customer Care (Direct Sales) (Paris)	01	47 62 69 76
	TechFax (Montpellier)	04	67 22 53 11
	TechConnect BBS (Montpellier)	04	67 22 53 04
	Switchboard (Paris)	01	47 62 68 50
	Switchboard (Montpellier)	04	67 06 65 51
Germany* (Langen)	Customer Technical Support	06103	971-200
	Customer Care	06103	971-500
	TechConnect BBS	06103	971-666
	Sales	06103	971-460
Hong Kong	Technical Support (Dell Dimension systems only) (Penang, Malaysia)		810 4948
<i>NOTE: Customers in Hong Kong call Malaysia for technical assistance for Dell Dimension systems and for customer assistance.</i>	Technical Support (Other systems)		toll free: 800 96 4107
	Customer Service (Penang, Malaysia)		810 4949
	Transaction Sales		toll free: 800 96 4109
	Corporate Sales		toll free: 800 96 4108

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Ireland* (Bray)	Customer Technical Support		1-850-543-543
	Sales		1-850-235-235
	SalesFax	01	286 2020
	Fax	01	286 6848
	TechConnect BBS	01	204 4761
	TechFax	01	204 4044
	Switchboard	01	286 0500
Italy* (Milan)	Switchboard		264 21 820
	Fax		264 13 420
Japan (Kawasaki)	Technical Support		toll free: 0088-22-7890
	Customer Care	044	556-4240
	Direct Sales	044	556-3344
	Commercial Sales	044	556-3430 556-3440
	Switchboard	044	556-4300
Korea (Seoul) <i>NOTE: Customers in Korea call Malaysia for customer assistance.</i>	Technical Support		toll free: 080-200-3800
	Transaction Sales		toll free: 080-200-3600
	Corporate Sales		toll free: 080-200-3900
	Customer Service (Penang, Malaysia)		810 4949
	Fax		394 3122
	Switchboard		287 5600

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Latin America <i>NOTE: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.</i>	Customer Technical Support (Austin, Texas, U.S.A.) . . .	512	728-4093
	Customer Service (Austin, Texas, U.S.A.)	512	728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512	728-3883
	Sales (Austin, Texas, U.S.A.)	512	728-4397
	SalesFax (Austin, Texas, U.S.A.)	512	728-4600 728-3772
Luxembourg* <i>NOTE: Customers in Luxembourg may call Belgium for sales, customer, and technical assistance as well as the SalesFax service, and they call the Netherlands for the TechFax and TechConnect BBS services.</i>	Customer Technical Support (Brussels, Belgium)		toll free: 0800 2109
	Customer Service (Luxembourg)		295151
	Customer Service (Brussels, Belgium)	02	481 92 99
	SalesFax (Brussels, Belgium)	02	481 92 44
	TechFax (Amsterdam, Netherlands)		682 91 06
TechConnect BBS (Amsterdam, Netherlands)		686 65 04	
Macau <i>NOTE: Customers in Macau call Malaysia for technical assistance for Dell Dimension systems and for customer assistance.</i>	Technical Support (Dell Dimension systems only) (Penang, Malaysia)		810 4948
	Technical Support (Other systems)		toll free: 0800 582
	Customer Service (Penang, Malaysia)		810 4949
	Transaction Sales		toll free: 0800 581
Malaysia (Penang)	Technical Support (Dell Dimension systems only)	04	810 4946
	Technical Support (Other systems)		toll free: 1 800 888 298
	Customer Service	04	810 4949
	Transaction Sales		toll free: 1 800 888 202
	Corporate Sales		toll free: 1 800 888 213

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Mexico (Colonia Granada) <i>NOTE: Customers in Mexico call the U.S.A. for access to the Automated Order-Status System and AutoTech.</i>	Automated Order-Status System (Austin, Texas, U.S.A.)	512	728-0685
	AutoTech (Automated technical support) (Austin, Texas, U.S.A.)	512	728-0686
	Customer Technical Support	525	228-7870
	Sales	525	228-7811
			toll free: 91-800-900-37
			toll free: 91-800-904-49
	Customer Service	525	228-7878
Main	525	228-7800	
Netherlands* (Amsterdam)	Customer Technical Support	020	5818838
	Direct Sales		toll free: 0800-0663
	Direct SalesFax	020	682 7171
	Corporate Sales	020	581 8818
	Corporate SalesFax	020	686 8003
	TechConnect BBS	020	686 6504
New Zealand	Technical Support (Dell Dimension systems only) (\$2.50 + GST per call)		0900 51010
	Technical Support (Other systems)		0800 446 255
	Customer Service		0800 444 617
	Sales		0800 441 567
	Fax		0800 441 566
Norway* (Lysaker)	Customer Technical Support and Customer Service		22-67 50 00
	Sales		67-125 711
Poland* (Warsaw)	Switchboard		620-7898
	Fax		620-4584

