

Dell™ Dimension™ XPS Txxx and Txxxr Systems

REFERENCE AND TROUBLESHOOTING GUIDE

**Information in this document is subject to change without notice.
© 1999–2000 Dell Computer Corporation. All rights reserved.**

Reproduction in any manner whatsoever without the written permission of Dell Computer Corporation is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, *Be Direct*, *Dimension*, *Inspiron*, *OptiPlex*, *DellWare*, and *Latitude* are trademarks of Dell Computer Corporation; *Intel*, *LANDesk*, and *Pentium* are registered trademarks and *Streaming* is a trademark of Intel Corporation; *MS-DOS*, *Microsoft*, *Windows*, and *Windows NT* are registered trademarks of Microsoft Corporation; *VESA* is a registered trademark of Video Electronics Standards Association.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own.

March 2000 P/N 8868D Rev. A04



Safety Instructions

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

When Using Your Computer System

As you use your computer system, observe the following safety guidelines.



CAUTION: Do not operate your computer system with any cover(s) (including computer covers, bezels, filler brackets, front-panel inserts, and so on) removed.

- To help avoid damaging your computer, be sure the voltage selection switch on the power supply is set to match the AC power available at your location:
 - 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
 - 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan
 - 230 V/50 Hz in most of Europe, the Middle East, and the Far East

Also be sure your monitor and attached peripherals are electrically rated to operate with the AC power available in your location.

- Before working inside the computer, unplug the system to help prevent electric shock or system board damage. Certain system board components continue to receive power any time the computer is connected to AC power.
- To help avoid possible damage to the system board, disconnect the power cable to your computer and then press the power button to ground the system board before disconnecting a device from the computer.
- To help prevent electric shock, plug the computer and peripheral power cables into properly grounded power sources. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.

- To help protect your computer system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Be sure nothing rests on your computer system's cables and that the cables are not located where they can be stepped on or tripped over.
- Do not spill food or liquids on your computer. If the computer gets wet, refer to "If Your Computer Gets Wet" in Chapter 6.
- Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- Keep your computer away from radiators and heat sources. Also, do not block cooling vents. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a bed, sofa, or rug.

Ergonomic Computing Habits

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



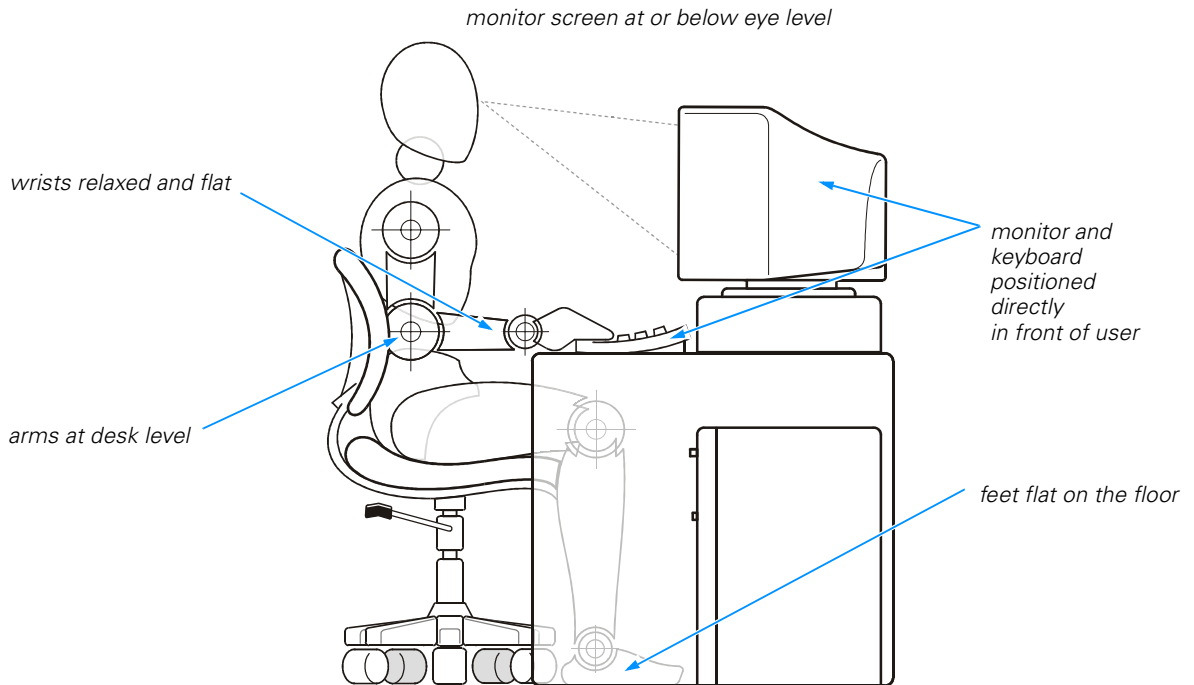
CAUTION: Viewing the monitor screen for extended periods of time may result in eye strain.



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

- Position your system so that the monitor and keyboard are directly in front of you as you work. Special shelves are available (from Dell and other sources) to help you correctly position your keyboard.
- 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.
- Adjust the tilt of the monitor, its contrast and 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 monitor screen.
- 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 or mouse.
- Always leave space to rest your hands while using the keyboard or 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.



When Working Inside Your Computer

Before you remove the computer cover, perform the following steps in the sequence indicated.

NOTICE: Do not attempt to service the computer system yourself, except as explained in this guide and elsewhere in Dell documentation. Always follow installation and service instructions closely.

1. Turn off your computer and all devices.
2. Ground yourself by touching an unpainted metal surface on the back of the computer before touching anything inside your computer.

While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

3. Disconnect the power cable to your computer, and then press the power button to ground the system board.

4. Disconnect any devices connected to the computer, including the monitor, from their electrical outlets to reduce the potential for personal injury or shock. Also, disconnect any telephone or telecommunication lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.
- Handle components and cards with care. Don't touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a microprocessor chip by its edges, not by its pins.



CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate 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 the microprocessor. You can do so by touching an unpainted metal surface on the computer chassis.

As you continue to work inside the computer, periodically touch an unpainted metal surface 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 in your computer. 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 notice may appear throughout this document to remind you of these precautions:

NOTICE: 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 a Dell Dimension XPS Txxx or Txxxr system. It can be used by both first-time and experienced computer users who want to learn about the features and operation of the systems or who want to upgrade their computers. The chapters and appendixes are summarized as follows:

- Chapter 1, "Introduction," provides an overview of the system features and information on preventive maintenance to protect the computer.
- Chapter 2, "Installing Upgrades on the System Board," provides information on performing various upgrades, such as installing additional memory. The chapter includes a basic orientation to internal features of the computer.
- Chapter 3, "Installing Drives," provides instructions on how to install and remove drives.
- Chapter 4, "Basic Troubleshooting," contains checklists to use before calling Dell for technical assistance and instructions for using the Dell Diagnostics.
- Chapter 5, "Software Solutions," has information on reinstalling drivers and the operating system.
- Chapter 6, "Checking Inside Your Computer," presents troubleshooting procedures for system components such as expansion cards, memory, and drives.
- Chapter 7, "Getting Help," provides information on obtaining technical assistance. Users who have been unable to resolve problems using the troubleshooting information provided in this guide can refer to this chapter.
- Appendix A, "System Specifications," is supplemental reference material.
- Appendix B, "System Setup Program," describes the system setup program used for checking and changing system configuration data.
- Appendix C, "Diagnostic Codes, Beep Codes, and System Messages," documents status and error messages generated during system start-up. Included are possible causes and corrective actions.
- Appendix D, "Regulatory Notices," provides regulatory information on the system.
- Appendix E, "Warranty and Return Policy," describes the warranty for your Dell system and the "Total Satisfaction" Return Policy.

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 for your system, see Appendix E, “Warranty and Return Policy.”

Other Documents You May Need



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

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

- The *Getting Started* sheet provides step-by-step instructions for setting up your computer system.
- The *Dell Dimension Systems Setup Guide* describes how to properly set up your operating system and connect a printer.
- The *Dell Dimension XPS Txxx or Txxxr Systems Help* describes the features and operation of your computer. It includes tips on using your computer hardware and answers to commonly asked questions. To open the *Help*, click the **Start** button, point to **Programs**—> **Dell Documents**, and then click **Dell Dimension Help**. You may also double-click the **Dell Documents** icon on the Windows desktop, click **System Information**, click **System Documentation**, and then click **Dell Dimension Help**.
- Online documentation is included for your computer devices (such as a video or modem card) and for any options you purchase separately from your system. To access this supplemental documentation, double-click the **Dell Documents** icon on the Windows desktop, click **System Information**, and then click **System Documentation**.
- Operating system documentation.
- Technical information files—sometimes called “readme” files—may be installed on your hard-disk drive to provide last-minute updates about technical changes to your system or reference material intended for experienced users.

Notes, Notices, and Cautions

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, notices, and cautions, and they are used as follows:



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

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



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

Typographical Conventions

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

- *Interface components* are window titles, button and icon names, menu names and selections, and other options that appear on the monitor screen or display. They are presented in bold.
Example: Click **OK**.
- *Keycaps* are labels that appear on the keys on a keyboard. They 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 when referenced.

Example: "Use the **format** command to"

In contrast, commands presented in the Courier New font are part of an instruction and intended to be typed.

