Dell™ Latitude™ CPi A-Series System User's Guide

Introduction

Setup and Operation

Powering Your Computer

Traveling With Your Computer

Drivers

Customizing Your Computer

Removing and Replacing Parts

Troubleshooting

Technical Specifications

Getting Help

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Back to Contents Page

Introduction: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Hardware Features | Available Options | Getting Help

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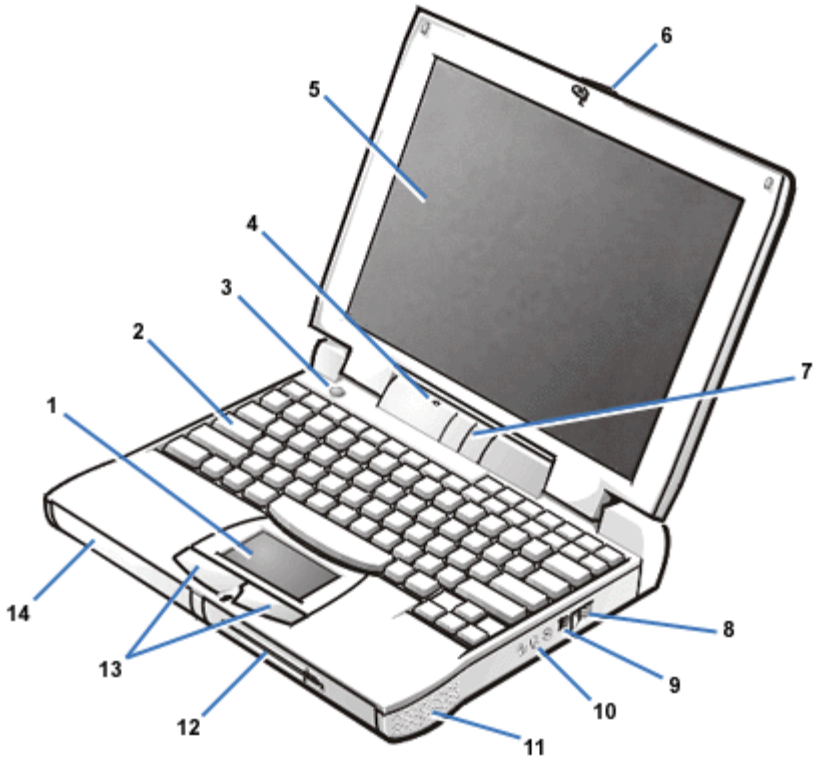
Overview

The Dell Latitude CPi A-Series portable computer is an expandable multimedia system designed around an Intel® microprocessor with Peripheral Component Interconnect (PCI) technology. This chapter describes the major hardware and software features of your computer. Figure 1 and Figure 2 show the front and back view of the computer, respectively.

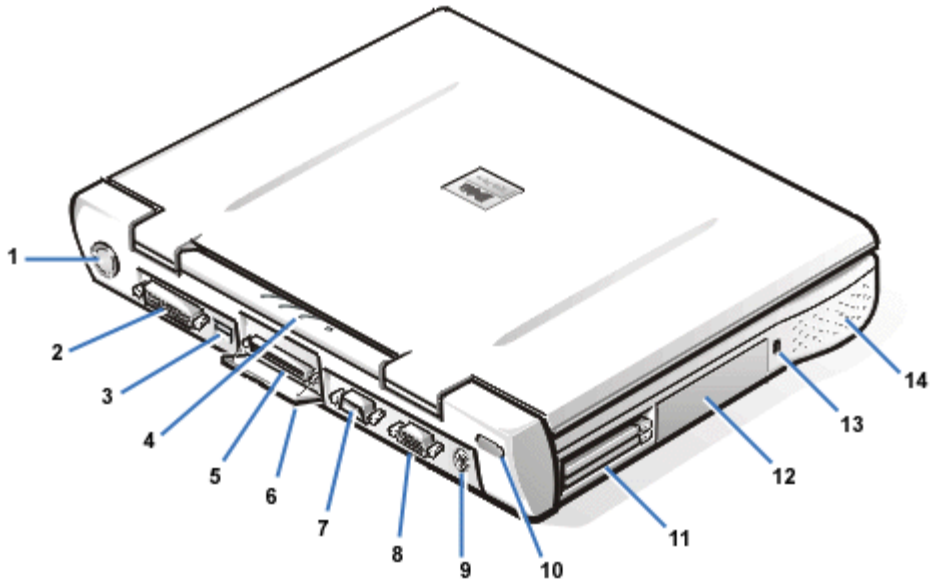
Figure 1. Front View of the Computer



1 Touch pad
2 Keyboard
3 Power button
4 Microphone
5 Display
6 Display latch
7 Status indicator panel
8 Air intake
9 AC adapter connector
10 Audio jacks (3)

11 Speaker
12 Modular bay
13 Touch pad buttons
14 Battery bay

Figure 2. Back View of the Computer



1 Fan
2 Parallel connector
3 USB connector
4 Status indicator panel
5 Docking connector
6 Docking connector door
7 Serial connector
8 Monitor connector
9 PS/2 connector
10 Infrared port
11 PC card slot
12 Hard-disk drive
13 Security cable slot
14 Speaker

Hardware Features

Your Dell computer has the following features:

- Full multimedia capability through the following standard features:
    - A 12.1-inch super video graphics array (SVGA), thin film transistor (TFT), 800 x 600 active-matrix color display or a 13.3-inch extended graphics array (XGA), TFT 1024 x

768 active-matrix color display.
    - A CD-ROM drive that can be used in the modular bay. When you unpack your computer, look for the CD-ROM drive in the accessories box of the shipping carton.
    - 256-bit hardware-accelerated video support, with 2.5 megabytes (MB) of video memory.
    - Support for a zoomed video (ZV) PC Card in the upper PC Card connector.
    - Software wavetable support, Sound Blaster emulation
    - Three audio jacks for connecting external speakers or headphones, a microphone, and a record/playback device to your computer.
    - Built-in microphone and two stereo speakers.
    - Accelerated graphics port (AGP) architecture that increases system performance, particularly video performance.

- A modular bay that supports a CD-ROM drive, diskette drive, second battery or hard-disk drive, or LS-120 drive module. To make the computer as light as possible when you travel, use the special travel module in the modular bay.

  NOTE: Your computer was shipped with a diskette drive in the modular bay. For information on removing the diskette drive and installing a different device in the bay, see Modular Bay.

- A 64-MB synchronous dynamic random-access memory (SDRAM) module is standard. Memory can be increased up to 256 MB by installing combinations of 32-, 64-, or 128-MB SDRAM modules in the two memory module sockets on the system board.
- Two power conservation modes—*suspend mode* and *suspend-to-disk mode*—that help you conserve battery power. If the batteries run out of power, suspend-to-disk mode prevents data loss by copying all system data to the hard-disk drive and turning off the computer.
- Connectors for two 3.3-volt (V) or 5-V PC Cards. The upper PC Card connector supports ZV PC Cards.

  NOTE: The PC Card controller supports the CardBus standard for 32-bit data transfer on the PC Card.

- Hardware and software support for the Dell Latitude C/Port Advanced Port Replicator (C/Port APR) and the Dell Latitude C/Dock Expansion Station.
- A touch-pad pointing device positioned for both left- and right-handed users. The left and right touch-pad buttons mimic mouse buttons; you can also perform many pointing functions by tapping the touch pad itself. Click-and-drag buttonless functions are supported.
- A lithium ion battery in the battery bay, with support for a second battery in the modular bay. ExpressCharge technology charges a single battery in approximately 1 hour (when the computer is off or in suspend mode).

  NOTE: The batteries are designed to work only with Dell Latitude CP Series portable computers. Do not use the batteries with other computers, and do not use batteries from other computers with the Dell Latitude CP Series.

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

- High-performance parallel and serial ports and a multipurpose Personal System/2 (PS/2) connector for attaching external devices. There is also a monitor connector for attaching an external monitor to your computer and a Universal Serial Bus (USB) connector that supports stand-alone and hub devices.
- An infrared port that permits file transfer without using cable connections. The port is compatible with

the Infrared Data Association (IrDA) Standard 1.1 (Fast IR) and Standard 1.0 (Slow IR) for use with external devices.
- An automatic thermal management system that uses a variable-speed fan and microprocessor speed changes to keep the system running at the optimum temperature.

The following software is included with your Dell computer system:

- The Microsoft® Windows® 95, Windows 98, or Windows NT® 4.0 or higher operating system is installed on your hard-disk drive. For more information, see your operating system documentation.
- The System Setup program lets you view and change the system configuration. For more information, see Using the System Setup Program.
- The Program Diskette Maker allows you to create program diskette sets of software that Dell installed on your computer's hard-disk drive.
- Dell Diagnostics for evaluating the computer's components and devices.

NOTE: If Dell did not install an operating system on your hard-disk drive, the drivers, system utilities, and diagnostics are available separately from Dell. To order, see Getting Help for the appropriate telephone number in your location.

Before turning on your computer for the first time, read all license agreements that came with your computer. When you turn on your computer for the first time, if you agree with the license terms, indicate your acceptance by typing y when prompted by the computer. Then complete the installation of your operating system.

Available Options

As your computing requirements change, you can extend your computer's capabilities with the C/Port APR or C/Dock Expansion Station. You can also install a hard-disk drive of larger capacity, increase system memory, and add functionality with PC Cards. Dell also offers additional modules that you can install in the modular bay, including a second hard-disk drive, CD-ROM drives, and LS-120 drive modules.

Dell offers the following devices and upgrade options:

- C/Port APR and C/Dock Expansion Station
- Additional batteries
- External keyboards and a numeric keypad
- External monitors
- External pointing devices
- External speakers, headphones, and microphones
- Printers
- Hard-disk drives
- Second hard-disk drive for the modular bay
- LS-120 drive modules
- AC adapter
- PC Cards
- 32-, 64-, and 128-MB memory modules
- Carrying case

Instructions for connecting or installing these options are included in the upgrade kit you receive from Dell.

Getting Help

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

Back to Contents Page

Back to Contents Page

Setup and Operation: Dell™ Latitude™ CPi A-Series System User's Guide

AC Adapter
Batteries
CD-ROM Drive
Display
Diskette Drive
Keyboard
PC Cards
Modular Bay
Touch Pad
Securing Your Computer
Connecting External Devices
I/O Connectors

Back to Contents Page

Powering Your Computer: Dell™ Latitude™ CPi A-Series System User's Guide

AC Adapter
Power Management Settings
Batteries

Back to Contents Page

Traveling With Your Computer: Dell™ Latitude™ CPi A-Series System User's Guide

Identifying Your Computer | Preparing Your Computer for Travel | Travel Tips

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Identifying Your Computer

As an antitheft measure, assign a primary password and a hard-disk drive password to prohibit unauthorized access to the computer.

- Write down your service tag number, and put it in a safe place separate from the computer or carrying case. If the computer is lost or stolen, use the service tag number when reporting to law enforcement officials and to Dell.
- Use a text editor (such as Windows® Notepad) to create a file called **if_found** in your root directory. Place information such as your name, address, and telephone number in this file. (See the documentation that came with your operating system for instructions on using the appropriate text editor.)
- Attach your business card or other name tag to the computer.
- Contact your credit-card company and ask if it offers coded identification tags that allow your property to be returned to you without the risk of revealing your name, address, or telephone number.
- Use a permanent marking or stenciling device to write your driver's license number or some other unique identifying mark on the computer. If a lost or stolen computer is recovered, such marking identifies the computer as your property.

Service Tag Number

The service tag number is a 5-character number on a bar code label located on the bottom of the computer. The number is unique to your computer and allows Dell technical assistance personnel to identify the computer and its configuration quickly if you call for assistance.

If Your Computer Is Lost or Stolen

If your computer is lost or stolen, perform the following steps:

1. Call a law enforcement agency to report the lost or stolen computer.

   Include the service tag number in your description of the computer. Ask that a case number be assigned, and write it down. Also write down the name, address, and telephone number of the law enforcement agency. If possible, obtain the name of the investigating officer.

   If you know where the computer was lost or stolen, call a law enforcement agency in that area. If you do not know, call a law enforcement agency where you live.

2. If the computer belongs to a company, notify the security office of the firm.
3. Call Dell technical assistance to report the missing computer.

Provide the computer's service tag number, the case number, and the name, address, and telephone number of the law enforcement agency to which you reported the missing computer. If possible, give the name of the investigating officer.

The Dell support technician will log your report under the computer's service tag number and flag the computer as missing or stolen. If someone calls Dell for technical assistance and gives your service tag number, the computer is identified automatically as missing or stolen. The technician will attempt to get the phone number and address of the caller. Dell will then contact the law enforcement agency to which you made the report of the missing or stolen computer.

Preparing Your Computer for Travel

To prepare your computer for travel, perform the following steps:

1. Remove any external devices attached to the computer, and store them in a safe place. If a diskette is in the diskette drive, remove it. Remove any cables attached to installed PC Cards (you do not have to remove the PC Cards themselves).

   CAUTION: The PC Card eject button can be damaged if left in the "out" position. Before traveling, make sure that the PC Card eject button is flush with the computer case.

2. To make the computer as light as possible, remove the diskette drive or CD-ROM drive from the modular bay and install the travel module.
3. To maximize battery life, check the charge on your battery. Then fully charge the battery and any spares you plan to carry with you.
4. Turn off the computer or press <FN><A> to enter suspend-to-disk mode. (On a French keyboard, press <FN><Q>.)
5. Disconnect the AC adapter.

   CAUTION: When disconnecting the AC adapter from the computer, grasp the adapter cable's connector, not the cable itself, and pull gently but firmly to avoid damaging the cable.

6. Remove any extraneous items, such as paper clips, pens, paper, or notebooks, from the keyboard. Then close the display.

   CAUTION: When the display is closed, items left on the keyboard could damage the display.

7. Pack all your computing accessories.

   With the optional Dell carrying case, you can pack the computer and its accessories together.

NOTE: Follow the portable computer travel tips and take special precautions if you are planning to travel by air.

Accessories

- Spare batteries
- AC adapter and AC power cable
- Backup diskettes
- Appropriate printer driver files if you will be using a printer
- Cables for PC Cards (such as modem and network cards)
- Power adapters for foreign electrical outlets and modem cable adapters for foreign telephone networks
- CD-ROM drive
- Diskette drive and parallel cable for using the drive as an external device
- Travel module

Traveling by Air

- Notify airport security in advance that you are bringing a portable computer.
- Be sure to have a charged battery or the AC adapter and power cable available in case you are asked to turn on the computer.
- Do not check the computer as baggage.
- Do not put the computer through a metal detector.

CAUTION: Have airport security personnel check the computer by hand. If the computer passes through a metal detector, data loss may occur. If you must pass the computer through a metal detector, first remove the hard-disk drive.

- The computer can go through an airport X-ray security machine.
- Before using the computer on an airplane, check the in-flight magazine or ask the flight crew to verify that such use is permitted. Some airlines forbid the use of electronic devices during the flight. All airlines forbid the use of electronic devices during takeoff and landing.
- Dell has several carrying cases that protect the computer and accessories during travel.
- If you pack the computer in a suitcase, do not pack so tightly that the computer display breaks or so loosely that the computer slides around.
- Avoid packing the computer with items such as shaving cream, colognes, perfumes, or food.
- Protect the computer, the battery, and the hard-disk drive from hazards such as extreme temperatures; overexposure to sunlight; and exposure to dirt, dust, or liquids.
- Pack the computer so that it does not slide around in the trunk of your car or in an overhead storage compartment.
- If you are carrying a second hard-disk drive separately, protect the drive from exposure to static electricity by placing the drive in an antistatic bag or wrapping it in a nonconductive fabric.

Travel Tips

- Consider changing the settings of your power management options to maximize battery life if you will be using battery power for extended periods.
- If you are traveling internationally, carry proof of ownership to speed your passage through customs. If the computer is provided by your employer, carry documentation of your right to use the computer. Investigate the customs regulations of the countries you plan to visit, and consider acquiring an international carnet from your government if you travel through many different countries.
- Power interruptions can occur frequently in some countries. Always have a charged battery available if traveling abroad.
- Credit card holders should check with their credit card companies for information about the kinds of

emergency travel assistance they offer to users of portable computers. Many companies provide services that help you solve problems, such as quickly locating 3.5-inch diskettes or providing a direct-dial telephone line for your modem connection.

CAUTION: Do not use the CD-ROM drive while the computer is in motion. Doing so could interrupt the flow of data to and from the CD-ROM drive and the hard-disk drive or diskette drive.

Carnet

A carnet is an international customs document (also known as a *merchandise passport*) that facilitates temporary imports into foreign countries and is valid for up to 1 year.

Back to Contents Page

Back to Contents Page

Drivers: Dell™ Latitude™ CPi A-Series System User's Guide

Installing Microsoft® Windows® 95 and Windows 98 Drivers
Installing Microsoft Windows NT® Drivers

Back to Contents Page

Customizing Your Computer: Dell™ Latitude™ CPi A-Series System User's Guide

Using the System Setup Program
Power Management Settings
Suspend-to-Disk Utility

Back to Contents Page

Removing and Replacing Parts: Dell™ Latitude™ CPi A-Series System User's Guide

Installing a Primary Hard-Disk Drive | Installing Memory Modules

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Installing a Primary Hard-Disk Drive

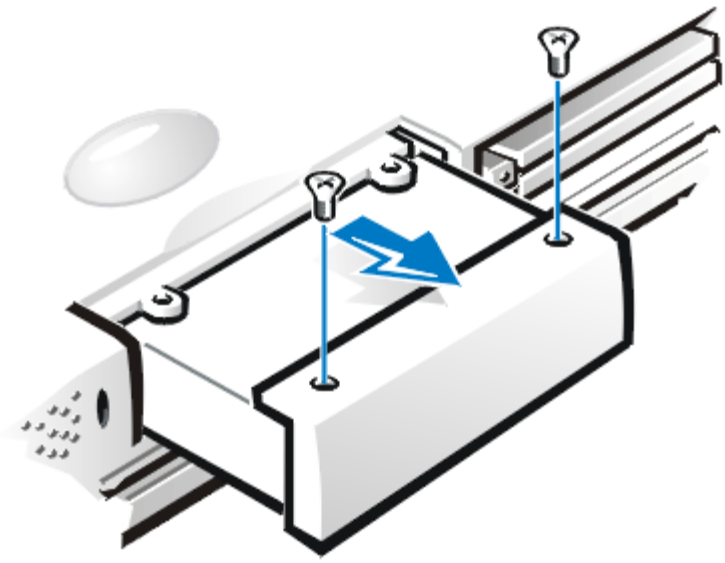
CAUTION: To prevent data loss, turn off your computer before removing the hard-disk drive. Do not remove the hard-disk drive if the computer is in suspend mode or if the drive access indicator is lit. Removing the drive under these conditions will lead to loss of data.

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

1. Save any open files, turn off the computer, and remove any installed batteries.
2. If there is a hard-disk drive in the drive bay, remove it.

   Close the display and turn the computer over. Use a small Phillips-head screwdriver to remove the two screws (see Figure 1) that hold the drive carrier in the drive bay. Save the screws for use later in this procedure.

   Figure 1. Removing a Hard-Disk Drive



3. Gently pull the drive carrier out of the drive.

   When the hard-disk drive is not in the computer, protect the drive from exposure to static electricity.

4. Remove the new drive from its packaging.

   Save the original packaging to use when storing or shipping the hard-disk drive.

5. Install the new drive into the drive carrier.
6. Gently push the drive carrier into the drive bay until the carrier door is flush with the computer case.

   CAUTION: If the drive carrier does not slide in easily, pull it out and try again. Do not force the drive carrier into the bay.

7. Replace the two screws you removed in step 2. Be careful not to overtighten the screws.

If you have installed a new hard-disk drive, follow the directions that came with the drive to partition and logically format the drive and to create a suspend-to-disk partition.

CAUTION: Hard-disk drives are extremely fragile and must be handled carefully. Follow these guidelines:

- **The primary hard-disk drive is installed in a metal carrier to protect the drive and make installation easier. When removing and installing hard-disk drives, handle the drive carrier, not the drive itself.**
- **Never press down on the top of the drive.**
- **Do not drop the drive. Even a slight jar or bump can damage the drive heads and spinning plates, thus rendering the drive inoperable.**
- **The primary hard-disk drive may be hot to the touch under extreme environmental conditions. If the drive is hot, allow it to cool before replacing it.**

Preparing a New Primary Drive

Every primary hard-disk drive must be physically formatted, partitioned, and logically formatted before it can be used to store data. Every primary hard-disk drive from Dell is physically formatted before it is sent to you. Use the program(s) provided by your operating system to partition and logically format the hard-disk drive.

Installing Memory Modules

NOTES: If necessary, print these instructions for reference before proceeding.

CAUTION: If you install a combination of extended-data out (EDO) and SDRAM memory modules, your computer will not operate.

To prepare the computer to remove or install memory modules, perform the following steps:

1. Turn off the computer and any attached peripherals.

   Do not install memory modules while the computer is in suspend, standby, or suspend-to-disk mode.

2. If the computer is docked, undock it.
3. Disconnect the computer and peripherals from AC power to reduce the potential for personal injury or shock.
4. Disconnect any telephone or telecommunication line from the computer.
5. Remove the battery from the battery bay or the modular bay.

CAUTION: Ground yourself by touching an unpainted metal surface of a connector on the back of the computer. While you work, periodically touch the connector to dissipate any static electricity that might harm internal components.

To remove or install memory modules, perform the following steps:

1. Close the display, turn the computer upside down, and remove the memory module cover.

   Locate the small semicircular indentation at one end of the memory module cover. Place the tip of your finger under the cover by the indentation and gently lift it up. Put the thumb of your other hand over the ridges on the door and push it toward the unlock icon. When the door pops up, slide it back and remove it.

2. If you are replacing a memory module, remove the old one.

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

3. Ground yourself and unpack the new memory module from the upgrade kit.
4. Install the new memory module.

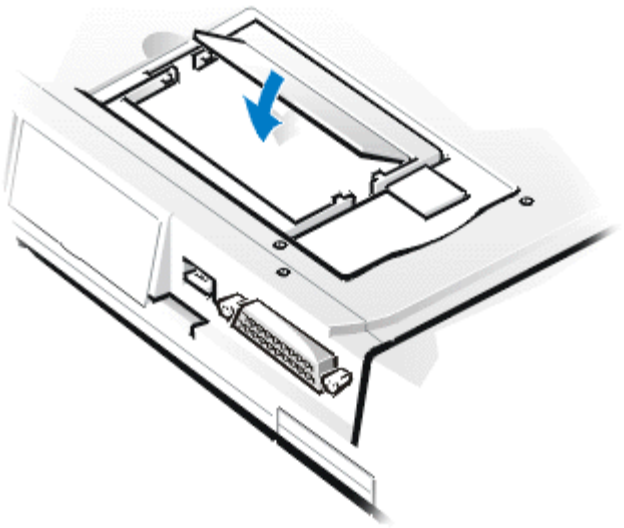
   Memory modules are *keyed*, or designed to fit into their sockets in only one direction. The sockets on the system board are notched so that the memory module can be firmly seated only one way.

   a. Align the memory module's edge connector with the slot in the center of the memory module socket.
   b. With the module at a 45-degree angle, press the memory module's edge connector firmly into the memory module socket.
   c. Pivot the memory module down until it clicks into place.

   If you do not hear a click as each end of the memory module snaps into the metal tabs, remove the memory module and reinstall it.

5. Replace the memory module cover (see Figure 2).

Figure 2. Installing a Memory Module Cover



a. Set the memory module cover loosely over the opening, making sure that the plastic tabs on the bottom of the cover catch in the slots on either side of the opening.
b. Slide the cover closed until it clicks into place.

6. Reconnect your computer and peripherals to AC power and turn them on.

   As the computer boots, it detects the presence of additional memory and automatically updates the system configuration information.

7. In one of the following ways, verify that the **System Memory** option reflects the newly installed memory:

   - Click the **Start** button, point to **Settings**, click **Control Panel**, and click the **System** icon. The amount of memory installed in the computer is displayed in the lower-right corner of the **General** tab window.
   - In the System Setup program, the **System Memory** option appears in the lower-right corner of pages 1, 2, and 4.

   If the total is incorrect, the memory module(s) may not be installed properly. Repeat preparatory steps 1 through 5 and removal and installation steps 1 through 8 until the memory total is correct.

8. Run the RAM test group of the Dell Diagnostics to confirm that all installed memory modules are operating correctly.
9. Use the Suspend-to-Disk utility to update the S2D partition on your hard-disk drive. The S2D partition stores system data while the computer is in suspend-to-disk mode.

Back to Contents Page

Back to Contents Page

Troubleshooting Your Computer: Dell™ Latitude™ CPi A-Series System User's Guide

Running the Dell Diagnostics
Diagnostic Video Tests
Error Messages and Flash Codes

Back to Contents Page

Technical Specifications: Dell™ Latitude™ CPi A-Series System User's Guide

Chip Set and Bus	
System chip set	Intel® Mobile 440BX PCIset
Microprocessor data bus width	64 bits
DRAM bus width	64 bits
Address bus width	32 bits
Flash EPROM	4 Mbits
AGP bus	66 MHz
PCI bus	33 MHz
PC Cards	
CardBus controller	Texas Instruments PCI 1225 CardBus controller
PC Card connectors	two (supports type I and type II cards in any combination; type III cards can be used only in the lower connector; the upper connector supports zoomed video cards on systems using the Microsoft® Windows® 95 or Windows 98 operating system)
Cards supported	3.3-V and 5-V
PC Card connector size	68 pins
Data width (maximum):	
PCMCIA	16 bits
CardBus	32 bits
Memory	
Architecture	SDRAM memory
Memory module sockets	two
Memory module capacities and type	32-, 64-, and 128-MB 3.3-V SDRAM[1]

Standard RAM	one 64-MB memory module
Maximum RAM	256 MB
Memory access time:	
tRAC	60 ns
tCAC	15 ns
BIOS address	F000:0000-F000:FFFF
Connectors	
Serial (DTE)	one 16,550-compatible, 16-byte buffer connector
Parallel	one unidirectional, bidirectional, or ECP connector
Video	one connector
PS/2	one mini-DIN connector
Infrared	one port compatible with both IrDA Standard 1.1 (Fast IR) and IrDA Standard 1.0 (Slow IR)
Audio	one microphone-in jack; one line-in/audio-in jack; one headphones/speakers jack
USB	one USB-compliant connector
Docking	one connector for the C/Port Advanced Port Replicator or C/Dock Expansion Station
Audio	
Audio type	Sound Blaster emulation
Audio controller	NeoMagic 2200 AC97 Codec
Stereo conversion	16 bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	PCI bus / AC97
External	stereo line-in minijack; microphone-in minijack; headphones/speakers-out minijack
Speakers	two 8-ohm speakers
Internal speaker amplifier	1 W into 8 ohms stereo

Controls	volume can be controlled through key combinations, software application menus, or the **Speaker** window in the Dell Control Center (Windows 95 only)
Video	
Video type	256-bit hardware-accelerated
Data bus	AGP
Video controller	NeoMagic 2200
Video memory	2.5 MB
12.1-Inch Display	
Type	active-matrix color (TFT LVDS)
Dimensions (active area):	
Height	184.5 mm (7.26 inches)
Width	246.0 mm (9.68 inches)
Diagonal	307.5 mm (12.1 inches)
Maximum resolution/colors	800 x 600 pixels; 16 million colors
Response time (typical)	50 ms
Operating angle	0° (closed) to 180°
Dot pitch	0.31 mm
Power consumption:	
Panel (typical)	0.6 W
Backlight	2.4 W

Controls	brightness can be controlled through a key combination, the **Display** window in the Dell Control Center (Windows 95 only), or the System Setup program
13.3-Inch Display	
Type	active-matrix color (TFT)
Dimensions (active area):	
Height	202.8 mm (7.98 inches)
Width	270.3 mm (10.64 inches)
Diagonal	337.8 mm (13.3 inches)
Maximum resolution/colors	1024 x 768 pixels; 65,536 colors
Response time (typical)	50 ms
Operating angle	0° (closed) to 180°
Dot pitch	0.26 mm
Power consumption:	
Panel (typical)	1.7 W
Backlight	2.6 W
Controls	brightness can be controlled through a key combination, the **Display** window in the Dell Control Center (Windows 95 only), or the System Setup program
Keyboard	
Number of keys	87 (U.S., Canada, Korea, Thailand, and locations that use traditional Chinese); 88 (Europe); 90 (Japan)

Key travel	3.0 mm + 0.5 mm/-0.2 mm (0.12 inch + 0.02 inch/-0.0008 inch)
Key spacing	19.05 mm ± 0.3 mm (0.75 inch ± 0.012 inch)
Battery	
Type	lithium ion
Dimensions:	
Height	21.5 mm (0.83 inch)
Depth	88.5 mm (3.48 inches)
Width	139.0 mm (5.47 inches)
Weight	0.39 kg (0.87 lb)
Voltage	16.8 VDC
Capacity	44 WH
Charge time (approximate):[2]	
Computer on	2.5 hours
Computer off	1 hour
Life span (approximate)[2]	500 discharge/charge cycles
Temperature range:	
Charge	0° to 40°C (32° to 104°F)
Storage	-20° to 60°C (-4° to 140°F)
AC Adapter	
Input voltage	90 to 135 VAC and 164 to 264 VAC
Input current (maximum)	3.5 A
Input frequency	47 to 63 Hz

Output current	4.5 A (maximum at 4-second pulse); 3.51 A (continuous)
Rated output voltage	20.0 VDC
Height	27.94 mm (1.1 inches)
Width	58.42 mm (2.3 inches)
Depth	133.35 mm (5.25 inches)
Weight (with cables)	0.4 kg (0.9 lb)
Temperature range:	
Operating	0° to 40°C (32° to 104°F)
Storage	-20° to 60°C (-4° to 140°F)
Physical	
Height	38.6 mm (1.52 inches)
Width	306.0 mm (12.05 inches)
Depth	241.0 mm (9.49 inches)
Weight[3]	2.63 kg (5.8 lb)
Environmental (Computer)	
Temperature:	
Operating	0° to 40°C (32° to 104°F)
Storage	-20° to 60°C (-4° to 140°F)
Relative humidity (maximum):	
Operating	10% to 90% (noncondensing)
Storage	5% to 95% (noncondensing)
Maximum vibration:	
Operating	0.51 GRMS using a random-vibration spectrum that simulates truck shipment

Storage	1.3 GRMS using a random-vibration spectrum that simulates air/truck shipment
Maximum shock:[4]	
Operating	152.4 cm/sec (60.0 inches/sec) (less than or equal to a pulse width of 2 ms)
Storage	203.2 cm/sec (80 inches/sec) (less than or equal to a pulse width of 2 ms)
Altitude (maximum):	
Operating	-18 to 3048 m (-59 to 10,000 ft)
Storage	-18 to 10,600 m (-59 to 35,000 ft)
Touch Pad	
Interface	PS/2-compatible
X/Y position resolution (graphics table mode)	200 points/mm (500 points/inch)
Size:	
Thickness	2.50 mm (0.10 inch) at highest component
Width (sensor-active area)	61.8 mm (2.43 inch) at bottom 58.6 mm (2.31 inch) at top
Height	48.8-mm (1.92-inch) rectangle
Weight	8 g (0.28 oz) 0.5 g (0.02 oz)
Power:	
Supply voltage	5 V ± 10%
Supply current	2.75 mA (maximum operating)

ESD	12 kV applied to front surface

NOTES:

[1] The Dell Latitude CPi A-Series does not support memory modules from older models of Dell portable computers, such as the Latitude XP, XPi CD, or LM.

[2] Battery performance features such as charge time and life span can vary according to the conditions under which the computer and battery are used.

[3] Weight shown is with a hard-disk drive, a battery in the battery bay, a diskette drive in the modular bay, and one memory module. Your computer might weigh more or less, depending on its configuration. The maximum weight of the Dell Latitude CPi A366XT is 2.81 kg (6.2 lb), which includes a hard-disk drive, two batteries, and two memory modules. The minimum weight of a Latitude CPi A300ST is 2.4 kg (5.3 lb), which includes a hard-disk drive, a battery in the battery bay, the travel module in the modular bay, and one memory module.

[4] Measured with the hard-disk drive in head-parked position.

Back to Contents Page

Back to Contents Page

Getting Help: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Technical Assistance | Help Tools | Problems With Your Order | Product Information | Returning Items for Warranty Repair or Credit | Before You Call | Dell Contact Numbers

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Overview

This file 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. Run the Dell Diagnostics as described in Running the Dell Diagnostics.
2. Make a copy of the Diagnostics Checklist and fill it out.
3. 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.
4. If the preceding steps have not resolved the problem and you need to talk to a Dell technician, call Dell's technical support service.

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.

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 on the Internet

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 file, including AutoTech, TechFax, order status, technical support, and product information.

From Dell's World Wide Web home page (**http://www.dell.com**), click the **Support** icon, and click **Support Your Dell**. Enter your service tag number (or, if you have one, your Express Service Code) and click **Submit**. If you don't have your service tag number or Express Service Code available, you can also select support information by system.

Everything you need to know about your system is presented on the system support page, including the following tools and information:

- Technical information — Details on every aspect of your system, including hardware specifications.
- Self-diagnostic tools — A system-specific troubleshooting application for resolving many computer-related issues by following interactive flowcharts.
- Drivers, files, and utilities — The latest drivers and basic input/output system (BIOS) updates to keep your system functioning at its best.
- Component support — Technical information, documentation, and troubleshooting tips for different system components.

- Online communications center — Tool for submitting requests for both technical and nontechnical information on Dell products. Avoid telephone delays by receiving an e-mail response to your request for information if your computer is not functioning properly or if you have questions regarding your computer's hardware or operation.

Dell can be accessed electronically using the following addresses:

- World Wide Web

  http://www.dell.com/

  http://www.dell.com/intl/apcc/ (for Asian/Pacific countries only)

  http://www.euro.dell.com (for Europe only)

- 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.

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.

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.

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 Before You Call and then call the number for your country as listed in Dell Contact Numbers.

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.

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.

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.
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

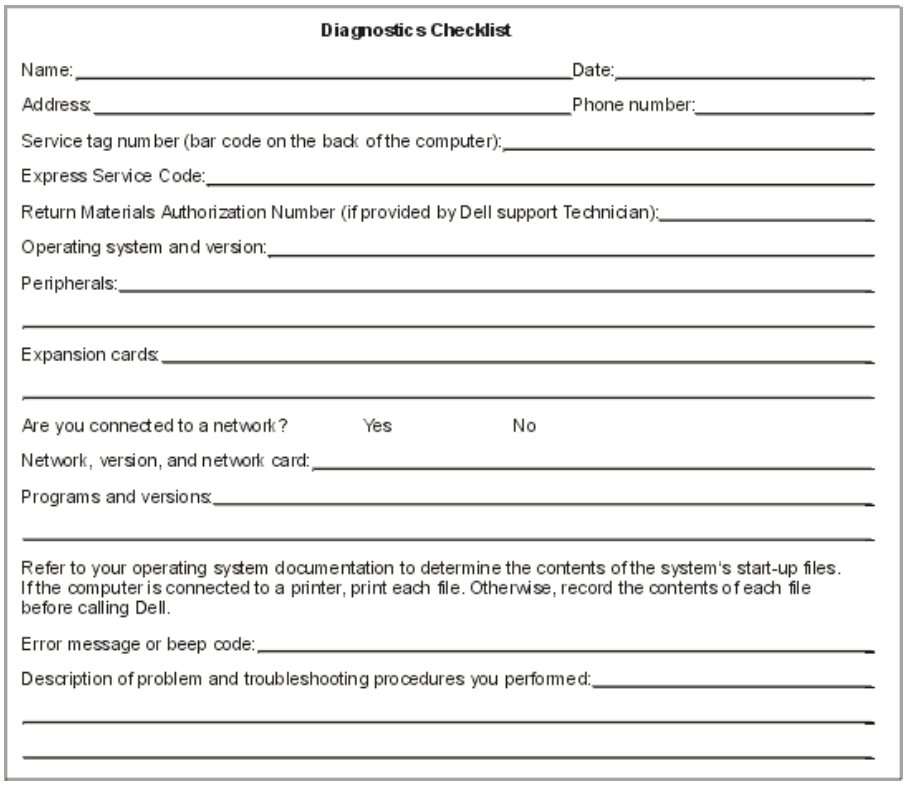
NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the Diagnostics Checklist (Figure 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 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.