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Singapore (Singapore) <i>NOTE: Customers in Singapore call Malaysia for technical assistance for Dell Dimension systems and for customer assistance.</i>	Technical Support (Dell Dimension systems only) (Penang, Malaysia)	04	810 4947
	Technical Support (Other systems)		toll free: 800 6011 051
	Customer Service (Penang, Malaysia)	04	810 4949
	Transaction Sales		toll free: 800 6011 054
	Corporate Sales		toll free: 800 6011 053
South Africa (Johannesburg)	Switchboard	011	709 7700
	Technical Support	011	709 7710
	Fax	011	706 0495
Southeast Asian/ Pacific Countries (excluding Australia, Brunei, China, Hong Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—see individual listings for these countries)	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)		60 4 810-4810
Spain* (Madrid)	Technical Support	91 . . . . .	.902 100 130
	Customer Service	91 . . . . .	.329 10 80
	TechConnect BBS	91 . . . . .	.329 33 53
	Sales	91 . . . . .	.902 100 185
	Switchboard	91 . . . . .	.722 92 00
Sweden* (Upplands Vasby)	Technical Support	08 . . . . .	.590 05 199
	Customer Care	08 . . . . .	.590 05 169
	TechConnect BBS	08 . . . . .	.590 05 591
	Sales	08 . . . . .	.590 05 185

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Table 5-3. Dell Contact Numbers (continued)

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Switzerland* (Geneva)	Technical Support . . . . .		.0844 811 411
	Commercial Services	022 . . . . .	.799 01 01
	Customer Service	022 . . . . .	.799 01 50
	Fax	022 . . . . .	.799 01 90
Taiwan <i>NOTE: Customers in Taiwan call Malaysia for customer assistance.</i>	Technical Support		toll free: 0080 651 226/0800 33 557
	Customer Service (Penang, Malaysia)		810 4949
	Transaction Sales		toll free: 0080 651 228/0800 33 556
	Corporate Sales		toll free: 0080 651 227/0800 33 555
Thailand <i>NOTE: Customers in Thailand call Malaysia for customer assistance.</i>	Technical Support		toll free: 0880 060 07
	Customer Service (Penang, Malaysia)		810 4949
	Sales		toll free: 0880 060 06
U.K.* (Bracknell)	Customer Technical Support (Dell Dimension systems)	01344 . . . . .	.720111
	Customer Technical Support (Other systems)	01344 . . . . .	.723723
	Customer Care	01344 . . . . .	.720110
	TechFax	01344 . . . . .	.723178
	TechConnect BBS	01344 . . . . .	.723858
	Sales	01344 . . . . .	.720000

* For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).

Appendix A

Technical Specifications



Table A-1. Technical Specifications

Microprocessor	
Microprocessor type	Intel Mobile Module Pentium microprocessor with MMX technology
Microprocessor speed	166, 200, or 233 MHz
Internal cache memory	32 KB
External cache memory:	
Dell Inspiron 3000 M166ST	256-KB pipelined-burst SRAM
Dell Inspiron 3000 M200ST and M233XT	512-KB pipelined-burst SRAM
Math coprocessor	internal to the microprocessor

Chip Set and Bus	
System chip set	Intel 430TX PCIset
Host data bus width.	64 bits
DRAM bus width	64 bits
Host address bus width	32 bits
Flash EPROM.	2 Mbits

Table A-1. Technical Specifications (continued)

PC Card	
PCI controller	Texas Instruments PCI 1131 cardbus controller
PC Card connectors	two (supports two type I or type II cards or one type III card)
Cards supported	3.3-V and 5-V
PC Card connector size	68 pins
Data width (maximum)	32 bits

Memory	
Architecture	SDRAM
Memory module capacities	16-, 32-, and 64-MB SoDIMM
Standard RAM	16 MB on system board
Maximum RAM	144 MB
Memory access time/clock frequency	83 MHz
BIOS address	F000:0000

Connectors	
Serial (DTE)	one 9-pin connector; 16550-compatible, 16-byte buffer
Parallel	one 25-hole connector; unidirectional, bidirectional, EPP 1.9, or ECP
Monitor	one 15-hole connector
PS/2 keyboard/mouse	one 6-pin mini-DIN connector
Infrared	one IrDA 1.1 port
Expansion connector	240 pins
Audio	microphone, headphones/speakers, and line-in jacks
USB	one 4-pin connector

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table A-1. Technical Specifications (continued)

Audio	
Audio type	Sound Blaster Pro-compatible voice and music functions
Audio controller	Crystal 4237B
Conversion	16 bit (stereo analog-to-digital and digital-to-analog)
Interfaces:	
Internal	ISA bus
External	microphone (minijack; mono); headphones/speaker-out (minijack); line-in
Internal speaker amplifier	1.5 W stereo
Controls	volume can be controlled through key combinations and software application menus

Video	
Video type	64-bit (128-bit hardware-accelerated) PCI
Video controller	NeoMagic 2160
Video memory	2 MB

Display (SVGA)	
Type	TFT SVGA
Dimensions:	
Height	184.5 mm (7.3 inches)
Width	246.0 mm (9.7 inches)
Diagonal	307.5 mm (12.1 inches)
Maximum resolution	800 x 600 pixels; 16 million colors
Response time (typical)	30 ms