Example: "Type `format a:` 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 presented in lowercase bold; variable parameters (those for which you substitute a value) are presented in lowercase italics; constant parameters are presented 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 a message or 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
```

Example: "Type md c:\programs and press <Enter>."

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

Example: DIMM_x (where x represents the DIMM socket designation)



Contents

| | | |
|------------------|--|------------|
| Chapter 1 | Introduction | 1-1 |
| | Hardware Features | 1-1 |
| | Software Features | 1-3 |
| | Available Upgrades | 1-3 |
| | Preventive Maintenance | 1-4 |
| | Preserving Data | 1-4 |
| | Scheduling Backups | 1-4 |
| | Backup Devices | 1-5 |
| | Virus-Scanning Software and Data Transfers | 1-5 |
| | Cleaning System Components | 1-5 |
| | Recommended Tools and Accessories | 1-5 |
| | Cleaning the Computer, Monitor, and Keyboard Exteriors | 1-6 |
| | Cleaning the Mouse | 1-6 |
| | Cleaning Diskette Drives | 1-7 |
| | Power Protection Devices | 1-7 |
| | Surge Protectors | 1-7 |
| | Line Conditioners | 1-7 |
| | Uninterruptible Power Supply | 1-7 |
| Chapter 2 | Installing Upgrades on the System Board | 2-1 |
| | Safety First—For You and Your Computer | 2-1 |
| | Installation Guidelines | 2-2 |
| | Removing and Replacing the Computer Cover and Support Beam | 2-2 |
| | Inside Your Computer | 2-5 |
| | System Board | 2-7 |
| | Jumpers | 2-9 |
| | Expansion Card Upgrades | 2-10 |
| | Installing Expansion Cards | 2-12 |
| | Removing Expansion Cards | 2-15 |

| | |
|---------------------------------------|------|
| Adding Memory | 2-16 |
| Installing a DIMM | 2-16 |
| Removing a DIMM. | 2-18 |
| Replacing the System Battery. | 2-19 |

Chapter 3 **Installing Drives 3-1**

| | |
|---|------|
| Removing and Replacing the Bezel. | 3-1 |
| Removing and Replacing the Drive Cage | 3-2 |
| Removing the Drive Cage | 3-2 |
| Replacing the Drive Cage. | 3-3 |
| Removing and Replacing a Front-Panel Insert | 3-4 |
| Removing a 3.5-Inch Insert | 3-4 |
| Replacing a 3.5-Inch Insert. | 3-4 |
| Configuring Drives. | 3-5 |
| Connecting Drives. | 3-5 |
| Installing Externally Accessible Drives | 3-6 |
| 5.25-Inch Drives | 3-7 |
| 3.5-Inch Drives | 3-9 |
| Upper 3.5-Inch Bay | 3-9 |
| Lower 3.5-Inch Bay (Mini Tower Chassis Only) | 3-11 |
| Installing EIDE Hard-Disk Drives | 3-13 |
| Primary Hard-Disk Drive Bay | 3-13 |
| Secondary Hard-Disk Drive Bay | 3-14 |
| Partitioning and Logically Formatting an EIDE Hard-Disk Drive | 3-17 |
| Installing SCSI Devices | 3-17 |
| SCSI Configuration Guidelines | 3-17 |
| SCSI ID Numbers | 3-17 |
| SCSI Cables and SCSI Termination. | 3-18 |
| General Procedure for Installing SCSI Devices | 3-19 |
| Partitioning and Formatting SCSI Hard-Disk Drives | 3-21 |

Chapter 4 **Basic Troubleshooting 4-1**

| | |
|---------------------------------|-----|
| Backing Up Data Files. | 4-1 |
| Checking the Basics | 4-1 |
| Connections | 4-2 |
| Environmental Factors | 4-3 |
| Power. | 4-4 |
| Boot Routine | 4-4 |
| Monitor | 4-5 |
| Speakers | 4-6 |
| Modem | 4-7 |
| Drives. | 4-8 |

| | |
|---|------|
| Running the Dell Diagnostics | 4-9 |
| Starting the Dell Diagnostics | 4-10 |
| Dell Diagnostics Main Screen | 4-11 |
| Using the Dell Diagnostics | 4-12 |
| Menu | 4-12 |
| Keys | 4-13 |
| Device Group | 4-13 |
| Device | 4-13 |
| Test | 4-13 |
| Versions | 4-13 |

Chapter 5 Software Solutions 5-1

| | |
|--|-----|
| Using Audio Utilities | 5-1 |
| Enabling the YAMAHA DS-XG Audio Configuration Program | 5-1 |
| YAMAHA DS-XG Audio Configuration Program for Windows 98 | 5-1 |
| YAMAHA DS-XG Audio Configuration Program for Windows NT | 5-3 |
| Adjusting Volume Control | 5-4 |
| Using Windows Power Management Features | 5-5 |
| Reinstalling Drivers | 5-6 |
| Your System's Drivers | 5-6 |
| Using the Dell Dimension ResourceCD to Reinstall Drivers | 5-6 |
| Temporarily Disabling the Virus-Scanning Program | 5-7 |
| Resolving Software and Hardware Incompatibilities | 5-8 |
| Reinstalling Windows 98 | 5-9 |

Chapter 6 Checking Inside Your Computer 6-1

| | |
|--|------|
| Expansion Cards | 6-1 |
| Modem | 6-3 |
| Sound Cards | 6-4 |
| Video Cards | 6-4 |
| Network Cards | 6-4 |
| System Memory | 6-5 |
| Reseating DIMMs | 6-6 |
| Drives | 6-6 |
| CD-ROM and DVD-ROM Drives | 6-7 |
| Hard-Disk Drive | 6-7 |
| System Board | 6-7 |
| Reseating the Microprocessor | 6-9 |
| If Your Computer Gets Wet | 6-11 |
| If Your Computer Is Damaged | 6-12 |

Chapter 7

Getting Help 7-1

| | |
|---|-----|
| Technical Assistance | 7-1 |
| Help Tools | 7-2 |
| World Wide Web | 7-2 |
| AutoTech Service | 7-3 |
| TechFax Service | 7-3 |
| TechConnect BBS | 7-3 |
| Automated Order-Status System | 7-3 |
| Technical Support Service | 7-3 |
| Problems With Your Order | 7-4 |
| Product Information | 7-4 |
| Returning Items for Warranty Repair or Credit | 7-4 |
| Before You Call | 7-4 |
| Dell Contact Numbers | 7-7 |

Appendix A

System Specifications A-1

Appendix B

System Setup Program B-1

| | |
|--|------|
| Entering the System Setup Program | B-1 |
| Using the System Setup Program | B-2 |
| System Setup Screens and Options | B-3 |
| Main Screen | B-4 |
| Advanced Screen | B-6 |
| Peripheral Configuration Submenu | B-8 |
| IDE Configuration Submenu | B-10 |
| Primary IDE Master Submenu | B-12 |
| Diskette Options Submenu | B-13 |
| DMI Event Logging Submenu | B-14 |
| Video Configuration Submenu | B-15 |
| Resource Configuration Submenu | B-16 |
| Security Screen | B-17 |
| Power Screen | B-18 |
| Boot Screen | B-20 |
| Hard Drive Submenu | B-22 |
| Removable Devices Submenu | B-23 |
| Exit Screen | B-24 |
| Disabling a Forgotten Password | B-25 |
| Enabling the Processor Serial Number | B-26 |
| Clearing NVRAM | B-26 |

| | | |
|-------------------|--|------------|
| Appendix C | Diagnostic Codes, Beep Codes, and System Messages | C-1 |
| | Diagnostic Codes | C-1 |
| | POST Beep Codes | C-6 |
| | System Messages | C-7 |

| | | |
|-------------------|---|------------|
| Appendix D | Regulatory Notices | D-1 |
| | FCC Notices (U.S. Only) | D-2 |
| | Class A | D-2 |
| | Class B | D-3 |
| | IC Notice (Canada Only) | D-4 |
| | CE Notice (European Union) | D-4 |
| | Battery Disposal | D-5 |
| | EN 55022 Compliance (Czech Republic Only) | D-5 |
| | VCCI Notice (Japan Only) | D-5 |
| | Class A ITE | D-6 |
| | Class B ITE | D-6 |
| | NOM Information (Mexico Only) | D-7 |
| | Información para NOM (únicamente para México) | D-8 |

| | | |
|-------------------|--|------------|
| Appendix E | Warranty and Return Policy | E-1 |
| | Limited Three-Year Warranty (U.S. Only) | E-1 |
| | Coverage During Year One | E-1 |
| | Coverage During Years Two and Three | E-2 |
| | General Provisions | E-2 |
| | Limited Three-Year Warranty (Canada Only) | E-3 |
| | Coverage During Year One | E-4 |
| | Coverage During Years Two and Three | E-4 |
| | General Provisions | E-5 |
| | One-Year End-User Manufacturer Guarantee (Latin America and the Caribbean Only) | E-6 |
| | Guarantee | E-6 |
| | Exclusions | E-6 |
| | Making a Claim | E-6 |
| | Limitation and Statutory Rights | E-6 |
| | “Total Satisfaction” Return Policy (U.S. and Canada Only) | E-7 |
| | Macrovision Product Notice | E-8 |

Index

Figures

| | | |
|--------------|---|------|
| Figure 2-1. | Removing the Computer Cover (Mini Tower Chassis) | 2-3 |
| Figure 2-2. | Removing the Support Beam | 2-4 |
| Figure 2-3. | Inside the Mini Tower Chassis | 2-5 |
| Figure 2-4. | Inside the Desktop Chassis | 2-6 |
| Figure 2-5. | System Board Features | 2-7 |
| Figure 2-6. | Expansion Cards | 2-11 |
| Figure 2-7. | Removing the Filler Bracket | 2-13 |
| Figure 2-8. | Installing an Expansion Card | 2-14 |
| Figure 2-9. | Correctly Installed Expansion Card | 2-15 |
| Figure 2-10. | Installing a DIMM | 2-17 |
| Figure 2-11. | Removing a DIMM | 2-18 |
| Figure 2-12. | System Battery and Battery Socket | 2-20 |
| Figure 3-1. | Removing the Bezel | 3-1 |
| Figure 3-2. | Removing the Drive Cage | 3-3 |
| Figure 3-3. | Removing a 3.5-Inch Insert | 3-4 |
| Figure 3-4. | DC Power Cable Connector. | 3-5 |
| Figure 3-5. | Drive Interface Connectors | 3-6 |
| Figure 3-6. | Removing a 5.25-Inch Insert | 3-7 |
| Figure 3-7. | Installing a 5.25-Inch Drive | 3-8 |
| Figure 3-8. | Removing a 3.5-Inch Drive Bay Plate | 3-10 |
| Figure 3-9. | Installing a Drive in the Upper 3.5-Inch Drive Bay | 3-10 |
| Figure 3-10. | Installing a Drive in the Lower 3.5-Inch Drive Bay (Mini Tower Chassis Only). | 3-12 |
| Figure 3-11. | Installing a Drive in the Primary Hard-Disk Drive Bay | 3-14 |
| Figure 3-12. | Secondary Hard-Disk Drive Assembly | 3-15 |
| Figure 3-13. | Secondary Hard-Disk Drive Bracket. | 3-16 |
| Figure 3-14. | Internal SCSI Cables | 3-18 |
| Figure 4-1. | Diagnostics Menu | 4-11 |
| Figure 4-2. | Dell Diagnostics Main Screen | 4-12 |
| Figure 5-1. | YAMAHA DS-XG Audio Config Window for Windows 98 | 5-2 |
| Figure 5-2. | YAMAHA DS-XG Audio Config Window for Windows NT | 5-3 |
| Figure 5-3. | Sample Volume Control Window | 5-4 |
| Figure 6-1. | Expansion-Card Installation | 6-2 |
| Figure 6-2. | Incorrect Expansion-Card Installations. | 6-2 |
| Figure 6-3. | Removing the SECC2 Package and Heat Sink | 6-10 |
| Figure 7-1. | Diagnostics Checklist | 7-6 |
| Figure B-1. | Main Screen Menu | B-4 |
| Figure B-2. | Advanced Screen Menu | B-6 |
| Figure B-3. | Peripheral Configuration Submenu | B-8 |
| Figure B-4. | IDE Configuration Submenu | B-10 |
| Figure B-5. | Primary IDE Master Submenu. | B-12 |
| Figure B-6. | Diskette Options Submenu | B-13 |
| Figure B-7. | DMI Event Logging Submenu. | B-14 |

| | | |
|--------------|--|------|
| Figure B-8. | Video Configuration Submenu | B-15 |
| Figure B-9. | Resource Configuration Submenu | B-16 |
| Figure B-10. | Security Screen Menu | B-17 |
| Figure B-11. | Power Screen Menu | B-18 |
| Figure B-12. | Boot Screen Menu | B-20 |
| Figure B-13. | Hard Drive Submenu | B-22 |
| Figure B-14. | Removable Devices Submenu | B-23 |
| Figure B-15. | Exit Screen Menu | B-24 |
| Figure D-1. | VCCI Class A ITE Regulatory Mark | D-6 |
| Figure D-2. | VCCI Class B ITE Regulatory Mark | D-6 |

Tables

| | | |
|-------------|--|------|
| Table 2-1. | System Board Connectors and Sockets | 2-8 |
| Table 2-2. | Configuration Jumper Settings | 2-10 |
| Table 4-1. | Boot Routine Indications | 4-4 |
| Table 7-1. | International Dialing Codes | 7-8 |
| Table 7-2. | Dell Contact Numbers | 7-9 |
| Table A-1. | Technical Specifications | A-1 |
| Table B-1. | System Setup Navigation Keys | B-2 |
| Table B-2. | Main Screen Menu Options | B-4 |
| Table B-3. | Advanced Screen Menu Options | B-6 |
| Table B-4. | Peripheral Configuration Submenu Options | B-8 |
| Table B-5. | IDE Configuration Submenu Options | B-10 |
| Table B-6. | Primary IDE Master Submenu Options | B-12 |
| Table B-7. | Diskette Options Submenu Options | B-13 |
| Table B-8. | DMI Event Logging Submenu Options | B-14 |
| Table B-9. | Video Configuration Submenu Options | B-15 |
| Table B-10. | Resource Configuration Submenu Options | B-16 |
| Table B-11. | Security Screen Menu Options | B-17 |
| Table B-12. | Power Screen Menu Options | B-18 |
| Table B-13. | Boot Screen Menu Options | B-20 |
| Table B-14. | Hard Drive Submenu Options | B-22 |
| Table B-15. | Removable Devices Submenu Option | B-23 |
| Table B-16. | Exit Screen Menu Options | B-24 |
| Table C-1. | Diagnostic Codes | C-2 |
| Table C-2. | POST Beep Codes | C-6 |
| Table C-3. | System Messages | C-7 |



CHAPTER 1

Introduction

Dell™ Dimension™ XPS Txxx and Txxxr computer systems are high-speed personal computers that include an Intel® Pentium® III microprocessor. These systems combine high-performance Peripheral Component Interconnect (PCI) design with accelerated graphics port (AGP) and Industry-Standard Architecture (ISA) design, allowing a wide range of initial configurations and upgrade possibilities.

This chapter provides information about the following:

- Major hardware and software features of your computer
- Available upgrades for your computer
- Preventive maintenance procedures to protect your investment and extend the life of your computer.

Hardware Features

Your Dell computer offers the following hardware features:

- An Intel Pentium III microprocessor that runs at an external speed of 100 megahertz (MHz).

The Intel Pentium III processor in your computer includes Streaming™ Single Instruction, Multiple Data (SIMD) Extensions. This technology improves the performance of 3D graphics, 3D audio, and other advanced application programs, such as speech recognition software.

The **Main** screen of the system setup program lists the speed of your system's processor. For information on accessing this program, see Appendix B, "System Setup Program."

- A dedicated graphics bus that significantly enhances 3D graphics performance and supports up to 2X AGP based on the video card.
- Memory that can be increased up to 768 megabytes (MB) by installing 32-, 64-, 128-, or 256-MB synchronous dynamic RAM (SDRAM) dual in-line memory modules (DIMMs) in the three DIMM sockets on the system board.

- Full Plug and Play version 1.2a capability in the system basic input/output system (BIOS) allows you to install both PCI and ISA Plug and Play expansion cards without performing manual configuration tasks. The system BIOS is stored in flash memory, so it can be updated to support future Plug and Play enhancements.



NOTE: The Microsoft® Windows NT® operating system does not provide ISA Plug and Play support. Therefore, some ISA Plug and Play cards may not work with Windows NT unless you configure them manually.

The system board includes the following integrated features:

- Four full-length 32-bit PCI expansion slots for connecting high-speed PCI devices to the PCI bus—greatly increasing their input/output (I/O) speeds over the speeds attainable using the ISA bus.
- One shared full-length PCI/ISA expansion slot containing both a PCI and an ISA expansion-card connector, only one of which can be used at any given time.
- One full-length AGP expansion slot.
- An integrated diskette drive interface that supports a single diskette drive without the need for a controller card.
- Two enhanced integrated drive electronics (EIDE) interfaces on the PCI bus that support up to two EIDE devices each. Supported devices include Advanced Technology Attachment (ATA)-33 Ultra direct memory access (DMA) hard-disk drives, CD-ROM drives, Zip drives, and tape drives.



NOTES: The ATA-66 controller card supports ATA-66 Ultra DMA hard-disk drives.

Inconsistencies in the manufacturing of CD-ROM media may cause some higher-speed CD-ROM drives to vibrate more than others. Such vibration and associated noise do not indicate a defect in the drive or the CD.

- One serial port and one bidirectional parallel port for connecting external devices.
- For systems running the Microsoft Windows® 98 Second Edition or Windows 2000 operating system, the two high-performance Universal Serial Bus (USB) ports provide a single connection point for multiple USB-compliant devices. These devices can be connected and disconnected while the system is running.



NOTE: If you attach a USB device that was not included in your original system configuration, you may need to install a specific driver for that device to obtain its full functionality. Contact the USB device manufacturer for more information.

- A PS/2-style keyboard port and a PS/2-compatible mouse port.
- Dell Dimension XPS Txxx and Txxxr systems are available with and without integrated sound. For systems with integrated sound, a Yamaha 724 DS-1 PCI advanced audio controller with 3D positioning and Direct Sound acceleration provides audio functions compatible with a Sound Blaster Pro expansion card. A musical instrument digital interface (MIDI)/game port provides a connection for a joystick, MIDI keypad, game pad, or other game input device.

Software Features

The following software is included with your Dell computer system:

- Microsoft Windows 98 Second Edition, Windows NT 4.0, or Windows 2000 is installed on your hard-disk drive. For more information, refer to your operating system documentation.
- Virus-scanning software.
- Audio utilities for systems with integrated sound.
- The system setup program for viewing and changing system configuration information (refer to Appendix B, "System Setup Program").
- Video drivers provided with the video card installed in your computer for supporting video resolutions greater than 640 x 480 pixels. Before changing the resolution, check the monitor documentation to determine the supported resolutions and refresh rates. Refer to "Video Display" in Chapter 4 of the *Setup Guide* for instructions on changing the resolution.
- Dell Diagnostics for evaluating the computer's components and devices (refer to "Running the Dell Diagnostics" in Chapter 4).
- The optional Intel LANDesk® Client Manager allows a network administrator to manage and troubleshoot personal computers from one or more systems. For additional information about LANDesk, refer to the documentation that accompanied the software.
- Wakeup On LAN (PCI 2.1) capability if a Wakeup On LAN-capable network card is installed. This feature, when enabled in the system setup program, allows the system to be started up from a server management console. Wakeup On LAN capability also allows remote computer setup, BIOS upgrades, software downloading and installation, file updates, and asset tracking after hours and on weekends when local area network (LAN) traffic is at a minimum.

Available Upgrades

The upgrades Dell offers undergo rigorous testing to ensure proper operation with your computer. You should review "Expansion Card Upgrades" in Chapter 2 or Chapter 3, "Installing Drives," to be sure you have the necessary slots or resources available before purchasing such an upgrade.

Dell offers a variety of expansion cards to increase system functionality:

- High-performance video cards
- ATA-66 controller cards
- 10- and 100-megabit per second (Mbps) network cards
- Small computer system interface (SCSI) host adapter cards
- Fax/modem cards with telephony support
- PCI sound cards and multimedia speakers
- TV tuner card

You can expand your system's memory up to 768 MB by installing additional 72-pin, 100-MHz ECC or non-ECC SDRAM DIMMs in the DIMM sockets on the system board. Purchasing memory upgrades from Dell Spare Parts ensures system compatibility; these upgrades are also covered under your system warranty. Refer to "Adding Memory" in Chapter 2 before purchasing a memory upgrade.

Dell offers a wide variety of drives that can be installed in your system, including the following options:

- ATA-33 Ultra DMA hard-disk drives
- ATA-66 Ultra DMA hard-disk drives (for use with ATA-66 controller cards)
- EIDE tape drives
- Zip drives with removable media
- SCSI hard-disk drives

To order any of these upgrades, call Dell.

Preventive Maintenance

The following sections contain maintenance procedures that you should perform regularly to keep the system in top operating condition.

Preserving Data

Everyone inadvertently deletes files at one time or another, viruses can corrupt files, and hard-disk drives can fail after extended use. To avoid data loss, regularly back up the data files on the hard-disk drive. If you should lose the contents of your hard-disk drive, you can reinstall programs, but your data files will be lost if you do not have a backup.

Your Dell-installed drivers and online documentation are preserved on the *Dell Dimension ResourceCD*. Use this CD to restore the drivers and documentation that came on your Dell-installed hard-disk drive.



NOTE: In case of warranty replacement of your hard-disk drive, you will receive a blank, formatted drive from Dell. You must reinstall application programs and restore data files.

Scheduling Backups

Dell recommends that you back up the hard-disk drive at least once a week, with a daily backup of those files that have been changed. Following these guidelines ensures the loss of no more than a day's work. As further insurance against data loss, keep duplicate copies of the weekly and monthly backups at an off-site location. Doing so ensures that you lose no more than a week's work, even if one of the on-site backups becomes corrupted.

Backup Devices

Tape and Zip drives are convenient and affordable devices that can back up data at rates of up to 1.6 megabytes per second (MB/sec) and can often run unattended. Dell recommends these drives and their associated backup software for use as system backup devices. Depending on how many data files you have, you can also use diskettes as backup devices.

Virus-Scanning Software and Data Transfers

With thousands of known viruses and with the prevalence of data transfers over telecommunications lines, Dell recommends that you use virus-scanning software to protect your computer. Regularly update your virus-scanning software as described in the software documentation and load updates immediately.

Use the virus-scanning software before installing any software from unlicensed sources, either downloaded from the Internet or on diskettes. Making regular backups as discussed in the previous section provides insurance in case a virus does infect your system.

Cleaning System Components

As it draws in air to cool the computer, the power supply fan also draws dust and other particles into the computer. This contaminant buildup increases the system's internal temperature and interferes with component operation.

To minimize these conditions, Dell recommends keeping your work environment clean. In particular, you should regularly clean your computer system and use commercially available drive-cleaning kits to remove contaminants inside externally accessible drives.

You may also want to purchase monitor and keyboard covers to protect against dust and debris.

Recommended Tools and Accessories

Use the following tools and accessories for cleaning the computer system:

- Wrist grounding strap to reduce the effects of electrostatic discharge (ESD)
- Liquid dishwashing detergent
- Isopropyl (rubbing) alcohol
- Soft, lint-free cleaning cloth
- Nonabrasive diskette-drive head-cleaning kit that contains pretreated diskettes in individually sealed packages
- Small vacuum cleaner with a brush attachment

Cleaning the Computer, Monitor, and Keyboard Exteriors

To clean the exterior of the computer, monitor, and keyboard, perform the following steps:

1. Place the strap around your wrist and attach the other end to an unpainted metal surface on the chassis, such as the power supply bracket, that is connected to chassis ground.
2. Turn off the computer, monitor, and any other attached devices, and disconnect them from their power sources.
3. Use the vacuum cleaner to remove any dust from the slots and holes on the computer and between the keys on the keyboard.
4. Moisten a soft cleaning cloth with a solution of three parts water and one part liquid dishwashing detergent.

Do not soak the cloth in the solution; you must not let the solution drip inside the computer or keyboard.

NOTICE: Do not wipe the monitor screen with this solution. Doing so may damage the antiglare coating on your monitor screen.

5. Use the moistened cloth to wipe the computer cover, the keyboard, and the exterior of the monitor.

Cleaning the Mouse

If the screen cursor skips or moves abnormally, clean your mouse by performing the following steps:

1. Turn the retainer ring counterclockwise to remove the ball.
2. Wipe the ball with a clean, lint-free cloth.
3. Blow carefully into the ball cage to dislodge dust and lint.
4. Look for a buildup of dirt on the rollers inside the ball cage. This buildup usually appears as a stripe running around the middle of the roller.
5. If dirty, clean the rollers using a cotton swab moistened lightly with isopropyl alcohol.

After cleaning, make sure the rollers are still centered in their channels. Make sure that fluff from the swab is not left on the rollers.

6. Replace the ball and retainer ring.

Cleaning Diskette Drives

You can clean a diskette drive using a commercially available cleaning kit. These kits contain pretreated diskettes to remove contaminants that accumulate during normal operation.

If the kit does not contain instructions, insert a pretreated diskette into the drive and turn on the system. After 20 or 30 seconds, remove the diskette from the drive.

NOTICE: Do not attempt to clean drive heads with a swab. You may accidentally misalign the heads, rendering the drive inoperable.

Power Protection Devices

A number of devices are available that protect against power problems, such as power surges, transients, and power failures.

Surge Protectors

Surge protectors prevent voltage spikes, which occur during electrical storms or following power interruptions, from entering a system through the electrical outlet. There are various types, and they usually provide a level of protection commensurate with their cost. Some also provide warranty coverage for certain types of damage. Compare joule ratings to determine the relative effectiveness of different devices. Most surge protectors do not protect against lightning strikes, so you should disconnect your computer when lightning is near.

Modems can also be damaged by power surges on telephone lines and should be disconnected during electrical storms. Many surge protectors have a phone jack for modem protection. *Network connections cannot be protected by surge protectors. Therefore, always disconnect the network cable from the network card connector during electrical storms.*

Surge protectors do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

Line Conditioners

Line conditioners keep a computer's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors—up to several hundred dollars. However, these devices cannot protect against a complete loss of power.

Uninterruptible Power Supply

A power loss while your computer is writing to your hard-disk drive can result in loss of data and file corruption. Worst case, your operating system could be corrupted. An uninterruptible power supply (UPS) offers the most complete protection against variations in power because it uses battery power to keep the system running when AC power is lost. AC power, while available, charges the battery; when AC power is lost, the battery provides power to the system for a limited amount of time—from 15 minutes to an hour or so—depending on the UPS system.



NOTE: Use a UPS to protect your computer only. Connect other devices, such as a printer, to a separate power strip providing surge protection. The length of time that the battery can supply power following an AC power loss decreases with additional hardware.

UPS systems can cost a few hundred dollars to several thousand dollars, depending on the operating time they provide when AC power is lost. UPS systems with 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. A UPS system should be Underwriters Laboratories (UL) safety-approved.



CHAPTER 2

Installing Upgrades on the System Board

This chapter describes how to install expansion cards and system memory as well as replace the system battery (if necessary). It also tells you how to remove and replace the computer cover and support beam and familiarizes you with internal components.

Safety First—For You and Your Computer

Working inside your computer is safe—if you observe the following precautions.



CAUTION: FOR YOUR PERSONAL SAFETY AND PROTECTION OF YOUR EQUIPMENT

Before working on your computer, perform the following steps:

1. Turn off your computer and all devices.
2. Ground yourself by touching an unpainted metal surface on the back of the computer before touching anything inside your computer.

While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

3. Disconnect the power cable to your computer, and then press the power button to ground the system board.
4. Disconnect any devices connected to the computer, including the monitor, from their electrical outlets to reduce the potential for personal injury or shock. Also, disconnect any telephone or telecommunication lines from the computer.

In addition, Dell recommends that you review the safety instructions at the front of this guide.

Installation Guidelines

Keep a static-sensitive component in its antistatic packing material until you are ready to install the component in the computer. Just before unwrapping the antistatic packaging, discharge static electricity from your body.

Make sure you have adequate lighting and a clean work space. If you temporarily disconnect cables or remove expansion cards, note the position of the connectors and slots so that you can reassemble the system correctly. Also note the extra connectors available for upgrades.

Removing and Replacing the Computer Cover and Support Beam



NOTE: This system uses two types of chassis. One chassis uses a cover with an integrated support beam. In the other chassis, the support beam is attached to the chassis and must be removed to access internal components.

To remove the computer cover and support beam from a desktop or mini tower system, perform the following steps:

1. Observe the “Caution for Your Personal Safety and Protection of Your Equipment” found earlier in this chapter. Also, observe the safety instructions at the front of this guide.

NOTICE: To avoid inadvertently damaging the system board, be sure you disconnect the system from the electrical outlet before removing the computer cover. This system continues to receive a small amount of power to the system board when the system is turned off and attached to an electrical outlet (the system-board power indicator, shown in Figure 2-5, turns on when power is detected).

2. If you are working on a mini tower system, lay the computer on its right side with the chassis foot off the edge of the work surface to allow the computer to lay flat.
3. Loosen the cover-mounting thumbscrew shown in Figure 2-1 that secures the cover to the back of the computer.



NOTE: The thumbscrew is captive and stays in the cover when loosened.

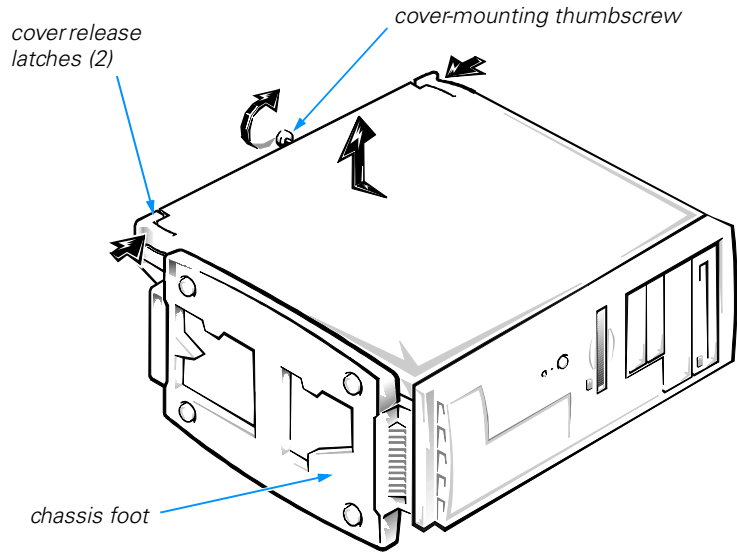


Figure 2-1. Removing the Computer Cover (Mini Tower Chassis)



CAUTION: To prevent cuts, keep your hands clear of the metal edges on the chassis and fan guard as you slide back the cover.

4. Face the front of the chassis. Use your thumbs to press in both cover release latches while pushing the cover backward. Move the cover back about an inch, and then lift it straight up off the chassis.

If necessary, use both hands and work one side at a time.
5. Pull up the front end of the support beam (see Figure 2-2) until it snaps free from its fastener. Lift the front of the beam until the hinged tabs on the back end of the beam clear their slots.

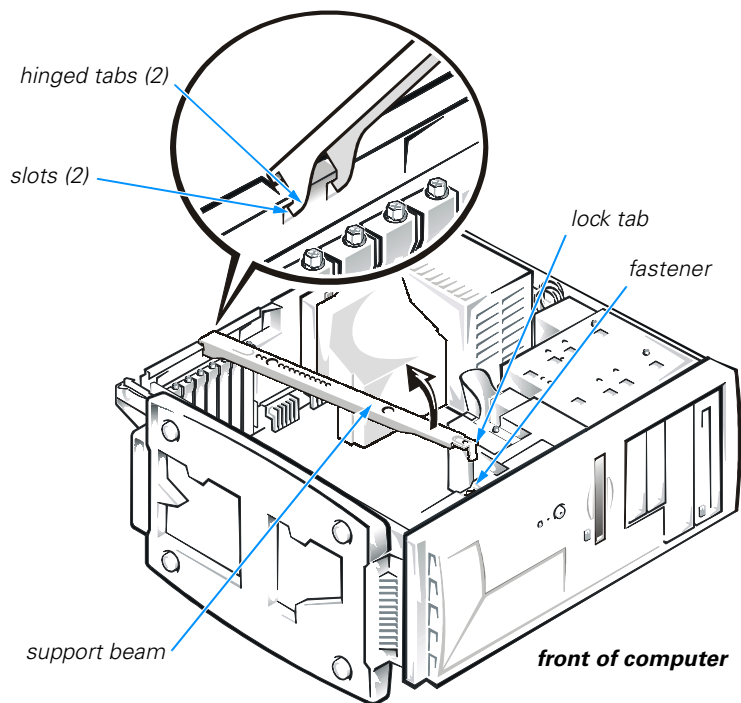


Figure 2-2. Removing the Support Beam

Replace the computer cover and support beam on a desktop or mini tower chassis as follows:

1. Check all cable connections, especially those that might have come loose during your work. Fold cables and unused connectors out of the way so that they do not catch on the computer cover or interfere with airflow inside the computer.
2. Check to see that no tools or extra parts (including screws) are left inside the computer.
3. Slip the support beam's hinged tabs into their slots (see Figure 2-2) and lower the beam. Then place the lock tab into its fastener, and press down on the front end of the beam until it snaps into position.
4. Position the cover on the chassis approximately 1 inch back. Slide the cover forward until it locks into place.
5. Tighten the cover-mounting thumbscrew on the back of the chassis.

Inside Your Computer

Figures 2-3 and 2-4 show the mini tower and desktop chassis with their covers and support beams removed as an aid in locating internal features and components.

When you look inside your computer, note the *DC power cables* coming from the power supply. These cables supply power to the system board, to internal drives, and to certain expansion cards that connect to external devices.

The flat ribbon cables are the *interface cables* for internal drives. An interface cable connects a drive to an interface connector on the system board or on an expansion card.

The *system board*—the large printed circuit board mounted vertically in the bottom half of the mini tower chassis or secured to the bottom of the desktop chassis—holds the computer's control circuitry and other electronic components. Some hardware options are installed directly onto the system board.

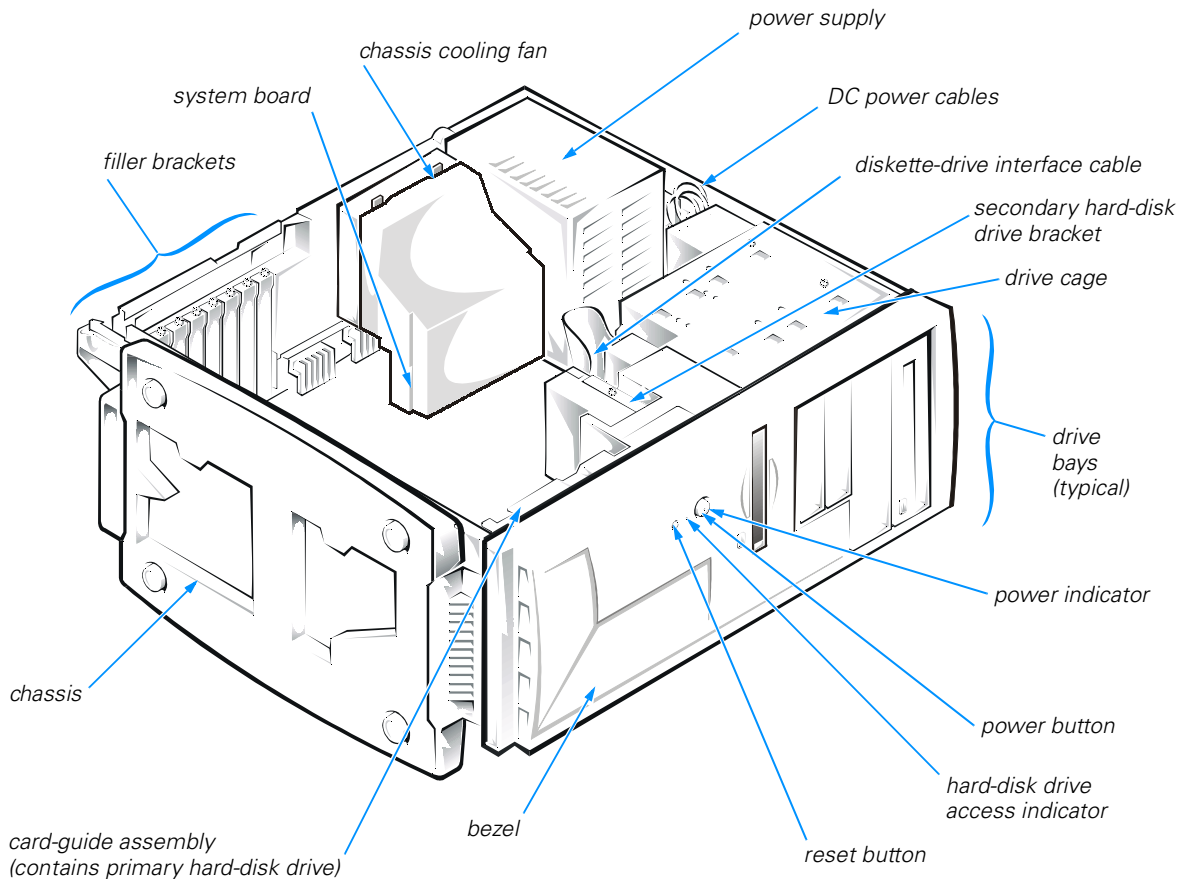


Figure 2-3. Inside the Mini Tower Chassis

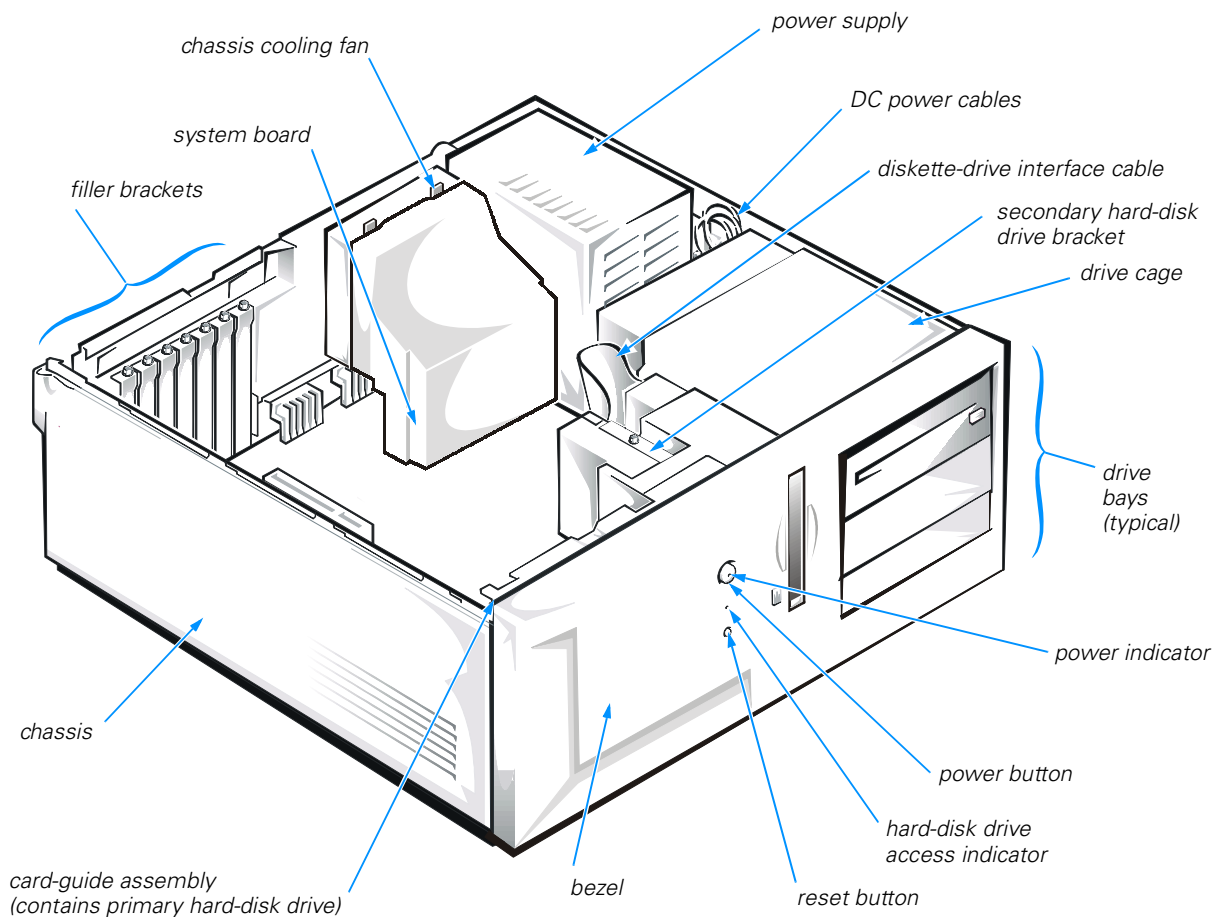
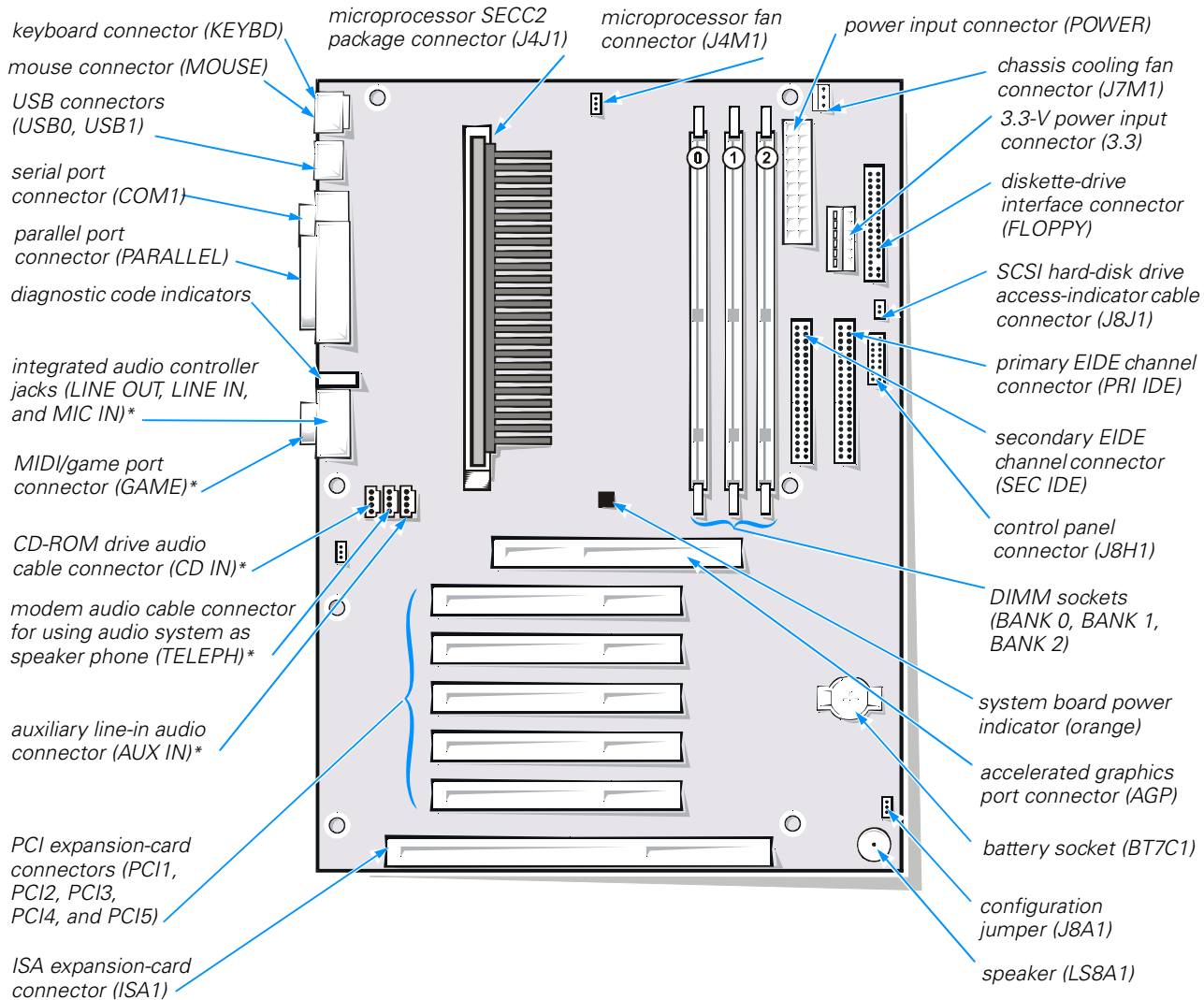


Figure 2-4. Inside the Desktop Chassis

System Board

Figure 2-5 shows the system board connectors and sockets, and Table 2-1 describes their functions.



* For systems with integrated audio

Figure 2-5. System Board Features

Table 2-1. System Board Connectors and Sockets

| Connector or Socket | Description |
|----------------------------|--|
| 3.3 | 3.3-V power input connector |
| AGP | Accelerated graphics port connector (brown color) |
| AUX IN | Auxiliary line-in audio connector (for systems with integrated audio; natural color) |
| BT7C1 | Battery socket |
| BANK <i>n</i> | DIMM sockets |
| CD IN | CD-ROM drive audio cable connector (for systems with integrated audio; black color) |
| COM1 | Serial port connector |
| FLOPPY | Diskette-drive interface connector |
| GAME | MIDI/game port connector (for systems with integrated audio) |
| ISA1 * | ISA expansion-card connector (black color) |
| J4J1 | Microprocessor SECC2 package connector |
| J4M1 | Microprocessor fan connector |
| J7M1 | Chassis cooling fan connector |
| J8A1 | Configuration jumper |
| J8H1 | Control panel connector |
| J8J1 | SCSI hard-disk drive access-indicator cable connector |
| KEYBD | Keyboard connector |
| LINE IN | Line-in jack (for systems with integrated audio) |
| LINE OUT | Line-out jack (for systems with integrated audio) |
| LS8A1 | Speaker |
| MIC IN | Microphone jack (for systems with integrated audio) |
| MOUSE | Mouse connector |

* Connectors ISA1 and PCI5 share a single card-slot opening, so only one of the two connectors can be used at any given time.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table 2-1. System Board Connectors and Sockets (continued)

| Connector or Socket | Description |
|---------------------|---|
| PARALLEL | Parallel port connector; sometimes referred to as <i>LPT1</i> |
| PCIn* | PCI expansion-card connectors (natural color) |
| POWER | Power input connector |
| PRI IDE | Primary EIDE channel connector |
| SEC IDE | Secondary EIDE channel connector |
| TELEPH | Modem audio cable connector (for using integrated audio system as a speaker phone; green color) |
| USB _n | USB connectors |

* Connectors ISA1 and PCI5 share a single card-slot opening, so only one of the two connectors can be used at any given time.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Jumpers



