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# HP OmniBook 6000

# Reference Guide

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# Introducing the Notebook Computer



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# Taking Inventory

Congratulations! Your notebook computer sets a new standard in personal computing. Although compact and easy to carry, your computer is made with the quality and attention to detail that are the hallmark of Hewlett-Packard.

Your computer has several features that make it convenient to use:

- The display is brighter than those on previous HP notebook computers.
- Two buttons provide convenient options for starting and stopping the computer.
- Volume controls are located within easy reach on the computer's right side, and the audio-off button and light let you cut off all sound quickly when needed.
- All cable connectors are near the back of the computer, keeping cables away from your working area.

This manual shows how to set up and operate your computer, as well as what to do if you run into trouble.

## What's in the Box?

- HP OmniBook 6000 PC.
- Main battery (installed).
- CD-ROM or DVD drive module (installed).
- Floppy disk drive module.
- External floppy disk drive cable.
- ac adapter and power cord.
- Quick Start sheet.
- *Startup Guide*.
- *Recovery CD*, for restoring Windows and all software included with your computer.
- Microsoft Windows manual.
- Mediamatics CD (for models with a DVD drive).



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## Software bundled on your computer

Your computer includes the following software.

| Software | Function |
|---|---|
| HP TopTools | Allows network managers and administrators to check the hardware and software on your computer and how well they are working. |
| Agaté Tioman Hot-Swap | Lets you swap most modules in the plug-in bay without needing to shut down and reboot the computer (Windows 95 and 98 only). |
| QuickLink | Permits fax transfer to fax machines and fax software, and permits data transfer. (Windows 98 only) |
| HP e-center | Provides easy access to e-pages and e-services—including backup, e-mail, and fax transfer (North America English only). |
| VirusScan | Protects your computer from potentially harmful files. |
| Adobe Acrobat Reader | Allows you to read documents in Acrobat format frequently used on the Internet. |
| HP DiagTools | Provides hardware diagnostic tests. |
| Mediamatics DVD Express CD | Controls DVD play (for models with a DVD drive). |

## To buy accessories

You can buy accessories for your computer online. For the latest accessories and options, visit the HP Notebook Web site (www.hp.com/notebooks).

HP currently offers docking solutions, plug-in modules, and other accessories, such as the following:

- ac adapter.
- Floppy disk drive module.
- External floppy disk drive cable.
- Plug-in modules, such as CD-ROM drive, DVD drive, CD read/write drive, Zip drive, LS-120 drive, second hard disk drive.
- Replacement hard disk drive module.
- Main battery.
- Secondary battery.



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- Weight-saving module, for module bay to reduce travel weight.
- External battery charger.
- Docking bay adapter.

## To find more information

The following table lists other sources of information about your computer and related products.

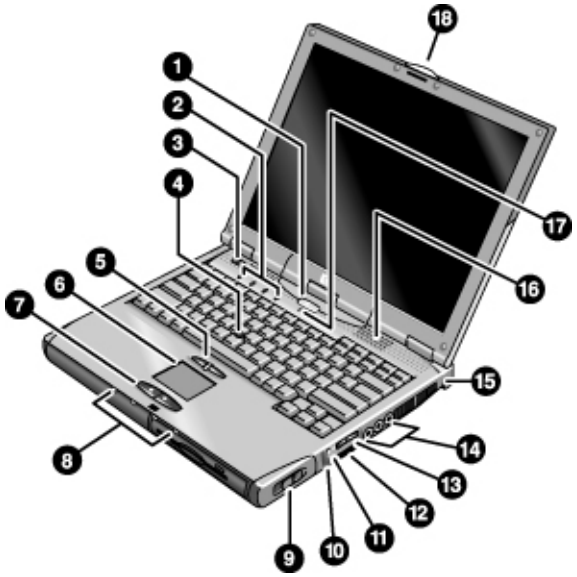
| Source | Description and Location |
|---|---|
| *Startup Guide* | This printed manual introduces your computer. It also contains setup instructions, basic operation guidelines, troubleshooting information, and warranty information. |
| Online *Reference Guide* | The full *Reference Guide* is shipped on the computer's hard drive, and provides a complete source for operating and maintaining the computer. Look in the HP Library group, or on the *Recovery CD* in \hp\Library. |
| Online HP Notes | For late-breaking information available after the manuals were completed, see the HP Notes in the online HP Library, or on the *Recovery CD* in \hp\Library. |
| Microsoft Windows manual | This is shipped with your computer and contains information about using the version of Microsoft Windows shipped with your computer. |
| HP Notebook Web Site | www.hp.com/notebooks.<br>www.europe.hp.com/notebooks (European mirror). |
| HP Customer Care Web Site | www.hp.com/go/support. |
| Corporate Evaluator's Guide | This provides information about installing alternate operating systems, as well as how to configure your notebook computer in a corporate, networked environment. Located at the HP Notebook Web site. |



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# Identifying Parts of the Computer

## Front View

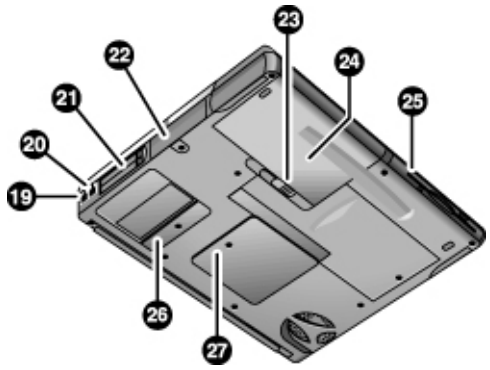



1. Sleep button. Suspends and resumes operation.
2. Keyboard status lights (left to right: Caps Lock, Num Lock, Keypad Lock, Scroll Lock).
3. Power slide button. Turns the computer on and off.
4. Pointing stick (pointing device).
5. Click buttons and scroll button.
6. Touch pad (pointing device).
7. Click buttons.
8. Main status lights (left to right): power state, hard disk activity, charging status for main battery, and charging status for secondary battery.
9. Module eject latch.
10. System-off switch.
11. Audio-off button and audio-off light.
12. Infrared port (below the volume control).
13. Volume control.
14. Audio jacks (left to right): audio out (headphones), external microphone, audio in.
15. Kensington lock slot (security connector).
16. Built-in speakers (one on each side).
17. Built-in microphone.
18. Latch for opening the computer.



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## Bottom View

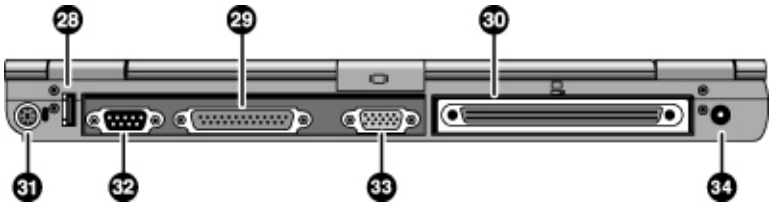



19. Modem port (on certain models).
20. LAN port (on certain models).
21. PC Card and CardBus slots (upper and lower).
22. Hard disk drive.
23. Main battery latch.
24. Main battery.
25. Plug-in module bay. Can contain a CD-ROM or DVD drive, floppy disk drive, secondary battery, or other plug-in module.
26. Mini-PCI cover (no user parts inside).
27. RAM cover.



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## Back View




28. Universal serial bus port (USB).
29. Parallel port (LPT1). Use this port for a parallel printer or other parallel device, or to connect the floppy disk drive externally.
30. Docking port.
31. PS/2 keyboard or PS/2 mouse port (supports Y adapter).
32. Serial port (COM1). Use this port for a serial mouse, modem, printer, or other serial device.
33. External monitor port.
34. ac adapter jack.

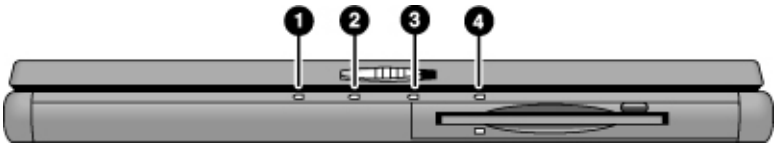


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## Status Lights

The computer includes a number of status lights that report power and battery status, drive activity, and keyboard functions such as caps lock and num lock.

The following diagram shows the status lights on the front of the computer.

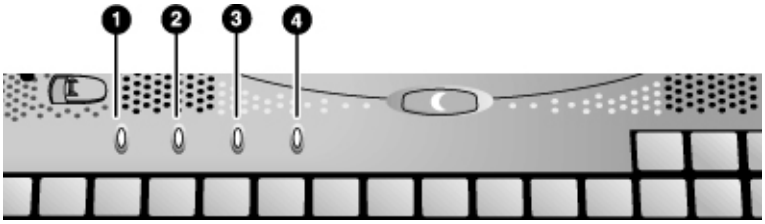



1. **Power status**.
   - Green: computer is on or in Display-off mode (Windows 98 and 2000).
   - Amber: computer is in Standby mode or Display-off mode (Windows 95).
   - No light: computer is off or in Hibernate mode.
   - Red light: computer failed when resuming, and must be reset.
2. **Hard disk drive activity**.
   - Green: computer is accessing the hard disk drive.
3. **Main battery status**.
   - Green: The ac adapter is connected and the battery is fully charged.
   - Amber: The ac adapter is connected and the battery is charging.
   - Red. The ac adapter is connected and the battery is missing or has a fault.
   - Off: The ac adapter is not connected.
4. **Secondary battery status**.
   - Green: The ac adapter is connected and the battery is fully charged.
   - Amber: The ac adapter is connected and the battery is charging.
   - Red. The battery has a fault.
   - Off: The ac adapter is not connected, a secondary battery is not installed, or the battery is not charging.



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The keyboard status lights, located above the keyboard, indicate the states of the keyboard locks.




1. **Caps Lock**. Caps Lock is active.
2. **Num Lock**. Num Lock is active. (The Keypad Lock must also be on to use the embedded keypad.)
3. **Keypad Lock**. The embedded keypad is active (Fn+F8). Num Lock must also be on for the numeric keys—otherwise, cursor control is active.
4. **Scroll Lock**. Scroll Lock is active.



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# Setting Up Your Computer

**WARNING**

**Improper use of keyboards and other input devices has been associated with ergonomic injury. For information about reducing your risk, see Working in Comfort in the online HP Library, or visit our ergonomics Web site, www.hp.com/ergo. For a summary about working with a notebook computer, see "Working in Comfort with a Notebook PC" on page 32.**

**If you are using your notebook computer as your primary computer, or using it for extended periods, you should use it with a full-size keyboard, monitor, and mouse. This can reduce the risk of ergonomic injury. See Working in Comfort in the online HP Library.**

When you set up your computer for the first time, you'll need to install and charge the battery, connect the ac adapter, turn on the computer, and run the Windows setup program.

## Step 1 – Install the battery

**WARNING**

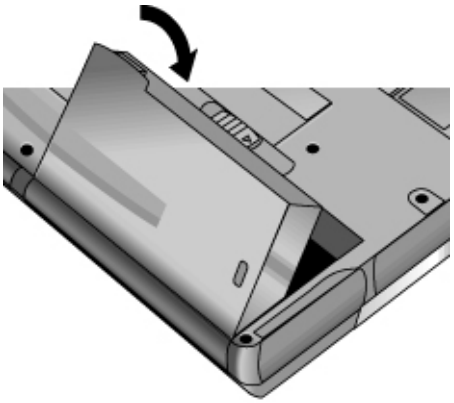
**Do not mutilate or puncture batteries. Do not dispose of batteries in fire, or they can burst or explode, releasing hazardous chemicals. Rechargeable batteries must be recycled or disposed of properly.**

Your computer is shipped with the battery installed. If the battery has been removed, you should install it:

1. Turn the computer upside down.
2. Insert the front (rounded) end of the battery into the battery compartment on the bottom of the computer, and lower the back end in until it clicks into place.

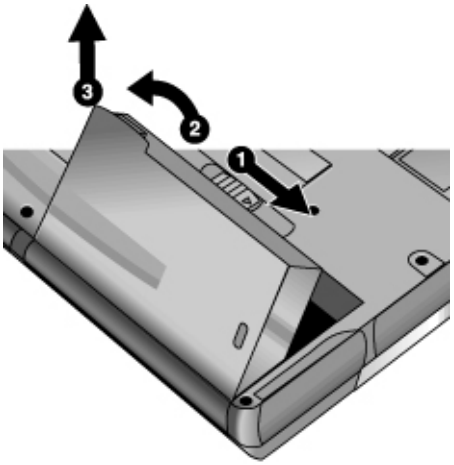


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**To remove the battery**

- Slide the battery's release latch, then lift the battery out of its compartment.





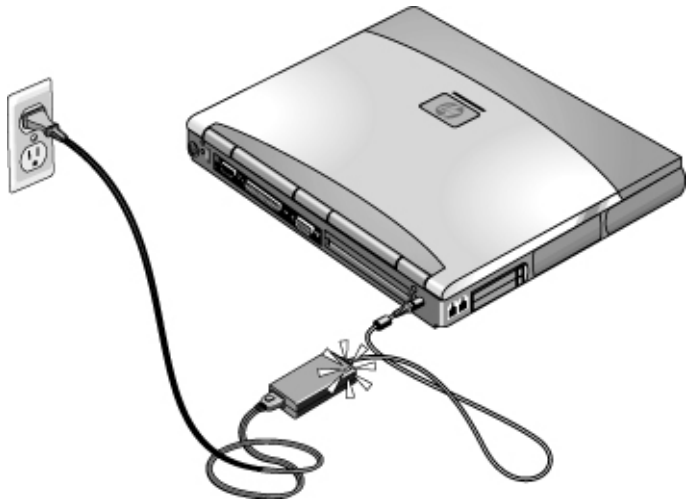

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## Step 2 – Connect ac power

**CAUTION**

**Use only the HP ac adapter included with your computer (or other approved adapter). Using any other ac adapter could damage the computer and may void your warranty (see the warranty statement in this manual).**

- Plug in the ac adapter, and connect it to the ac adapter jack on the back of the computer. The computer's battery then starts charging.