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table A-1. Technical Specifications (continued)

Display (SVGA) (continued)	
Operating angle	0° (closed) to 180°
Dot pitch	0.264 mm
Power consumption	2.35 W
Controls	brightness can be controlled through key combinations

Display (XGA)	
Type	TFT XGA
Dimensions:	
Height	203 mm (8 inches)
Width	271 mm (10.7 inches)
Diagonal	338 mm (13.3 inches)
Maximum resolution	1024 x 768 pixels; 64,000 colors
Response time (typical)	30 ms
Operating angle	0° (closed) to 170°
Dot pitch	0.264 mm
Power consumption	3.9 W
Controls	brightness can be controlled through key combinations

Keyboard	
Number of keys	87 (U.S. and Canada); 88 (Europe); 88 (Japan)
Key travel	3.0 ± 0.5 mm (0.12 ± 0.02 inch)
Key spacing	19.1 mm (0.75 inch)
Layout	QWERTY/AZERTY/Kanji

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table A-1. Technical Specifications (continued)

Touch Pad	
Interface	PS/2-compatible
X/Y position resolution (graphics table mode)	20 points/mm (500 points/inch)
Size:	
Thickness	4.65 mm (0.18 inch) at highest component
Width	64-mm (2.52-inch) sensor-active area
Height	47.0-mm (1.85-inch) rectangle with 0.5-mm (0.02-inch) tabs
Weight	15 g (0.52 ounce) ± 0.5 g (0.001 ounce)
Power:	
Supply voltage	5 V ± 10%
Supply current	4 mA (maximum operating current)

Main Battery	
Type	lithium ion
Dimensions:	
Height	23.0 mm (0.9 inch)
Depth	161.5 mm (6.5 inches)
Width	73.4 mm (2.8 inches)
Weight	0.41 kg (0.9 lb)
Voltage	14.4 VDC
Capacity	39 WH

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table A-1. Technical Specifications (continued)

Main Battery (continued)

Charge time (approximate):¹

Computer on 2.5 hour

Computer off 1.5 hour

Operating time¹ (approximate,
with no power management features
enabled). 2.5 to 3.5 hours with one battery;
5 to 7 hours with two batteries

Life span (approximate)¹ 500 discharge/charge cycles

Temperature range:

Charge 5° to 35°C (41° to 95°F)

Discharge 5° to 35°C (41° to 95°F)

Storage -20° to 50°C (-4° to 122°F)

¹ Battery performance features such as charge time, operating time, and life span can vary according to the conditions under which the computer and battery are used.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table A-1. Technical Specifications (continued)

AC Adapter	
Input voltage	90 to 264 VAC
Input current (maximum)	1.5 A at 90 VAC, full load
Input frequency	47 to 63 Hz
Output current	2.4 A (continuous)
Output power	45 W
Rated output voltage	19 VDC
Height	29.6 mm (1.17 inches)
Width	60.0 mm (2.36 inches)
Depth.	105 mm (4.13 inches)
Weight (with cables)	0.3 kg (0.71 lb)
Temperature range:	
Operating	5° to 35°C (41° to 95°F)
Storage	-20° to 50°C (-4° to 122°F)

Physical (Dell Inspiron 3000 M166ST and M200ST)	
Height	42 mm (1.65 inches)
Width	299 mm (11.77 inches)
Depth.	234 mm (9.21 inches)
Weight (with hard-disk drive, diskette drive, battery, and two PC Card blanks)	2.8 kg (6.2 lb)

Physical (Dell Inspiron 3000 M233XT)	
Height	51.5 mm (2.03 inches)
Width	303 mm (11.93 inches)
Depth.	234 mm (9.21 inches)
Weight (with hard-disk drive, diskette drive, battery, and two PC Card blanks)	3.0 kg (6.7 lb)

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Table A-1. Technical Specifications (continued)

Environmental (Computer)

Temperature:

Operating 5° to 35°C (41° to 95°F)

Storage –20° to 50°C (–4° to 122°F)

Relative humidity 10% to 90% (noncondensing)

Maximum vibration:

Operating 0.5 GRMS using a random-vibration spectrum that simulates air shipment

Storage 1.1 GRMS using a random-vibration spectrum that simulates truck shipment

Maximum shock:²

Operating 1.52 m/sec (4.98 feet/sec)
(less than or equal to a pulse width of 2 ms)

Storage 2.03 m/sec (6.66 feet/sec)
(less than or equal to a pulse width of 2 ms)

Altitude:

Operating 0 to 3048 m (0 to 10,000 ft)

Storage 0 to 12,192 m (0 ft to 40,000 ft)

² Measured with the hard-disk drive in head-parked position.

NOTE: For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.