Figure 1. Diagnostics Checklist



Diagnostics Checklist

Name: _____ Date: _____

Address: _____ Phone number: _____

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

Express Service Code: _____

Return Materials 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 or beep code: _____

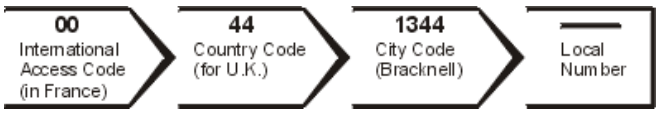
Description of problem and troubleshooting procedures you performed: _____

_____

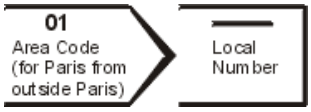
_____

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in Tables 1 and 2. Table 1, International Dialing Codes, provides the various codes required to make long-distance and international calls. Table 2, Dell Contact Numbers, provides local telephone numbers, area codes, toll-free numbers, 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 1 in addition to the local numbers provided in Table 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 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
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
Spain (Madrid)	07	34	1
Sweden (Upplands Vasby)	009	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

Table 2. Dell Contact Numbers

Country (City)	Area Local Number or Department Name or Service Code Toll-Free Number
Australia (Sydney)	Customer Technical Support toll free: 1-800-633-559 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)	Technical Support 0660-8779 Customer Care 01 660 8056 Switchboard 01 491 04 0

	Web site: support.euro.dell.com/at E-mail: tech_support_germany@dell.com
Belgium* (Brussels)	Customer Technical Support 02 4819288 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: support.euro.dell.com/be E-mail: tech_be@dell.com
Brunei *NOTE: Customers in Brunei call Malaysia for sales, customer, and technical assistance.*	Customer Technical Support (Penang, Malaysia) 810 4966 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales (Penang, Malaysia) 810 4955
Canada (North York, Ontario) *NOTE: Customers in Canada call the U.S.A. for access to TechConnect BBS.*	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
Chile (Santiago) *NOTE: Customers in Chile call the U.S.A for sales, customer, and technical assistance.*	Sales, Customer Support, and Technical Support toll free: 1230-020-4823
China (Xiamen)	Customer Service toll free: 800 858 2437 Sales toll free: 800 858 2222
Czech Republic* (Prague)	Technical Support 02 22 83 27 27 Customer Care 02 22 83 27 11 Fax 02 22 83 27 14 TechFax 02 22 83 27 28 Switchboard 02 22 83 27 11 Web site: support.euro.dell.com/cz E-mail: czech_dell@dell.com
Denmark* (Horsholm) *NOTE: Customers in Denmark call Sweden for fax technical support.*	Technical Support 45170182 Customer Care 45170181 Switchboard 45170100 Fax Technical Support (Upplands Vasby, Sweden) 859005594 Fax Switchboard 45170117 E-mail: den_support@dell.com
Finland* (Helsinki)	Technical Support 09 253 313 60 Customer Care 09 253 313 61 Fax 09 253 313 99 Switchboard 09 253 313 00 Web site: support.euro.dell.com/fi E-mail: fin_support@dell.com
France* (Paris/Montpellier)	Technical Support (Paris) 01 47 62 68 90 Technical Support (Montpellier) 04 67 06 62 86 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: support.euro.dell.com/fr E-mail: web_fr_tech@dell.com
Germany* (Langen)	Customer Technical Support 06103 971-200 Customer Care 06103 971-500 TechConnect BBS 06103 971-666 Switchboard 06103 971-0 Web site: support.euro.dell.com/de E-mail: tech_support_germany@dell.com
Hong Kong *NOTE: Customers in Hong Kong call Malaysia for customer assistance.*	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
Ireland* (Bray)	Customer Technical Support 1-850-543-543 Customer Care 01 204 4026 Home/Small Business Customer Care (Bracknell, U.K.) 0870 906 0100 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: 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 Fax 57503530 Web site: support.euro.dell.com/it E-mail: support_italy@dell.com
Japan (Kawasaki)	Technical Support toll free: 0088-22-7890 Customer Care 044 556-4240 Direct Sales 044 556-3344 Commercial Sales 044 556-3430 556-3440 Switchboard 044 556-4300
Korea (Seoul) *NOTE: Customers in Korea call Malaysia for customer assistance.*	Technical Support toll free: 080-200-3800 Transaction Sales toll free: 080-200-3600 Corporate Sales toll free: 080-200-3900 Customer Service (Penang, Malaysia) 810 4949 Fax 394 3122 Switchboard 287 5600
Latin America *NOTE: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.*	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* *NOTE: Customers in Luxembourg may call Belgium for sales, customer,*	Customer Technical Support (Brussels, Belgium) 02 481 92 88 Home/Small Business Sales (Brussels, Belgium) toll free:

and technical assistance.	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: support.euro.dell.com/be E-mail: tech_be@dell.com
Macau *NOTE: Customers in Macau call Malaysia for customer assistance.*	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
Mexico (Colonia Granada) *NOTE: Customers in Mexico call the U.S.A. for access to the Automated Order-Status System and AutoTech.*	Automated Order-Status System (Austin, Texas, U.S.A.) 512 728-0685 AutoTech (Automated technical support) (Austin, Texas, U.S.A.) 512 728-0686 Customer Technical Support 525 228-7870 Sales 525 228-7811; toll free: 91-800-900-37; toll free: 91-800-904-49 Customer Service 525 228-7878 Main 525 228-7800
Netherlands* (Amsterdam)	Customer Technical Support 020 5818838 Home/Small Business Sales toll free: 0800-0663 Home/Small Business SalesFax 020 682 7171 Corporate Sales 020 581 8818 Corporate SalesFax 020 686 8003 Fax 020 686 8003 Switchboard 020 581 8818 Web site: support.euro.dell.com/nl
New Zealand	Technical Support 0800 446 255 Customer Service 0800 444 617 Sales 0800 441 567 Fax 0800 441 566
Norway* (Lysaker) *NOTE: Customers in Norway call Sweden for fax technical support.*	Technical Support 671 16882 Customer Care 671 16881 Switchboard 1 16800 Fax Technical Support (Upplands Vasby, Sweden) 590 05 594 Fax Switchboard 671 16865 Web site: support.euro.dell.com/no E-mail: nor_support@dell.com
Poland* (Warsaw)	Technical Support 22 6061 99 Customer Care 22 6061 99 Sales 22 60 61 99 Fax 22 60 61 998 Switchboard 22 60 61 999 Web site: support.euro.dell.com/pl E-mail: pl_support@dell.com
Singapore (Singapore) *NOTE: Customers in Singapore call Malaysia for customer assistance.*	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
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: 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
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: support.euro.dell.com/es E-mail: es_support@dell.com
Sweden* (Upplands Vasby)	Technical Support 08 590 05 199 Customer Care 08 590 05 169 Fax Technical Support 08 590 05 594 Sales 08 590 05 185 Web site: support.euro.dell.com/sw 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: support.euro.dell.com/ch E-mail: swisstech@dell.com
Taiwan *NOTE: Customers in Taiwan call Malaysia for customer assistance.*	Technical Support toll free: 0080 651 226/0800 33 557 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales toll free: 0080 651 228/0800 33 556 Corporate Sales toll free: 0080 651 227/0800 33 555
Thailand *NOTE: Customers in Thailand call Malaysia for customer assistance.*	Technical Support toll free: 0880 060 07 Customer Service (Penang, Malaysia) 810 4949 Sales toll free: 0880 060 06
U.K.* (Bracknell)	Technical Support Department 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: support.euro.dell.com/uk E-mail: dell_direct_support@dell.com
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 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 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 Switchboard 512 338-4400
** For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).*	

Back to Contents Page

Back to Contents Page

Modular Bay: Dell™ Latitude™ CPi A-Series System User's Guide

Using the Modular Bay | Installing Devices in the Modular Bay | Setting Up a Second Hard-Disk Drive

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Using the Modular Bay

Your computer comes with a diskette drive installed in the modular bay. You can also install a battery, a CD-ROM drive, a LS-120 drive; or second hard-disk drive in the modular bay. To make the computer as light as possible, use the travel module in the modular bay.

To install a device in the modular bay, perform the following steps:

1. Verify that the **Diskette Reconfig** option in the System Setup program is set to **Any Time**. Refer to the Diskette Reconfig option in the System Setup program.
2. Save any open files.
3. If the computer is docked, turn it off and undock it.
4. If you are removing or installing a CD-ROM drive, turn off the computer if you have not already done so.
   You can remove the battery, diskette drive, and travel module without turning off your computer.
5. If there is a device in the modular bay, remove it.
   a. Close the computer display and turn the computer over. Slide the modular bay latch toward the unlock icon.
   b. Keep holding the modular bay latch with one hand while pulling the device out of the bay with the other hand.
   c. Release the modular bay latch.

   CAUTION: When the CD-ROM and diskette drives are not inside the computer, they are fragile and must be handled carefully to avoid damage. Do not press down on the drives or place heavy objects on top of them. Place the drives in a travel case to keep them free of dust and liquids. Store the drives in a safe place.

6. Slide the new device firmly into the modular bay.

   You should hear a click when the device is fully seated.

7. If you turned off the computer in step 2 or 3, press the power button to turn the computer back on.

   If the computer uses the Microsoft® Windows NT® 4.0 operating system, reboot the computer.

Installing Devices in the Modular Bay

Table 1 explains how to install devices in the modular bay.

Table 1. Installing Devices in the Modular Bay

Device in Modular

Bay	Device You Want to Install	Procedure
Battery	Diskette drive Travel module	1. If your computer is docked, turn it off and undock it. 2. Remove the battery. 3. Install the new device. 4. Dock the computer and turn it on, if necessary.
Battery	CD-ROM drive LS-120 drive Second hard-disk drive	1. Turn off and undock the computer. 2. Remove the battery. 3. Install the new device. 4. Dock the computer and turn it on.
CD-ROM drive	Battery Diskette drive LS-120 drive Second hard-disk drive Travel module	1. Turn off and undock the computer. 2. Remove the CD-ROM drive. 3. Install the new device. 4. Dock the computer and turn it on.
Diskette drive	Battery Travel module	1. If your computer is docked, turn it off and undock it. 2. Remove the diskette drive. 3. Install the new device. 4. Dock the computer and turn it on, if necessary.
Diskette drive	CD-ROM drive LS-120 drive Second hard-disk drive	1. Turn off and undock the computer. 2. Remove the diskette drive. 3. Install the new device. 4. Dock the computer and turn it on.
LS-120 drive	Battery CD-ROM drive Diskette drive Second hard-disk drive Travel module	1. Turn off and undock the computer. 2. Remove the LS-120 drive. 3. Install the new device. 4. Dock the computer and turn it on.
Second hard-disk drive	Battery CD-ROM drive Diskette drive LS-120 drive Travel module	1. Turn off and undock the computer. 2. Remove the second hard-disk drive. 3. Install the new device. 4. Dock the computer and turn it on.
Travel module	Battery Diskette drive	1. If your computer is docked, turn it off and undock it. 2. Remove the travel module. 3. Install the new device.

		4. Dock the computer and turn it on, if necessary.
Travel module	CD-ROM drive LS-120 drive Second hard-disk drive	1. Turn off and undock the computer. 2. Remove the travel module. 3. Install the new device. 4. Dock the computer and turn it on.

Setting Up a Second Hard-Disk Drive

The first time you install a second hard-disk drive in the modular bay, you must format that drive. For instructions, see the documentation that came with the device.

Back to Contents Page

Back to Contents Page

Using the System Setup Program: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Entering the System Setup Program | Using the System Setup Program | System Setup Options

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Overview

Each time you turn on your computer, it compares the installed hardware with the system configuration information stored in nonvolatile random-access memory (NVRAM). If the system detects a discrepancy, it generates an error message for each incorrect configuration setting.

You can use the System Setup program as follows:

- To set or change user-selectable features — for example, your password or power management features
- To verify information about your computer's current configuration, such as the amount of system memory

For some setup options, you must reboot the computer before any changes take effect. Changes for other options take effect immediately.

*NOTE: If you change an option that is activated by rebooting, the System Setup program displays the setting you selected rather than the setting currently in effect. You **must** reboot for the new setting to take effect.*

After you set up your computer, run the System Setup program to familiarize yourself with your system configuration information and optional settings. Dell recommends that you write down the information for future reference.

*NOTES: If the computer uses the Microsoft® Windows® 95 operating system, you can also use the Dell Control Center to view and change the system configuration. Access the Dell Control Center from the **Dell Accessories** folder.*

If the computer uses the Microsoft Windows NT® 4.0 operating system, you must use the System Setup program to view and change your system configuration.

Entering the System Setup Program

Enter and use the System Setup program as follows:

If you are using Windows 95, press <FN><F1> at any time on the built-in keyboard (or <Scroll Lock><F1> on an external keyboard if the **External Hot Key** option is enabled). If you press <FN><F3> (or <Scroll Lock><F3> on an external keyboard if the **External Hot Key** option is enabled), the System Setup program opens directly to the battery status screen.

If you are using Windows NT 4.0, close all open application programs and exit the operating system. When prompted, reboot the computer and press <FN>< F1> (or <Scroll Lock><F1> from an external keyboard if the **External Hot Key** option is enabled). If you wait too long and your operating system begins to load into memory, let the system complete the load operation; then shut down the computer and try again.

In either operating system, press <Esc> to exit the System Setup program. If you change the setting of an option that requires rebooting in order to take effect, exit the operating system *before* rebooting. (The Help text in the upper-right corner of System Setup screens 1, 2, and 4 tells you if the computer must be rebooted.)

NOTE: If the System Setup program is running when the computer enters suspend mode, the computer exits the System Setup program and then activates suspend mode.

Using the System Setup Program

The System Setup screens display the current setup and configuration information and optional settings for your computer. Information on the screens is organized in five boxed areas:

- **Title**

  The box at the top of all screens lists the page number, system name, and version number of the basic input/output system (BIOS).

- **Options**

  The box on the left half of screens 1, 2, and 4 lists options that define the installed hardware in your computer and the power conservation and security features for your computer.

  Fields next to the options contain settings or values. You can change those values that appear bright on the screen. Options or values that you cannot change (because they are determined or calculated by the computer) appear less bright.

- **Help**

  The box on the upper-right half of screens 1, 2, and 4 displays help information for the option with a currently highlighted field.

- **Computer data**

  The box in the lower-right corner of screens 1, 2, and 4 displays information about your computer.

- **Key functions**

  The line of boxes across the bottom of all screens lists keys and their functions within the System Setup program.

System Setup Options

The following *alphabetized* subsections explain in detail the options found in the System Setup program.

AC

AC, a category under **Power Management**, allows you to set different time-outs for the following options when you operate your computer from AC power: **Display Time-Out, Disk Time-Out, Suspend Time-Out, S2D Time-Out, Smart CPU Mode**, and **Brightness**.

A change to the AC option takes effect immediately (rebooting is not required).

Admin Password

Admin Password displays the current status of your administrator password and allows you to assign or change this password. Settings for this option are:

- **Disabled** (the default) — Indicates that no administrator password is assigned.
- **Enabled** — Indicates that an administrator password is currently assigned.

The administrator password is designed for use by system administrators and service technicians in corporate environments. If an administrator password is assigned, you can use it to access the computer even if you do not know the primary password.

CAUTION: The password features provide a high level of security for the data in your computer. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs or PC Cards with encryption features.

Alarm Resume

The **Alarm Resume** option directs the computer to resume normal operation when it is in suspend mode and detects an alarm from the real-time clock (RTC). Such alarms can be set through various application programs. In order for the alarms in these programs to work, the **Alarm Resume** option must be set to **Enabled**.

Settings for this option are:

- **Enabled** (the default) — Resumes normal operation when the computer detects an alarm.
- **Disabled** — Keeps the computer in suspend mode even if the computer detects an alarm.

A change to the **Alarm Resume** option takes effect immediately (rebooting is not required).

Asset Tag

The **Asset Tag** option displays the asset tag code if you or your organization assigned one to your computer.

For more information, see Asset Tag Utility.

Audio Mode

Audio Mode helps you manage the resources of the computer and the external devices you use with it.

Settings for this option are:

- **Disabled** (the default) — Disables the audio controller and makes the direct memory access (DMA),interrupt request (IRQ), and input/output (I/O) resources available for another serial device to use.
- **Full Duplex** — Allows the computer's audio system to play and record sounds simultaneously.

For a change in the **Audio Mode** option to take effect, you must reboot your computer.

*NOTES: The System Setup program limits the options available for **Audio Mode**, depending on how the **Parallel Mode** and **Infrared Mode** options are set. If **Parallel Mode** is set to **ECP** and **Infrared Mode** is set to **Fast IR**, the **Audio Mode** option cannot be set to **Full Duplex**. This limitation is based on the number of available 8-bit DMA channels.*

*The value selected for **Audio Mode** determines the boot configuration for the device. If Windows 95 finds another available resources, the operating system may upgrade the configuration.*

Battery

Battery, a category of **Power Management**, allows you to set different time-outs for the following options when you operate your computer from battery power: **Display Time-Out**, **Disk Time-Out**, **Suspend Time-Out**, **S2D Time-Out**, **Smart CPU Mode**, and **Brightness**.

A change to the **Battery** option takes effect immediately (rebooting is not required).

Battery Status

Battery Status (page 3 of the System Setup screens) is a graphical representation of the approximate amount of charge left in the main and secondary batteries. There are no user-selectable settings for this option. If there is no battery installed in the main battery compartment or in the modular bay, the battery gauge illustration says **Battery Status: Not Installed**.

If you are not in the System Setup program, you can see the battery gauge illustration at any time by pressing <Fn><F3>.

BIOS Version

BIOS Version displays the version number and release date of the BIOS in your computer. A service technician may ask you for this version number if you call Dell for technical assistance.

NOTE: Dell may periodically offer revisions of the BIOS that add features or solve specific problems. Because the BIOS for your computer is stored on a reprogrammable flash-memory chip, you can use the Flash BIOS Update program to update your computer's BIOS entirely through software.

Boot First Device

Boot First Device determines which disk device your computer uses to find the software needed to start the operating system.

The term *boot* refers to the computer's start-up procedure. When you turn on the computer, it "bootstraps" itself into an operational state by loading into memory a small program, which in turn loads the necessary operating system. **Boot First Device** tells the computer where to look first for the files that it needs to load.

Settings for this option are:

- **Diskette Drive** (the default) — Causes your computer to attempt first to boot from a bootable diskette.
- **Internal HDD** — Causes your computer to boot from the hard-disk drive.
- **CD-ROM Drive** — Causes your computer to attempt first to boot from a bootable CD-ROM disk.
- **Modular Bay HDD** — Attempt first to boot from the second hard-disk drive installed in the modular bay.

For a change in the **Boot First Device** option to take effect, you must reboot your computer.

Boot Second Device

If the system cannot find the software it needs to start the operating system on the drive identified in **Boot First Device**, it will search the device named in this option.

Settings for the option are:

- **Internal HDD** (the default) — Causes your computer to attempt to boot from the hard-disk drive.
- **Diskette Drive** — Causes your computer to attempt to boot from the diskette drive.
- **CD-ROM Drive** — Causes your computer to attempt to boot from a bootable CD-ROM disk.
- **Modular Bay HDD** — Attempts to boot from the second hard-disk drive installed in the modular bay.
- **None**

For a change in the **Boot Second Device** option to take effect, you must reboot your computer.

Boot Third Device

If the system cannot find the software it needs to start the operating system on the drive identified in **Boot Second Device**, it will search the device named in this option.

Settings for the option are:

- **None** (the default)
- **Internal HDD** — Causes your computer to attempt to boot from the hard-disk drive.
- **Diskette Drive** — Causes your computer to attempt to boot from the diskette drive.
- **CD-ROM Drive** — Causes your computer to attempt to boot from a bootable CD-ROM disk.
- **Modular Bay HDD** — Attempts to boot from the second hard-disk drive installed in the modular bay.

For a change in the Boot Third Device option to take effect, you must reboot your computer.

Boot Speed

Boot Speed allows you to choose between the computer's processing speed (the default) and **Compatible**, a slower compatibility speed. The compatibility speed varies, depending on the configuration of your system.

When you change the setting in the **Boot Speed** option, the System Setup program stores and continues to display the new setting even if you do not reboot your computer when you exit the System Setup program. If you start the System Setup program again during your current work session, the processing speed displayed for the **Boot Speed** option may not match the actual speed at which your computer is running.

For a change in the **Boot Speed** option to take effect, you must reboot your computer.

Brightness

Brightness allows you to specify the brightness of the display when the computer is operating on battery power. Use the left- and right-arrow keys to change the brightness of the display. When the computer is powered by a battery, the default setting for **Brightness** is **Minimum**. If the computer is using AC power, the default setting is **Maximum**.

A change to the **Brightness** option becomes effective immediately (rebooting is not required).

Click Volume

Click Volume allows you to disable or adjust the volume of the keyboard clicks if the **Keyboard Click** option is enabled. The default setting for **Click Volume** is **Maximum**.

A change to the **Click Volume** option takes effect immediately (rebooting is not required).

Date

Date resets the date on the computer's internal calendar.

Your computer automatically displays the day of the week corresponding to the settings in the three fields that follow (**month**, **day-of-the-month**, and **year**).

A change to the **Date** option becomes effective immediately (rebooting is not required). However, you must reboot to make the change apparent to the operating system.

To change the date, press the right-arrow key to increase the number in the highlighted field, or press the left-arrow key to decrease the number. If you prefer, you can type in numbers in the **month** and **day-of-the-month** fields.

Disk Time-Out

Disk Time-Out lets you determine how long your hard-disk drive remains idle before the drive motor turns off to conserve battery power.

The **AC** category is set to **Disabled**. There are no user-selectable settings for this option. Settings for **Battery** category are:

- **Disabled**
- **15 Seconds**
- **1 Minute**
- **2 Minutes**
- **3 Minutes**
- **4 Minutes**
- **5 Minutes**
- **10 Minutes**
- **15 Minutes**
- **30 Minutes**
- **1 Hour**

The default setting is **3 Minutes** if the computer is powered by a battery or **1 Minute** if the computer is using AC power. To increase battery operating time, set **Disk Time-Out** to a lower number. However, if your

software requires frequent hard-disk drive accesses, using a higher time-out setting may save battery power and time by minimizing the number of times the hard-disk drive must power up.

*NOTE: Set **Disk Time-Out** to **Disabled** if using it causes compatibility problems with your software.*

A change to the **Disk Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can turn off the hard-disk drive immediately by pressing <Fn><h>. The drive resumes normal operation automatically when it is accessed by the microprocessor.

Diskette Drive A

Diskette Drive A identifies the location of the 3.5-inch diskette drive: **Modular Bay**, **Parallel Port**, or **Not Installed**. There are no user-selectable settings for the **Diskette Drive A** option.

Diskette Drive B

Diskette Drive B identifies the location of a second 3.5-inch diskette drive: **Parallel Port**, **Modular Bay**, or **Not Installed**. There are no user-selectable settings for the **Diskette Drive B** option.

Diskette Reconfig

Diskette Reconfig allows application programs that access the diskette drive to run at their optimum speed. Settings are **At Reboot Only** and **Any Time**.

When **Diskette Reconfig** is set to **Any Time** (the default), you do not have to reboot after installing a diskette drive in the modular bay or attaching a diskette drive to the parallel connector on the back of the computer. However, some application programs such as virus scans that access the diskette drive will run very slowly if the diskette drive is not in the modular bay or connected to the parallel port. When **Diskette Reconfig** is set to **At Reboot Only**, such application programs run at normal speed, but you must reboot after installing or attaching a diskette drive.

Display Close

Display Close lets you determine whether your computer enters suspend mode when the display is closed or whether only the display is turned off.

- **Suspend** (the default) — Allows the computer to enter suspend mode when the display is closed.
- **Active** — Turns off the display, but does not put the computer into suspend mode.

Display Time-Out

Display Time-Out lets you decide how long the computer operates with no I/O activity before turning off the display to conserve battery power.

Settings for this option in both the **AC** and **Battery** categories are:

- **Disabled**
- **1 Minute**
- **5 Minutes**
- **10 Minutes**

- **2 Minutes**
- **3 Minutes**
- **4 Minutes**
- **15 Minutes**
- **30 Minutes**
- **1 Hour**

The default setting is **4 Minutes**. To increase battery operating time, set **Display Time-Out** to a lower number of minutes.

*NOTE: Set the **Display Time-Out** option to **Disabled** if using it causes compatibility problems with your software.*

A change to the **Display Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can turn off the display immediately by pressing <Fn><d>. The display resumes normal operation automatically when you press a key, move the cursor, or press the power button.

Docking Status

Docking Status shows whether the computer is attached to a Dell Latitude C/Port Advanced Port Replicator (APR) or C/Dock Expansion Station. There are no user-selectable settings for the **Docking Status** option.

External Hot Key

External Hot Key lets you use the <Scroll Lock> key on the external keyboard the same way you use the <Fn> key on the computer's built-in keyboard. Set this option to **Scroll Lock** (the default) if you are using an external keyboard. Set this option to **Not Installed** to disable this function on the external keyboard.

Infrared Data Port

Infrared Data Port allows you to avoid resource conflicts by remapping the address of the infrared ports or disabling the port. The **COM1**, **COM2**, **COM3**, and **COM4** settings allow you to take advantage of the computer's Fast IR support.

Settings for this option are:

- **Disabled** — Disables the infrared data port and makes the DMA, IRQ, and I/O resources available for another serial device to use
- **COM1** — Maps the infrared data port to COM1
- **COM2** — Maps the infrared data port to COM2
- **COM3** (the default) — Maps the infrared data port to COM3
- **COM4** — Maps the infrared data port to COM4

For a change in the **Infrared Data Port** option to take effect, you must reboot your computer.

Infrared Mode

The **Infrared Mode** option appears on the screen only after an address is assigned in the **Infrared Data Port** option. **Infrared Mode** lets you select **Fast IR** mode or **Slow IR** mode for use with an infrared device. Select **Slow IR** if the **Parallel Mode** option is set to **ECP** and the **Audio Mode** option is set to **Full Duplex**.

*NOTES: The System Setup program limits the options available for **Infrared Mode**, depending on how the **Parallel Mode** and **Audio Mode** options are set. If **Parallel Mode** is set to **ECP** and **Audio Mode** is set to **Full Duplex**, the **Infrared Mode** option cannot be set to **Fast IR**. This limitation is based on the number of available 8-bit DMA channels.*

*The value selected for **Infrared Mode** determines the boot configuration for the device. If Windows 95 finds other available resources, the operating system may upgrade the configuration.*

Internal Cache

Internal Cache tells you how much external cache your computer has. There are no user-selectable settings for the **Internal Cache** option.

Internal Hard Drive

Internal Hard Drive displays the capacity of your computer's hard-disk drive. This option does not have any user-selectable settings.

Keyboard Click

Keyboard Click lets you choose whether the built-in keyboard makes audible clicking sounds. The **Click Volume** option must be enabled for this option to function. The volume of the simulated key clicks is controlled by the setting in the **Click Volume** option.

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

A change to the **Keyboard Click** option takes effect immediately (rebooting is not required).

Modular Bay

Modular Bay identifies the kind of device—**Diskette Drive**, **Battery**, or **CD-ROM Drive**—that is installed in the modular bay. If there is no device in the modular bay or if a travel bay is installed, this option reads **Not Installed**. There is no user-selectable setting for this option.

Microprocessor

Microprocessor displays the type and speed of the microprocessor installed on your computer's system board. There are no user-selectable settings for this option.

Parallel Mode

Parallel Mode controls whether the computer's built-in parallel port acts as a Personal System/2 (PS/2)-compatible (**Bidirectional**) port, AT-compatible (**Normal**) port, or Extended Capabilities Port (**ECP**)-compatible port. The default setting for **Parallel Mode** is **ECP**.

Windows 95 uses ECP protocol automatically if it detects an ECP-compatible device.

Set this category according to the type of peripheral device connected to the parallel port. To determine the correct mode to use, see the documentation that came with the device.

*NOTE: The **ECP** setting also works for most software written for the AT and PS/2 modes. Devices that use **ECP** mode may come with special drivers that need to be installed in order to use these modes.*

Setting **Parallel Mode** to **Disabled** disables the parallel port and its assigned LPT address, freeing its interrupt for another device to use.

For a change in the **Parallel Mode** option to take effect, you must reboot your computer.

*NOTES: The System Setup program limits the options available for **Parallel Mode**, depending on how the **Audio Mode** and **Infrared Mode** options are set. If **Audio Mode** is set to **Full Duplex** and I**nfrared Mode** is set to **Fast IR**, the **Parallel Mode** option cannot be set to **ECP**. This limitation is based on the number of available 8-bit DMA channels.*

*The value selected for **Parallel Mode** determines the boot configuration for the device. If Windows 95 finds other available resources, the operating system may upgrade the configuration.*

Pointing Device

Pointing Device enables and disables the computer's touch pad.

Settings for this option are:

- **Touch Pad-PS/2 Mouse** (the default)
- **Serial Mouse** — Disables the touch pad and allows you to use a mouse connected to the serial connector on the I/O port

If you want to use a serial mouse, you must first set the **Pointing Device** option to **Serial Mouse**.

For a change in the **Pointing Device** option to take effect, you must reboot your computer.

Power Management

Power Management (Page 4 of the System Setup screens) allows you to enable or disable power conservation features when the computer is being powered by a battery or AC power.

If you want to use any of the time-out options while using battery power, the **Battery** option must be set to **Enabled**. If you want to use the time-out options while using AC power, the AC option must be set to **Enabled**.

A change to the **Power Management** option takes effect immediately (rebooting is not required).

Primary Password

Primary Password displays the current status of the primary password and allows you to assign or change this password.

Settings for this option are:

- **Disabled** (the default) — Indicates that no primary password is assigned
- **Enabled** — Indicates that a primary password is currently assigned

If you assign a primary password, the computer prompts you for the password each time you boot the

computer.

CAUTION: The password features provide a high level of security for the data in your computer. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs or PC Cards with encryption features.

Ring/Event Resume

Ring/Event Resume lets you determine if the computer exits suspend mode when an installed modem card receives an incoming call. This feature must be supported by your modem PC Card and your operating system.

Settings for this option are:

- **Disabled** (the default) — Resumes normal operation when the computer detects a modem ring
- **Enabled** — Keeps the computer in suspend mode when the computer detects a modem ring

*NOTES: Dell recommends that you set **Ring/Event Resume** to **Disabled** when an external serial device, **other than a modem**, is connected to your computer.*

*In order for the **Ring/Event Resume** option to work properly, this feature must be enabled in the device driver for your modem PC Card. All drivers supplied by Dell with your computer are configured to allow the computer to resume normal operation when a modem receives an incoming call. If you use a PC Card that you did not receive from Dell, check the documentation to make sure this feature is set to **Enabled**.*

A change to the **Ring/Event Resume** option takes effect immediately (rebooting is not required).

S2D Time-Out

S2D Time-Out lets you determine how long your computer remains idle (no I/O activity) before activating suspend-to-disk mode to conserve battery power.

Settings for this option in both the **AC** and **Battery** categories are:

- **Disabled**
- **30 Minutes**
- **1 Hour**
- **2 Hours**
- **3 Hours**
- **4 Hours**
- **6 Hours**
- **8 Hours (default)**
- **12 Hours**

A change to the **S2D Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can activate **S2D Time-Out** mode at any time by pressing <Fn><a>. Press the power switch to resume from suspend-to-disk mode.

Serial Port

Serial Port allows you to map the address of the serial port or to disable the serial port.

Settings for this option are:

- **COM1** (the default) — Maps the serial port to COM1
- **COM2** — Maps the serial port to COM2
- **COM3** — Maps the serial port to COM3
- **COM4** — Maps the serial port to COM4
- **Disabled** — Disables the serial port and its assigned COM address, freeing that interrupt for another device to use.

For a change in the **Serial Port** option to take effect, you must reboot your computer.

Service Tag

Service Tag displays the computer's five-character service code, which was programmed into NVRAM by Dell during the manufacturing process. Be prepared to supply this identification during technical assistance or service calls. The service tag is also accessed by certain Dell support software, including diagnostics.

There are no user-selectable settings for this option.

*NOTE: Convert the service tag number into an express service code when prompted to do so the first time you turn on the computer (or use the program in the **Dell Accessories** folder). Keep the code handy in case you call Dell for technical assistance. The code helps Dell's automated support telephone system direct your call more efficiently.*

Smart CPU Mode

Smart CPU Mode allows the computer to slow down the microprocessor automatically if it is not being actively used.

Settings for this option are:

- **Enabled** — Allows the computer to slow down the microprocessor when it is inactive
- **Disabled** — Keeps the microprocessor running at its normal operating speed regardless of microprocessor inactivity

The default for **Smart CPU Mode** is **Enabled** if the computer is operating on battery power. If the computer is using AC power, the default for this option is **Disabled**. To increase battery operating time, set the **Smart CPU Mode** option to **Enabled**.

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

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

*Interactive application programs should function well when **Smart CPU Mode** is set to **Enabled**. (Examples of interactive programs include spreadsheet, text editor, graphics design, entertainment, educational, and utility programs.) However, you may experience performance degradation when*

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

A change to the **Smart CPU Mode** option takes effect immediately (rebooting is not required).

Suspend Time-Out

Suspend Time-Out lets you determine how long your computer remains idle before activating suspend mode to conserve battery power.

Settings for this option in both **AC** and **Battery** categories are:

- **Disabled**
- **1 Minute**
- **2 Minutes**
- **3 Minutes**
- **4 Minutes**
- **5 Minutes**
- **10 Minutes (default)**
- **15 Minutes**
- **30 Minutes**
- **1 Hour**

To increase battery operating time, set the **Suspend Time-Out** option to a lower number of minutes.

NOTE: Set the ***Suspend Time-Out*** *option to* ***Disabled*** *if using it causes compatibility problems with your software.*

A change to the **Suspend Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can activate suspend mode at any time by pressing <Fn><Esc>. The computer resumes normal operation automatically when you press a key on the built-in keyboard.

System Memory

System Memory displays the total amount of synchronous dynamic random-access memory (SDRAM) installed in your computer.

There are no user-selectable settings for this option. The amount of memory displayed changes if you install or remove a memory module.

Time

Time resets the time on the computer's internal clock. Time is kept in a 24-hour format (hours:minutes:seconds).

NOTE: If a network server controls the time reflected by the ***Time*** *option, changing this option has no effect.*

A change to the **Time** option becomes effective immediately (rebooting is not required). However, you must reboot to make the change apparent to the operating system.

Universal Connect

The **Universal Connect** option functions with the Dell Latitude C/Port APR if the computer uses Windows 95.

Set this category to **Enabled** (the default) if you often use more than one C/Port APR and want to minimize the initialization time when you connect the replicator to the computer. When this category is set to **Disabled**, the C/Port APR is reinitialized each time it is connected to the computer.

Video Memory

Video Memory displays the amount of video memory installed on the system board. There are no user-selectable settings for this option.

Back to Contents Page

Back to Contents Page

AC Adapter: Dell™ Latitude™ CPi A-Series System User's Guide

Using the AC Adapter | Connecting the AC Adapter

Using the AC Adapter

The AC adapter converts AC power to the DC power required by the computer. The AC adapter kit includes two cables: the AC adapter cable and an AC power cable.

You can connect the AC adapter with your computer either turned on or off.

The AC adapter works with AC power sources worldwide. However, power connectors vary among countries. Before using AC power in a foreign country, you may need to obtain a new power cable designed for use in that country.

If the computer is docked to the C/Port Advanced Port Replicator (C/Port APR) or C/Dock Expansion Station, connect the AC adapter to the C/Port APR or C/Dock Expansion Station, *not* to the computer.

NOTE: If you are running your computer on AC power with a battery installed, the AC adapter charges the battery (if needed) and then maintains the battery's charge.

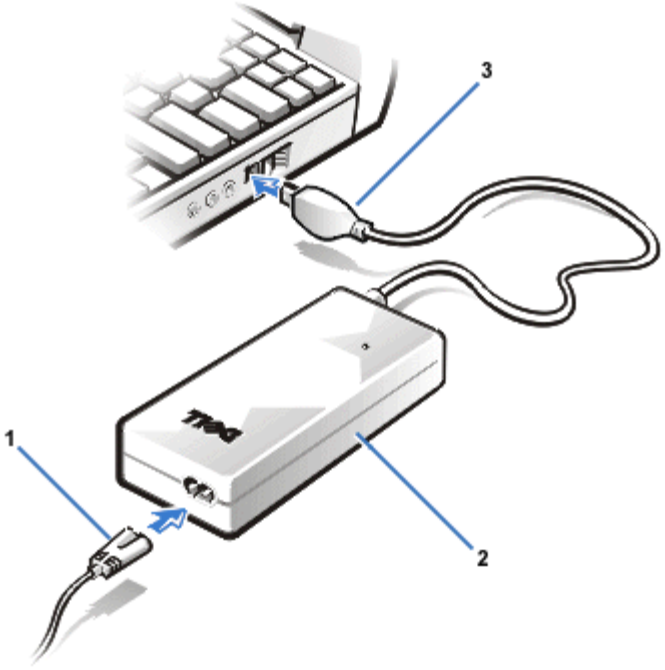
CAUTION: The AC adapter should be in a ventilated area, such as on a desktop or on the floor, when used to power the computer or charge the battery. Do not use the AC adapter in a poorly ventilated environment, such as inside a carrying case.