Jumpers are small blocks on the system board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins, creating a circuit. To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.



The jumper setting is often shown in text as two numbers, such as 1–2. The number 1 is printed on the circuit board so that you can identify each pin number based on the location of pin 1.

Figure 2-5 shows the location of the system-board configuration jumper in your computer. Table 2-2 describes the settings and functions of the configuration jumper.

Table 2-2. Configuration Jumper Settings

| Jumper Settings* | Description |
|---|--|
| Normal mode  | In Normal mode (jumper on pins 1–2), system setup settings and installed password(s) are retained when the system boots. In this mode, an automatic recovery is attempted if the BIOS detects that any of its main blocks are corrupted. |
| Maintenance mode  | Starting the system in Maintenance mode (jumper on pins 2–3) automatically starts the system setup program, adds the Maintenance option to the menu bar, and displays the Maintenance screen. The Maintenance screen provides the option listed below. CAUTION: Entering Maintenance mode returns all settings in the system setup program to their defaults. Dell strongly recommends that you record or print all current settings before entering Maintenance mode so that you can correct them when the system is reset to Normal mode. Clear All Passwords — Allows you to disable a forgotten password (refer to “Disabling a Forgotten Password” in Appendix B). |

* ● indicates pin 1

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Expansion Card Upgrades

The system board accommodates up to six expansion cards—32-bit Peripheral Component Interconnect (PCI) expansion cards, 8- or 16-bit Industry-Standard Architecture (ISA) expansion cards, and a 32-bit accelerated graphics port (AGP) expansion card. Figure 2-6 shows examples of different types of expansion cards.

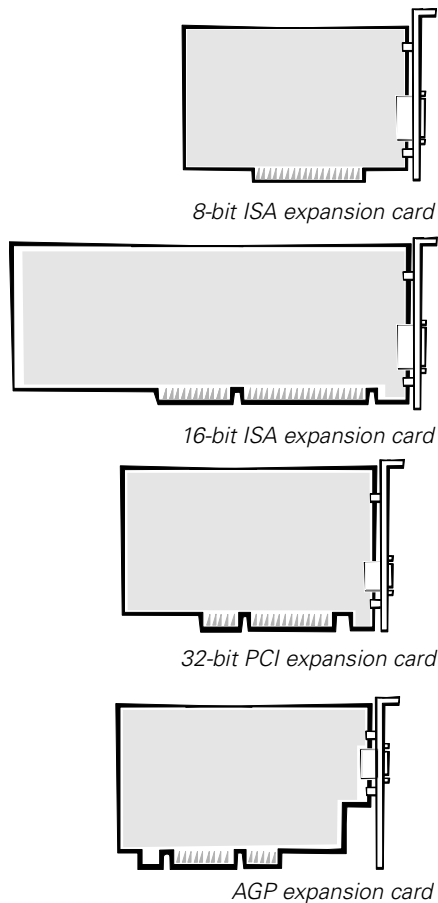


Figure 2-6. Expansion Cards

Of the seven expansion-card connectors (see Figure 2-5), the brown one (AGP) is for the AGP video card, the five beige ones (PCI1, PCI2, PCI3, PCI4, and PCI5) are for PCI cards, and the black one (ISA1) is for an ISA card. Because connector ISA1 shares expansion-slot space with connector PCI5, a maximum of five PCI and ISA expansion cards can be installed.

Make sure you have a slot available for the type of card you are installing. Also check the Windows 98 Device Manager, Windows 2000 Device Manager, or Windows NT Diagnostics for an available interrupt request (IRQ) line that is supported by the card.

To check Windows 98 resources, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **System** icon.

3. Click the **Device Manager** tab.
4. Double-click the **Computer** icon to open the **Computer Properties** window and view the **View Resources** tab.

To check Windows NT resources, start the **Windows NT Diagnostics** in the **Administrative Tools (Common)** folder and view the **Resources** tab.

To check Windows 2000 resources, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **System** icon.
3. Click the **Hardware** tab.
4. Click **Device Manager**.
5. Click **View**, then **Resources by connection**.
6. Double-click **Interrupt request (IRQ)** to view the IRQ assignments.



NOTE: If an IRQ supported by your card is not available, you may be to able to reassign resources used by other devices or disable unused devices.

The computer can support a mixture of a traditional ISA expansion card (called *legacy* expansion cards), Plug and Play ISA expansion cards, and PCI expansion cards. The system basic input/output system (BIOS) allows you to install both PCI and ISA Plug and Play expansion cards without performing manual configuration tasks.



NOTE: If you are using the Windows NT operating system, you should configure an ISA expansion card manually. If you do not have a manually configurable card, you can use the ISA Configuration Utility (ICU) to manage an ISA expansion card. This utility can be downloaded from the Dell World Wide Web site at <http://www.dell.com>.

Installing Expansion Cards

To install an expansion card, perform the following steps:

1. Prepare the expansion card for installation as instructed in the documentation that came with the expansion card.

Check the documentation to make sure the card is configured to work with other devices already installed in your computer. Set any necessary jumpers or switches on the card to avoid conflicts with devices already installed.

2. Remove the computer cover and support beam according to the instructions in "Removing and Replacing the Computer Cover and Support Beam" found earlier in this chapter.



3. Choose an expansion-card connector for the card.

NOTE: The ISA1 connector and the PCI5 connector share a single card-slot opening, so only one of these connectors can be used at any given time.

4. Unscrew and remove the metal filler bracket that covers the card-slot opening for the expansion slot you intend to use (see Figure 2-7).

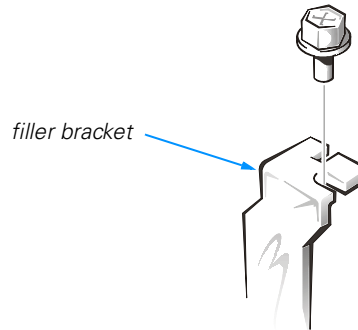


Figure 2-7. Removing the Filler Bracket

5. Insert the expansion card firmly into the expansion-card connector.

Cutouts in the card-edge connector align with crossbars in the expansion-card connector. Gently rock the card into the connector until it is fully seated (see Figure 2-8). If the expansion card is full-length, insert the front end of the card into the corresponding card guide at the front of the chassis as you insert the card into its connector.

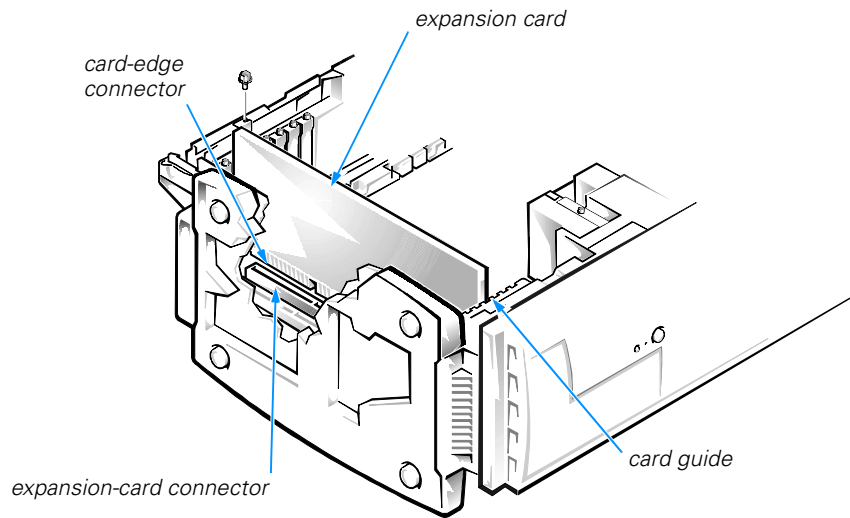


Figure 2-8. Installing an Expansion Card

6. When the card is firmly seated in the connector, secure the card-mounting bracket with the screw you removed in step 4.

Make sure the front of the card-edge connector is completely seated in the expansion-card connector. The bottom of the card-mounting bracket must be inside the card-slot opening, and the top of the bracket must be flush against the chassis with the notch aligned with the screw hole in the chassis (see Figure 2-9). "Expansion Cards" in Chapter 6 provides more information on correctly seating an expansion card.

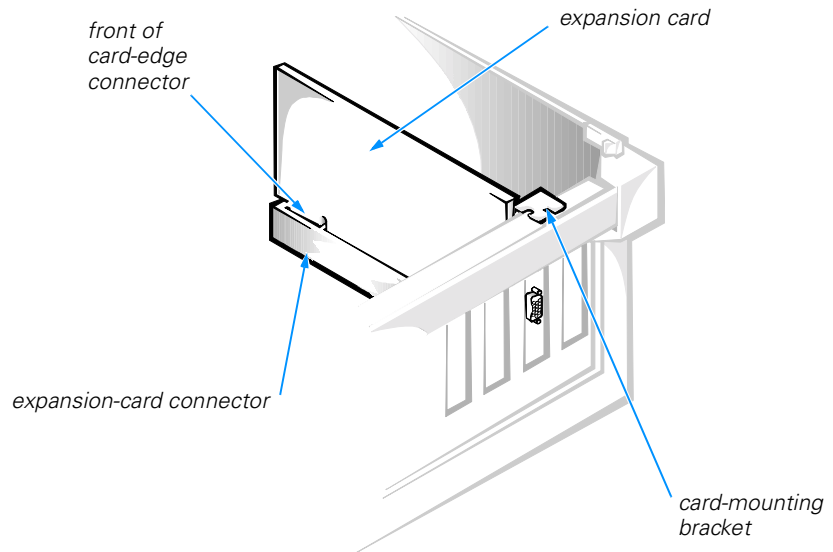


Figure 2-9. Correctly Installed Expansion Card

7. Connect any cables required for the card as described in the documentation that came with the card.
8. Replace the computer cover and support beam; reconnect your computer and devices to their electrical outlets and turn them on.

Refer to the documentation that came with the expansion card for information on installing any required drivers for your operating system.

Removing Expansion Cards

To remove an expansion card, perform the following steps:

1. Remove the computer cover and support beam according to the instructions in "Removing and Replacing the Computer Cover and Support Beam" found earlier in this chapter.
2. If necessary, disconnect any cables connected to the card.
3. Remove the screw from the card-mounting bracket.
4. Grasp the card by its top corners, and ease it out of its connector.
5. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening in the chassis.



NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your computer.

6. Replace the computer cover and support beam; reconnect your computer and devices to their electrical outlets and turn them on.

Adding Memory

Memory can be increased to a maximum of 768 megabytes (MB) by installing combinations of 3.3-volt (V) 32-, 64-, 128-, and 256-MB dual in-line memory modules (DIMMs) in the three DIMM sockets on the system board. Only 100-megahertz (MHz) DIMMs are supported. Purchasing memory upgrades from Dell Spare Parts ensures system compatibility; these upgrades are also covered under your system warranty.



NOTE: Your computer is designed for peak performance with specific DIMMs that are validated through rigorous testing. The system may not recognize other synchronous dynamic random-access memory (SDRAM) DIMMs and may fail power-on self-test (POST).

Dell Dimension XPS Txxx and Txxxr systems can use SDRAM modules that provide error checking and correction (ECC) capabilities. To support ECC, *all* installed DIMMs must be ECC-capable.



NOTES: You can mix DIMM sizes and install them in any order in the memory banks, leaving a bank unoccupied if necessary. Dell recommends but does not require that you fill the sockets in order starting with Bank 0.

As the amount of system memory increases, especially with ECC-type memory installed and enabled, the longer it takes for the video to synchronize with the system during system start-up. For example, video may not appear for 30 seconds or more in a system with 768 MB of ECC memory installed after the computer has been turned on or restarted.

Installing a DIMM

To install a DIMM, perform the following steps:

1. Remove the computer cover and support beam according to the instructions in “Removing and Replacing the Computer Cover and Support Beam” found earlier in this chapter.
2. Press outward on the plastic securing clips at each end of the DIMM socket to release them as shown in step 1 of Figure 2-10.

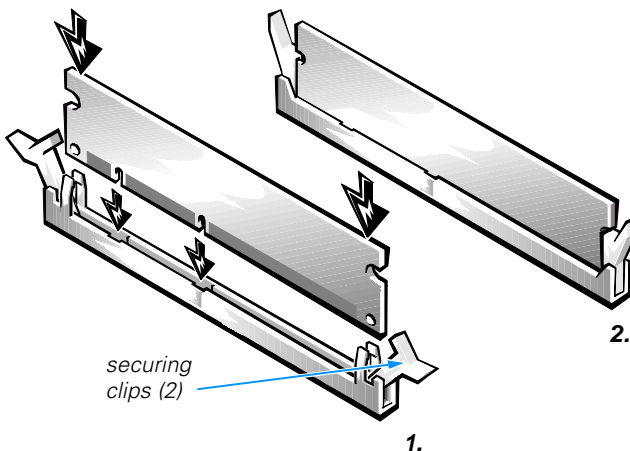


Figure 2-10. Installing a DIMM

3. Orient the DIMM so that the cutouts on its edge connector align with the cross-bars in the central groove of the socket.

NOTICE: Do not press near the middle of the DIMM. Doing so could break the module.

4. Insert the DIMM straight down into the socket, making sure it fits into the vertical guides at each end of the socket. Press firmly at each end until the DIMM snaps into place.

If you inserted the DIMM correctly, the securing clips snap into the cutouts at each end of the DIMM (see step 2 of Figure 2-10).

5. Replace the computer cover and support beam, and reconnect your computer and devices to their electrical outlets.
6. Reboot the computer system, and press when prompted to enter the system setup program. Verify that the amount displayed for **System Memory** on the **Main** screen is correct.

If the memory total is incorrect, turn off the system, remove the computer cover and support beam, and reseal the DIMMs in their sockets. Then repeat steps 5 and 6.

7. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

For systems running Windows 98, also insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.

NOTE: For systems running Windows NT, use the Hard Drive Diagnostics and Utilities diskette included with your computer system or any MS-DOS® bootable diskette.



8. Turn on the computer system.

If the system does not start, see Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.

9. When the boot screen appears, select **Start Computer with CD-ROM Support**.
10. At the `a:\` prompt, type `x:` (where `x` is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.) Press `<Enter>`.
11. Type `diags32` and press `<Enter>`.

The **DIAGNOSTICS MENU** appears.

12. Run the **RAM** test group in the Dell Diagnostics to test all installed DIMMs.

For instructions, refer to “Running the Dell Diagnostics” in Chapter 4.

Removing a DIMM

To remove a DIMM, perform the following steps:

1. Remove the computer cover and support beam according to the instructions in “Removing and Replacing the Computer Cover and Support Beam” found earlier in this chapter.
2. Press outward on the plastic securing clips at each end of the DIMM socket until the DIMM disengages from the socket.

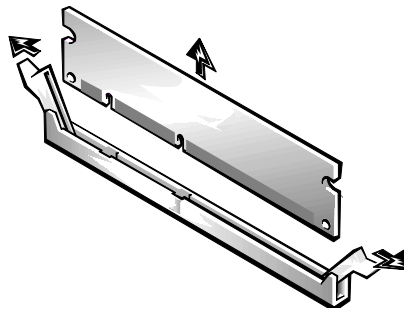


Figure 2-11. Removing a DIMM

3. Replace the computer cover and support beam, and reconnect your computer and devices to their electrical outlets.
4. Reboot the computer system, and press `` when prompted to enter the system setup program. Verify that the amount displayed for **System Memory** on the **Main** screen is correct.

Replacing the System Battery

A 3.0-V CR2032 coin-cell battery mounted in a system board socket (see Figure 2-5) maintains system configuration, date, and time information. The battery can last several years.



NOTE: Leave your power strip turned on when the computer is turned off to extend battery life.

If the battery expires, the system loses the system configuration information whenever it is disconnected from power. If you have to repeatedly reset this information after turning on the system, replace the battery.

To replace the system battery with another CR2032 coin-cell battery, perform the following steps.



CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

1. Make a copy of the screens in the system setup program.

You will need a written or printed copy of the system configuration information to restore the correct settings later. Refer to Appendix B, "System Setup Program," for instructions.

2. Remove the computer cover and support beam according to the instructions in "Removing and Replacing the Computer Cover and Support Beam" found earlier in this chapter.

NOTICE: If you pry out the battery with a blunt object, insert the object between the battery and the socket. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

3. Locate the battery (see Figure 2-5) and pry it out of its socket with your fingers or with a blunt, nonconductive object, such as a plastic screwdriver.
4. Insert the battery into the socket with the side labeled "+" facing up (see Figure 2-12).

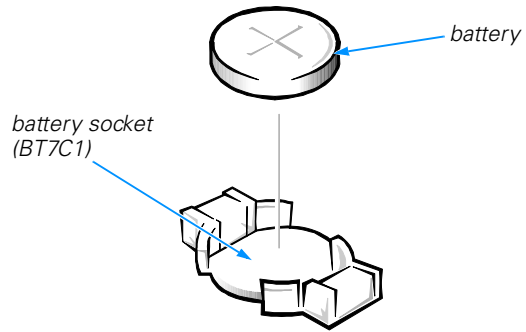


Figure 2-12. System Battery and Battery Socket

5. Replace the computer cover and support beam, and reconnect your computer and devices to their electrical outlets.
6. Reboot the computer system, press when the blue Dell logo screen appears to enter the system setup program, and restore the correct settings.

Refer to Appendix B, "System Setup Program," for instructions.



CHAPTER 3

Installing Drives

This chapter provides instructions for removing and replacing the bezel, the drive cage, and front-panel inserts. These procedures may be required for a drive installation. The remainder of the chapter covers the installation of different types of drives.

Removing and Replacing the Bezel

To remove the bezel, perform the following steps:

1. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
2. While facing the front of the computer, press in the tabs at the top and side of the bezel as shown in Figure 3-1.

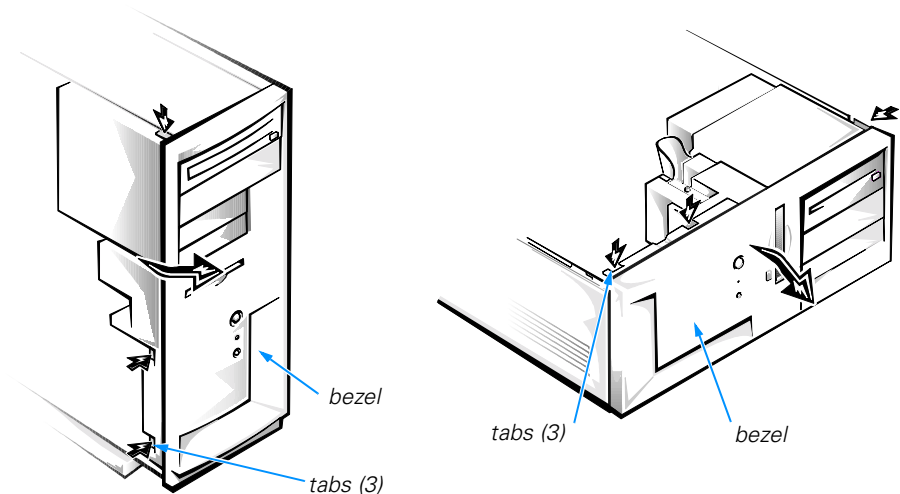


Figure 3-1. Removing the Bezel

3. Swing the bezel away from the chassis, disengage the three retaining hooks on the bezel, and carefully pull it away from the chassis.

To replace the bezel, fit the bezel's three retaining hooks into their corresponding slots on the chassis. Rotate the bezel toward the chassis until the hooks snap into the slots.

Removing and Replacing the Drive Cage

The drive cage (see Figure 3-2) holds the externally accessible drives except for the standard 3.5-inch diskette drive. It holds up to two half-height, 5.25-inch devices and two 3.5-inch devices in the mini tower chassis. In the desktop chassis, it holds up to two half-height, 5.25-inch devices and one 3.5-inch device. The drive cage must be removed to install a drive in one of its bays.

Removing the Drive Cage

To remove the drive cage, perform the following steps:

1. Remove the bezel as described in the previous section.
2. Note the location and orientation of any cables attached to devices in the drive cage; then disconnect the cables.
3. Remove the screw at the side of the drive cage (see Figure 3-2).
4. Slide the drive cage toward you about one inch. Then lift it out of the chassis.



NOTE: The drive cage has slots on the sides and bottom that engage tabs in the chassis. Three of these tabs contain a detent feature that locks the drive cage into place. The drive cage may be slightly difficult to slide forward until it is detached from the detents.

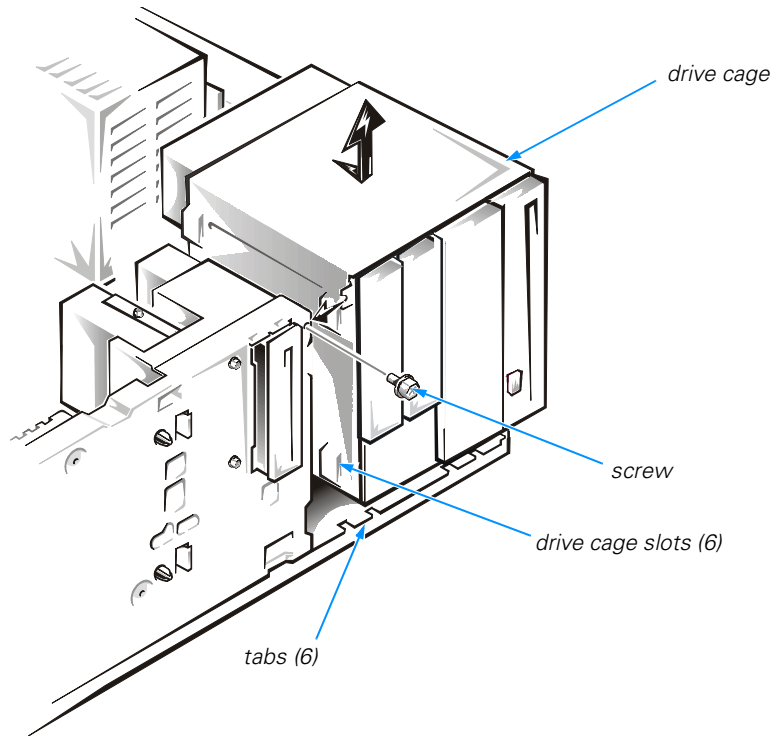


Figure 3-2. Removing the Drive Cage

Replacing the Drive Cage

To replace the drive cage after installing a device in it, perform the following steps:

1. With the slots on the side of the drive cage extending slightly beyond the front of the chassis, lower the drive cage into the chassis. Slide the drive cage toward the back of the chassis so that the tabs on the chassis fully insert into the slots on the drive cage.

The drive cage and chassis contain matching scribe marks that should line up when the drive cage is correctly installed.

2. Replace the screw that secures the drive cage to the chassis.
3. Reconnect any cables you disconnected earlier.

Removing and Replacing a Front-Panel Insert

Empty drive bays in the drive cage are covered by a front-panel insert. The insert for a 3.5-inch drive bay is mounted to the inside of the bezel. The insert for the lower 5.25-inch bay is mounted to the drive cage and is removed during installation of a 5.25-inch drive (refer to “5.25-Inch Drives” found later in this chapter).

Removing a 3.5-Inch Insert

After you have removed the bezel, remove the front-panel insert for the bay you plan to use. From the back of the bezel, as shown for the mini tower chassis in Figure 3-3, press the release tab to the side. Then rotate the insert toward you, and remove it from the bezel. For mini tower computers, you must remove the upper insert to remove the lower insert.

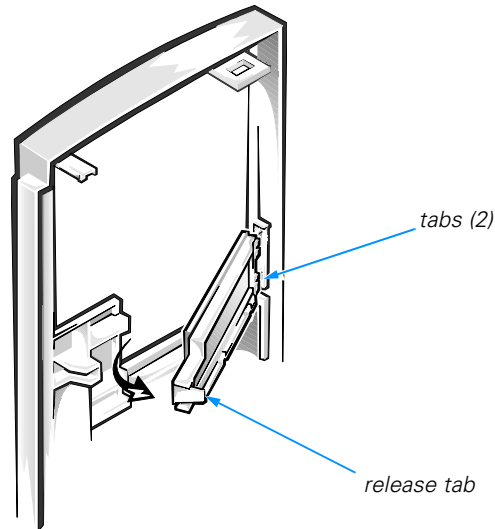


Figure 3-3. Removing a 3.5-Inch Insert

Replacing a 3.5-Inch Insert

If you permanently remove a drive from the drive cage, replace the front-panel insert by inserting its two tabs into the slot in the bezel and rotating the insert forward until it snaps into place.

Configuring Drives

Before you install your drive, check the documentation that came with the drive to make sure that it is configured to work with other drives already installed in your computer. You may need to change jumper or switch settings on the new drive to avoid conflicts with drives already installed.



NOTE: If you are installing a tape drive, configure the drive for device address DS4 rather than DS2 or DS3 as may be indicated in the drive documentation.

All enhanced integrated device electronics (EIDE) devices should be configured for the Cable Select jumper position, which assigns master and slave status to devices by their position on the interface cable. In this configuration, the drive attached to the last connector on the interface cable is the master or boot drive (drive 0) and the drive attached to the middle connector on the interface cable is the slave drive (drive 1). Refer to the drive's documentation for instructions on setting the Cable Select jumper position.

Connecting Drives

When installing a drive, you connect two cables—a DC power cable and an interface cable—to the back of the drive.

The DC power cable comes from the power supply and contains a 4-pin connector that is keyed to avoid incorrect insertion. Do not force two connectors together if they do not fit properly. Your drive's power input connector (to which you connect the DC power cable) resembles the connector shown in Figure 3-4.

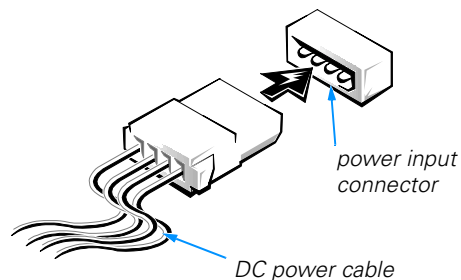


Figure 3-4. DC Power Cable Connector

The interface cable is attached to an interface connector either on the system board or on a controller card. The system board contains a diskette-drive interface connector (labeled "FLOPPY") and two EIDE interface connectors (a primary one labeled "PRI IDE" and a secondary one labeled "SEC IDE"). Connect EIDE hard-disk drives to the primary connector; connect EIDE devices such as CD-ROM drives, Zip drives, or tape drives to the secondary connector.

The connectors on the interface cables are either header connectors or card-edge connectors, as shown in Figure 3-5. Both types of connectors are usually keyed for correct insertion.

Header connectors have a blocked hole on the cable connector that matches a missing pin on the interface connector.

Card-edge connectors have a notch in the interface connector.

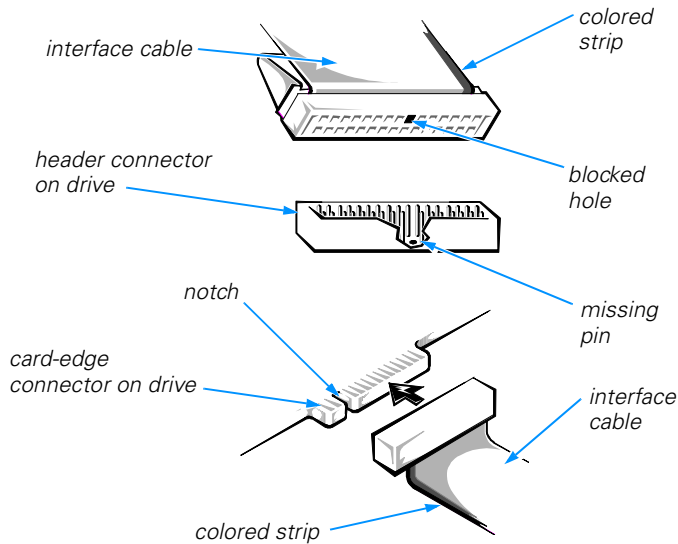


Figure 3-5. Drive Interface Connectors

NOTICE: When connecting an interface cable, do not place the colored strip on the cable away from pin 1 on the interface connector. Doing so prevents drive operation and could damage the controller, the drive, or both.

When attaching the interface cable to a drive, be sure to match the colored strip on the cable to pin 1 of the drive's interface connector. For the location of pin 1, look for a silk-screened "1" next to the interface connector or refer to the documentation that came with the drive.

Installing Externally Accessible Drives

The drive cage typically holds diskette drives, Zip drives, tape drives, and CD-ROM drives—up to two half-height, 5.25-inch devices and two 3.5-inch devices in the mini tower chassis. In the desktop chassis, it holds up to two half-height, 5.25-inch devices and one 3.5-inch device.



NOTE: Some devices may require additional hardware, such as a mounting kit for installing a 3.5-inch drive in a 5.25-inch bay.

5.25-Inch Drives

To install a drive in a 5.25-inch drive bay, perform the following steps:

1. Prepare the drive for installation as described earlier in “Configuring Drives.”
2. Remove the drive cage as described earlier in “Removing the Drive Cage.”
3. If you are installing a drive in the lower 5.25-inch bay, remove the front-panel insert shown in Figure 3-6 by pressing in the two tabs on the right side and rotating the insert toward you until the retaining hook disengages from the drive cage.

If you permanently remove the drive later, reinstall the insert by fitting the hook into the slot on the left side of the drive cage, rotating the insert into place, and snapping the tabs on the right side of the insert into the slots in the drive cage.

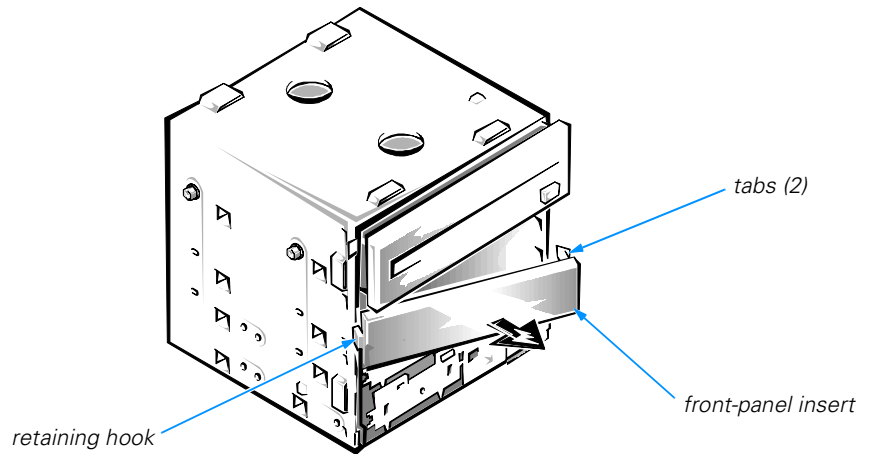


Figure 3-6. Removing a 5.25-Inch Insert

4. Slide the drive into its bay, and secure it to the drive cage with two screws on the left and one screw on the right (see Figure 3-7).

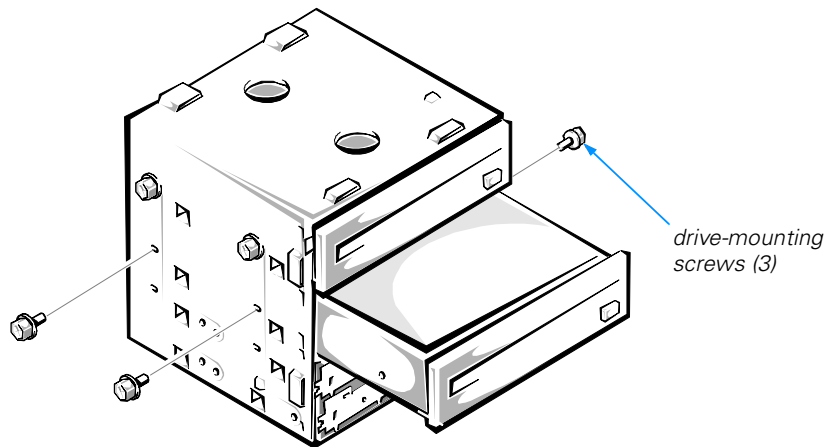


Figure 3-7. Installing a 5.25-Inch Drive

5. If you are installing a controller card, configure and install it in an expansion slot now (refer to “Expansion Card Upgrades” in Chapter 2 for instructions).

Install the card as close as possible to the drive cage.

NOTICE: Dell does not recommend routing cables over full-height cards because the cables can restrict airflow, cause cooling problems, and interfere with removing and replacing the computer cover and support beam. If you must route cables over full-height cards, be extremely cautious when removing and replacing the computer cover and support beam.

6. Reinstall the drive cage as described earlier in “Replacing the Drive Cage.”
7. Connect a DC power cable to the drive as described earlier in “Connecting Drives.”
8. Attach the appropriate interface cable to the drive. If you installed a controller card in step 5, attach the other end of the interface cable to the controller card rather than the system board.

NOTICE: Match the colored strip on the cable with pin 1 on the interface connector.

9. Replace the bezel as described earlier in “Removing and Replacing the Bezel.”
10. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the computer cover and support beam.
11. Replace the computer cover and support beam and tighten the cover-mounting thumbscrew.

12. If you installed a diskette drive, remove the shipping protector from the drive, and save it in case you later move your computer to a new location.
13. Reconnect your computer and devices to their electrical outlets, and turn them on.
14. If you installed a drive that requires device drivers, such as a CD-ROM drive, refer to the drive's documentation for driver installation instructions.
15. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

3.5-Inch Drives

The mini tower computer has two 3.5-inch drive bays, and the desktop computer has one (upper bay).

Upper 3.5-Inch Bay

To install a drive in the upper 3.5-inch bay, perform the following steps:

1. Prepare the drive for installation as described earlier in "Configuring Drives."
2. Remove the drive cage as described earlier in "Removing the Drive Cage."
3. Remove the plastic insert from the bezel as described earlier in "Removing a 3.5-Inch Insert."
4. Remove the 6/32 x 1/4-inch screw securing the drive bracket to the drive cage and remove the bracket. Attach the drive to the bracket with two screws on the right side as shown in Figure 3-9.



NOTE: The screws used to secure the drive to the bracket and to the left side of the drive cage have 3-millimeter (mm) threads. Be sure to use only these screws when attaching the drive to the bracket and when securing the left side of the drive to the drive cage.

5. Remove the metal plate covering the bay as shown in Figure 3-8. Work the plate back and forth to break the perforations around the edges.

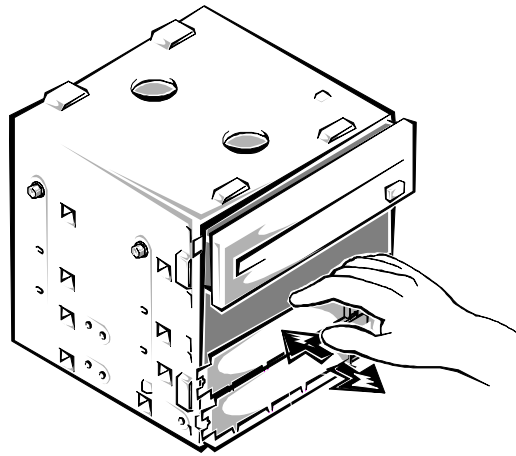


Figure 3-8. Removing a 3.5-Inch Drive Bay Plate

- Slide the drive assembly into the drive bay, and secure it to the drive cage with one screw on each side as shown in Figure 3-9.



NOTE: Be sure to use the 1/4-inch drive-bracket mounting screw (removed in step 4) on the right side of the drive and the smaller (3-mm) screw on the left side.

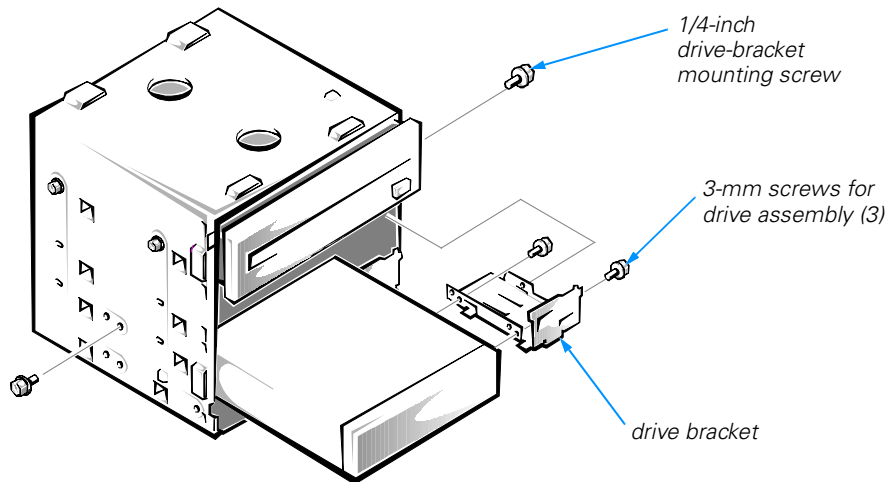


Figure 3-9. Installing a Drive in the Upper 3.5-Inch Drive Bay

7. If you are installing a controller card, configure and install it in an expansion slot now (refer to “Expansion Card Upgrades” in Chapter 2 for instructions).

Install the card as close as possible to the drive cage.

NOTICE: Dell does not recommend routing cables over full-height cards because the cables can restrict airflow, cause cooling problems, and interfere with removing and replacing the computer cover and support beam. If you must route cables over full-height cards, be extremely cautious when removing and replacing the computer cover and support beam.

8. Reinstall the drive cage as described earlier in “Replacing the Drive Cage.”
9. Connect a DC power cable to the drive as described earlier in “Connecting Drives.”
10. Attach the appropriate interface cable to the drive. If you installed a controller card in step 7, attach the other end of the interface cable to the controller card rather than the system board.

NOTICE: Match the colored strip on the cable with pin 1 on the interface connector.

11. Replace the bezel as described earlier in “Removing and Replacing the Bezel.”
12. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the computer cover and support beam.
13. Replace the computer cover and support beam and tighten the cover-mounting thumbscrew.
14. Reconnect your computer and devices to their electrical outlets, and turn them on.
15. If you installed a drive that requires device drivers, such as a CD-ROM drive, refer to the drive's documentation for driver installation instructions.
16. Verify the correct operation of the drive by running the Dell Diagnostics (refer to “Running the Dell Diagnostics” in Chapter 4).

Lower 3.5-Inch Bay (Mini Tower Chassis Only)

To install a drive in the lower 3.5-inch bay of a mini tower computer, perform the following steps:

1. Prepare the drive for installation as described earlier in “Configuring Drives.”
2. Remove the drive cage as described earlier in “Removing the Drive Cage.”
3. Remove the plastic insert from the bezel as described earlier in “Removing a 3.5-Inch Insert.”
4. Remove the metal plates covering the 3.5-inch bays. Work the plates back and forth as shown in Figure 3-8 to break the perforations around the edges.

- Slide the new drive into the drive bay. Secure it to the drive cage, as shown in Figure 3-10, with one screw on the bottom and two screws on the left side.

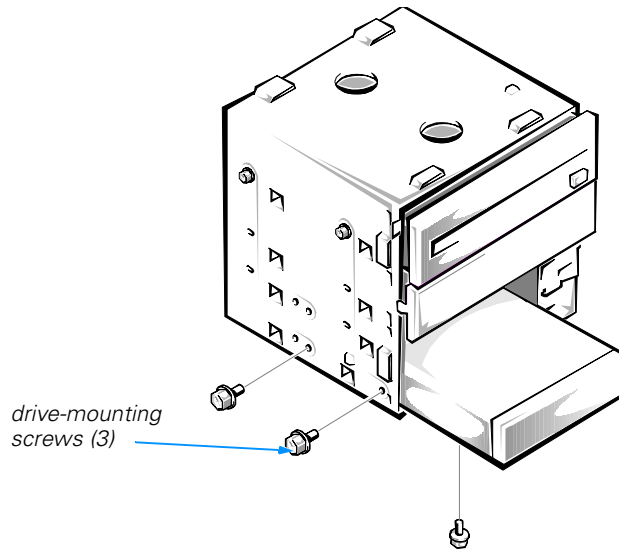


Figure 3-10. Installing a Drive in the Lower 3.5-Inch Drive Bay (Mini Tower Chassis Only)

- If you are installing a controller card, configure and install it in an expansion slot now (refer to “Expansion Card Upgrades” in Chapter 2 for instructions).

Install the card as close as possible to the drive cage.

NOTICE: Dell does not recommend routing cables over full-height cards because the cables can restrict airflow, cause cooling problems, and interfere with removing and replacing the computer cover and support beam. If you must route cables over full-height cards, be extremely cautious when removing and replacing the computer cover and support beam.

- Reinstall the drive cage as described earlier in “Replacing the Drive Cage.”
- Connect a DC power cable to the drive as described earlier in “Connecting Drives.”
- Attach the appropriate interface cable to the drive. If you installed a controller card in step 6, attach the other end of the interface cable to the controller card rather than the system board.

NOTICE: Match the colored strip on the cable with pin 1 on the interface connector.

10. Replace the bezel as described earlier in “Removing and Replacing the Bezel.”
11. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the computer cover and support beam.
12. Replace the computer cover and support beam and tighten the cover-mounting thumbscrew.
13. Reconnect your computer and devices to their electrical outlets, and turn them on.
14. If you installed a drive that requires device drivers, such as a CD-ROM drive, refer to the drive's documentation for driver installation instructions.
15. Verify the correct operation of the drive by running the Dell Diagnostics (refer to “Running the Dell Diagnostics” in Chapter 4).

Installing EIDE Hard-Disk Drives

In addition to the externally accessible drive bays, your computer has two internal bays for 1-inch-high hard-disk drives. One bay is occupied with your Dell-installed hard-disk drive. Use the procedures in this section to upgrade a hard-disk drive or install a second drive.

Primary Hard-Disk Drive Bay

To install a drive in the primary hard-disk drive bay, perform the following steps:



1. Prepare the drive for installation as described earlier in “Configuring Drives.”

*NOTE: For EIDE drives, the boot drive should correspond to **Primary IDE Master** in the system setup program.*

2. Remove the bezel as described earlier in “Removing and Replacing the Bezel.”
3. Remove the drive already installed in the bay.

Remove the two screws securing the hard-disk drive to the front of the chassis (see Figure 3-11). Disconnect any cables attached to the drive.

4. Connect a DC power cable and the EIDE cable to the new drive as described earlier in “Connecting Drives.”

NOTICE: Match the colored strip on the interface cable with pin 1 on the drive's interface connector.

5. Install the new drive in the bay.

Orient the drive with its circuit board facing the front of the chassis, and place the drive in the card-guide assembly as shown in Figure 3-11. Secure the drive to the chassis with the two screws you removed in step 3.

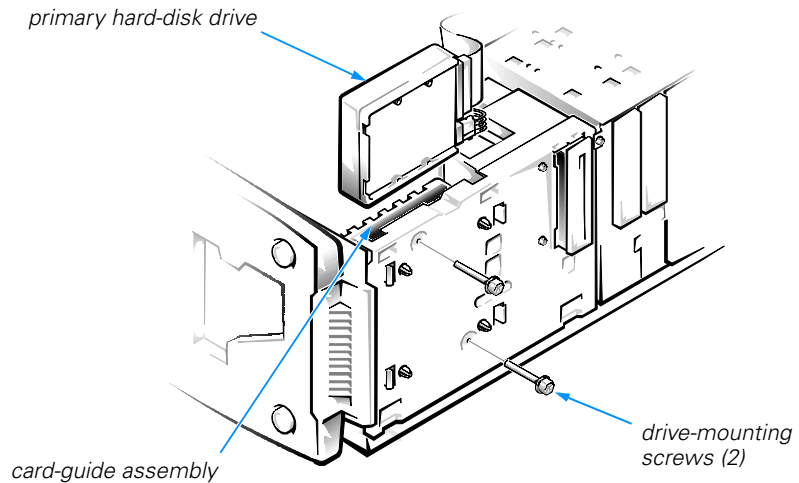


Figure 3-11. Installing a Drive in the Primary Hard-Disk Drive Bay

6. If necessary, connect the EIDE cable to the PRI IDE connector on the system board.
7. Replace the bezel as described earlier in "Removing and Replacing the Bezel."
8. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the computer cover and support beam.
9. Replace the computer cover and support beam and tighten the cover-mounting thumbscrew.
10. Reconnect your computer and devices to their electrical outlets, and turn them on.
11. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

Secondary Hard-Disk Drive Bay

To install a drive in the secondary hard-disk drive bay, perform the following steps:

1. Prepare the drive for installation as described earlier in "Configuring Drives."
2. Remove the bezel as described earlier in "Removing and Replacing the Bezel."
3. If a drive is already installed, disconnect any cables attached to the drive.
4. Remove the two screws securing the secondary hard-disk drive bracket to the chassis (see Figure 3-12). Slide the bracket toward the back of the chassis and lift it out.

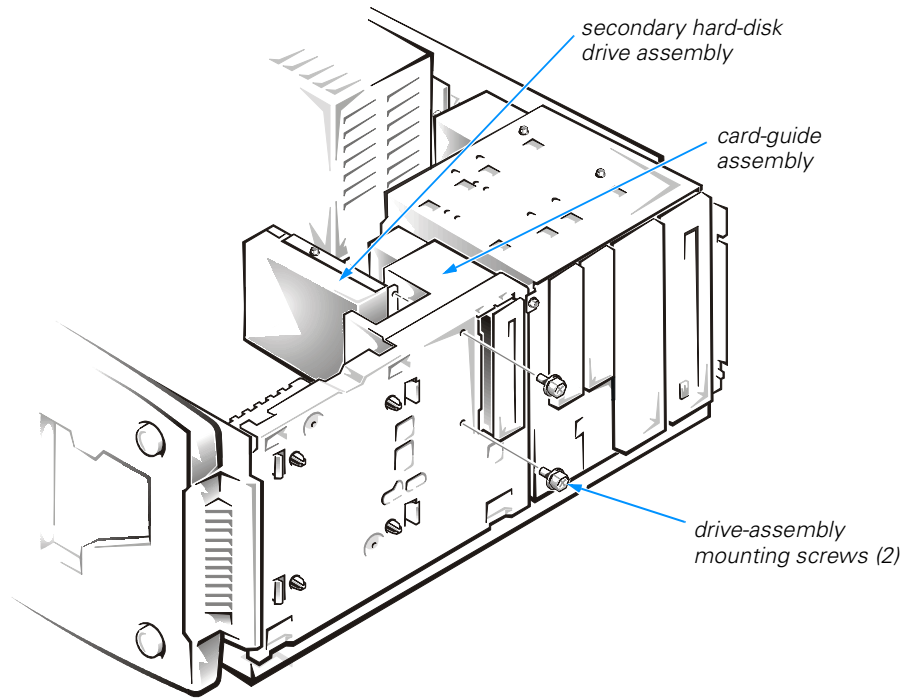


Figure 3-12. Secondary Hard-Disk Drive Assembly

5. If a drive is already installed, remove the screw securing the drive to the bracket and rotate the drive out of the bracket.
6. Orient the new drive with its circuit board facing the inside of the bracket. Align the two tabs on the inside of the bracket with two screw holes in the side of the drive, and rotate the drive into the bracket as shown in Figure 3-13. Secure the drive to the bracket with one screw on the side opposite the tabs.

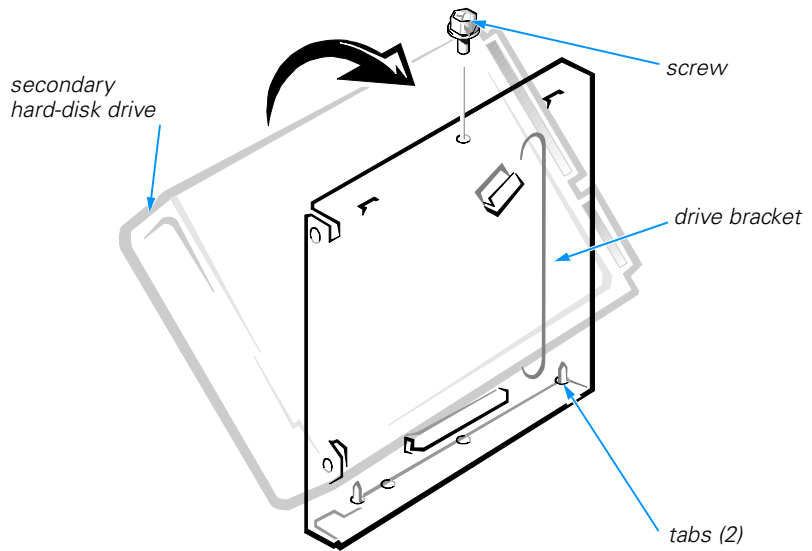


Figure 3-13. Secondary Hard-Disk Drive Bracket

7. Align the external tabs on the bracket with the slots in the chassis, and slide the bracket back into place. Secure the bracket to the chassis with the screws you removed in step 4.
8. Connect a DC power cable and the EIDE cable to the drive as described earlier in "Connecting Drives."

NOTICE: Match the colored strip on the interface cable with pin 1 on the drive's interface connector.

9. If necessary, connect the EIDE cable to the PRI IDE connector on the system board.
10. Replace the bezel as described earlier in "Removing and Replacing the Bezel."
11. Make sure that no cable connections were loosened during the procedure. Arrange cables so that they will not interfere with replacing the computer cover and support beam.
12. Replace the computer cover and support beam and tighten the cover-mounting thumbscrew.
13. Reconnect your computer and devices to their electrical outlets, and turn them on.
14. Verify the correct operation of the drive by running the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

Partitioning and Logically Formatting an EIDE Hard-Disk Drive

EIDE hard-disk drives must be physically formatted, partitioned, and logically formatted before they can be used to store data. Every hard-disk drive purchased from Dell is physically formatted before it is sent to you.

For the Microsoft Windows 98 and Windows 2000 operating systems, all drives use a single partition with the 32-bit file allocation table (FAT32) file system. For the Windows NT operating system, all drives have a 2-gigabyte (GB) primary partition that uses a 16-bit file allocation table (FAT16) file system and a secondary partition formatted in the Windows NT file system (NTFS).

If you ever have to partition and logically format an EIDE hard-disk drive, use the program(s) provided by the operating system.

Installing SCSI Devices

To use small computer system interface (SCSI) devices in your Dell computer, you must have a SCSI host adapter card, which comes with its own SCSI cable. This cable can be used to attach a variety of SCSI devices (hard-disk drives, tape drives, and so on). The SCSI host adapter configures the devices attached to it as one subsystem—not as independent devices.

Although SCSI devices are installed essentially the same way as other devices, their configuration requirements are different.

SCSI Configuration Guidelines