Appendix B

Diagnostic Video Tests



The Video Test Group of the Dell Diagnostics consists of the following eight tests, each of which verifies a particular video function or group of functions on your built-in display or on an external monitor:

- Video Memory Test — Checks the integrity of characters generated from data in the video memory
- Video Hardware Test — Checks the functions of the cursor register and the horizontal and vertical retrace bit registers
- Text Mode Character Test — Checks the video subsystem's ability to present text mode data
- Text Mode Color Test — Checks the video subsystem's ability to present color in text modes
- Text Mode Pages Test — Checks the video subsystem's ability to map and present all available video text pages on the display or monitor, one page at a time
- Graphics Mode Test — Checks the video subsystem's ability to present graphics mode data and colors
- Color Palettes Test — Checks the video subsystem's ability to display all available colors
- Solid Colors Test — Checks the video subsystem's ability to show screens full of solid colors and to display all pixels

All of these tests, except the Video Memory Test and the Video Hardware Test, are interactive. These interactive tests display images on the display or monitor and require you to respond with the following steps:

1. **Examine a displayed image for correctness.**
2. **If an image is correct, type *y*.**
3. **If an image is incorrect, type *n*.**

The following sections describe each of the tests in the Video Test Group.

Video Memory Test

The Video Memory Test verifies the integrity of the video memory on the system board. When a test is complete, a message indicates whether the video memory has passed or failed the test. This test does not require any interaction on your part.

Video Hardware Test

The Video Hardware Test verifies the operation of the cursor registers and the horizontal and vertical retrace bit registers. When a test is complete, a message indicates whether these registers have passed or failed the test. This test does not require any interaction on your part.

Text Mode Character Test

The Text Mode Character Test consists of a group of subtests that display printable characters and character attributes. The subtests check character quality and the ability of the display or monitor to show the characters correctly. A prompt at the bottom of each screen asks you to decide whether the display is satisfactory and to respond by typing *y* or *n*.

If you respond affirmatively to each subtest, the Text Mode Character Test passes. A negative response to any subtest causes the test to fail.

The following subsections describe the subtests of the Text Mode Character Test in the order in which they appear.

Character Attributes Subtest (80 x 25)

The 80-column x 25-line character attributes subtest displays four lines of text that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (80 x 25)

The 80-column x 25-line character set subtest displays all 256 characters in the American Standard Code for Information Interchange (ASCII) character set in 80-column by 25-line text mode. Figure B-1 shows part of the character set subtest screen.

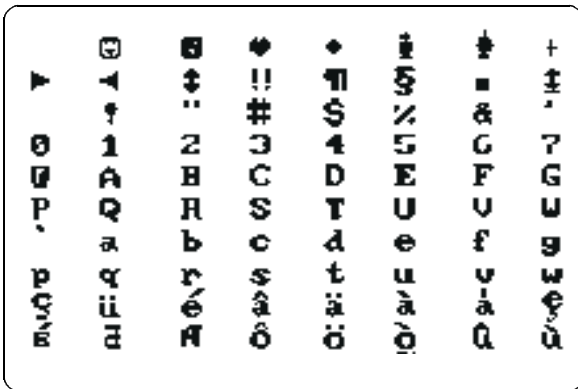


Figure B-1. 80-Column x 25-Line Character Set Subtest Screen

Character Attributes Subtest (40 x 25)

The 40-column x 25-line character attributes subtest displays four lines of text, in 40-column by 25-line (double-wide) text mode, that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (40 x 25)

The 40-column x 25-line character set subtest displays all 256 characters in the ASCII character set in 40-column by 25-line (double-wide) text mode. Figure B-2 shows part of the 40-column x 25-line character set subtest screen.

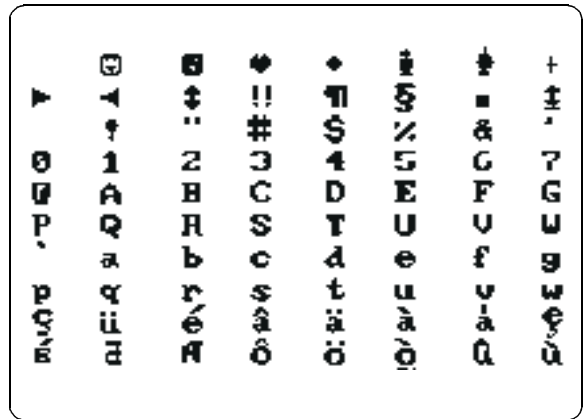


Figure B-2. 40-Column x 25-Line Character Set Subtest Screen

Text Mode Color Test

The Text Mode Color Test contains three subtests that check the video subsystem's ability to present color in text modes. The following subsections describe these subtests.

Color Attributes Subtest (80 x 25)

The 80-column x 25-line color attributes subtest displays a pattern of 16 rows and 16 columns in 80-column by 25-line text mode. Each row has a hexadecimal number in a unique foreground color and each column has a unique background color. Where the same foreground and background color intersect, the hexadecimal number is not visible. Type y if each character is displayed correctly; otherwise, type n. Table B-1 indicates the color in each of the rows and columns.

Table B-1. Color Attributes

Row or Column Number	Foreground Color	Background Color
0	black	black
1	blue	blue
2	green	green
3	cyan	cyan
4	red	red
5	magenta	magenta
6	brown	brown
7	white	white
8	dark gray*	black
9	light blue*	blue
A	light green*	green
B	light cyan*	cyan
C	light red*	red
D	light magenta*	magenta
E	yellow*	brown
F	intense white*	white

* These colors blink during the test.