Connecting the AC Adapter

To connect the AC adapter, perform the following steps:

1. Connect the AC power cable to the AC adapter (See Figure 1).
2. Plug the AC adapter cable into the AC adapter connector on the computer.
3. Plug the AC power cable into an AC power source.

Figure 1. Connecting the AC Adapter



Back to Contents Page

Back to Contents Page

Batteries: Dell™ Latitude™ CPi A-Series System User's Guide

About the Batteries | Charging a Hot Battery | Battery Usage | Installing a Battery | Battery Charge Gauge | First Low-Battery Warning | Second Low-Battery Warning | Charging the Battery | Detecting Battery Problems | Battery Disposal | About Battery Power

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About the Batteries

Your computer's lithium ion battery provides power when an AC power source is not available. A battery in the battery bay is standard with the computer. Lithium ion batteries are longer lived than conventional batteries and do not require replacement as often. To double battery life, install a second battery in the modular bay.

The lithium ion technology used in your computer's battery is significantly less hazardous to the environment than the lithium metal technology used in some other batteries (such as watch batteries). Spent batteries should not be placed with common household waste products. Contact local authorities for the location of a chemical waste collection program nearest you.

- You can expect 3 to 5 hours of battery life with a single fully charged battery and 6 to 10 hours of battery life with two fully charged batteries. Actual performance varies, depending on which power management features are enabled and which application programs are being using.
- When two batteries are installed, the computer draws power first from the battery in the modular bay. The AC adapter first charges the battery in the battery bay.
- The built-in charge gauge lets you check a battery's charge before you insert it into the computer.
- The battery's self-test capability alerts you to battery conditions such as low charge.
- There is no battery memory effect with lithium ion batteries—you can charge the battery whenever you like without fear of reducing its charge capacity.
- A battery has a life span of up to 500 full charges and 2000 partial charges, provided it is charged at normal room temperature.

NOTE: The battery is designed to work with Dell Latitude CP Series computers only. Do not use the battery with other computers, and do not use batteries from other computers with the Dell Latitude CP Series.

Charging a Hot Battery

A hot battery will not charge when you connect the AC adapter to the computer. This safety feature is important because charging a hot battery shortens the battery's life span and may damage the battery and the computer.

The battery is too hot to start charging if the battery indicator flashes green and amber alternately. If this occurs, disconnect the computer from AC power and allow it and the battery to return to room temperature. Reconnect the computer to AC power and continue charging the battery.

If the computer is not allowed to return to room temperature, the battery stops charging before it reaches its full capacity.

Battery Usage

The battery is partially charged when you receive it. Dell recommends that you charge your battery to full capacity before using it to power the computer.

If you are powering the computer from a battery, try to conserve battery power. A number of factors affect battery operating time:

- **Power conservation features that you use**
- **Type of display and microprocessor your computer has**
- **Use of the CD-ROM drive**
- **Number and type of PC Cards and other external devices you use**
- **Kinds of application programs you run**
- **Capacity of the memory modules you install (the higher the capacity, the more power used)**
- **Use of the infrared port**

When you activate suspend or standby mode, the computer can run on battery power for about 9 days (if the battery was fully charged before activating suspend or standby mode). If two fully charged batteries are installed when you activate suspend or standby mode, the computer can run on battery power for about 18 days.

If you are going to store the computer, disconnect all peripheral devices and turn off the computer. Leave a fully charged battery in the computer. The battery should still power the computer for about 138 days.

Installing a Battery

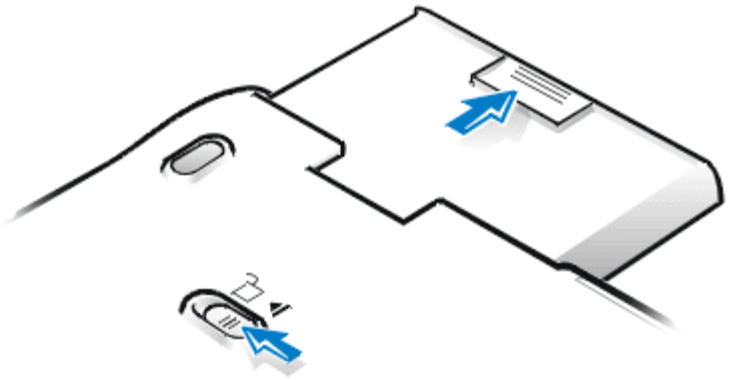
CAUTION: To avoid data loss, do not replace a battery while the computer is turned on unless the computer is connected to AC power or a second battery is installed.

To install a battery in the battery bay, perform the following steps.

NOTES: You can also install a battery in the modular bay.

If necessary, print these instructions for reference before proceeding.

Figure 1. Installing a Battery



1. Save your work. If the computer is docked, turn it off and undock it.
2. If there is a battery in the modular bay, go to step 4.
3. If the only battery in the computer is in the battery bay and that is the battery you want to replace, preserve your data in one of these ways and then proceed to step 4:
   - Connect the computer to AC power, and then continue with step 4.
   - Place the computer in suspend mode by pressing <FN><Esc> (or <Scroll Lock><Esc> on an external keyboard if the External Hot Key option is enabled in the System Setup program).
   - Place the computer in suspend-to-disk mode by pressing <FN><A> (or <FN><Q> on a French keyboard). When the green power indicator turns off, continue to step 4.
4. Remove the battery from the battery bay.

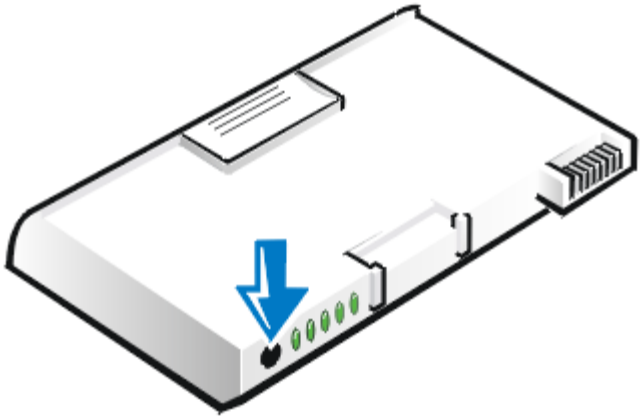
   Close the computer display and turn the computer over. Slide the battery bay latch toward the Unlock icon. Keep holding the latch with one hand while pulling the battery out of the bay with the other hand.
5. Release the latch.
6. Slide the new battery firmly into the battery bay. You should hear a click when the battery is fully seated.
7. If you put the computer into suspend mode or suspend-to-disk mode in step 3, press the power button to resume normal operation.

Battery Charge Gauge

The battery charge gauge consists of five indicators. Each indicator represents 20 percent of full charge. If only one indicator lights up, recharge the battery before using it.

To check the charge level, press the battery test button that is next to the indicators (see Figure 2). The appropriate number of indicators lights up for a few seconds to indicate the amount of charge remaining in the battery. For example, if three indicators light up, your battery has between 40 percent and 60 percent of its charge left.

Figure 2. Battery Charge Gauge



NOTES: An indicator that blinks rapidly when you check the battery's charge level indicates a temporary failure or a potentially recoverable failure like overheating. Allow the battery to cool for several minutes before checking the charge level again.

If the battery is experiencing a permanent failure, when you press the battery test button, you will see no indicators. If you install such a battery into the computer, the amber battery indicator on the computer flashes rapidly. To purchase a new battery, call Dell or access the Dell World Wide Web server at ***http://www.dell.com/****. Dispose of the old battery properly.*

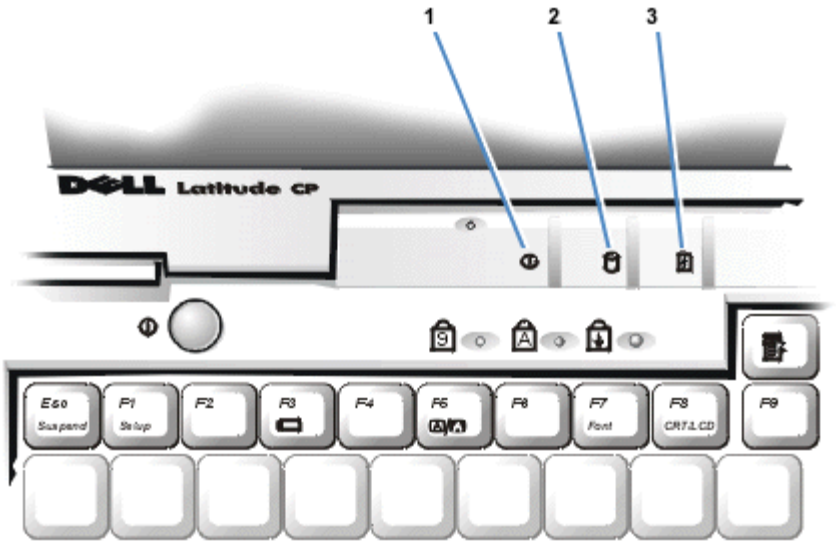
Percentage of Charge

- **If one indicator lights up, the battery has 1 to 20 percent of its charge remaining.**
- **If two indicators light up, the battery has 21 to 40 percent of its charge remaining.**
- **If three indicators light up, the battery has 41 to 60 percent of its charge remaining.**
- **If four indicators light up, the battery has 61 to 80 percent of its charge remaining.**
- **If five indicators light up, the battery has 81 to 100 percent of its charge remaining.**

First Low-Battery Warning

The first low-battery warning—a blinking amber battery indicator—occurs when you have about 15 minutes of battery life left under current conditions and the computer is not connected to AC power. Figure 3 shows the battery indicator.

Figure 3. Status Lights



1 Power indicator
2 Drive access indicator
3 Battery indicator

CAUTION: When you see a low-battery warning, save your work immediately. Then replace the battery or connect your computer to AC power.

After the first low-battery warning, if no input/output (I/O) activity occurs within 75 seconds, the computer activates suspend-to-disk mode. If the computer has no suspend-to-disk partition, the computer enters suspend mode. The computer can preserve data for several hours in suspend mode.

If you have set the computer to enter suspend-to-disk mode after a certain amount of time with no I/O activity, the computer enters suspend-to-disk mode before sounding the final low-battery warning. Once suspend-to-disk mode is activated, no further power is consumed.

CAUTION: Never turn off the computer while the drive access indicator is on. Doing so could cause data loss. Instead, close all of your applications before turning off the computer.

Second Low-Battery Warning

The second low-battery warning—a steady amber battery indicator—occurs when you have about 5 minutes of battery life left under current conditions and the computer is not connected to AC power.

After the second low-battery warning, if no further I/O activity occurs within 15 seconds, the computer activates suspend-to-disk mode. If there is no suspend-to-disk partition, the computer enters suspend mode. The computer can preserve data for several hours in suspend mode.

If the computer is already in suspend mode when a final low-battery warning occurs, the computer activates suspend-to-disk mode immediately. If suspend-to-disk mode has been disabled, the computer reenters suspend mode.

CAUTION: To avoid losing data (and possibly corrupting data areas on your hard-disk drive), save your work immediately after a second low-battery warning. Then connect your computer

to AC power, or place the computer in suspend mode. If the battery runs completely out of power, the computer shuts off without properly closing any open files.

Charging the Battery

Each time you connect the computer to AC power or install a battery in a computer that is connected to AC power, the computer checks the battery's charge. The AC adapter charges the battery (if needed) and then maintains the battery's charge.

NOTE: For maximum battery performance, charge the battery only at normal room temperature.

If two batteries are installed in the computer, the AC adapter first charges the battery in the battery bay, then the battery in the modular bay.

When installed in a computer connected to AC power, the battery immediately starts charging. The green power indicator remains steady while the AC adapter charges the battery. The indicator starts blinking when the express charge cycle is complete. While the indicator is blinking, the AC adapter provides a trickle charge to bring the battery to full capacity. The indicator continues to blink until you remove the battery or disconnect the computer from AC power.

CAUTION: If the battery indicator flashes alternately green and amber while the computer is connected to AC power, disconnect the computer from AC power and allow it and the battery to return to room temperature. Then reconnect the computer to AC power and continue charging the battery. If the computer is not allowed to return to room temperature, the battery stops charging before it reaches full capacity.

If the computer is turned off, it takes the AC adapter about 1 hour to fully charge a battery that has been completely discharged. If the computer determines that the battery is near full capacity, the AC adapter skips the express charging process and starts trickle-charging the battery. If the computer is on, it takes up to 2.5 hours to charge a fully discharged battery, depending on which devices you are using and which programs you are running.

NOTE: You can leave the battery in the computer as long as you like. The battery's built-in circuitry prevents the battery from overcharging.

Detecting Battery Problems

A battery problem may prevent the battery from being charged to its full potential and can lead to unpredictable operation. To obtain a new battery, call Dell or access the Dell World Wide Web site at http://www.dell.com.

- **If the battery indicator flashes alternately green and amber, the battery is too hot to charge. Turn off the computer, and let the battery and computer cool to room temperature.**
- **If the battery indicator flashes amber for 4 seconds when you connect or disconnect the AC adapter or when you press the power button, you need to replace the battery.**
- **To avoid installing a defective battery, check the battery gauge before installing a battery in the computer.**

Battery Disposal

When your battery no longer holds a charge, call your local waste disposal agency or environmental agency for advice on disposing of the computer's lithium ion battery.

CAUTION: Do not puncture or incinerate the battery.

NOTES: The lithium ion technology used in your computer's battery is significantly less hazardous to the environment than the lithium metal technology used in some other batteries (such as watch batteries).

*This computer is supplied with a lithium ion battery. Lithium ion batteries are longer lived than conventional batteries and do not require replacement as often. Spent batteries should not be placed in common household waste products. Contact local authorities for the location of a chemical waste collection program nearest you. To purchase a new battery, call Dell or access the Dell World Wide Web site at **http://www.dell.com/**.*

About Battery Power

You automatically conserve battery power each time you attach an AC power source to the computer. The battery is even being recharged when you use AC power. The battery's life expectancy is largely determined by the number of charges it receives, so use an AC power source to run the computer whenever possible.

You can customize power management by individually controlling the computer's power conservation features. These features reduce power consumption by monitoring application programs and computer devices for inactivity and slowing down or stopping some of the computer's internal devices.

NOTES: When you use power conservation features, you often trade some of the performance of the computer for increased battery operating time. For example, if you turn off the hard-disk drive, you may experience a delay the next time the computer tries to access the hard-disk drive.

Other power conservation features, such as suspend mode, stop almost all system activity. They allow you to maximize power conservation when your work is interrupted.

Experiment with power conservation features to achieve the optimum power conservation for your work environment.

Back to Contents Page

Back to Contents Page

CD-ROM Drive: Dell™ Latitude™ CPi A-Series System User's Guide

Using the CD-ROM Drive | Caring for CDs | Types of Supported Discs

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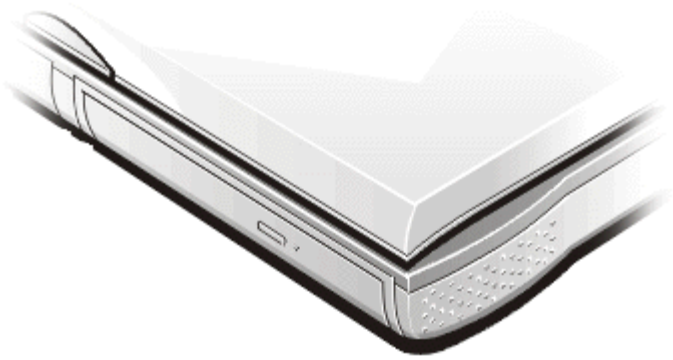
Using the CD-ROM Drive

The CD-ROM drive is a read-only device that lets you play most commercially available 8- or 12-centimeter (cm) sound and video CDs on the computer. Dell installed the appropriate CD-ROM drive device drivers on your hard-disk drive.

Use the CD-ROM drive in the computer's modular bay. The CD-ROM drive cannot be used externally. You must turn the computer off before installing the CD-ROM drive in the modular bay. For detailed instructions on installing devices in the modular bay, see Using the Modular Bay.

Figure 1. CD-ROM Drive



CAUTION: Protect the CD-ROM drive when it is not in the modular bay. Do not squeeze the drive or place objects on top of it; doing so could damage the drive motor. Keep the drive as clean as possible.

To play a CD, press the eject button on the face of the CD-ROM drive or press <FN><F10>. When the tray slides out, place the CD into the tray label side up. Make sure that the CD is seated correctly on the spindle. Then gently push in the tray.

CAUTION: If the CD is not seated correctly, the CD or the CD-ROM drive can be damaged. Center the CD over the spindle. Then gently press the CD down on both sides of the spindle until the CD snaps into place.

CAUTION: Do not use the CD-ROM drive while the computer is in motion. Doing so could interrupt the flow of data between the CD-ROM drive and the hard-disk drive or diskette drive.

When the CD-ROM drive is in use, the drive access indicator blinks on the computer's front panel.

If you are using the Microsoft® Windows® 95 or Windows 98 operating system, disable the autoplay feature while you use the CD-ROM drive. (The autoplay feature can interfere with the computer's power management functions.) If Dell installed the operating system, the autoplay feature has been disabled. If you

reinstall the operating system or if you installed it yourself, be sure to disable the autoplay feature if you want to use the CD-ROM drive.

See the operating system user's guide for instructions on changing the **Auto Insert Notification** option.

Caring for CDs

- Never use a damaged or warped CD.
- Always hold the CD by its edges. Do not touch the surface of the disc.
- Use a clean, dry cloth to remove dust, smudges, or fingerprints from the surface of the CD. When cleaning, wipe from the center of the CD to the edge.
- Never use solvents, such as benzene, record cleaners, or antistatic sprays, to clean the CD.
- Do not write on the surface of the CD.
- Store CDs in their containers, placing them in a cool, dry place. Extreme temperatures may damage CDs.
- Do not bend or drop a CD.
- Do not place objects on top of a CD.

Types of Supported Discs

- CD-ROM red-book audio discs (CD-DA)
- CD-ROM yellow-book mode-1 and mode-2 data discs
- CD-ROM XA (mode-2 form 1 and form 2; without Adaptive Differential Pulse Code modulation [ADPCM])
- CD-I (mode-2 form 1 and form 2)
- CD-I Ready
- CD-Bridge
- Photo CD, CD-R (single and multisession)
- Video CD
- CD-RW (the 24x CD-ROM drive supports CD-RW)

Back to Contents Page

Back to Contents Page

Display: Dell™ Latitude™ CPi A-Series System User's Guide

Adjusting the Brightness | Expanded Video Mode | Video Drivers and Video Resolution | Customizing Video Resolution | Dual-Display Mode | If You Have Display Problems

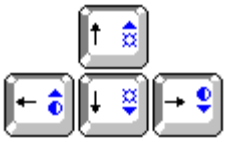
---

Adjusting the Brightness

To accommodate local lighting conditions or video output from the software you are using, you can use the key combinations shown in Table 1.

NOTE: When running the computer on battery power, set your computer's brightness control to the lowest setting that affords comfortable viewing. You can conserve up to 10 percent of battery power by using the minimum brightness setting.

Table 1. Brightness Key Combinations and Their Functions



Key Combinations	Function
<FN> + down arrow	Decreases brightness
<FN> + up arrow	Increases brightness
<FN> + right arrow	Decreases contrast on the Latitude CP family (has no effect on an active-matrix display)
<FN> + left arrow	Increases contrast on the Latitude CP family (has no effect on an active-matrix display)

NOTES: Contrast cannot be changed on an active-matrix (thin film transistor [TFT]) display.

*To use key combinations on an external keyboard, enable the **External Hot Key** option in the System Setup program and use <Scroll Lock> instead of <FN>.*

Expanded Video Mode

When working in text mode, you can select the font used to display text. Press <FN><F7> to toggle between a regular serif font and a serif font with extra leading. Expanded video mode is useful if you are working in resolutions of 640 x 480 pixels or lower and using a 12.1-inch super video graphics array (SVGA) or 13.3-inch extended graphics array (XGA) display, or if you are working in a resolution of 800 x 600 pixels and using a 13.3-inch XGA display.

NOTE: You may have trouble using the display fonts feature with MS-DOS® programs that use downloaded fonts.

Video Drivers and Video Resolution

The Dell-installed video drivers work with the operating system to let you customize the video resolution, number of screen colors, and refresh rate of your display.

NOTE: The Dell-installed video drivers are designed to offer the best performance on your computer. Dell recommends that you use only these drivers with your factory-installed operating system.

Table 2 lists the combinations of resolutions and colors that the computer supports.

Table 2. Combinations of Resolutions and Colors Supported

Resolution	**Colors**		
640 x 480	256	High Color (16-bit)	True Color (24-bit)
800 x 600	256	High Color (16-bit)	True Color (24-bit)
1024 x 768	256	High Color (16-bit)	True Color (24-bit)
1280 x 1024*	256	High Color (16-bit)	True Color (24-bit)

** External monitor only*

To display more colors, select a lower resolution. If you select a resolution and color combination that the system does not support, the system automatically selects the next supported combination.

The video adapter inside your computer supports higher resolutions if you are using an external monitor is attached to the computer. Check the documentation that came with the monitor to determine which resolutions the monitor can display.

Customizing Video Resolution

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

   The Control Panel window appears.

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

   The Display Properties window appears.

3. Click the **Settings** tab, and then set the resolution by dragging the slider in the **Desktop Area** box. In the **Color Palette** box, choose the number of colors from the menu provided. See your operating system documentation for more information.

If you choose a resolution or color palette higher than the display supports, the settings adjust automatically to the closest possible setting.

4. To change the refresh rate, click the **NeoMagic** tab, and then follow the instructions on your display.

*NOTE: You can adjust the refresh rate only on an external monitor. If the **NeoMagic** tab is inactive, it means that your external monitor adjusts the refresh rate automatically.*

Dual-Display Mode

With the Microsoft® Windows® 98 operating system, you can use an external monitor as an extension of your built-in display. To set up your computer for dual-display mode, perform the following steps,

1. Attach the external monitor.
   See Connecting an External Monitor.
2. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
3. In the **Control Panel** window, double-click the **Display** icon.
4. In the **Display Properties** window, click the **Settings** tab.
5. Change the **Color palette** option to **256 Color** or **High Color (16 bit)**.
6. Change the **Desktop area** to **800 by 600 pixels**.
7. Click the **NeoMagic** tab.
8. Select the **Set Dual-Display** checkbox and click **Apply**.
9. Click **Yes** when prompted to restart your system.
10. When the system has restarted, reopen the **Display** icon in the **Control Panel**.
11. Click the **Settings** tab.
    Two displays now appear in this window.
12. Click the display that is greyed out. When asked if you want to enable this display, click **Yes**, and then click **Apply**.

If You Have Display Problems

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

1. If the display is blank, you may be in suspend or standby mode. Press the power button to resume from suspend mode or standby mode. If the display is blank and the power light-emitting diode (LED) is on, the display may have timed out. In this case, press any key on the built-in keyboard to resume normal operation.
2. If the low-battery light is blinking, connect the AC adapter to the computer or replace the battery.
3. Adjust the brightness or contrast.
4. If your computer is attached to an external monitor, press <FN><F8> to switch the video image to the display.

Back to Contents Page

Back to Contents Page

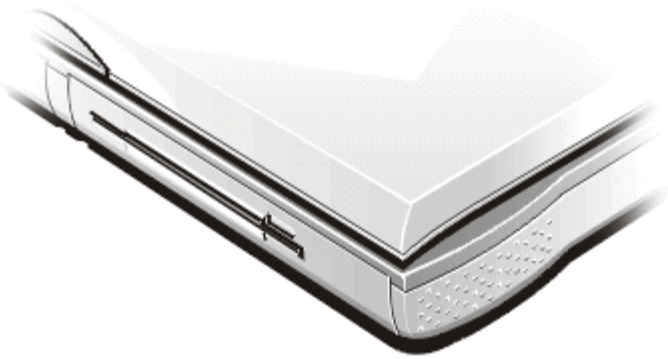
Diskette Drive: Dell™ Latitude™ CPi A-Series System User's Guide

Your computer was shipped with a 3.5-inch diskette drive (see Figure 1) in the modular bay. To use another device in the modular bay, first remove the diskette drive. For detailed instructions on installing devices in the modular bay, see Using the Modular Bay.

NOTE: If the computer is docked to the C/Port Advanced Port Replicator (APR) or the C/Dock Expansion Station, turn off the computer and undock it before installing or removing a diskette drive.

The diskette drive lets you install programs and transfer data using 3.5-inch diskettes.

Figure 1. Diskette Drive



To use the diskette drive, insert a 3.5-inch diskette into the drive (label side up and metal end first). Push the diskette into the drive until the eject button extends outside the drive casing.

CAUTION: Do not travel with a diskette in the diskette drive. Doing so could break the eject button and damage the drive.

To remove a diskette from the drive, press the eject button to release the diskette, and then pull the diskette out of the drive.

When data is being accessed from the diskette drive in the modular bay, the drive access indicator blinks.

*NOTE: The diskette drive can be used externally by connecting it to the parallel connector on the back of the computer. If the **Diskette Reconfig** option is enabled in the System Setup program, you do not have to reboot the computer when you connect the diskette drive to the parallel connector.*

Back to Contents Page

Back to Contents Page

Keyboard: Dell™ Latitude™ CPi A-Series System User's Guide

Embedded Numeric Keypad | Display Key Combinations | Power Conservation Key Combinations | Processing Speed Key Combinations | Speaker Key Combinations | System Function Key Combinations | CD-ROM Drive Key Combinations

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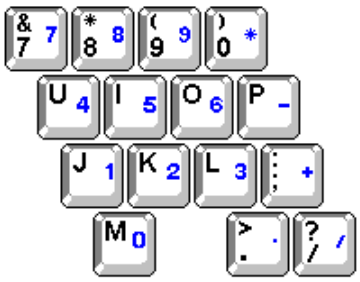
Embedded Numeric Keypad

As you work, you may want to use the embedded numeric keypad (see Figure 1) to enter numbers in spreadsheet or financial programs. The embedded numeric keypad shares some of the keys on your computer's keyboard. The number and symbol characters are marked to the right on these keys; the cursor-control functions are marked on the front of these keys. To activate the embedded numeric keypad, press <Num Lk> (the **Num Lock** indicator lights up).

Figure 1. Embedded Numeric Keypad



Some key combinations can be used whether the keypad is off or on.

*NOTE: On an external keyboard, use <Scroll Lock> with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 1. Embedded Numeric Keypad Key Combinations

When Keypad Is On	**Function**
<Num Lk>	Toggles the embedded numeric keypad off
<FN><*key*>	Temporarily disables the embedded numeric keypad; enables the lowercase characters/functions of the keyboard
<FN><Shift><*key*>	Temporarily disables the embedded numeric keypad; enables the uppercase characters/functions of the keyboard
<Shift><*cursor key*>	Temporarily enables a cursor-control key in the embedded numeric keypad
When Keypad Is Off	**Function**
<Num Lk>	Toggles the embedded numeric keypad on
<FN><*cursor key*>	Temporarily enables a cursor-control key in the embedded numeric keypad
<FN><Shift><*number key*>	Temporarily enables a number or symbol key in the embedded

numeric keypad

Display Key Combinations

*NOTE: On an external keyboard, use <Scroll Lock> with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 2. Display Key Combinations

Key Combinations	Function
<FN><Down Arrow>	Incrementally decreases brightness.
<FN><Up Arrow>	Incrementally increases brightness.
<FN><Right Arrow>	Incrementally decreases contrast (no effect on an active-matrix display).
<FN><Left Arrow>	Incrementally increases contrast (no effect on an active-matrix display).
<FN><F5>	Toggles the computer's display between regular video mode and reverse video mode (white on black). This key combination works only if the computer is in text mode; it has no effect if the computer is running a graphical operating system or application program.
<FN><F7>	Toggles the computer’s display between expanded mode and regular video mode.
<FN><F8>	Switches the video image to the next display in the following sequence: the built-in display, an external monitor, or both displays simultaneously.
<FN><D>	Turns off the built-in display.*

** This key combination does not function with Advanced Configuration and Power Interface (ACPI).*

Power Conservation Key Combinations

*NOTE: On an external keyboard, use <Scroll Lock> with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 3. Power Conservation Key Combinations

Key Combinations	Function
<FN><D>	Turns off the built-in display*
<FN><H>	Turns off the hard-disk drive*
<FN><Esc>	Activates suspend or standby mode.
<FN><A> or <FN><Q> on French keyboards	Activates suspend-to-disk mode*

** This key combination does not function with ACPI.*

Processing Speed Key Combinations

*NOTE: On an external keyboard, use <Scroll Lock> with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 4. Processing Speed Key Combinations

<FN><\>	Switches between the microprocessor's maximum speed and a slower compatibility speed
<Ctrl><\>	In full MS-DOS mode or in a full-screen DOS box, switches between the microprocessor’s maximum speed and a slower compatibility speed

Speaker Key Combinations

*NOTE: On an external keyboard, use <Scroll Lock> with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 5. Speaker Key Combinations

Key Combinations	Function
<FN><Page Up>	Increases the volume of the built-in speakers and the external speakers, if attached
<FN><Page Dn>	Decreases the volume of the built-in speakers and the external speakers, if attached
<FN><End>	Enables and disables the built-in speakers and the external speakers, if attached

System Function Key Combinations

*NOTE: On an external keyboard, use Scroll Lock with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 6. System Function Key Combinations

Key Combinations	Function
<Ctrl><Alt><Delete>	Restarts (reboots) the computer in MS-DOS mode. In the Microsoft® Windows® 95, Windows 98, and Windows NT® operating systems, click the **Start** button and click **Shut Down**.
<FN><F1>*	Opens the System Setup program.
<FN><F3>	Opens the **Battery Status** screen of the System Setup program.

** This key combination does not function with ACPI.*

CD-ROM Drive Key Combinations

*NOTE: On an external keyboard, use <Scroll Lock> with the appropriate keys if the **External Hot Key** option is enabled in the System Setup program.*

Table 7. CD-ROM Drive Key Combination

Key Combinations	Function
<FN><F10>	Ejects the CD tray

Back to Contents Page

Back to Contents Page

PC Cards: Dell™ Latitude™ CPi A-Series System User's Guide

About PC Cards | Installing PC Cards | Removing PC Cards

About PC Cards

The computer has a slot into which you can install up to two PC Cards if the PC Cards comply with Release 2.01 of the Personal Computer Memory Card International Association (PCMCIA) standard and Release 4.2 of the Japanese Electronic Industry Development Association (JEIDA) standard.

The computer supports type I, type II, and type III PC Cards (including such memory devices as static random-access memory [SRAM] cards that emulate diskettes, random-access memory [RAM] cards, and one-time programmable [OTP] ROM cards), and advanced technology attachment (ATA) cards that emulate integrated drive electronics (IDE) hard-disk drives. Also supported are input/output (I/O) cards such as modems, local area network (LAN) cards, wireless LAN cards, and small computer system interface (SCSI) cards.

If you are using the Microsoft® Windows® 95 or Windows 98 operating system, you can use a zoomed video (ZV) PC Card only in the upper PC Card connector. (Microsoft Windows NT® 4.0 does not support ZV.)

NOTES: A PC Card is not a boot device. The "type" of a card refers to its thickness, not its functionality. Your computer recognizes most I/O cards and automatically loads the device driver associated with that card.

CAUTION: Take extra precautions if you use extended PC Cards in your computer. Extended cards are longer versions of standard PC Cards. They fit into, and operate correctly with, your computer. However, they extend beyond the edge of the computer when installed. If something strikes the exposed end of an installed card, your system board can be damaged. Because of space considerations, you may have trouble using two PC Cards in your computer if one of them is an extended card. It may be easier to use an extended card if you install it in the top PC Card connector. Always remove an extended PC Card before you pack the computer in its carrying case.

Installing PC Cards

You can use the following PC Card combinations in the PC Card slots:

- A single type I or type II card (using either the upper or lower PC Card connector)
- A single type III card (using only the lower PC Card connector only)
- One type I card and one type II card (using either connector)
- Two type I cards or two type II cards

Note: Use a ZV PC Card in the upper connector only.

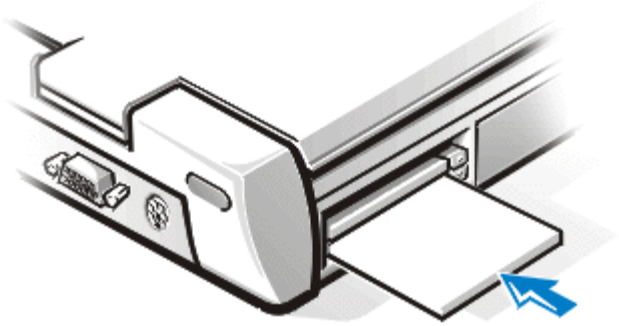
PC cards are generally marked with a symbol, such as a triangle or an arrow, to indicate which end should be inserted into the slot. The cards are keyed to prevent incorrect insertion. If card orientation is not clear,

see the documentation that came with the card.

You do not need to turn off your computer or exit suspend or standby mode before you install a PC Card. To install a PC Card (see Figure 1), perform the following steps:

1. If necessary, remove the blank from the connector you intend to use.
2. Hold the card with its orientation symbol pointing into the slot and the top side of the card facing up.
3. Insert the card into the slot, and press in firmly until the card is completely seated in the internal PC Card connector.
4. If there is too much resistance when inserting it, do not force the card. Check the card's orientation and try again.

Figure 1. Installing a PC Card



PC Card Blanks

Save the blank to use whenever you do not have a PC Card installed. The blank protects the PC Card connector from dust and other particles.

Removing PC Cards

CAUTION: If you are using Windows 95 or Windows 98, use the PC Card configuration utility on the taskbar to select and stop a card before you remove it. If you do not remove the card in the configuration utility, you could lose data from open software applications.

CAUTION: In Windows NT, close all applications that use the PC Card before you remove it. If you receive a message that the card is not supported in Plug and Play mode, shut down the computer before you remove the PC Card.

To remove a PC Card (see Figure 2), perform the following steps:

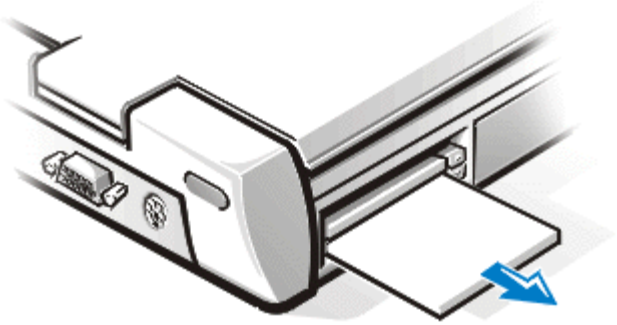
1. Press the PC Card eject button.

   NOTE: Use a pen tip or other small instrument to press the eject button. The button has a small recessed area designed to keep the pen tip from slipping.

2. When the eject button slides out, press it again to release the card.
3. Gently remove the card.
4. Press the PC Card eject button until it is flush with the computer casing.

CAUTION: The PC Card eject button can be damaged if left in the "out" position. If you accidentally press the PC Card eject button, remove and reinstall the PC Card immediately to make sure the button stays flush with the computer case.

Figure 2. Removing a PC Card



To protect the PC Card connectors, install a blank if you are not going to use the connector.

Configuring PC Cards

The PC Card configuration utility performs the following functions:

- Notifies you whenever a PC Card is inserted and tells you how the card is configured
- Automatically loads the proper device driver if it is available on the hard-disk drive
- If drivers are not available on the hard-disk drive, prompts you to install them using the device driver diskette that came with the card

The operating system automatically detects a PC Card and opens the **Add New Hardware** menu from the **Control Panel**. See the PC Card operating system documentation for information.

Back to Contents Page

Back to Contents Page

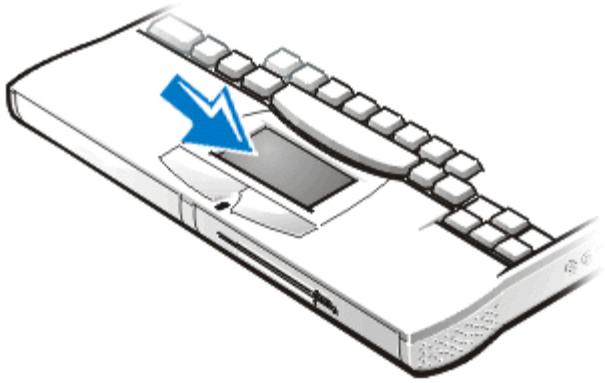
Touch Pad: Dell™ Latitude™ CPi A-Series System User's Guide

Using the Touch Pad | Customizing the Touch Pad

Using the Touch Pad

The Personal System/2 (PS/2) touch pad (see Figure 1) detects the position of your finger over a touch-sensitive area and provides the computer full mouse functionality. The touch pad's two buttons correspond to the left and right buttons on a standard mouse.