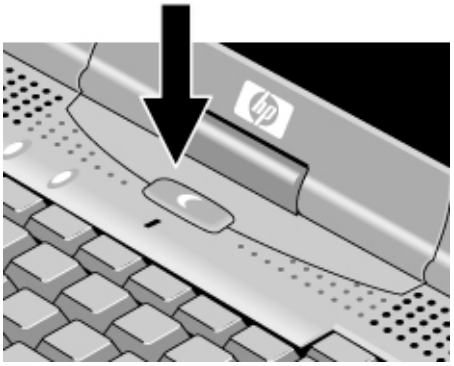
While the battery is charging, you can continue with step 3.



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## Step 3 – Turn on the computer

- Press the blue sleep button above the keyboard. The computer then boots up, and Windows starts automatically.



**Hint**

If your computer does not turn on when operating on battery power, the battery may be out of power. Plug in the ac adapter and press the blue sleep button again. Leave the ac adapter plugged in for at least an hour.



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## Step 4 – Set up Windows

Your notebook computer has Microsoft Windows 95, 98, or 2000 preinstalled on its hard disk drive. The first time you turn on your computer, the Windows Setup program runs automatically so you can customize your setup.

- Follow the Setup program's instructions as they appear on the screen. If the program prompts you to enter the Product ID code, you will find this code on the bottom of the computer.

**Year 2000**

Hewlett-Packard makes no representation or warranty about the Year 2000 readiness of non-HP products, including preinstalled operating systems or application software. You should contact the software manufacturer directly to determine if you need to do anything else to ensure compliance.

Microsoft has indicated that many of its operating system software products and applications require customer installation of software patches for Year 2000 compliance, and may require additional patches in the future. The need for such patches most likely applies to the operating system software and any Microsoft applications shipped with this product. You are urged to contact Microsoft at www.microsoft.com/y2k, at 1-888-MSFTY2K (U.S. and Canada only), or at your local Microsoft office.



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# Using Your Computer



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# Operating Your Computer

You can start and stop your computer using its blue sleep button. However, at certain times you may want to use other methods to start or stop the computer—depending on power considerations, types of active connections, and start-up time.

## To start and stop the computer

| Power mode | To enter this mode | To turn on again |
|---|---|---|
| **Display-off mode**<br>Saves minimal power.<br>Turns off the display and hard disk.<br>Restarts quickly.<br>Maintains network connections. | Allow timeout. | Press any key or move a pointing device to restore the display (“Instant-On”). |
| **Standby mode**<br>Saves significant power.<br>Turns off the display and other components.<br>Maintains current session in RAM.<br>Restarts quickly.<br>Restores network connections. | Press blue sleep button<br>–or–<br>click Start, Suspend (Windows 95) or Start, Shutdown, Standby (Windows 98 and 2000)<br>–or–<br>allow timeout. | Press the blue sleep button to display your current session (“Instant-On”). |
| **Hibernate mode**<br>Saves maximum power.<br>Saves current session to disk, then shuts down.<br>Restores network connections. | Press Fn+F12<br>–or–<br>Click Start, Shut Down, Hibernate (Windows 2000)<br>–or–<br>allow timeout. | Press the blue sleep button to restart and restore your previous session. |
| **Shut down (off)**<br>Saves maximum power.<br>Turns off without saving current session.<br>At startup, resets everything, starts a new session, and restores network connections. | Click Start, Shut Down (recommended)<br>–or–<br>slide the power button. | Press the blue sleep button to restart with a new session. |

You can also customize the way these power modes work. See “How the computer manages power automatically” on page 42.



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**Hint**

To boot from a CD-ROM or DVD drive in the module bay, press ESC during reboot when the HP logo and prompt appear. Then select the CD-ROM/DVD drive as the temporary boot device.

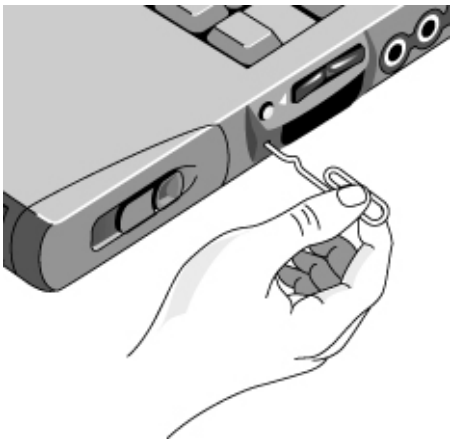
## To reset the computer

Occasionally, you may find that Windows or the computer has stopped responding, and will not let you turn the computer off. If this happens, try the following in the order listed.

1. If possible, shut down Windows: press CTRL+ALT+DEL, then click Shut Down.
2. Slide and hold the power button for 4 seconds, until the display shuts down, then press the blue sleep button to restart.

   –or, if this fails–

   Insert a straightened paper clip into the system-off switch on the right side of the computer, then press the blue sleep button to restart.

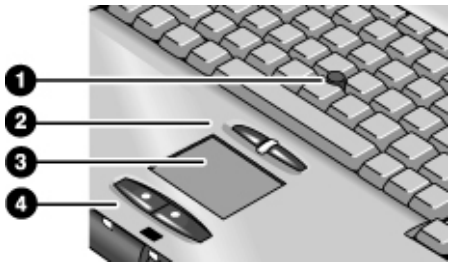




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## To use the pointing devices

Your computer includes two built-in pointing devices: the pointing stick and touch pad.




1. Pointing stick (pressure-sensitive pointing device).
2. Click buttons and scroll button. The click buttons work like the left and right buttons on a standard mouse. The scroll button works with the pointing stick to scroll the contents of a window.
3. Touch pad (touch-sensitive pointing device).
4. Click buttons. These also work like the left and right buttons on a standard mouse.

**Moving and selecting**

1. Place your hands in a normal typing position.
2. **Pointing stick.** With your index finger, press the pointing stick in the direction you want the pointer to move.

   **Touch pad.** Move a thumb or finger across the touch pad in the direction you want the pointer to move.
3. Use the left and right click buttons, which function like the left and right buttons on a mouse, to make your selection:
   - To open an application, move the pointer over the icon and double-click the left button.
   - To make menu selections, move the pointer to the menu item and click the left button.
   - To open the shortcut menu for an item, move the pointer over the item and click the right button.
   - To drag an item, move the pointer over the item. Then press *and hold* the left button while you move the pointer to the new location, and release the button.



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**Scrolling with the scroll button**

- Hold down the scroll button and move the pointer using the pointing stick. The contents of the window scroll in the direction you move the pointer.

## To configure the pointing devices

You can customize the operation of your computer's pointing devices (pointing stick, touch pad, and external PS/2 or serial mouse). You can change the left, right, and scroll button actions, double-click speed, pointer speed, and more. For details, click Help in the Mouse window.

- Double-click the touch pad icon in the task bar.

  –or–

  Click Start, Settings, Control Panel, then double-click Mouse.

## To disable one pointing device

If you prefer to use only one of your computer's built-in pointing devices, you can disable the other. For example, if you notice that your hand inadvertently contacts the touch pad and moves the cursor while you're typing, consider disabling the touch pad.

1. Click Start, Settings, Control Panel, then double-click Mouse.

   –or–

   Double-click the touch pad icon in the taskbar.

2. Click the Touch tab, and select the device you want to disable from the pull-down menu.
3. Select Disable This Device near the bottom of the window.
4. Click OK.



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## To use the Fn hot keys




The combination of the Fn key plus another key creates a *hot key*—a shortcut key sequence—for various system controls. To use a hot key, press *and hold* Fn, press the appropriate second key, then release both keys.

| This hot key | Does this |
|---|---|
| Fn+F1 | Decreases the display brightness. |
| Fn+F2 | Increases the display brightness. |
| Fn+F5 | Toggles among the built-in display, an external display, and simultaneous display on both. |
| Fn+F7 | Audio mute |
| Fn+F8 | Toggles the built-in keypad on and off. Does not affect an external keyboard. If Num Lock is on, then the numeric functions are active; otherwise, cursor control is active. |
| Fn+F12 | Enters Hibernate mode. |
| Fn+NumLock | Toggles Scroll Lock on and off. |
| Fn+UP ARROW | Increases sound volume. |
| Fn+DOWN ARROW | Decreases sound volume. |

External keyboards support only Fn+F5, Fn+F7, and Fn+F12. To use these, press and hold left CTRL+left ALT, press the appropriate second key, then release both keys.



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## To use the Windows and Applications keys



The Windows key brings up the Windows Start menu. This is the same as clicking the Start button on the taskbar.



The Applications key brings up the shortcut menu for the current application. This is the same menu that appears when you right-click while pointing at the application.

| This key combination | Does this |
|---|---|
| Windows key+E | Runs Windows Explorer |
| Windows key+F1 | Runs Windows Help |
| Windows key+F | Runs Windows Find: File or Folders… dialog box |
| Windows key+M | Minimizes all displayed windows |
| Shift+Windows key+M | Returns all minimized windows to original size |
| Windows key+R | Runs the Windows Run dialog box |

## To use the embedded keypad

Your computer's built-in keyboard includes an embedded keypad you can use to type numbers and arithmetic operators. The keys in this keypad are marked using light gold characters.

- Press Fn+F8 to turn on the embedded keypad.
- Hold Fn while typing a key to turn the embedded keypad on temporarily.

When the embedded keypad is active, you can use Num Lock to change how the keypad functions:

- Num Lock on: The keys enter the numbers and arithmetic operator printed in light gold on the keyboard.
- Num Lock off: The keys act as cursor control keys.

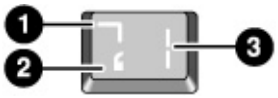


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## To use the ALT GR key

Non-U.S. keyboards have an ALT GR key to the right of the spacebar. This is a shift key that provides access to certain special keyboard characters.

- For a character in the lower-right corner of a key, press and hold ALT GR to type the character.




1. Shifted.
2. Unshifted.
3. ALT GR.

## To adjust the display

### Changing the brightness

- Press Fn+F1 to decrease the display's brightness.
- Press Fn+F2 to increase the display's brightness.

**Hint**

To maximize your battery operating time, set the brightness to the lowest level you can view comfortably.

### Changing display settings

You can customize a number of display settings for your computer, such as color depth and screen area.

1. Click Start, Settings, Control Panel, then double-click Display.
2. Click the Settings tab, then make the settings you want.

### Using an external monitor

If you want, you can attach an external monitor to your notebook computer. See "To use an external monitor" on page 69.



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## To adjust the volume

**From the keyboard**

- To increase the volume, press the rear half of the volume control on the right side of the computer.

  –or–

  Press Fn+UP ARROW.

- To decrease the volume, press the front half of the volume control.

  –or–

  Press Fn+DOWN ARROW.

- To toggle the standard mute function, press Fn+F7.

**With the audio-off button**

Your computer includes an audio-off button you can use to temporarily disconnect the speakers without changing the volume or mute settings. This feature is handy when you want to block all speaker output regardless of what your computer is doing.

- To toggle the speaker connection on and off, press the audio-off button on the right side of the computer. The audio-off light turns on when the speakers are disconnected.

**In Windows**

1. Click the Volume icon in the taskbar.
2. Drag the volume control bar up or down to adjust the volume.
3. To temporarily silence the speakers without changing the volume setting, click Mute.



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# Working in Comfort with a Notebook PC

**WARNING**

**Improper use of keyboards and other input devices has been associated with ergonomic injury. For more information about reducing your risk, visit our ergonomics Web site at www.hp.com/ergo—or see Working in Comfort in the online HP Library.**

You can use your HP notebook computer virtually anywhere, anytime. The following recommendations should help you work more comfortably.

**Note**

Note that if you are using your portable computer as your primary computer, or using it for extended periods, you should use it with a full-size keyboard, monitor, and mouse. This will give your portable computer the adjustability and comfort features of a desktop unit. HP docking accessories offer quick, easy connections to these devices. More information on how to prepare your workspace environment and set up your HP equipment is available in *Working in Comfort*, which is preloaded on the hard disk in the HP Library and available on the *Recovery CD* in \hp\Library—as well as at www.hp.com/ergo.

### Your Mobile Work Environment

- Use a chair that provides good support for your lower back. If an adjustable chair is not available, you can use a pillow or rolled-up towel to provide lower back support.
- Try to keep your thighs parallel to the floor and your feet flat on the floor. In a mobile environment, you can do this by using a phone book or briefcase to support your feet.
- Adjust the height of either your work surface or chair to keep your arms in a neutral position. Your arms should be relaxed and loose, elbows at your sides, with the forearms and hands parallel with the floor.
- Position your notebook computer display to minimize glare and reflection. For example, on an airplane, lower the window shade, or in a hotel room, draw the curtains. You also should maintain a comfortable viewing distance–approximately 40 to 60 cm (16 to 24 inches). Adjust the angle of your display to help keep your head angled slightly downward in a comfortable position.

### Using Your Mobile Computer

- Position the computer so your wrists and hands are in a neutral position. Your wrists should be as straight as possible and should not have to bend sideways or more than 10 degrees up or down. If your notebook computer does not have a built-in palm rest, you can use a rolled-up towel.



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- Try to type as lightly as possible. The notebook keyboard requires little force to activate.
- Take frequent, short rest breaks–this is especially important in a mobile computing environment.
- Portable computers weigh between approximately 1.4 and 3.7 kilos (3 and 8 pounds). When traveling, be sure to carry your computer properly to minimize strain on your body. Shift the bag containing your notebook equipment frequently between your left and right hands and shoulders.



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# Taking Care of Your Computer

Use the following recommendations to maintain your computer during everyday use and prevent potential physical damage or data loss.

## To protect your hard disk drive

Hard disk drives, as well as other internal components, are not indestructible and can be damaged by inappropriate handling and operation.

- Avoid bumps or jolts.
- Do not operate the computer while traveling over bumpy terrain.
- Suspend or shut down the computer before transporting it. This turns off the hard drive. A drop of a few inches onto a rigid surface while the hard drive is operating could destroy data or damage the drive.
- Carry the computer in a padded case to protect against bumps and jolts.
- Set down the computer gently.