NOTICE: If the SCSI host adapter has a 68-pin external connector, do not connect cables to all three connectors on the card (internal narrow, internal wide, and external). You can safely connect devices to any two of the three connectors; connecting to all three is a violation of the SCSI standard.

For details on configuring a SCSI subsystem, refer to the documentation that came with the SCSI devices and/or the host adapter card. The following subsections offer some general guidelines.

SCSI ID Numbers

Each device attached to a SCSI host adapter card, as well as the card itself, must have a unique SCSI ID number from 0 to 7. The SCSI host adapter card is typically configured as SCSI ID 7. The boot hard-disk drive must be configured as SCSI ID 0. Any other SCSI devices attached to the SCSI host adapter card can be configured for any SCSI IDs from 1 to 6. Refer to the documentation for each device for instructions on configuring its SCSI ID.



*NOTE: SCSI ID numbers do **not** have to be assigned sequentially, and devices do not have to be attached to the cable in order by ID number.*

SCSI Cables and SCSI Termination

The SCSI standard requires termination at two end points. If only internal devices are connected, the SCSI host adapter card is terminated at one end. The device end of the cable must then be terminated in one of two ways: either the cable contains a terminator, or the device attached to the end connector must be terminated. However, if you have both internal and external devices attached to the SCSI host adapter card, the card should have termination disabled. External SCSI cables do not have terminators, so termination must be enabled on the external SCSI device itself. Any devices attached to inner connectors on the SCSI cable should have termination disabled. Refer to the documentation for each device for instructions on enabling and disabling termination.

The type of cabling you receive with a SCSI device depends on the type of device you are installing:

- If you are installing an internal narrow SCSI device (such as a CD-ROM drive, a Zip drive, or tape drive), you have a 50-pin internal SCSI cable as shown in Figure 3-14. One end of this cable attaches to the SCSI host adapter card. The three connectors on the other end of the cable are used for attaching up to three narrow SCSI devices installed in the externally accessible drive bays.

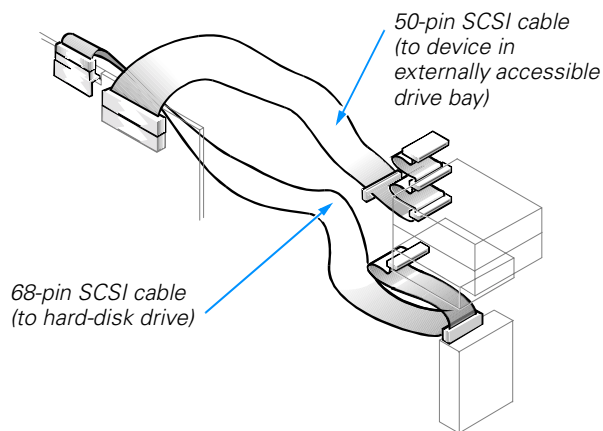


Figure 3-14. Internal SCSI Cables

- If you are installing an internal wide SCSI device (such as a wide SCSI hard-disk drive), you have a 68-pin internal SCSI cable as shown in Figure 3-14. One end of this cable attaches to the SCSI host adapter card and the two connectors on the other end of the cable are used for attaching up to two SCSI hard-disk drives.
- If you are installing an external SCSI device, you have a shielded external cable that connects to the external SCSI connector on the SCSI host adapter card. You have a separate power cable to connect the SCSI device to an AC power source.

General Procedure for Installing SCSI Devices

To configure and install one or more SCSI devices, perform the following steps:

1. Determine which connector on the internal SCSI cable you will attach to each SCSI device (refer to “SCSI Configuration Guidelines” found earlier in this section).
2. Unpack each SCSI device and prepare it for installation.

Configure the device for a SCSI ID number and termination, if necessary. For instructions, refer to the documentation that came with the SCSI device as well as “SCSI Configuration Guidelines” found earlier in this section.

3. Install the SCSI devices as appropriate.

To install a SCSI hard-disk drive, complete steps 2, 3, and 5 of “Primary Hard-Disk Drive Bay” or steps 2 through 7 of “Secondary Hard-Disk Drive Bay” found earlier in this chapter. Then continue with step 4 of this procedure.

To install a 5.25-inch SCSI tape drive, CD-ROM drive, Zip drive, or digital audio tape (DAT) drive, complete steps 2 through 4 and step 6 of “5.25-Inch Drive Bay” found earlier in this chapter. Then continue with step 4 of this procedure.

To install a 3.5-inch SCSI tape drive, complete steps 2 through 6 and step 8 of “Upper 3.5-Inch Bay” or steps 2 through 5 and step 7 of “Lower 3.5-Inch Bay (Mini Tower Chassis Only)” found earlier in this chapter. Then continue with step 4 of this procedure.

To install an external SCSI tape drive, continue with step 4 of this procedure.

4. If you are installing a SCSI host adapter card, configure and install it in an expansion slot now. If a SCSI host adapter card is already installed, remove, reconfigure, and reinstall the card at this time.

For instructions on configuring the card, refer to the documentation that came with the card as well as “SCSI Configuration Guidelines” found earlier in this section. For instructions on removing and installing the card, refer to “Expansion Card Upgrades” in Chapter 2.

If you are installing a hard-disk drive, connect the thin access indicator cable to the SCSI host adapter card and to the J8J1 connector on the system board (see Figure 2-5). This cable carries a signal from the SCSI host adapter card to the hard-disk drive access indicator on the computer’s front panel whenever a SCSI hard-disk drive is accessed.

5. Attach the SCSI cable to each SCSI device.

If you are installing an internal SCSI device, firmly press the SCSI cable’s header connector onto the 50- or 68-pin connector on the back of the device. The connectors on narrow SCSI cables are keyed for proper positioning—a raised area on the outside of the header connector fits into a notch on the device connector. The connectors on wide SCSI cables are shaped so that they can be attached one way only.

NOTICE: Match the colored strip on the cable with pin 1 on the drive's interface connector.

If you are installing an external SCSI device, connect one end of the external SCSI cable to the SCSI bus connector on the back of the device.

For additional instructions on connecting SCSI devices, refer to "SCSI Cables and SCSI Termination" found earlier in this section.

6. Attach the SCSI cable to the connector on the SCSI host adapter card.

If you are installing an internal SCSI device, match the colored strip on the internal SCSI cable to the pin-1 end of the 50-pin connector (for a narrow SCSI device) or the 68-pin connector (for a wide SCSI device) on the adapter card. Then press the cable connector firmly onto the adapter card connector.

NOTICE: Match the colored strip on the internal SCSI cable with pin 1 on the adapter card connector.

If you are installing an external SCSI device, connect the other end of the external SCSI cable to the external connector on the adapter card.

For additional instructions, refer to the documentation that came with the adapter card.

7. Connect the SCSI device(s) to power.

If you are installing an internal SCSI device, connect a DC power cable to the power input connector on the SCSI device.

If you are installing an external SCSI device, connect the socket end of the power cable to the AC power receptacle on the back of the SCSI device. Insert the other end of the power cable into an electrical outlet.

Check all other cable connections. Fold all internal cables out of the way to provide airflow for the fan or cooling vents.

8. Replace the front bezel as described earlier in "Removing and Replacing the Bezel."
9. Replace the computer cover and support beam and tighten the cover-mounting thumbscrew.
10. Reconnect your computer and devices to their power sources, and turn them on.
11. If necessary, enter the system setup program and set **Type** to **None** for the appropriate IDE drive options. For instructions, refer to Appendix B, "System Setup Program."

Tape drives attached to a SCSI host adapter card are not part of the system setup program's configuration information.

12. If you installed a SCSI hard-disk drive, partition and format the drive. Then install the operating system and any necessary drivers.

For instructions, refer to the next subsection, "Partitioning and Formatting SCSI Hard-Disk Drives," and the operating system documentation.

13. Test the SCSI device(s).

Test a SCSI hard-disk drive by running the **SCSI Devices** test group of the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

To test a SCSI tape drive, refer to the documentation for the tape drive software to perform a tape drive backup and verification test.

Partitioning and Formatting SCSI Hard-Disk Drives

You may need to use different programs than those provided with the operating system to partition and format SCSI hard-disk drives. Refer to the documentation that came with your SCSI software drivers for information on installing the appropriate drivers and preparing the SCSI hard-disk drive for use.

For the Windows 98 and Windows 2000 operating systems, all drives use a single partition with the FAT32 file system. For the Windows NT operating system, all drives have a 2-GB primary partition that uses a FAT16 file system and a secondary partition formatted in the NTFS.

If you ever have to partition and logically format a SCSI hard-disk drive, use the program(s) provided by the operating system.



CHAPTER 4

Basic Troubleshooting

This chapter guides you through some initial checks and procedures that can solve basic computer problems. It can also direct you to the appropriate chapter in this guide for detailed troubleshooting information and procedures to solve more complex problems. You should complete the checks in this chapter before calling Dell for technical assistance; even if these checks do not provide an immediate solution, they can help support technicians diagnose and fix the problem.

Backing Up Data Files

You can lose data when a system failure occurs. If your system is behaving erratically, back up your data files immediately (refer to “Preserving Data” in Chapter 1).

There is no need to back up Dell-installed driver files for Dell-installed devices. The driver files are preserved on the *Dell Dimension ResourceCD*.



NOTE: In case of warranty replacement of your hard-disk drive, you will receive a blank formatted drive from Dell. You must reinstall application programs and restore data files.

Checking the Basics

To perform an initial check of your computer system, perform the following steps.



NOTE: If your computer is wet or damaged, refer to “If Your Computer Gets Wet” or “If Your Computer Is Damaged” in Chapter 6.

1. If the problem you are experiencing began after making a change to your computer, such as installing new hardware or software, undo the change if possible.

If you need technical assistance, contact the product manufacturer or the company from whom you purchased the product.



NOTE: DellWare™ products are supported by the item's manufacturer. To receive product support information, call 1-800-753-7201.

If the problem is resolved, check any documentation that came with the option you attempted to install or that describes the change you made. In particular, read any text files (such as **readme.txt**) included with the software package or hardware product; such files contain information updating or supplementing the documentation for the software or hardware. Typically, readme files provide installation information, describe new product enhancements or corrections that have not yet been documented, and list known problems.

If you were trying to install new hardware, double-check configuration settings and available system resources (refer to “Resolving Software and Hardware Incompatibilities” in Chapter 5). Also make sure you changed the appropriate settings in the system setup program for the system’s new hardware configuration (refer to Appendix B, “System Setup Program”).

2. Perform the steps described in the next section, “Connections.”
3. Check the items listed in “Environmental Factors” found later in this chapter.
4. For power problems, refer to “Power” found later in this chapter.
5. Perform the checks in “Boot Routine” found later in this chapter.



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.

6. If you hear a beep code or see a system message, refer to Appendix C, “Diagnostic Codes, Beep Codes, and System Messages.”
7. If appropriate, refer to the subsections found later in this chapter titled “Monitor,” “Speakers,” “Modem,” and “Drives.”
8. Verify that the settings in the system setup program match your computer’s configuration as explained in Appendix B, “System Setup Program.”
9. Use the Dell Diagnostics to check your system (refer to “Running the Dell Diagnostics” found later in this chapter).
10. If the problem persists, refer to Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.

Connections

Improperly set switches and controls, loose cables, and improperly connected cables are the most likely sources of problems for your computer system. A quick check of all the switches, controls, and cable connections can easily solve these problems.



NOTE: See the “System Features” section of the Dell Dimension XPS Txxx and Txxxr Systems Help for the location of your computer’s external connectors and controls.

To check computer connections, perform the following steps:

1. Turn off the computer, the monitor, and all attached devices.

2. Verify that all power cables are properly connected to the computer, the monitor and devices, and their electrical outlets.
3. Verify that the keyboard (purple) and mouse (green) interface cables are firmly attached to the proper connectors on the back of the computer.
4. Verify that any devices attached to the serial port, parallel port, and Universal Serial Bus (USB) connectors are properly connected.

Each of the serial, parallel, and USB interface cable connectors must be firmly attached to an appropriate connector on the back of the computer as well as to the interface connector on the device. The captive screws on the serial and parallel interface cable connectors must be secure enough to ensure a firm connection.

5. Verify that the video-interface cable connector (blue) is firmly attached to the video card connector and to the connector on the back of the monitor.
6. Turn on the computer, the monitor, and all attached devices.

Environmental Factors

A number of external factors, including temperature extremes and humidity, magnetic influences, sources of electromagnetic interference (EMI), and poor input power or signal quality, can interfere with the performance of your computer and attached devices. Monitors are especially susceptible to these environmental factors. The following items can adversely affect the performance of a computer system:

- Inadequate ventilation from operating the computer in a confined space, such as a desk enclosure
- Direct sunlight causing the computer to overheat
- Line noise or power drops and surges from electrical outlets due to poor wiring
- Line noises or surges through telephone lines
- High-voltage electrical appliances on the same circuit or operating in close proximity to the computer
- Speakers, especially subwoofer, or telephone too close to the monitor, generating magnetic fields that distort the display image
- Fluorescent lights causing display flickering or distortion
- Electrical extension cords and keyboard and mouse extension cables
- Too many devices on a power strip or multiple power strips from one electrical outlet
- Electrical conduits in an adjoining wall or elevators on the other side of the wall
- Large metal beams inside the wall behind the system

If removing potential sources of problems does not help, try moving the system.

Power

If you are experiencing problems with power to your computer, perform the following tasks:

- Check the computer's power indicator (see Figures 2-3 and 2-4). When lit, the power indicator verifies that the power supply is operating. Whenever the power is on, the fan on the power supply should also spin. If the fan does not spin, refer to "System Board" in Chapter 6 for further troubleshooting information.
- If your computer is connected to a power strip, turn the power strip off and then on again.
- Plug the computer directly into an electrical outlet, bypassing any power protection devices.
- Turn off the computer and any attached devices, and disconnect them from their electrical outlets. Disconnect any devices attached to the computer except for the mouse and the monitor. Reseat the power cable at the back of the computer; then reconnect the computer and monitor to an electrical outlet, making sure that all connections fit tightly together. Turn on the computer system. If the computer boots (starts), turn it off again and reconnect devices one at a time, turning on the system each time to see if the problem returns.
- Turn off the system, and swap the monitor and computer power cables.
- Plug a device such as a lamp that you know works into the electrical outlet to make sure the power source is OK.

Boot Routine



NOTE: Most of the checks in Table 4-1 require observation of computer functions and indications, some of which can occur simultaneously. It may be necessary to reboot (restart) the computer several times to complete all these steps.

Table 4-1. Boot Routine Indications

| Indication | Action |
|---------------------------|--|
| Error message | Refer to "System Messages" in Appendix C. |
| Monitor's power indicator | Most monitors have a power indicator (usually on the front bezel). If the monitor's power indicator does not light up, refer to "Monitor" found later in this chapter. |
| Keyboard indicators | Most keyboards have three indicators in the upper-right corner, which quickly flash on and off during the boot sequence. Press the <Num Lock> key, the <Caps Lock> key, and the <Scroll Lock> key to toggle the keyboard indicators on and off. If the keyboard indicators do not light up, make sure the keyboard connector is firmly seated. Then run the PC-AT Compatible Keyboards test group as described in "Running the Dell Diagnostics" found later in this chapter. |

Table 4-1. Boot Routine Indications (continued)

| Indication | Action |
|--|---|
| Diskette-drive access indicator | The diskette-drive access indicator should quickly flash on and off when you access data on the diskette drive. You can test the drive by inserting a diskette in the drive, double-clicking My Computer , and then double-clicking the icon for drive A. If the diskette-drive access indicator does not light up, refer to “Drives” found later in this chapter. |
| Hard-disk drive access indicator | The hard-disk drive access indicator should quickly flash on and off when you access data on the hard-disk drive. You can test the drive by double-clicking My Computer and then double-clicking the icon for drive C. If the hard-disk drive access indicator does not light up, refer to “Drives” found later in this chapter. |
| Series of beeps | Refer to “POST Beep Codes” in Appendix C. |
| Diagnostic code | Refer to “Diagnostic Codes” in Appendix C. |
| Unfamiliar constant scraping or grinding sound when you access a drive | Make sure the sound is not caused by the application program you are running. The sound could be caused by a hardware malfunction. See Chapter 7, “Getting Help,” for instructions on obtaining technical assistance from Dell. |
| Absence of a familiar sound | When you turn on your system, you can hear the hard-disk drive spin up, and the system tries to access the boot files from the hard-disk drive or the diskette drive. If the system boots, refer to “Running the Dell Diagnostics” found later in this chapter. If your system does not boot, refer to Chapter 7, “Getting Help.” |

Monitor

This section lists some basic checks you can do for most monitors. Check the documentation that came with the monitor for fault indications and troubleshooting procedures specific to your monitor. If you purchased the monitor from Dell, you can also find troubleshooting information on Dell’s World Wide Web site (<http://support.dell.com>).

If you have no picture, try the following checks:

- Make sure the power button is completely depressed (a click is heard when the button is pressed).
- If the power indicator is lit, turn contrast and brightness to their maximum settings.
- Turn off the computer system, and reseal the power cable to the monitor and electrical outlet. Verify that the video-interface cable connector is firmly attached to the video card connector and secured with the captive screws. Then reboot the computer system.

- Verify the power source by plugging in an appliance that you know works.
- Plug the monitor directly into an electrical outlet, bypassing any power protection devices.
- If the power indicator is not lit, check for a bad power cable by turning off the system and swapping the monitor and computer power cables.
- Perform the monitor self-test as described in the documentation that came with the monitor.
- Refer to “Video Cards” in Chapter 6 for further troubleshooting information.

If the picture quality is poor, perform these checks:

- Rotate the monitor to face a different direction. If the picture changes, refer to “Environmental Factors” found earlier in this chapter. Monitors are particularly susceptible to EMI, which causes colors to fade and blend.
- If the orientation of the computer affects the display geometry, check the documentation that came with the monitor for information on adjustments.
- Degauss (demagnetize) the monitor as described in the documentation that came with the monitor.
- If you changed the resolution or refresh rate settings of the monitor, return the monitor to its manufacturer’s recommended settings (refer to the monitor documentation).
- Turn off the computer system, and examine the video-interface cable connector for bent, pushed in, broken, or missing pins. Remove any video extension cables, reseal the monitor’s video-interface cable connector, and securely tighten the captive screws. Then reboot the computer system.



NOTE: Some missing pins may be normal for your monitor; check the documentation that came with the monitor.

- Perform the monitor self-test as described in the documentation that came with the monitor.
- If another monitor or computer is available, try it.
- Move the monitor to another room.
- Reinstall the video drivers as described in the documentation that came with the video card.
- Refer to “Video Cards” in Chapter 6 for further troubleshooting information.

Speakers

Perform the following checks for speaker problems:

- Ensure the speakers are properly connected as shown on the *Getting Started* sheet and as described in the documentation that came with the speakers.
- Verify that the speakers and/or subwoofer are turned on if they have a power control.
- Turn up the volume knob on the speakers.

- If the audio is distorted, make sure that the volume is not turned to its maximum setting. Turn off the monitor to check for interference.
- Reseat all speaker connections and make sure they are inserted fully. Verify that the audio jacks are not bent or broken.
- Turn up the volume by clicking the yellow speaker icon in the Windows taskbar and adjusting the volume setting.
- Plug the speakers into the headphone jack of the CD-ROM or DVD-ROM drive, make sure the headphone volume control is turned up, and play a music CD.
- If your system includes an integrated audio controller, check for conflicts as described in “Resolving Software and Hardware Incompatibilities” in Chapter 5. Then reinstall the audio drivers (refer to “Audio Drivers” in Chapter 5).
- If your system has a sound card, refer to “Sound Cards” in Chapter 6 for further troubleshooting information.

Modem

NOTICE: Connect the modem to an analog line only. Using a nonanalog line, such as a digital or private branch exchange (PBX) line, will damage the modem.



NOTE: If your modem can dial and connect to one Internet service provider (ISP) or to a fax machine, your modem is functioning properly. For assistance, contact the ISP to which you cannot connect.

If you are experiencing problems with a modem, perform the following checks.

- If you have any other telephone devices plugged into this line, such as answering machines, dedicated fax machines, or line splitters, then bypass them and plug the modem cable directly into the telephone connector on the wall.
- Disconnect the cable from the modem and plug it directly into a telephone. Listen for a dial tone.
- Check that the modem cable is connected to the green line-in jack on the modem. Reseat the cable connections.
- Plug a telephone cable into the adjacent telephone jack on the modem and listen for a dial tone.
- Try a different cable; if you are using a cable that is 10 feet or more in length, try a shorter one.
- Low connection speeds can be caused by line noise. If you have persistent problems, contact your telephone company to check for data noise and imbalanced lines.
- Refer to “Modem” in Chapter 6 for further troubleshooting information.

Drives

If you have diskette drive problems, perform the following checks:

- Make sure the diskette is not write-protected if you are trying to copy data to it.
- Try a different diskette in the drive. If the new diskette works, the original one may be defective.
- Check drive operations at the MS-DOS[®] prompt in the Dell Diagnostics (refer to “Starting the Dell Diagnostics” found later in this chapter) and the Windows operating system.
- Check the settings on the **Diskette Options** submenu of the system setup program as described in Appendix B, “System Setup Program.”
- Run the **Diskette** test group as described in “Running the Dell Diagnostics” found later in this chapter.
- Refer to “Diskette Drive” in Chapter 6 for further troubleshooting information.

If you have CD-ROM or DVD-ROM drive problems, perform the following checks.



NOTE: Inconsistencies in the manufacturing of CD-ROM media may cause some higher-speed CD-ROM drives to vibrate more than others. Such vibration and associated noise do not indicate a defect in the drive or the CD.

- Double-click **My Computer** and check to see if the drive is recognized by the system. Most of the common boot sector viruses cause the CD-ROM or DVD-ROM drive to “disappear.” Use virus-scanning software to check for and remove any viruses.
- Clean the disc with a soft, lint-free cloth and isopropyl alcohol.
- Try another CD or DVD title.



NOTE: Because of different conventions currently used in the industry, not all DVD titles work in all DVD-ROM drives.

- Enter the system setup program as described in Appendix B, “System Setup Program,” and verify that **Type** is set to **Auto** for the appropriate IDE drive option.
- Run the **IDE Devices** test group as described in “Running the Dell Diagnostics” found later in this chapter.
- Refer to “CD-ROM and DVD-ROM Drives” in Chapter 6 for further troubleshooting information.

If you have hard-disk drive problems, perform the following checks:

- For Windows 98, run the **ScanDisk** utility by clicking the **Start** button, pointing to **Programs—> Accessories—> System Tools**, and clicking **ScanDisk**.
- For Windows NT, run the error-checking utility by opening the property sheet of the affected volume(s) and clicking **Check Now** in the **Error-checking** section of the **Tools** tab.

- For Windows 2000, perform the following steps:
 1. Double-click the **My Computer** icon located on the Windows desktop.
 2. Click **File**, and then click **Properties**.
 3. Click the **Tools** tab.
 4. Under **Error-checking**, click **Check Now**.
 5. Under **Check disk options**, click **Scan for and attempt recovery of bad sectors**.
 6. Click **Start**.
- Run the **IDE Devices** test group as described in “Running the Dell Diagnostics” found later in this chapter.
- Check the settings on the **IDE Configuration** submenu of the system setup program as described in Appendix B, “System Setup Program.”
- Refer to “Hard-Disk Drive” in Chapter 6 for further troubleshooting information.

Running the Dell Diagnostics

Whenever a major component or device in your computer system does not function properly, run the Dell Diagnostics provided on the *Dell Dimension ResourceCD* to check your computer's hardware. If you find a problem you cannot solve by yourself, the diagnostic tests can provide you with important information you will need when talking to Dell's service and support personnel.

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

The Dell Diagnostics provides a series of menus and options from which you choose particular test groups or subtests. 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 or print out test results, or to save them in a file
- Options to temporarily suspend testing if an error is detected, or to terminate testing when an adjustable error limit is reached
- A **Devices** menu category that briefly describes each test and its parameters
- A **Config** menu category that describes the configuration of the devices in the selected device group

- Status messages that inform you whether test groups or subtests were completed successfully
- Error messages that appear if any problems are detected

As long as the microprocessor and the input and output components of your computer system (the monitor, keyboard, CD-ROM or DVD-ROM drive, and diskette drive) are working, you can use the Dell Diagnostics. If you are experienced with computers and know what component(s) you need to test, simply 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 section.

Starting the Dell Diagnostics

1. Turn off the computer.

NOTICE: Before using the *Microsoft Windows 98 Boot Disk*, make sure to write-protect the diskette.

2. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

For systems running Windows 98, also insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.



NOTE: For systems running Windows NT, use the *Hard Drive Diagnostics and Utilities* diskette included with your computer system or any MS-DOS bootable diskette.

3. Turn on the computer.
4. When the boot screen appears, select **Start Computer with CD-ROM Support** (Windows 98 and Windows 2000) or **EIDE Support** (Windows NT).
5. At the `a: \` prompt, type `x:` (where `x` is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a: \` prompt). Press `<Enter>`.

For example, if your CD-ROM drive is drive D, type `d:` and press `<Enter>`.

6. Type `diags32` and press `<Enter>`.

The **DIAGNOSTICS MENU** appears (see Figure 4-1). The menu allows you to run all or specific diagnostic tests or to exit to the MS-DOS prompt.



NOTE: Before you read the rest of this section, you may want to start the Dell Diagnostics so that you can see it on the screen of your monitor.

For a quick check of your system, select **Quickly Test All Devices**. 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 thorough check of your system, select **Fully Test All Devices**. To check a particular area of your system, select **Select Devices to Test**.

To select an option from this menu, highlight the option and press <Enter>, or press the key that corresponds to the highlighted letter in the option you choose.

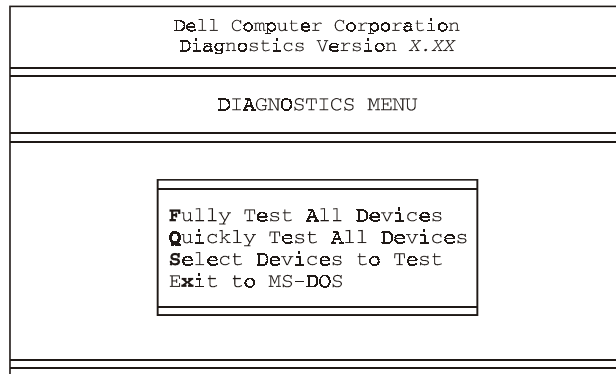


Figure 4-1. Diagnostics Menu

Dell Diagnostics Main Screen

When you select **Select Devices to Test** from the **DIAGNOSTICS MENU**, the main screen of the diagnostics appears (see Figure 4-2). The main screen lists the diagnostic test device groups, lists the devices of the selected device group, and allows you to select options from a menu. From this screen, you can enter two other types of screens.

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

- Two lines at the top of the screen identify the version number of the Dell Diagnostics.
- On the left side of the screen, the **Device Groups** area lists the diagnostic test groups in the order they will run if you select **All** from the **Run Tests** menu. Press the up- or down-arrow key to highlight a device group.
- On the right side of the screen, the **Devices for Highlighted Group** area lists the devices to be tested for the selected device group.
- Two lines at the bottom of the screen are the menu area. The first line lists the menu 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.

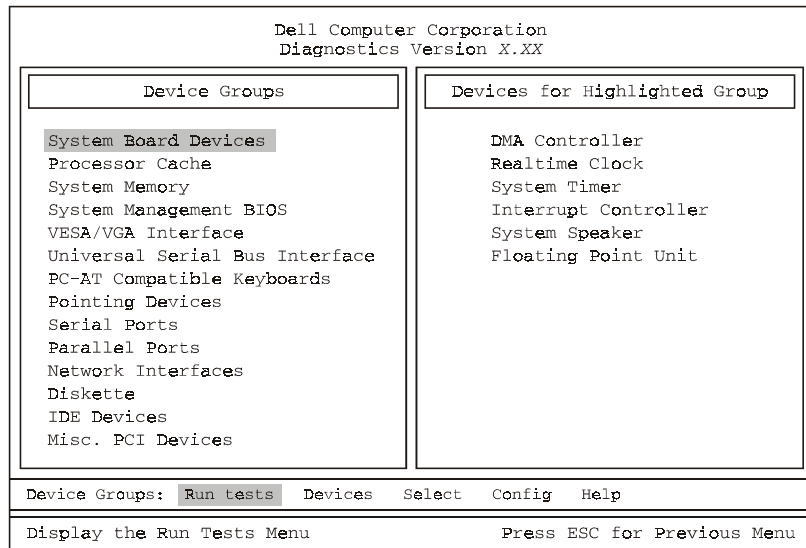


Figure 4-2. Dell Diagnostics Main Screen

Do not be concerned if the **Device Groups** area does not list the names of all the components or devices you know are part of your computer system. For example, you will not see a mouse listed, although you know one is attached to your computer. If you select the **Pointing Devices** device group, **Mouse** is listed under **Devices for Highlighted Group**. Similarly, you can test your printer connection through the **Parallel Ports** device group.

Using the Dell Diagnostics

The online Help in the Dell Diagnostics provides instructions on how to use the program and explains each menu item, test group, subtest, and test and error result. To enter the Help menu, perform the following steps:

1. Highlight **Select Devices to Test** in the **DIAGNOSTICS MENU**.
2. Press <Enter>.
3. Press <h>.

The **Help** menu options are **Menu**, **Keys**, **Device Group**, **Device**, **Test**, and **Versions**. The online Help also provides detailed descriptions of the devices that you are testing. The **Help** options are explained in the following subsections.

Menu

Menu describes the main menu screen area, the device groups, and the different diagnostic menus and commands and provides instructions on how to use them.

Keys

Keys explains the functions of all the keystrokes that can be used in the Dell Diagnostics.

Device Group

Device Group describes the test group that is presently highlighted in the **Device Groups** list on the main menu screen. It also provides reasoning for using some tests.

Device

Device is the educational section of the online Help. It describes the function and purpose of the highlighted device in the **Device Groups** area. For example, the following information appears when you select **Device** for **Diskette** in the **Device Groups** list:

Diskette drive A:

The diskette disk drive device reads and writes data to and from diskettes. Diskettes are flexible recording media, sometimes contained in hard shells. Diskette recording capacities are small and access times are slow relative to hard disk drives, but they provide a convenient means of storing and transferring data.

Test

Test provides a thorough explanation of the subtest highlighted for a selected device group. For example, the following description is provided for the **Diskette Drive Seek Test**:

Diskette drive A: - Diskette Drive Seek Test

This test verifies the drive's ability to position its read/write heads. The test operates in two passes: first, seeking from the beginning to ending cylinders inclusively, and second, seeking alternately from the beginning to ending cylinders with convergence towards the middle.

Versions

Versions lists the version numbers of the subtests that are used by the Dell Diagnostics.



CHAPTER 5

Software Solutions

This chapter describes software procedures, such as using audio utilities and reinstalling drivers, that can often solve problems with your computer system.

Using Audio Utilities