Figure 1. PS/2 Touch Pad



- To move the cursor, lightly slide your finger over the smooth sensor area.
- To select an object, gently tap once on the surface of the touch pad.
- To select and move (or drag) an object, position the cursor on the object and tap down-up-down on the touch pad. On the second down motion, leave your finger on the touch pad and move the selected object by sliding your finger across the surface.
- To double-click an object, position the cursor on the object and then tap twice.

NOTES: When enabled, the touch pad uses interrupt request (IRQ) 12. No other device can use IRQ12 while the touch pad is enabled.

When an external PS/2 mouse is attached to the computer, the touch pad is automatically disabled.

Customizing the Touch Pad

To customize the touch pad, perform the following steps:

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

You can also click the touch pad icon on the taskbar to open the **Mouse Properties** control panel.

Back to Contents Page

Back to Contents Page

Securing Your Computer: Dell™ Latitude™ CPi A-Series System User's Guide

About Passwords | Using a Primary Password | Using an Adminstrator Password | Using a Hard-Disk Drive Password | Physically Securing the Computer and the Hard-Disk Drive | Asset Tag Utility

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About Passwords

A primary password prevents unauthorized access to the computer at start-up. An administrator password can be used in place of the primary password. A hard-disk drive password helps prevent the unauthorized access of data on the hard-disk drive, even when the device is placed into another computer.

NOTES: All three passwords are disabled when you receive your computer. You need to assign those passwords if you require password security for your computer. Some companies may assign any or all of these passwords before distributing the computer.

If you are using the Microsoft® Windows NT® operating system, use the System Setup program to assign all passwords.

CAUTION: The password features provide a high level of security for the data in your computer or hard-disk drive. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs or PC Cards with encryption features.

If you forget any of your passwords, call Dell. For your protection, Dell's technical support staff will ask you for proof of your identity to make sure that an unauthorized person is not trying to use the computer.

Using a Primary Password

The primary password allows you to protect the computer from unauthorized access.

After assigning a primary password, you must enter it each time you turn on your computer. The following message appears each time you turn on the computer:

```
Please type in the primary or administrator password and press <Enter>.
```

To continue, type your password and press <Enter>.

NOTE: If no password is entered within 2 minutes, the computer returns to its previous state.

If you have assigned an administrator password, you can use it instead of the primary password. The computer does not specifically prompt you for the administrator password.

CAUTION: Disabling the administrator password also disables the primary password.

Using an Administrator Password

The administrator password is designed to give system administrators or service technicians in large companies access to computers for repair or reconfiguration. The administrators or technicians can assign identical administrator passwords to groups of computers as they are unpacked and configured, leaving the primary password free to be assigned by the user.

When an administrator password is set, the System Setup program automatically enables the **Configure Setup** option, which lets you restrict access to the System Setup program in the same way a system password restricts access to the system.

The administrator password can be used in place of the primary password. Whenever you are prompted to enter the primary password, you can enter the administrator password instead.

NOTE: The administrator password provides access to the system, but it does not provide access to the hard-disk drive when it is protected by a password.

If you forget the primary password and do not have an administrator password assigned, or if you have both a primary and an administrator password assigned but forget them both, call Dell.

CAUTION: Disabling the administrator password also disables the primary password.

Using a Hard-Disk Drive Password

The hard-disk drive password helps protect the data on your hard-disk drive from unauthorized access. You can also assign a password for the modular hard-disk drive (if one is being used) that can be the same as or different from the password for the primary hard-disk drive.

NOTE: Only hard-disk drives purchased from Dell for use with the Latitude CP Series systems support the hard-disk drive password option.

After assigning a hard-disk drive password, you must enter it each time you turn on the computer and each time you resume normal operation from suspend mode or standby mode.

If the hard-disk drive password is enabled, the following message appears each time you turn on the computer:

```
Please type in the hard-disk drive password and press <Enter>.
```

To continue, enter the hard-disk drive password. Press <Esc> to return the computer to its previous state—suspend or standby mode.

NOTE: If no password is entered within 2 minutes, the computer returns to its previous state.

If you enter the wrong password, the following message appears:

```
Invalid password
[Press Enter to retry]
```

If the correct password is not entered in three attempts, the computer tries to boot from another bootable device if the **Boot First Device** option in the System Setup program is set to allow it. If the **Boot First Device** option is not set to allow booting from another device, the computer returns to the state it was in when you turned it on—suspend or standby mode.

NOTES: If the hard-disk drive password, the modular hard-disk drive password, and the primary password are the same, you are prompted only for the primary password. If the hard-disk drive password is different from the primary password, you are prompted for both. Two different passwords provide greater security.

The administrator password provides access to the system, but it does not provide access to the hard-disk drive when it is protected by a password.

Physically Securing the Computer and the Hard-Disk Drive

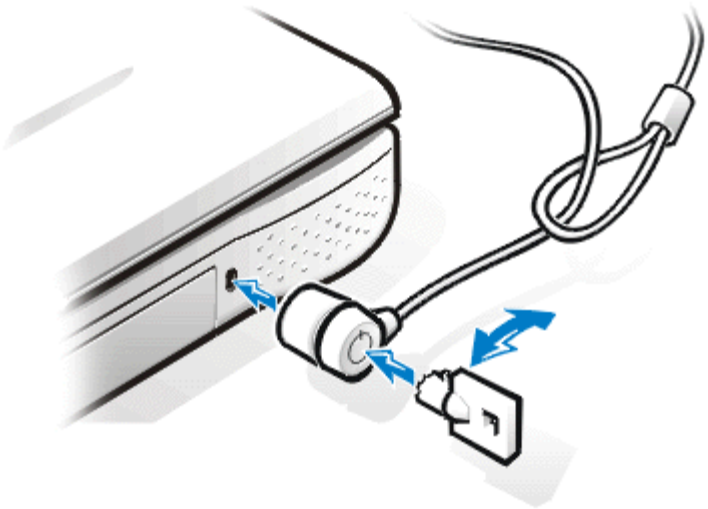
To prevent unauthorized removal of the computer, you can use a security cable to attach the computer to an immovable object. The same mechanism can be used to lock your hard-disk drive to the computer.

The security cable slot lets you attach a commercially available antitheft device to the computer and hard-disk drive. Antitheft devices for portable computers usually include a segment of metal-stranded cable with an attached locking device and associated key. Complete instructions for installing this kind of antitheft device are usually included with the device.

To prevent unauthorized removal of the hard-disk drive, insert the locking device into the security cable slot on the hard-disk drive panel, and lock the device with its associated key.

To prevent unauthorized removal of your computer, loop the cable around an immovable object, insert the locking device into the security cable slot, and lock the device. See Figure 1 for an example of how to secure your computer.

Figure 1. Securing the Computer



NOTE: Antitheft devices are of differing designs. Before purchasing such a device, make sure it will work with the security cable slot in your computer.

Asset Tag Utility

The Asset Tag utility allows you to enter an asset tag number that you or your company assigns to the computer. The default System Setup screens do not show the asset tag number unless you enter one using this utility.

You can also use the Asset Tag utility to enter an owner tag that appears in the system log-on screen and with the primary password prompt.

To view existing asset tag and service tag numbers, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `asset` and press <Enter>.

Assigning and Deleting an Asset Tag Number

An asset tag number can have up to ten characters; any combination of characters excluding spaces is valid. To assign or change an asset tag number, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `asset` and a space followed by the new number.
3. Press <Enter>.
   For example, type the following command line and press <Enter>:

   ```
   asset 1234$ABCD&
   ```

4. When the system prompts you to verify the asset tag number, type `y` and press <Enter>.

   The system displays the new or modified asset tag number and the service tag number.

To delete the asset tag number without assigning a new one, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `asset /d` and press <Enter>.

Assigning and Deleting an Owner Tag

An owner tag can have up to 80 characters; any combination of letters, numbers, and spaces is valid. To assign an owner tag, peform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `asset /o` and a space followed by the new owner tag.
3. Press <Enter>.
   For example, type the following command line and press <Enter>:

   ```
   asset /o ABC Company
   ```

4. When the system prompts you to verify the owner tag, type `y` and press <Enter>.

The system displays the new owner tag.

To delete the owner tag without assigning a new one, perform the following steps:

1. Click the **Start** button, point to **Programs**, and click **MS-DOS Prompt**.
2. Type `asset /o /d` and press <Enter>.

NOTE: For security, you cannot set, change, or delete the owner tag if the primary or administrator passwords are set.

Table 1 lists the command-line options you can use with the Asset Tag utility. To use one of these options, open an MS-DOS prompt, and then type `asset` and a space followed by the option.

Table 1. Asset Tag Utility Command-Line Options

Asset Tag Option	Description
`/d`	Deletes the asset tag number
`/o <tag>`	Specifies a new owner tag
`/o /d`	Deletes the owner tag
`/?`	Displays the Asset Tag utility help screen

Back to Contents Page

Back to Contents Page

Connecting External Devices: Dell™ Latitude™ CPi A-Series System User's Guide

Connector Illustration | Audio | Keyboard | Keypad | Mouse | Diskette Drive | Connecting an External Monitor | Using an External Monitor

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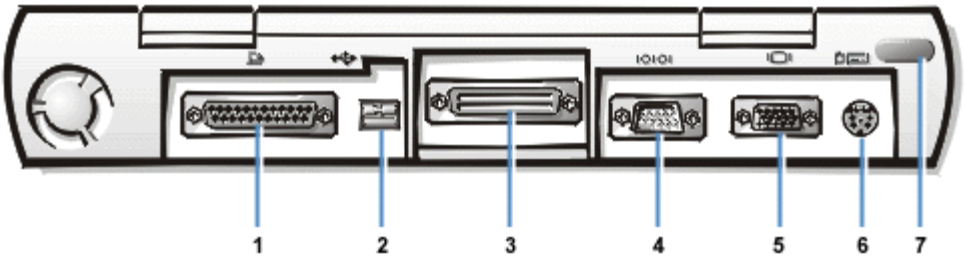
Connector Illustration

Use Figure 1 to locate the connectors on the back of the computer.

Figure 1. Connector Illustration



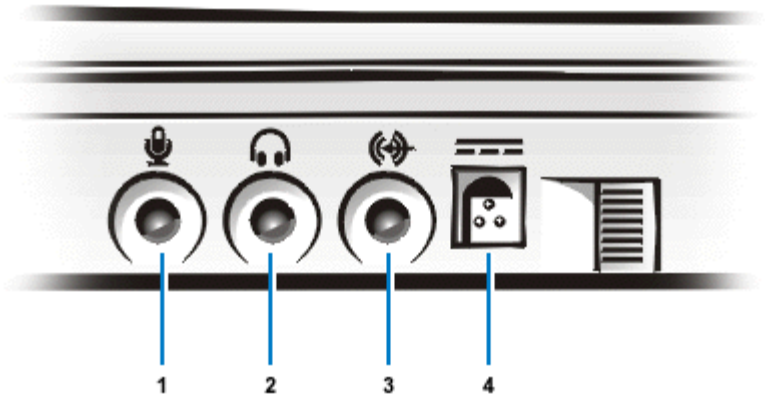
1	Parallel connector
2	USB connector
3	Docking connector
4	Serial connector
5	Video connector
6	PS/2 connector
7	Infrared port

Audio

You can connect audio devices such as speakers, microphones, headphones, and record/playback devices to your computer. The following information tells you how to connect the cables. Figure 2 shows the locations of the audio jacks.

- Connect the audio cable from a microphone to the microphone jack, also called the MIC IN jack.
- Connect the audio cable from the speakers to the headphones/speakers jack, also called the line-out/speaker-out jack.
- Connect the line-out cable from a record/playback device to the line-in/audio-in jack. Cassette players, CD players, radios, stereo systems, and tape players are all record/playback devices.

Figure 2. Connecting Audio Devices



1 Microphone (MIC IN)

2 Speakers and Headphones (line-out/speaker-out)

3 Record/Playback (line-out/audio-in)

4 AC adapter connector

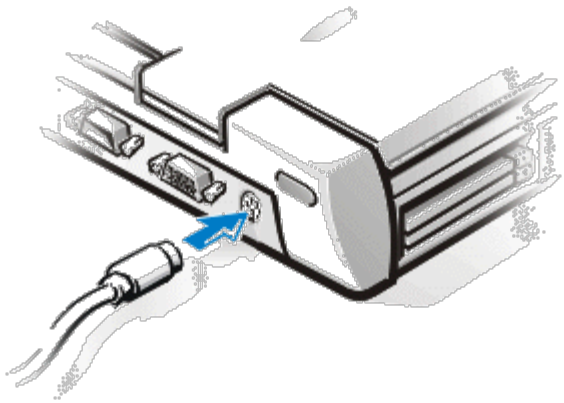
NOTE: The C/Port Advanced Port Replicator (APR) also has a headphones/speaker jack. The C/Dock Expansion Station has all three jacks.

You can control the sound on your computer through the **Dell Control Center Speaker** window, the System Setup program, and key combinations.

Keyboard

You can attach a Personal System/2 (PS/2)-compatible external 101- or 102-key keyboard to the computer's mini-Deutsche Industrie Norm (DIN) connector, as shown in Figure 3.

Figure 3. Attaching an External Keyboard



NOTE: If the computer is in suspend mode or suspend-to-disk mode when you attach an external keyboard, the device is recognized immediately by the computer when it resumes normal operation.

You can use the internal keyboard and an external keyboard at the same time. When you attach a keyboard to the computer, the embedded numeric keypad is automatically disabled.

On an external keyboard, the <Scroll Lock> key acts the same way as the <FN> key on the computer's built-in keyboard (if the **External Hot Key** option is enabled in the System Setup program).

You can also connect an external keyboard to the C/Port APR or the C/Dock Expansion Station.

Keypad

You can attach a PS/2-compatible external numeric keypad to the computer's mini-DIN keypad connector.

NOTE: If the computer is in suspend mode or suspend-to-disk mode when you attach an external keypad, the device is recognized immediately by the computer when it resumes normal operation.

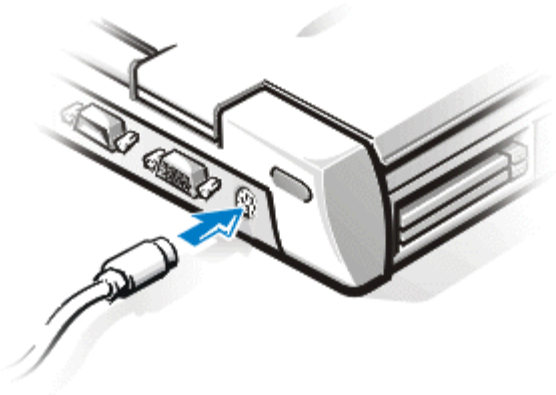
When you attach a numeric keypad to the computer, the embedded numeric keypad is automatically disabled. The indicators on the built-in keyboard track the operation of an external numeric keypad.

You can also connect an external keypad to the C/Port APR or C/Dock Expansion Station.

Mouse

You can attach a PS/2-compatible mouse to the computer's mini-DIN mouse connector, as shown in Figure 4.

Figure 4. Connecting an External Mouse



NOTE: If the computer is in suspend mode or suspend-to-disk mode when you attach an external mouse, the device is recognized immediately by the computer when it resumes normal operation. However, programs that were already running may need to be restarted in order to recognize the mouse.

The touch pad/mouse device drivers that Dell installed on your hard-disk drive work with a PS/2 mouse from Dell. If you did not receive your mouse from Dell, you must install device drivers in order to use the mouse. This software is usually included with mouse upgrade kits.

When you attach a PS/2 mouse to the computer, the touch pad is automatically disabled. If you disconnect the mouse, you must shut down the computer or enter suspend or standby mode and then resume from it before the touch pad is operational. If you do not do this, the touch pad resumes operation in standard PS/2 mode, which means that many of the configuration features are disabled.

If you are using a PS/2-compatible mouse that is not made by Microsoft and the mouse does not work properly, reboot the computer. If the mouse still does not work, install the drivers from the diskette that came with the mouse and reboot the computer.

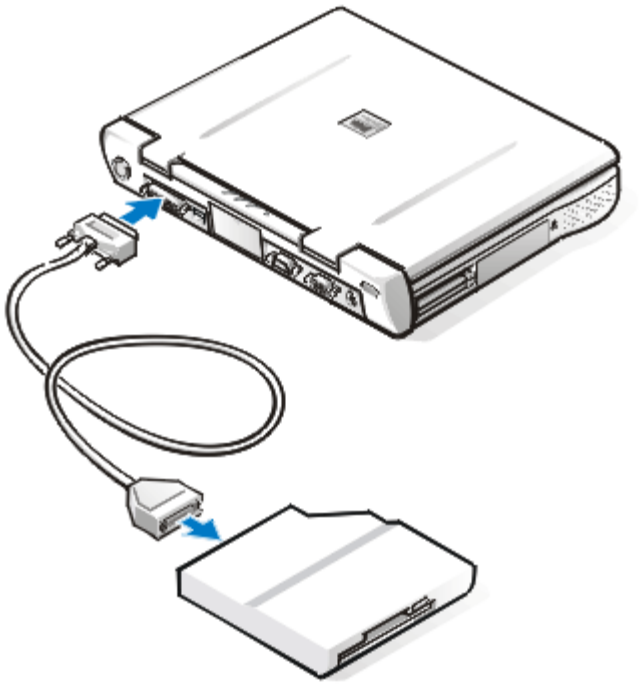
You can also connect an external mouse to the C/Port APR or the C/Dock Expansion Station.

Diskette Drive

The diskette drive can be used as an external device if you have a CD-ROM drive, battery, or travel module in the modular bay. The external diskette drive letter is A. If there is a diskette drive in the modular bay, the external diskette drive letter is B.

Use the parallel diskette drive cable that came with the computer to connect the drive to the parallel connector on the input/output (I/O) panel, as shown in Figure 5.

Figure 5. Using the Diskette Drive As an External Device



CAUTION: When the diskette drive is not being used externally, remove the parallel diskette drive cable from the parallel connector.

CAUTION: Use the parallel diskette drive cable only with the diskette drive. Do not try to connect any other device to the computer with this cable.

If the **Diskette Reconfig** option is enabled in the System Setup program, you do not have to turn the computer off when you connect the diskette drive to the parallel connector. For more information see Diskette Reconfig.

The drive access indicator does not blink when data is being accessed from the diskette drive connected to the parallel connector.

CAUTION: Protect the diskette drive when it is not in the modular bay. Do not squeeze the drive or place objects on top of it; doing so could damage the drive motor.

Connecting an External Monitor

The computer's video connector is used to connect an external monitor to the computer. To attach an external monitor, perform the following steps:

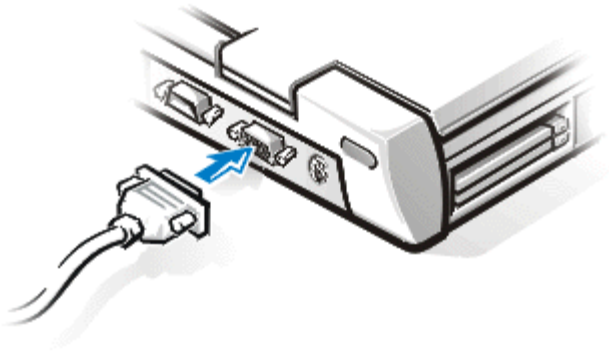
1. Make sure that the external monitor is turned off. Set the monitor on a monitor stand, desk top, or other level surface near your computer.

   CAUTION: Do not place the monitor directly on top of your portable computer, even if it is closed. Doing so can crack the computer case, the display, or both.

2. Connect the external monitor's video cable to the computer.

   Plug the video cable connector into the matching video connector on the back of the computer, as shown in Figure 6. If the video cable is not permanently attached to the monitor, connect it to the monitor also.

   Figure 6. Connecting an External Monitor

   Be sure to tighten all the screws on the video cable connector(s) to eliminate radio frequency interference (RFI).

3. Connect your external monitor to a grounded AC power source.

   Plug the three-prong connector on one end of the monitor's power cable into a grounded power strip or some other grounded power source. If the cable is not permanently attached to the monitor, connect it to the monitor also.

   You can also connect an external monitor to the C/Port APR or C/Dock Expansion Station.

   NOTE: If you are using the Microsoft® Windows® 98 operating system, you can use an external monitor as an extension of your built-in display. For more information, see the Windows 98 documentation or Dual-Display Mode.

Using an External Monitor

When an external monitor is connected to the computer, the video image automatically appears on the external monitor's screen when you boot your computer.

To toggle the video image between the built-in display, an external monitor, or both simultaneously, press <FN><F8> on the built-in keyboard. Press <Scroll Lock><F8> on an external keyboard if the **External Hot Key** option is enabled in the System Setup program.

If the external monitor is turned off when you boot your computer, the computer still sends the video image to the external monitor. In this case, you will not see an image on either the computer's display or the external monitor. To see an image, turn on the external monitor or switch the video image to the computer's display by pressing <FN><F8> on the built-in keyboard or <Scroll Lock><F8> on an external keyboard if the **External Hot Key** option is enabled in the System Setup program.

NOTE: If you are using your external monitor at a resolution greater than the display supports, the simultaneous display feature is disabled. To use the display, switch to a resolution that the system supports, or disconnect the external monitor and restart your computer.

Back to Contents Page

Back to Contents Page

I/O Connectors: Dell™ Latitude™ CPi A-Series System User's Guide

About the I/O Connectors | Parallel Connector | Serial Connector | USB Connector | Video Connector | PS/2 Connector | Infrared Port | Connecting External Devices

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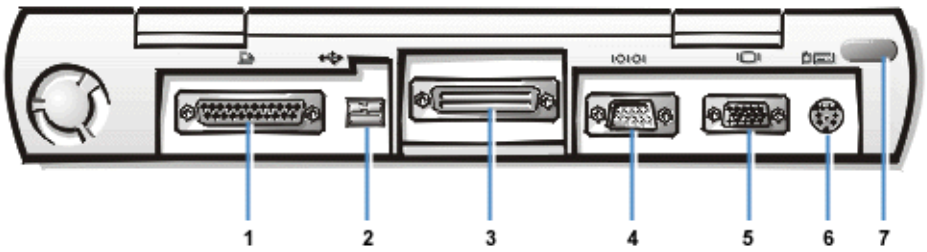
About the I/O Connectors

You can connect external devices to the input/output (I/O) connectors. The computer's basic input/output system (BIOS) detects the presence of external devices when you boot (start) or reboot your computer. Figure 1 shows the connectors on the back of your computer.

Figure 1. Connector Illustration



1	Parallel connector
2	USB connector
3	Docking connector
4	Serial connector
5	Video connector
6	PS/2 connector
7	Infrared port

NOTES: Some external devices require you to load software called device drivers into system memory before the devices will work. These device drivers help your computer recognize the external device and direct its operation. Instructions for installing this software are usually included in the upgrade kits.

The C/Port Advanced Port Replicator (APR) has the same I/O connectors as your computer. In addition, the C/Port APR has a second Personal System/2 (PS/2) connector, a second Universal Serial Bus (USB) connector, and an Ethernet network connector.

The C/Dock Expansion Station has the same I/O connectors as your computer. In addition, the C/Dock Expansion Station has a second PS/2 connector, a second USB connector, an Ethernet network connector, and a small computer system interface (SCSI) connector.

Parallel Connector

Use the 25-hole parallel connector to attach a parallel device to the computer. The parallel connector is used primarily for printers. You can also connect the diskette drive to the parallel connector.

The parallel port sends and receives data in parallel format, where eight data bits (one byte) are sent

simultaneously over eight separate lines. The port can be configured as a unidirectional (output-only) port for devices such as a printer or as a bidirectional port for devices such as a network adapter. Table 1 lists the pin assignments.

The computer's built-in parallel port is designated as LPT1. If you reconfigure your hardware, you may need pin number and signal information for the serial connector. The Microsoft® Windows® 95 and Windows 98 operating systems automatically recognize the parallel device and configure it correctly. The parallel port can also be configured for compatibility with the PS/2 standard.

Table 1. Parallel Port Pin Assignments

Pin	Signal	I/O	Definition	Pin	Signal	I/O	Definition
1	STB#	O	Strobe	11	BUSY	I	Busy
2	PD0	I/O	Parallel data bit 0	12	PE	I	Paper end
3	PD1	I/O	Parallel data bit 1	13	SLCT	I	Select
4	PD2	I/O	Parallel data bit 2	14	AFD#	O	Automatic feed
5	PD3	I/O	Parallel data bit 3	15	EFF#	I	Error
6	PD4	I/O	Parallel data bit 4	16	INIT#	O	Initialize printer
7	PD5	I/O	Parallel data bit 5	17	SLIN#	O	Select in
8	PD6	I/O	Parallel data bit 6	18-25	N/A	N/A	Signal ground
9	PD7	I/O	Parallel data bit 7	Shell	N/A	N/A	Frame ground
10	ACK#	I	Acknowledge				

USB Connector

The USB connector supports the use of a USB hub device to attach multiple devices. USB devices are typically low-speed peripherals such as mice, keyboards, printers, and computer speakers. The C/Port APR and C/Dock Expansion Station have two USB connectors.

NOTE: If you are using a USB external keyboard, do not enter the System Setup program by using a keyboard command on the external keyboard. Instead, press <FN><F1> on the built-in keyboard.

Serial Connector

Use the 9-pin serial connector to attach a serial device to the computer. Table 2 lists the pin assignments.

The serial port passes data in serial format (one bit at a time over one line). This port supports a variety of devices that require serial data transmission, including a serial mouse, serial printer, plotter, or external modem.

If you reconfigure your hardware, you may need pin number and signal information for the serial connector.

Table 2. Serial Port Connector Pin Assignments

Pin	Signal	I/O	Definition
1	DCD	I	Data carrier detect
2	RXDA	I	Receive data
3	TXDA	O	Transmit data
4	DTR	O	Data terminal ready
5	GND	N/A	Signal ground
6	DSR	I	Data set ready
7	RTS	O	Request to send
8	CTS	I	Clear to send
9	RI	I	Ring indicator
Shell	N/A	N/A	Frame ground

Video Connector

Use the 15-hole video connector to attach an external monitor to the computer. Table 3 lists the pin assignments. If you reconfigure your hardware, you may need pin number and signal information for the monitor connector.

Table 3. Video Connector Pin Assignments

Pin	Signal	I/O	Definition
1	RED	O	Red video
2	GREEN	O	Green video
3	BLUE	O	Blue video
4	NC	N/A	No connection
5-8	GND	N/A	Signal ground
9	NC	N/A	No connection
10	GND	N/A	Signal ground
11	NC	N/A	No connection
12	NC	N/A	Reserved
13	HSYNC	O	Horizontal synchronization

14	VSYNC	O	Vertical synchronization
15	NC	N/A	No connection
Shell	N/A	N/A	Frame ground

PS/2 Connector

Use the mini Deutsche Industrie Norm (DIN) PS/2 connector to attach PS/2-compatible devices such as a mouse, keyboard, or external numeric keypad.

NOTE: If the computer is in suspend mode when you attach a mouse, you can use the mouse when the computer resumes normal operation. Otherwise, you must reboot the computer in order to use the mouse. While the mouse is attached to the computer, the touch pad is disabled.

If you reconfigure your hardware, you may need pin number and signal information for the PS/2 connector. This information appears in Table 4.

Table 4. PS/2 Connector Pin Assignments

Pin	Signal	I/O	Definition
1	EXK_MSDATA	I/O	External keyboard/keypad/mouse data
2	NC	N/A	No connection
3	GND	N/A	Signal ground
4	EXK_MSPWR	O	External keyboard/keypad/mouse supply voltage
5	EXK_MSCLK	I/O	External keyboard/keypad/mouse clock
6	NC	N/A	No connection
Shell	N/A	N/A	Frame ground

Infrared Port

The computer's infrared (IR) port is compatible with IrDA 1.1 (Fast IR) and 1.0 (Slow IR) standards. An infrared port lets you transfer files from your computer to another infrared-compatible device without using cable connections. An infrared data stream is transmitted through a lens in the computer up to a distance of 1 m (3.3 ft). This light is received by a compatible computer, printer, mouse, or remote control.

The default address of the infrared port is COM3. To avoid resource conflicts with other devices, remap the address of the infrared port.

When the computer is being used with the C/Port APR or C/Dock Expansion Station, the infrared port on the computer is automatically disabled.

Point the computer's infrared port directly at the compatible device's infrared port. Infrared devices transmit data

in a 30-degree cone of infrared light. Start the data communications software on both devices, and then begin to transfer files. Be sure to read the documentation that came with your compatible device to make sure that you operate it correctly.

For more information about using an infrared device, see the documentation that came with your operating system. The Microsoft Windows NT® 4.0 operating system does not support the use of infrared devices.

NOTES: Make sure that there are no books, papers, or other objects between the two infrared devices and that the two devices are within the 30-degree cone.

If the infrared device does not work, it is possible that the computer and device are misaligned. Move the device or computer to bring them into the 30-degree cone.

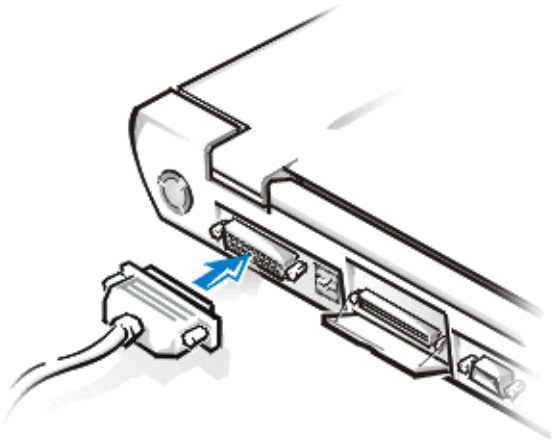
Connecting External Devices

To connect an external device to the computer, perform the following steps:

1. Plug the connector on the device's I/O cable into the matching connector on the back of the computer. See Figure 2 for an example.

   Be sure to tighten all the screws on the I/O cable connector to eliminate radio frequency interference (RFI).

   Figure 2. Connecting External Devices



2. If the device has a power cable, plug the cable into a grounded AC power source.

   CAUTION: When disconnecting external devices from the back of the computer, wait 5 seconds after turning off the computer before you disconnect a device in order to avoid possible damage to the system board.

Back to Contents Page

Back to Contents Page

Power Management Settings: Dell™ Latitude™ CPi A-Series System User's Guide

Experimenting With Power Conservation | Using Key Combinations | Closing the Display | Suspend Mode | Suspend-to-Disk Mode | Standby Mode | Power Management Properties for Windows 98

Experimenting With Power Conservation

In general, the lower the value you set for each power conservation feature, the longer the battery's charge lasts. On the other hand, setting high values tends to optimize the computer's performance.

To evaluate the way that different settings affect how long you can operate the computer on battery power versus the relative efficiency of how the software performs, experiment as follows:

- Use the computer with all the options set at their default values.
- Use the computer with all the options disabled or set to **Off**.
- Use the computer with all the options set to their minimum or maximum values.

Using Key Combinations

Table 1 identifies the power management key combinations.

*NOTE: To use key combinations on an external keyboard, enable the **External Hot Key** option in the System Setup program and use <Scroll Lk> instead of <FN>.*

Table 1. Key Combinations to Activate/Deactivate Features

Feature	Activate/Deactivate
Turn off display	To activate, press <FN><D>. * To deactivate, move the cursor or press a key on the built-in or external keyboard. (If nothing happens, the computer may be in suspend mode. Press the power button to resume normal operation.)
Turn off hard-disk drive	To activate, press <FN><H>. * Automatically deactivates when the hard-disk drive is accessed. *NOTE: If a modular hard drive is installed in the C/Dock media bay, pressing <FN><H> will not turn off the hard-disk drive*.
Suspend mode	To activate, press <FN><Esc>. To deactivate, press the power button.

Suspend-to-disk mode	To activate, press <FN><A>. (On a French keyboard, press <FN><Q>.) * To deactivate, press the power button.

* *These key combinations do not function with the Advanced Configuration and Power Interface (ACPI*).

Closing the Display

One way to conserve power on the computer is to close the display when the computer is not in use. When you close the display and an external monitor is *not* connected, the computer's liquid crystal display (LCD) shuts off automatically. If you activate suspend mode, the display shuts off automatically when you close the display.

NOTE: If an external monitor is connected when you close the display, the computer does not activate suspend mode. You can still use the external display.

If the computer detects a wakeup alarm or receives a modem call while the display is closed, the computer handles the alarm or answers the call. After such input/output (I/O) activity ceases, the computer waits 1 minute before reactivating suspend mode.

To resume work, open the display. (It may take several seconds for the computer to resume operation.)

Suspend Mode

Suspend mode stops almost all computer activity, but leaves the computer ready to resume operations immediately in about 20 to 30 seconds. Use suspend mode whenever you leave the computer unattended.

Suspend mode conserves battery power by turning off the microprocessor clock, the display, the hard-disk drive, the CD-ROM drive (if installed), the external monitor connector, the external keyboard (if attached), the parallel port, the serial port, the touch pad, and the diskette drive.

You can activate suspend mode immediately by pressing <FN><Esc> (or <Scroll Lock><Esc> on an external keyboard if the **External Hot Key** option is enabled in the System Setup program).

When suspend mode is activated, the power indicator is not lit.

Resume from suspend mode by pressing the power button. The computer may take several seconds to return to normal operation.

NOTES: On resumption from suspend mode, if a password is set, the system displays the password prompt screen. At the password prompt screen, if you do not enter a password within 2 minutes, the system returns to suspend mode.

Suspend mode is known as standby mode under the Microsoft® Windows® 98 operating system.

Suspend-to-Disk Mode

Suspend-to-disk mode copies all system data to a reserved area—the S2D partition—on the hard-disk drive and then turns off all power to the computer. When you resume normal operation, the same programs will be running and the same files will be open that were loaded before you activated this mode.

Place the computer in suspend-to-disk mode if you intend to store the computer for longer than 40 days. Suspend-to-disk mode preserves the configuration information stored in nonvolatile random-access memory (NVRAM). The reserve battery maintains this information, but it may run out of energy after 40 days.

NOTE: Suspend-to-disk mode helps preserve system data by quickly saving it to the hard-disk drive if you are about to run out of battery power.

To activate suspend-to-disk mode immediately, press <FN><A> (or <Scroll Lock><A> on an external keyboard if the **External Hot Key** option is enabled in the System Setup program).* On a French keyboard, press <FN><Q> or <Scroll Lock><Q>.

Deactivate suspend-to-disk mode by pressing the power button.

If you connect or remove devices while the computer is in suspend-to-disk mode, the computer automatically recognizes the newly connected devices when it resumes normal operation.

Some PC Cards may not operate correctly after resuming from suspend-to-disk mode. If you encounter problems with a card, remove and reinsert the card.

NOTE: Dell creates an appropriately sized suspend-to-disk (S2D) partition before shipping the computer to you. Use the Suspend-to-Disk utility to remove the file, to increase the size of the file, or to add the suspend-to-disk file if you removed it.

** These key combinations do not function with ACPI.*

Standby Mode

Standby mode turns off the display, stops the hard-disk drive, and turns off other internal devices so that the computer uses less battery power. When the computer resumes operation from standby mode, the desktop is restored exactly as it was before entering standby mode.

CAUTION: Windows 98 saves data to random-access memory (RAM), not to your hard-disk drive, before entering standby mode. If the computer enters standby mode while running on battery power, data loss from RAM can occur if the battery discharges completely.

You can activate standby mode by pressing <FN><Esc> or by selecting **Standby** mode from the **Shutdown** window. To resume operation from standby mode, press the power button.

Power Management Properties for Windows 98

Windows 98 with Advanced Power Management (APM) provides the **Power Management Properties** window for setting power conservation features.

Complete the following steps in Windows 98 to access the **Power Management Properties** window and set

the power management features:

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

The **Power Management Properties** window contains the following tabs:

- **Power Scheme**, which allows you to select one of three power mode settings.
- **Alarms**, which allows you to set the **Low Battery** and **Critical Battery** alarms to alert you when the system battery falls below a certain percentage. When you received your computer, the **Low Battery** and **Critical Battery** alarms check boxes were not checked. Dell recommends that you do not select these options.
- **Power Meter**, which allows you to view the percentage of battery life remaining when your system is operating on battery power. If your system is operating on AC power, the system displays a message.
- **Advanced**, which allows you to display the **Power Meter** on the Windows 98 taskbar and to display a password prompt when the computer resumes from standby mode.