## To take care of your computer

- Provide adequate ventilation around the computer. Always set the computer on a flat surface, so that air can flow freely around and underneath it.
- Always shut down the computer or put it in Hibernate mode before putting it in a carrying case or other enclosed space.
- Do not pick up or carry the computer by its display.
- Observe the temperature limits and other specifications listed in “Hardware Specifications” on page 126. Do not use the computer outside in the rain or snow (inclement weather).



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## To safeguard your data

- Do not use a pointing device or activate any other device that interrupts operation while the system is starting or stopping.
- Back up your work regularly. Copy files to floppy, tape, or network drives.
- Use a virus-scanning program (such as the VirusScan program included with your computer) to check the integrity of your files and operating system. Since new viruses appear frequently, you will also want to update the program's virus definitions from time to time; updates are on the Web at www.networkassociates.com.
- Check your disk using the scandisk utility.

## To extend the life of the display

- Set the display brightness to the lowest comfortable level (Fn+F1).
- When working at your desk, connect an external monitor and turn off the internal display (Fn+F5).
- If you are not using an external monitor, set the Turn off monitor timeouts (for both ac and battery operation) to the shortest comfortable interval.
- Avoid using a screen saver or other software that prevents the computer from changing to Display-off or Standby mode after a timeout period. If you use a screen saver in Windows 95, 98, or 2000, enable the option to shut off the display after a time delay.
- Do not disable Display-off or Standby timeouts.
- If you are using ac power and have no external monitor attached, put the computer in Display-off or Standby mode when not in use.

## To get the most from your batteries

- Do not leave batteries unused for long periods. If you have more than one, rotate them.
- If you normally use ac power, make a practice of using the battery as your power source at least once a week.



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- Unplug the ac adapter when the computer is not in use.
- To preserve the life of a battery, be sure to charge it regularly.
- For long-term storage, the battery must be charged 20–50% to minimize capacity loss by self-discharge and to avoid deterioration of performance. Storing a fully charged battery can cause higher self-discharge and reduce its discharge capacity—even after recharging—as compared to a battery stored when charged 20–50%.

## To clean your computer

- You can clean the computer with a soft cloth dampened with clean water or with water containing a mild detergent. Do not use an excessively wet cloth, and take care to keep water out of the case.
- Do not use abrasive cleaners, especially on the display. Do not apply any cleaner directly to the display. Instead, apply the cleaner to a soft cloth and then gently wipe the display.
- You can clean the keyboard with a vacuum cleaner to remove accumulated dust.



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# Securing Your Computer

## To set up password protection

You can protect your computer from access by another user when you set up password protection, which is available through Windows 98 and 2000 and through the BIOS Setup utility. For complete protection in Windows 98 or 2000, set passwords in both places.

To cancel password protection, set an empty password.

**BIOS Setup Utility (Windows 95, 98, or 2000)**

1. Click Start, Shut Down, Restart.
2. When the HP logo appears, press F2 to enter BIOS Setup.
3. From the Security menu, enter or modify the Administrator Password or User Password as needed. See “Security Menu” on page 81.
4. Press F10 to save and exit BIOS Setup.

**Windows 98**

1. Click Start, Settings, Control Panel, then double-click Passwords.
2. Click the Change Passwords tab, then click Change Windows Password and set a password.
3. Click Start, Settings, Control Panel, then double-click Power Management.
4. On the Advanced tab, select the option to prompt for a password when the computer leaves Standby mode.

**Windows 2000**

1. Click Start, Settings, Control Panel, then double-click Users and Passwords.
2. Click the Users tab, and create or modify a user name and password as needed. See Windows Help for details.
3. Click Start, Settings, Control Panel, then double-click Power Options.
4. On the Advanced tab, select the option to prompt for a password when the computer leaves Standby mode.



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## To attach a security cable

Your computer includes a built-in connector you can use to secure the computer with a cable and a lock (such as the Kensington MicroSaver lock system, available at many computer stores).

1. Wrap the cable around a secure object, such as a table leg.
2. Loop the cable to create a slip knot around the stationary object, and make sure it can't slip off.
3. Insert the lock into the security connector on the right side of the computer and release the key. Store the key in a safe place away from the computer.





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## To use the VirusScan utility

Virus-protection software can help protect the integrity of your data. This is especially important if you use the Web.

Your computer comes equipped with VirusScan. Before you can use VirusScan, you need to install it.

1. Click Start, Programs, VirusScan, Setup.
2. Follow the instructions as they appear on the screen.

Once installed, you can get detailed instructions from VirusScan's online Help.

## To set PC identification

You must have administrator password authority to set a PC identification number.

1. If you have not already installed HP TopTools, do so now. See "To set up TopTools" on page 84.
2. Click Start, Programs, HP TopTools for Notebooks, HP TopTools.
3. Click Security, then type your administrator password and press ENTER.
4. Click Settings and Actions.
5. In the "Tattooing String" box, type a unique set of characters that will identify your PC. You can type up to 80 characters including spaces and special characters. Do not press ENTER when typing. The string wraps automatically.



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## To lock the hard disk drive

The computer enables you to lock its internal hard disk drive to help keep your information secure. *Hard disk drive lock does not protect a second hard disk drive installed in the module bay*.

**CAUTION**

**When you enable hard disk drive lock, the current BIOS user password (or administrator password if that is the only password set) is encoded on the hard disk drive.**

***If you move the hard disk drive to another computer, you can't access the drive until you set the user (or administrator) password to match the drive's password*. After you match the drive's password, you can change the computer (and drive) password. If you forget the password, you cannot recover your data.**

1. Click Start, Shut Down, Restart.
2. When the HP logo appears, press F2 to enter the BIOS Setup utility.
3. From the Security menu, enable Password Required to Boot.
4. From the Security menu, enable Internal hard disk drive lock.
5. Press F10 to save and exit BIOS Setup.



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# Traveling with Your Computer



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# Managing Power Consumption

When you're running your computer on battery power, you will want to maximize operating time without compromising performance. Your computer is designed to help you reduce power consumption and extend battery life without needing to turn it off.

- During idle periods, the computer automatically enters power-saving modes after specified timeout periods. You can adjust these timeouts to suit your working habits.
- You can manually send the computer into a power-saving mode at any time by pressing the appropriate key—see "To manage power manually" on page 45.

## How the computer manages power automatically

Your computer automatically enters Hibernate mode, Standby mode, and Display-off mode, and turns off the hard disk based on values set in the Power Management Properties window (Windows 98 and 2000) or the BIOS Setup utility (Windows 95).

| Automatic action | Occurs after… | To resume… |
|---|---|---|
| **Turns off hard disk.** Turns off the hard disk drive. This is usually set to occur shortly after the display is turned off. | The hard disk is not accessed for the specified interval. | Begin using the computer: the hard disk turns on when needed. |
| **Enters Display-off mode.** Turns off the display and hard disk to conserve battery power and extend the life of the display. | No keyboard, pointing device, or other input activity occurs for the specified interval. | Press any key or move a pointing device to return to your current session. |
| **Enters Standby mode.** Maintains your current session in RAM, and turns off the display and other components to conserve battery power. | No pointing devices are used, no disk drive is accessed, and no port (serial, parallel, or IR) is active for the specified interval. | Press the blue sleep button to return to your current session. |
| **Enters Hibernate mode.** Saves your current session to the hard disk, then turns off the computer. | No pointing devices are used, no disk drive is accessed, and no port (serial, parallel, or IR) is active for the specified interval. | Press the blue sleep button to restore your previous session. |
| **Lowers CPU speed (SpeedStep only).** Switches to the lower CPU speed to use power more efficiently. See below. | The ac adapter is unplugged. | Plug in the ac adapter. |



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For Windows 98 and 2000, message box appears 15 seconds before the computer enters Standby mode. This allows you to stop the process and save your work if you have not recently done so.

**CAUTION**

**Make a habit of saving your work before allowing your computer to enter Standby mode. If power is interrupted while the computer is in Standby mode, any information that was not saved will be lost.**

The computer can also enter Hibernate mode if battery power reaches a critically low level. (See “To respond to a low-battery warning” on page 48.) If this happens, you will find on resuming that all your data has been saved, but some functions may be disabled. To resume normal operation, restore power by connecting an ac adapter or installing a charged battery, then shut the computer off and restart it.

### Changing timeout settings and creating power schemes

You can adjust the periods of non-use after which your computer automatically shuts down components or enters a power-saving mode. You can also save these settings as a power scheme.

- Windows 95:
  1. Click Start, Shut Down, Restart.
  2. When the HP logo appears, press F2 to enter the BIOS Setup utility.
  3. In the Power menu, enter the timeout values you want—see “Power Menu” on page 82.
  4. Press F10 to save and exit BIOS Setup.
- Windows 98 and 2000:
  1. Click Start, Settings, Control Panel, then double-click Power.
  2. Click the Power Schemes tab, and enter the settings you want. If you don’t want a particular timeout to occur, set the value to Never. See Windows Help for details.

     If you want to save the settings as a power scheme, click Save As and enter a name for the scheme.

  For Windows 98, change the Hibernate timeout in BIOS Setup—see “To run the BIOS Setup utility” on page 78.

**CAUTION**

**For Windows 2000, do not disable Hibernate support in the Power settings, or you will lose any unsaved data if the computer’s battery runs down completely.**



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### Managing CPU power (SpeedStep)

If your computer's taskbar contains an Intel SpeedStep Technology icon, then your computer contains a dual-speed processor with Intel SpeedStep Technology. This feature enables the processor to automatically switch to a lower, power-saving speed when the computer is running on the battery.

- If you reboot the computer with the ac adapter plugged in, the processor starts at its high speed. If you reboot the computer on battery power, the processor starts at its low speed.
- If you unplug the ac adapter while the computer is running or in Standby mode, the processor changes to low speed.
- If you plug in the ac adapter while the computer is running or in Standby mode, the processor changes to high speed.

You can also customize SpeedStep to best suit your working environment.

- To set the speed used by the processor at boot, change the Intel SpeedStep Mode setting in the BIOS Setup Power menu—see "To run the BIOS Setup utility" on page 78.
- To set the speed used by the processor when Windows is running, double-click the Intel SpeedStep Technology icon in the taskbar.



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## To manage power manually

In addition to allowing the computer to enter its power-saving modes automatically, you can also put it into any of the following three modes whenever you need to.

| Power mode | Does this… | Use when… | To enter this mode… |
|---|---|---|---|
| **Standby** | Maintains your current session in RAM, and turns off the display and other components. | You will be away from your computer for a short time. | Press blue sleep button<br>–or–<br>click Start, Suspend (Windows 95) or Start, Shutdown, Standby (Windows 98 and 2000). |
| **Hibernate** | Saves the current session to disk, then shuts down. Provides maximum power savings while still allowing you to recover the current session. | You will be away from your computer for several hours, but want to continue your session. | Press Fn+F12<br>–or–<br>click Start, Shut Down, Hibernate (Windows 2000). |
| **Off** | Turns off your computer, providing maximum power savings. The current session will not be saved, and any unsaved data will be lost. | You're done with your work. | Click Start, Shut Down (recommended)<br>–or–<br>slide the power button. |



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## To suspend the computer when closing the display

By default, the computer display turns off when you close the display lid. If you prefer, you can instead set the computer so that closing the lid suspends the computer to Standby mode.

**Windows 2000**

1. Click Start, Settings, Control Panel, then double-click Power Options.
2. Click the Advanced tab, then select an option for closing the lid. None means that the computer enters Display-off mode when you close the lid.

**Windows 95 or 98**

1. Click Start, Shut Down, Restart.
2. When the HP logo appears, press F2 to enter the BIOS Setup utility.
3. From the Power menu, choose Lid Switch Mode.
4. Choose Suspend. Closing the lid will then suspend the computer to Standby mode.
5. Press F10 to save and exit BIOS Setup.



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# Using Battery Power

## To check battery status

**From the battery status lights**

Your computer has two battery status lights, one for the main battery and one for the optional secondary battery in the module bay—see “Status Lights” on page 16.

**From the Windows taskbar**

The Windows taskbar includes a power icon that provides detailed battery status information. The icon looks like a battery when ac is not connected.

- Place the pointer over the power icon to display the remaining battery charge. This value is shown as either a percentage of charge remaining, or as time remaining.
- Double-click the power icon to open the Battery Meter window.

**From the Windows Control Panel**

- Click Start, Settings, Control Panel, then double-click Power. This provides access to all of Windows’ power-information options.

**On the battery**

1. Remove the battery from the computer—see “Step 1 – Install the battery” on page 18.
2. Press the contact pad on the back of the battery. The number of lights that turn on indicates the remaining charge (each light represents 20% of a full charge).



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## To respond to a low-battery warning

The computer automatically alerts you when the battery power drops to a critically low level. The computer first emits a high-pitched beep. Then, if you do not restore power within a short time, the computer goes into Hibernate mode.

Once the computer enters Hibernate mode, you won't be able to turn it on again until you restore power by doing one of the following:

- Replace the battery with a charged one. See "Step 1 – Install the battery" on page 18.
- Plug in the ac adapter. See "Step 2 – Connect ac power" on page 20.
- Install a charged secondary battery in the plug-in module bay. See "To install a secondary battery" on page 48.

**Note**

If you plug in the ac adapter, you can continue to work while your battery recharges.

## To install a secondary battery

You can install a secondary battery in your computer's plug-in module bay. See "Using Plug-In Modules" on page 52 for information about installing plug-in modules.

## To maximize battery operating time

Follow these suggestions to make your battery's power last as long as possible.

- Plug in the ac adapter, especially while using a drive in the module bay or any external connections such as a PC Card or a modem.
- Set the display brightness to the lowest comfortable level (Fn+F1).
- Put the computer in Standby mode whenever you are not using it for a short while: press the blue sleep button for approximately one second or click Start, Suspend (Windows 95) or Start, Shut Down, Standby (Windows 98 and 2000).
- Put the computer in Hibernate mode whenever you want to save your current session, but will not be using the computer for several hours: press Fn+F12.