For systems with integrated audio, the YAMAHA DS-XG Audio Configuration program enables you to add and control a variety of sound enhancements, including 3D stereo, synthesizer effects, reverberation, chorus, and microphone echo.

Enabling the YAMAHA DS-XG Audio Configuration Program

This section explains how to enable the YAMAHA DS-XG Audio Configuration program for the Microsoft Windows 98 and Windows NT operating systems and briefly describes its controls and features. For comprehensive instructions on using the program, click **Help** on the **YAMAHA DS-XG Audio Config** window (see Figures 5-1 and 5-2).



NOTE: You do not need to enable the Audio Configuration program if your computer is running Windows 2000. When Windows 2000 was initially installed, it automatically installed and enabled the audio drivers.

YAMAHA DS-XG Audio Configuration Program for Windows 98

To enable the YAMAHA DS-XG Audio Configuration program in Windows 98, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **YAMAHA DS-XG Audio Config** icon.

The **YAMAHA DS-XG Audio Config** window, shown in Figure 5-1, appears.



Figure 5-1. YAMAHA DS-XG Audio Config Window for Windows 98

About Tab

The **About** tab provides the version of the YAMAHA DS-XG Audio Configuration program and a **Help** button.



*NOTE: Click **Help** for comprehensive instructions on using the YAMAHA DS-XG Audio Configuration program's functions and controls.*

Synthesizer Tab

The **Synthesizer** tab allows you to enable the musical instrument digital interface (MIDI) synthesizer functions:

- **Reverb** — Adds a resounding effect to acoustical music
- **Chorus** — Adds a chorale effect to musical sound
- **Variation** — Alters sound effects
- **SONDIUS-XG** — Outputs a virtual simulation of actual acoustical instrument operation

MIC Echo Tab

The **MIC Echo** tab provides controls that add an echo effect to the microphone input. The controls are active only while this tab is open. When the tab is closed, the mixer has no echo functionality.

SPDIF Tab

The **SPDIF** tab allows you to produce digital and analog sources of sounds as digital output.

DirectSound Tab

The **DirectSound** tab provides controls to enable or disable DirectSound3D.

DirectSound3D Tab

The **DirectSound3D** tab allows you to enable the 3D-positional stereo audio mode compliant with the Sensaura technology developed by Central Research Laboratories Limited. This mode produces an invariable and unchangeable sound experience in a 360-degree area using stereo speakers or headphones.

DOS Box Tab

The **DOS Box** tab provides features that support MS-DOS programs that run in the Windows DOS box.

YAMAHA DS-XG Audio Configuration Program for Windows NT

To enable the YAMAHA DS-XG Audio Configuration program in Windows NT, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **YAMAHA DS-XG Audio Config** icon.

The **YAMAHA DS-XG Audio Config** window, shown in Figure 5-2, appears.

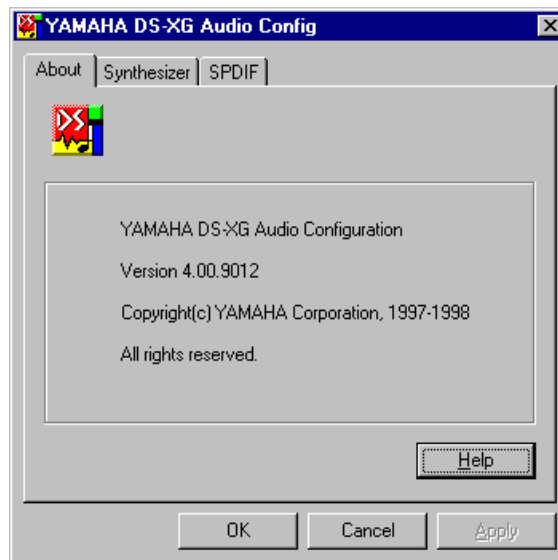


Figure 5-2. YAMAHA DS-XG Audio Config Window for Windows NT

About Tab

The **About** tab provides the version of the YAMAHA DS-XG Audio Configuration program and the program **Help**.



*NOTE: Click **Help** for comprehensive instructions on using the YAMAHA DS-XG Audio Configuration program's functions and controls.*

Synthesizer Tab

The **Synthesizer** tab allows you to enable the following MIDI synthesizer functions:

- **Reverb** — Adds a resounding effect to acoustical music
- **Chorus** — Adds a chorale effect to musical sound
- **Variation** — Alters sound effects

SPDIF Tab

The **SPDIF** tab allows you to produce digital and analog sources of sounds as digital output.

Adjusting Volume Control

To adjust the volume control, perform the following steps:

1. Double-click the yellow speaker icon in the Windows taskbar to display the SB16 Mixer **Volume Control** window (see Figure 5-3).

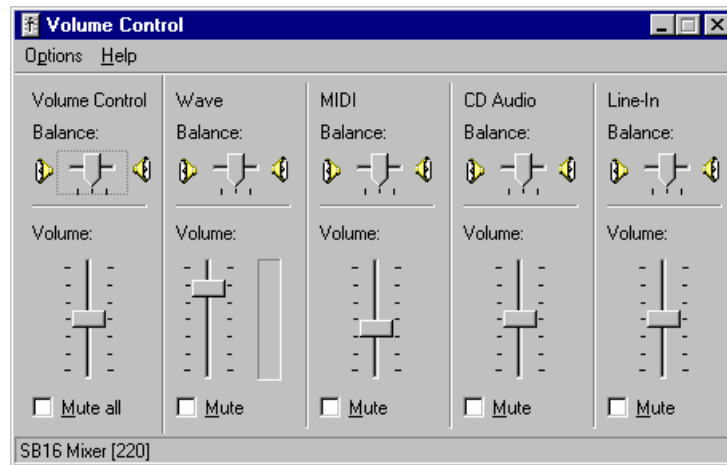


Figure 5-3. Sample Volume Control Window

2. Increase or decrease the stereo sound by moving the slide switches up or down, respectively.

Using Windows Power Management Features

For Windows 98, the power management features of your Dell system can be set through the **Power Management Properties** window. For Windows 2000, the power management features can be set through the **Power Options Properties** window. If you press when the computer restarts, your computer's power management features can be set through the system setup program.

To set the power management features through Windows 98, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **Power Management** icon.
3. Set the power management features in the **Power Management Properties** window.

To set the power options features through Windows 2000, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **Power Options** icon.
3. Set the power management features in the **Power Options Properties** window.

The **Power Schemes** tab allows you to select the power scheme (**Always On**, **Home/Office Desktop**, and **Portable/Laptop**) and power mode settings for your computer. For Windows 2000, the **Power Schemes** tab also allows you to select the battery settings for your computer. The following power scheme settings are available:

- **Turn off monitor** — Turns off the monitor so that the system uses less power. You can press any key to turn on the monitor. The Windows desktop is restored exactly as it appeared before the monitor was turned off.
- **Turn off hard disk** — Turns off the hard-disk drive so that the system uses less power. You can press any key to turn on the hard-disk drive. The Windows desktop is restored exactly as it appeared before the hard-disk drive was turned off.
- **System standby** — Turns off the monitor, stops the hard-disk drive, and turns off other internal devices so that the computer uses less power. When the system resumes from standby mode, the Windows desktop is restored exactly as it appeared prior to entering standby mode.



NOTE: Windows may take several seconds to resume the system from the power scheme settings.

The **Advanced** tab allows you to display the **Power Management** icon on the Windows 98 taskbar, and the **Power Options** icon on the Windows 2000 taskbar. You may also select a password prompt when the system resumes from standby mode. For Windows 2000, you may set the system to power off or to enter standby mode when the power button is pressed.

For Windows 2000, the following tabs are included in the **Power Options Properties** window:

- The **Hibernate** tab allows you to enable hibernate support and displays available disk space for hibernation.
- The **UPS** tab displays the status of the uninterruptible power supply (UPS), if installed.

Reinstalling Drivers

All of your system's drivers for Dell-installed devices are operative when you receive the system—no further installation or configuration is needed. However, if you ever need to reinstall any of these drivers, the driver files are provided on the *Dell Dimension ResourceCD*.

Device problems can often be corrected by reinstalling the appropriate drivers. Also, hardware manufacturers frequently provide updated drivers that support feature enhancements or that correct problems. Obtain updated drivers for products purchased from Dell at the support section of the Dell World Wide Web site (<http://support.dell.com>).

NOTICE: Drivers available on the Dell Web site have been validated for correct operation on Dell systems. Installing drivers obtained from other sources may cause errors or performance degradation.

Your System's Drivers

The device drivers that can be reinstalled on your system are listed below:

- **Yamaha Audio Driver** — Enables the system's audio controller to produce sound.
- **Other Drivers** — Control the devices, such as modem cards or network interface controller (NIC) cards, that might be installed on your system. For instructions on how to reinstall those drivers, see the device's documentation by double-clicking the **Dell Documents** icon on the Windows desktop, clicking **System Information**, and then clicking **System Documentation**.



NOTE: If a driver does not appear under a selected operating system on the Dell Dimension ResourceCD, then the driver is not required by that operating system.

Using the Dell Dimension ResourceCD to Reinstall Drivers

NOTICE: The Dell Dimension ResourceCD contains drivers for devices that might not be installed in your computer. Do not install device drivers unless you first identify the specific driver intended for the hardware installed in

your computer (see “Your System’s Drivers,” found earlier in this chapter). Installing incorrect drivers might make your computer inoperable.

1. Start the computer’s operating system.
2. If you have not initially installed the *Dell Dimension ResourceCD* application program, proceed to the next step. If you have previously installed the application program, proceed to step 6.
3. Insert the *Dell Dimension ResourceCD* into the optical drive.
The **ResourceCD Installation** application program automatically starts.
4. Follow the instructions on your screen.
5. When the **InstallShield Wizard Complete** window appears, remove the *Dell Dimension ResourceCD* from the optical drive, and then click **Finish** to restart the computer.
6. After the operating system starts, insert the *Dell Dimension ResourceCD* into the optical drive.
The **Welcome Dell System Owner** screen appears.
7. Click **Next**.
8. If necessary, change the language in the **Language** list located in the upper-right corner of the window.
9. Select the model of your computer in the **System Model** list.
10. Select your computer’s operating system in the **Operating System** list.
11. Select the type of device in the **Device Type** list.
12. Select **Drivers** in the **Topic** list.
13. Click the name of the driver that you want to reinstall.
See “Your System’s Drivers,” found earlier in this chapter, for a list of drivers that you can reinstall on your computer.
14. Follow the instructions on the screen.

Temporarily Disabling the Virus-Scanning Program

Before you install commercially available software, temporarily disable any virus-scanning program running on your computer. For instructions on temporarily disabling virus protection, see the online documentation provided with your virus-scanning software.

NOTICE: When virus-scanning software is disabled, viruses are not detected on your system.

After you install the software, reenable the virus-scanning program. See the online documentation provided with your virus-scanning software for instructions.

Resolving Software and Hardware Incompatibilities

To check for conflicts on a computer running Windows 98 or Windows 2000, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. In the **Control Panel**, double-click **System**.
3. Click the **Device Manager** tab.
4. In the **Device Manager** list, check for conflicts with the other devices.

Conflicts are indicated by a yellow exclamation point (!) beside the conflicting device or a red X if the device has been disabled.

5. Double-click any conflicting device listed to bring up the **Properties** window so you can determine what needs to be reconfigured or removed from the **Device Manager**. Resolve these conflicts before checking specific devices.
6. Double-click the malfunctioning device type in the **Device Manager** list.
7. Double-click the icon for the specific device in the expanded list.

The **Properties** window appears.

8. If there is an interrupt request (IRQ) conflict, the **Device status** area in the **Properties** window reports what expansion cards or devices are sharing the device's IRQ. Resolve the IRQ conflicts.

If you suspect a resource conflict using Windows NT, open the **Event Viewer** in the **Administrative Tools (Common)** folder and check for any relevant event log messages. Start the **Windows NT Diagnostics** from the **Administrative Tools (Common)** folder and check current resource assignments on the **Resources** tab. Then click the **Services** tab and view the state of **Services and Devices**.

To check for conflicts on a computer running Windows 2000, perform the following steps:

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the **System** icon.
3. Click the **Hardware** tab.
4. Click **Device Manager**.
5. Click **View**, then **Resources by connection**.

6. Double-click **Interrupt request (IRQ)** to view the IRQ assignments.
Conflicts are indicated by a yellow exclamation point (!) beside the conflicting device or a red X if the device has been disabled.
7. Double-click any conflicting device listed to bring up the **Properties** window so you can determine what needs to be reconfigured or removed from the **Device Manager**. Resolve these conflicts before checking specific devices.
8. Double-click the malfunctioning device type in the **Device Manager** list.
9. Double-click the icon for the specific device in the expanded list.
The **Properties** window appears.
10. If there is an IRQ conflict, the **Device status** area in the **Properties** window reports what expansion cards or devices are sharing the device's IRQ. Resolve the IRQ conflicts.

You can also use the Windows 98 or Windows 2000 Hardware Conflict Troubleshooter. To use the troubleshooter, click the **Start** button and click **Help**. In Windows 98, double-click **Troubleshooting** on the **Contents** tab, and then double-click **If you have a hardware conflict**. In Windows 2000, double-click **Troubleshooting and Maintenance** on the **Contents** tab, and then double-click **If you have a hardware conflict**.

Reinstalling Windows 98

If Dell installed a Microsoft Windows operating system on your computer, under normal circumstances you should never need to reinstall the operating system.

NOTICE: Dell recommends against reinstalling the Windows operating system over your currently installed Windows operating system. If advised by a Dell technical support representative to reinstall Windows 98, perform the following steps in the order listed.



NOTE: The instructions in this section apply only to reinstalling a Dell-installed Windows 98 operating system.

1. Turn on the system.
2. Insert the *Microsoft Windows 98 Boot Disk* into the diskette drive and the *Microsoft Windows 98 CD* into the CD-ROM or DVD-ROM drive.
3. Reboot the computer.
4. When the **Microsoft Windows 98 Startup Menu** appears, ensure that the **Start Windows 98 Setup CD-ROM** option is highlighted and press <Enter>.
5. When the **Microsoft Windows 98 Setup** window appears, press <Enter>.

6. If you see a message prompting you to reinstall Windows 98 over your current operating system, use the down-arrow key to highlight **Continue setup and replace your current operating system**. Then press <Enter>.
7. If you see a message stating that Windows 98 is about to prepare the system for installing the operating system, press <Enter>.

ScanDisk checks your system files.

8. When a message appears to alert you that ScanDisk has finished checking the system drive(s), type **x** if prompted.
9. When the **Windows 98 Setup** window appears, click **Continue**.

Windows 98 checks your hard-disk drive and prepares your system for installing the operating system.

If prompted, enter the Windows Product Key, which is printed on the front cover of the *Getting Started/Microsoft Windows 98* document.

10. When prompted for the directory to install the Windows 98 files, ensure that **c:\windows** is selected and click **Next**.

The **Windows 98 Setup** wizard appears and checks your system for available hard-disk drive space.

11. When the **Establish Your Location** window appears, select your regional location and click **Next**.

This setting tells Windows 98 how to display Internet content.

12. When prompted to create the start-up diskette, remove the boot diskette from the diskette drive and click **Next**.
13. Label a blank diskette as instructed, insert the diskette into the diskette drive, and click **OK**.

If a dialog box instructs you to format the diskette, click **Format**.

14. After you have created the start-up diskette, remove the diskette from the diskette drive and click **OK**.

15. When the **Start copying files** window appears, click **Next**.

The **Welcome to Microsoft Windows 98** window appears and displays information about the operating system while the files are copied to your hard-disk drive.



NOTE: This step may take several minutes to complete. The approximate time is displayed on the Windows 98 status bar.

When the files have been copied to the hard-disk drive, Windows 98 restarts the system. A series of windows appears to inform you that Windows 98 is setting up hardware, initializing drivers, and detecting hardware and Plug and Play devices.

The system may reboot a second time.

Windows 98 restarts the system and detects additional hardware settings.

The **Windows 98 Setup** window appears and lists which items Windows 98 is setting up.

16. Windows 98 updates the system settings and restarts the system.

The **Welcome to Windows 98** screen appears.

17. Reinstall any necessary drivers by using the procedures in this chapter.



CHAPTER 6

Checking Inside Your Computer

This chapter describes troubleshooting procedures for expansion cards, memory, drives, and the system board. Some procedures require you to access the inside of the computer and remove and reinstall components. Procedures are also included for reseating the microprocessor and checking a wet or damaged computer.



CAUTION: Before completing any of the procedures in this chapter, be sure to follow the procedures in “Safety First—For You and Your Computer” in Chapter 2.

Expansion Cards

If an error message indicates an expansion-card problem or if an expansion card seems to perform incorrectly or not at all, the problem could be a faulty connection, a conflict with software or other hardware, or a faulty expansion card. If software problems and conflicts have been eliminated, perform the following general steps to troubleshoot expansion cards:

1. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
2. Remove all cables attached to the expansion cards.
3. Remove each expansion card, and verify any jumper or switch settings.
4. Reinstall the expansion cards, fully seating the cards in their connectors.

Figure 6-1 illustrates a correctly seated expansion card, and Figure 6-2 illustrates incorrect expansion-card installations.

5. Reconnect the cable connectors to the appropriate connectors on the expansion cards.
6. Replace the computer cover and support beam, connect all external cables, and turn on the system.

The following subsections provide troubleshooting procedures for some specific types of expansion cards.

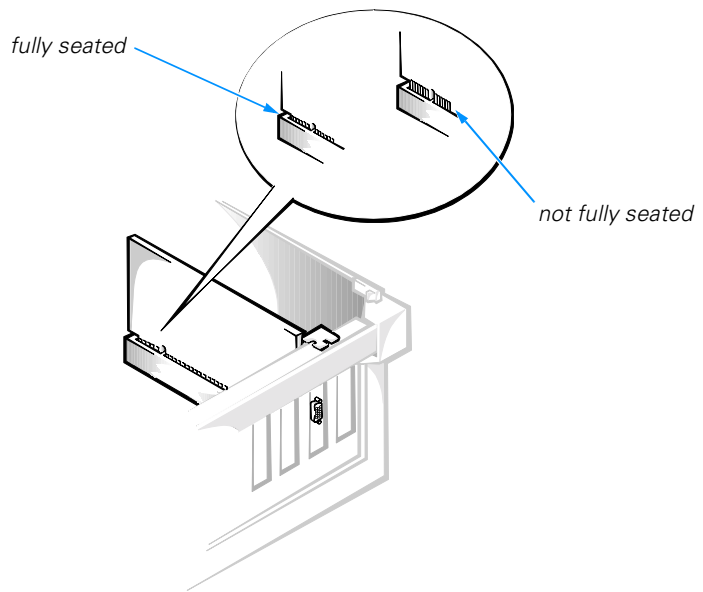


Figure 6-1. Expansion-Card Installation

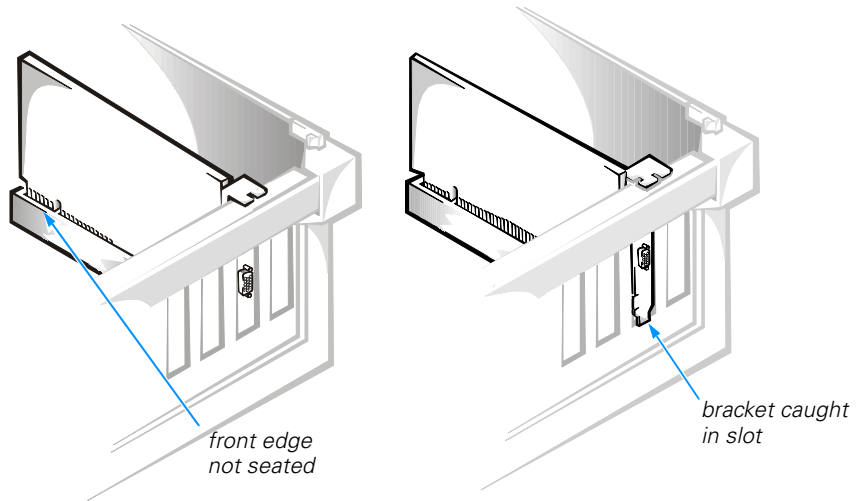


Figure 6-2. Incorrect Expansion-Card Installations

Modem

In general, modem malfunctions may be caused by any of the following problems:

- Incorrectly installed modem
- Interrupt request (IRQ) conflicts
- Incorrect information (.inf) files
- Multiple drivers installed
- Incorrect Plug and Play configuration

To troubleshoot a modem card, perform the following steps:

1. Check for modem IRQ conflicts.
Refer to “Resolving Software and Hardware Incompatibilities” in Chapter 5. Resolve any modem IRQ conflicts, and restart the computer system.
2. Verify the modem configuration.
 - a. Click the **Start** button, point to **Settings**, and click **Control Panel**.
 - b. In the **Control Panel**, double-click **Modems**. If there are multiple entries for the same modem, remove those entries and restart the computer. If there are modems listed that are not part of the system configuration, remove them from the list. If you are using Windows NT, check the modem properties and then proceed to step 3. If you are using Windows 2000, double-click **Phone and Modem Options** in the **Control Panel**.
 - c. Click the **Diagnostics** tab.
 - d. Highlight the COM port that the modem is using.
 - e. Click **More Info** to verify that the system can communicate with the modem. If the modem reports information to the system, the modem is operating properly.
3. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
4. Remove and reinstall the modem, fully seating the card in its connector (see Figure 6-1).
5. Replace the computer cover and support beam, connect all external cables, and turn on the system. Enter the system setup program as described in Appendix B, “System Setup Program,” and verify that **Serial port A** on the **Peripheral Configuration** submenu is set to **Auto**.



NOTE: If you have persistent problems with low connection speeds, contact your telephone company to check for data noise and imbalanced lines or your Internet service provider (ISP) for information about their service.

Sound Cards

If you completed the basic speaker checks (refer to “Speakers” in Chapter 4) and suspect a problem with a sound card, perform the following checks:

- Check for conflicts as described in “Resolving Software and Hardware Incompatibilities” in Chapter 5.
- Reinstall the audio drivers that came with the sound card.
- Perform the expansion-card checks described in “Expansion Cards” at the beginning of this chapter.

Video Cards

If you completed the basic monitor checks (refer to “Monitor” in Chapter 4) and suspect a problem with the video card, perform the following checks:

- Click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **Display** icon, and click the **Settings** tab. Try different **Color Palette** and **Screen area** (Windows 98 and Windows 2000) or **Desktop Area** (Windows NT) settings.
- Change the display type to standard video graphics array (VGA) as follows: Restart the system. For Windows 98 or Windows 2000, press <F8> when you see the **Starting Windows** message, and then select **Safe Mode** from the boot manager screen. For Windows NT, select **Windows NT Workstation 4.0 [VGA Mode]** from the boot manager screen.
- Reinstall the video drivers as described in the documentation that came with the video card.
- Perform the expansion-card checks described in “Expansion Cards” at the beginning of this chapter.

Network Cards

In general, network malfunctions may be caused by the following problems:

- Wrong or incorrectly installed network interface controller (NIC) drivers
- IRQ conflicts
- Damaged RJ45 connector or patch cable
- Bad hub port connection
- Incorrectly installed or malfunctioning network card



NOTE: If you can connect to the network but are having problems accessing network resources, contact your network administrator.

To troubleshoot a network card, perform the following steps:

1. Run the **Network Interfaces** test group in the Dell Diagnostics if you have a supported network card (refer to “Running the Dell Diagnostics” in Chapter 4).

2. Run the diagnostics for your network card as described in the documentation that came with the card.

If the network card is not detected, go to step 3.

If the network card does not pass all the tests, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
3. Remove the computer cover and support beam as described in "Removing and Replacing the Computer Cover and Support Beam" in Chapter 2.
4. Remove all expansion cards installed in the computer (refer to "Removing Expansion Cards" in Chapter 2) except the video card to prevent a card that is incorrectly configured from causing an interrupt or input/output (I/O) port resource conflict.
5. Replace the computer cover and support beam, connect all external cables, and turn on the system.
6. Clear nonvolatile random-access memory (NVRAM) as described in "Clearing NVRAM" in Appendix B.
7. Check the network connections if the network hardware is functional.
 - a. Check the network card connector for physical damage.
 - b. Ensure that the cable is inserted properly.
 - c. Replace the patch cable or network cable from the wall jack to the computer.
 - d. If replacing the patch cable or network cable does not solve the problem, try moving the computer to another location on the network.
 - e. If you still cannot connect to the network, ensure that the right drivers are being used.
8. If the network card is still not detected, refer to Chapter 7, "Getting Help," for information on obtaining technical assistance. If the network card is detected, repeat step 2.

System Memory

A computer memory problem can be caused by a faulty dual in-line memory module (DIMM) or a faulty system board. If you received an error message after making changes in the system setup program, restore the original values and restart the system. If a random-access memory (RAM) error message appears, troubleshoot the memory by performing the following steps:

1. Turn on the computer and monitor.
2. If you hear a beep code or if you see a diagnostic code, refer to Appendix C, "Diagnostic Codes, Beep Codes, and System Messages."

3. Enter the system setup program as described in Appendix B, “System Setup Program,” and verify **System Memory** on the **Main** screen.

If the memory amount displayed does not match the computer’s configuration, reseal the DIMMs as described in the next subsection.

Reseating DIMMs

1. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
2. Remove the DIMMs as described in “Removing a DIMM” in Chapter 2.
3. Verify that the proper memory is installed.
Refer to “Adding Memory” in Chapter 2 for information on supported memory.
4. Check the DIMMs and DIMM sockets for broken tabs and damaged connectors.
If a module is damaged, replace it. If a DIMM socket is damaged, refer to Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.
5. Reinstall the DIMMs as described in “Installing a DIMM” in Chapter 2.
6. Replace the computer cover and support beam; reconnect the system to an electrical outlet and turn it on.
7. Enter the system setup program, and verify **System Memory** on the **Main** screen again.

If the problem still exists and you have a single DIMM, repeat the preceding steps, installing the DIMM in a different socket. If you have more than one DIMM, try installing one at a time. Install a known working DIMM if available.

8. If the problem persists, refer to Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.

Drives

If an error message indicates a drive problem or if a drive seems to perform incorrectly or not at all, the problem could be a faulty connection, a basic input/output system (BIOS) problem, a conflict with other hardware, or a faulty drive. If BIOS problems and conflicts have been eliminated, perform the following general steps to troubleshoot drives:

1. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
2. Remove the interface cable and the DC power connector from the malfunctioning drive, and inspect them for damage.
3. Reconnect the interface and DC power connectors to the appropriate connectors on the drive, making sure they are firmly seated.

4. Replace the computer cover and support beam, connect all external cables, and turn on the system.

The following subsections provide troubleshooting checks for some specific types of drives.

CD-ROM and DVD-ROM Drives

If you completed the basic drive checks (refer to “Drives” in Chapter 4 and this chapter) and suspect a problem with a CD-ROM or DVD-ROM drive, perform the following checks:

- Check for hardware conflicts as described in “Resolving Software and Hardware Incompatibilities” in Chapter 5.
- If you have Windows 98, double-click the **System** icon in the **Control Panel** and check the **Performance** tab for any abnormal indications. If you have Windows 2000, double-click the **Administrative Tools** icon in the **Control Panel** and check the **Event Viewer**.
- Clear NVRAM as described in “Clearing NVRAM” in Appendix B.

Hard-Disk Drive

If you completed the basic drive checks (refer to “Drives” in Chapter 4 and this chapter) and suspect a problem with a hard-disk drive, perform the following checks:

- Clear NVRAM as described in “Clearing NVRAM” in Appendix B.
- Disconnect other devices on the same interface cable.

System Board

A system board problem can result from a defective system board component, a faulty power supply, or a defective component connected to the system board. If an error message indicates a system board problem, the boot routine does not complete (refer to “Boot Routine” in Chapter 4), or if the power supply fan does not spin when power is on, perform the following steps:

1. Verify that the electrical outlet to which the computer is connected is properly functioning. Test the electrical outlet with another electrical device, such as a lamp.
2. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
3. Remove all expansion cards *except* the video card as described in “Removing Expansion Cards” in Chapter 2.

Make sure the video card is fully seated in its connector (see Figure 6-1).

4. If the system does not boot, check connections and remove potential shorts or overloads.
 - a. Reseat the control panel cable and power cable connectors from the power supply to the system board (see Figure 2-5 for connector locations).
 - b. Remove the primary hard-disk drive as described in steps 2 and 3 of “Primary Hard-Disk Drive Bay” in Chapter 3. Disconnect the DC power cable connectors to all other drives *except* for the 3.5-inch diskette drive and the CD-ROM or DVD-ROM drive.
 - c. Disconnect all devices attached to the computer except the keyboard and monitor.
5. Replace the computer cover and support beam; reconnect the system to an electrical outlet.
6. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

For systems running Windows 98, also insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.



NOTE: For systems running Windows NT, use the Hard Drive Diagnostics and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

7. Turn on the computer system.

If the system does not start, see Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.



NOTE: System start-up time is extended if you removed the hard-disk drive in step 4. Ignore any error messages received in this situation.

8. When the boot screen appears, select **Start Computer with CD-ROM Support**.
9. At the `a: \` prompt, type `x:` (where `x` is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a: \` prompt.). Press `<Enter>`.
10. Type `diags32` and press `<Enter>`.

The **DIAGNOSTICS MENU** appears.

11. Type `q` to quickly test your computer system.

If the tests complete successfully, proceed to the next step. Otherwise, see Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.

12. Remove the boot diskette from the diskette drive and the CD from the CD-ROM or DVD-ROM drive, turn off the system, and disconnect it from the electrical outlet. Replace the computer cover and support beam.

13. If you removed the primary hard-disk drive in step 4, reinstall it as described in steps 4 through 8 of “Primary Hard-Disk Drive Bay” in Chapter 3. Then repeat steps 6 through 12 of this procedure.
14. One at a time, reconnect the DC power connectors to other drives (if you performed step 4) and reinstall each of the expansion cards you removed in step 3. Repeat steps 6 through 12 after each reinstallation.
15. *If the problem returns after you reconnect a drive not obtained from Dell, remove it and contact the manufacturer. Otherwise, refer to Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.*

If the problem returns when an expansion card is reinstalled, go to the next step.

16. Try the expansion card in a different slot.

If reseating the cards does not correct the problem, and if the problem is caused by a card not obtained from Dell, contact the manufacturer. Otherwise, refer to Chapter 7, “Getting Help,” for instructions on obtaining technical assistance.

Reseating the Microprocessor

If you are instructed by a Dell technical support representative to reseat the single-edge contact cartridge 2 (SECC2) package and heat sink, perform the following steps.



CAUTION: The SECC2 package and heat sink can get extremely hot during system operation. Be sure that the assembly has had sufficient time to cool before you touch it.



CAUTION: When handling the SECC2 package and heat sink assembly, take care to avoid sharp edges on the heat sink.

1. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
2. Remove the fan shroud by pressing its two tabs (see Figure 6-3) and gently lifting the shroud until it clears the fan and guide bracket assemblies. Set the fan shroud aside.

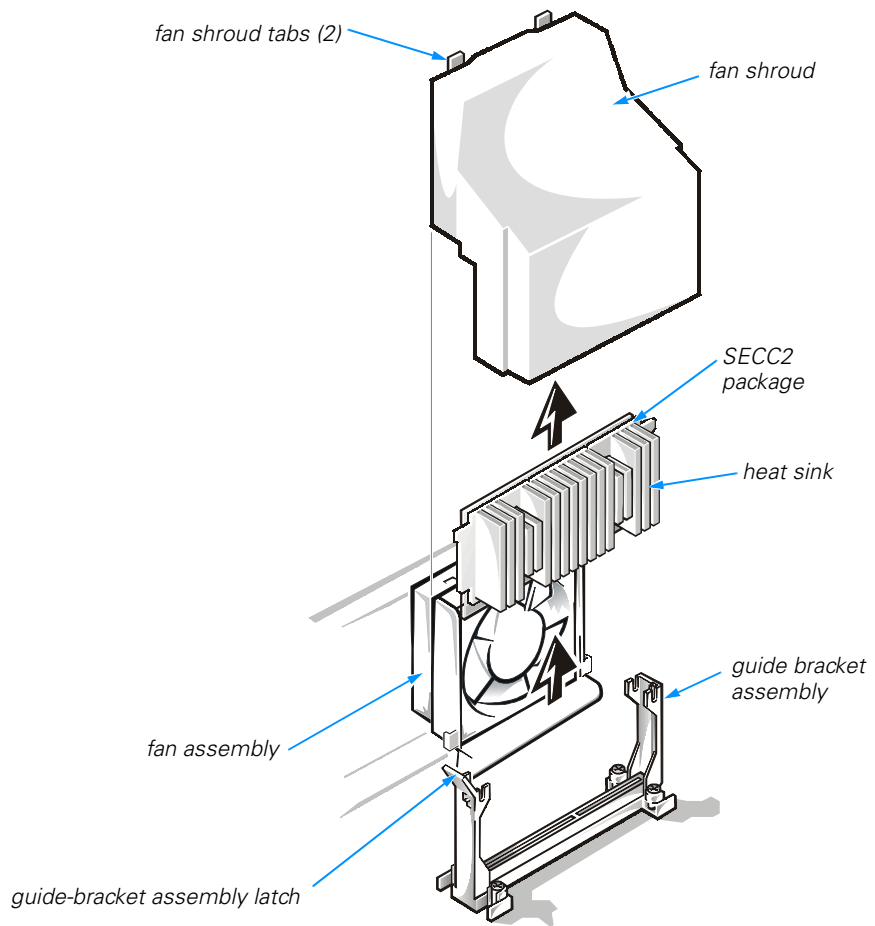


Figure 6-3. Removing the SECC2 Package and Heat Sink

3. Gently pull out the guide-bracket assembly latch, grasp the SECC2 package firmly, and pull straight up to remove it from the guide bracket assembly.

You must use up to 15 pounds of force to disengage the SECC2 package from the connector. Do not rock the package while removing it.

4. Slide the SECC2 package into the guide bracket assembly, with the heat sink toward the front of the computer, and firmly seat the microprocessor/heat sink assembly.

You must use up to 25 pounds of force to seat the SECC2 package. Do not rock the package while inserting it into the connector.

5. Place the fan shroud over the fan assembly and the guide bracket assembly. Then gently press down the shroud until the two fan shroud tabs snap into the two slots on top of the fan assembly.



6. Replace the computer cover and support beam, and reconnect the system to an electrical outlet.
7. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

For systems running Windows 98, also insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.

NOTE: For systems running Windows NT, use the Hard Drive Diagnostics and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

8. Turn on the computer system.
If the system does not start, see Chapter 7, "Getting Help," for instructions on obtaining technical assistance.
9. When the boot screen appears, select **Start Computer with CD-ROM Support**.
10. At the `a:\` prompt, type `x:` (where `x` is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.). Press `<Enter>`.
11. Type `diags32` and press `<Enter>`.
The **DIAGNOSTICS MENU** appears.
12. Run the **System Board Device** test group in the Dell Diagnostics (refer to "Running the Dell Diagnostics" in Chapter 4).

If the tests do not complete successfully, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

If Your Computer Gets Wet

Liquids from spills, splashes, and excessive humidity can damage your computer. If an external device (such as a printer) gets wet, contact the manufacturer for instructions. If your computer gets wet, perform the following steps:

1. Immediately unplug the computer from the electrical outlet.
2. Remove the computer cover and support beam as described in "Removing and Replacing the Computer Cover and Support Beam" in Chapter 2.
3. Let the computer dry for at least 24 hours.

NOTICE: Make sure that the computer is thoroughly dry before proceeding.

4. Remove all expansion cards installed in the computer (refer to "Removing Expansion Cards" in Chapter 2) except the video card.