Back to Contents Page

Back to Contents Page

Installing the Microsoft® Windows® 95 and Windows 98 Operating System Drivers: Dell™ Latitude™ CPi A-Series System User's Guide

General Instructions | Installing Video Drivers for Windows 95 | Installing Video Drivers for Windows 98 | Installing Audio Drivers | Installing Software Wavetable | Installing Touch Pad Drivers | Installing MS-DOS CD-ROM Drivers | Installing Infrared Drivers

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General Instructions

NOTES: The following procedure requires you to turn off the computer. Before proceeding, print the procedure. Also print the instructions for installing drivers for the Peripheral Component Interconnect (PCI) video card and Token-Ring Network controller.

You must have administrator privileges to perform the following procedure. Dell recommends that you check with your network administrator before performing this procedure.

If your computer uses Windows 95 or Windows 98, the computer is already configured to work with the Dell Latitude C/Dock Expansion Station or C/Port Advanced Port Replicator (APR). Use the following procedure the first time you turn on the computer.

CAUTION: Do not dock the computer before turning it on the first time.

Installing Docking Drivers

To install the C/Dock Expansion Station or C/Port APR drivers, perform the following steps:

1. If the computer has never been turned on, turn it on now while it is undocked and complete the operating system setup. Then go to step 2.

   If you have completed the operating system setup, turn on the computer and go to step 2.

   For setup instructions, see the Dell-supplied operating system setup guide that came with the computer.

2. Dock the computer.

   The operating system creates a hardware profile for the C/Dock Expansion Station or the C/Port APR.

3. Follow the instructions on the display to load the appropriate drivers for use with the C/Dock Expansion Station or C/Port APR. When prompted, restart the computer.

CAUTION: Follow the PCI video card driver installation instructions carefully. If the driver is incorrectly installed, the computer may become inoperable.

4. Install the appropriate drivers to use with a PCI video or network expansion card in the C/Dock Expansion Station.

Installing Video Drivers for Windows 95

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

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

To install the video drivers for Windows 95, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the video drivers diskette into the diskette drive.
3. Click the **Start** button, point to **Settings**, and then click **Control Panel**.

   The **Control Panel** window appears.

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

   The **Display Properties** window appears.

5. Click the **Settings** tab.
6. Click **Advanced Properties**.

   The **Advanced Properties** window appears.

7. Click the **Adapter** tab and then click **Change**.

   The **Select Device** window appears.

8. Click **Have Disk...** .
9. Verify that **A:** is displayed in the **Install from Disk** field, and then click **OK**.
10. When the **Select Device** window appears, verify that the **NeoMagic MagicMedia 256AV** option is highlighted, and then click **OK**.

    A progress bar is shown while the driver files are copied to your hard-disk drive.

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

11. In the **Advanced Display Properties** window, click **Apply** and **OK**.
12. Click **Close** in the **Display Properties** window.
13. Restart your computer to activate the drivers.

Installing Video Drivers for Windows 98

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

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

To install the video drivers for Windows 98, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the video drivers diskette into the diskette drive.
3. Click the **Start** button, point to **Settings**, and then click **Control Panel**.

   The **Control Panel** window appears.

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

   The **Display Properties** window appears.

5. Click the **Settings** tab and then click **Advanced Properties**.
6. Click the **Adapter** tab and then click **Change**.
7. When the **Update Driver Wizard** appears, click **Next>**.
8. Select **Display a list of all the drivers in a specific location**, and click **Next>**.
9. When prompted for the location of the drivers, click **Have Disk**.
10. In the **Install from Disk** window, enter `A:\video` and click **OK**.

    The **Select Device** window appears.

11. Make sure that **NeoMagic MagicGraph 256AV** is highlighted, and click **OK**.
12. In the **Update Device Driver Wizard** window, click **Next>** to begin copying the files.
13. Close the **Display Properties** window.
14. When prompted to restart the computer, click **Yes**.

After installing the video drivers and restarting your computer, you can set the display parameters with the **Display** control panel.

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
   The **Control Panel** window appears.
2. Double-click the **Display** icon.
   The **Display Properties** window appears.
3. Click the **Settings** tab.
4. Change the **Color** palette option from **256 colors** to **High Color (16 bit)**.
5. Depending on your computer's display size, set the **Desktop** area as follows:

   - 13.3-inch display, set the **Desktop** area to **1024 x 768**.
   - 12.1-inch display, set the **Desktop** area to **800 x 600**.

6. Click **Apply**.

Installing Audio Drivers

Dell provides audio drivers so you can customize the audio features of your computer.

To install the audio drivers, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the audio driver diskette into the diskette drive.
3. Click the **Start** button, then click **Run...** .

   The **Run** dialog box appears.

4. Type `a:\setup` and then click **OK** or press <Enter>.
5. Follow the instructions on your screen.
6. After the files are copied to your hard-disk drive, click **Finish**.

Installing Software Wavetable

The software wavetable allows you to customize certain audio features. To install the software wavetable, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the first software wavetable diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...** .

   The **Run** dialog box appears.

4. Type `a:\setup` and then click **OK** or press <Enter> to install the utility on your hard-disk drive.
5. Follow the instructions on your screen.
6. After the installation is complete, remove the final diskette from the diskette drive and restart your computer to use the software wavetable.

Installing Touch Pad Drivers

Touch pad drivers and associated utilities allow you to use and customize the integrated touch pad or an external mouse. To install the touch pad drivers, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the touch pad drivers diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...** .

   The **Run** dialog box appears.

4. Type `a:\setup` and then click **OK** or press <Enter> to install the utility on your hard-disk drive.
5. Restart your computer to activate the drivers.

Installing MS-DOS® CD-ROM Drivers

CD-ROM drivers must be installed in order to use the MS-DOS CD-ROM utility. To install the CD-ROM drivers, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the CD-ROM drivers diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...** .

   The **Run** dialog box appears.

4. Type `a:\setup`, and then click **OK** or press <Enter> to install the utility on your hard-disk drive.
5. Follow the instructions on your screen, and when prompted, restart your computer to activate the drivers.

Enabling Microsoft Infrared Support

Microsoft infrared support for Windows 95 and Windows 98 must be enabled before you can install the infrared drivers. To enable Microsoft infrared support, perform the following steps:

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
2. Double-click the **Add New Hardware** icon.

   The **Add New Hardware Wizard** appears.

3. Click **Next** to continue.
4. When the **Add New Hardware Wizard** asks to search for new hardware, select **No** and then click **Next**.
5. When the **Hardware Types** window appears, select **Infrared** and then click **Next**.
6. When the **Add Infrared Device Wizard** window appears, click **Next**.
7. (Windows 95 only) When the **Manufacturers and Models** window appears, select **Standard Infrared Devices** from the **Manufacturers** list and **Built-In Infrared Port on Laptop or Desktop** from the **Models** list, and then click **Next**.
8. Follow the instructions on your screen to complete this portion of the installation.
9. Shut down and reboot your computer to enable infrared support.
10. If you are using Windows 98, the process is complete. If you are using Windows 95, complete the procedure in Installing Infrared Drivers.

Installing Infrared Drivers

The infrared port lets you transfer files from your computer to another infrared-compatible device without using cable connections. To install the infrared drivers, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the *Infrared Drivers* diskette into the diskette drive.
3. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
4. Double-click the **System** icon.

   The **System Properties** dialog box appears.

5. Click the **Device Manager** tab.
6. Click the **View Devices by Type** radio button.
7. Click the plus sign to the left of the **Ports** icon.

   The names of various device ports appear beneath the **Ports** icon.

8. Click **Infrared Serial (COM) Connections Port**, and then click **Properties**.

   The **Infrared Serial (COM) Connections Port Properties** dialog box appears.

9. Click the **Driver tab** and **Update Driver**.

   The **Update Device Driver Wizard** appears.

10. Click the **Yes (Recommended)** radio button, and then click **Next**.

    Windows 95 searches for the drivers on the diskette you inserted in step 2.

11. Follow the instructions on your screen to complete the installation.
12. After the driver is updated, close the **Device Manager** and open **Windows Explorer**.
13. With the *Infrared Drivers* diskette still in the diskette drive, click drive A.
14. Right-click the **smcirlap.inf** file.

    A pop-up menu appears.

15. Click **Install**.

    The **smcirlap.inf** file is installed.

16. Restart your computer to activate the infrared drivers.

Back to Contents Page

Back to Contents Page

Installing the Microsoft® Windows NT® Operating System Drivers: Dell™ Latitude™ CPi A-Series System User's Guide

Installing Video Drivers | Installing the Power Management Utility | Installing the PC Card Utility | Installing Audio Drivers | Installing Touch Pad Drivers | Installing System Utilities | Installing the Software Wavetable

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Dell provides software utilities and drivers that help you control certain features of your computer.

This document explains how to reinstall utilities and drivers on your Dell system with the Microsoft Windows NT 4.0 operating system.

NOTE: You must have administrator privileges to perform the following procedure. Dell recommends that you check with your network administrator before performing this procedure.

Use the program diskette set you made when you received your computer or the diskette set you received separately from Dell.

Installing Video Drivers

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

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

To install the video drivers for Windows NT 4.0, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the video drivers diskette into the diskette drive.
3. Click the **Start** button, point to **Settings**, and then click **Control Panel**.

   The **Control Panel** window appears.

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

   The **Display Properties** window appears.

5. Click the **Settings** tab.
6. Click the **Display Type...** button.

   The **Display Type** window appears.

7. In the **Adapter Type** box, click the **Change...** button.
8. The **Change Display** window appears.

9. Click the **Have Disk...** button.
10. Verify that **A:** is displayed in the **Install from Disk** box, and then click **OK**.
11. When the **Change Display** window appears, verify that the **NeoMagic MagicMedia 256AV** option is highlighted, and then click **OK**.

    A progress bar is shown while the driver files are copied to your hard-disk drive.

    After the drivers are successfully installed, the **Installing Driver** window appears.

12. Click **OK** in the **Installing Driver** window.
13. Click the **Close** button in the **Display Type** window, and then click the **Close** button in the **Display Properties** window.
14. Restart your computer to activate the drivers.

Installing the Power Management Utility

Dell provides a power management utility that helps you conserve battery power and view available power levels.

To install the power management utility, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the Softex power management utility diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...**

   The **Run** dialog box appears.

4. Type `a:\setup`, and then click **OK** or press <Enter> to install the utility on your hard-disk drive.
5. Follow the instructions and restart your computer to activate the utility.

Installing the PC Card Utility

Dell provides a PC Card utility that allows you to view and configure settings for your PC Card(s). To install the PC Card utility, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the first Softex PC card controller diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...**

   The **Run** dialog box appears.

4. Type `a:\setup` and then click **OK** or press <Enter> to install the utility on your hard-disk drive.

   Follow the instructions on your screen

5. Restart your computer.
6. When the computer completes the starting sequence, the **Softex PC Card Controller Diagnostics** appears.

7. Follow the instructions on your screen, and when prompted, restart your computer to activate the utility.

Installing Audio Drivers

Dell provides audio drivers so you can customize the sound features of your computer.

To install the audio drivers, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the audio driver diskette into the diskette drive.
3. Click the **Start** button, point to **Settings**, and then click **Control Panel**.
4. Double-click the **Multimedia** icon.

   The **Multimedia Properties** dialog box appears.

5. Click the **Devices** tab.
6. Click **Add...**

   The **Add** dialog box appears, displaying a list of drivers.

7. Click the **Unlisted or Updated Driver** option, and then click **OK**.

   The **Install Driver** dialog box appears.

8. Verify that **A:** is highlighted, and then click **OK**.

   The **Add Unlisted or Updated Driver** window appears.

9. Verify that the **NeoMagic MagicWare Audio Driver 256AV/3Dx Series Driver** is highlighted, and then click **OK**.

   The **Audio** dialog box appears.

10. Click OK.
11. After installation is complete, restart your computer to activate the drivers.

Installing Touch Pad Drivers

Touch pad drivers and associated utilities allow you to use and customize the integrated touch pad or an external mouse. To install the touch pad drivers, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the touch pad drivers diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...**

   The **Run** dialog box appears.

4. Type `a:\setup`, and then click **OK** or press <Enter> to install the utility on your hard-disk drive.
5. Follow the instructions on your screen, and when prompted, restart the computer to activate the

drivers.

Installing System Utilities

System utilities let you configure features such as the asset tag code and suspend-to-disk partition.

To copy the system utilities to your hard-disk drive, perform the following steps.

NOTE: You can also run the system utilities directly from the System Utilities diskette.

1. Insert the *System Utilities* diskette into the diskette drive.
2. Copy each of the utilities on the *System Utilities* diskette to the **c:\dell** directory on your hard-disk drive. The utilities have the following filenames: **mks2d.exe**, **rms2d.exe**, **asset.com**, and **readme.s2d.**

   For more information on copying files in Windows 95, see the documentation that came with the operating system.

After you copy the utilities to your hard-disk drive, you must restart your computer in the MS-DOS® mode to use the utilities.

See the **readme.s2d** file for more information on using the suspend-to-disk partition utilities. For more information on using the asset tag utility, see your Dell system documentation.

Installing the Software Wavetable

The software wavetable allows you to customize certain audio features. To install the software wavetable, perform the following steps:

1. Save your work in all open application programs, because you will need to restart your computer at the end of this procedure to complete the installation.
2. Insert the first software wavetable diskette into the diskette drive.
3. Click the **Start** button, and then click **Run...** .

   The **Run** dialog box appears.

4. Type `a:\setup` and then click **OK** or press <Enter> to install the utility on your hard-disk drive.
5. Follow the instructions on your screen.
6. After the installation is complete, remove the final diskette from the diskette drive and restart your computer to use the software wavetable.

Back to Contents Page

Back to Contents Page

Suspend-to-Disk Utility: Dell™ Latitude™ CPi A-Series System User's Guide

Suspend-to-Disk Utility | Removing the S2D Partition | Creating the S2D Partition

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Suspend-to-Disk Utility

The Suspend-to-Disk (S2D) utility allows you to manage the S2D partition in your file system as your computing needs change. For instance, you can remove the S2D partition if you need the space on the hard-disk drive for other purposes, or you can use the S2D utility to create the partition if you have removed it.

Removing the S2D Partition

If you want to use the S2D partition on your hard-disk drive for another purpose (for instance, if you are running out of file space), perform the following steps to remove the partition:

1. At an MS-DOS® prompt, type `cd c:\dell\util` and press <Enter> to change to the directory on your hard-disk drive that contains the Suspend-to-Disk utility files.

   If you are using an operating system that is not compatible with MS-DOS, see the **readme.s2d** file for instructions.

2. Type `rms2d` and press <Enter>.

   Status messages appear on the display as the removal process progresses. When the S2D partition has been removed, the following message appears:

   `The S2D partition was successfully removed.`

NOTE: After you remove the S2D partition, the computer cannot activate suspend-to-disk mode until you recreate the partition. If you try to activate suspend-to-disk mode and receive the message `No Suspend-To-Disk partition available`, you must create an S2D partition.

Creating the S2D Partition

The **mks2d.exe** file creates the S2D partition the computer uses to store the system data that is saved when you put the computer in suspend-to-disk mode. Use the **mks2d.exe** file to create a new S2D partition in the following cases:

- If Dell did not install MS-DOS on your hard-disk drive
- If you increase the amount of system memory by adding a memory module
- If you used the **rms2d.exe** file to remove the original S2D partition and now want to recreate the partition
- If your hard-disk drive becomes corrupted
- If you install a new hard-disk drive

- If you received the system utilities separately on diskette or if you deleted the Suspend-to-Disk utility from your hard-disk drive

To create an S2D partition, perform the following steps.

NOTE: If you are creating the partition on a new hard-disk drive, if Dell did not install MS-DOS on your hard-disk drive, or if you are using an operating system that is not compatible with MS-DOS, read the ***readme.s2d*** *file before using the following procedure.*

1. At an MS-DOS prompt, type `cd c:\dell\util` and press <Enter> to change to the directory on your hard-disk drive that contains the Suspend-to-Disk utility files.
2. Type `mks2d` and press <Enter>.

   As the utility builds the partition, status messages appear on the display. If an error message appears, it provides information about which steps to take to continue building the partition.

   When the S2D partition has been built and verified, the following message appears:

   `The S2D partition was successfully created.`

Back to Contents Page

Back to Contents Page

Running the Dell Diagnostics: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Features of the Dell Diagnostics | When to Use the Dell Diagnostics | Before You Start Testing | Starting the Dell Diagnostics | How to Use the Dell Diagnostics | Confirming the System Configuration Information | How to Use the Menu | Main Menu Options | Tests in the Dell Diagnostics | Error Messages | RAM Test Group | System Set Test Group | Video Test Group | Keyboard Test Group | Mouse Test | Diskette Drives Test Group | Hard-Disk Drives (Non-SCSI) Test Group | IDE CD-ROM Drives Test Group | Serial/Infrared Ports Test Group | Parallel Ports Test Group | SCSI Devices Test Group | Network Interface Test Group | Audio Test Group | Other Test Group

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Overview

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

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

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

Features of the Dell Diagnostics

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

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

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

When to Use the Dell Diagnostics

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

Before You Start Testing

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

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

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

2. Turn on your printer, if one is attached, and make sure it is online.
3. Confirm the computer's system configuration information and enable all of its components and devices, such as ports.

   For instructions, see Using the System Setup Program.

4. Disable all system setup options for power management.

   For instructions, see Power Management.

5. Attach an AC adapter to the computer.

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

Starting the Dell Diagnostics

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

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

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

   For instructions, see CD-ROM Drive.

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

   For instructions, see Diskette Drive.

3. Turn off the computer.

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

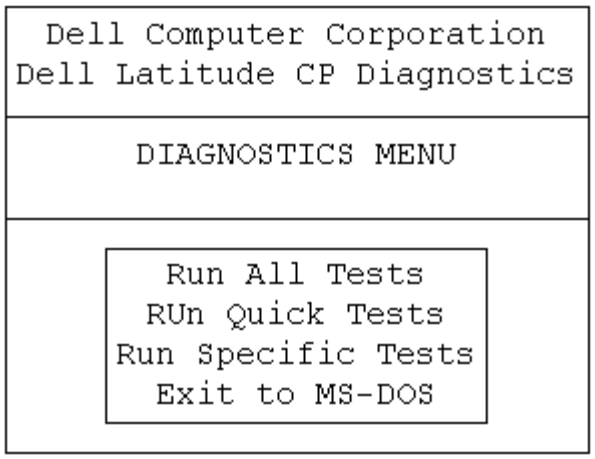
NOTE: Before you read the rest of this chapter, you may want to start the Dell Diagnostics so you can see the menus on your display.

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

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

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

Figure 1. Diagnostics Menu



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

How to Use the Dell Diagnostics

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

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

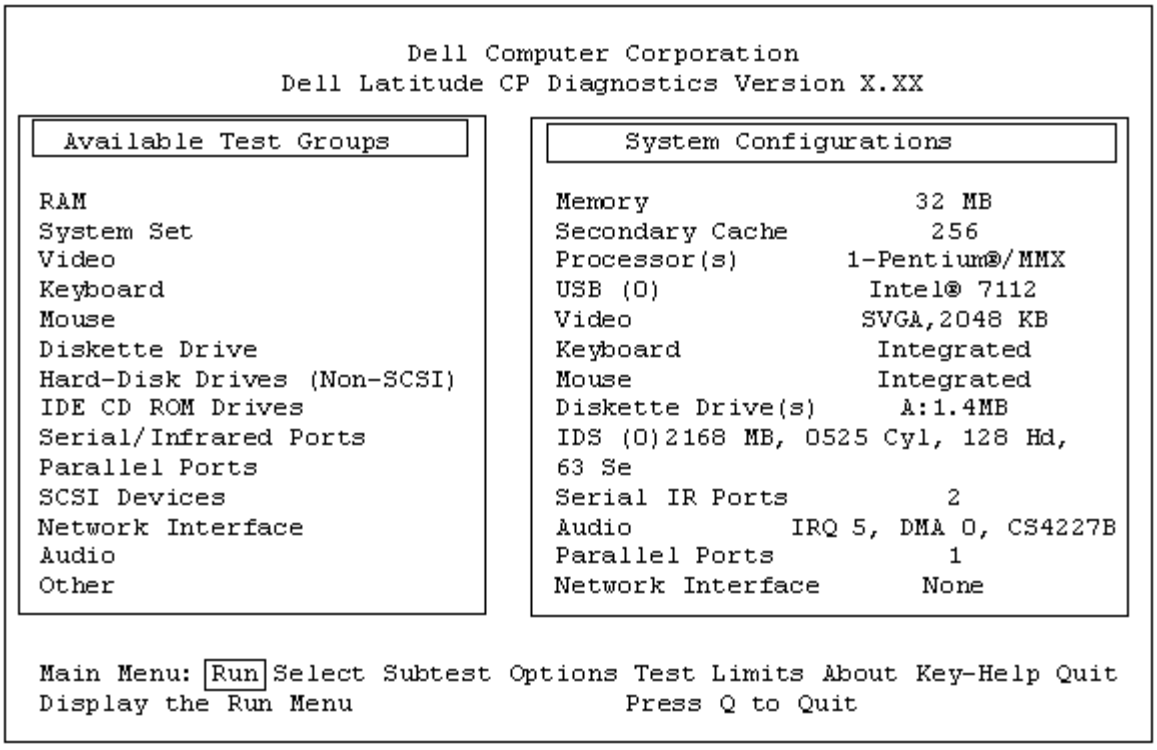
Information on the main screen of the diagnostics is presented in the following five areas:

- Two lines at the top of the screen identify the diagnostics and give its version number.
- On the left side of the screen, the **Available Test Groups** area lists the diagnostic test groups in the order they will be run if you select **Run** and then **All**. Press the up- or down-arrow key to highlight a test group.
- On the right side of the screen, the **System Configuration** area lists the computer's current hardware settings.
- On the lower-right side of the screen, the **IDE Drive Information** area displays information about your hard-disk drive.

The menu area is at the bottom of the screen. The first line lists the options you can select; press the left- or right-arrow key to highlight a menu option. The second line gives information about the option currently highlighted.

CAUTION: While the diagnostic tests are running, do not interrupt the tests, do not unplug the AC adapter, and do not reboot the computer. Interrupting the tests in any of these ways could lead to the loss of system data. It is important to quit the diagnostics program correctly, because the program writes data to the computer's memory that can cause problems unless properly cleared.

Figure 2. Main Screen of the Dell Diagnostics



Confirming the System Configuration Information

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

The following sources supply this configuration information for the diagnostics:

- The system configuration information that you selected through the system setup options
- Identification tests of the microprocessor, the video controller, the keyboard controller, and other key components
- Basic input/output system (BIOS) configuration information temporarily saved in RAM

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

How to Use the Menu

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

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

Main Menu Options

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

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

There are two ways to select a menu option:

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

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

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

Run

Run displays five options: **One**, **Selected**, **All**, **Key-Help**, and **Quit Menu**. If you select **One**, only the highlighted test group is run. If you choose **Selected**, the computer runs the test groups or the subtests selected within the test groups that you selected. (Specify the test groups or subtests to be run within each test group, using the **Select** or **Subtest** option, respectively, as described in the following subsections.) If you select **All**, all of the subtests in all of the test groups are run. (The test groups or subtests are run in the same order as they are listed.)

The **Key-Help** option displays a list of key controls available for the selected option. The **Quit Menu** option

returns you to the **Main** menu.

Select

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

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

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

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

Subtest

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

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

Run (Under Subtest)

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

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

Select (Under Subtest)

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

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

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

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

Options (Under Subtest)

The **Options** option in the **Subtest** menu functions in the same manner as the **Options** option in the **Main** menu. For information on that option, see **Options**.

Test Limits (Under Subtest)

The **Test Limits** option in the **Subtest** menu functions in the same manner as the **Test Limits** option in the **Main** menu. For information on that option, see **Test Limits**.

About (Under Subtest)

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

Key-Help (Under Subtest)

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

Quit Menu (Under Subtest)

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

Options

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

Table 1. Option Parameters

Option Limit	Possible Values
Number of Times to Repeat Test(s)	0001 through 9999, or 0000, which loops indefinitely until you press the <Ctrl> and <Break> keys. The default is 1.
Maximum Errors Allowed	0000 through 9999, where 0000 means that there is no error limit. The default is 1.
Pause for User Response	**Yes, No** Allows you to decide whether tests will wait for user input. The default is **Yes** to wait for user input.
Output Device for Status Messages	**Display, Printer, File** If you have a printer attached to the computer, you can use it to print the *status* messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select **File**, the status messages are printed to a file named **result** on the diagnostics diskette. The default is **Display**.

Output Device for Error Messages	**Display, Printer, File** If you have a printer attached to the computer, you can use it to print the *error* messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select **File**, the error messages are printed to a file named **result** on the diagnostics diskette. (Make sure the diskette is not write-protected.) The default is **Display**.

Number of Times to Repeat Test(s)

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

Maximum Errors Allowed

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

Pause for User Response

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

- Your interaction is needed to verify screens and functions or to insert a diskette
- The maximum error limit is reached

To continue testing, press any key.

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

Output Device for Status Messages

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

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

1. Select **Quit Menu** to exit the diagnostics and return to the MS-DOS prompt.
2. Remove the *Dell Diagnostics Diskette* from the diskette drive.
3. Reboot the computer.
4. If necessary, start your operating system.
5. Insert the *Dell Diagnostics Diskette* into the diskette drive.

6. Double-click the **Notepad** icon. Then select **Open** from the **File** menu.
7. In the **File Name** text box, type `a:\result` and press <Enter>.

   The contents of the file appear on the display.

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

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

   ```
   type result
   ```

   The contents of the file appear on the display.

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

Output Device for Error Messages

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

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

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

Test Limits

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

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

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

After you are satisfied with the limits, press <Page Down> to select the next menu or submenu in the **Test Limits** category. Press <Esc> to return to the main **Test Limits** menu. The values you selected under **Test Limits** remain in effect until you change them or exit the diagnostics. The values are reset to their defaults when you restart the diagnostics.

About

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

Key-Help

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

Quit

Select **Quit** from the **Main** menu (or press <q>) to exit the diagnostics and return to an MS-DOS prompt.

After you return to the operating system environment, remove your diagnostics diskette from drive A and reboot the computer.

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

Tests in the Dell Diagnostics

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

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

Table 2 list the diagnostic test groups, their subtests, and comments concerning their use.

Table 2. Dell Diagnostics Tests

Test Groups	Subtests	Description
RAM	Quick Test Comprehensive Test Secondary Cache Test	Tests the RAM.
System Set	CMOS Confidence Test DMA Controller Test Real-Time Clock Test System Speaker Test System Timers Test Interrupt Controller Test	Tests the system board's support chips, DMA controller, computer timer, NVRAM, speaker controller, and, if appropriate, the external cache and the thermal-control device.

	Coprocessor Calculation Test Coprocessor Error Exception Test PC Card Controller Test USB Register Test USB Memory Structure Test	 Tests the math coprocessor that is internal to the microprocessor. Tests the PC Card controller on the system board. Tests the computer's USB connector.
Video	Video Memory Test Video Hardware Test Text Mode Character Test Text Mode Color Test Text Mode Pages Test Graphics Mode Test Color Palettes Test Solid Colors Test	Tests the display by checking various aspects of video output.
Keyboard	Keyboard Controller Test Keyboard Key Sequence Test Keyboard Interactive Test Stuck Key Test	Tests the keyboard by checking the keyboard controller and by finding keys that *stick* or respond incorrectly.
Mouse	Mouse Test	Tests the electronic pointing device (integrated touch pad, external serial mouse, or external PS/2 mouse).
Diskette Drives	Change Line Test Seek Test Read Test Write Test	Tests a drive that uses removable diskettes. Also tests the associated controlling devices and important parts of the cabling.
Hard-Disk Drives (Non-SCSI)	Disk Controller Test Forced Error-Correction-Code Test Seek Test Read Test Write Test	Tests a drive that uses fixed, internal disks. Also tests the associated controlling devices.
IDE CD-ROM Drives	Drive Controller Test Seek Test Read Test Audio Output Test Eject Removable Media	Tests an IDE drive that uses removable CD media. Also tests the associated controlling devices.
Serial/Infrared Ports	Serial/Infrared Baud Rate Test Serial/Infrared Interrupt Test Serial/Infrared Internal Trans-mission Test Serial External Transmission Test	Tests the components through which peripherals that use the serial or infrared port, such as communications devices, send and receive data. Requires an external loopback connector.

Parallel Ports	Parallel Internal Test Parallel External Loopback Test Parallel External Interrupt Test Parallel Printer Pattern Test	Tests the components through which peripherals that use the parallel port, such as printers, send and receive data.
SCSI Devices	Internal Diagnostic Test Seek Test Read Test Write Test Audio Output Test Eject Removable Media Test Display Information Test	Tests the SCSI controller in the C/Port APR or C/Dock Expansion Station and all SCSI devices attached to either. This test runs only if the computer is docked.
Network Interface	Registers Test Loopback Test Shared RAM Test Display Information Test	Tests the read and write access capability of the network controller registers in the Dell Latitude C/Port APR or C/Dock Expansion Station. This test runs only if the computer is docked.
Audio	Software Reset Test Interrupt Test DMA Test FM Sound Playback Test Analog Sound Playback Test Record and Playback Test	Tests the operation of the audio chip set. Tests the record and playback ability of the internal microphone and speakers.
Other	Fan Control Test	Tests the function of the fan.

Error Messages

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

RAM Test Group

The RAM test group subtests check all the directly addressable RAM. You should run the stand-alone RAM Test program (**ramtest.exe**) from the MS-DOS prompt if, for some reason, the diagnostics cannot load into memory.

The RAM Test program has switches that allow you to set both test limits and options for the subtests from the MS-DOS prompt. The switches listed in Table 3 can be added to the end of the **ramtest** command line.

The switches can be used in any order, but they must be separated by a space.

For example, to run the RAM comprehensive subtest 10 times without pausing, stop at a maximum of 20 errors, and output the results to a file named **ramtst.rpt,** type the following command line at the MS-DOS prompt and press <Enter>:

```
ramtest -r10 -np -m20 -oframtst.rpt
```

To view the Help screen that lists all of the **ramtest** command-line switches, type the following command at the MS-DOS prompt and press <Enter>:

```
ramtest?
```

Table 3. RAM Test Switches

Switch	Description
`-r` *number*	Repeats the subtest this number of times. Valid numbers are 1 through 9999. A value of 0 causes the test to run until you press <Ctrl><Break>. The default value is 1.
`-m` *number*	Stops the test if this number of errors occur. Valid numbers are 1 through 9999. A value of 0 causes the test to accept an unlimited number of errors. The default value is 0.
`-s` *hexadecimal memory address*	Starts the test at this hexadecimal address. Valid hexadecimal values are 0 up to the highest memory address. The default value is 0.
`-e` *hexadecimal memory address*	Stops the test at this hexadecimal address. Valid hexadecimal values are 0 up to the highest memory address. The default is the highest memory address.
`-o [f` *filename*`,p]`	Outputs the test report to a file (**f**) or a printer (**p**). If you output to a file, append the *filename* after the **f** parameter. If you do not specify a filename when using the **f** parameter, the test report is output to a file named **result.** If you output to the printer, the test file is output to LPT1.
`-[q,c]`	Runs the quick (**q**) or comprehensive (**c**) subtest. The comprehensive subtest is the default value.
`-np`	Does not pause when an error occurs or a subtest finishes. Pause (**p**) is the default value.

Why Run a RAM Test?

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

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

Subtests

Three subtests are available for the RAM test group: the Quick Test, the Comprehensive Test, and the Secondary Cache Test. The Quick Test performs an address check to determine whether the computer is

properly setting and clearing individual bits in RAM. It also determines whether the RAM read and write operations are affecting more than one memory address location at a time. This subtest checks all available RAM, including the secondary cache. The Comprehensive Test also performs an address check, as well as the following:

- Data pattern checks, to look for RAM bits that are stuck high or low, short-circuited data lines, and some data pattern problems that are internal to the memory chips
- A parity check that verifies the ability of the memory subsystem to detect errors
- A refresh check, to verify that the dynamic RAM (DRAM) is being recharged properly

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System Set Test Group

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

Why Run a System Set Test?

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

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

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

- A program is not running as usual, or a proven piece of software appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is functioning properly by moving it to another computer and running it there.)
- A PC Card you previously accessed can no longer be accessed.
- The computer periodically locks up, especially at different places and times in different programs.
- Parity errors or page fault failures (any error message that contains the word *parity* or *page fault*) occur at any time during operation. These errors are usually accompanied by a reference to an address, which you should record on a copy of the Diagnostics Checklist found in Getting Help.
- Correcting errors in the system configuration information does not resolve a problem.
- The computer's clock/calendar stops.
- The speaker no longer functions. The problem could be a failure of the system timers as well as a failure of the speaker itself. Run the System Timers Test, followed by the System Speaker Test.
- If a peripheral device appears to malfunction, run the Interrupt Controllers Test. If the computer fails the test, the problem lies with the interrupt controller; if the computer passes, then the problem lies with the peripheral device.
- A spreadsheet program or other type of mathematical application runs abnormally slow, generates error messages concerning calculations or operations, runs incorrectly, or generates incorrect results; or a proven piece of the program appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is not at fault by moving the program to another computer and running it there.)
- The computer halts in the middle of performing calculations or complex mathematical operations.

Subtests

The 11 subtests in the System Set test group confirm the following computer functions:

- CMOS Confidence Test

  Checks the nonvolatile RAM (NVRAM) for accessibility and reliability of data storage by performing a data pattern check and verifying the uniqueness of memory addresses.

- DMA Controller Test

  Tests the direct memory access (DMA) controller and verifies the correct operation of its page and channel registers by writing patterns to the registers.

- Real-Time Clock Test

  Confirms the functionality and accuracy of the computer's real-time clock (RTC).

- System Speaker Test

  Checks the functionality of the speaker by generating eight tones.

- System Timers Test

  Checks the timers used by the microprocessor for event counting, frequency generation, and other functions. Only the functions that can be activated by software are tested.

- Interrupt Controller Test

  Generates an interrupt on each interrupt request (IRQ) line to verify that devices using that line can communicate with the microprocessor and that the interrupt controller sends the correct memory addresses to the microprocessor.

- Coprocessor Calculation Test

  Checks the use of different types of numbers and the math coprocessor's ability to calculate correctly.

- Coprocessor Error Exception Test

  Verifies the math coprocessor's ability to handle errors and to send IRQs to the microprocessor.

- PC Card Controller Test

  Checks the functionality of the PC Card controller on the system board.

- USB Register Test

  Checks the integrated registers of the Universal Serial Bus (USB) interface. This subtest does not test USB peripherals.

- USB Memory Structure Test

  Monitors the ability of a USB controller to process a simple set of memory-resident instructions.

Video Test Group

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

Why Run a Video Test?

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

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

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

Subtests

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

- Video Memory Test

  Checks the read/write capability of the video memory in various video modes

- Video Hardware Test

  Checks the cursor registers and the horizontal and vertical retrace bit registers in the video controller

- Text Mode Character Test

  Checks the video subsystem's ability to present data in text modes

- Text Mode Color Test

  Checks the video subsystem's ability to present color in text modes

- Text Mode Pages Test

  Checks the video subsystem's ability to map and present all available video pages on the screen, one page at a time

- Graphics Mode Test

  Checks the video subsystem's ability to present data and color in graphics modes

- Color Palettes Test

  Checks the video subsystem's ability to display all of the available colors

- Solid Colors Test

  Checks the video subsystem's ability to show screens full of solid colors and allows you to check for missing color pixels

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

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

Keyboard Test Group

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

Why Run a Keyboard Test?

Keyboard problems are not always caused by the keyboard. For example, a complete lockup of the computer, rendering the keyboard inoperable, is probably not caused by a problem with the keyboard. There are two symptoms that are likely to be keyboard-related. Sometimes, the configuration of a program changes the function of a key or key combination. Similarly, key configuration programs like ProKey can change a key's function. Because these programs are memory resident, be sure to clear them out of the computer's memory before running a subtest in the Keyboard test group. (Clear them from memory by booting the computer from the *Dell Diagnostics Diskette*.) When these possibilities have been eliminated, and if the following symptoms occur, you should run one or more of the subtests in the Keyboard test group:

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

Subtests

The four subtests in the Keyboard test group confirm the following keyboard functions:

- Keyboard Controller Test

  Confirms the ability of the keyboard controller chip to communicate with the keyboard and confirms the programming of the controller chip

- Keyboard Key Sequence Test

Verifies that the keys on the keyboard function correctly when you press them in a predefined order

- Keyboard Interactive Test

  Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a malfunctioning key

- Stuck Key Test

  Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a repeating key signal

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Mouse Test

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

Why Run the Mouse Test?

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

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

Subtests

There are no subtests for the Mouse test.

Diskette Drives Test Group

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

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

Why Run a Diskette Drives Test?