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- Set the automatic timeout settings to emphasize saving power. If your computer has a dual-speed processor, use the lower speed on battery power (the default settings conserve battery power). See “How the computer manages power automatically” on page 42.
- If you have an I/O PC Card—that is, a PC Card having an external connection, such as a network card—remove it when you’re not using it. Some I/O cards use significant power even while they’re inactive.
- If you work with an application that uses the serial port or an I/O PC Card, exit the application when you finish using it.
- Install a secondary battery—see “To install a secondary battery” on page 48.
- If your main battery is rated at 11.1 volts (check its label), purchase a replacement main battery, which is rated at 14.8 volts.



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# Making Connections



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# Using Plug-In Modules

You can use any compatible plug-in module with your computer's module bay, such as:

- CD-ROM or DVD drive.
- LS-120 or Zip drive.
- CD read/write drive.
- Second hard drive.
- Floppy disk drive.

  You can also attach the floppy disk drive to your computer's parallel port using the external floppy drive cable.
- Secondary battery.

**CAUTION**

**Never remove a plug-in module without first notifying Windows—see "To replace a plug-in module" on page 53. Otherwise, you could lose data.**

## To install hot-swap support

If your computer uses Windows 95 or 98, it also includes the Agaté Tioman "hot-swap" software that lets you disconnect most modules from the computer's plug-in bay without needing to shut down and reboot the computer.

If a plug-in module icon is displayed in the taskbar, Agaté Tioman is already installed. If the icon is not present, you can install the software as follows:

- Click Start, Programs, Agaté Tioman for HP, Setup, then follow the onscreen instructions.



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## To replace a plug-in module

Windows 95 and 98 use the Agaté Tioman hot-swap software to let you disconnect most plug-in modules without shutting down the computer. Before replacing a hard drive module, however, you must first shut down the computer.

Windows 2000 displays the Unplug or Eject Hardware icon at the right end of the taskbar when a drive module is present.

**CAUTION**

**Before disconnecting a CD-ROM drive, DVD drive, or any other type of drive, you must either use the icon in the taskbar or shut down the computer—otherwise, you could lose data.**

**Exception: for Windows 95 or 98, you must shut down the computer before connecting or disconnecting a hard disk drive.**

**Handle and store a module carefully when it's out of the computer. Do not drop it or apply excessive pressure to its surfaces—this could damage its internal mechanisms. Do not touch the metallic pins on the computer's connectors, module connectors, or cable connectors. Static electricity can damage internal components.**

1. Close all files that are open from the plug-in module.
2. **Windows 95 or 98**: If the plug-in module icon is present in the taskbar, right-click the icon, then click Remove Device. When prompted to remove the module, click OK. (You don't have to do this if the bay is empty or contains a battery.)

   **Windows 2000**: Left-click the Unplug or Eject Hardware icon on the taskbar, and select the module you want to remove. When prompted to remove the module, click OK. (You don't have to do this if the bay is empty or contains a battery.)

   –or–

   For any system: Click Start, Shut Down, Shut down. For Windows 95 or 98, you *must* do this if you are removing or inserting a hard disk drive in the module bay.

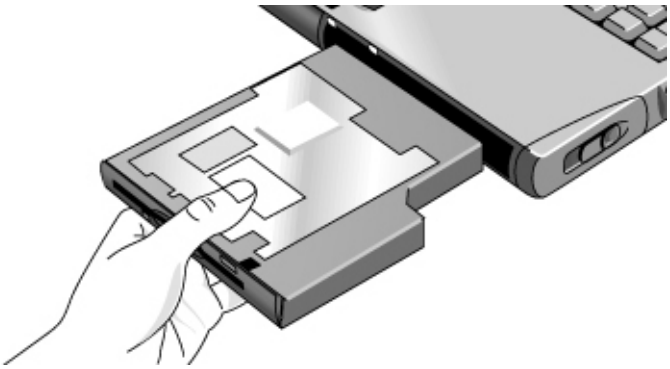


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3. Press the button on the module release latch, and slide the latch toward the front of the computer.



4. Grasp the module and pull it out.



5. Slide the new plug-in module into the computer until it clicks into place.

If you have a CD-ROM drive or other module in the module bay, you can connect the floppy disk drive to the parallel port. See the next topic.



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## To connect the floppy disk drive to the parallel port

If you prefer, you can connect the floppy disk drive to your computer's parallel port using the external floppy drive cable.

- Connect the cable directly to the floppy drive and to the computer parallel port.



Before disconnecting the floppy disk drive, use the icon in the taskbar to stop the drive, or else shut down the computer. See "To replace a plug-in module" on page 53.

## To insert or remove a CD or DVD

**CAUTION**

**Do not insert or remove a CD while the computer is reading it. Otherwise, the computer could stop responding and you could lose data.**

1. Press the button on the face of the CD-ROM or DVD drive. If you are using this drive for the first time, be sure to remove the cardboard packing insert.
2. Place the CD into the drive (label facing up) and gently press down to seat it on the spindle.

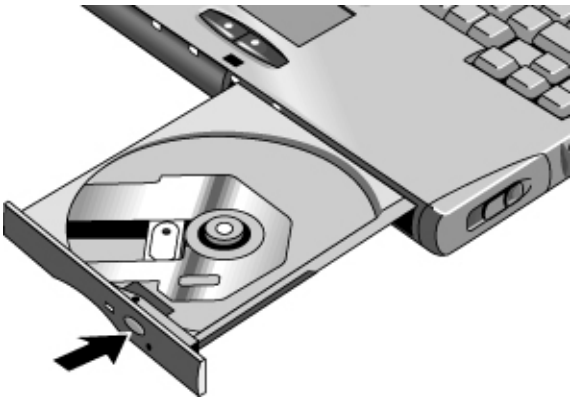
   –or–

   Remove the CD.



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3. Slide the tray back into the module to close it.



If your computer loses power, or if you have removed the CD-ROM or DVD module from the computer, you can manually open the drive to remove a CD.

- Insert a straightened paper clip into the recessed hole on the front of the drive.

**Note**

**Windows 95**: Your computer has been configured at the factory to disable CD Auto Insert notification. This allows your system to suspend on time-out. However, you may notice that Windows 95 may not automatically detect the insertion of a CD.

**Windows 98 and 2000**: Your computer has been configured to enable CD Auto Insert notification. This does not affect time-outs.

## To play DVD movies

If your computer came with a DVD drive, you can install DVD player software that lets you play DVD movies.

- Run Setup on the Mediamatics CD to install the player software.



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# Using the Modem

If your computer has a modem port, you can connect your modem to a telephone line and communicate with other computers throughout the world. You can explore the Internet, send and receive e-mail messages, and use your PC to send and receive faxes. Your computer contains several software programs that work with your modem:

- Internet Explorer, for browsing the World Wide Web
- Outlook Express, for sending and receiving e-mail messages
- Windows 95 or 2000 fax software, or QuickLink with Windows 98, for sending and receiving faxes
- HP e-center, which links to a Web site that allows you to receive faxes at your existing e-mail address (North America English only)

The modem is a high-speed 56-Kbps modem. It allows you to connect to any Internet Service Provider (ISP) or modem network that has V.90 interoperable modems. Check with your ISP for a list of telephone numbers that support V.90.

Note that the maximum speed for faxing is 14.4 Kbps. Even though the modem is capable of downloading at 56 Kbps, your ISP or modem network may not operate at this speed or support this technology. Please check with your service provider for information on its capabilities. Furthermore, download transmission rates depend on the condition of the telephone line.



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## To connect the modem

1. Check that the telephone line is an analog line, sometimes called a data line. It should have 2, 3, or 4 wires. (You must not use a PBX or digital line.)
2. Connect a telephone cord with an RJ-11 plug to the built-in modem. If the plug on the phone cord doesn't fit the modem jack, you may need to buy an adapter.



**Special restrictions in certain countries**

- In France, if you want to access the MiniTel system, you need MiniTel emulator software. If your computer was purchased in France, it includes the TimTel Light software. If your computer does not include TimTel Light, you must purchase emulator software separately.
- The pulse dialing feature may be disabled in certain countries, possibly because Loop Disconnect is not certified there. If pulse dialing is disabled, you should use tone dialing connections only.

## To connect to the Internet

Before you can connect to the Internet, you need to set up an account with an Internet Service Provider (ISP). Check in your area for providers. After registering with an ISP, follow these steps.

1. Double-click the Internet Explorer icon on the desktop. For your first connection, you'll be prompted for information about your connection.



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2. Click the Connect button in the Dial-up Connection window.

When you are successfully connected to the Internet, you'll see a connect icon (two connected computers) in the taskbar. You are now ready to explore the Internet! To go to a specific Web site, enter the address (for example, http://www.hp.com) in the browser's Address field. To search for information on the Web, you can use the browser's Search tool and enter the word or phrase you are looking for.

## To disconnect from the Internet

You remain connected to the Internet until you shut down the computer, disconnect the phone line from the computer, or give a command to hang up the connection.

- Double-click the connect icon in the taskbar, and click Disconnect.

## To dial in to a network

You can use the modem to dial in to a LAN (local area network) that supports dial-in connections. This gives you access to network resources from a remote location.

- See Windows Help for information about setting up and using dial-in network connections—click Start, Help.



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## To change your modem settings

The modem is already set up to be compatible with telephone systems and modems in most areas. However, in some situations, you may have to change modem settings to match local conditions. If you have questions about local requirements, contact your telephone company.

- **Control Panel.** Open Modems (Windows 95 or 98) or Phone And Modem Options Windows 2000) in Control Panel to change many modem settings.

  For Windows 95 or 98, on the General tab click Properties to set connection speeds or special dialing options.

  For Windows 2000, on the Modems tab click Properties to set connection speeds, or on the Dialing Rules tab click Edit to set dialing options.

- **Communications software.** Many communications applications provide options for controlling modem settings. See the help for your software.

- **AT commands.** You can control many aspects of modem operation using modem AT commands. AT commands are special strings of characters sent to the modem to set up specific conditions. Those command strings normally start with “AT”. For a list of AT commands for the built-in modem, see “Modem Reference Information” on page 129.

  For Windows 95 or 98, open Modems in Control Panel. On the General tab, click Properties, then on the Connections tab click Advanced. You can type AT commands in the space for extra settings.

  For Windows 2000, open Phone And Modem Options in Control Panel. On the Modems tab, click Properties. You can type AT commands on the Advanced tab in the space for extra settings.

For example, to force a built-in Ambit modem to connect with the V.34 modulation, you can use the +MS command as shown in table of AT commands—type AT+MS=11 in the space for extra settings.



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## To send and receive e-mail

Sending and receiving e-mail requires an e-mail account with an Internet Service Provider or with your company's communications system. If you are using AOL, e-mail services are part of your AOL service. For another ISP, you can use Outlook Express (included with your computer) or an e-mail system of your choice. This topic includes instructions for using Outlook Express.

**To start Outlook Express**

1. Click Start, Programs, Outlook Express, or double-click Outlook Express on the desktop.
2. If you are not currently connected to the Internet, the Dial-up Connection window appears. Choose Connect to connect to the Internet.

**To send an e-mail message**

1. In Outlook Express, click the New Mail tool on the toolbar.
2. Fill in the information in the New Message window.
3. When you're finished, click the Send button.

**To receive e-mail messages**

1. In Outlook Express, click the Send/Recv tool on the toolbar to have Outlook deliver new messages.
2. Click the Inbox folder to view the list of messages. Unread messages appear bold on the screen.
3. To view a message, click it once. (Or double-click to view the message in its own window.)



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## To send and receive faxes (Windows 95)

Sending and receiving faxes requires just a telephone connection—you don't need an Internet connection. You can use the modem and fax software to send and receive faxes on your computer. Fax software is built into Windows 95.

**To send a fax**

1. Double-click the Inbox icon on the desktop. If this is the first time you're opening the Inbox, follow the instructions to set up Microsoft Exchange and Microsoft Fax.
2. Click Compose, New Fax. Follow the instructions to create and send the fax.

If instead you want to send a document as a fax, open the document in its application window, then open the Print dialog box. Change the selected printer to Microsoft Fax, then print it.

**To receive faxes**

Faxes are automatically received when the Inbox is open or minimized.

1. Double-click the Inbox icon on the desktop to open the Inbox.
2. Click the fax icon in the taskbar, then click Answer Now.

## To send and receive faxes (Windows 98)

Sending and receiving faxes requires just a telephone connection—you don't need an Internet connection. You can use the modem and fax software to send and receive faxes on your computer. QuickLink fax software is included with Windows 98 on the hard disk.

**To start QuickLink**

- Click Start, Programs, QuickLink, QuickLink.

The first time you start QuickLink, the Setup Wizard steps you through the process of setting options and customizing the program for your personal use. Follow the onscreen instructions. If you're unsure which setting to choose, accept the default choice.

**To send a fax**

1. In QuickLink, click the QuickFax tool on the main toolbar.
2. Enter the fax number and the recipient's name and company.



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3. Type the message body in the QuickFax Note area.
4. Click Send Fax.

If instead you want to send a document as a fax, open the document in its application window, then open the Print dialog box. Change the selected printer to QuickLink, then print it.

**To receive faxes**

Faxes are automatically received when QuickLink is running in an open or minimized window. New faxes are indicated in the status box in the QuickLink window. To receive a fax manually, follow these steps.

1. When a fax call is coming in, click Start on the menu bar.
2. Click Manual Fax Receive.

**To view and print a fax**

1. In QuickLink, click the Fax Viewer tool on the toolbar.
2. Click Yes to view the fax now.
3. Click the printer icon to print the fax.



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## To send and receive faxes (Windows 2000)

Sending and receiving faxes requires just a telephone connection—you don't need an Internet connection. You can use the modem and fax software to send and receive faxes on your computer. Fax software is built into Windows 2000.

**To set up for faxing**

1. Click Start, Settings, Control Panel, Fax. Enter your fax information.
2. On the Advanced Options tab, add a fax printer.

   If you do not want to receive faxes, stop here.
3. On the Advanced Options tab, open the Fax Service Management window.
4. In the list under Fax, click Devices, then right-click the modem and click Properties.
5. On the General tab, enable the modem to receive faxes.
6. On the Received Faxes tab, select the option to save faxes in a folder.