5. Replace the computer cover and support beam; reconnect the system to an electrical outlet and turn it on.

If the system does not have power, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

6. Turn off the system, and disconnect it from the electrical outlet. Remove the computer cover and support beam, and reinstall all the expansion cards you removed in step 4.

Refer to "Installing Expansion Cards" in Chapter 2 for instructions.

7. Replace the computer cover and support beam, and reconnect the system to an electrical outlet.

8. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

For systems running Windows 98, also insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.



NOTE: For systems running Windows NT, use the Hard Drive Diagnostics and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

9. Turn on the computer system.

If the system does not start, see Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

10. When the boot screen appears, select **Start Computer with CD-ROM Support**.

11. At the `a:\` prompt, type `x:` (where `x` is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.). Press `<Enter>`.

12. Type `diags32` and press `<Enter>`.

The **DIAGNOSTICS MENU** appears.

13. Type `q` to quickly test your computer system.

If the tests do not complete successfully, see Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

If Your Computer Is Damaged

If your computer is dropped or damaged, check it to make sure it still functions properly. If a device attached to the computer is dropped or damaged, contact the manufacturer for technical assistance. To troubleshoot a damaged computer, perform the following steps:

1. Remove the computer cover and support beam as described in "Removing and Replacing the Computer Cover and Support Beam" in Chapter 2.

2. Check the connections in the computer.

Check all power and interface cable connections for the drives. Make sure all cables are securely and properly connected to the system board. Verify that all expansion cards are firmly seated as shown in Figure 6-1 and that all components are properly seated in their connectors and sockets.

3. Replace the computer cover and support beam, and reconnect the system to an electrical outlet.

4. Insert the *Dell Dimension ResourceCD* into the CD-ROM or DVD-ROM drive.

For systems running Windows 98, also insert the *Microsoft Windows 98 Boot Disk* into the diskette drive.



NOTE: For systems running Windows NT, use the Hard Drive Diagnostics and Utilities diskette included with your computer system or any MS-DOS bootable diskette.

5. Turn on the computer system.

If the system does not start, see Chapter 7, "Getting Help," for instructions on obtaining technical assistance.

6. When the boot screen appears, select **Start Computer with CD-ROM Support**.

7. At the `a:\` prompt, type `x:` (where `x` is the drive letter for the CD-ROM or DVD-ROM drive, which is displayed on the line above the `a:\` prompt.). Press `<Enter>`.

8. Type `diags32` and press `<Enter>`.

The **DIAGNOSTICS MENU** appears.

9. Type `q` to quickly test your computer system.

If the tests do not complete successfully, see Chapter 7, "Getting Help," for instructions on obtaining technical assistance.



CHAPTER 7

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 for technical or customer assistance.

Technical Assistance

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

1. Complete the troubleshooting checks in Chapter 4, “Basic Troubleshooting.”
2. Run the Dell Diagnostics as described in “Running the Dell Diagnostics” in Chapter 4.
3. Make a copy of the Diagnostics Checklist (found later in this chapter), and fill it out.
4. Use Dell’s extensive suite of online services available at Dell’s World Wide Web site (<http://www.dell.com>) for help with installation and troubleshooting procedures.

For more information, refer to “World Wide Web” found later in this chapter.

5. If the preceding steps have not resolved the problem, call Dell for technical assistance.

When prompted by Dell’s automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.



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

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

Help Tools

Dell provides a number of tools to assist you. These tools are described in the following sections.



NOTE: Some of the following tools are not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

World Wide Web

The Internet is your most powerful tool for obtaining information about your computer and other Dell products. Through the Internet, you can access most of the services described in this section, including AutoTech, TechFax, order status, technical support, and product information.

You can access Dell's support Web site at **<http://support.dell.com>**. To select your country, click the map that appears. The **Welcome to support.dell.com** page opens. Enter your system information to access help tools and information.

Dell can be accessed electronically using the following addresses:

- World Wide Web
<http://www.dell.com/>
<http://www.dell.com/ap/> (for Asian/Pacific countries only)
<http://www.euro.dell.com> (for Europe only)
<http://www.dell.com/la> (for Latin American countries)

- Anonymous file transfer protocol (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)
support.euro.dell.com (for Europe only)
- Electronic Quote Service
sales@dell.com
apmarketing@dell.com (for Asian/Pacific countries only)
- Electronic Information Service
info@dell.com

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 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, refer to "Dell Contact Numbers" found later in this chapter.

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. For the TechFax telephone number to call, refer to "Dell Contact Numbers" found later in this chapter.

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 protocol parameters for the BBS are 1200 to 19.2K baud, 8 data bits, no parity, 1 stop bit.

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, refer to "Dell Contact Numbers" found later in this chapter.

Technical Support Service

Dell's industry-leading hardware technical-support service is available 24 hours a day, seven days a week, to answer 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 10 minutes. When you call, our experts can refer to records kept on your Dell system to better understand your particular question. Our technical support staff use computer-based diagnostics to provide fast, accurate answers to 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.

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, refer to “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, visit Dell’s World Wide Web site at <http://www.dell.com/>. For the telephone number to call to speak to a sales specialist, refer to “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, refer to “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



NOTE: Have your Express Service Code ready when you call. The code helps Dell’s automated-support telephone system direct your call more efficiently.

Remember to fill out the Diagnostics Checklist (Figure 7-1). If possible, turn on your system 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 system itself. Make sure that the system documentation is available.



WARNING: If you need to remove the computer covers, be sure to first disconnect the computer system's power and modem cables from all electrical outlets.

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: _____

Expansion cards: _____

Are you connected to a network? yes no

Network, version, and network card: _____

Programs and versions: _____

Refer to 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.

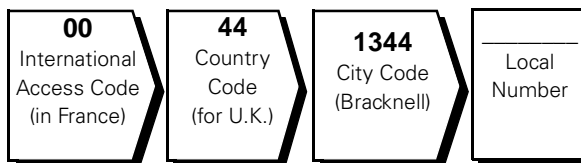
Error message, beep code, or diagnostic code: _____

Description of problem and troubleshooting procedures you performed: _____

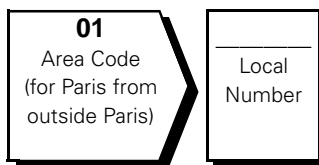
Figure 7-1. Diagnostics Checklist

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in Tables 7-1 and 7-2. Table 7-1 provides the various codes required to make long-distance and international calls. Table 7-2 provides local telephone numbers, area codes, toll-free numbers, Web site and e-mail addresses, 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 7-1 in addition to the local numbers provided in Table 7-2. 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 7-1. 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 |
| Brazil | 0021 | 55 | 51 |
| Brunei | — | 673 | — |
| Canada (North York, Ontario) | 011 | — | Not required |
| Chile (Santiago) | — | 56 | 2 |
| China (Xiamen) | — | 86 | 592 |
| 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 7-1. International Dialing Codes (continued)

| Country (City) | International Access Code | Country Code | City Code |
|-------------------------|---------------------------|--------------|--------------|
| Spain (Madrid) | 07 | 34 | 91 |
| 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 7-2. Dell Contact Numbers

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|---|--|--------------|----------------------------------|
| Australia (Sydney) | Home and Small Business | | 1-300-65-55-33 |
| | Government and Business | | toll free: 1-800-633-559 |
| | Preferred Accounts Division (PAD) | | toll free: 1-800-060-889 |
| | 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) <i>NOTE: Customers in Austria call Germany for technical and customer assistance.</i> | Home/Small Business Sales | 01 | .795 567602 |
| | Home/Small Business Fax | 01 | .795 67605 |
| | Home/Small Business Customer Care | 01 | .795 67603 |
| | Preferred Accounts/Corporate Customer Care | | 0660 8056 |
| | Home/Small Business Technical Support | 01 | .795 67604 |
| | Preferred Accounts/Corporate Technical Support | | 0660 8779 |
| | Switchboard | 01 | 491 04 0 |
| | Web site: http://support.euro.dell.com/at | | |
| E-mail: tech_support_germany@dell.com | | | |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|---|---|----------------------------|----------------------------------|
| Belgium (Brussels) | Technical Support | 02 | 481 92 88 |
| | Customer Care | 02 | 481 91 19 |
| | Home/Small Business Sales | | .toll free: 0800 16884 |
| | Corporate Sales | 02 | 481 91 00 |
| | Fax | 02 | 481 92 99 |
| | Switchboard | 02 | 481 91 00 |
| | Web site: http://support.euro.dell.com/be E-mail: tech_be@dell.com | | |
| Brazil | Sales, Customer Support, Technical Support | | 0800 90 3355 |
| | Web site: http://www.dell.com/br | | |
| Brunei <i>NOTE: Customers in Brunei call Malaysia for sales, customer, and technical assistance.</i> | Customer Technical Support (Penang, Malaysia) | | 810 4966 |
| | Customer Service (Penang, Malaysia) | | 810 4949 |
| | Transaction Sales (Penang, Malaysia) | | 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 | | .toll free: 1-800-433-9014 |
| | AutoTech (Automated technical support) | | .toll free: 1-800-247-9362 |
| | Customer Care (From outside Toronto) | | .toll free: 1-800-387-5759 |
| | Customer Care (From within Toronto) | 416 | 758-2400 |
| | Customer Technical Support | | .toll free: 1-800-847-4096 |
| | Sales (Direct Sales—from outside Toronto) | | .toll free: 1-800-387-5752 |
| | Sales (Direct Sales—from within Toronto) | 416 | 758-2200 |
| | Sales (Federal government, education, and medical) | | .toll free: 1-800-567-7542 |
| | Sales (Major Accounts) | | .toll free: 1-800-387-5755 |
| | TechConnect BBS (Austin, Texas, U.S.A.) | 512 | 728-8528 |
| TechFax | | .toll free: 1-800-950-1329 | |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|---|---|------------------|---|
| <p>Chile (Santiago)</p> <p><i>NOTE: Customers in Chile call the U.S.A for sales, customer, and technical assistance.</i></p> | <p>Sales, Customer Support, and Technical Support. toll free: 1230-020-4823</p> | | |
| <p>China (Xiamen)</p> | <p>Customer Service toll free: 800 858 2437</p> <p>Sales. toll free: 800 858 2222</p> | | |
| <p>Czech Republic (Prague)</p> | <p>Technical Support 02. 22 83 27 27</p> <p>Customer Care 02. 22 83 27 11</p> <p>Fax 02. 22 83 27 14</p> <p>TechFax. 02. 22 83 27 28</p> <p>Switchboard 02. 22 83 27 11</p> <p>Web site: http://support.euro.dell.com/cz</p> <p>E-mail: czech_dell@dell.com</p> | | |
| <p>Denmark (Horsholm)</p> <p><i>NOTE: Customers in Denmark call Sweden for fax technical support.</i></p> | <p>Technical Support 45170182</p> <p>Relational Customer Care. 45170184</p> <p>Home/Small Business Customer Care. 32875505</p> <p>Switchboard 45170100</p> <p>Fax Technical Support (Upplands Vasby, Sweden) 859005594</p> <p>Fax Switchboard 45170117</p> <p>Web site: http://support.euro.dell.com/dk</p> <p>E-mail: den_support@dell.com</p> | | |
| <p>Finland (Helsinki)</p> | <p>Technical Support 09. 253 313 60</p> <p>Technical Support Fax. 09. 253 313 81</p> <p>Relational Customer Care. 09. 253 313 38</p> <p>Home/Small Business Customer Care. 09. 693 791 94</p> <p>Fax 09. 253 313 99</p> <p>Switchboard 09. 253 313 00</p> <p>Web site: http://support.euro.dell.com/fi</p> <p>E-mail: fin_support@dell.com</p> | | |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|---|--|-----------------|----------------------------------|
| France (Paris/Montpellier) | Technical Support | 0803 | .387 270 |
| | Customer Care (Paris) | 01 | .47 62 68 92 |
| | Customer Care (Montpellier) | 04 | .67 06 61 96 |
| | TechConnect BBS (Montpellier) | 04 | .67 22 53 04 |
| | Fax (Montpellier) | 04 | .67 06 60 07 |
| | Switchboard (Paris) | 01 | .47 62 69 00 |
| | Switchboard (Montpellier) | 04 | .67 06 60 00 |
| | Web site: http://support.euro.dell.com/fr E-mail: web_fr_tech@dell.com | | |
| Germany (Langen) | Technical Support | 06103 | .766-7200 |
| | Technical Support Fax | 06103 | .766-9222 |
| | Home/Small Business Customer Care | | 0180-5-224400 |
| | Global Segment Customer Care | 06103 | .766-9570 |
| | Preferred Accounts Customer Care | 06103 | .766-9420 |
| | Large Accounts Customer Care | 06103 | .766-9560 |
| | Public Accounts Customer Care | 06103 | .766-9555 |
| | TechConnect BBS | 06103 | .766-9666 |
| | Switchboard | 06103 | .766-7000 |
| Web site: http://www.dell.de/support E-mail: tech_support_germany@dell.com | | | |
| Hong Kong <i>NOTE: Customers in Hong Kong call Malaysia for customer assistance.</i> | Technical Support | | 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 |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|----------------------------|--|--|--|
| Ireland (Bray) | Technical Support | | 1-850-543-543 |
| | Customer Care | 01 | 204 4026 |
| | Sales | | 1-850-235-235 |
| | SalesFax | 01 | 286 2020 |
| | Fax | 01 | 286 6848 |
| | TechConnect BBS | 01 | 204 4711 |
| | TechFax | 01 | 204 4708 |
| | Switchboard | 01 | 286 0500 |
| | Web site: http://support.euro.dell.com/ie | | |
| | E-mail: dell_direct_support@dell.com | | |
| Italy (Milan) | Technical Support | 2 | 57782.690 |
| | Customer Care | 2 | 57782.555 |
| | Sales | 2 | 57782.411 |
| | Fax | 2 | 57503530 |
| | Switchboard | 2 | 57782.1 |
| | | Web site: http://support.euro.dell.com/it | |
| | E-mail: support_italy@dell.com | | |
| Japan (Kawasaki) | Technical Support (Server) | | toll free: 0120-1984-35 |
| | Technical Support (Dimension™ and Inspiron™) | | toll free: 0120-1982-56 or 0088-25-3355 |
| | Technical Support (WorkStation, OptiPlex™, and Latitude™) | | toll free: 0120-1984-39 or 0088-22-7890 |
| | Y2K Support | 044 | 556-4298 |
| | Customer Care | 044 | 556-4240 |
| | Home and Small Business Group Sales | 044 | 556-3344 |
| | Preferred Accounts Division Sales | 044 | 556-3433 |
| | Large Corporate Accounts | 044 | 556-3430 |
| | Faxbox Service | | 03-5972-5840 |
| | Switchboard | 044 | 556-4300 |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|--|---|-----------|----------------------------------|
| Korea (Seoul) | Technical Support toll free: 080-200-3800 Sales toll free: 080-200-3777 Customer Service (Seoul, Korea 2194-6220 Customer Service (Penang, Malaysia) 604-810-4949 Fax 2194-6202 Switchboard 2194-6000 | | |
| 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 call Belgium for sales, customer, and technical assistance.</i> | Technical Support (Brussels, Belgium) 02 481 92 88 Home/Small Business Sales (Brussels, Belgium) toll free: 080016884 Corporate Sales (Brussels, Belgium) 02 481 91 00 Customer Care (Brussels, Belgium) 02 481 91 19 Fax (Brussels, Belgium) 02 481 92 99 Switchboard (Brussels, Belgium) 02 481 91 00 Web site: http://support.euro.dell.com/be E-mail: tech_be@dell.com | | |
| Macau <i>NOTE: Customers in Macau call Malaysia for customer assistance.</i> | Technical Support toll free: 0800 582 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales toll free: 0800 581 | | |
| Malaysia (Penang) | Technical Support 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 | | |

Table 7-2. 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 |
| Netherlands (Amsterdam) | Technical Support | 020 | 581 8838 |
| | Customer Care | 020 | 581 8740 |
| | Home/Small Business Sales | | toll free: 0800-0663 |
| | Home/Small Business Sales Fax | 020 | 682 7171 |
| | Corporate Sales | 020 | 581 8818 |
| | Corporate Sales Fax | 020 | 686 8003 |
| | Fax | 020 | 686 8003 |
| | Switchboard | 020 | 581 8818 |
| New Zealand | Home and Small Business | | 0800 446 255 |
| | Government and Business | | 0800 444 617 |
| | Sales. | | 0800 441 567 |
| | Fax | | 0800 441 566 |
| Norway (Lysaker) <i>NOTE: Customers in Norway call Sweden for fax technical support.</i> | Technical Support | | 671 16882 |
| | Relational Customer Care. | | 671 17514 |
| | Home/Small Business Customer Care | | 23162298 |
| | Switchboard | | 671 16800 |
| | Fax Technical Support (Upplands Vasby, Sweden) | | 590 05 594 |
| | Fax Switchboard | | 671 16865 |
| | Web site: http://support.euro.dell.com/no | | E-mail: nor_support@dell.com |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|--|---|------------------|---|
| Poland (Warsaw) | Technical Support | 22 | 60 61 999 |
| | Customer Care | 22 | 60 61 999 |
| | Sales | 22 | 60 61 999 |
| | Fax | 22 | 60 61 998 |
| | Switchboard | 22 | 60 61 999 |
| | Web site: http://support.euro.dell.com/pl | | |
| E-mail: pl_support@dell.com | | | |
| Singapore (Singapore) | Technical Support | 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 |
| <i>NOTE: Customers in Singapore call Malaysia for customer assistance.</i> | | | |
| South Africa (Johannesburg) | Technical Support | 011 | 709 7710 |
| | Customer Care | 011 | 709 7710 |
| | Sales | 011 | 706 7700 |
| | Fax | 011 | 709 0495 |
| | Switchboard | 011 | 709 7700 |
| | Web site: http://support.euro.dell.com/za | | |
| E-mail: dell_za_support@dell.com | | | |
| Southeast Asian/ Pacific Countries (excluding Australia, Brunei, China, Hong Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—refer to individual listings for these countries) | Customer Technical Support, Customer Service, and Sales (Penang, Malaysia) | | 60 4 810-4810 |

Table 7-2. Dell Contact Numbers (continued)

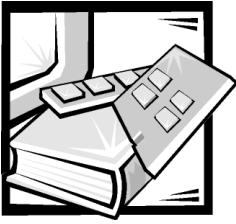
| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|--|--|-----------|-------------------------------------|
| Spain (Madrid) | Technical Support | | 902 100 130 |
| | Corporate Customer Care | | 902 118 546 |
| | Home/Small Business Customer Care | | 902 118 540 |
| | TechConnect BBS. | 91 | 329 33 53 |
| | Corporate Sales | | 902 100 185 |
| | Home/Small Business Sales | | 902 118 541 |
| | Switchboard | 91 | 722 92 00 |
| | Web site: http://support.euro.dell.com/es | | |
| | E-mail: es_support@dell.com | | |
| Sweden (Upplands Vasby) | Technical Support | 08 | 590 05 199 |
| | Relational Customer Care. | 08 | 590 05 642 |
| | Home/Small Business Customer Care | 08 | 587 70 527 |
| | Fax Technical Support. | 08 | 590 05 594 |
| | Sales. | 08 | 590 05 185 |
| | Web site: http://support.euro.dell.com/se | | |
| | E-mail: swe_support@dell.com | | |
| Switzerland (Geneva) | Technical Support | | 0844 811 411 |
| | Customer Care | | 0848 802 802 |
| | Fax | 022 | 799 01 90 |
| | Switchboard | 022 | 799 01 01 |
| | Web site: http://support.euro.dell.com/ch | | |
| | E-mail: swisstech@dell.com | | |
| Taiwan | Technical Support | | toll free: 0080 60 1255 |
| | Technical Support (servers) | | toll free: 0080 60 1256 |
| | 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 09 |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number |
|----------------------------|---|------------------|---|
| U.K. (Bracknell) | Technical Support | | 0870-908-0800 |
| | Corporate Customer Care | 01344 | 720206 |
| | Home/Small Business Customer Care | | 0870-906-0010 |
| | TechConnect BBS | | 0870-908-0610 |
| | Sales | 01344 | 720000 |
| | AutoFax | | 0870-908-0510 |
| | Web site: http://support.euro.dell.com/uk E-mail: dell_direct_support@dell.com | | |

Table 7-2. Dell Contact Numbers (continued)

| Country (City) | Department Name or Service | Area Code | Local Number or Toll-Free Number | |
|----------------------------------|---|---------------|--|--|
| U.S.A. (Austin, Texas) | Automated Order-Status System | | toll free: 1-800-433-9014 | |
| | AutoTech (Automated technical support) | | toll free: 1-800-247-9362 | |
| | Dell Home and Small Business Group: | | | |
| | Customer Technical Support (Return Material Authorization Numbers) | | toll free: 1-800-624-9896 | |
| | Customer Technical Support (Home sales purchased via http://www.dell.com) | | toll free: 1-877-576-3355 | |
| | Customer Service (Credit Return Authorization Numbers) | | toll free: 1-800-624-9897 | |
| | National Accounts (systems purchased by established Dell national accounts [have your account number handy], medical institutions, or value-added resellers [VARs]): | | | |
| | Customer Service and Technical Support (Return Material Authorization Numbers) | | toll free: 1-800-822-8965 | |
| | Public Americas International (systems purchased by governmental agencies [local, state, or federal] or educational institutions): | | | |
| | Customer Service and Technical Support (Return Material Authorization Numbers) | | toll free: 1-800-234-1490 | |
| | Dell Sales | | toll free: 1-800-289-3355 toll free: 1-800-879-3355 | |
| | Spare Parts Sales | | toll free: 1-800-357-3355 | |
| | DellWare™ | | toll free: 1-800-753-7201 | |
| | DellWare FaxBack Service | 512 | 728-1681 | |
| | Fee-Based Technical Support | | toll free: 1-800-433-9005 | |
| | Sales (Catalogs) | | toll free: 1-800-426-5150 | |
| | Fax | | toll free: 1-800-727-8320 | |
| | TechFax. | | toll free: 1-800-950-1329 | |
| | TechConnect BBS. | 512 | 728-8528 | |
| | Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired | | toll free: 1-877-DELLTTY (1-877-335-5889) | |
| Switchboard | | 512338-4400 | | |



APPENDIX A

System Specifications

Table A-1. Technical Specifications

| Microprocessor | |
|-------------------------------|--|
| Microprocessor type | Intel Pentium III microprocessor that runs at 100 MHz externally. |
| L1 cache | 32 KB (16-KB data cache; 16-KB instruction cache) |
| L2 cache | |
| Dimension XPS Txxx | 512-KB pipelined write-back SRAM on a separate chip on the processor card. The L2 cache runs at half the processor's internal clock speed. |
| Dimension XPS Txxxr | 256-KB Advanced Transfer Cache that resides in the processor's core. The L2 cache runs at the processor's internal clock speed. |
| Math coprocessor | internal to microprocessor |

| System Information | |
|-----------------------------|--------------------|
| System chip set | Intel 440BX AGPset |
| Data bus width | 64 bits |
| Address bus width | 32 bits |
| DMA channels | seven |
| Interrupt levels | 15 |
| System BIOS chip | 4 Mb (512 KB) |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

| Expansion Bus | |
|---|---|
| Bus types | PCI (version 2.1), ISA, and AGP (version 1.0) |
| Bus speed | AGP: 66 or 133 MHz PCI: 33 MHz ISA: 8.33 MHz |
| AGP expansion-card connectors | one |
| AGP expansion-card connector size | 124 pins |
| AGP expansion-card connector data width (maximum) | 32 bits |
| PCI expansion-card connectors | four |
| Shared PCI/ISA expansion-card connector | one |
| PCI expansion-card connector size | 120 pins |
| PCI expansion-card connector data width (maximum) | 32 bits |
| ISA expansion-card connectors | one (shares a card-slot opening with a PCI connector) |
| ISA expansion-card connector size | 98 pins |
| ISA expansion-card connector data width (maximum) | 16 bits |

| System Clock | |
|---|--|
| System clock | 100 MHz (matches external processor speed) |
| Diskette/communications ports | 48 MHz from the system clock |

| Memory | |
|---------------------------|--------------------------------|
| Architecture | ECC or non-ECC SDRAM modules |
| DIMM sockets | three; gold contacts |
| DIMM capacities | 32, 64, 128, and 256 MB |
| Minimum RAM | 64 MB (non-ECC) |
| Maximum RAM | 768 MB |
| Frequency | 100 MHz |
| Clock cycle | 10 ns (supports 4 clocks only) |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

| Memory (continued) | |
|---------------------------|-------------------|
| CAS latency | three |
| SPD revision | 1.2A |
| Buffering | unbuffered |
| Voltage | 3.3 V |
| Data bus width | 8 bits |
| BIOS address | E8000h - FFFFFFFh |

| Drives | |
|---------------------------------|---|
| Externally accessible: | |
| Mini tower chassis | two 5.25-inch bays three 3.5-inch bays |
| Desktop chassis | two 5.25-inch bays two 3.5-inch bays |
| Internally accessible | two bays for 1-inch-high EIDE or SCSI hard-disk drives |

| Ports and Connectors | |
|----------------------------------|--|
| Externally accessible: | |
| Serial (DTE) | one 9-pin connector; 16550C-compatible |
| Parallel | one 25-hole connector (bidirectional) |
| Video | one 15-hole connector on an AGP video card |
| Audio ¹ | three miniature jacks for line in, line out, and microphone |
| PS/2-style keyboard | 6-pin mini-DIN connector |
| PS/2-compatible mouse | 6-pin mini-DIN connector |
| MIDI/game ¹ | one 15-pin connector |
| USB | two USB-compliant connectors |
| Internally accessible: | |
| Primary EIDE channel | 40-pin connector on PCI local bus |
| Secondary EIDE channel | 40-pin connector on PCI local bus |
| Diskette drive | 34-pin connector |

¹ Available in integrated audio systems only.

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

| Video | |
|----------------------|---|
| Video type | 2X AGP video card (see manufacturer's specifications) |

| Audio | |
|--------------------------|---|
| Audio type | Integrated Yamaha XG 64 Voice Wavetable Sound |
| Audio chip set | Yamaha 724 DS-1 chip set |

| Controls and Indicators | |
|--|--|
| Reset control | push button |
| Power control | push button |
| Power indicator | green |
| Hard-disk drive access indicator | green |
| Diagnostic code indicators | four bi-color (yellow and green) located on back panel |

| Power | |
|---|---|
| DC power supply: | |
| Wattage | 200 W |
| Heat dissipation | 778 BTU (fully loaded system without monitor) |
| Voltage (switch selectable on back panel) | 90 to 135 V at 60 Hz; 180 to 265 V at 50 Hz; 100 V at 50–60 Hz for Japanese systems |
| Backup battery | 3-V CR2032 coin cell |

| Physical | |
|---------------------|-----------------------------------|
| Mini tower chassis: | |
| Height | 43.69 cm (17.2 inches) |
| Width | 20.32 cm (8 inches) |
| Depth | 44.45 cm (17.5 inches) |
| Weight | 11.3 to 13.6 kg (25.0 to 30.0 lb) |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table A-1. Technical Specifications (continued)

Physical (continued)

Desktop chassis:

| | |
|------------------|-----------------------------------|
| Height | 16.00 cm (6.3 inches) |
| Width | 42.42 cm (16.7 inches) |
| Depth | 44.45 cm (17.5 inches) |
| Weight | 11.3 to 13.6 kg (25.0 to 30.0 lb) |

Environmental

Temperature:

| | |
|---------------------|--|
| Operating | 10° to 35°C ² (50° to 95°F) |
| Storage | -40° to 65°C (-40° to 149°F) |

Relative humidity 20% to 80% (noncondensing)

Maximum vibration:

| | |
|---------------------|---|
| Operating | 0.25 G at 3 to 200 Hz at 1/2 octave/min |
| Storage | 0.5 G at 3 to 200 Hz at 1/2 octave/min |

Maximum shock:

| | |
|---------------------|--|
| Operating | left side (for mini tower orientation) and bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec) |
| Storage | 23-G faired-square wave with a velocity change of 508 cm/sec (200 inches/sec) |

Altitude:

| | |
|---------------------|---|
| Operating | -16 to 3048 m (-50 to 10,000 ft) ² |
| Storage | -16 to 10,600 m (-50 to 35,000 ft) |

² At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).

NOTE: The Glossary in the system Help defines abbreviations and acronyms.



APPENDIX B

System Setup Program

This appendix describes the system setup program, which you can use to configure your computer system as well as enable and disable your system's password features.

Each time you turn on your computer system or press the reset button, the system compares the hardware installed in the system to the hardware listed in the configuration information stored in nonvolatile random-access memory (NVRAM) on the system board. If the system detects a discrepancy between the two, it generates error messages that identify the incorrect configuration settings. The system then prompts you to enter the system setup program to correct the setting.

You can use the system setup program as follows:

- To change the system configuration information after you add, change, or remove any hardware in your system
- To set or change user-selectable options—for example, the user password

Dell recommends that you print the system setup program screens (by pressing <Print Screen>) or write down the information for future reference.

Before you use the system setup program, you need to know the kind of hard-disk drive(s) and diskette drive(s) installed in your computer. If you are unsure of any of this information, refer to the online **Manufacturing Test Report** in the **Dell Accessories** folder.

Entering the System Setup Program

Enter the system setup program as follows:

1. Turn on (or restart) your system.
2. When the blue Dell logo appears, press .







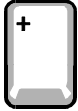







If you wait too long and the operating system begins to load into memory, *let the system complete the load operation*. Then shut down the system and try again.

You can also enter the system setup program by responding to certain error messages.

Using the System Setup Program

Table B-1 lists the keys you use to view or change information on the system setup screens and to exit the program.

Table B-1. System Setup Navigation Keys

| Keys | Action |
|---|--|
|  | Displays help information. |
|  | Returns to the parent menu; from a parent menu, exits without saving changes. |
|  or  | Moves the cursor up or down to select an item. |
|  or  | Moves the cursor to the previous or next menu option. |
|  or  | Increases or decreases the current value in the selected field or cycles through settings for the selected option. |
|  | Selects the submenu for the current option (if there is one) or, on the Exit menu, performs the current command. For System Time and System Date , pressing <Enter> moves the cursor to the next field. |
|  | Reverts all settings to the initial defaults. |
|  | Saves changes and exits the program. |
|  or | For System Time and System Date , moves the cursor to the next or previous field. |
|   | |

System Setup Screens and Options

The system setup screens are organized as follows:

- At the top is a menu bar for accessing the main program screens.
- The box on the left side of each screen lists options that define the installed hardware in your system.

Fields beside the options contain settings or values. You can change those that are enclosed in brackets. Values that are not enclosed in brackets contain status information reported by the system.

- The box on the right side of each screen displays help information for the option with a currently highlighted field.
- The bottom area lists keys and their functions for the currently displayed screen.

The menu bar provides access to the following six screens:

- **Main** screen — Provides settings for the basic system configuration
- **Advanced** screen — Provides detailed settings for some system features
- **Security** screen — Provides indications and settings for system password and setup password
- **Power** screen — Provides settings for the system power-management features
- **Boot** screen — Provides information about which device boots the system
- **Exit** screen — Provides selections for saving and loading the configurations and options

In addition to these screens, options identified by a right arrow (see Figure B-1 for an example) provide access to submenus.

Main Screen

| Dell Dimension XPS T450 Setup | | | | | |
|---|---------------------------|----------|-------|------|--------------------|
| Main | Advanced | Security | Power | Boot | Exit |
| BIOS Version | 4S4EB0X1.10A.0000.D [A00] | | | | |
| Processor Type | Pentium (R) III processor | | | | |
| Processor Speed | 450 MHz | | | | |
| Processor Serial Number | [Disabled] | | | | |
| Cache RAM | 512 KB | | | | |
| Service Tag | M5JNS | | | | |
| System Memory | 64 MB | | | | |
| Memory Bank 0 | 64 MB SDRAM | | | | |
| Memory Bank 1 | Not Installed | | | | |
| Memory Bank 2 | Not Installed | | | | |
| ECC Configuration | [ECC] | | | | |
| L2 Cache ECC Support: | [Auto] | | | | |
| System Time: | [09:28:04] | | | | |
| System Date: | [04/09/1998] | | | | |
| F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ↔ Select Menu Enter Select ► Submenu F10 Save and Exit | | | | | Item Specific Help |

Figure B-1. Main Screen Menu

Table B-2. Main Screen Menu Options

| Option | Function |
|-------------------------|--|
| BIOS Version | Displays the version of the BIOS being used. |
| Processor Type | Displays the type of microprocessor installed. |
| Processor Speed | Displays the internal speed of the microprocessor. |
| Processor Serial Number | Displays the serial number of the microprocessor when set to Enabled . Disabled (default) turns off this feature. |
| Cache RAM | Indicates the amount of L2 cache memory installed. |
| Service Tag | Displays the system's service tag. |
| System Memory | Displays the amount of system memory installed, ranging from 64 to 768 MB, in the three DIMM sockets on the system board. |
| Memory Bank <i>n</i> | Displays the size and type of memory in the DIMM sockets. |
| ECC Configuration | Appears on the screen only if the system detects an all-ECC memory configuration. Leave this option set to ECC (default) for optimum performance. To disable ECC , select Non-ECC . |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-2. Main Screen Menu Options (continued)

| Option | Function |
|----------------------|--|