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

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

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

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

Subtests

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

- Change Line Test

  Checks for bent pins on the diskette drive controller and for defective lines on the diskette cable

- Seek Test

  Checks the drive's ability to search for a specified track on the diskette and to position the read/write heads of the drive to all tracks

- Read Test

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

- Write Test

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

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Hard-Disk Drives (Non-SCSI) Test Group

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

Why Run a Hard-Disk Drives Test?

If you check your hard-disk drive to determine the amount of available space, your operating system will probably report problem areas. Problem areas on hard-disk drives are common, because most hard-disk drives have a small amount of space that is not usable. The hard-disk drive keeps a record of this space so that the computer will not attempt to use it. Identification of unusable disk space, unless it is an unusually large amount (over 5 percent of the possible total), should not be regarded as a cause for testing the hard-

disk drive.

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

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

Subtests

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

- Disk Controller Test

  Checks the internal microcode of the hard-disk drive controller

- Forced Error-Correction-Code Test

  Checks the ability of the hard-disk drive to identify and correct errors

- Seek Test

  Checks the drive's ability to search for a specified track on the drive and to position the read/write heads of the drive to all tracks

- Read Test

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

- Write Test

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

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IDE CD-ROM Drives Test Group

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

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

Why Run an IDE CD-ROM Drives Test?

If you encounter a problem while using an application program on a CD, the problem could result from the

disc or from the drive. When you encounter problems, first try using a different CD. If the problem recurs, run the IDE CD-ROM Drives test group.

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

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

Subtests

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

- Drive Controller Test

  Causes the drive to execute its internal self-test.

- Seek Test

  Checks the drive's ability to search for each block on the device.

- Read Test

  Positions the read heads at each block of the device for reading data and verifies that all blocks on the device can be read correctly.

- Audio Output Test

  Causes the drive to begin playing the first audio track on an audio CD. (To determine if the test passed, listen to the audio output of the drive.)

  NOTE: The Audio Output Test does not run automatically as part of the IDE CD-ROM Drives test group; you must select this subtest individually.

- Eject Removable Media

  Checks the drive's ability to eject the CD tray.

Serial/Infrared Ports Test Group

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

Why Run a Serial/Infrared Ports Test?

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

If the diagnostics do not recognize the computer's serial or infrared port, check the **Serial Port** or **Infrared Data Port** option in the System Setup program to see if the port has been disabled. For instructions, see Serial Port, Infrared Data Port, or Parallel Mode. The subtests in the Serial/Infrared Ports test group cannot test a port unless it is enabled.

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

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

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

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

Subtests

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

- Serial/Infrared Baud Rate Test

  Checks the baud rate generator in each serial communications chip against the computer's clock

- Serial/Infrared Interrupt Test

  Checks the serial port's ability to send IRQs to the microprocessor

- Serial/Infrared Internal Transmission Test

  Checks several internal functions of the serial port using the internal loopback mode of the serial communications chip

- Serial External Transmission Test

  If a loopback device is attached, checks the line control bits of the serial port and sends a test pattern at several baud rates, checking the returned values

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Parallel Ports Test Group

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

Why Run a Parallel Ports Test?

If the diagnostics does not recognize the computer's parallel port, check the **Parallel Mode** option in the

System Setup program to see if the port has been disabled. The subtests in the Parallel Ports test group cannot test a port unless it is enabled.

When a port is faulty, it may not be immediately evident that the port, and not the device connected to the port, is faulty. Instead, the peripheral (such as a printer) might behave erratically or not operate at all. Also, if the external device is not properly installed through software, it may not function properly. Try operating the peripheral from different programs or through the operating system. If it still does not work, you can eliminate the software setup as the cause of the problem.

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

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

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

Subtests

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

- Parallel Internal Test

  Checks several internal functions of the parallel port

- Parallel External Loopback Test

  Tests the functionality of the control lines through an external loopback connector, if an external loopback connector is available

- Parallel External Interrupt Test

  Tests the parallel port's ability to generate interrupts from all possible sources, if an external loopback connector is available

- Parallel Printer Pattern Test

  Tests whether the port(s) can retain data, print text on a printer, and generate interrupts

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SCSI Devices Test Group

The subtests in the SCSI Devices test group check the functionality of the small computer system interface

(SCSI) controller in the C/Port APR or C/Dock Expansion Station, and the SCSI devices attached to either. These tests run only if the computer is docked.

NOTES: Before conducting these subtests on an external SCSI CD-ROM drive, insert into the drive a CD with audio and data tracks (such as a multimedia CD). The Audio Output Test requires a CD with audio tracks; all other subtests require a CD with data tracks.

If the external CD-ROM drive is empty, or if it contains a CD that does not have the required data or audio tracks, the subtest fails.

Why Run a SCSI Devices Test?

If you check your SCSI hard-disk drive to determine the amount of available space, your operating system will probably report problem areas. Problem areas on hard-disk drives are common, because most hard-disk drives have a small amount of space that is not usable. The hard-disk drive keeps a record of this space so that your computer will not attempt to use it. Identification of unusable disk space, unless it is an unusually large amount (over 5 percent of the possible total), should not be regarded as a cause for testing the hard-disk drive.

These are the most common symptoms that might prompt you to test a SCSI device:

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

Subtests

The seven subtests in the SCSI Devices test group confirm the following drive functions:

- Internal Diagnostic Test

  Causes the device to run its internal self-test.

- Seek Test

  Checks the device's ability to search for a specified track on the device and to position its read/write heads to all tracks.

- Read Test

  Positions the read/write heads at each block of the device for reading data and verifies that all tracks on the device can be read correctly.

- Write Test

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

- Audio Output Test

Causes the drive to begin playing the first audio track on an audio CD. (To determine if the test passed, listen to the audio output of the drive.)

NOTE: The Audio Output Test does not run automatically as part of the SCSI Devices test group; you must select this subtest individually.

- Eject Removable Media Test

  Causes a CD-ROM drive to eject its CD, or a SCSI tape drive to eject its tape cartridge.

- Display Information Test

  Displays information about the SCSI controller in an expansion device, the resources allocated to the controller, and a list of target devices attached to it.

Network Interface Test Group

The subtests in the Network Interface test group verify the basic operation of the network interface controller in the Dell Latitude C/Port APR or C/Dock Expansion Station. They test the controller's internal functions, including read and write access to its registers and internal transmit and receive (loopback) capability. These tests run only if the computer is docked.

Why Run a Network Interface Test?

Running a subtest in the Network Interface test group helps diagnose problems that may occur while using the computer in a network environment. Most network failures are caused by one of the following:

- Poor network connections
- Failure in the network controller
- Interrupt conflict (the controller trying to use the same IRQ line as another device)
- Software configuration error

If a problem occurs while using the computer in a network environment, the network connection should be inspected. If the connection is good, run the Network Interface test group to determine if the network interface controller is functioning. If the test group is run in a loop, it can be used to detect intermittent failures.

Subtests

The four subtests in the Network Interface test group confirm the following functions:

- Registers Test

  Checks the interrupt generation capability of the controller by writing patterns to the writeable registers in the controller and by reading the patterns back to verify whether they are accessible and able to retain data.

- Loopback Test

  Places the controller into its various loopback modes and tests its ability to transmit and receive data.

- Shared RAM Test

  Performs a memory test on controllers with memory-mapped shared RAM. On controllers with first-in first-out (FIFO) shared RAM, writes a data pattern to all locations and reads the pattern back to verify the operation. Some controllers do not support shared RAM tests.

- Display Information Test

  Displays address and configuration information about the network controller. This information includes the network address used for communication on the local area network (LAN) and the controller's IRQ level. You can make sure there is not an interrupt conflict by verifying that the IRQ level is not being used by another device connected to the system.

Audio Test Group

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

Why Run an Audio Test

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

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

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

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

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

Subtests

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

- Software Reset Test

  Checks for the presence of an active audio controller in your system

- Interrupt Test

  Checks whether the audio controller is generating an interrupt on the IRQ line configured for that controller

- DMA Test

  Tests for the presence of a DMA channel on the system chip set, and determines if the DMA controller and the audio controller can exchange signals

- FM Sound Playback Test

  Tests whether the system can synthesize sounds and play them through the built-in speakers

- Analog Sound Playback Test

  Tests whether the system can play sampled sounds through the built-in speakers

- Record and Playback Test

  Checks the ability of the audio controller to generate a sampled sound from signals received from the built-in microphone

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

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

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

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

Other Test Group

The Fan Control Test in the Other test group checks the function of the fan. The fan works with the air intake on the computer as part of the automatic thermal management system.

Back to Contents Page

Back to Contents Page

Diagnostic Video Tests: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Video Memory Test | Video Hardware Test | Text Mode Character Test | Text Mode Color Test | Text Mode Pages Test | Graphics Mode Test | Color Palettes Test | Solid Colors Test

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Overview

The Video test group of the Dell Diagnostics consists of the following eight tests, each of which verifies a particular video function or group of functions on your built-in display or on an external monitor:

- Video Memory Test — Checks the integrity of characters generated from data in the video memory
- Video Hardware Test — Checks the functions of the cursor register and the horizontal and vertical retrace bit registers
- Text Mode Character Test — Checks the video subsystem's ability to present text mode data
- Text Mode Color Test — Checks the video subsystem's ability to present color in text modes
- Text Mode Pages Test — Checks the video subsystem's ability to map and present all available video text pages on the display or monitor, one page at a time
- Graphics Mode Test — Checks the video subsystem's ability to present graphics mode data and colors
- Color Palettes Test — Checks the video subsystem's ability to display all available colors
- Solid Colors Test — Checks the video subsystem's ability to show screens full of solid colors and to display all pixels

All of these tests, except the Video Memory Test and the Video Hardware Test, are interactive. These interactive tests display images on the display or monitor and require you to respond with the following steps:

1. Examine a displayed image for correctness.
2. If an image is correct, type y.
3. If an image is incorrect, type n.

The following sections describe each of the tests in the Video test group.

Video Memory Test

The Video Memory Test verifies the integrity of the video memory on the system board. When a test is complete, a message indicates whether the video memory has passed or failed the test. This test does not require any interaction on your part.

Video Hardware Test

The Video Hardware Test verifies the operation of the cursor registers and the horizontal and vertical retrace bit registers. When a test is complete, a message indicates whether these registers have passed or failed the test. This test does not require any interaction on your part.

Text Mode Character Test

The Text Mode Character Test consists of a group of subtests that display printable characters and character attributes. The subtests check character quality and the ability of the display or monitor to show the characters correctly. A prompt at the bottom of each screen asks you to decide whether the display is satisfactory and to respond by typing y or n.

If you respond affirmatively to each subtest, the Text Mode Character Test passes. A negative response to any subtest causes the test to fail.

The following subsections describe the subtests of the Text Mode Character Test in the order in which they appear.

Character Attributes Subtest (80 x 25)

The 80-column x 25-line character attributes subtest displays four lines of text that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (80 x 25)

The 80-column x 25-line character set subtest displays all 256 characters in the American Standard Code for Information Interchange (ASCII) character set in 80-column by 25-line text mode. Figure 1 shows part of the character set subtest screen.

Figure 1. 80-Column x 25-Line Character Set Subtest Screen

Character Attributes Subtest (40 x 25)

The 40-column x 25-line character attributes subtest displays four lines of text, in 40-column by 25-line (double-wide) text mode, that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (40 x 25)

The 40-column x 25-line character set subtest displays all 256 characters in the ASCII character set in 40-column by 25-line (double-wide) text mode. Figure 2 shows part of the 40-column x 25-line character set subtest screen.

Figure 2. 40-Column x 25-Line Character Set Subtest Screen

Text Mode Color Test

The Text Mode Color Test contains three subtests that check the video subsystem's ability to present color in text modes. The following subsections describe these subtests.

Color Attributes Subtest (80 x 25)

The 80-column x 25-line color attributes subtest displays a pattern of 16 rows and 16 columns in 80-column by 25-line text mode. Each row has a hexadecimal number in a unique foreground color, and each column has a unique background color. Where the same foreground and background color intersect, the hexadecimal number is not visible. Type y if each character is displayed correctly; otherwise, type n. Table 1 indicates the color in each of the rows and columns.

Table 1. Color Attributes

Row or Column Number	Foreground Color	Background Color
0	black	black
1	blue	blue
2	green	green
3	cyan	cyan
4	red	red
5	magenta	magenta
6	brown	brown
7	white	white
8	dark gray*	black
9	light blue*	blue
A	light green*	green
B	light cyan*	cyan
C	light red*	red
D	light magenta*	magenta

E	yellow*	brown
F	intense white*	white
* *These colors blink during the test.*		

Color Attributes Subtest (40 x 25)

The 40-column x 25-line color attributes subtest is the same as the previous subtest except that the characters are displayed in 40-column by 25-line (double-wide) text mode. Type y if each character is displayed correctly; otherwise, type n.

Color Bars Subtest

The color bars subtest displays 16 bars in different colors with background intensity enabled. Under each bar is the name of the color that should be displayed. Type y if each character is displayed correctly; otherwise, type n.

Text Mode Pages Test

The Text Mode Pages Test checks the video subsystem's ability to map and present all available video pages on the display or monitor, one page at a time. The test displays eight successive screens, the first of which contains 21 lines of 77 zeros. The remaining seven screens are identical to the first, except that each screen substitutes a different numeral (1 through 7) for the zeros.

Type y if all the rows of numbers on each screen are displayed correctly; otherwise, type n.

Graphics Mode Test

The Graphics Mode Test checks the video subsystem's ability to present graphics mode data and colors. This test displays a number of different screens, each of which allows you to check some aspect of graphics mode data and colors. The following subsections describe the Graphics Mode Test screens in the order in which they appear.

320 x 200 Graphics Mode Screens

The Graphics Mode Test displays two successive 320- x 200-pixel graphics mode screens. The first screen displays three pyramids in red, green, and yellow. The second screen displays three pyramids in magenta, cyan, and white. Type y if all the pyramids are the correct colors; otherwise, type n.

320 x 200 16-Color Graphics Mode Screen

The 320- x 200-pixel 16-color graphics mode screen displays a series of Xs in 16 different colors with the name of the color beneath each X. Type y if all the Xs are the correct colors; otherwise, type n.

640 x 200 16-Color Graphics Mode Screen

The 640- x 200-pixel 16-color graphics mode screen displays a series of hexagons in 16 different colors with

the name of the color beneath each hexagon. Type y if all the hexagons are the correct colors; otherwise, type n.

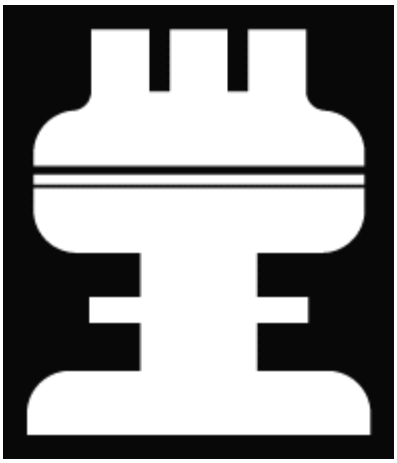
640 x 350 16-Color Graphics Mode Screen

The 640- x 350-pixel 16-color graphics mode screen displays a series of octagons in 16 different colors with the name of the color displayed beneath each octagon. Type y if all the octagons are the correct colors; otherwise, type n.

640 x 480 2-Color Graphics Mode Screen

The 640- x 480-pixel 2-color graphics mode screen displays three chess pieces. Type y if all the chess pieces are identical and displayed correctly; otherwise, type n. Figure 3 shows part of this screen.

Figure 3. 640 x 480 2-Color Graphics Mode Screen



640 x 480 16-Color Graphics Mode Screen

The 640- x 480-pixel 16-color graphics mode screen displays a series of stars in 16 different colors with the name of the color beneath each star. Type y if all the stars are the correct colors; otherwise, type n.

320 x 200 256-Color Graphics Mode Screen

The 320- x 200-pixel 256-color graphics mode screen displays a series of squares in 256 different color hues and intensities. Type y if all the squares are the correct colors; otherwise, type n.

640 x 480 256-Color Graphics Mode Screen

The 640- x 480-pixel 256-color graphics mode screen displays a series of squares with two colors in each square. Type y if all the squares appear to be correct; otherwise, type n.

800 x 600 16-Color Graphics Mode Screen

The 800- x 600-pixel 16-color graphics mode screen displays a series of pyramids in 16 different colors with the name of the color beneath each pyramid. Type y if all the pyramids appear to be correct; otherwise, type n.

800 x 600 256-Color Graphics Mode Screen

The 800- x 600-pixel 256-color graphics mode screen displays a series of squares with four colors in each square. Type `y` if all the squares appear to be correct; otherwise, type `n`.

1024 x 768 16-Color Graphics Mode Screen (External Monitor)

The 1024- x 768-pixel 16-color graphics mode screen displays a series of hourglasses in 16 different colors with the name of the color beneath each hourglass. Type `y` if all the hourglasses appear to be correct; otherwise, type `n`.

1024 x 768 256-Color Graphics Mode Screen (External Monitor)

The 1024- x 768-pixel 256-color graphics mode screen displays a series of asterisks with four colors in each asterisk. Type `y` if all the asterisks appear to be correct; otherwise, type `n`.

Color Palettes Test

The Color Palettes Test checks the video subsystem's ability to display all available colors. The test displays two screens that allow you to check the quality of different shades of the basic colors and to test the ability of the display or monitor to vary the intensity of these colors.

The first screen contains four sets of 64 squares, one for gray and one for each of the three basic colors (red, green, and blue). Each square contains a different shade of its associated color, ranging from very light to very dark. Type `y` if all the squares are the correct colors; otherwise, type `n`.

The second screen is the red/green/blue (RGB) color combination screen. This screen allows you to test the ability of the display or monitor to increase or decrease the intensity of the three basic colors.

The RGB color combination screen displays an RGB box in the top center of the screen with individual red, green, and blue boxes beneath it. Underneath the individual color boxes are three lines that show the intensity of each color. Type `r`, `g`, or `b` to adjust the intensity of the corresponding color; then press the right-arrow key to increase the color intensity, or press the left-arrow key to decrease the intensity. Type `y` if all the squares are the correct colors; otherwise, type `n`.

Solid Colors Test

The Solid Colors Test checks whether the video subsystem is displaying the correct colors. This test also lets you check for missing pixels. When this test is running, four screens appear sequentially—a red screen, a green screen, a blue screen, and a white screen. Check each screen for missing pixels, and verify that the correct color is being displayed.

When the test is complete, a message asks if you are satisfied with the quality of the colors. Type `y` if all the pixels were present and if the correct colors were displayed; otherwise, type `n`.

Back to Contents Page

Back to Contents Page

Error Messages and Flash Codes: Dell™ Latitude™ CPi A-Series System User's Guide

Error Messages | System Flash Codes | Avoiding Interrupt Assignment Conflicts | Memory Allocations | I/O Memory Map

Error Messages

Your application programs, operating system, and the computer itself can identify problems and alert you to them. When this occurs, a message may appear on the computer's display or on an external monitor (if one is attached), or a flash code may be emitted.

If an error message appears on the display or external monitor, make a note of the message. See Table 1 for an explanation of the message and suggestions for correcting any errors. The messages are listed alphabetically.

NOTE: If the message is not listed In Table 1, check the documentation for the application program that was running at the time the message appeared and/or the operating system documentation for an explanation of the message and a recommended action.

Table 1. System Error Messages

Message	Cause	Action
`Auxiliary device failure`	The integrated touch pad or external PS/2 mouse may be faulty.	If you are using an external mouse only, check the connection for a loose or improperly connected cable. If the problem persists, enable the **Pointing Device** option. If the problem persists, call Dell for technical Assistance. (See Getting Help for instructions.)
`Bad command or file name`	The command you entered does not exist or is not in the pathname you specified.	Make sure that you have typed the command correctly, placed spaces in the proper location, and used the correct pathname.
`Cache disabled due to failure`	The primary cache internal to the microprocessor has failed.	Call Dell for technical assistance. (For instructions, see Getting Help.)
`Data error`	The diskette or hard-disk drive cannot read the data.	Run the appropriate utility to check the file structure of the diskette drive or hard-disk drive. See the documentation that came with your operating system.
`Decreasing available memory`	One or more memory modules may be faulty or improperly seated.	
`Disk C: failed initialization`	The hard-disk drive failed initialization.	
`Diskette drive 0 seek failure`	A cable may be loose, or the system configuration information may not match the hardware configuration.	
`Diskette read failure`	A cable may be loose, or the diskette may be faulty.	If the diskette-drive access indicator lights up, try a different diskette.
`Diskette subsystem reset failed`	The diskette drive controller may be faulty.	Run the Diskette Drive test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
`Diskette write-`	Because the diskette is write-protected, the operation cannot be	Slide the write-protect notch up.

protected	completed.	
Drive not ready	No diskette is in the diskette drive, or no hard-disk drive is in the drive bay. The operation requires a diskette in the drive or a hard-disk drive in the bay before it can continue.	Put a diskette in the drive, or push the diskette all the way into the drive until the eject button pops out. Or, install a hard-disk drive in the drive bay.
Error reading PCMCIA card	The computer cannot identify the PC Card.	Reseat the card or try another PC Card that you know works.
Extended memory size has changed	The amount of memory recorded in NVRAM does not match the memory installed in the computer.	Reboot the computer. If the error appears on the display again, call Dell for technical assistance. (See Getting Help for instructions.)
Gate A20 failure	An installed memory module may be loose.	
General failure	The operating system is unable to carry out the command.	This message is usually followed by specific information—for example, Printer out of paper. Respond by taking the appropriate action.
Hard-disk drive configuration error	The computer cannot identify the drive type.	Turn off the computer, remove the drive, and boot the computer from a bootable diskette. Then turn off the computer, reinstall the drive, and reboot the computer. Run the Hard-Disk Drive test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Hard-disk drive controller failure 0	The hard-disk drive does not respond to commands from the computer.	Turn off the computer, remove the drive, and boot the computer from a bootable diskette. Then turn off the computer again, reinstall the drive, and reboot the computer. If the problem persists, try another drive. Then run the Hard-Disk Drive test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Hard-disk drive controller failure 1	The CD-ROM drive does not respond to commands from the computer.	
Hard-disk drive failure	The hard-disk drive does not respond to commands from the computer.	Turn off the computer, remove the drive, and boot the computer from a bootable diskette. Then turn off the computer again, reinstall the drive, and reboot the computer. If the problem persists, try another drive. Then run the Hard-Disk Drive test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Hard-disk drive read failure	The hard-disk drive may be faulty.	
Invalid configuration information-please run System Setup Program	The system configuration information does not match the hardware configuration. This message is most likely to occur after a memory module is installed.	Correct the appropriate options in the System Setup program. (For instructions, see Using the System Setup Program.)
Keyboard clock line failure	A cable or connector may be loose, or the keyboard may be faulty.	Run the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Keyboard controller failure	A cable or connector may be loose, or the keyboard may be faulty.	Reboot the computer, and avoid touching the keyboard or the mouse during the boot routine. If the problem persists, run the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Keyboard data line failure	A cable or connector may be loose, or the keyboard may be faulty.	Run the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)

Keyboard stuck key failure	If an external keyboard or keypad is being used, a cable or connector may be loose or the keyboard may be faulty. If the built-in keyboard is being used, the keyboard may be faulty. A key on the built-in keyboard or external keyboard may have been pressed while the computer was booting.	Run the Stuck Key Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Memory address line failure at address, read value expecting value	An installed memory module may be faulty or improperly seated.	
Memory allocation error	The software you are attempting to run is conflicting with the operating system, another application program, or a utility.	Turn off the computer, wait 30 seconds, and then restart it. Try to run the program again. If the problem persists, contact the software company.
Memory data line failure at address, read value expecting value	An installed memory module may be faulty or improperly seated.	
Memory double word logic failure at address, read value expecting value	An installed memory module may be faulty or improperly seated.	
Memory odd/even logic failure at address, read value expecting value	An installed memory module may be faulty or improperly seated.	
Memory write/read failure at address, read value expecting value	An installed memory module may be faulty or improperly seated.	
No boot device available	The computer cannot find the diskette or hard-disk drive.	If the diskette drive is your boot device, make sure that there is a bootable diskette in the drive. If the hard-disk drive is your boot device, make sure that the drive is installed, properly seated, and partitioned as a boot device.
No boot sector on hard-disk drive	The operating system may be corrupted.	Reinstall your operating system. See the documentation that came with your operating system.
No timer tick interrupt	A chip on the system board may be malfunctioning.	Run the System Set test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)

Non-system disk or disk error	The diskette in drive A or your hard-disk drive does not have a bootable operating system installed on it.	If you are trying to boot from the diskette, replace it with one that has a bootable operating system.
Not a boot diskette	There is no operating system on the diskette.	Boot the computer with a diskette that contains an operating system.
Optional ROM bad checksum	The optional ROM apparently failed.	Call Dell for technical assistance. (For instructions, see Getting Help.)
Sector not found	The operating system cannot locate a sector on the diskette or hard-disk drive. You probably have a bad sector or corrupted FAT on the diskette or hard-disk drive.	Run the appropriate utility to check the file structure on the diskette or hard-disk drive. If a large number of sectors are defective, back up the data (if possible), and then reformat the diskette or hard-disk drive.
Seek error	The operating system cannot find a specific track on the diskette or hard-disk drive.	If the error is on the diskette drive, try another diskette in the drive.
Shutdown failure	A chip on the system board may be malfunctioning.	Run the System Set test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Time-of-day clock lost power	Data stored in NVRAM has become corrupted.	Connect your computer to AC power to charge the battery. If the problem persists, try to restore the data. To restore the data, press <FN><F1> to enter the System Setup program. Then immediately exit it (as described in Using the System Setup Program). If the message reappears, call Dell for technical assistance. (For instructions, see Getting Help.)
Time-of-day clock stopped	The reserve battery that supports the data stored in NVRAM may be read.	Connect your computer to AC power to charge the battery. If the problem persists, call Dell for technical assistance. (For instructions, see Getting Help.)
Time-of-day not set-please run the System Setup program	The time or date stored in the System Setup program does not watch the system clock.	Correct the settings for the **Date** and **Time** options. (For instructions, see Using the System Setup Program.)
Timer chip counter 2 failed	A chip on the system board may be malfunctioning.	Run the System Set test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Unexpected interrupt in protected mode	The keyboard controller may be malfunctioning, or an installed memory module may be loose.	Run the RAM test group and the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
Warning: Battery is critically low.	The battery is running out of charge.	Replace the battery, or connect the computer to AC power. Otherwise, activate suspend-to-disk mode or turn off the computer.

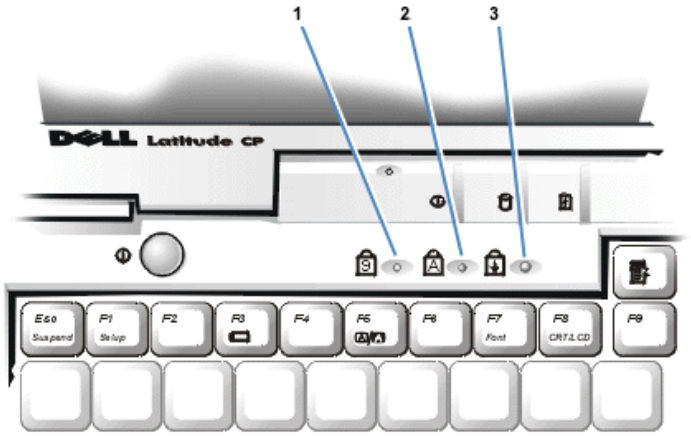
System Flash Codes

When errors that occur during the boot routine cannot be reported on the built-in display or on an external monitor (if attached), the Num Lock, Caps Lock, and Scroll Lock indicators (see Figure 1) may flash together in a pattern of lights (or *flash code*) that identifies the problem. For example, one flash, followed by a second flash, and then a burst of three flashes (code 1-1-3) means that the computer was unable to read the data in nonvolatile random-access memory (NVRAM). This information is important to the Dell support staff if you need to call for technical assistance.

The Num Lock, Caps Lock, and Scroll Lock indicators flash briefly when the computer is turned on. The flash codes, if needed, occur

after the boot routine.

Figure 1. Flash Code Indicators



1 Num Lock
2 Caps Lock
3 Scroll Lock

When the computer emits a flash code, write it down on a copy of the Diagnostics Checklist found in Getting Help and then look up its cause and meaning in Table 2. If you are unable to resolve the problem, use the Dell Diagnostics to identify a more serious cause. (See Running the Dell Diagnostics.) If you are still unable to resolve the problem, call Dell for technical assistance. (See Getting Help for instructions.)

Table 2. Flash Codes and Corrective Actions

Message	Cause	Action
1-1-3	NVRAM write/read failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics, for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)
1-1-4	ROM BIOS checksum failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)
1-2-1	Programmable interval timer failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)
1-2-2	DMA initialization failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)
1-2-3	DMA page register write/read failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)
1-3-1 through 2-4-4	An installed memory module is not being properly identified or used.	Make sure that a memory module is installed in one of the memory module sockets on the system board. The computer will not function unless at least one memory module is installed.
3-1-1	Slave DMA register failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)
3-1-2	Master DMA register failure.	Run the System Set test group in the Dell Diagnostics. (See Running the Dell Diagnostics for instructions.) If the program does not load, call Dell for technical assistance. (For instructions, see Getting Help.)

3-1-3	Master interrupt mask register failure.	Call Dell for technical assistance. (For instructions, see Getting Help.)
3-1-4	Slave interrupt mask register failure.	Call Dell for technical assistance. (For instructions, see Getting Help.)
3-2-4	Keyboard controller test failure.	Run the Keyboard Controller Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
3-3-4	Display memory test failure.	Run the Video Memory Test in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
3-4-1	Display initialization failure.	Run the Video test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
3-4-2	Display retrace test failure.	Run the Video test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
4-2-1	No timer tick.	Call Dell for technical assistance. (For instructions, see Getting Help.)
4-2-2	Shutdown failure.	Call Dell for technical assistance. (For instructions, see Getting Help.)
4-2-3	Gate A20 failure.	Call Dell for technical assistance. (For instructions, see Getting Help.)
4-2-4	Unexpected interrupt in protected mode.	Call Dell for technical assistance. (For instructions, see Getting Help.)
4-3-1	Memory failure above address 0FFFFh.	Run the RAM test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
4-3-3	Timer chip counter 2 failure.	Call Dell for technical assistance. (For instructions, see Getting Help.)
4-3-4	Time-of-day clock stopped.	Call Dell for technical assistance. (For instructions, see Getting Help.)
4-4-1	Serial port failure.	Run the Serial/Infrared Ports test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)
5-1-2	No usable memory.	Run the RAM test group in the Dell Diagnostics. (For instructions, see Running the Dell Diagnostics.)

Avoiding Interrupt Assignment Conflicts

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

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

*To view IRQ line assignments in the Microsoft® Windows® 95 and Windows 98 operating systems, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Select the **Device Manager** tab, and then double-click **Computer**.*

Table 3. IRQ Line Assignments

IRQ Line	Reserved/Available
IRQ0	Reserved; generated by the system timer
IRQ1	Reserved; generated by the keyboard controller to signal that the keyboard output buffer is full
IRQ2	Reserved; generated internally by the interrupt controller to enable IRQ8 through IRQ15
IRQ3	Available for use by a PC Card unless the built-in serial port or infrared port is configured for COM2 or COM4

IRQ4	Available for use by a PC Card unless the built-in serial port or infrared port is configured for COM1 (the default) or COM3
IRQ5	Generated by the audio controller
IRQ6	Generated by the diskette drive controller to indicate that the diskette drive requires the attention of the microprocessor
IRQ7	Available for use by a PC Card or audio controller if the parallel port is disabled
IRQ8	Reserved; generated by the system I/O controller's RTC
IRQ9	Reserved; generated by the video controller
IRQ10	Available for use by a PC Card or audio controller unless the C/Port APR or C/Dock Expansion Station is attached
IRQ11	Generated by USB and PC Card controllers; available for use by a PC Card
IRQ12	Reserved; generated by the keyboard controller to indicate that the output buffer of the touch pad or external PS/2 mouse is full
IRQ13	Reserved; generated by the math coprocessor
IRQ14	Reserved; generated by the hard-disk drive to indicate that the drive requires the attention of the microprocessor
IRQ15	Reserved; generated by CD-ROM drive in the modular bay to indicate that the drive requires the attention of the microprocessor

Memory Allocations

Table 4 provides a map of the conventional memory area. When the microprocessor or a program addresses a location within the conventional memory range, it is physically addressing a location in main memory.

*NOTE: To view memory allocations in Windows 95 and Windows 98, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Select the **Device Manager** tab, and then double-click **Computer**.*

Table 4. Conventional Memory Map

Address Range	Use
0000h-003FFh	Interrupt vector table
00400h-00FFFF	BIOS data area
00500h-005FFh	MS-DOS® and BASIC work area
00600h-9FBFFh	User memory

Table 5 provides a map of the upper memory area. Some of these addresses are dedicated to various system devices, such as the system/video basic input/output system (BIOS). Others are available for use by expansion cards and/or an expanded memory manager (EMM).

When the microprocessor or a program addresses a location within the upper memory area, it is physically addressing a location within one of these devices.

Table 5. Upper Memory Map

Address Range	Use
0009FC00-0009FFFF	PS/2-mouse data area
000A0000-000BFFFF	Video RAM
000C0000-000CBFFF	Video BIOS
000CC000-000CDFFF	Reserved for PC Card

000F0000-000FFFFF	System BIOS
00100000-03FFFFFF	High memory area
FD000000-FDFFFFFF	Video RAM
FF200000-FF2FFFFF	Video RAM
FFFE0000-FFFFFFFF	BIOS ROM

I/O Memory Map

Table 6 provides a map of memory addresses reserved by the system for peripheral I/O devices. Use the information in Table 6 to determine if the memory address of an external peripheral (such as a PC Card) conflicts with a memory address reserved by the system.

Check the documentation of the external I/O device to determine its memory address. If there is a conflict with a memory address reserved by the system, change the address of the device.

*NOTE: To view I/O addresses in Windows 95 and Windows 98, click the **Start** button, point to **Settings**, and click **Control Panel**. Double-click the **System** icon. Click the **Device Manager** tab, and then double-click **Computer**.*

Table 6. I/O Memory Map

Address	Device
0000-001F	DMA controller #1
0020-003F	Interrupt controller #1
0040-005F	System timers
0060-006F	Keyboard controller
0070-007F	RTC and NMI enable
0080-009F	DMA page registers
00A0-00BF	Interrupt controller #2
00C0-00DF	DMA controller #2
00F0-00FF	Math coprocessor
0170-0177	CD-ROM controller
01F0-01F7	Hard-disk drive controller
0210-0217	Audio controller
0220-022F	Audio controller
0270-0277	Fast IR
0376-0376	IDE controller
0378-037F	LPT1
0388-038B	Audio controller
038B-03BB	VGA
03C0-03DF	VGA
03E0-03E1	PC Card controller
03E8-03EF	Fast IR

03F0-03F7	Diskette controller
03F8-03FF	COM1
0530-0537	Audio controller
0078-077B	ECP registers
ECE0-ECFF	USB controller
FFA0-FFAF	PCI-IDE bus registers

Back to Contents Page

Back to Contents Page

Getting Help: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Technical Assistance | Help Tools | Problems With Your Order | Product Information | Returning Items for Warranty Repair or Credit | Before You Call | Dell Contact Numbers

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Overview

This file 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. Run the Dell Diagnostics as described in Running the Dell Diagnostics.
2. Make a copy of the Diagnostics Checklist and fill it out.
3. 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.
4. If the preceding steps have not resolved the problem and you need to talk to a Dell technician, call Dell's technical support service.

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.

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 on the Internet

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 file, including AutoTech, TechFax, order status, technical support, and product information.

From Dell's World Wide Web home page (**http://www.dell.com**), click the **Support** icon, and click **Support Your Dell**. Enter your service tag number (or, if you have one, your Express Service Code) and click **Submit**. If you don't have your service tag number or Express Service Code available, you can also select support information by system.

Everything you need to know about your system is presented on the system support page, including the following tools and information:

- Technical information — Details on every aspect of your system, including hardware specifications.
- Self-diagnostic tools — A system-specific troubleshooting application for resolving many computer-related issues by following interactive flowcharts.
- Drivers, files, and utilities — The latest drivers and basic input/output system (BIOS) updates to keep your system functioning at its best.
- Component support — Technical information, documentation, and troubleshooting tips for different system components.

- Online communications center — Tool for submitting requests for both technical and nontechnical information on Dell products. Avoid telephone delays by receiving an e-mail response to your request for information if your computer is not functioning properly or if you have questions regarding your computer's hardware or operation.

Dell can be accessed electronically using the following addresses:

- World Wide Web

  http://www.dell.com/

  http://www.dell.com/intl/apcc/ (for Asian/Pacific countries only)

  http://www.euro.dell.com (for Europe only)

- 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.