**To send a fax**

- Click Start, Programs, Accessories, Communications, Fax, Send Cover Page Fax. Follow the instructions to create and send the fax.

If instead you want to send a document as a fax, open the document in its application window, then open the Print dialog box. Change the selected printer to the fax printer, then print it.

**To receive, view, and print faxes**

If you enabled the modem to receive faxes, they are automatically received.

1. Click Start, Programs, Accessories, Communications, Fax, My Faxes.
2. In the Received Faxes folder, double-click the fax.
3. To print, click File, Print.



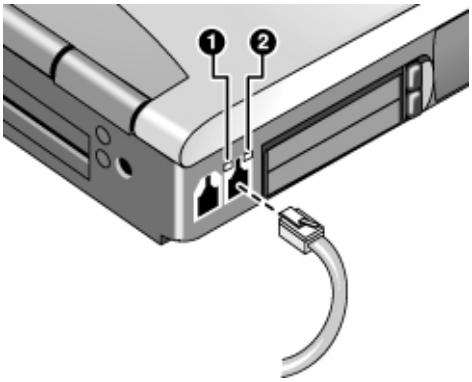
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# Connecting to a LAN

If your computer model has a LAN port, you can use it to connect to a local area network (LAN). This gives you access to network resources, such as printers and file servers on your corporate network, and possibly to the Internet.

## To connect to a LAN

1. Check that the existing LAN supports Ethernet 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) connections.
2. Plug the LAN cable (not supplied) into the built-in LAN port. The cable must have an RJ-45 connector.




3. Windows 2000 automatically detects and sets up a LAN connection.

   For Windows 95 or 98, open Network in Control Panel to set up support for a LAN connection on your network. For example, you can add the Microsoft TCP/IP protocol.

See Windows Help for information about setting up and using LAN connections—click Start, Help. Contact your network administrator for network information.

Two lights next to the LAN port indicate the status of the connection (see the figure above):

1. The yellow light indicates network activity.
2. The green light indicates that a link is established to the network.



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# Connecting PC Cards

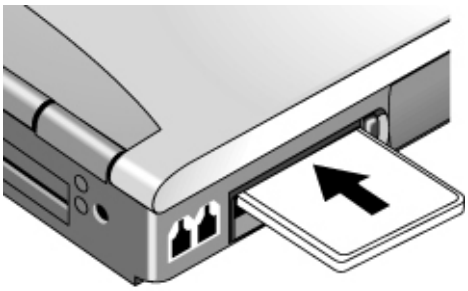
The computer's PC Card slots are available for storing data and expanding the communication capabilities of the computer. The computer supports standard Type I, II, and III PC Cards (PCMCIA and CardBus), and can hold two Type I or II cards or one Type III card.

The lower slot supports Zoomed Video, which allows a zoomed video card to show high-quality multimedia presentations.

## To insert or remove a PC Card

### Inserting a PC Card

1. Hold the PC Card with its face up and its connector holes toward the card slot.
2. Slide the PC Card all the way into the slot, until its outer edge is flush with the casing of the computer.





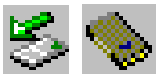
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### Removing a PC Card

**CAUTION**

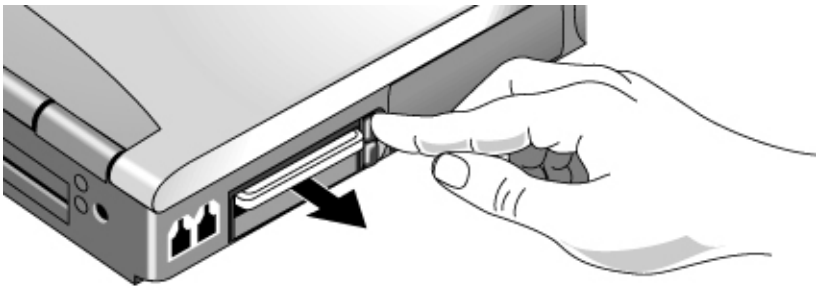
**Before removing a PC Card, you must either use the PC Card or Eject Hardware icon in the taskbar or shut down the computer. Otherwise, you could lose data.**

1. Before removing the card, click the PC Card or Eject Hardware icon in the taskbar, then click Stop. This protects your data and helps avoid unexpected problems.

   If needed, you can restart the card by removing and then reinserting it.

2. Press the eject button to pop the button out, then press it in to eject the PC Card.



### Finding tested PC Cards

For the current listing of PC Cards that have been tested and approved for use with your computer, visit the Accessories section of the HP Notebook Web site (www.hp.com/notebooks).

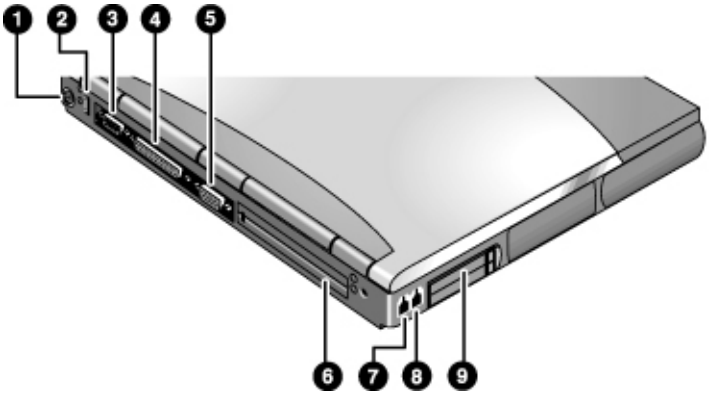


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# Connecting External Devices

## To identify connectors for external devices

The diagram below shows your computer's connectors for external devices.




1. PS/2 keyboard or PS/2 mouse port (supports Y adapter).
2. Universal serial bus (USB) port.
3. Serial port (COM1).
4. Parallel port (LPT1). Use this port for a parallel printer or other parallel device, or to connect the floppy disk drive externally.
5. External monitor port.
6. Docking port.
7. Modem port (on certain models).
8. LAN port (on certain models).
9. PC Card and CardBus slots (upper and lower). See "Connecting PC Cards" on page 66.

The computer also includes an infrared port and audio ports on its right side.



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**Note**

Before you connect any device, check its documentation to see if you need to make any settings or adjustments to the equipment before using it. This might include setting switches to configure the equipment so that it will operate properly with your computer and the software you plan to use.

## To use an external monitor

### Connecting an external monitor

1. Click Start, Shut Down, Shut down.
2. Connect the monitor cable from the monitor to the VGA port on the rear of the computer.
3. Connect the monitor to a power source and turn it on.
4. Press the blue sleep button to turn on the computer.

### Switching the display to the external monitor

- Press Fn+F5 (or CTRL+ALT+F5 on an external keyboard) to cycle through the display options: notebook display, external monitor, both.
- If you need to use both displays at once, press Fn+F5 repeatedly until the image shows on both displays. However, by default, the image is limited by the internal display to 1024 × 768 pixels, so at a higher resolution you will see only part of the desktop on both displays. This doesn't happen if you use only the external monitor. If you need to increase the refresh rate on the external monitor, you can switch to only the external monitor, or make the internal or external display a "secondary" display—you make this setting on the Display tab (in Windows 98 or 2000, click Advanced on the Settings tab first).

### Adjusting monitor resolution and other settings

1. Click Start, Settings, Control Panel, then double-click Display.
2. On the Settings tab, adjust the Screen area. Other settings are also available.

The internal display supports settings of up to 1024 × 768 resolution with 16M colors (24-or 32-bit).

For a high-resolution external monitor, the computer supports 1280 × 1024 resolution with 16M colors (24-bit for Celeron models, 32-bit for Pentium models) at 85 Hz max. refresh rate. It supports 1600 × 1200 resolution with 64K colors for Celeron models and 16M colors (24-bit) for Pentium models at 60 Hz max. refresh rate.



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**Using dual display mode (Windows 98 and 2000)**

You can extend your desktop by connecting an external monitor to your computer.

1. Click Start, Settings, Control Panel.
2. Double-click Display and click the Settings tab.
3. **Windows 98**: Right-click display 2, and select Enabled.

   **Windows 2000**: Click display 2, then select the Extend checkbox.

You can set different resolutions and numbers of colors for each display. However, using the Extended Desktop requires video memory to be shared. For this reason, higher resolutions and higher numbers of colors may cause unexpected behavior on the displays. We recommend starting with 1024 × 768 resolution on the external display and 64K colors (16-bit) on both displays. You can try higher settings to see whether they work for your applications. In addition, certain operations such as playing DVDs and running 3D graphics require extra video memory, so you may have to use lower display settings.

**Changing display actions**

You can use the BIOS Setup utility to change certain display behaviors, such as stretching the image to fill the screen at lower resolutions. See “To run the BIOS Setup utility” on page 78.

For a display connected to a video adapter in a docking system, the docking display is automatically selected when it is detected. To change this behavior, change the Primary Video Adapter setting in BIOS Setup.

## To connect a printer or other parallel device

The computer’s parallel port uses a standard 25-pin connector, most commonly used for connecting dot-matrix, ink-jet, and laser printers. You can also use it to connect a parallel Zip drive.

- Connect the cable from the parallel printer or other parallel device to the computer’s parallel port.



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## To connect an external keyboard or PS/2 mouse

Your computer's 6-pin PS/2 port allows you to attach an external keyboard or a PS/2–compatible mouse to the computer. The pointing stick and touch pad are normally disabled while an external PS/2 mouse is connected.

- Plug the mouse or keyboard PS/2 cable into the computer's PS/2 port.
- To connect a mouse and keyboard at the same time, use the HP F1469A Y adapter.
- To connect a device that has a PC-type jack, connect its cable to an adapter cable that has a PS/2 jack.

**Note**

To use hot keys from an external keyboard, substitute left CTRL+left ALT for the computer Fn key. For example, to access Fn+F12, press left CTRL+left ALT+F12. Only Fn+F5, Fn+F7, and Fn+F12 are supported on an external keyboard.

## To connect a USB device

Your computer's universal serial bus (USB) provides a bi-directional serial interface for adding peripheral devices such as game controllers, serial and parallel ports, and scanners on a single bus.

- Attach the device's USB cable to the computer's USB port. Windows automatically recognizes the USB device. Some USB devices can be connected to the computer in series—this is called a daisy-chain connection.

**Note**

If you have problems making this connection, contact the device manufacturer and the HP Customer Care Web site (www.hp.com/go/support) for the latest version of the driver for the device.



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## To connect a serial device

The computer includes a standard 9-pin serial port that you can use to connect devices such as external modems and fax modems. If needed, you can set the serial port's address in the BIOS Setup utility.

- Connect the device's serial cable to the computer's serial port.

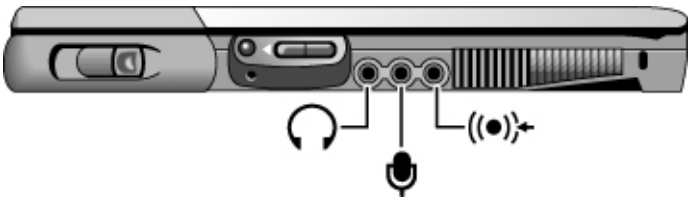
## To connect an audio device

Your computer includes a built-in microphone (just in front of the blue sleep button) that you can use to record voice, sound, and music. You can also plug in a stereo input source (such as a CD player), an external microphone, external speakers, or headphones.

**CAUTION**

**The audio jacks are three-terminal stereo jacks. They are not compatible with two-terminal mono plugs. Connecting a mono plug into the speaker-out jack may damage the OmniBook.**

- Attach the audio cable to the corresponding audio port on the computer.



**Note**

When you plug a device into the external microphone port, the built-in microphone automatically turns off. When you plug a device into the audio out port, the built-in speakers automatically turn off.



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## To make an infrared connection

Your computer includes an infrared port—located below the volume control on the right side of the computer—which provides wireless, serial communication between the computer and other infrared devices such as printers or other computers.

By default, the infrared port is not enabled, so you must enable it before you can use it.

- **Windows 95**: Enable the infrared port in the BIOS Setup utility, then install the infrared driver. For more information, see the Readme file located in C:\hp\Drivers.
- **Windows 98 and Windows 2000**: Enable the infrared port in the BIOS Setup utility (the computer reboots automatically when you save and exit). The infrared drivers then install automatically on Windows 98 and 2000 during reboot. For more information, see the Readme file located in C:\hp\Drivers.

**Using the infrared port**

- Make sure the infrared ports of your computer and the other device lie in as straight a line as possible. The two ports should be no more than 1 meter apart, with no obstructions in between. Noise from nearby equipment can cause transmission errors.
- To check the status of communications, click Start, Settings, Control Panel, then double-click Infrared (Windows 95 and 98) or Wireless Link (Windows 2000).
- Disable infrared communication when you aren't using it, and especially before suspending or docking:

  1. Close any applications that are using infrared, and any folders on an infrared link.
  2. Click Start, Settings, Control Panel.
  3. **Windows 95 or 98**: Double-click Infrared and disable communications.

     **Windows 2000**: Double-click Wireless Link and disable the hardware.

**Printing to an infrared printer**

- Install your printer and assign it to the computer's infrared port. You can then print from your applications as you would to any other printer.

**Transferring files through an infrared connection**

You can use your computer's infrared port to transfer files. In Windows 2000, you can use Wireless Link. In Windows 95 or Windows 98, you can using the built-in Direct



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Cable Connection software. For Windows 98, you will first need to install the software as follows:

1. Click Start, Settings, Control Panel, then double-click Add/Remove Programs.
2. Click Windows Setup, double-click Communications, and select the Direct Cable Connection checkbox.

See the Windows online help for instructions on using Direct Cable Connection or Wireless Link.