Color Attributes Subtest (40 x 25)

The 40-column x 25-line color attributes subtest is the same as the previous subtest except that the characters are displayed in 40-column by 25-line (double-wide) text mode. Type *y* if each character is displayed correctly; otherwise, type *n*.

Color Bars Subtest

The color bars subtest displays 16 bars in different colors with background intensity enabled. Under each bar is the name of the color that should be displayed. Type *y* if each color bar is displayed correctly; otherwise, type *n*.

Text Mode Pages Test

The Text Mode Pages Test checks the video subsystem's ability to map and present all available video pages on the display or monitor, one page at a time. The test displays eight successive screens, the first of which contains 21 lines of 77 zeros. The remaining seven screens are identical to the first, except that each screen substitutes a different numeral (1 through 7) for the zeros.

Type *y* if all the rows of numbers on each screen are displayed correctly; otherwise, type *n*.

Graphics Mode Test

The Graphics Mode Test checks the video subsystem's ability to present graphics mode data and colors. This test displays a number of different screens, each of which allows you to check some aspect of graphics mode data and colors. The following subsections describe the Graphics Mode Test screens in the order in which they appear.

320 x 200 Graphics Mode Screens

The Graphics Mode Test displays two successive 320- x 200-pixel graphics mode screens. The first screen displays three pyramids in red, green, and yellow. The second screen displays three pyramids in magenta, cyan, and white. Type *y* if all the pyramids are the correct colors; otherwise, type *n*.

320 x 200 16-Color Graphics Mode Screen

The 320- x 200-pixel 16-color graphics mode screen displays a series of Xs in 16 different colors with the name of the color beneath each X. Type *y* if all the Xs are the correct colors; otherwise, type *n*.

640 x 200 16-Color Graphics Mode Screen

The 640- x 200-pixel 16-color graphics mode screen displays a series of hexagons in 16 different colors with the name of the color beneath each hexagon. Type *y* if all the hexagons are the correct colors; otherwise, type *n*.

640 x 350 16-Color Graphics Mode Screen

The 640- x 350-pixel 16-color graphics mode screen displays a series of octagons in 16 different colors with the name of the color displayed beneath each octagon. Type *y* if all the octagons are the correct colors; otherwise, type *n*.

640 x 480 2-Color Graphics Mode Screen

The 640- x 480-pixel 2-color graphics mode screen displays three chess pieces. Type *y* if all the chess pieces are identical and displayed correctly; otherwise, type *n*. Figure B-3 shows part of this screen.



Figure B-3. 640 x 480 2-Color Graphics Mode Screen

640 x 480 16-Color Graphics Mode Screen

The 640- x 480-pixel 16-color graphics mode screen displays a series of stars in 16 different colors with the name of the color beneath each star. Type *y* if all the stars are the correct colors; otherwise, type *n*.

320 x 200 256-Color Graphics Mode Screen

The 320- x 200-pixel 256-color graphics mode screen displays a series of squares in 256 different color hues and intensities. Type *y* if all the squares are the correct colors; otherwise, type *n*.

640 x 480 256-Color Graphics Mode Screen

The 640- x 480-pixel 256-color graphics mode screen displays a series of squares with two colors in each square. Type *y* if all the squares appear to be correct; otherwise, type *n*.

800 x 600 16-Color Graphics Mode Screen

The 800- x 600-pixel 16-color graphics mode screen displays a series of pyramids in 16 different colors with the name of the color beneath each pyramid. Type *y* if all the pyramids appear to be correct; otherwise, type *n*.

800 x 600 256-Color Graphics Mode Screen

The 800- x 600-pixel 256-color graphics mode screen displays a series of squares with four colors in each square. Type *y* if all the squares appear to be correct; otherwise, type *n*.

1024 x 768 16-Color Graphics Mode Screen

The 1024- x 768-pixel 16-color graphics mode screen displays a series of hourglasses in 16 different colors with the name of the color beneath each hourglass. Type *y* if all the hourglasses appear to be correct; otherwise, type *n*.

1024 x 768 256-Color Graphics Mode Screen

The 1024- x 768-pixel 256-color graphics mode screen displays a series of asterisks with four colors in each asterisk. Type *y* if all the asterisks appear to be correct; otherwise, type *n*.

Color Palettes Test

The Color Palettes Test checks the video subsystem's ability to display all available colors. The test displays two screens that allow you to check the quality of different shades of the basic colors and to test the ability of the display or monitor to vary the intensity of these colors.

The first screen contains four sets of 64 squares, one for gray and one for each of the three basic colors (red, green, and blue). Each square contains a different shade of its associated color, ranging from very light to very dark. Type *y* if all the squares are the correct colors; otherwise, type *n*.

The second screen is the red/green/blue (RGB) color combination screen. This screen allows you to test the ability of the display or monitor to increase or decrease the intensity of the three basic colors.