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.

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.

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 Before You Call and then call the number for your country as listed in Dell Contact Numbers.

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.

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.

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.
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

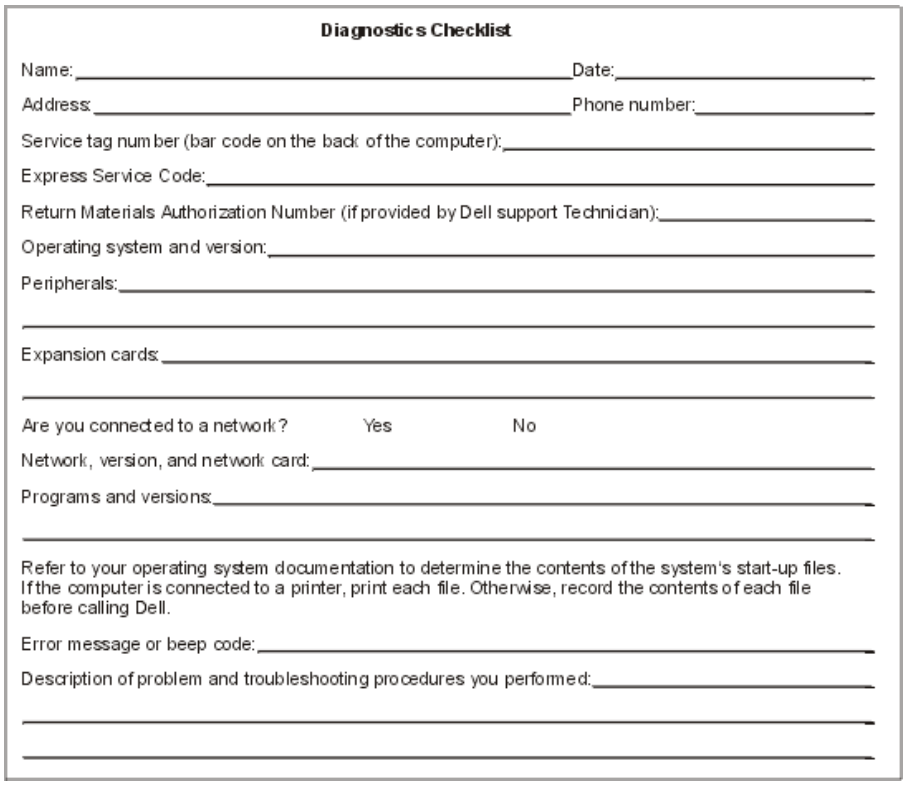
NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the Diagnostics Checklist (Figure 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 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.

Figure 1. Diagnostics Checklist



Diagnostics Checklist

Name: _____ Date: _____

Address: _____ Phone number: _____

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

Express Service Code: _____

Return Materials 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 or beep code: _____

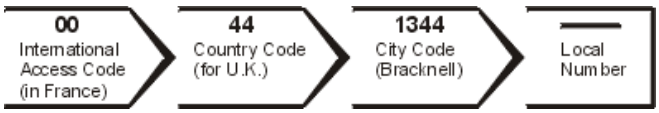
Description of problem and troubleshooting procedures you performed: _____

_____

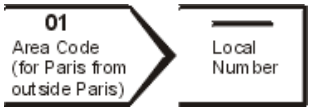
_____

Dell Contact Numbers

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in Tables 1 and 2. Table 1, International Dialing Codes, provides the various codes required to make long-distance and international calls. Table 2, Dell Contact Numbers, provides local telephone numbers, area codes, toll-free numbers, 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 1 in addition to the local numbers provided in Table 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 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
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
Spain (Madrid)	07	34	1
Sweden (Upplands Vasby)	009	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

Table 2. Dell Contact Numbers

Country (City)	Area Local Number or Department Name or Service Code Toll-Free Number
Australia (Sydney)	Customer Technical Support toll free: 1-800-633-559 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)	Technical Support 0660-8779 Customer Care 01 660 8056 Switchboard 01 491 04 0

	Web site: support.euro.dell.com/at E-mail: tech_support_germany@dell.com
Belgium* (Brussels)	Customer Technical Support 02 4819288 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: support.euro.dell.com/be E-mail: tech_be@dell.com
Brunei *NOTE: Customers in Brunei call Malaysia for sales, customer, and technical assistance.*	Customer Technical Support (Penang, Malaysia) 810 4966 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales (Penang, Malaysia) 810 4955
Canada (North York, Ontario) *NOTE: Customers in Canada call the U.S.A. for access to TechConnect BBS.*	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
Chile (Santiago) *NOTE: Customers in Chile call the U.S.A for sales, customer, and technical assistance.*	Sales, Customer Support, and Technical Support toll free: 1230-020-4823
China (Xiamen)	Customer Service toll free: 800 858 2437 Sales toll free: 800 858 2222
Czech Republic* (Prague)	Technical Support 02 22 83 27 27 Customer Care 02 22 83 27 11 Fax 02 22 83 27 14 TechFax 02 22 83 27 28 Switchboard 02 22 83 27 11 Web site: support.euro.dell.com/cz E-mail: czech_dell@dell.com
Denmark* (Horsholm) *NOTE: Customers in Denmark call Sweden for fax technical support.*	Technical Support 45170182 Customer Care 45170181 Switchboard 45170100 Fax Technical Support (Upplands Vasby, Sweden) 859005594 Fax Switchboard 45170117 E-mail: den_support@dell.com
Finland* (Helsinki)	Technical Support 09 253 313 60 Customer Care 09 253 313 61 Fax 09 253 313 99 Switchboard 09 253 313 00 Web site: support.euro.dell.com/fi E-mail: fin_support@dell.com
France* (Paris/Montpellier)	Technical Support (Paris) 01 47 62 68 90 Technical Support (Montpellier) 04 67 06 62 86 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: support.euro.dell.com/fr E-mail: web_fr_tech@dell.com
Germany* (Langen)	Customer Technical Support 06103 971-200 Customer Care 06103 971-500 TechConnect BBS 06103 971-666 Switchboard 06103 971-0 Web site: support.euro.dell.com/de E-mail: tech_support_germany@dell.com
Hong Kong *NOTE: Customers in Hong Kong call Malaysia for customer assistance.*	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
Ireland* (Bray)	Customer Technical Support 1-850-543-543 Customer Care 01 204 4026 Home/Small Business Customer Care (Bracknell, U.K.) 0870 906 0100 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: 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 Fax 57503530 Web site: support.euro.dell.com/it E-mail: support_italy@dell.com
Japan (Kawasaki)	Technical Support toll free: 0088-22-7890 Customer Care 044 556-4240 Direct Sales 044 556-3344 Commercial Sales 044 556-3430 556-3440 Switchboard 044 556-4300
Korea (Seoul) *NOTE: Customers in Korea call Malaysia for customer assistance.*	Technical Support toll free: 080-200-3800 Transaction Sales toll free: 080-200-3600 Corporate Sales toll free: 080-200-3900 Customer Service (Penang, Malaysia) 810 4949 Fax 394 3122 Switchboard 287 5600
Latin America *NOTE: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.*	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* *NOTE: Customers in Luxembourg may call Belgium for sales, customer,*	Customer Technical Support (Brussels, Belgium) 02 481 92 88 Home/Small Business Sales (Brussels, Belgium) toll free:

and technical assistance.	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: support.euro.dell.com/be E-mail: tech_be@dell.com
Macau *NOTE: Customers in Macau call Malaysia for customer assistance.*	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
Mexico (Colonia Granada) *NOTE: Customers in Mexico call the U.S.A. for access to the Automated Order-Status System and AutoTech.*	Automated Order-Status System (Austin, Texas, U.S.A.) 512 728-0685 AutoTech (Automated technical support) (Austin, Texas, U.S.A.) 512 728-0686 Customer Technical Support 525 228-7870 Sales 525 228-7811; toll free: 91-800-900-37; toll free: 91-800-904-49 Customer Service 525 228-7878 Main 525 228-7800
Netherlands* (Amsterdam)	Customer Technical Support 020 5818838 Home/Small Business Sales toll free: 0800-0663 Home/Small Business SalesFax 020 682 7171 Corporate Sales 020 581 8818 Corporate SalesFax 020 686 8003 Fax 020 686 8003 Switchboard 020 581 8818 Web site: support.euro.dell.com/nl
New Zealand	Technical Support 0800 446 255 Customer Service 0800 444 617 Sales 0800 441 567 Fax 0800 441 566
Norway* (Lysaker) *NOTE: Customers in Norway call Sweden for fax technical support.*	Technical Support 671 16882 Customer Care 671 16881 Switchboard 1 16800 Fax Technical Support (Upplands Vasby, Sweden) 590 05 594 Fax Switchboard 671 16865 Web site: support.euro.dell.com/no E-mail: nor_support@dell.com
Poland* (Warsaw)	Technical Support 22 6061 99 Customer Care 22 6061 99 Sales 22 60 61 99 Fax 22 60 61 998 Switchboard 22 60 61 999 Web site: support.euro.dell.com/pl E-mail: pl_support@dell.com
Singapore (Singapore) *NOTE: Customers in Singapore call Malaysia for customer assistance.*	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
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: 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
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: support.euro.dell.com/es E-mail: es_support@dell.com
Sweden* (Upplands Vasby)	Technical Support 08 590 05 199 Customer Care 08 590 05 169 Fax Technical Support 08 590 05 594 Sales 08 590 05 185 Web site: support.euro.dell.com/sw 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: support.euro.dell.com/ch E-mail: swisstech@dell.com
Taiwan *NOTE: Customers in Taiwan call Malaysia for customer assistance.*	Technical Support toll free: 0080 651 226/0800 33 557 Customer Service (Penang, Malaysia) 810 4949 Transaction Sales toll free: 0080 651 228/0800 33 556 Corporate Sales toll free: 0080 651 227/0800 33 555
Thailand *NOTE: Customers in Thailand call Malaysia for customer assistance.*	Technical Support toll free: 0880 060 07 Customer Service (Penang, Malaysia) 810 4949 Sales toll free: 0880 060 06
U.K.* (Bracknell)	Technical Support Department 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: support.euro.dell.com/uk E-mail: dell_direct_support@dell.com
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 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 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 Switchboard 512 338-4400
** For technical assistance in this country after normal working hours, use one of the following numbers: (353-1) 204 4008 or (353-1) 286 5908 (English only—the call is rerouted to the U.S.A.).*	

Back to Contents Page

Back to Contents Page

Using the System Setup Program: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Entering the System Setup Program | Using the System Setup Program | System Setup Options

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Overview

Each time you turn on your computer, it compares the installed hardware with the system configuration information stored in nonvolatile random-access memory (NVRAM). If the system detects a discrepancy, it generates an error message for each incorrect configuration setting.

You can use the System Setup program as follows:

- To set or change user-selectable features — for example, your password or power management features
- To verify information about your computer's current configuration, such as the amount of system memory

For some setup options, you must reboot the computer before any changes take effect. Changes for other options take effect immediately.

*NOTE: If you change an option that is activated by rebooting, the System Setup program displays the setting you selected rather than the setting currently in effect. You **must** reboot for the new setting to take effect.*

After you set up your computer, run the System Setup program to familiarize yourself with your system configuration information and optional settings. Dell recommends that you write down the information for future reference.

*NOTES: If the computer uses the Microsoft® Windows® 95 operating system, you can also use the Dell Control Center to view and change the system configuration. Access the Dell Control Center from the **Dell Accessories** folder.*

If the computer uses the Microsoft Windows NT® 4.0 operating system, you must use the System Setup program to view and change your system configuration.

Entering the System Setup Program

Enter and use the System Setup program as follows:

If you are using Windows 95, press <FN><F1> at any time on the built-in keyboard (or <Scroll Lock><F1> on an external keyboard if the **External Hot Key** option is enabled). If you press <FN><F3> (or <Scroll Lock><F3> on an external keyboard if the **External Hot Key** option is enabled), the System Setup program opens directly to the battery status screen.

If you are using Windows NT 4.0, close all open application programs and exit the operating system. When prompted, reboot the computer and press <FN>< F1> (or <Scroll Lock><F1> from an external keyboard if the **External Hot Key** option is enabled). If you wait too long and your operating system begins to load into memory, let the system complete the load operation; then shut down the computer and try again.

In either operating system, press <Esc> to exit the System Setup program. If you change the setting of an option that requires rebooting in order to take effect, exit the operating system *before* rebooting. (The Help text in the upper-right corner of System Setup screens 1, 2, and 4 tells you if the computer must be rebooted.)

NOTE: If the System Setup program is running when the computer enters suspend mode, the computer exits the System Setup program and then activates suspend mode.

Using the System Setup Program

The System Setup screens display the current setup and configuration information and optional settings for your computer. Information on the screens is organized in five boxed areas:

- **Title**

  The box at the top of all screens lists the page number, system name, and version number of the basic input/output system (BIOS).

- **Options**

  The box on the left half of screens 1, 2, and 4 lists options that define the installed hardware in your computer and the power conservation and security features for your computer.

  Fields next to the options contain settings or values. You can change those values that appear bright on the screen. Options or values that you cannot change (because they are determined or calculated by the computer) appear less bright.

- **Help**

  The box on the upper-right half of screens 1, 2, and 4 displays help information for the option with a currently highlighted field.

- **Computer data**

  The box in the lower-right corner of screens 1, 2, and 4 displays information about your computer.

- **Key functions**

  The line of boxes across the bottom of all screens lists keys and their functions within the System Setup program.

System Setup Options

The following *alphabetized* subsections explain in detail the options found in the System Setup program.

AC

AC, a category under **Power Management**, allows you to set different time-outs for the following options when you operate your computer from AC power: **Display Time-Out, Disk Time-Out, Suspend Time-Out, S2D Time-Out, Smart CPU Mode**, and **Brightness**.

A change to the AC option takes effect immediately (rebooting is not required).

Admin Password

Admin Password displays the current status of your administrator password and allows you to assign or change this password. Settings for this option are:

- **Disabled** (the default) — Indicates that no administrator password is assigned.
- **Enabled** — Indicates that an administrator password is currently assigned.

The administrator password is designed for use by system administrators and service technicians in corporate environments. If an administrator password is assigned, you can use it to access the computer even if you do not know the primary password.

CAUTION: The password features provide a high level of security for the data in your computer. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs or PC Cards with encryption features.

Alarm Resume

The **Alarm Resume** option directs the computer to resume normal operation when it is in suspend mode and detects an alarm from the real-time clock (RTC). Such alarms can be set through various application programs. In order for the alarms in these programs to work, the **Alarm Resume** option must be set to **Enabled**.

Settings for this option are:

- **Enabled** (the default) — Resumes normal operation when the computer detects an alarm.
- **Disabled** — Keeps the computer in suspend mode even if the computer detects an alarm.

A change to the **Alarm Resume** option takes effect immediately (rebooting is not required).

Asset Tag

The **Asset Tag** option displays the asset tag code if you or your organization assigned one to your computer.

For more information, see Asset Tag Utility.

Audio Mode

Audio Mode helps you manage the resources of the computer and the external devices you use with it.

Settings for this option are:

- **Disabled** (the default) — Disables the audio controller and makes the direct memory access (DMA),interrupt request (IRQ), and input/output (I/O) resources available for another serial device to use.
- **Full Duplex** — Allows the computer's audio system to play and record sounds simultaneously.

For a change in the **Audio Mode** option to take effect, you must reboot your computer.

*NOTES: The System Setup program limits the options available for **Audio Mode**, depending on how the **Parallel Mode** and **Infrared Mode** options are set. If **Parallel Mode** is set to **ECP** and **Infrared Mode** is set to **Fast IR**, the **Audio Mode** option cannot be set to **Full Duplex**. This limitation is based on the number of available 8-bit DMA channels.*

*The value selected for **Audio Mode** determines the boot configuration for the device. If Windows 95 finds another available resources, the operating system may upgrade the configuration.*

Battery

Battery, a category of **Power Management**, allows you to set different time-outs for the following options when you operate your computer from battery power: **Display Time-Out**, **Disk Time-Out**, **Suspend Time-Out**, **S2D Time-Out**, **Smart CPU Mode**, and **Brightness**.

A change to the **Battery** option takes effect immediately (rebooting is not required).

Battery Status

Battery Status (page 3 of the System Setup screens) is a graphical representation of the approximate amount of charge left in the main and secondary batteries. There are no user-selectable settings for this option. If there is no battery installed in the main battery compartment or in the modular bay, the battery gauge illustration says **Battery Status: Not Installed**.

If you are not in the System Setup program, you can see the battery gauge illustration at any time by pressing <Fn><F3>.

BIOS Version

BIOS Version displays the version number and release date of the BIOS in your computer. A service technician may ask you for this version number if you call Dell for technical assistance.

NOTE: Dell may periodically offer revisions of the BIOS that add features or solve specific problems. Because the BIOS for your computer is stored on a reprogrammable flash-memory chip, you can use the Flash BIOS Update program to update your computer's BIOS entirely through software.

Boot First Device

Boot First Device determines which disk device your computer uses to find the software needed to start the operating system.

The term *boot* refers to the computer's start-up procedure. When you turn on the computer, it "bootstraps" itself into an operational state by loading into memory a small program, which in turn loads the necessary operating system. **Boot First Device** tells the computer where to look first for the files that it needs to load.

Settings for this option are:

- **Diskette Drive** (the default) — Causes your computer to attempt first to boot from a bootable diskette.
- **Internal HDD** — Causes your computer to boot from the hard-disk drive.
- **CD-ROM Drive** — Causes your computer to attempt first to boot from a bootable CD-ROM disk.
- **Modular Bay HDD** — Attempt first to boot from the second hard-disk drive installed in the modular bay.

For a change in the **Boot First Device** option to take effect, you must reboot your computer.

Boot Second Device

If the system cannot find the software it needs to start the operating system on the drive identified in **Boot First Device**, it will search the device named in this option.

Settings for the option are:

- **Internal HDD** (the default) — Causes your computer to attempt to boot from the hard-disk drive.
- **Diskette Drive** — Causes your computer to attempt to boot from the diskette drive.
- **CD-ROM Drive** — Causes your computer to attempt to boot from a bootable CD-ROM disk.
- **Modular Bay HDD** — Attempts to boot from the second hard-disk drive installed in the modular bay.
- **None**

For a change in the **Boot Second Device** option to take effect, you must reboot your computer.

Boot Third Device

If the system cannot find the software it needs to start the operating system on the drive identified in **Boot Second Device**, it will search the device named in this option.

Settings for the option are:

- **None** (the default)
- **Internal HDD** — Causes your computer to attempt to boot from the hard-disk drive.
- **Diskette Drive** — Causes your computer to attempt to boot from the diskette drive.
- **CD-ROM Drive** — Causes your computer to attempt to boot from a bootable CD-ROM disk.
- **Modular Bay HDD** — Attempts to boot from the second hard-disk drive installed in the modular bay.

For a change in the Boot Third Device option to take effect, you must reboot your computer.

Boot Speed

Boot Speed allows you to choose between the computer's processing speed (the default) and **Compatible**, a slower compatibility speed. The compatibility speed varies, depending on the configuration of your system.

When you change the setting in the **Boot Speed** option, the System Setup program stores and continues to display the new setting even if you do not reboot your computer when you exit the System Setup program. If you start the System Setup program again during your current work session, the processing speed displayed for the **Boot Speed** option may not match the actual speed at which your computer is running.

For a change in the **Boot Speed** option to take effect, you must reboot your computer.

Brightness

Brightness allows you to specify the brightness of the display when the computer is operating on battery power. Use the left- and right-arrow keys to change the brightness of the display. When the computer is powered by a battery, the default setting for **Brightness** is **Minimum**. If the computer is using AC power, the default setting is **Maximum**.

A change to the **Brightness** option becomes effective immediately (rebooting is not required).

Click Volume

Click Volume allows you to disable or adjust the volume of the keyboard clicks if the **Keyboard Click** option is enabled. The default setting for **Click Volume** is **Maximum**.

A change to the **Click Volume** option takes effect immediately (rebooting is not required).

Date

Date resets the date on the computer's internal calendar.

Your computer automatically displays the day of the week corresponding to the settings in the three fields that follow (**month**, **day-of-the-month**, and **year**).

A change to the **Date** option becomes effective immediately (rebooting is not required). However, you must reboot to make the change apparent to the operating system.

To change the date, press the right-arrow key to increase the number in the highlighted field, or press the left-arrow key to decrease the number. If you prefer, you can type in numbers in the **month** and **day-of-the-month** fields.

Disk Time-Out

Disk Time-Out lets you determine how long your hard-disk drive remains idle before the drive motor turns off to conserve battery power.

The **AC** category is set to **Disabled**. There are no user-selectable settings for this option. Settings for **Battery** category are:

- **Disabled**
- **15 Seconds**
- **1 Minute**
- **2 Minutes**
- **3 Minutes**
- **4 Minutes**
- **5 Minutes**
- **10 Minutes**
- **15 Minutes**
- **30 Minutes**
- **1 Hour**

The default setting is **3 Minutes** if the computer is powered by a battery or **1 Minute** if the computer is using AC power. To increase battery operating time, set **Disk Time-Out** to a lower number. However, if your

software requires frequent hard-disk drive accesses, using a higher time-out setting may save battery power and time by minimizing the number of times the hard-disk drive must power up.

*NOTE: Set **Disk Time-Out** to **Disabled** if using it causes compatibility problems with your software.*

A change to the **Disk Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can turn off the hard-disk drive immediately by pressing <Fn><h>. The drive resumes normal operation automatically when it is accessed by the microprocessor.

Diskette Drive A

Diskette Drive A identifies the location of the 3.5-inch diskette drive: **Modular Bay**, **Parallel Port**, or **Not Installed**. There are no user-selectable settings for the **Diskette Drive A** option.

Diskette Drive B

Diskette Drive B identifies the location of a second 3.5-inch diskette drive: **Parallel Port**, **Modular Bay**, or **Not Installed**. There are no user-selectable settings for the **Diskette Drive B** option.

Diskette Reconfig

Diskette Reconfig allows application programs that access the diskette drive to run at their optimum speed. Settings are **At Reboot Only** and **Any Time**.

When **Diskette Reconfig** is set to **Any Time** (the default), you do not have to reboot after installing a diskette drive in the modular bay or attaching a diskette drive to the parallel connector on the back of the computer. However, some application programs such as virus scans that access the diskette drive will run very slowly if the diskette drive is not in the modular bay or connected to the parallel port. When **Diskette Reconfig** is set to **At Reboot Only**, such application programs run at normal speed, but you must reboot after installing or attaching a diskette drive.

Display Close

Display Close lets you determine whether your computer enters suspend mode when the display is closed or whether only the display is turned off.

- **Suspend** (the default) — Allows the computer to enter suspend mode when the display is closed.
- **Active** — Turns off the display, but does not put the computer into suspend mode.

Display Time-Out

Display Time-Out lets you decide how long the computer operates with no I/O activity before turning off the display to conserve battery power.

Settings for this option in both the **AC** and **Battery** categories are:

- **Disabled**
- **1 Minute**
- **5 Minutes**
- **10 Minutes**

- **2 Minutes**
- **3 Minutes**
- **4 Minutes**
- **15 Minutes**
- **30 Minutes**
- **1 Hour**

The default setting is **4 Minutes**. To increase battery operating time, set **Display Time-Out** to a lower number of minutes.

*NOTE: Set the **Display Time-Out** option to **Disabled** if using it causes compatibility problems with your software.*

A change to the **Display Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can turn off the display immediately by pressing <Fn><d>. The display resumes normal operation automatically when you press a key, move the cursor, or press the power button.

Docking Status

Docking Status shows whether the computer is attached to a Dell Latitude C/Port Advanced Port Replicator (APR) or C/Dock Expansion Station. There are no user-selectable settings for the **Docking Status** option.

External Hot Key

External Hot Key lets you use the <Scroll Lock> key on the external keyboard the same way you use the <Fn> key on the computer's built-in keyboard. Set this option to **Scroll Lock** (the default) if you are using an external keyboard. Set this option to **Not Installed** to disable this function on the external keyboard.

Infrared Data Port

Infrared Data Port allows you to avoid resource conflicts by remapping the address of the infrared ports or disabling the port. The **COM1**, **COM2**, **COM3**, and **COM4** settings allow you to take advantage of the computer's Fast IR support.

Settings for this option are:

- **Disabled** — Disables the infrared data port and makes the DMA, IRQ, and I/O resources available for another serial device to use
- **COM1** — Maps the infrared data port to COM1
- **COM2** — Maps the infrared data port to COM2
- **COM3** (the default) — Maps the infrared data port to COM3
- **COM4** — Maps the infrared data port to COM4

For a change in the **Infrared Data Port** option to take effect, you must reboot your computer.

Infrared Mode

The **Infrared Mode** option appears on the screen only after an address is assigned in the **Infrared Data Port** option. **Infrared Mode** lets you select **Fast IR** mode or **Slow IR** mode for use with an infrared device. Select **Slow IR** if the **Parallel Mode** option is set to **ECP** and the **Audio Mode** option is set to **Full Duplex**.

*NOTES: The System Setup program limits the options available for **Infrared Mode**, depending on how the **Parallel Mode** and **Audio Mode** options are set. If **Parallel Mode** is set to **ECP** and **Audio Mode** is set to **Full Duplex**, the **Infrared Mode** option cannot be set to **Fast IR**. This limitation is based on the number of available 8-bit DMA channels.*

*The value selected for **Infrared Mode** determines the boot configuration for the device. If Windows 95 finds other available resources, the operating system may upgrade the configuration.*

Internal Cache

Internal Cache tells you how much external cache your computer has. There are no user-selectable settings for the **Internal Cache** option.

Internal Hard Drive

Internal Hard Drive displays the capacity of your computer's hard-disk drive. This option does not have any user-selectable settings.

Keyboard Click

Keyboard Click lets you choose whether the built-in keyboard makes audible clicking sounds. The **Click Volume** option must be enabled for this option to function. The volume of the simulated key clicks is controlled by the setting in the **Click Volume** option.

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

A change to the **Keyboard Click** option takes effect immediately (rebooting is not required).

Modular Bay

Modular Bay identifies the kind of device—**Diskette Drive**, **Battery**, or **CD-ROM Drive**—that is installed in the modular bay. If there is no device in the modular bay or if a travel bay is installed, this option reads **Not Installed**. There is no user-selectable setting for this option.

Microprocessor

Microprocessor displays the type and speed of the microprocessor installed on your computer's system board. There are no user-selectable settings for this option.

Parallel Mode

Parallel Mode controls whether the computer's built-in parallel port acts as a Personal System/2 (PS/2)-compatible (**Bidirectional**) port, AT-compatible (**Normal**) port, or Extended Capabilities Port (**ECP**)-compatible port. The default setting for **Parallel Mode** is **ECP**.

Windows 95 uses ECP protocol automatically if it detects an ECP-compatible device.

Set this category according to the type of peripheral device connected to the parallel port. To determine the correct mode to use, see the documentation that came with the device.

*NOTE: The **ECP** setting also works for most software written for the AT and PS/2 modes. Devices that use **ECP** mode may come with special drivers that need to be installed in order to use these modes.*

Setting **Parallel Mode** to **Disabled** disables the parallel port and its assigned LPT address, freeing its interrupt for another device to use.

For a change in the **Parallel Mode** option to take effect, you must reboot your computer.

*NOTES: The System Setup program limits the options available for **Parallel Mode**, depending on how the **Audio Mode** and **Infrared Mode** options are set. If **Audio Mode** is set to **Full Duplex** and I**nfrared Mode** is set to **Fast IR**, the **Parallel Mode** option cannot be set to **ECP**. This limitation is based on the number of available 8-bit DMA channels.*

*The value selected for **Parallel Mode** determines the boot configuration for the device. If Windows 95 finds other available resources, the operating system may upgrade the configuration.*

Pointing Device

Pointing Device enables and disables the computer's touch pad.

Settings for this option are:

- **Touch Pad-PS/2 Mouse** (the default)
- **Serial Mouse** — Disables the touch pad and allows you to use a mouse connected to the serial connector on the I/O port

If you want to use a serial mouse, you must first set the **Pointing Device** option to **Serial Mouse**.

For a change in the **Pointing Device** option to take effect, you must reboot your computer.

Power Management

Power Management (Page 4 of the System Setup screens) allows you to enable or disable power conservation features when the computer is being powered by a battery or AC power.

If you want to use any of the time-out options while using battery power, the **Battery** option must be set to **Enabled**. If you want to use the time-out options while using AC power, the AC option must be set to **Enabled**.

A change to the **Power Management** option takes effect immediately (rebooting is not required).

Primary Password

Primary Password displays the current status of the primary password and allows you to assign or change this password.

Settings for this option are:

- **Disabled** (the default) — Indicates that no primary password is assigned
- **Enabled** — Indicates that a primary password is currently assigned

If you assign a primary password, the computer prompts you for the password each time you boot the

computer.

CAUTION: The password features provide a high level of security for the data in your computer. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs or PC Cards with encryption features.

Ring/Event Resume

Ring/Event Resume lets you determine if the computer exits suspend mode when an installed modem card receives an incoming call. This feature must be supported by your modem PC Card and your operating system.

Settings for this option are:

- **Disabled** (the default) — Resumes normal operation when the computer detects a modem ring
- **Enabled** — Keeps the computer in suspend mode when the computer detects a modem ring

*NOTES: Dell recommends that you set **Ring/Event Resume** to **Disabled** when an external serial device, **other than a modem**, is connected to your computer.*

*In order for the **Ring/Event Resume** option to work properly, this feature must be enabled in the device driver for your modem PC Card. All drivers supplied by Dell with your computer are configured to allow the computer to resume normal operation when a modem receives an incoming call. If you use a PC Card that you did not receive from Dell, check the documentation to make sure this feature is set to **Enabled**.*

A change to the **Ring/Event Resume** option takes effect immediately (rebooting is not required).

S2D Time-Out

S2D Time-Out lets you determine how long your computer remains idle (no I/O activity) before activating suspend-to-disk mode to conserve battery power.

Settings for this option in both the **AC** and **Battery** categories are:

- **Disabled**
- **30 Minutes**
- **1 Hour**
- **2 Hours**
- **3 Hours**
- **4 Hours**
- **6 Hours**
- **8 Hours (default)**
- **12 Hours**

A change to the **S2D Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can activate **S2D Time-Out** mode at any time by pressing <Fn><a>. Press the power switch to resume from suspend-to-disk mode.

Serial Port

Serial Port allows you to map the address of the serial port or to disable the serial port.

Settings for this option are:

- **COM1** (the default) — Maps the serial port to COM1
- **COM2** — Maps the serial port to COM2
- **COM3** — Maps the serial port to COM3
- **COM4** — Maps the serial port to COM4
- **Disabled** — Disables the serial port and its assigned COM address, freeing that interrupt for another device to use.

For a change in the **Serial Port** option to take effect, you must reboot your computer.

Service Tag

Service Tag displays the computer's five-character service code, which was programmed into NVRAM by Dell during the manufacturing process. Be prepared to supply this identification during technical assistance or service calls. The service tag is also accessed by certain Dell support software, including diagnostics.

There are no user-selectable settings for this option.

*NOTE: Convert the service tag number into an express service code when prompted to do so the first time you turn on the computer (or use the program in the **Dell Accessories** folder). Keep the code handy in case you call Dell for technical assistance. The code helps Dell's automated support telephone system direct your call more efficiently.*

Smart CPU Mode

Smart CPU Mode allows the computer to slow down the microprocessor automatically if it is not being actively used.

Settings for this option are:

- **Enabled** — Allows the computer to slow down the microprocessor when it is inactive
- **Disabled** — Keeps the microprocessor running at its normal operating speed regardless of microprocessor inactivity

The default for **Smart CPU Mode** is **Enabled** if the computer is operating on battery power. If the computer is using AC power, the default for this option is **Disabled**. To increase battery operating time, set the **Smart CPU Mode** option to **Enabled**.

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

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

*Interactive application programs should function well when **Smart CPU Mode** is set to **Enabled**. (Examples of interactive programs include spreadsheet, text editor, graphics design, entertainment, educational, and utility programs.) However, you may experience performance degradation when*

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

A change to the **Smart CPU Mode** option takes effect immediately (rebooting is not required).

Suspend Time-Out

Suspend Time-Out lets you determine how long your computer remains idle before activating suspend mode to conserve battery power.

Settings for this option in both **AC** and **Battery** categories are:

- **Disabled**
- **1 Minute**
- **2 Minutes**
- **3 Minutes**
- **4 Minutes**
- **5 Minutes**
- **10 Minutes (default)**
- **15 Minutes**
- **30 Minutes**
- **1 Hour**

To increase battery operating time, set the **Suspend Time-Out** option to a lower number of minutes.

NOTE: Set the ***Suspend Time-Out*** *option to* ***Disabled*** *if using it causes compatibility problems with your software.*

A change to the **Suspend Time-Out** option takes effect immediately (rebooting is not required).

If you are not in the System Setup program, you can activate suspend mode at any time by pressing <Fn><Esc>. The computer resumes normal operation automatically when you press a key on the built-in keyboard.

System Memory

System Memory displays the total amount of synchronous dynamic random-access memory (SDRAM) installed in your computer.

There are no user-selectable settings for this option. The amount of memory displayed changes if you install or remove a memory module.

Time

Time resets the time on the computer's internal clock. Time is kept in a 24-hour format (hours:minutes:seconds).

NOTE: If a network server controls the time reflected by the ***Time*** *option, changing this option has no effect.*

A change to the **Time** option becomes effective immediately (rebooting is not required). However, you must reboot to make the change apparent to the operating system.

Universal Connect

The **Universal Connect** option functions with the Dell Latitude C/Port APR if the computer uses Windows 95.

Set this category to **Enabled** (the default) if you often use more than one C/Port APR and want to minimize the initialization time when you connect the replicator to the computer. When this category is set to **Disabled**, the C/Port APR is reinitialized each time it is connected to the computer.

Video Memory

Video Memory displays the amount of video memory installed on the system board. There are no user-selectable settings for this option.

Back to Contents Page

Back to Contents Page

Diagnostic Video Tests: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Video Memory Test | Video Hardware Test | Text Mode Character Test | Text Mode Color Test | Text Mode Pages Test | Graphics Mode Test | Color Palettes Test | Solid Colors Test

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Overview

The Video test group of the Dell Diagnostics consists of the following eight tests, each of which verifies a particular video function or group of functions on your built-in display or on an external monitor:

- Video Memory Test — Checks the integrity of characters generated from data in the video memory
- Video Hardware Test — Checks the functions of the cursor register and the horizontal and vertical retrace bit registers
- Text Mode Character Test — Checks the video subsystem's ability to present text mode data
- Text Mode Color Test — Checks the video subsystem's ability to present color in text modes
- Text Mode Pages Test — Checks the video subsystem's ability to map and present all available video text pages on the display or monitor, one page at a time
- Graphics Mode Test — Checks the video subsystem's ability to present graphics mode data and colors
- Color Palettes Test — Checks the video subsystem's ability to display all available colors
- Solid Colors Test — Checks the video subsystem's ability to show screens full of solid colors and to display all pixels

All of these tests, except the Video Memory Test and the Video Hardware Test, are interactive. These interactive tests display images on the display or monitor and require you to respond with the following steps:

1. Examine a displayed image for correctness.
2. If an image is correct, type y.
3. If an image is incorrect, type n.

The following sections describe each of the tests in the Video test group.

Video Memory Test

The Video Memory Test verifies the integrity of the video memory on the system board. When a test is complete, a message indicates whether the video memory has passed or failed the test. This test does not require any interaction on your part.

Video Hardware Test

The Video Hardware Test verifies the operation of the cursor registers and the horizontal and vertical retrace bit registers. When a test is complete, a message indicates whether these registers have passed or failed the test. This test does not require any interaction on your part.

Text Mode Character Test

The Text Mode Character Test consists of a group of subtests that display printable characters and character attributes. The subtests check character quality and the ability of the display or monitor to show the characters correctly. A prompt at the bottom of each screen asks you to decide whether the display is satisfactory and to respond by typing y or n.

If you respond affirmatively to each subtest, the Text Mode Character Test passes. A negative response to any subtest causes the test to fail.

The following subsections describe the subtests of the Text Mode Character Test in the order in which they appear.

Character Attributes Subtest (80 x 25)

The 80-column by 25-line character attributes subtest displays four lines of text that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (80 x 25)

The 80-column by 25-line character set subtest displays all 256 characters in the American Standard Code for Information Interchange (ASCII) character set in 80-column by 25-line text mode. Figure 1 shows part of the character set subtest screen.

Figure 1. 80-Column by 25-Line Character Set Subtest Screen

Character Attributes Subtest (40 x 25)

The 40-column by 25-line character attributes subtest displays four lines of text, in 40-column by 25-line (double-wide) text mode, that demonstrate normal-intensity video, reverse video, intensified video, and blinking video.