## To connect to a docking product

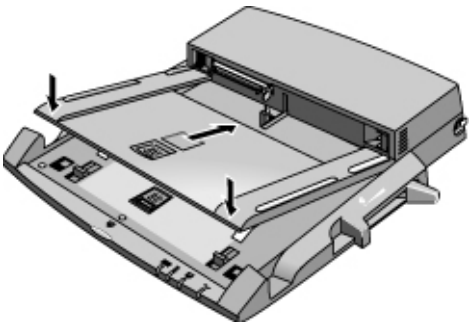
A docking product provides your computer with external connections that you can leave in place whenever you remove the computer from your desk. Instead of disconnecting and reconnecting peripheral devices, you can simply undock and dock the computer.

For more information about using docking products, see the *User's Guide* that shipped with your dock.

### Installing a docking tray

Your dock requires a tray that accommodates your specific computer model. Install this tray prior to connecting the computer to the dock. If you don't have a tray labeled for the OmniBook 6000, you'll need to purchase HP accessory F2012A.

1. Slide the rear of the tray into the dock as shown on the dock label.
2. Push down firmly on both sides of the tray until it snaps into place.



To remove a tray from the dock, pull the latch (at the center front of the dock) towards you until the tray pops free.

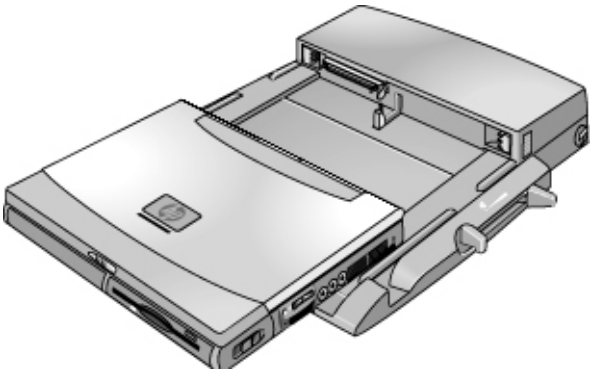


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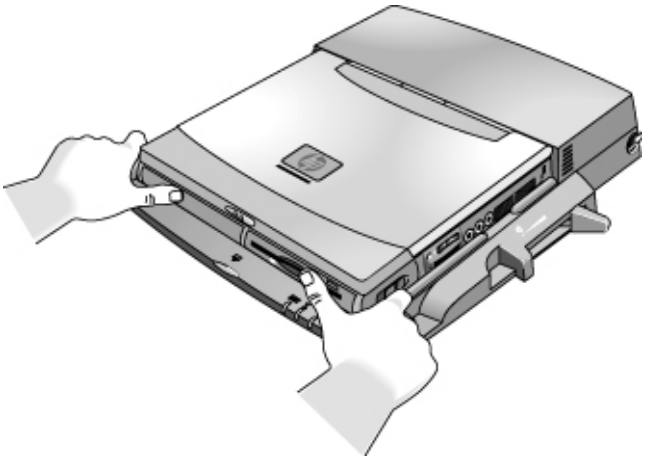
### Docking the computer

The computer can be on, suspended, or off when docking.

1. Connect power to the dock—the type of connection depends on the dock. See the manual that came with the dock.
2. Place the computer on the dock platform, with the rear of the computer facing the dock's docking connector. *Make sure the computer's PC Card eject buttons are in*.



3. Position your fingers on the platform grips as shown below. Use your thumbs to push the computer into the dock until the computer slides into place.

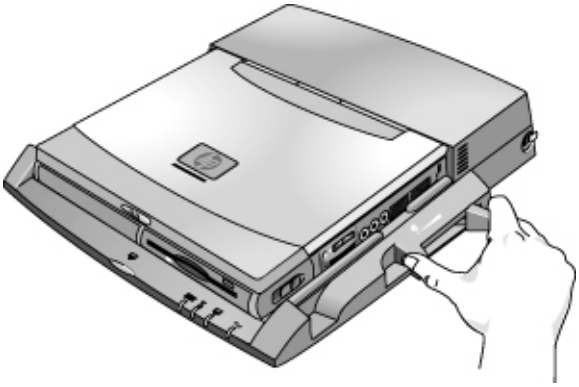




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### Undocking the computer

1. Press the undock button on the front of the dock and wait for the undock light to blink. Then position your thumb as shown and pull the release lever forward.



2. Remove the computer from the dock.



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# Configuring and Expanding Your Computer



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# Using the BIOS Setup Utility

The BIOS (Basic Input and Output System) Setup utility enables you to make changes to the computer's system configuration, and to tailor the operation of your computer to your individual work needs.

The settings made in BIOS Setup generally control the computer's hardware, and so greatly affect how the computer operates.

## To run the BIOS Setup utility

1. Click Start, Shut Down, Restart.
2. When the HP logo appears, press F2 to enter BIOS Setup.
3. The pointing devices are not active in BIOS Setup, so you will need to use the keyboard to navigate:
   - Press the LEFT and RIGHT arrow keys to move among menus.
   - Press the UP and DOWN arrow keys to move among parameters in a menu.
   - Press F5 or F6 to move through values for the current parameter, or press ENTER to change a setting.
4. After you select the options you want, press F10 or use the Exit menu to exit BIOS Setup.
5. If the settings cause a conflict between devices during reboot, the system prompts you to run BIOS Setup, and marks the conflicting settings.

The following tables describe BIOS settings for BIOS version 1.00. If your BIOS is a different version, some settings may differ from those shown.



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### Main Menu

| Setting | Description | Default |
|---|---|---|
| BIOS Revision | Shows the current BIOS version. | Detected automatically. |
| System Time | Sets the time using 24-hour format. Values set take effect immediately. | |
| System Date | Sets the date using dd/mm/yy format (except English, which uses mm/dd/yy format). | |
| Floppy Drive | Sets the floppy drive type. | Floppy disk drive type detected and set automatically. |
| Internal Hard Disk | Sets the hard disk drive type and various parameters. | Hard disk drive detected and set automatically. |
| Quiet Boot | When enabled, hides summary of power-on self-test and messages during boot. | Enabled |
| Video Display Device | Sets whether the built-in display automatically switches to an external display, if one is detected. | Auto |
| Video Expansion | When enabled, the video image covers the entire display in lower resolution modes. When disabled, the video image is centered in the display. | Disabled |
| Primary Video Adapter | Sets whether the computer automatically switches to an external video adapter connected to the docking system, if one is detected. | Auto |
| System Memory | Shows the system memory size. | 640 KB |
| Extended Memory | Shows the extended memory size. | Detected automatically. |
| CPU Serial Number | For a processor with a serial number, makes the processor serial number available to software. | Disabled |



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**System Devices Menu**

| Setting | Description | Default |
|---|---|---|
| PS/2 Pointing Devices | Disables the internal pointing devices when an external PS/2 mouse is connected. | Auto |
| External Fn Key | Sets whether left CTRL+left ALT on an external keyboard is interpreted as the Fn key. | Enabled |
| IDE Controller | Enables the primary (hard drive) and secondary (module bay device) controllers. | Both |
| FDD Controller | Enables the floppy drive. | Enabled |
| Serial port | Sets whether the serial port is active, and whether it is configured automatically or by the user. | Enabled |
| Base I/O address | Sets the I/O address and interrupt. | 3F8h, IRQ4 |
| IrDA port | Sets whether the infrared port is active, and whether it is configured automatically or by the user. | Disabled |
| Mode | Sets the hardware to support FIR (Fast IR) or SIR (Standard IR) infrared communications. (Driver installation required for Windows 95.) | FIR |
| Base I/O address | Sets the I/O address and interrupt. | 2F8h, IRQ3 |
| DMA channel | Sets the DMA channel for Fast IR (FIR) mode. | DMA0 |
| Parallel Port | Sets whether the parallel port is configured by the user or the BIOS or OS (automatically), or not at all. | Enabled |
| Mode | Sets the port to output only, bi-directional, EPP, or ECP. | ECP |
| Base I/O address | Sets the I/O address. | 378h |
| Interrupt | Sets the interrupt. | IRQ7 |
| DMA channel | Sets the DMA channel for ECP mode. | DMA3 |



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**Security Menu**

| Setting | Description | Default |
|---|---|---|
| User Password is | Shows if a user password is set. | Clear |
| Administrator Password is | Shows if an administrator password is set. | Clear |
| Set User Password | Press ENTER to set, change, or clear the user password. The password can have no more than 8 characters (0–9, A–Z), and cannot include special or accented characters. | Enter |
| Set Administrator Password | Press ENTER to set, change, or clear the administrator password, which protects BIOS Setup settings. The password can have no more than 8 characters (0–9, A–Z), and cannot include special or accented characters. | Enter |
| Boot | Sets whether a user password is required when the computer boots. Requires the administrator password for changes. | Enabled |
| Resume* | Sets whether a user password is required when resuming from Standby or Hibernate mode. Requires the administrator password for changes. (Windows 95 and 98 only.) | Enabled |
| Undock* | Sets whether a user password is required when undocking the computer. Requires the administrator password for changes. (Windows 95 and 98 only.) | Disabled |
| Internal hard disk drive lock* | Encodes the current user password (or administrator password if that is the only password set) on the hard disk drive. | Disabled |
| Removable Device Boot | Sets whether the computer will attempt to boot from a floppy drive or other removable device. | Enabled |
| * Resume, Undock, and Internal hard disk drive lock options are available only if the Boot option is enabled. | | |



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### Power Menu

Windows 2000 uses only the settings marked with *. Windows 98 uses only the settings marked with * or **. All other settings in the Power menu are ignored.

| Setting | Description | Default |
|---|---|---|
| Intel SpeedStep Mode* | Sets the speed used by a dual-speed processor at boot, depending on the available power source. A separate Control Panel power setting controls speed changes after boot. | Automatic |
| Power Management Mode | Disables time-outs, selects a combination of time-outs, or allows customized time-outs. | Max. Power Savings |
| Smart CPU Mode | Enables automatic CPU power savings when running on battery power. Absence of keyboard, mouse, and hard disk activity could cause slower CPU response. | On |
| Display-off Time-out | Sets the period of inactivity after which the computer enters Display-off power mode. | 2 minutes |
| Suspend Time-out | Sets the period of inactivity after which the computer goes from Display-off to Standby power mode. (Skips Display-off mode if that time-out is disabled.) | 4 minutes |
| Hibernate Time-out** | Sets whether the computer goes from Standby to Hibernate power mode after the indicated period of inactivity. (Skips Standby mode if the suspend time-out is disabled.) | 4 hours |
| Hard Disk Time-out | Sets the period of hard disk inactivity after which the internal hard disk (and any hard disk drive in the plug-in module bay) stops spinning. | 2 minutes |
| Time-out on AC | Sets whether power management time-outs occur while the ac adapter is connected. | Disabled |
| Lid Switch Mode | Sets the action that occurs if the computer's lid is closed. | Turn off LCD |
| Resume On Serial Ring | Sets whether the system resumes if it received a ring signal. | Enabled |
| Resume On Time of Day | Sets whether the system resumes at a defined time of day. | Disabled |
| Resume Time | Sets the 24-hour time when the system resumes from if Resume On Time of Day is enabled. | |
| Auto Suspend on Undock* | Sets whether the computer suspends to Standby power mode after undocking. | When Lid Closed |
| Auto Turn-On on Dock* | Sets whether the computer turns on after docking. | Enabled |
| * Windows 98 and 2000 use these settings.<br>** Windows 98 uses this additional setting. | | |



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### Boot Menu

| Setting | Description | Default |
|---|---|---|
| +Removable Device<br>+Hard Disk<br>CD-ROM/DVD Drive<br>MBA UNDI | Shows the order of boot devices, with "+" indicating a device category. Move the entries to change the order. If the computer has more than one device in a category, you can select the one scanned. MBA UNDI (Managed Boot Agent) appears in the list only if a built-in LAN is present—it provides diskless boot from a network server. | 1. Removable Device<br>2. Hard Disk<br>3. CD-ROM/DVD drive<br>4. MBA UNDI |

### Exit Menu

| Setting | Description | Default |
|---|---|---|
| Save Changes and Exit | Saves Setup changes, then exits and reboots. | |
| Discard Changes and Exit | Discards any Setup changes made since last save, then exits and reboots. Does not affect password, date, or time changes. | |
| Get Default Values | Restores default settings, and remains in Setup. Does not affect password, date, or time changes. | |
| Load Previous Values | Discards any Setup changes made since last save, and remains in Setup. Does not affect password, date, or time changes. | |
| Save Changes | Saves Setup changes, and remains in Setup. Security settings are saved when changed. | |



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# Using TopTools

HP TopTools is for network managers and administrators who are responsible for managing computer systems. It offers configuration and security options that allow you to check which hardware and software components are installed on your computer and how well they are working.

## To set up TopTools

The TopTools package is included with your computer, but you'll need to install it before you can use it.

**Windows 2000**

If TopTools is not already on your computer, download it from the HP Customer Care Web site (www.hp.com/go/support).

1. Click Start, Programs, HP TopTools for Notebooks, Setup.
2. Follow the instructions that appear on the screen.

TopTools can be run locally on an individual computer, or remotely by a network administrator.

- To run TopTools locally, click Start, Programs, HP TopTools for Notebooks, HP TopTools.

For information on manageable HP computers, HP TopTools, and how they lower PC operating costs, see the HP Web site at www.hp.com/toptools.



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# Installing a RAM Expansion Module

The computer has no memory (RAM) built in but has two slots that hold two RAM modules. One slot contains a RAM module installed at the factory. You can use both slots to expand your RAM.

## To install a RAM expansion module

You'll need a small Phillips screwdriver for these steps.

**CAUTION**

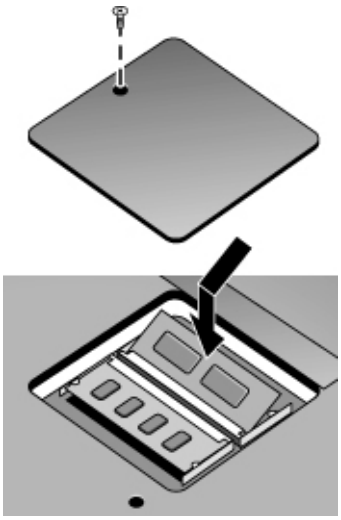
**Your computer's chips are extremely sensitive to static electricity, and can be permanently damaged by it. Handle the RAM module only by its edges. Before installing the memory module, discharge your body's static electricity by touching the metal shielding around the connectors on the rear of the computer.**

1. Click Start, Shut Down, Shut down.
2. **Important**: Unplug the ac adapter, if present, and remove the battery. Remove the secondary battery if one is installed.
3. Turn the unit bottom-side up, remove the screw holding the RAM cover, and remove the cover.