| L2 Cache ECC Support | <p>When Auto (default) is selected, the system first checks the type of installed DIMMs. Then, if all of the DIMMs are detected as ECC, error checking automatically occurs on data accessed from the L2 cache. If one or more non-ECC DIMMs are detected, error checking is not performed. When Enabled, this option allows error checking to occur on data accessed from the L2 cache without checking the type of installed DIMMs. If set to Disabled, error checking is not performed.</p> <p>CAUTION: Be sure that Auto or Enabled is selected before running mathematical application programs. Otherwise, error checking will not be performed on the cache data.</p> |
| System Time | Resets the time on the system's internal clock. |
| System Date | Resets the date on the system's internal calendar. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Advanced Screen

| Dell Dimension T450 Setup | | | | | |
|--|----------------|------------------------|-------------------|--------------------|------|
| Main | Advanced | Security | Power | Boot | Exit |
| <p>Setup Warning</p> <p>Setting Items on this menu to incorrect values may cause your system to malfunction.</p> <p>Plug & Play O/S: [No]</p> <p>Reset Configuration Data: [No]</p> <p>Numlock: [Auto]</p> <ul style="list-style-type: none"> ▶ Peripheral Configuration ▶ IDE Configuration ▶ Diskette Options ▶ DMI Event Logging ▶ Video Configuration ▶ Resource Configuration | | | | Item Specific Help | |
| | | | | Reset | |
| F1 Help | ↑↓ Select Item | -/+ Change Values | F9 Setup Defaults | | |
| ESC Exit | ↔ Select Menu | Enter Select ▶ Submenu | F10 Save and Exit | | |

Figure B-2. Advanced Screen Menu

Table B-3. Advanced Screen Menu Options

| Option | Function |
|--------------------------|--|
| Plug & Play O/S | Determines whether the system is configured to support Plug and Play devices from the operating system or from the system BIOS. Leave this option set to No so the BIOS handles all Plug and Play operation. |
| | <i>NOTE: Be sure this option is set to No before running Dell Diagnostics. Otherwise, some diagnostics may incorrectly fail.</i> |
| Reset Configuration Data | Permits resetting Plug and Play configuration data to default values. Yes resets the data; No (default) retains the current Plug and Play settings. If set to Yes , configuration data reverts to default values the next time the system boots. This option automatically reverts back to the No setting. |
| Numlock | Selects the power-on state for Num Lock. Options are Auto (default), On , and Off . |
| Peripheral Configuration | Displays the Peripheral Configuration submenu. Refer to "Peripheral Configuration Submenu" found next in this appendix. |
| IDE Configuration | Displays the IDE Configuration submenu. Refer to "IDE Configuration Submenu" found later in this appendix. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-3. Advanced Screen Menu Options (continued)

| Option | Function |
|------------------------|---|
| Diskette Options | Displays the Diskette Options submenu. Refer to “Diskette Options Submenu” found later in this appendix. |
| DMI Event Logging | Displays the DMI Event Logging submenu. Refer to “DMI Event Logging Submenu” found later in this appendix. |
| Video Configuration | Displays the Video Configuration submenu. Refer to “Video Configuration Submenu” found later in this appendix. |
| Resource Configuration | Displays the Resource Configuration submenu for allocating IRQs and memory ranges. Refer to “Resource Configuration Submenu” found later in this appendix. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Peripheral Configuration Submenu

| Peripheral Configuration | | Item Specific Help |
|--------------------------|-------------------|------------------------|
| Serial port A: | [Auto] | |
| Parallel port: | [Auto] | |
| Mode: | [Bidirectional] | |
| Audio: | [Enabled] | |
| Legacy USB Support: | [Disabled] | |
| F1 Help | ↑↓ Select Item | -/+ Change Values |
| ESC Exit | ↔ Select Menu | Enter Select ► Submenu |
| | | F9 Setup Defaults |
| | | F10 Save and Exit |

Figure B-3. Peripheral Configuration Submenu

Table B-4. Peripheral Configuration Submenu Options

| Option | Function |
|------------------|--|
| Serial port A | Configures the serial port. Set this option to Auto (default), Enabled , or Disabled . If set to Enabled , you can set the following additional options: |
| Base I/O Address | Available I/O addresses are COM1 , COM2 , COM3 , and COM4 . |
| Interrupt | Available interrupts are IRQ3 and IRQ4 . |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-4. Peripheral Configuration Submenu Options (continued)

| Option | Function |
|--------------------|--|
| Parallel port | Configures the parallel port. Set this option to Auto (default), Enabled , or Disabled . Depending on the port setting, you can set the following additional options: |
| Mode | If port is set to Auto or Enabled , available modes are Output Only , Bi-Directional , ECP , and EPP Bidirectional is the default setting. <i>NOTE: Refer to the device manufacturer's documentation for information on which mode to use before changing this setting.</i> |
| Base I/O Address | If port is set to Enabled , available I/O addresses are 378h (default), 278h , 3BC , and 228h . |
| Interrupt | If port is set to Enabled , available interrupts are IRQ7 and IRQ5 . |
| Audio | <i>NOTE: This option is available in integrated audio systems only.</i> Determines if integrated audio controller is Enabled (default) or Disabled . Set this option to Disabled if you are using a sound card instead of the integrated audio controller or if the resources used by the controller are needed. |
| Legacy USB Support | Set to Disabled (default) if legacy universal serial bus (USB) support is not desired. Enabled allows support for legacy USB. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

IDE Configuration Submenu

| Dell Dimension T450 Setup | |
|--|--|
| Advanced | |
| IDE Configuration | Item Specific Help |
| IDE controller [Both] ▶ Primary IDE Master [IBM-DHEA-38451] ▶ Primary IDE Slave [None] ▶ Secondary IDE Master [FX 120T] ▶ Secondary IDE Slave [None] | |
| F1 Help ↑↓ Select Item -/+ Change Values ESC Exit ↔ Select Menu Enter Select ▶ Submenu | F9 Setup Defaults F10 Save and Exit |

Figure B-4. IDE Configuration Submenu

Table B-5. IDE Configuration Submenu Options

| Option | Function |
|--------------------|--|
| IDE controller | Configures the integrated primary and secondary EIDE controllers and detects the types of drives attached to them. If set to Primary , Secondary , or Both , the designated controller(s) are enabled, and the types of drives attached are displayed. If set to either Primary or Secondary , the other controller is not enabled and the IRQ it normally uses becomes available. If set to Disabled , the system cannot detect any drives attached to the controllers and displays None for all four IDE drive options. |
| Primary IDE Master | Identifies the first drive attached to the primary EIDE interface, usually the boot hard-disk drive. Refer to "Primary IDE Master Submenu" found next in this appendix. |
| Primary IDE Slave | Identifies the second drive attached to the primary EIDE interface, usually a second hard-disk drive. The format of this submenu is the same as the one described in "Primary IDE Master Submenu" found next in this appendix. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-5. IDE Configuration Submenu Options (continued)

| Option | Function |
|----------------------|--|
| Secondary IDE Master | Identifies the first drive attached to the secondary EIDE interface, usually a CD-ROM or tape drive. The format of this submenu is the same as the one described in "Primary IDE Master Submenu" found next in this appendix. |
| Secondary IDE Slave | Identifies the second drive attached to the secondary EIDE interface, usually a CD-ROM or tape drive. The format of this submenu is the same as the one described in "Primary IDE Master Submenu" found next in this appendix. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Primary IDE Master Submenu

| Dell Dimension XPS T450 Setup | |
|--|--------------------|
| Advanced | |
| Primary IDE Master [IBM-DHEA-38451] | Item Specific Help |
| Type: [Auto] | |
| Maximum Capacity: 8455 MB | |
| Multi-sector Transfers: [16 Sectors] | |
| LBA Mode Control: [Enabled] | |
| Transfer Mode: [Fast PIO 4] | |
| Ultra DMA: [Mode 2] | |
| F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults | |
| ESC Exit ↔ Select Menu Enter Select ► Submenu F10 Save and Exit | |

Figure B-5. Primary IDE Master Submenu

Table B-6. Primary IDE Master Submenu Options

| Option | Function |
|------------------------|---|
| Type | Specifies the type of hard-disk drive. If the drive supports the auto-detect feature, set this option to Auto (default). Cylinders, Heads, and Sectors can be edited if Type is set to User . For a non-IDE drive, set Type to None . |
| Maximum Capacity | Displays the drive's maximum storage capacity. |
| Multi-Sector Transfers | Determines the number of sectors per block during multiple-sector transfers. If Type is set to User , set Multi-sector Transfers to 2 Sectors, 4 Sectors, 8 Sectors, or 16 Sectors or disable the feature. |
| LBA Mode Control | Determines LBA mode control. Set to Enabled (default) unless directed to change it by a Dell technical support representative. |
| Transfer Mode | Selects method of moving data to and from the EIDE drive. Options include Standard and the PIO modes 1, 2, 3, and 4, which can improve the performance of a hard-disk drive. (The higher the PIO number, the faster the transfer; most newer drives support Fast PIO 4 .) For the optimum transfer mode, set Type to Auto . If Type is set to Disabled , PIO is turned off. |
| Ultra DMA | Sets the Ultra DMA mode for the drive. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Diskette Options Submenu

| Dell Dimension XPS T450 Setup | | | | | |
|---|----------------|----|-------------|--------------------|------------------|
| Advanced | | | | | |
| Diskette Options | | | | Item Specific Help | |
| Diskette controller: [Enabled] Diskette A: [1.44/1.25 MB 3 1/2"] Diskette Write Protect: [Disabled] | | | | | |
| F1 | Help | ↑↓ | Select Item | -/+ | Change Values |
| ESC | Exit | ↔ | Select Menu | Enter | Select ► Submenu |
| F9 | Setup Defaults | | | | F10 |
| | | | | | Save and Exit |

Figure B-6. Diskette Options Submenu

Table B-7. Diskette Options Submenu Options

| Option | Function |
|------------------------|--|
| Diskette controller | Configures diskette drive interface. Options are Auto , Enabled (default), and Disabled . |
| Diskette A | Identifies the boot diskette drive in the computer. The default is 1.44/1.25 MB 3 1/2" |
| Diskette Write Protect | Protects a diskette from being written to when set to Enabled . When this option is set to Disabled (default), the diskette is not protected unless the write-protect tab is in place. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

DMI Event Logging Submenu

| Dell Dimension XPS T450 Setup | |
|--|--------------------|
| Advanced | |
| DMI Event Logging | Item Specific Help |
| Event Log Capacity | Space available |
| Event Log Validity | Valid |
| View DMI event log | [Enter] |
| Clear all DMI event logs | [No] |
| Event Logging | [Enabled] |
| Mark DMI events as read | [Enter] |
| F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults ESC Exit ← Select Menu Enter Select ► Submenu F10 Save and Exit | |

Figure B-7. DMI Event Logging Submenu

Table B-8. DMI Event Logging Submenu Options

| Option | Function |
|--------------------------|--|
| Event Log Capacity | Displays information about the event log. |
| Event Log Validity | Displays Invalid if an error was detected in the event log. |
| View DMI event log | Permits viewing of DMI Event Log. Press <Enter> to view the DMI Event Log. To return to the DMI Event Logging submenu, select Continue in the Event Log window. |
| Clear all DMI event logs | Clears the DMI Event Log when the system restarts if set to Yes . Retains the event log information if set to No (default). |
| Event Logging | Permits logging of DMI events. Set this option to No if no record of DMI events is desired. |
| Mark DMI events as read | Press <Enter>, and then select Yes or No to mark DMI events as read. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Video Configuration Submenu

| Dell Dimension XPS T450 Setup | |
|---|--|
| Advanced | |
| Video Configuration | Item Specific Help |
| Palette Snooping [Disabled] AGP Aperture Size: [64 MB] Default Primary Video Adapter: [AGP] | |
| F1 Help ↑↓ Select Item -/+ Change Values ESC Exit ↔ Select Menu Enter Select ► Submenu | F9 Setup Defaults F10 Save and Exit |

Figure B-8. Video Configuration Submenu

Table B-9. Video Configuration Submenu Options

| Option | Function |
|-------------------------------|--|
| Palette Snooping | Allows an ISA expansion card to check a PCI expansion card for an updated graphics palette. If this option is set to Disabled , the ISA expansion card may not be updated along with the PCI expansion card. |
| AGP Aperture Size | Sets the aperture size for the AGP video controller to 64 MB (default) or 256 MB . |
| Default Primary Video Adapter | Supports the Windows 98 and Windows 2000 multiple-monitor feature. Select AGP (default) to specify the AGP video card as the primary video adapter. Select PCI to specify a PCI video card as the primary video adapter. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Resource Configuration Submenu

| Dell Dimension XPS T450 Setup | |
|-------------------------------|-----------------------------------|
| Advanced | |
| Resource Configuration | Item Specific Help |
| C800 - CBFF: [Available] | |
| CC00 - CFFF: [Available] | |
| D000 - D3FF: [Available] | |
| D400 - D7FF: [Available] | |
| D800 - DBFF: [Available] | |
| DC00 - DFFF: [Available] | |
| IRQ 3: [Available] | |
| IRQ 4: [Available] | |
| IRQ 5: [Available] | |
| IRQ 7: [Available] | |
| IRQ 10: [Available] | |
| IRQ 11: [Available] | |
| F1 Help ESC Exit | ↑↓ Select Item ↔ Select Menu |
| -/+ Enter | Change Values Select ► Submenu |
| F9 F10 | Setup Defaults Save and Exit |

Figure B-9. Resource Configuration Submenu

Table B-10. Resource Configuration Submenu Options

| Option | Function |
|--------------|---|
| xxxx-xxxx | Reserves the specified UMB (for example C800 – CBFF) for use by legacy ISA devices. Settings are Available (default) and Reserved . |
| IRQ <i>n</i> | Reserves the specified IRQ for use by legacy ISA devices. Settings are Available (default) and Reserved . |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Security Screen

| Dell Dimension XPS T450 Setup | | | | | |
|-------------------------------|----------------|------------------------|-------------------|------|--------------------|
| Main | Advanced | Security | Power | Boot | Exit |
| Security | | | | | Item Specific Help |
| User Password Is: | | Not Installed | | | |
| Setup Password Is: | | Not Installed | | | |
| Set User Password | | [Enter] | | | |
| Set Setup Password | | [Enter] | | | |
| User Setup Access: | | [Full Access] | | | |
| F1 Help | ↑↓ Select Item | -/+ Change Values | F9 Setup Defaults | | |
| ESC Exit | ↔ Select Menu | Enter Select ► Submenu | F10 Save and Exit | | |

Figure B-10. Security Screen Menu

Table B-11. Security Screen Menu Options

| Option | Function |
|--------------------|---|
| User Password Is | Indicates whether a user password has been assigned. |
| Setup Password Is | Indicates whether a setup password has been assigned. |
| Set User Password | Allows you to assign, change, or clear a user password, which controls access to the computer at start-up. |
| Set Setup Password | Allows assigning, changing, or clearing a setup password. The setup password provides access to both the computer and the system setup program. |
| User Setup Access | Controls user access to the system setup program. Full Access (default) allows full user access. Set this option to Limited Access to allow user access only to System Date , System Time , and Set User Password . Set this option to View Only to allow only user viewing access. None prevents user access to the system setup program. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Power Screen

| Dell Dimension XPS T450 Setup | | | | | |
|---|----------|----------|-------------|-------|--------------------|
| Main | Advanced | Security | Power | Boot | Exit |
| Power Management: [Enabled] Inactivity Timer: [Off] Hard Drive: [Enabled] VESA Video Power Down: [Enabled] | | | | | Item Specific Help |
| F1 | Help | ↑↓ | Select Item | -/+ | Change Values |
| ESC | Exit | ↔ | Select Menu | Enter | Select ► Submenu |
| | | | | F9 | Setup Defaults |
| | | | | F10 | Save and Exit |

Figure B-11. Power Screen Menu

Table B-12. Power Screen Menu Options

| Option | Function |
|------------------|--|
| Power Management | Enables or disables Inactivity Timer and Hard Drive options. |
| Inactivity Timer | Determines the period of system inactivity (between 1 and 120 minutes) before certain system components enter a low-power mode. To disable power management, leave this option set to Off (default). <i>NOTE: Leave this option set to Off if your operating system has power management controls.</i> |
| Hard Drive | When set to Enabled (default), Hard Drive allows most EIDE hard-disk drives to automatically switch into low-power mode after a specified period of system inactivity (called a <i>time-out</i>). The time-out period is set with the Inactivity Timer option. When Hard Drive is set to Disabled , hard-disk drives do not switch into low-power mode |

Table B-12. Power Screen Menu Options (continued)

| Option | Function |
|-----------------------|--|
| VESA Video Power Down | <p><i>NOTES: For the Windows 98 operating system, use the Display icon in the Control Panel to save monitor power instead of this option.</i></p> <p><i>For the Windows 2000 operating system, double-click the Display icon in the Control Panel, and then click the Power button on the Screen Saver tab.</i></p> <p><i>This option is available only if the installed video card supports this feature.</i></p> <p>CAUTION: Before enabling this option, check the monitor documentation to make sure that the monitor is DPMS-compliant; otherwise, there is a risk of damaging the monitor.</p> <p>This option selects a VESA® power management mode for the monitor during periods of system inactivity. Settings are Disabled, Standby (default), Suspend, and Sleep.</p> |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Boot Screen

| Dell Dimension XPS T450 Setup | | | | | | | |
|---|----------|----------|-------------|-------|--------------------|-----|----------------|
| Main | Advanced | Security | Power | Boot | Exit | | |
| Boot-time Diagnostic Screen: [Disabled] QuickBoot Mode: [Disabled] | | | | | Item Specific Help | | |
| Restore On AC/Power Loss: [Last State] On LAN: [Power On] | | | | | | | |
| First Boot Device [Removable Devices] Second Boot Device [Hard Drive] Third Boot Device [ATAPI CD-ROM Drive] Fourth Boot Device [Network Boot] | | | | | | | |
| ▶Hard Drive ▶Removable Devices | | | | | | | |
| F1 | Help | ↑↓ | Select Item | -/+ | Change Values | F9 | Setup Defaults |
| ESC | Exit | ↔ | Select Menu | Enter | Select ▶ Submenu | F10 | Save and Exit |

Figure B-12. Boot Screen Menu

Table B-13. Boot Screen Menu Options

| Option | Function |
|-----------------------------|--|
| Boot-time Diagnostic Screen | When set to Disabled (default), this option allows only the blue Dell logo screen to appear during POST. If set to Enabled , this option allows the POST diagnostics test results to be displayed on the screen during POST. |
| QuickBoot Mode | When set to Enabled , this option shortens POST by eliminating some tests. If set to Disabled (default), all POST tests occur. |
| Restore On AC/Power Loss | Determines what state the system enters when AC power is restored after a power loss. Settings are as follows: <ul style="list-style-type: none"> • Last State (default) — System returns to the state it was in when power was lost. • Stay Off — System stays off when power is restored; you must press the power button to restore power. • Power On — System turns on when power is restored. |
| On LAN | This option controls how the system responds to a Wakeup on LAN event. The selections are Power On (default) or Stay Off . |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table B-13. Boot Screen Menu Options (continued)

| Option | Function |
|--------------------|---|
| First Boot Device | Determines which device the system tries to boot from first. Use the up- or down-arrow key to highlight a device, and press the plus (+) or minus (-) key to move the item up or down the list. Settings for this option are: <ul style="list-style-type: none">• Removable Devices (default) — Normally diskette drive A• Hard Drive — Hard-disk drive connected to primary EIDE channel• ATAPI CD-ROM Drive — CD-ROM drive• Network Boot — Drive on the network server |
| Second Boot Device | Determines which device the system tries to boot from if it cannot boot from the device selected for First Boot Device . Settings for this option are the same as for First Boot Device . |
| Third Boot Device | Determines which device the system tries to boot from if it cannot boot from the devices selected for First Boot Device or Second Boot Device . Settings for this option are the same as for First Boot Device . |
| Fourth Boot Device | Determines which device the system tries to boot from if it cannot boot from the devices selected for First Boot Device , Second Boot Device , and Third Boot Device . Settings for this option are the same as for First Boot Device . |
| Hard Drive | Displays order of bootable hard-disk drives. Refer to “Hard Drive Submenu” found next in this appendix. |
| Removable Devices | Displays a list of removable devices. Refer to “Removable Devices Submenu” found later in this appendix. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Hard Drive Submenu

| Dell Dimension XPS T450 Setup | | | | | |
|--|------|----------------|--------------------|------------------|-------------------|
| Boot | | | | | |
| Hard Drive | | | Item Specific Help | | |
| 1. [IBM-DHEA-38451] 2. [Bootable Add-In Card] | | | | | |
| F1 | Help | ↑↓ Select Item | -/+ | Change Values | F9 Setup Defaults |
| ESC | Exit | ↔ Select Menu | Enter | Select ► Submenu | F10 Save and Exit |

Figure B-13. Hard Drive Submenu

Table B-14. Hard Drive Submenu Options

| Option | Function |
|---------------------------|---|
| <i>device designation</i> | The computer system attempts to boot the operating system from the first device listed. To select a new boot device, reorder the list: Use the up- or down-arrow key to highlight a device, and press the plus (+) or minus (-) key to move the item up or down the list. If no operating system is found on the boot device, the system attempts to boot from each successive device until an operating system is found. |
| Bootable Add-In Card | Same as preceding item. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Removable Devices Submenu

| Dell Dimension XPS T450 Setup | |
|-------------------------------|-----------------------------------|
| Boot | |
| Removable Devices | Item Specific Help |
| 1. [Legacy Floppy Drives] | |
| F1 Help ESC Exit | ↑↓ Select Item ↔ Select Menu |
| -/+ Enter | Change Values Select ► Submenu |
| F9 F10 | Setup Defaults Save and Exit |

Figure B-14. Removable Devices Submenu

Table B-15. Removable Devices Submenu Option

| Option | Function |
|----------------------|---|
| Legacy Floppy Drives | The operating system assigns drive letters to removable devices in the order listed on the Removable Devices submenu. To change the drive designations, reorder the list: Use the up- or down-arrow key to highlight a device, and press the plus (+) or minus (-) key to move the item up or down the list. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Exit Screen

| Dell Dimension XPS T450 Setup | | | | | |
|--|---------------------------------|---|--|------|--------------------|
| Main | Advanced | Security | Power | Boot | Exit |
| Exit Saving Changes [Enter] Exit Discarding Changes [Enter] Load Setup Defaults [Enter] Load Custom Defaults [Enter] Save Custom Defaults [Enter] Discard Changes [Enter] | | | | | Item Specific Help |
| F1 Help ESC Exit | ↑↓ Select Item ↔ Select Menu | -/+ Change Values Enter Select ► Submenu | F9 Setup Defaults F10 Save and Exit | | |

Figure B-15. Exit Screen Menu

Table B-16. Exit Screen Menu Options

| Option | Function |
|-------------------------|---|
| Exit Saving Changes | Saves any changes you have made, exits the system setup program, and restarts the system. |
| Exit Discarding Changes | Discards any changes you have made, exits the system setup program, and restarts the system. |
| Load Setup Defaults | Discards any changes you have made and reverts all options to their original default settings, but does not exit the system setup program. |
| Load Custom Defaults | Loads settings saved using Save Custom Defaults option. Press <Enter>. Then press spacebar to select Yes or No at the confirmation pop-up menu, and press <Enter> again. |
| Save Custom Defaults | Saves any changes you have made, but does not exit the system setup program. |
| Discard Changes | Discards any changes you have made and reverts all options to their last saved settings, but does not exit the system setup program. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Disabling a Forgotten Password

If you forget your user or setup password, you will be unable to operate your system or change settings in the system setup program, respectively, until you disable the existing password(s). Disabling the password(s) involves removing the computer cover and changing a jumper setting (twice) on the system board.



NOTE: You disable both user and setup passwords at the same time.



CAUTION: This procedure requires entering Maintenance mode, which returns all options in the system setup program to their default settings. Dell strongly recommends that you record or print all current settings before entering Maintenance mode so that you can correct them when the system is reset to Normal mode.

To disable a forgotten password, perform the following steps:

1. Remove the computer cover and support beam as described in “Removing and Replacing the Computer Cover and Support Beam” in Chapter 2.
2. Refer to Figure 2-5 and Table 2-2 for the location and settings of the configuration jumper (J8A1) on the system board.
3. Move the jumper plug to the Maintenance mode setting (pins 2 and 3 jumpered).
4. Replace the computer cover and support beam; reconnect your computer to an electrical outlet and turn it on.

The system boots directly into the **Maintenance** screen of the system setup program.

5. At the Maintenance screen, highlight Clear All Passwords, press <Enter>, and then click Yes to erase all existing passwords.
6. Press <F10> to save your changes and exit the system setup program.
7. Turn off the system, and remove the computer cover and support beam.
8. Move the jumper plug back to the Normal mode setting (pins 1 and 2 jumpered).
9. Replace the computer cover and support beam; reconnect the computer and devices to electrical outlets and turn them on.
10. Assign a new user and/or setup password on the Security screen of the system setup program.

For information on assigning a new user and/or setup password, refer to Table B-11.

Enabling the Processor Serial Number

The Intel Pentium III microprocessor includes a processor serial number feature designed to provide additional user security and manageability benefits. By default, this feature is disabled on Dell systems to protect your privacy. However, it can be enabled through the **Processor Serial Number** option in the system setup program.

To enable the processor serial number feature, perform the following steps.



CAUTION: Do not change this setting by any means other than the system setup program. Otherwise, your system may become unusable.

1. Enter the system setup program as described at the beginning of this appendix.
2. When the Main screen appears, use the down-arrow key to highlight the Processor Serial Number option.
3. Press <Enter>, select Enabled from the menu, and then press <Enter> again.
4. Use the right-arrow key to highlight Exit and then press <Enter>.
5. When prompted to confirm the changes you made, press <Enter>.

The system restarts with the processor serial number feature enabled.



NOTE: The processor serial number feature remains enabled until you disable it in the system setup program.

To disable the processor serial number feature, repeat steps 1 through 5, selecting **Disabled** in step 3.

Clearing NVRAM

To clear NVRAM for all devices and restart the system, perform the following steps:

1. Enter the system setup program as described at the beginning of this appendix.
2. Press the right-arrow key to move to the Advanced menu.
3. Press the down-arrow key to highlight Reset Configuration Data. Then press the plus (+) key to change the setting to Yes (refer to Table B-3).
4. Press <F10> to exit the program and restart the system.



APPENDIX C

Diagnostic Codes, Beep Codes, and System Messages


Your application programs, the operating system, and the computer itself can provide you with diagnostic, error, and status information in the form of indicators that display diagnostic codes, beep codes that sound through the computer's speaker, or messages that appear on the monitor screen. This appendix documents the diagnostic and beep codes and system messages generated by the system basic input/output system (BIOS). For other messages, refer to the documentation for your application program or operating system.

Diagnostic Codes

Your system is equipped with four diagnostic code indicators, which are labeled "A," "B," "C," and "D" on the back of the computer. Each of the four indicators can be yellow or green. When the computer is turned on or restarted and the system is functioning normally, the indicators flash during POST. After the system boots, the indicators remain green to signify normal system operation.

If a malfunction is detected and the computer fails to boot, the indicators display a code that identifies the problem. In this situation, write down the diagnostic code displayed and look it up in Table C-1.


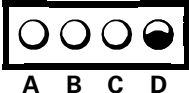
Table C-1. Diagnostic Codes

| Diagnostic Code | Definition | Corrective Action |
|--|-------------------|---|
|  <p>A B C D</p> | Power up default. | <p>Make sure that the system is connected to an electrical outlet, and then check whether the front-panel power indicator (see Figures 2-3 or 2-4) is on or off. If the power indicator is off, check the power supply. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> <p>If the power indicator is on, reseal the microprocessor as described in "Reseating the Microprocessor" in Chapter 6. Remove all expansion cards as described in "Expansion Cards" in Chapter 6. If the system still does not start, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> |

-  = yellow
-  = green
-  = off

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

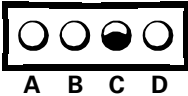
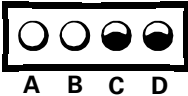
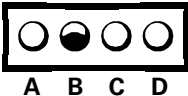
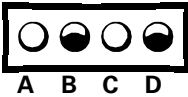
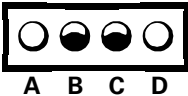
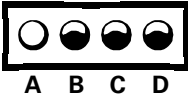
Table C-1. Diagnostic Codes (continued)

| Diagnostic Code | Definition | Corrective Action |
|---|---|---|
|  | System board is receiving power, but the BIOS is not executing. | Set the configuration jumper to Maintenance mode (see Table 2-2) and restart the system. Enter the system setup program (see Appendix B) and ensure that the microprocessor speed is set correctly. Exit and save the setting. Turn off the computer and reset the configuration jumper to Normal mode, and then restart the system. Reseat the microprocessor as described in "Reseating the Microprocessor" in Chapter 6. Remove all expansion cards and restart the system to determine if a resource conflict exists. If a conflict exists, resolve the conflict as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | Recovery mode from BIOS failure. | Set the configuration jumper (see Table 2-2) to Maintenance mode and restart the system. Enter the system setup program (see Appendix B) and ensure that the microprocessor speed is set correctly. Exit and save the setting. Turn off the computer and reset the configuration jumper to Normal mode, and then restart the system. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |

-  = yellow
-  = green
-  = off

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

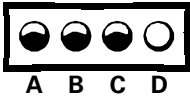

Table C-1. Diagnostic Codes (continued)


| Diagnostic Code | Definition | Corrective Action |
|---|---|---|
|  | Microprocessor has failed a BIOS test. | Reseat the microprocessor as described in "Reseating the Microprocessor" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | Memory failed to be sized or enabled. | Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | A PCI/ISA bus failure has occurred. | Remove all expansion cards and restart the system to determine if a resource conflict exists. If a conflict exists, resolve the conflict as described in "Resolving Software and Hardware Incompatibilities" in Chapter 5. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | The video controller failed to initialize or respond. | Reseat the video card as described in "Expansion Cards" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | An IDE bus failure has occurred. | Reseat the EIDE cables. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | The USB port or a device connected to it has failed initialization. | Disconnect the device from the USB port. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |


-  = yellow
-  = green
-  = off

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-1. Diagnostic Codes (continued)

| Diagnostic Code | Definition | Corrective Action |
|---|---|---|
|  | Other failure. | Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
|  | System has started and turned over control to the operating system. | No action is necessary. |

 = yellow

 = green

 = off

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

POST Beep Codes

If the monitor cannot display errors or problems, during power-on self-test (POST) the computer may emit a series of beeps, or *beep code*, that identifies the problem. For example, one beep, a burst of three short beeps, and two more single beeps (beep code 1-3-1-1) means that the system has encountered a dynamic random-access memory (DRAM) refresh error condition.

If the system emits a beep code and then fails to boot, write down the beep code and look it up in Table C-2.

Table C-2. POST Beep Codes

| Beep Code | Possible Cause | Corrective Action |
|------------------|---|--|
| 1-2 | Video card not present | Reseat the video card as described in "Expansion Cards" in Chapter 6. |
| 1-2-2-3 | BIOS ROM checksum error | Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| 1-3-1-1 | DRAM refresh error | Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. |