The RGB color combination screen displays an RGB box in the top center of the screen with individual red, green, and blue boxes beneath it. Underneath the individual color boxes are three lines that show the intensity of each color. Type *r*, *g*, or *b* to adjust the intensity of the corresponding color; then press the right-arrow key to increase the color intensity, or press the left-arrow key to decrease the intensity. Type *y* if all the squares are the correct colors; otherwise, type *n*.

Solid Colors Test

The Solid Colors Test checks whether the video subsystem is displaying the correct colors. This test also lets you check for missing pixels. When this test is running, four screens appear sequentially—a red screen, a green screen, a blue screen, and a white screen. Check each screen for missing pixels, and verify that the correct color is being displayed.

When the test is complete, a message asks if you are satisfied with the quality of the colors. Type *y* if all the pixels were present and if the correct colors were displayed; otherwise, type *n*.

Appendix C

Regulatory Notices



All regulatory notices for the computer are located on the bottom of the computer.

A Notice About Shielded Cables: Use only shielded cables for connecting peripherals to any Dell device to reduce the possibility of interference with radio and television reception. Using shielded cables ensures that you maintain the appropriate FCC certification of this product. For parallel printers, a cable is available from Dell Computer Corporation.

FCC Class B Notice (U.S. Only)

NOTE: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.

- Plug the computer into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult a representative of Dell Computer Corporation or an experienced radio/television technician for additional suggestions. You may find the following booklet helpful: *FCC Interference Handbook, 1986*, available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00450-7.

Note that FCC regulations provide that changes or modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment. Furthermore, shielded cables must be used when you connect peripherals to any Dell device.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

The following information is provided about the device or devices covered by this document in compliance with FCC regulations:

- Product name: Dell Inspiron 3000
- Model number: TS30H
- Company name: Dell Computer Corporation
Regulatory Department
One Dell Way
Round Rock, Texas 78682 USA
512-338-4400

Modem Requirements

This equipment operates in compliance with Part 68 of the FCC rules. In accordance with this regulation, the following requirements should be observed.

Type of Service

Your Dell portable computer modem is designed to be used on standard device telephone lines. The modem connects to the telephone line by means of a standard jack called the USOC RJ-11C. Connection to a telephone-company-provided coin service (central-office-implemented systems) is prohibited. Connection to party-line service is subject to state tariffs.

Telephone Company Procedures

The goal of the telephone company is to provide you with the best service it can. To this end, the company may need to occasionally make changes in its equipment, operations, or procedures. If these changes might affect your service or the operation of your equipment, the telephone company will give you notice, in writing, to allow you to make any changes necessary to maintain uninterrupted service.

If you have any questions about your telephone line, such as how many pieces of equipment you can connect to it, the telephone company will provide this information on request.

In certain circumstances, it may be necessary for the telephone company to request information from you concerning the equipment that you have connected to your telephone line. On request of the telephone company, provide the FCC registration number and the ringer equivalence number (REN) of the equipment that is connected to your line; both of these items are listed on the equipment label. The sum of all the RENs on your telephone line should be less than five to ensure proper service from the telephone company. In some cases, a sum of five may not be usable on a given line.

If Problems Arise

If your telephone equipment is not operating properly, immediately disconnect the modem from the telephone line, as it may harm the telephone network. If the telephone company notes a problem, it may temporarily

discontinue service. When practical, it will notify you in advance of this disconnection. If advance notice is not feasible, you will be notified as soon as possible. When you are notified, you will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC.

If repairs are needed on your Dell portable computer modem, they should be performed by Dell Computer Corporation or an authorized representative of Dell Computer Corporation. To return products, you must call Dell customer service at the toll-free number shown in Chapter 5, "Getting Help," to receive a Credit Return Authorization Number. For more information on returning equipment, see the "Total Satisfaction" Return Policy in Appendix D, "Warranties and Return Policy."

Installation and Labeling

Your Dell portable computer modem provides all the connections necessary for proper operation. Connection to the telephone network should be made with standard modular cords that connect to the jacks or the modem.

Load Number

The load number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the LNs of all the devices does not exceed 100. An alphabetic suffix is also specified in the LN for the appropriate ringing type (A or B), if applicable. For example, LN = 20 A designates an LN of 20 and an "A" type ringer.

IC Notice (Canada Only)

Most Dell portable computers (and other Dell digital apparatus) are classified by the Industry Canada (IC) Interference-Causing Equipment Standard #3 (ICES-003) as Class B digital devices. To determine which classification (Class A or B) applies to your computer (or other Dell digital apparatus), examine all registration labels located on the bottom or the back panel of your computer (or other digital apparatus). A statement in the form of "IC Class A

ICES-3” or “IC Class B ICES-3” will be located on one of these labels.

Note that Industry Canada regulations provide that changes or modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment.

This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B (ou Classe A, si ainsi indiqué sur l'étiquette d'enregistrement) respecte toutes les exigences du Règlement sur le Matériel Brouilleur du Canada.