Character Set Subtest (40 x 25)

The 40-column x 25-line character set subtest displays all 256 characters in the ASCII character set in 40-column by 25-line (double-wide) text mode. Figure 2 shows part of the 40-column by 25-line character set subtest screen.

Figure 2. 40-Column by 25-Line Character Set Subtest Screen

Text Mode Color Test

The Text Mode Color Test contains three subtests that check the video subsystem's ability to present color in text modes. The following subsections describe these subtests.

Color Attributes Subtest (80 x 25)

The 80-column by 25-line color attributes subtest displays a pattern of 16 rows and 16 columns in 80-column by 25-line text mode. Each row has a hexadecimal number in a unique foreground color, and each column has a unique background color. Where the same foreground and background color intersect, the hexadecimal number is not visible. Type y if each character is displayed correctly; otherwise, type n. Table 1 indicates the color in each of the rows and columns.

Table 1. Color Attributes

Row or Column Number	Foreground Color	Background Color
0	black	black
1	blue	blue
2	green	green
3	cyan	cyan
4	red	red
5	magenta	magenta
6	brown	brown
7	white	white
8	dark gray*	black
9	light blue*	blue
A	light green*	green
B	light cyan*	cyan
C	light red*	red
D	light magenta*	magenta

E	yellow*	brown
F	intense white*	white
** These colors blink during the test.*		

Color Attributes Subtest (40 x 25)

The 40-column by 25-line color attributes subtest is the same as the previous subtest except that the characters are displayed in 40-column by 25-line (double-wide) text mode. Type y if each character is displayed correctly; otherwise, type n.

Color Bars Subtest

The color bars subtest displays 16 bars in different colors with background intensity enabled. Under each bar is the name of the color that should be displayed. Type y if each character is displayed correctly; otherwise, type n.

Text Mode Pages Test

The Text Mode Pages Test checks the video subsystem's ability to map and present all available video pages on the display or monitor, one page at a time. The test displays eight successive screens, the first of which contains 21 lines of 77 zeros. The remaining seven screens are identical to the first, except that each screen substitutes a different numeral (1 through 7) for the zeros.

Type y if all the rows of numbers on each screen are displayed correctly; otherwise, type n.

Graphics Mode Test

The Graphics Mode Test checks the video subsystem's ability to present graphics mode data and colors. This test displays a number of different screens, each of which allows you to check some aspect of graphics mode data and colors. The following subsections describe the Graphics Mode Test screens in the order in which they appear.

320 x 200 Graphics Mode Screens

The Graphics Mode Test displays two successive 320- x 200-pixel graphics mode screens. The first screen displays three pyramids in red, green, and yellow. The second screen displays three pyramids in magenta, cyan, and white. Type y if all the pyramids are the correct colors; otherwise, type n.

320 x 200 16-Color Graphics Mode Screen

The 320- x 200-pixel 16-color graphics mode screen displays a series of Xs in 16 different colors with the name of the color beneath each X. Type y if all the Xs are the correct colors; otherwise, type n.

640 x 200 16-Color Graphics Mode Screen

The 640- x 200-pixel 16-color graphics mode screen displays a series of hexagons in 16 different colors with

the name of the color beneath each hexagon. Type y if all the hexagons are the correct colors; otherwise, type n.

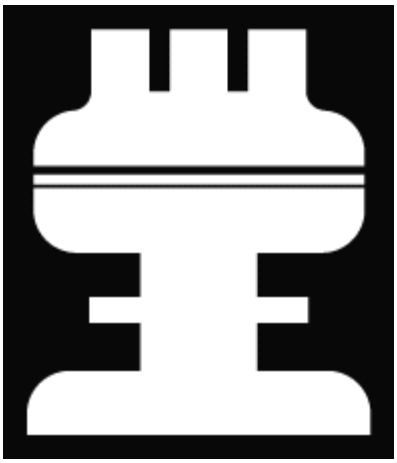
640 x 350 16-Color Graphics Mode Screen

The 640- x 350-pixel 16-color graphics mode screen displays a series of octagons in 16 different colors with the name of the color displayed beneath each octagon. Type y if all the octagons are the correct colors; otherwise, type n.

640 x 480 2-Color Graphics Mode Screen

The 640- x 480-pixel 2-color graphics mode screen displays three chess pieces. Type y if all the chess pieces are identical and displayed correctly; otherwise, type n. Figure 3 shows part of this screen.

Figure 3. 640 x 480 2-Color Graphics Mode Screen



640 x 480 16-Color Graphics Mode Screen

The 640- x 480-pixel 16-color graphics mode screen displays a series of stars in 16 different colors with the name of the color beneath each star. Type y if all the stars are the correct colors; otherwise, type n.

320 x 200 256-Color Graphics Mode Screen

The 320- x 200-pixel 256-color graphics mode screen displays a series of squares in 256 different color hues and intensities. Type y if all the squares are the correct colors; otherwise, type n.

640 x 480 256-Color Graphics Mode Screen

The 640- x 480-pixel 256-color graphics mode screen displays a series of squares with two colors in each square. Type y if all the squares appear to be correct; otherwise, type n.

800 x 600 16-Color Graphics Mode Screen

The 800- x 600-pixel 16-color graphics mode screen displays a series of pyramids in 16 different colors with the name of the color beneath each pyramid. Type y if all the pyramids appear to be correct; otherwise, type n.

800 x 600 256-Color Graphics Mode Screen

The 800- x 600-pixel 256-color graphics mode screen displays a series of squares with four colors in each square. Type `y` if all the squares appear to be correct; otherwise, type `n`.

1024 x 768 16-Color Graphics Mode Screen (External Monitor)

The 1024- x 768-pixel 16-color graphics mode screen displays a series of hourglasses in 16 different colors with the name of the color beneath each hourglass. Type `y` if all the hourglasses appear to be correct; otherwise, type `n`.

1024 x 768 256-Color Graphics Mode Screen (External Monitor)

The 1024- x 768-pixel 256-color graphics mode screen displays a series of asterisks with four colors in each asterisk. Type `y` if all the asterisks appear to be correct; otherwise, type `n`.

Color Palettes Test

The Color Palettes Test checks the video subsystem's ability to display all available colors. The test displays two screens that allow you to check the quality of different shades of the basic colors and to test the ability of the display or monitor to vary the intensity of these colors.

The first screen contains four sets of 64 squares, one for gray and one for each of the three basic colors (red, green, and blue). Each square contains a different shade of its associated color, ranging from very light to very dark. Type `y` if all the squares are the correct colors; otherwise, type `n`.

The second screen is the red/green/blue (RGB) color combination screen. This screen allows you to test the ability of the display or monitor to increase or decrease the intensity of the three basic colors.

The RGB color combination screen displays an RGB box in the top center of the screen with individual red, green, and blue boxes beneath it. Underneath the individual color boxes are three lines that show the intensity of each color. Type `r`, `g`, or `b` to adjust the intensity of the corresponding color; then press the right-arrow key to increase the color intensity, or press the left-arrow key to decrease the intensity. Type `y` if all the squares are the correct colors; otherwise, type `n`.

Solid Colors Test

The Solid Colors Test checks whether the video subsystem is displaying the correct colors. This test also lets you check for missing pixels. When this test is running, four screens appear sequentially—a red screen, a green screen, a blue screen, and a white screen. Check each screen for missing pixels, and verify that the correct color is being displayed.

When the test is complete, a message asks if you are satisfied with the quality of the colors. Type `y` if all the pixels were present and if the correct colors were displayed; otherwise, type `n`.

Back to Contents Page

Back to Contents Page

Running the Dell Diagnostics: Dell™ Latitude™ CPi A-Series System User's Guide

Overview | Features of the Dell Diagnostics | When to Use the Dell Diagnostics | Before You Start Testing | Starting the Dell Diagnostics | How to Use the Dell Diagnostics | Confirming the System Configuration Information | How to Use the Menu | Main Menu Options | Tests in the Dell Diagnostics | Error Messages | RAM Test Group | System Set Test Group | Video Test Group | Keyboard Test Group | Mouse Test | Diskette Drives Test Group | Hard-Disk Drives (Non-SCSI) Test Group | IDE CD-ROM Drives Test Group | Serial/Infrared Ports Test Group | Parallel Ports Test Group | SCSI Devices Test Group | Network Interface Test Group | Audio Test Group | Other Test Group

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Overview

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

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

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

Features of the Dell Diagnostics

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

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

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

When to Use the Dell Diagnostics

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

Before You Start Testing

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

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

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

2. Turn on your printer, if one is attached, and make sure it is online.
3. Confirm the computer's system configuration information and enable all of its components and devices, such as ports.

   For instructions, see Using the System Setup Program.

4. Disable all system setup options for power management.

   For instructions, see Power Management.

5. Attach an AC adapter to the computer.

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

Starting the Dell Diagnostics

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

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

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

   For instructions, see CD-ROM Drive.

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

   For instructions, see Diskette Drive.

3. Turn off the computer.

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

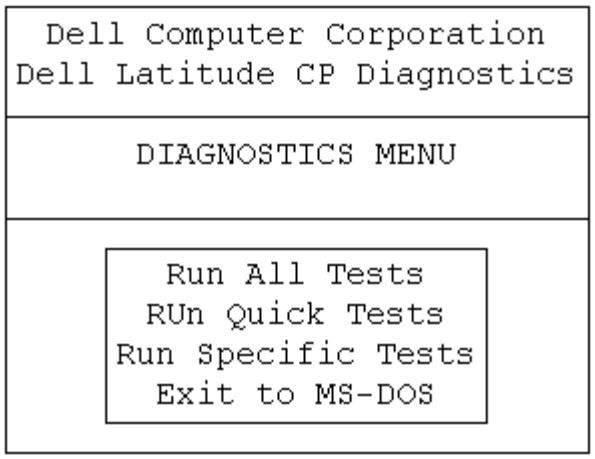
NOTE: Before you read the rest of this chapter, you may want to start the Dell Diagnostics so you can see the menus on your display.

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

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

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

Figure 1. Diagnostics Menu



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

How to Use the Dell Diagnostics

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

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

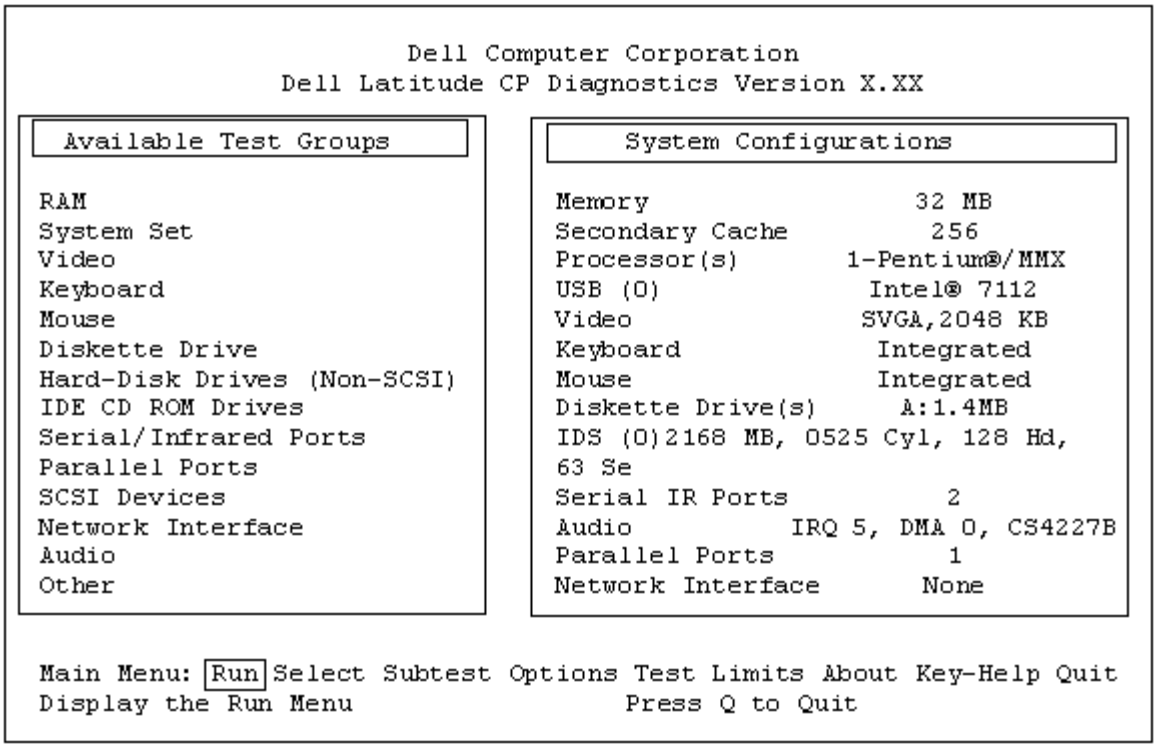
Information on the main screen of the diagnostics is presented in the following five areas:

- Two lines at the top of the screen identify the diagnostics and give its version number.
- On the left side of the screen, the **Available Test Groups** area lists the diagnostic test groups in the order they will be run if you select **Run** and then **All**. Press the up- or down-arrow key to highlight a test group.
- On the right side of the screen, the **System Configuration** area lists the computer's current hardware settings.
- On the lower-right side of the screen, the **IDE Drive Information** area displays information about your hard-disk drive.

The menu area is at the bottom of the screen. The first line lists the options you can select; press the left- or right-arrow key to highlight a menu option. The second line gives information about the option currently highlighted.

CAUTION: While the diagnostic tests are running, do not interrupt the tests, do not unplug the AC adapter, and do not reboot the computer. Interrupting the tests in any of these ways could lead to the loss of system data. It is important to quit the diagnostics program correctly, because the program writes data to the computer's memory that can cause problems unless properly cleared.

Figure 2. Main Screen of the Dell Diagnostics



Confirming the System Configuration Information

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

The following sources supply this configuration information for the diagnostics:

- The system configuration information that you selected through the system setup options
- Identification tests of the microprocessor, the video controller, the keyboard controller, and other key components
- Basic input/output system (BIOS) configuration information temporarily saved in RAM

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

How to Use the Menu

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

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

Main Menu Options

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

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

There are two ways to select a menu option:

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

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

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

Run

Run displays five options: **One**, **Selected**, **All**, **Key-Help**, and **Quit Menu**. If you select **One**, only the highlighted test group is run. If you choose **Selected**, the computer runs the test groups or the subtests selected within the test groups that you selected. (Specify the test groups or subtests to be run within each test group, using the **Select** or **Subtest** option, respectively, as described in the following subsections.) If you select **All**, all of the subtests in all of the test groups are run. (The test groups or subtests are run in the same order as they are listed.)

The **Key-Help** option displays a list of key controls available for the selected option. The **Quit Menu** option

returns you to the **Main** menu.

Select

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

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

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

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

Subtest

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

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

Run (Under Subtest)

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

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

Select (Under Subtest)

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

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

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

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

Options (Under Subtest)

The **Options** option in the **Subtest** menu functions in the same manner as the **Options** option in the **Main** menu. For information on that option, see **Options**.

Test Limits (Under Subtest)

The **Test Limits** option in the **Subtest** menu functions in the same manner as the **Test Limits** option in the **Main** menu. For information on that option, see **Test Limits**.

About (Under Subtest)

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

Key-Help (Under Subtest)

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

Quit Menu (Under Subtest)

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

Options

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

Table 1. Option Parameters

Option Limit	Possible Values
Number of Times to Repeat Test(s)	0001 through 9999, or 0000, which loops indefinitely until you press the <Ctrl> and <Break> keys. The default is 1.
Maximum Errors Allowed	0000 through 9999, where 0000 means that there is no error limit. The default is 1.
Pause for User Response	**Yes, No** Allows you to decide whether tests will wait for user input. The default is **Yes** to wait for user input.
Output Device for Status Messages	**Display, Printer, File** If you have a printer attached to the computer, you can use it to print the *status* messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select **File**, the status messages are printed to a file named **result** on the diagnostics diskette. The default is **Display**.

Output Device for Error Messages	**Display, Printer, File** If you have a printer attached to the computer, you can use it to print the *error* messages, if any, that are generated when a test runs. (The printer must be turned on and in the online mode to print.) If you select **File**, the error messages are printed to a file named **result** on the diagnostics diskette. (Make sure the diskette is not write-protected.) The default is **Display**.

Number of Times to Repeat Test(s)

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

Maximum Errors Allowed

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

Pause for User Response

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

- Your interaction is needed to verify screens and functions or to insert a diskette
- The maximum error limit is reached

To continue testing, press any key.

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

Output Device for Status Messages

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

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

1. Select **Quit Menu** to exit the diagnostics and return to the MS-DOS prompt.
2. Remove the *Dell Diagnostics Diskette* from the diskette drive.
3. Reboot the computer.
4. If necessary, start your operating system.
5. Insert the *Dell Diagnostics Diskette* into the diskette drive.

6. Double-click the **Notepad** icon. Then select **Open** from the **File** menu.
7. In the **File Name** text box, type `a:\result` and press <Enter>.

   The contents of the file appear on the display.

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

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

   ```
   type result
   ```

   The contents of the file appear on the display.

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

Output Device for Error Messages

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

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

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

Test Limits

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

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

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

After you are satisfied with the limits, press <Page Down> to select the next menu or submenu in the **Test Limits** category. Press <Esc> to return to the main **Test Limits** menu. The values you selected under **Test Limits** remain in effect until you change them or exit the diagnostics. The values are reset to their defaults when you restart the diagnostics.

About

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

Key-Help

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

Quit

Select **Quit** from the **Main** menu (or press <q>) to exit the diagnostics and return to an MS-DOS prompt.

After you return to the operating system environment, remove your diagnostics diskette from drive A and reboot the computer.

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

Tests in the Dell Diagnostics

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

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

Table 2 list the diagnostic test groups, their subtests, and comments concerning their use.

Table 2. Dell Diagnostics Tests

Test Groups	Subtests	Description
RAM	Quick Test Comprehensive Test Secondary Cache Test	Tests the RAM.
System Set	CMOS Confidence Test DMA Controller Test Real-Time Clock Test System Speaker Test System Timers Test Interrupt Controller Test	Tests the system board's support chips, DMA controller, computer timer, NVRAM, speaker controller, and, if appropriate, the external cache and the thermal-control device.

	Coprocessor Calculation Test Coprocessor Error Exception Test PC Card Controller Test USB Register Test USB Memory Structure Test	 Tests the math coprocessor that is internal to the microprocessor. Tests the PC Card controller on the system board. Tests the computer's USB connector.
Video	Video Memory Test Video Hardware Test Text Mode Character Test Text Mode Color Test Text Mode Pages Test Graphics Mode Test Color Palettes Test Solid Colors Test	Tests the display by checking various aspects of video output.
Keyboard	Keyboard Controller Test Keyboard Key Sequence Test Keyboard Interactive Test Stuck Key Test	Tests the keyboard by checking the keyboard controller and by finding keys that *stick* or respond incorrectly.
Mouse	Mouse Test	Tests the electronic pointing device (integrated touch pad, external serial mouse, or external PS/2 mouse).
Diskette Drives	Change Line Test Seek Test Read Test Write Test	Tests a drive that uses removable diskettes. Also tests the associated controlling devices and important parts of the cabling.
Hard-Disk Drives (Non-SCSI)	Disk Controller Test Forced Error-Correction-Code Test Seek Test Read Test Write Test	Tests a drive that uses fixed, internal disks. Also tests the associated controlling devices.
IDE CD-ROM Drives	Drive Controller Test Seek Test Read Test Audio Output Test Eject Removable Media	Tests an IDE drive that uses removable CD media. Also tests the associated controlling devices.
Serial/Infrared Ports	Serial/Infrared Baud Rate Test Serial/Infrared Interrupt Test Serial/Infrared Internal Trans-mission Test Serial External Transmission Test	Tests the components through which peripherals that use the serial or infrared port, such as communications devices, send and receive data. Requires an external loopback connector.

Parallel Ports	Parallel Internal Test Parallel External Loopback Test Parallel External Interrupt Test Parallel Printer Pattern Test	Tests the components through which peripherals that use the parallel port, such as printers, send and receive data.
SCSI Devices	Internal Diagnostic Test Seek Test Read Test Write Test Audio Output Test Eject Removable Media Test Display Information Test	Tests the SCSI controller in the C/Port APR or C/Dock Expansion Station and all SCSI devices attached to either. This test runs only if the computer is docked.
Network Interface	Registers Test Loopback Test Shared RAM Test Display Information Test	Tests the read and write access capability of the network controller registers in the Dell Latitude C/Port APR or C/Dock Expansion Station. This test runs only if the computer is docked.
Audio	Software Reset Test Interrupt Test DMA Test FM Sound Playback Test Analog Sound Playback Test Record and Playback Test	Tests the operation of the audio chip set. Tests the record and playback ability of the internal microphone and speakers.
Other	Fan Control Test	Tests the function of the fan.

Error Messages

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

RAM Test Group

The RAM test group subtests check all the directly addressable RAM. You should run the stand-alone RAM Test program (**ramtest.exe**) from the MS-DOS prompt if, for some reason, the diagnostics cannot load into memory.

The RAM Test program has switches that allow you to set both test limits and options for the subtests from the MS-DOS prompt. The switches listed in Table 3 can be added to the end of the **ramtest** command line.

The switches can be used in any order, but they must be separated by a space.

For example, to run the RAM comprehensive subtest 10 times without pausing, stop at a maximum of 20 errors, and output the results to a file named **ramtst.rpt,** type the following command line at the MS-DOS prompt and press <Enter>:

```
ramtest -r10 -np -m20 -oframtst.rpt
```

To view the Help screen that lists all of the **ramtest** command-line switches, type the following command at the MS-DOS prompt and press <Enter>:

```
ramtest?
```

Table 3. RAM Test Switches

Switch	Description
`-r` *number*	Repeats the subtest this number of times. Valid numbers are 1 through 9999. A value of 0 causes the test to run until you press <Ctrl><Break>. The default value is 1.
`-m` *number*	Stops the test if this number of errors occur. Valid numbers are 1 through 9999. A value of 0 causes the test to accept an unlimited number of errors. The default value is 0.
`-s` *hexadecimal memory address*	Starts the test at this hexadecimal address. Valid hexadecimal values are 0 up to the highest memory address. The default value is 0.
`-e` *hexadecimal memory address*	Stops the test at this hexadecimal address. Valid hexadecimal values are 0 up to the highest memory address. The default is the highest memory address.
`-o [f` *filename*`,p]`	Outputs the test report to a file (**f**) or a printer (**p**). If you output to a file, append the *filename* after the **f** parameter. If you do not specify a filename when using the **f** parameter, the test report is output to a file named **result.** If you output to the printer, the test file is output to LPT1.
`-[q,c]`	Runs the quick (**q**) or comprehensive (**c**) subtest. The comprehensive subtest is the default value.
`-np`	Does not pause when an error occurs or a subtest finishes. Pause (**p**) is the default value.

Why Run a RAM Test?

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

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

Subtests

Three subtests are available for the RAM test group: the Quick Test, the Comprehensive Test, and the Secondary Cache Test. The Quick Test performs an address check to determine whether the computer is

properly setting and clearing individual bits in RAM. It also determines whether the RAM read and write operations are affecting more than one memory address location at a time. This subtest checks all available RAM, including the secondary cache. The Comprehensive Test also performs an address check, as well as the following:

- Data pattern checks, to look for RAM bits that are stuck high or low, short-circuited data lines, and some data pattern problems that are internal to the memory chips
- A parity check that verifies the ability of the memory subsystem to detect errors
- A refresh check, to verify that the dynamic RAM (DRAM) is being recharged properly

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System Set Test Group

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

Why Run a System Set Test?

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

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

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

- A program is not running as usual, or a proven piece of software appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is functioning properly by moving it to another computer and running it there.)
- A PC Card you previously accessed can no longer be accessed.
- The computer periodically locks up, especially at different places and times in different programs.
- Parity errors or page fault failures (any error message that contains the word *parity* or *page fault*) occur at any time during operation. These errors are usually accompanied by a reference to an address, which you should record on a copy of the Diagnostics Checklist found in Getting Help.
- Correcting errors in the system configuration information does not resolve a problem.
- The computer's clock/calendar stops.
- The speaker no longer functions. The problem could be a failure of the system timers as well as a failure of the speaker itself. Run the System Timers Test, followed by the System Speaker Test.
- If a peripheral device appears to malfunction, run the Interrupt Controllers Test. If the computer fails the test, the problem lies with the interrupt controller; if the computer passes, then the problem lies with the peripheral device.
- A spreadsheet program or other type of mathematical application runs abnormally slow, generates error messages concerning calculations or operations, runs incorrectly, or generates incorrect results; or a proven piece of the program appears to malfunction and you confirm that the software itself is not at fault. (You can confirm that the software is not at fault by moving the program to another computer and running it there.)
- The computer halts in the middle of performing calculations or complex mathematical operations.

Subtests

The 11 subtests in the System Set test group confirm the following computer functions:

- CMOS Confidence Test

  Checks the nonvolatile RAM (NVRAM) for accessibility and reliability of data storage by performing a data pattern check and verifying the uniqueness of memory addresses.

- DMA Controller Test

  Tests the direct memory access (DMA) controller and verifies the correct operation of its page and channel registers by writing patterns to the registers.

- Real-Time Clock Test

  Confirms the functionality and accuracy of the computer's real-time clock (RTC).

- System Speaker Test

  Checks the functionality of the speaker by generating eight tones.

- System Timers Test

  Checks the timers used by the microprocessor for event counting, frequency generation, and other functions. Only the functions that can be activated by software are tested.

- Interrupt Controller Test

  Generates an interrupt on each interrupt request (IRQ) line to verify that devices using that line can communicate with the microprocessor and that the interrupt controller sends the correct memory addresses to the microprocessor.

- Coprocessor Calculation Test

  Checks the use of different types of numbers and the math coprocessor's ability to calculate correctly.

- Coprocessor Error Exception Test

  Verifies the math coprocessor's ability to handle errors and to send IRQs to the microprocessor.

- PC Card Controller Test

  Checks the functionality of the PC Card controller on the system board.

- USB Register Test

  Checks the integrated registers of the Universal Serial Bus (USB) interface. This subtest does not test USB peripherals.

- USB Memory Structure Test

  Monitors the ability of a USB controller to process a simple set of memory-resident instructions.

Video Test Group

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

Why Run a Video Test?

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

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

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

Subtests

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

- Video Memory Test

  Checks the read/write capability of the video memory in various video modes

- Video Hardware Test

  Checks the cursor registers and the horizontal and vertical retrace bit registers in the video controller

- Text Mode Character Test

  Checks the video subsystem's ability to present data in text modes

- Text Mode Color Test

  Checks the video subsystem's ability to present color in text modes

- Text Mode Pages Test

  Checks the video subsystem's ability to map and present all available video pages on the screen, one page at a time

- Graphics Mode Test

  Checks the video subsystem's ability to present data and color in graphics modes

- Color Palettes Test

  Checks the video subsystem's ability to display all of the available colors

- Solid Colors Test

  Checks the video subsystem's ability to show screens full of solid colors and allows you to check for missing color pixels

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

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

Keyboard Test Group

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

Why Run a Keyboard Test?

Keyboard problems are not always caused by the keyboard. For example, a complete lockup of the computer, rendering the keyboard inoperable, is probably not caused by a problem with the keyboard. There are two symptoms that are likely to be keyboard-related. Sometimes, the configuration of a program changes the function of a key or key combination. Similarly, key configuration programs like ProKey can change a key's function. Because these programs are memory resident, be sure to clear them out of the computer's memory before running a subtest in the Keyboard test group. (Clear them from memory by booting the computer from the *Dell Diagnostics Diskette*.) When these possibilities have been eliminated, and if the following symptoms occur, you should run one or more of the subtests in the Keyboard test group:

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

Subtests

The four subtests in the Keyboard test group confirm the following keyboard functions:

- Keyboard Controller Test

  Confirms the ability of the keyboard controller chip to communicate with the keyboard and confirms the programming of the controller chip

- Keyboard Key Sequence Test

Verifies that the keys on the keyboard function correctly when you press them in a predefined order

- Keyboard Interactive Test

  Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a malfunctioning key

- Stuck Key Test

  Checks the internal microcode of the keyboard and the external interface of the keyboard controller chip for a repeating key signal

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Mouse Test

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

Why Run the Mouse Test?

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

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

Subtests

There are no subtests for the Mouse test.

Diskette Drives Test Group

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

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

Why Run a Diskette Drives Test?

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

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

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

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

Subtests

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

- Change Line Test

  Checks for bent pins on the diskette drive controller and for defective lines on the diskette cable

- Seek Test

  Checks the drive's ability to search for a specified track on the diskette and to position the read/write heads of the drive to all tracks

- Read Test

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

- Write Test

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

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Hard-Disk Drives (Non-SCSI) Test Group

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

Why Run a Hard-Disk Drives Test?

If you check your hard-disk drive to determine the amount of available space, your operating system will probably report problem areas. Problem areas on hard-disk drives are common, because most hard-disk drives have a small amount of space that is not usable. The hard-disk drive keeps a record of this space so that the computer will not attempt to use it. Identification of unusable disk space, unless it is an unusually large amount (over 5 percent of the possible total), should not be regarded as a cause for testing the hard-

disk drive.

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

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

Subtests

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

- Disk Controller Test

  Checks the internal microcode of the hard-disk drive controller

- Forced Error-Correction-Code Test

  Checks the ability of the hard-disk drive to identify and correct errors

- Seek Test

  Checks the drive's ability to search for a specified track on the drive and to position the read/write heads of the drive to all tracks

- Read Test

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

- Write Test

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

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IDE CD-ROM Drives Test Group

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

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

Why Run an IDE CD-ROM Drives Test?

If you encounter a problem while using an application program on a CD, the problem could result from the

disc or from the drive. When you encounter problems, first try using a different CD. If the problem recurs, run the IDE CD-ROM Drives test group.

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

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

Subtests

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

- Drive Controller Test

  Causes the drive to execute its internal self-test.

- Seek Test

  Checks the drive's ability to search for each block on the device.

- Read Test

  Positions the read heads at each block of the device for reading data and verifies that all blocks on the device can be read correctly.

- Audio Output Test

  Causes the drive to begin playing the first audio track on an audio CD. (To determine if the test passed, listen to the audio output of the drive.)

  NOTE: The Audio Output Test does not run automatically as part of the IDE CD-ROM Drives test group; you must select this subtest individually.

- Eject Removable Media

  Checks the drive's ability to eject the CD tray.

Serial/Infrared Ports Test Group

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

Why Run a Serial/Infrared Ports Test?

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

If the diagnostics do not recognize the computer's serial or infrared port, check the **Serial Port** or **Infrared Data Port** option in the System Setup program to see if the port has been disabled. For instructions, see Serial Port, Infrared Data Port, or Parallel Mode. The subtests in the Serial/Infrared Ports test group cannot test a port unless it is enabled.

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

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

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

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

Subtests

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

- Serial/Infrared Baud Rate Test

  Checks the baud rate generator in each serial communications chip against the computer's clock

- Serial/Infrared Interrupt Test

  Checks the serial port's ability to send IRQs to the microprocessor

- Serial/Infrared Internal Transmission Test

  Checks several internal functions of the serial port using the internal loopback mode of the serial communications chip

- Serial External Transmission Test

  If a loopback device is attached, checks the line control bits of the serial port and sends a test pattern at several baud rates, checking the returned values

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Parallel Ports Test Group

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

Why Run a Parallel Ports Test?

If the diagnostics does not recognize the computer's parallel port, check the **Parallel Mode** option in the

System Setup program to see if the port has been disabled. The subtests in the Parallel Ports test group cannot test a port unless it is enabled.

When a port is faulty, it may not be immediately evident that the port, and not the device connected to the port, is faulty. Instead, the peripheral (such as a printer) might behave erratically or not operate at all. Also, if the external device is not properly installed through software, it may not function properly. Try operating the peripheral from different programs or through the operating system. If it still does not work, you can eliminate the software setup as the cause of the problem.

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

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

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

Subtests

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

- Parallel Internal Test

  Checks several internal functions of the parallel port

- Parallel External Loopback Test

  Tests the functionality of the control lines through an external loopback connector, if an external loopback connector is available

- Parallel External Interrupt Test

  Tests the parallel port's ability to generate interrupts from all possible sources, if an external loopback connector is available

- Parallel Printer Pattern Test

  Tests whether the port(s) can retain data, print text on a printer, and generate interrupts

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SCSI Devices Test Group

The subtests in the SCSI Devices test group check the functionality of the small computer system interface

(SCSI) controller in the C/Port APR or C/Dock Expansion Station, and the SCSI devices attached to either. These tests run only if the computer is docked.

NOTES: Before conducting these subtests on an external SCSI CD-ROM drive, insert into the drive a CD with audio and data tracks (such as a multimedia CD). The Audio Output Test requires a CD with audio tracks; all other subtests require a CD with data tracks.

If the external CD-ROM drive is empty, or if it contains a CD that does not have the required data or audio tracks, the subtest fails.

Why Run a SCSI Devices Test?

If you check your SCSI hard-disk drive to determine the amount of available space, your operating system will probably report problem areas. Problem areas on hard-disk drives are common, because most hard-disk drives have a small amount of space that is not usable. The hard-disk drive keeps a record of this space so that your computer will not attempt to use it. Identification of unusable disk space, unless it is an unusually large amount (over 5 percent of the possible total), should not be regarded as a cause for testing the hard-disk drive.

These are the most common symptoms that might prompt you to test a SCSI device:

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

Subtests

The seven subtests in the SCSI Devices test group confirm the following drive functions:

- Internal Diagnostic Test

  Causes the device to run its internal self-test.

- Seek Test

  Checks the device's ability to search for a specified track on the device and to position its read/write heads to all tracks.

- Read Test

  Positions the read/write heads at each block of the device for reading data and verifies that all tracks on the device can be read correctly.

- Write Test

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

- Audio Output Test

Causes the drive to begin playing the first audio track on an audio CD. (To determine if the test passed, listen to the audio output of the drive.)

NOTE: The Audio Output Test does not run automatically as part of the SCSI Devices test group; you must select this subtest individually.

- Eject Removable Media Test

  Causes a CD-ROM drive to eject its CD, or a SCSI tape drive to eject its tape cartridge.

- Display Information Test

  Displays information about the SCSI controller in an expansion device, the resources allocated to the controller, and a list of target devices attached to it.

Network Interface Test Group

The subtests in the Network Interface test group verify the basic operation of the network interface controller in the Dell Latitude C/Port APR or C/Dock Expansion Station. They test the controller's internal functions, including read and write access to its registers and internal transmit and receive (loopback) capability. These tests run only if the computer is docked.

Why Run a Network Interface Test?

Running a subtest in the Network Interface test group helps diagnose problems that may occur while using the computer in a network environment. Most network failures are caused by one of the following:

- Poor network connections
- Failure in the network controller
- Interrupt conflict (the controller trying to use the same IRQ line as another device)
- Software configuration error

If a problem occurs while using the computer in a network environment, the network connection should be inspected. If the connection is good, run the Network Interface test group to determine if the network interface controller is functioning. If the test group is run in a loop, it can be used to detect intermittent failures.

Subtests

The four subtests in the Network Interface test group confirm the following functions:

- Registers Test

  Checks the interrupt generation capability of the controller by writing patterns to the writeable registers in the controller and by reading the patterns back to verify whether they are accessible and able to retain data.

- Loopback Test

  Places the controller into its various loopback modes and tests its ability to transmit and receive data.

- Shared RAM Test

  Performs a memory test on controllers with memory-mapped shared RAM. On controllers with first-in first-out (FIFO) shared RAM, writes a data pattern to all locations and reads the pattern back to verify the operation. Some controllers do not support shared RAM tests.

- Display Information Test

  Displays address and configuration information about the network controller. This information includes the network address used for communication on the local area network (LAN) and the controller's IRQ level. You can make sure there is not an interrupt conflict by verifying that the IRQ level is not being used by another device connected to the system.

Audio Test Group

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

Why Run an Audio Test

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

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

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

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

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

Subtests

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

- Software Reset Test

  Checks for the presence of an active audio controller in your system

- Interrupt Test

  Checks whether the audio controller is generating an interrupt on the IRQ line configured for that controller

- DMA Test

  Tests for the presence of a DMA channel on the system chip set, and determines if the DMA controller and the audio controller can exchange signals

- FM Sound Playback Test

  Tests whether the system can synthesize sounds and play them through the built-in speakers

- Analog Sound Playback Test

  Tests whether the system can play sampled sounds through the built-in speakers

- Record and Playback Test

  Checks the ability of the audio controller to generate a sampled sound from signals received from the built-in microphone

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

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

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

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

Other Test Group

The Fan Control Test in the Other test group checks the function of the fan. The fan works with the air intake on the computer as part of the automatic thermal management system.

Back to Contents Page