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4. Insert the RAM board into the connector at about a 30° angle until it is fully inserted. Then press down at both sides until both latches snap closed.



5. Replace the cover.
6. Insert the battery.

## To remove a RAM expansion module

You may want to remove a RAM module so you can install a larger one. You'll need a small Phillips screwdriver for these steps.

**CAUTION**

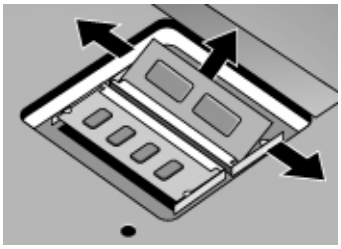
**Your computer's chips are extremely sensitive to static electricity, and can be permanently damaged by it. Handle the RAM module only by its edges. Before installing the memory module, discharge your body's static electricity by touching the metal shielding around the connectors on the rear of the computer.**

1. Click Start, Shut Down, Shut down.
2. **Important**: Unplug the ac adapter, if present, and remove the battery. Remove the secondary battery if one is installed.
3. Turn the unit bottom-side up, remove the screw holding the RAM cover, and remove the cover.



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4. Release the two latches at the sides of the RAM board, so the free edge of the board pops up.



5. Pull the board out of the connector.
6. Replace the cover.
7. Insert the battery.



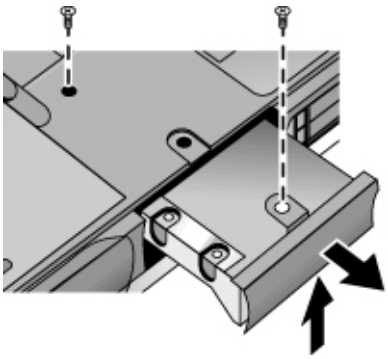
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# Replacing a Hard Disk Drive

## To replace the hard disk drive

You'll need a small Phillips screwdriver for this procedure.

1. Unplug the ac adapter if you're using one, and remove the battery.
2. Turn the unit bottom side up and remove both hard drive screws.
3. Raise the cover on the end of the drive so that its retainer tab is free of the computer casing, then gently pull the hard drive out of the computer.



4. Gently slide the new drive into the hard drive compartment. Press firmly to make sure the connector seats properly.
5. Slide the cover down into place (so the retainer tab engages the casing), and reinstall both hard drive screws.

**Important**

If you are installing a new hard disk drive, you should create a Hibernate partition on the drive before loading any software. See "To recover the factory installation of your hard disk" on page 115.

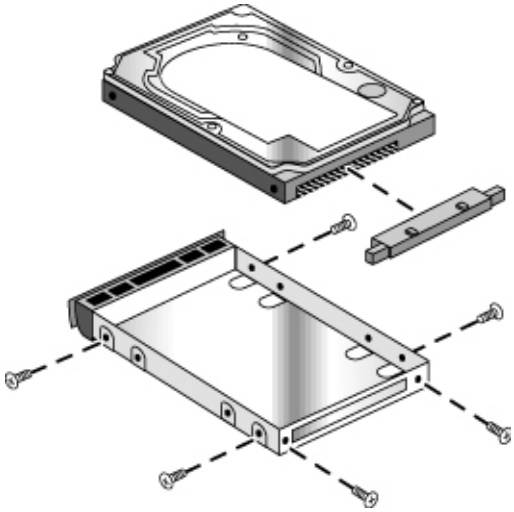


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## To replace the hard disk drive holder

If you are installing a new hard drive that does not have a cover, you can remove the cover parts from the old hard drive. You'll need a small Phillips screwdriver for this procedure.

1. Remove all six screws from the holder and drive case, then lift the drive out of the holder.
2. Notice that the hard drive has a pin connector attachment at one end. Carefully remove this connector from the end of the drive. Work alternately at each end so that the connector slides off evenly without bending the connector pins.



3. Carefully put the pin connector attachment back onto the pins on the end of the new hard drive. Work alternately at each end so that the connector slides on evenly without bending the connector pins.
4. Insert the connector through the end of the holder, and lower the drive into the holder.
5. Reinstall all six screws into the holder and drive case. The thinner screws go nearest the connector.



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## To prepare a new hard disk drive

When you install a new hard disk drive, you also need to prepare it to be able to work with your computer.

- If you want to restore the Windows software and operating system that were originally installed on your computer, you can do so using the *Recovery CD* that also came with your computer. See “To recover the factory installation of your hard disk” on page 115.
- If you want to use the hard disk with other than the original software and operating system, prepare the hard disk as described in the *Corporate Evaluator’s Guide*, available at the HP Customer Care Web site (www.hp.com/go/support).



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# Troubleshooting Your Computer



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# Troubleshooting Techniques

This section contains solutions to a many types of problems you might have with your computer. Try the solutions one at a time, in the order in which they are presented.

Here are some other sources of information for troubleshooting:

- Click Start, Help, Contents, Troubleshooting, and use the Windows Troubleshooters.
- See the Microsoft Windows manual shipped with the computer.
- See the HP Notes in the online HP Library for updated information.
- Find technical tips and software updates for the computer at the HP Customer Care Web site (www.hp.com/go/support).
- Test your computer by running the DiagTools test program. See “Testing the Hardware” on page 113.
- Contact your dealer or Hewlett-Packard—see “To contact the HP Customer Care Center” on page 120. Please have your computer with you when you call.

## Audio Problems

**If no sound is audible**

- Press the back end of the volume control several times, or press Fn+UP ARROW several times.
- Click the speaker icon on the taskbar, and make sure that Mute is not checked and the Volume Control slider is not set to the bottom.
- Press the audio-off button on the right side of the computer once or twice until the indicator light goes off.
- When you are operating your computer in MS-DOS mode (for example, when running MS-DOS games), you may find that the sound does not operate properly. Use Windows applications for full use of sound capabilities.

**If sound does not record**

- Check the software controls for recording sound: click Start, Programs, Accessories, Multimedia (or Entertainment), Sound Recorder.



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- Test the audio with the DiagTools diagnostics. See “Testing the Hardware” on page 113.

**If you hear a loud high-pitched whine (feedback) from the speakers**

- In the Volume Control, try reducing the Master volume: double-click the speaker icon in the taskbar.
- In Volume Control, click Options, Properties, and select the microphone option for the playback settings. Then in Volume Control, make sure the microphone is muted.
- Avoid using the built-in microphone and built-in speaker at the same time.

## CD-ROM and DVD Problems

**If you can’t boot from a CD or DVD in the CD/DVD drive**

- Make sure the CD or DVD is bootable, such as the *Recovery CD*.
- If you want the computer to boot from a CD or DVD whenever one is present, check the boot order in the BIOS Setup utility:
  1. Click Start, Shut Down, Restart.
  2. When the HP logo appears, press F2 to enter BIOS Setup.
  3. Open the Boot menu. The default boot order is (1) Removable Device, (2) Hard Disk, and (3) CD-ROM/DVD Drive.
  4. Select CD-ROM/DVD Drive for first boot device.
  5. Press F10 to exit BIOS Setup.
- Restart the computer: click Start, Shut Down, Restart.
- Test the DVD drive with the DiagTools diagnostics. See “Testing the Hardware” on page 113.

**If a DVD plays erratically**

- Dirt or smudges can cause a disc to skip. Clean the disc with a soft cloth. If the disc is badly scratched, it will probably have to be replaced.



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**If a DVD movie stops playing in the middle**

- The DVD may be double-sided. Open the DVD tray, and read the text near the center hole of the disc. If it says Side A, flip the disc over, close the tray, and press the Play button to continue playing the movie.
- You may have accidentally paused the DVD movie. Press the Play button to resume.

**If you get a Region Code error when playing a DVD movie**

- DVDs can have regional codes embedded in the disc data. These codes prevent DVD movies from being played outside the region of the world in which they are sold. If you get a Region Code error, you are trying to play a DVD intended for a different region.

**If the computer cannot read a CD or DVD**

- For a single-sided CD or DVD, make sure the disc is placed in the drive with the label facing up.
- Clean the disc.
- Wait 5 to 10 seconds after closing the tray to give the computer time to recognize the disc.
- Restart the system: Remove the disc from the drive, and click Start, Shut Down, Restart.

**If a DVD movie doesn't fill the screen**

- Each side of a double-sided DVD has a different format (standard or widescreen). In widescreen format, black bands appear at the top and bottom of the screen. To view the standard format, flip the disc over and play the other side.

**If the computer can't find Wordpad.exe after inserting a CD**

- The system is trying to open a .doc file in WordPad, but cannot find the Wordpad.exe program file. Type C:\Program Files\Accessories in the error message box.

## Display Problems

**If the computer is on, but the screen is blank**

- Move the mouse or pointing stick, or tap the touch pad. This will wake the display if it is in Display-off mode.



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- Press Fn+F5 in case the internal display was disabled. (Do this three times to return to the state you started from.)
- If the computer is cold, allow it to warm up.

**If the screen is difficult to read**

- Try setting the display resolution to its default setting of 1024×768: click Start, Settings, Control Panel, Display, Settings.

**If an external display does not work**

- Check the connections.
- Press Fn+F5 in case the external monitor was disabled. (Do this three times to return to the state you started from.)
- The external monitor may not be detected. In the BIOS Setup utility, try setting Video Display Device to Both in the Main menu.
- Test the display with the DiagTools diagnostics. See “Testing the Hardware” on page 113.

## Docking Problems

**If a port on a dock isn’t working**

- Check that ac power is connected to the dock.
- Try using the corresponding port on the computer while undocked.
- Make sure the computer is fully inserted into the dock.
- See the manual for the dock.

**If the operating system hangs when you dock or undock**

- Your system may hang if you dock or undock your computer while you are suspending or resuming. Make sure your computer has completely suspended or resumed before you dock or undock it.

**If the drive A icon is missing for the floppy drive when docked**

- For Windows 98, if you insert the floppy drive after docking, the drive A icon may not be available. To be recognized, the drive must be present when the computer



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docks or boots. If the drive A icon is missing, either dock the computer again with the floppy drive installed, or reboot the computer.

**If the computer hangs after inserting a PC Card in a dock**

- For Windows 95, if you use a PC card in a dock, you should insert the card only when the computer is running or after it is shut down, and remove the card only after stopping the card using the PC Card icon in the taskbar or after shutting down. If you remove the card while the computer is suspended, the computer may stop responding.

**If an IDE drive in a docking system doesn't work**

- If you install an IDE drive in a docking system PC device bay, you should set the IDE jumpers on the drive to the Single or Cable Select setting. Whenever you want to partition or format a drive that's larger than 8 GB, you must first use Device Manager to turn on the Int 13 setting for the IDE drive.

## Hard Disk Drive Problems

**If the computer's hard drive doesn't spin**

- Make sure the computer has power. If necessary, connect the ac adapter, and make sure it is fully plugged into a power source and into the rear of the computer.
- Remove and reinsert the hard drive. See "Replacing a Hard Disk Drive" on page 88.

**If the hard disk makes a buzzing or whining noise**

- Back up the drive immediately.
- See whether the noise is coming from elsewhere, such as from the fan or a PC Card drive.

**If files are corrupted**

- In Windows 95 or 98, run the Scandisk surface scan to check the hard disk. From the Start menu, click Programs, Accessories, System Tools, Scandisk.
- For Windows 2000, open My Computer, select the disk you want to scan, click File, Properties, and use the Tools tab.
- Run the VirusScan program. See "To use the VirusScan utility" on page 39.
- Test the hard disk drive with the DiagTools diagnostics. See "Testing the Hardware" on page 113.



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- If necessary, you can format the hard disk and reinstall the original factory software. See “To recover the factory installation of your hard disk” on page 115.

## Heat Problems

Your computer normally gets warm during routine operation.

**If the computer gets abnormally hot**

- Always set the computer on a flat surface, so that air can flow freely around and underneath it.
- Make sure the air vents on the bottom and right side of the computer are clear.
- Keep in mind that games and other programs that drive CPU usage toward 100% can increase the computer’s temperature.

## Infrared Problems

By default, the infrared port is not enabled, so you must enable it before you can use it.

**If you have problems with infrared communications**

- Make sure the line between the two infrared ports is not blocked, and that the ports face each other as squarely as possible. (The computer’s infrared port is located on its right side, beneath the volume control.) The ports should be no more than 1 meter apart.
- Check settings in the BIOS Setup utility:
  1. Restart the computer: click Start, Shut Down, Restart.
  2. When the HP logo appears, press F2 to enter BIOS Setup.
  3. From the System Devices menu, make sure Infrared Port is enabled and FIR mode is selected.
  4. Press F10 to save and exit BIOS Setup.
- To use infrared communications with Windows 95, you must first install an infrared driver that matches the mode selected in the BIOS Setup utility. For details, refer to the driver’s Readme file located in C:\hp\Drivers.
- Make sure only one application is using the infrared port.



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- Remove any PC Cards from the computer. An infrared IRQ conflict is possible if two PC Cards are present at the same time.

## Keyboard and Pointing Device Problems

**If the pointer is difficult to control**

- Adjust the pointer controls: click Start, Settings, Control Panel, the double-click Mouse.

**If the touch pad or pointing stick doesn't work**

- Don't move the pointer or touch the touch pad while the computer is rebooting or resuming from Standby mode. If this happens, try the following:
  - Press a key on the keyboard to restore normal operation.
  - Suspend and resume operation using the sleep button.
  - Shut down and restart Windows.
- If an external mouse is connected, the built-in pointing devices are normally disabled. You can change this setting with the BIOS Setup utility—see "Using the BIOS Setup Utility" on page 78.
- Restart the computer: click Start, Shut Down, Restart.