Canadian Modem Requirements

The ICES label identifies certified equipment. This certification means the equipment meets certain telecommunications network protective, operational, and safety requirements. The Industry Canada regulations do not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, 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. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). Be aware that compliance with these conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier (in this case, Dell Computer Corporation). Any repairs or alterations made to this equipment, or equipment malfunctions, may give the telecommunications company cause to request that you disconnect the equipment.


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

EN 55022 Compliance (Czech Republic Only)

This device belongs to category B devices as described in EN 55022, unless it is specifically stated that it is a category A device on the specification label. The following applies to devices in category A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all steps necessary to remove sources of interference to telecommunication or other devices.

Pokud není na typovém štítku počítače uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařízení zařazená do třídy A (ochranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jiných zařízení, je uživatel povinen provést taková opatření, aby rušení odstranil.

CE Notice

Marking by the symbol  indicates compliance of this Dell portable computer to the EMC (Electromagnetic Compatibility) directive of the European Community. Such marking is indicative that this Dell portable computer meets or exceeds the following technical standards:

- EN 55022 — “Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.”

NOTE: EN 55022 emissions requirements provide for two classifications—Class A and Class B. If any one of the registration labels (located on the bottom or back panel of your computer, on card-mounting brackets, or on the cards themselves) carries an FCC Class A rating, the following warning applies to your portable computer.

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

- EN 50082-1 — “Electromagnetic compatibility— Generic immunity standard Part 1: Residential, commercial, and light industry.”
- IEC 801-2 — “Electromagnetic compatibility for industrial-process measurement and control equipment Part 2: Electrostatic discharge requirements.” — Severity level 3.
- IEC 801-3 — “Electromagnetic compatibility for industrial-process measurement and control equipment Part 3: Radiated electromagnetic field requirements.” — Severity level 2.
- IEC 801-4 — “Electromagnetic compatibility for industrial-process measurement and control equipment Part 4: Electrical fast transient/burst requirements.” — Severity level 2.
- EN60950:1992 + Amd.1:1993 + Amd.2:1993 — “Safety of Information Technology Equipment including Electrical Business Equipment.”

A “Declaration of Conformity” in accordance with the above standards has been made and is on file at Dell Products Europe BV, Limerick, Ireland.

VCCI Notices (Japan Only)

Most Dell computer systems are classified by the Voluntary Control Council for Interference (VCCI) as Class B information technology equipment (ITE). However, the inclusion of certain options changes the rating of some configurations to Class A. To determine which classification applies to your computer system, examine the FCC classification on the registration labels located on the back panel of your computer, on card-mounting brackets, and on the cards themselves. If any one of the labels carries an FCC Class A designation, your entire system is considered to be VCCI Class A ITE. If *all* labels carry either an FCC Class B identification number or the FCC logo (**FCC**), your system is considered to be VCCI Class B ITE.

Once you have determined your system’s VCCI classification, read the appropriate VCCI notice. Note that VCCI regulations provide that changes or modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment.

Class A ITE

This is a Class A product based on the standard of the Voluntary Control Council for Interference for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Class B ITE

This is a Class B product based on the standard of the Voluntary Control Council for Interference for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Korean Regulatory Notice

To determine which classification (Class A or B) applies to your portable computers (or other Dell digital apparatus), examine all registration labels located on the bottom or the back panel of your computer (or other digital apparatus), on card-mounting brackets, and on the cards themselves. If any one of the labels carries a Class A rating, your entire computer is considered to be a Class A digital device. If all labels carry the Class B rating, your computer is considered to be a Class B digital device.

NOTE: Class A devices are for business purposes. Class B devices are for nonbusiness purposes.

Class A Device

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you may exchange it for a device that has been approved for use in residential as well as business environments.

Class B Device

Please note that this device has been approved for non-business purposes and may be used in any environment, including residential areas.

Polish Center for Testing and Certification Notice

All equipment that works together (computer, monitor, printer, and so on) should have the same power supply source.

The phasing conductor of the room's electrical installation should have a reserve short-circuit protection device in the form of a fuse with a nominal value no larger than 10 amperes (A).

To completely switch off the equipment, the power supply cable must be removed from the power supply socket, which should be located near the equipment and easily accessible.

A protection mark "B" confirms that the equipment is in compliance with the protection usage requirements of standards PN-93/T-42107 and PN-89/E-06251.

Wymagania Polskiego Centrum Badań i Certyfikacji

Współpracujące ze sobą urządzenia (komputer, monitor, drukarka) powinny być zasilane z tego samego źródła.

Instalacja elektryczna pomieszczenia powinna zawierać w przewodzie fazowym rezerwową ochronę przed zwarciami, w postaci bezpiecznika o wartości znamionowej nie większej niż 10A (amperów).

W celu całkowitego wyłączenia urządzenia z sieci zasilania, należy wyjąć wtyczkę kabla zasilającego z gniazdka, które powinno znajdować się w pobliżu urządzenia i być łatwo dostępne.

Znak bezpieczeństwa "B" potwierdza zgodność urządzenia z wymaganiami bezpieczeństwa użytkownika zawartymi w PN-93/T-42107 i PN-89/E-06251.