| 1-3-1-3 | 8742 keyboard controller error | Reseat the keyboard connector. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| 1-3-3-1 | Memory defective or not present | Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. |
| 1-3-4-1 | RAM failure on line xxx | Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. |
| 1-3-4-3 | RAM failure on data bits xxx of low byte on memory bus | Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. |
| 1-4-1-1 | RAM failure on data bits xxx of high byte on memory bus | Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

System Messages

The first column in Table C-3 lists (in alphabetical order) system messages that may appear on the screen during the boot routine or during normal system operation. The second column in the table lists probable causes of the messages, and the third column either provides a corrective action or refers you to a source for resolving the problem.

Table C-3. System Messages

| Message | Possible Cause | Corrective Action |
|--|--|--|
| <i>nnnn</i> Cache RAM Passed | <i>nnnn</i> KB of system cache RAM has been successfully tested. | No action is necessary. |
| <i>nnnn</i> Extended RAM Passed | <i>nnnn</i> KB of system RAM has been successfully tested. | No action is necessary. |
| <i>nnnn</i> Shadow RAM Passed | <i>nnnn</i> KB of shadow RAM has been successfully tested. | No action is necessary. |
| <i>nnnn</i> System RAM Passed | <i>nnnn</i> KB of system RAM has been successfully tested. | No action is necessary. |
| CD ROM drive Identified | The system's automatic drive-type detection feature has identified the CD-ROM drive. | No action is necessary. |
| Diskette drive A error Diskette drive B error | Drive A or B is present but has failed the BIOS POST. | Ensure that the drive is installed correctly in the chassis and defined correctly in the system setup program. Check the interface cable at both ends as described in "Drives" in Chapter 6. |
| Entering Setup | The system is starting the system setup program. | No action is necessary. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-3. System Messages (continued)

| Message | Possible Cause | Corrective Action |
|--|--|---|
| Extended RAM Failed at offset: <i>nnnn</i> | Extended memory is not working correctly or is not configured correctly at offset <i>nnnn</i> . | <p>If you receive this message after making changes in the system setup program, enter the program and restore the original value(s).</p> <p>If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> |
| Failing Bits: <i>nnnn</i> | <i>nnnn</i> is a map of the bits at the RAM address (in system, extended, or shadow memory) that failed the memory test. Each "1" in the map indicates a failed bit. | <p>If you receive this message after making changes in the system setup program, enter the program and restore the original value(s).</p> <p>If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> |
| Fixed Disk <i>n</i> Failure Fixed Disk Controller Failure | The hard-disk drive specified by <i>n</i> is not working or is not configured correctly. | <p>Ensure that the drive is installed correctly in the chassis and defined correctly in the system setup program.</p> <p>If the problem persists, refer to "Hard-Disk Drive" in Chapter 6.</p> |
| Fixed Disk <i>n</i> Identified | The system's automatic drive-type detection feature has identified the hard-disk drive(s). | No action is necessary. |
| Incorrect Drive <i>x</i> type - Run SETUP | Diskette drive <i>x</i> is not correctly identified in the system setup program. | Ensure that the drive is defined correctly in the system setup program. |
| Invalid NVRAM media type | The system is having a problem accessing NVRAM. | Set the configuration jumper to Maintenance mode (refer to Table 2-2), and restart the system to return all settings to their defaults. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-3. System Messages (continued)

| Message | Possible Cause | Corrective Action |
|-----------------------------------|--|---|
| Invalid system configuration data | The system configuration information in the system setup program is incorrect, or the battery charge may be low. | Enter the system setup program, and verify the system configuration information; then restart the computer. If the problem persists, refer to "Replacing the System Battery" in Chapter 2. If neither action provides a solution, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Keyboard controller error | The keyboard controller failed its test. | If you receive this message after making changes in the system setup program, enter the program and restore the original value(s). If the problem persists, you may have to replace the keyboard or system board. Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Keyboard error | The keyboard is not working correctly. | You may have to replace the keyboard or system board. Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Keyboard error <i>nn</i> | The BIOS has detected a stuck key represented by scan code <i>nn</i> . | Make sure nothing is resting on the keyboard; if a key appears to be stuck, carefully try to pry it up. If the problem persists and/or you cannot locate the stuck key, you may need to replace your keyboard. Refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Mouse initialized | The system's mouse has been found and initialized. | No action is necessary. |
| Operating system not found | The operating system cannot be located on drive A or drive C. | Enter the system setup program and confirm that drive A or drive C is properly identified. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-3. System Messages (continued)

| Message | Possible Cause | Corrective Action |
|---|---|---|
| Parity check 1 <i>nnnn</i> | A parity error has been detected on the system bus. The BIOS attempts to locate the address and display it (<i>nnnn</i>); if it cannot locate the address, it displays <i>????</i> instead. | If you receive this message after making changes in the system setup program, enter the program and restore the original value(s). Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Parity check 2 <i>nnnn</i> | A parity error has been detected on the I/O bus. The BIOS attempts to locate the address and display it (<i>nnnn</i>); if it cannot locate the address, it displays <i>????</i> instead. | If you receive this message after making changes in the system setup program, enter the program and restore the original value(s). Reseat the DIMMs as described in "Reseating DIMMs" in Chapter 6. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Press <F1> to resume, <F2> to Setup | This message is displayed after any recoverable error message. | Press <F1> to start the boot routine or <F2> to enter the system setup program and change any settings. |
| Press to enter SETUP | Optional message displayed during POST. | If desired, press to enter the system setup program. |
| Previous boot incomplete - Default configuration used | After an unsuccessful boot, POST loads default values and offers to run the system setup program. (POST does <i>not</i> input these default values to the system setup program.) | There may be incorrect values or settings in the system setup program. Run the system setup program and attempt to restore the correct setting(s). If the message reappears, set the configuration jumper to Maintenance mode (refer to Table 2-2), and start the system to return all settings to their defaults. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-3. System Messages (continued)

| Message | Possible Cause | Corrective Action |
|--|---|--|
| Real time clock error | The RTC has failed the BIOS test. | If you receive this message after making changes in the system setup program, enter the program and restore the original value(s). If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Resource allocation conflict on motherboard | The system cannot configure all system board devices without a resource conflict. | Run the system setup program and try to resolve any obvious resource conflicts. If the message reappears, set the configuration jumper to Maintenance mode (refer to Table 2-2), and start the system to return all settings to their defaults. If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| Shadow RAM failed at offset: <i>nnnn</i> | Shadow RAM has failed at offset <i>nnnn</i> in the 64-KB block in which the error was detected. | If you receive this message after making changes in the system setup program, enter the program and restore the original value(s). If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance. |
| System battery is dead - Replace and run SETUP | The CMOS clock battery indicator shows the battery is dead. | Replace the battery, and run the system setup program to reconfigure the system. |
| System BIOS shadowed | The system BIOS has been copied to shadow RAM. | No action is necessary. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.

Table C-3. System Messages (continued)

| Message | Possible Cause | Corrective Action |
|--|--|---|
| System cache error - cache disabled | RAM cache failed the BIOS test; the BIOS has disabled the cache. | <p>If you receive this message after making changes in the system setup program, enter the program and restore the original value(s).</p> <p>If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> |
| System CMOS checksum bad - run SETUP | System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. | Run the system setup program and reconfigure the system by either reverting to the default values or making your own selections. |
| System RAM failed at offset: <i>nnnn</i> | System RAM failed at offset <i>nnnn</i> in the 64-KB block in which the error was detected. | <p>If you receive this message after making changes in the system setup program, enter the program and restore the original value(s).</p> <p>If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> |
| System timer error | The timer test failed. | <p>If you receive this message after making changes in the system setup program, enter the program and restore the original value(s).</p> <p>If the problem persists, refer to Chapter 7, "Getting Help," for instructions on obtaining technical assistance.</p> |
| UMB upper limit segment address: <i>nnnn</i> | Displays the address <i>nnnn</i> of the upper limit of the UMB, indicating released segments of the BIOS which may be reclaimed by a virtual memory manager. | No action is necessary. |
| Video BIOS shadowed | The video BIOS has been successfully copied to shadow RAM. | No action is necessary. |

NOTE: The Glossary in the system Help defines abbreviations and acronyms.



APPENDIX D

Regulatory Notices

Electromagnetic Interference (EMI) is any signal or emission, radiated in free space or conducted along power or signal leads, that endangers the functioning of a radio navigation or other safety service or seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include but are not limited to AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pager, and Personal Communication Services (PCS). These licensed services, along with unintentional radiators such as digital devices, including computer systems, contribute to the electromagnetic environment.

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, 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. Otherwise the URL doesn't work.

If necessary, consult a Technical Support representative of Dell Computer Corporation or an experienced radio/television technician for additional suggestions. You may find the *FCC Interference Handbook, 1986*, to be helpful. It is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00450-7 or on the World Wide Web at <http://www.fcc.gov/Bureaus/Compliance/WWW/tvibook.html>.

Dell computer systems are designed, tested, and classified for their intended electromagnetic environment. These electromagnetic environment classifications generally refer to the following harmonized definitions:

- Class A is typically for business or industrial environments.
- Class B is typically for residential environments.

Information Technology Equipment (ITE), including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, that are integrated into or connected to the system should match the electromagnetic environment classification of the computer system.

A Notice About Shielded Signal Cables: Use only shielded cables for connecting peripherals to any Dell device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment. For parallel printers, a cable is available from Dell Computer Corporation. If you prefer, you can order a cable from Dell Computer Corporation on the World Wide Web at <http://www.dell.com/products/dellware/index.htm>.

Most Dell computer systems are classified for Class B environments. To determine the electromagnetic classification for your system or device, refer to the following sections specific for each regulatory agency. Each section provides country-specific EMC/EMI or product safety information.

FCC Notices (U.S. Only)

Most Dell computer systems are classified by the Federal Communications Commission (FCC) as Class B digital devices. However, the inclusion of certain options can change the rating of some configurations to Class A. To determine which classification applies to your computer system, examine all FCC registration labels located on the bottom or back panel of your computer, on card-mounting brackets, and on the cards themselves. If any one of the labels carries a Class A rating, your entire system is considered to be a Class A digital device. If *all* labels carry an FCC Class B rating as distinguished by either an FCC ID number or the FCC logo, (**FCC**), your system is considered to be a Class B digital device.

Once you have determined your system's FCC classification, read the appropriate FCC notice. Note that FCC regulations provide that changes or modifications not expressly approved by Dell Computer Corporation could void your authority to operate this equipment.

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.

Class A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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 harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Class B

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The following information is provided on the device or devices covered in this document in compliance with FCC regulations:

- Model number: MMS
- Company name: Dell Computer Corporation
EMC Engineering Department
One Dell Way
Round Rock, Texas 78682 USA
512-338-4400

IC Notice (Canada Only)

Most Dell computer systems (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 system (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.

CE Notice (European Union)

Marking by the symbol **CE** indicates compliance of this Dell system to the EMC Directive and the Low Voltage Directive of the European Union. Such marking is indicative that this Dell system meets the following technical standards:

- EN 55022 — “Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.”
- EN 50082-1: 1992 — “Electromagnetic compatibility—Generic immunity standard Part 1: Residential, commercial, and light industry.”
- EN 60950 — “Safety of Information Technology Equipment.”



NOTE: EN 55022 emissions requirements provide for two classifications:

- *Class A is for typical commercial areas.*
- *Class B is for typical domestic areas.*

This Dell device is classified for use in a typical Class B domestic environment.

A “Declaration of Conformity” in accordance with the preceding directives and standards has been made and is on file at Dell Products Europe BV, Limerick, Ireland.



Battery Disposal

Your computer system uses a lithium-ion battery. The lithium-ion battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace it, refer to the section about replacing the battery in your Dell system documentation for instructions.

Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

EN 55022 Compliance (Czech Republic Only)

This device belongs to Class B devices as described in EN 55022, unless it is specifically stated that it is a Class A device on the specification label. The following applies to devices in Class 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.

VCCI Notice (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 can change the rating of some configurations to Class A. ITE, including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, integrated into or connected to the system, should match the electromagnetic environment classification (Class A or B) of the computer system.

To determine which classification applies to your computer system, examine the regulatory labels/markings (see Figures D-1 and D-2) located on the bottom or back panel of your computer. Once you have determined your system's VCCI classification, read the appropriate VCCI notice.

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) 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.

VCCI-A

Figure D-1. VCCI Class A ITE Regulatory Mark

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は家庭環境で使用することを目的としていますが、ラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをしてください。

This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) 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.



Figure D-2. VCCI Class B ITE Regulatory Mark

NOM 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):

| | |
|--------------------------|--|
| 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 Kuhne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F. |
| Supply voltage: | 115/230 VAC |
| Frequency: | 60/50 Hz |
| Input current rating: | 6.0/3.0 A |

Información para NOM (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):

| | |
|--------------------------|---|
| 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: | 115/230 VAC |
| Frecuencia: | 60/50 Hz |
| Consumo de corriente: | 6.0/3.0 A |



APPENDIX E

Warranty and Return Policy

Limited Three-Year Warranty (U.S. 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 Chapter 7, “Getting Help,” in this guide or to “Contacting Dell” in the system *Help* 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., 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 (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. 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 Provisions

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER SUCH PERIOD.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE PRECEDING LIMITATION MAY NOT APPLY TO YOU.

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 three-year warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the warranty.



NOTE: If you chose one of the available warranty and service options in place of the standard limited three-year warranty described in the preceding text, the option you chose will be listed on your invoice.

Limited Three-Year Warranty (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 Chapter 7, "Getting Help," in this guide or to "Contacting Dell" in the system *Help* 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 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 (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. 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 Provisions

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 OF 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 three-year warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the warranty.



NOTE: If you chose one of the available warranty and service options in place of the standard limited three-year warranty described in the preceding text, the option you chose will be listed on your invoice.

One-Year End-User Manufacturer Guarantee (Latin America and the Caribbean Only)

Guarantee

Dell Computer Corporation ("Dell") warrants to the end user in accordance with the following provisions that its branded hardware products, purchased by the end user from a Dell company or an authorized Dell distributor in Latin America or the Caribbean, will be free from defects in materials, workmanship, and design affecting normal use, for a period of one year from the original purchase date. Products for which proper claims are made will, at Dell's option, be repaired or replaced at Dell's expense. Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing repairs and building replacement products.

Exclusions

This Guarantee does not apply to defects resulting from: improper or inadequate installation, use, or maintenance; actions or modifications by unauthorized third parties or the end user; accidental or willful damage; or normal wear and tear.

Making a Claim

Claims must be made in Latin America or the Caribbean by contacting the Dell point of sale within the guarantee period. The end user must always supply proof of purchase, indicating name and address of the seller, date of purchase, model and serial number, name and address of the customer, and details of symptoms and configuration at the time of malfunction, including peripherals and software used. Otherwise, Dell may refuse the guarantee claim. Upon diagnosis of a warranted defect, Dell will make arrangements and pay for ground freight and insurance to and from Dell's repair/replacement center. The end user must ensure that the defective product is available for collection properly packed in original or equally protective packaging together with the details listed above and the return number provided to the end user by Dell.

Limitation and Statutory Rights

Dell makes no other warranty, guarantee or like statement other than as explicitly stated above, and this Guarantee is given in place of all other guarantees whatsoever, to the fullest extent permitted by law. In the absence of applicable legislation, this Guarantee will be the end user's sole and exclusive remedy against Dell or any of its affiliates, and neither Dell nor any of its affiliates shall be liable for loss of profit or contracts, or any other indirect or consequential loss arising from negligence, breach of contract, or howsoever.

This Guarantee does not impair or affect mandatory statutory rights of the end user against and/or any rights resulting from other contracts concluded by the end user with Dell and/or any other seller.

Dell World Trade LP

One Dell Way, Round Rock, TX 78682, USA

Dell Computadores do Brasil Ltda (CNPJ No. 72.381.189/0001-10)/

Dell Commercial do Brasil Ltda (CNPJ No. 03 405 822/0001-40)

Avenida Industrial Belgraf, 400

92990-000 - Eldorado do Sul – RS - Brasil

Dell Computer de Chile Ltda

Coyancura 2283, Piso 3- Of.302,

Providencia, Santiago - Chile

Dell Computer de Colombia Corporation

Carrera 7 #115-33 Oficina 603

Bogota, Colombia

Dell Computer de Mexico SA de CV

Rio Lerma #302- 4 Piso

Col. Cuauhtemoc, Mexico, D.F. 06500

“Total Satisfaction” Return Policy (U.S. and Canada Only)

If you are an end-user customer who bought new products directly from a Dell company, you may return them to Dell within 30 days of the date of invoice for a refund or credit of the product purchase price. If you are an end-user customer who bought reconditioned or refurbished products from a Dell company, you may return them to Dell within 14 days of the date of invoice for a refund or credit of the product purchase price. In either case, the refund or credit will not include any shipping and handling charges shown on your invoice. If you are an organization that bought the products under a written agreement with Dell, the agreement may contain different terms for the return of products than specified by this policy.

To return products, you must call Dell Customer Service to receive a Credit Return Authorization Number. Refer to Chapter 7, “Getting Help,” in this guide or to “Contacting Dell” in the system *Help* to find the appropriate telephone number for obtaining customer assistance. To expedite the processing of your refund or credit, Dell expects you to return the products to Dell in their original packaging within five days of the date that Dell issues the Credit Return Authorization Number. You must also prepay shipping charges and insure the shipment or accept the risk of loss or damage during shipment. You may return software for refund or credit only if the sealed package containing the diskette(s) or CD(s) is unopened. Returned products must be in as-new condition, and all of the manuals, diskette(s), CD(s), power cables, and other items included with a product must be returned with it. For customers who

want to return, for refund or credit only, either applications software or an operating system that has been installed by Dell, the whole system must be returned, along with any media and documentation that may have been included in the original shipment.

This "Total Satisfaction" Return Policy does not apply to DellWare products, which may be returned under DellWare's then-current return policy. In addition, reconditioned parts purchased through Dell Spare Parts Sales in Canada are nonreturnable.

Macrovision Product Notice

The following product notice applies to the Macrovision Corporation product that is included with the DVD-ROM drive:

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.



Index

A

- accelerated graphics port. *See* AGP
- Advanced screen, system setup program, B-6
- AGP, 2-8
- AGP connector, 2-7
- assistance
 - technical, 7-1
 - telephone numbers, 7-7
 - warranty repair or credit, 7-4
- audio
 - adjusting volume, 5-4
 - integrated, 1-2
 - jacks, 2-7
 - YAMAHA DS-XG Audio Configuration program, 5-1
- audio driver, 5-6
- audio utilities, 5-1
- AutoTech service, 7-3

B

- backup devices, 1-5
- basic input/output system. *See* BIOS
- battery
 - location, 2-7
 - replacing, 2-19
- beep codes, C-6

- bezel
 - removing and replacing, 3-1
- BIOS, 1-2
- boot routine, 4-2
- Boot screen, system setup program, B-20

C

- cables
 - See also* DC power cables; interface cables
 - DC power, 3-5
 - drive interface, 3-5
 - SCSI cables, 3-18
- cache memory, A-1
- calling Dell, 7-7
- card-edge connector, 3-6
- cautions, xi, 2-1
- CD-ROM drives
 - audio cable connector, 2-7
 - troubleshooting, 4-8, 6-7
- chassis. *See* computer
- cleaning
 - accessories, 1-5
 - drives, 1-7
 - system exterior, 1-6
 - tools, 1-5
- clearing NVRAM, B-26

- computer
 - cleaning, 1-6
 - cover, 2-2
 - features, 1-1
 - internal view, 2-5, 2-6
 - technical specifications, A-1
 - configuration jumper
 - location, 2-7
 - settings, 2-10
 - connections
 - troubleshooting, 4-2
 - connectors
 - 3.3-V power input, 2-7
 - AGP, 2-7
 - audio jacks, 2-7
 - card-edge, 3-6
 - CD-ROM drive audio cable, 2-7
 - chassis cooling fan, 2-7
 - control panel, 2-7
 - diskette drive interface, 2-7
 - ISA expansion-card, 2-7
 - keyboard, 2-7
 - list of, 2-8
 - microprocessor SECC2 package, 2-7
 - MIDI/game port, 2-7
 - modem audio cable, 2-7
 - mouse, 2-7
 - parallel port, 2-7
 - PCI expansion-card, 2-7
 - power input, 2-7
 - primary EIDE channel, 2-7
 - SCSI hard-disk drive access indicator cable, 2-7
 - secondary EIDE channel, 2-7
 - serial port, 2-7
 - USB, 2-7
 - cover and support beam
 - removing and replacing, 2-2
- D**
- DC power cables
 - about, 2-5, 3-5
 - location, 2-5, 2-6
 - Dell Diagnostics
 - about, 4-9
 - Help menu, 4-12
 - main screen, 4-11
 - starting, 4-10
 - Dell Dimension ResourceCD, 4-9, 4-10, 5-6
 - diagnosing problems, 1-3, 4-1, 7-1
 - diagnostic code indicators, C-1
 - diagnostic codes, C-1
 - Diagnostics Checklist, 7-6
 - diagnostics. *See* Dell Diagnostics
 - DIMMs
 - installing, 2-16
 - performance, 2-16
 - removing, 2-18
 - sockets, 2-7
 - diskette drives
 - cleaning, 1-7
 - connecting, 3-5
 - installing, 3-6
 - interface cable, 2-5, 2-6
 - interface connector, 2-7
 - troubleshooting, 4-8
 - drive cage
 - removal, 3-3
 - drivers
 - audio, 5-6
 - installed on your system, 5-6
 - other, 5-6
 - reinstalling, 5-5, 5-6
 - reinstalling from Dell Dimension ResourceCD, 5-6
 - drives
 - 3.5-inch, installing, 3-10, 3-12
 - 5.25-inch, installing, 3-8
 - See also* diskette drives; hard-disk drives; SCSI devices; tape drives
 - bays, 2-5, A-3
 - cables, 2-5
 - connecting to power, 3-5
 - drive cage, 2-5
 - formatting, 3-17, 3-21

drives (*continued*)
front-panel inserts, 3-4, 3-7
installing, 3-6, 3-13, 3-18
location, 2-5, 2-6
partitioning, 3-17, 3-21
primary hard-disk, installing, 3-13
secondary hard-disk, installing, 3-15
termination, 3-18
troubleshooting, 4-8, 6-6
types supported, 1-2

dual in-line memory modules. *See*
DIMMs

DVD-ROM drives
troubleshooting, 4-8

E

ECC, 2-16

EIDE support, 1-2

electrostatic discharge. *See* ESD

enhanced integrated drive electronics.
See EIDE

error checking and correction. *See* ECC

error messages
invalid configuration information, B-1
list, C-7

ESD, viii

Exit screen, system setup program, B-24

expansion cards
about, 2-10
connectors, 2-11
installing, 2-12
removing, 2-15
troubleshooting, 6-1

exterior cleaning of system, 1-6

F

fan
location, 2-5, 2-6

filler brackets, 2-5, 2-6, 2-13, 2-15

fixing problems, 4-1, 7-1

floppy drives. *See* diskette drives

formatting
EIDE hard-disk drives, 3-17
SCSI hard-disk drives, 3-21

front-panel inserts, 3-4, 3-7

G

getting help, 7-1

grounding procedure, 2-1

H

hard-disk drives
cleaning, 1-7
data recovery, 1-4
EIDE support on system board, 1-2
formatting, 3-21
installing, 3-13, 3-15
primary EIDE channel connector, 2-7
secondary EIDE channel connector,
2-7
troubleshooting, 4-8, 6-7

hardware options. *See* upgrade options

help tools
AutoTech service, 7-3
Internet, 7-2
TechConnect BBS, 7-3
TechFax service, 7-3

host adapter card
SCSI, 3-17

I

installing
drives, 3-1
expansion cards, 2-12
memory, 2-16

- integrated audio, 1-2
- interface cables
 - about, 2-5, 3-6
 - connectors, 3-5
 - location, 2-5, 2-6
- Internet help tools, 7-2
- interrupt request. *See* IRQ
- IRQ, B-7, B-8, B-9, B-16
- ISA expansion cards
 - about, 2-10
 - installing, 2-12
 - removing, 2-15

J

- jacks
 - line-in, 2-7
 - line-out, 2-7
 - microphone, 2-7
- jumpers
 - about, 2-9
 - configuration jumper settings, 2-10
 - location, 2-7

K

- keyboard
 - cleaning, 1-6
- keyboard connector, 2-7
- keys and key combinations
 - Dell Diagnostics, 4-12
 - system setup program, B-2

L

- line conditioners, 1-7
- line-in jack, 2-7
- line-out jack, 2-7
- logical formatting, 3-17, 3-21

M

- Main Menu, Dell Diagnostics, 4-11
- Main screen, system setup program, B-4
- memory
 - See also* DIMMs
 - troubleshooting, 6-5
- messages
 - list, C-7
- microprocessor
 - fan connector, 2-7
 - reseating, 6-9
 - SECC2 package connector, 2-7
 - type supported, 1-1, A-1
- MIDI/game port connector, 2-7
- modem
 - troubleshooting, 4-7, 6-3
- monitor
 - cleaning, 1-6
 - troubleshooting, 4-5
- mouse
 - cleaning, 1-6
- musical instrument digital interface. *See* MIDI

N

- nonvolatile random-access memory. *See* NVRAM
- notes, x
- notes, notices and cautions, x
- notices, x
- NVRAM
 - clearing, B-26

O

- operating systems supported, 1-3

P

- parallel port connector, 2-7
- partitioning
 - EIDE hard-disk drives, 3-17
 - SCSI hard-disk drives, 3-21
- passwords
 - disabling, B-3
 - setting, B-17
- PCI expansion cards
 - about, 2-7
 - installing, 2-12
 - removing, 2-15
- Peripheral Component Interconnect. *See* PCI
- physical formatting, 3-18, 3-21
- Plug and Play expansion cards
 - installing, 2-12
- Plug and Play support, 1-2
- POST beep codes, C-6
- power button, 2-5, 2-6
- power protection devices, 1-7
- Power screen, system setup program, B-18
- power sources
 - troubleshooting, 4-2
- power supply
 - cables. *See* DC power cables
 - input connectors, 2-7
 - location, 2-5, 2-6
- power-on self-test. *See* POST
- problems
 - diagnosing, 4-1, 7-1
 - with your order, 7-4
- product information, 7-4

R

- RAM, 1-1
- random-access memory. *See* RAM

- regulatory notices, D-1
- ResourceCD, 5-6
- return policy, E-7
- returns, 7-4
- ribbon cables. *See* interface cables

S

- safety instructions
 - for preventing ESD, viii
 - general, v, 2-1
 - health considerations, vi
- SCSI devices
 - configuration guidelines, 3-17
 - formatting SCSI hard-disk drives, 3-21
 - host adapter card, 3-17
 - ID numbers, 3-17
 - installing, 3-17, 3-19
 - interface cables, 3-18
 - partitioning SCSI hard-disk drives, 3-21
 - termination, 3-18
- secondary EIDE channel connector, 2-7
- Security screen, system setup program, B-17
- serial port connector, 2-7
- service, 7-1
- small computer system interface. *See* SCSI
- sockets
 - battery, 2-7
 - DIMM, 2-7
- software
 - audio utilities, 5-1
 - drivers, 1-3, 5-1, 5-6
 - for configuring system, B-1
 - included with system, 1-3
- software features, 1-3
- sound cards
 - troubleshooting, 6-4
- specifications, A-1

- support
 - technical, 7-1
- surge protector, 1-7
- system. *See* computer
- system board
 - about, 2-5
 - features, 1-2
 - location, 2-5, 2-6
 - troubleshooting, 6-7
- system configuration information. *See* system setup program
- system memory. *See* memory
- system messages
 - list, C-7
- system setup program
 - about, B-1
 - Advanced screen, B-6
 - Boot screen, B-20
 - configuration options, B-3
 - copying or printing information, B-1
 - Diskette Options submenu, B-13
 - DMI Event Logging submenu, B-14
 - entering, B-1
 - error messages, B-1
 - Exit screen, B-24
 - Hard Drive submenu, B-22
 - help information, B-3
 - IDE Configuration submenu, B-10
 - key functions, B-2
 - Main screen, B-4
 - Maintenance mode, 2-10
 - Peripheral Configuration submenu, B-8
 - Power screen, B-18
 - Primary IDE Master submenu, B-12
 - Removable Devices submenu, B-23
 - Resource Configuration submenu, B-16
 - Security screen, B-17
 - system configuration information, B-1
 - using, B-2
 - Video Configuration submenu, B-15

T

- tape drives
 - backing up data, 1-5
 - installing, 3-7
- TechConnect BBS, 7-3
- TechFax service, 7-3
- technical assistance
 - obtaining, 7-1
 - warranty repair or credit, 7-4
- technical specifications, A-1
- termination for SCSI devices, 3-18
- tools
 - cleaning, 1-5
- troubleshooting
 - about, 1-3
 - basic problems, 4-1
 - beep codes, C-6
 - boot routine, 4-4
 - checking connections, 4-2
 - diagnostic codes, C-1
 - Diagnostics Checklist, 7-6
 - drives, 4-8, 6-6
 - environmental factors, 4-3
 - error messages, C-7
 - expansion cards, 6-1
 - Internet tools, 7-2
 - modem, 4-7, 6-3
 - monitor, 4-5
 - network cards, 6-4
 - power, 4-4
 - sound cards, 6-4
 - speakers, 4-6
 - system board, 6-7
 - system memory, 6-5
 - video cards, 6-4
 - where to start, 4-1
- typographical conventions, xi

U

uninterruptible power supply. *See* UPS

Universal Serial Bus. *See* USB

upgrade options

available, 1-3

expansion cards, 2-12

memory, 2-16

unpacking, 2-2

UPS, 1-7

USB ports, 2-7

V

virus-scanning programs

temporarily disabling, 5-7

W

Wakeup On LAN

about, 1-3

warranty information, x, E-1, E-3, E-6

warranty repair or credit, 7-4

Windows 2000

power management features, 5-5

resolving software and hardware
incompatibilities, 5-8

Windows 98

power management features, 5-5

reinstalling, 5-9

resolving software and hardware
incompatibilities, 5-8

World Wide Web help tools, 7-2

wrist grounding strap, 1-5

Y

YAMAHA DS-XG Audio Configuration
program, 5-1