Pozostałe instrukcje bezpieczeństwa

- Nie należy używać wtyczek adapterowych lub usuwać końcówki obwodu ochronnego z wtyczki. Jeżeli konieczne jest użycie przedłużacza to należy użyć przedłużacza 3-żyłowego z prawidłowo połączonym przewodem ochronnym.
- System komputerowy należy zabezpieczyć przed nagłymi, chwilowymi wzrostami lub spadkami napięcia, używając eliminatora przepięć, urządzenia dopasowującego lub bezzakłócenowego źródła zasilania.
- Należy upewnić się, aby nic nie leżało na kablach systemu komputerowego, oraz aby kable nie były umieszczone w miejscu, gdzie można byłoby na nie nadeptywać lub potykać się o nie.
- Nie należy rozlewać napojów ani innych płynów na system komputerowy.
- Nie należy wpychać żadnych przedmiotów do otworów systemu komputerowego, gdyż może to spowodować pożar lub porażenie prądem, poprzez zwarcie elementów wewnętrznych.
- System komputerowy powinien znajdować się z dala od grzejników i źródeł ciepła. Ponadto, nie należy blokować otworów wentylacyjnych. Należy unikać kładzenia luźnych papierów pod komputer oraz umieszczania komputera w ciasnym miejscu bez możliwości cyrkulacji powietrza wokół niego.

NOM 024 Information (Mexico Only)

The following information is provided on the device(s) described in this document in compliance with the requirements of the official Mexican standards (NOM 024):

Exporter:	Dell Computer Corporation One Dell Way Round Rock, TX 78682
Importer:	Dell Computer de México, S.A. de C.V. Rio Lerma No. 302 - 4° Piso Col. Cuauhtemoc 16500 México, D.F.
Ship to:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Supply voltage:	100/250 VAC ±10%
Frequency:	50/60 Hz
Current consumption:	0.8/0.4 A

Información para NOM 024 (únicamente para México)

La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Mexicana (NOM 024):

Exportador:	Dell Computer Corporation One Dell Way Round Rock, TX 78682
Importador:	Dell Computer de México, S.A. de C.V. Rio Lerma No. 302 - 4° Piso Col. Cuauhtemoc 16500 México, D.F.
Embarcar a:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Tensión alimentación:	100/250 V.C.A. ±10%
Frecuencia:	50/60 Hz
Consumo de corriente:	0.8/0.4 A

Appendix D

Warranties and Return Policy



Dell systems come with either a one-year limited warranty or a three-year limited warranty. The standard limited one-year and three-year warranties for systems purchased in the U.S. and Canada are included in the following subsections. However, your actual limited warranty statement is noted on your invoice and included in the documentation accompanying your system.

Limited One-Year Warranty (U.S. and Canada Only)

Dell Computer Corporation (“Dell”) manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The warranty term is one year beginning on the date of invoice, as further described in the following text.

Damage due to shipping the products to you is covered under this warranty. Otherwise, this warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell’s system integration department; accessories or parts that are not installed in the Dell factory; or DellWare products. Monitors, keyboards, and mice that

are Dell-branded or that are included on Dell’s standard price list are covered under this warranty; all other monitors, keyboards, and mice (including those sold through the DellWare program) are not covered.

Dell will repair or replace products covered under this limited warranty that are returned to Dell’s facility. To request warranty service, you must call Dell’s Customer Technical Support within the warranty period. Refer to the chapter titled “Getting Help” in your *Diagnostics and Troubleshooting Guide* or the section titled “Contacting Dell” in your online *System User’s Guide* to find the appropriate telephone number for obtaining customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you (freight prepaid) if you use an address in the continental U.S. or Canada, where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard-disk drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as diskettes, CDs, or PC Cards.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

DELL MAKES NO EXPRESS WARRANTIES OR CONDITIONS BEYOND THOSE STATED IN THIS WARRANTY STATEMENT. DELL DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES AND CONDITIONS OR MERCHANTABILITY AND FITNESS

FOR A PARTICULAR PURPOSE. SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES OR CONDITIONS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION).

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's limited one-year warranty only. For provisions of any service contract covering your system, refer to the separate service contract that you will receive.

If Dell elects to exchange a product or portion of a product, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange.

Limited Three-Year Warranty (U.S. and Canada Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this warranty. Otherwise, this warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or DellWare products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this warranty; all other monitors, keyboards, and mice (including those sold through the DellWare program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must call Dell's Customer Technical Support within the warranty period. Refer to the chapter titled "Getting Help" in your *Reference and Troubleshooting Guide* or the section titled "Contacting Dell" in your online *System User's Guide* to find the appropriate telephone number for obtaining customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in the continental U.S. or Canada, where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard-disk drive(s) and any other storage device(s) in the product(s). Remove any removable

media, such as diskettes, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts and prepay the shipping costs if you use an address in the continental U.S. or Canada, where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General

DELL MAKES NO EXPRESS WARRANTIES BEYOND THOSE STATED IN THIS WARRANTY STATEMENT. DELL DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THIS LIMITATION MAY NOT APPLY TO YOU.

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