**If the touch pad moves the pointer or cursor while you type**

- Increase the PalmCheck setting for the touch pad:
  1. Double-click the touch pad icon in the taskbar.
     –or–
     Click Start, Settings, Control Panel, then double-click Mouse.
  2. Click the Touch tab, and select the touch pad device.
  3. Adjust the PalmCheck slider, and click Apply.
- Disable the touch pad: on the Touch tab, select the touch pad device, then select Disable and click Apply.



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**If a PS/2 scroll mouse doesn't work**

- The built-in pointing devices must be disabled for the mouse's scroll feature to work. In the BIOS Setup utility, make sure the PS/2 Pointing Devices option in the System Devices menu is set to Auto. See "To run the BIOS Setup utility" on page 78.
- Suspend or shut down the computer before you attach the scroll mouse, so that it will be detected properly.

  If you want to use the touch pad again, you must suspend or shut down the computer before you detach the scroll mouse.
- Test the keyboard and pointing devices with the DiagTools diagnostics. See "Testing the Hardware" on page 113.

**If the embedded numeric keypad doesn't work**

- To type numbers, make sure Num Lock is on.
- Make sure the embedded Keypad Lock (Fn+F8) is on—or that you press and hold the Fn key to temporarily access the embedded keypad.
- Don't touch the touch pad or pointing stick while booting or resuming.

**If left CTRL+left ALT doesn't work on an external keyboard**

- Left CTRL+left ALT on an external keyboard should work like the Fn key. However, only Fn+F5, Fn+F7, and Fn+F12 are supported on an external keyboard.
- In the BIOS Setup utility, make sure External Fn Key is enabled in the System Devices menu. See "To run the BIOS Setup utility" on page 78.

**If you can't type the euro symbol**

- Hold ALT GR when you press the marked key.
- The euro symbol is not on the U.S. English keyboard. Make sure the embedded keypad is active (Fn+F8) and Num Lock is on, then hold ALT while typing 0128 on the numeric keypad.
- Support for the euro symbol requires software available from Microsoft. This software is installed in the factory software, but may not be included with retail Windows.



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## Memory Problems

**If a message says you are out of memory**

- If you're using Windows 95 or 98, use the Memory Troubleshooter in Windows Help: click Start, Help, Contents, Troubleshooting.
- If you are having memory problems while running MS-DOS programs, use the MS-DOS Troubleshooter in Windows Help: click Start, Help, Contents, Troubleshooting.
- Not all third-party memory cards have been tested for use with the computer. Please check the HP Notebook Web site (www.hp.com/notebooks) for a list of approved and tested memory cards.
- Test your computer's memory with the DiagTools diagnostics. See "Testing the Hardware" on page 113.

**If memory doesn't increase after adding RAM**

- Make sure your computer is using only PC-100 memory (RAM) modules.

## Modem Problems

**If the modem seems slow**

- Check for excess static or noise on a line reduces the overall transmission speed. If necessary, contact your telephone company about fixing this type of problem.
- If you're dialing internationally, line noise is often a problem that's difficult or impossible to eliminate.
- If you have call-waiting, disable it—your telephone company can provide instructions. It can cause symptoms similar to static.
- Eliminate extra connections in the line. If possible, connect directly to the wall jack.
- Try another telephone line, preferably one normally used for a fax machine or modem.

**If the modem doesn't dial or no dial tone is detected**

- Check all cables and connections.



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- Connect a standard telephone to the phone line and make sure the line is working.
- Make sure someone else isn't using the same phone line.
- Try another telephone line, preferably one normally used for a fax machine or modem.
- If you're in a foreign country, the dial tone may not be recognized by the modem. In Control Panel, open Modems (Windows 95 or 98) or Phone And Modem Options (Windows 2000). Try disabling the option that waits for a dial tone.

**If the modem dials incorrectly**

- Check the telephone number you entered, including any digits required for outside access or long distance.
- In Control Panel, open Modems (Windows 95 or 98) or Phone And Modem Options (Windows 2000). Check the dialing options—look for duplicate digits for outside access or long distance.
- Make sure the number you're calling isn't busy.
- If you're in a foreign country, the dial tone may not be recognized by the modem. In Control Panel, open Modems (Windows 95 or 98) or Phone And Modem Options (Windows 2000). Try disabling the option that waits for a dial tone.
- If you have call-waiting, disable it—your telephone company can provide instructions.

**If the modem dials but doesn't connect**

- Make sure you're using an analog telephone line (2, 3, or 4 wires). You must not use a PBX or digital line. In a hotel, ask for a data line.
- Try another telephone line, preferably one normally used for a fax machine or modem.
- The modem at the other end may have a problem. Try dialing to a different modem.
- Try disabling error correction and data compression.

**If the modem isn't detected**

- Check the modem setup. In Control Panel, open Modems (Windows 95 or 98) or Phone And Modem Options (Windows 2000). Check the COM port.
- Click Start, Settings, Control Panel, System and open the hardware Device Manager. If the modem is disabled, try to enable it. If it has a conflict, try disabling another device.



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- If you're running fax software using fax Class 2, try using Class 1.

**If the modem dials but you can't hear it**

- Make sure the audio-off light is turned off. If it's on, press the audio-off button.
- Check the speaker volume setting.
- In Control Panel, open Modems (Windows 95 or 98) or Phone And Modem Options (Windows 2000). Select the modem and click Properties, then check the volume setting on the General tab.

**If the modem connects, but transferred data is bad**

- In Control Panel, open Modems (Windows 95 or 98) or Phone And Modem Options (Windows 2000). Make sure the parity, speed, word length, and stop bits match on sending and receiving modems.
- Try disabling error correction and data compression.

**If the modem causes an ERROR message**

- A string of AT commands may contain an incorrect command. If you entered commands as extra settings for the modem in Control Panel or in your communications software, check the commands.

**If the modem doesn't fax**

- If you're using fax Class 2 in the fax software, try using Class 1.
- Close any other communications programs.
- If you're faxing by printing from an application, make sure you've selected the fax printer.
- Try turning off power management features temporarily.

**If excessive line current is detected**

- Make sure you're using an analog telephone line (2, 3, or 4 wires). You must not use a PBX or digital line. In a hotel, ask for a data line.

**If the modem clicks repeatedly but doesn't connect**

- Make sure you're using an analog telephone line (2, 3, or 4 wires). You must not use a PBX or digital line. In a hotel, ask for a data line.
- Check all cables and connections.



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## Network Problems

**If the built-in network adapter doesn't connect to the LAN**

- Check all cables and connections. Try connecting at a different network station, if available.
- If the green light next to the LAN port does not light, the LAN cable may not be connected to the network or the network may be down. Try connecting a different computer to the cable.
- For Windows 95 or 98, open Network in Control Panel. Make sure you have the correct clients and protocols installed.
- Make sure the LAN cable is Category 3, 4, or 5 for 10Base-T operation, or Category 5 for 100Base-TX operation. Maximum cable length is 100 meters (330 feet).
- Click Start, Help, Contents, Troubleshooting and use the Network Troubleshooter.
- Click Start, Settings, Control Panel, System and open the hardware Device Manager. If the network interface is disabled, try to enable it. If it has a conflict, try disabling another device.
- Run the LAN diagnostic software—click Start, Programs, 3Com NIC Diags, Setup to install the software.

**If you can't browse the Network Neighborhood**

- Check with your network administrator to make sure NetBEUI protocol is supported on the network.
- Click Start, Find, Find Computer to look for a computer.

**If you can't log in to Netware servers**

- If a Netware server is using IPX/SPX protocol, you may need to force your frame type to match the server's frame type. Check with your network administrator.

**If the computer stops responding after booting**

- Check whether you have a TCP/IP network with no DHCP server. This can cause a long delay at startup because DHCP is enabled. Contact your network administrator to determine the proper TCP/IP configuration.



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**If you have slow or dropped connections on a 10/100 network switch or hub**

- The switch may be forced to 10 Mbps. For Windows 95 or 98, use Network in Control Panel to disable Auto Polarity for the network adapter.

## PC Card (PCMCIA) Problems

**If the notebook doesn't recognize a PC Card**

- Remove and reinsert the PC Card.
- Insert the PC Card in a different slot.
- Press the blue sleep button to suspend the computer, then press it again to resume.
- Restart the computer: click Start, Shut Down, Restart.
- If the card requires an IRQ, make sure one is available**.** If necessary, set the IRQ to an unused value manually (Windows 95 or 98 only): Click Start, Settings, Control Panel, then double-click System and use the Device Manager tab.
- Check the HP Customer Care Web site (www.hp.com/go/support) for information about installing certain PC Cards.
- Make sure your computer supports the problem PC card: check the HP Notebook Web site (www.hp.com/notebooks) for a list of approved and tested PC Cards.
- Try the card in another computer to see whether the card functions properly.
- Zoomed Video is supported in the lower card slot only.
- Certain Xircom CE2 (IIps) LAN cards conflict with the game port device in Windows 2000. Contact Xircom to see if your card is one of these.
- When using a PC card in a docking system, insert or remove the card while the system is turned on.
- Test the PC card with the DiagTools diagnostics. See "Testing the Hardware" on page 113.

**If an I/O card stops communicating properly**

- The card may have been reset if the computer suspended or turned off. Exit any applications, then remove and reinsert the card.



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**If a PC card modem is not working**

- Disable the internal modem:
  1. Click Start, Settings, Control Panel, then double-click System.
  2. Open the hardware Device Manager.
  3. Double-click Modem to list the current modem devices.
  4. Double-click the internal modem, then select the option to disable the modem.

**If an I/O card stops communicating properly**

- Exit and restart the application. The card may have been reset if the computer suspended or turned off.
- Check settings in Control Panel.

## Performance Problems

For best performance with Windows 2000, your computer should have at least 96 to 128 MB of memory (RAM).

**If the computer pauses or runs sluggishly**

- This may be normal Windows behavior. Background processing can affect response time.
- Certain background operations (such as VirusScan) can affect performance.
- Press CTRL+ALT+DEL to see if an application is not responding.
- Restart the computer: click Start, Shut Down, Restart.
- Some file browsers respond slowly while processing graphics or waiting for broken network connections to time out.
- If the computer's hard disk drive frequently runs (as indicated by the hard drive light on the front of the computer) while the computer appears to be paused or running slowly, Windows is likely spending excess time writing to its swap file on the computer's hard disk. If this occurs frequently, consider installing additional memory.
- Check the amount of available free disk space. Delete temporary and unneeded files.
- Check settings in the BIOS Setup utility:
  1. Click Start, Shut Down, Restart.



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2. When the HP logo appears, press F2 to enter BIOS Setup.
3. From the Power menu, set the Power Management Mode to Max. Performance.
4. Press F10 to save and exit BIOS Setup.

**If the computer stops responding**

- Press CTRL+ALT+DEL to end the application that is not responding.
- Slide and hold the power button for at least four seconds to turn off and reset the computer. Then press the blue sleep button to turn the computer back on.
- If nothing happens, insert a straightened paper clip into the system-off switch on the right side of the computer. Then press the blue sleep button to turn the computer back on.

## Power and Battery Problems

**If the computer turns off immediately after it turns on**

- Battery power is probably extremely low. Plug in the ac adapter or insert a charged battery.

**If the computer keeps beeping**

- The computer beeps for 15 seconds when battery power is low. Save your work, shut down Windows immediately, and insert a charged battery or plug in the ac adapter.

**If the battery doesn’t charge**

- Make sure the ac adapter is fully plugged into the power source and the computer, and that the light on the adapter is on.
- If you’re using a power strip, remove the ac adapter from the power strip and plug it directly into a wall outlet.
- Make sure the battery is fully installed and locked in place.
- Move the computer away from any nearby heat source. Unplug the ac adapter and allow the battery to cool down. If the battery gets too hot, it will not charge properly.
- If available, try another battery and ac adapter.



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**If a secondary battery doesn't charge**

- The computer's secondary battery won't charge until the main battery is fully charged.
- Make sure the ac adapter is fully plugged into the power source and the computer, and that the light on the adapter is on.
- Make sure the secondary battery is correctly installed and locked in place.

**If the computer has a short operating time**

- Try conserving power using any of the suggestions listed in "To maximize battery operating time" on page 48.
- If you are running an application that has an automatic save feature (such as MS Word), disable this feature or increase the specified save time to reduce hard disk access.
- If the operating time has gradually become shorter and the battery is more than a year or two old, you may need to replace the battery.
- Heavy modem use can affect battery operating time.
- PC card use can affect battery operating time.

**If the Time Remaining for the battery is not correct**

- The Time Remaining is an estimate, not a precise value, and is based on the rate at which the computer is using power at the moment. This value therefore depends on your current task, and assumes that you will continue using power at the same rate until the battery runs out. So, if you check the Time Remaining while the computer is performing a task requiring a good deal of power (such as reading from a CD or DVD), the value will probably show less time remaining than you really have, since you will probably later switch to tasks that require less power.

**If the computer doesn't suspend to Standby mode as expected**

- If you have a connection to another computer, the computer won't suspend if the connection is active.
- If the computer is performing an operation, it normally waits for the operation to finish before suspending.
- For Windows 95, if a CD-ROM drive is present, make sure auto insert notification is disabled (the default factory setting). This is not required for Windows 98 or 2000.

  In Windows 95 or 98, view the CD-ROM drive properties in Device Manager.



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**If the computer doesn't automatically hibernate as expected**

- For Windows 2000, make sure hibernate support is enabled. From Control Panel, open Power, then click the Hibernate tab.

  Also, check the Power Schemes tab. Make sure the Hibernate timeouts for both ac power and battery power are not set to Never.

- For Windows 95 or 98, check the Hibernate timeout in BIOS Setup—see "To run the BIOS Setup utility" on page 78.

## Printing Problems

**Hint**

You will usually be able to solve most printing problems by using the Print Troubleshooter in Windows Help: click Start, Help, Contents, Troubleshooting.

**If a serial or parallel printer doesn't print**

- Make sure the printer is on and has paper in it.
- Make sure you are using the correct printer cable or cable adapter, and that the cable is secure at both ends.
- Check for printer errors.

**If the left edge of printed output is missing**

- Certain applications may not work properly with 600-dpi printers. If you're using such a printer, try selecting a compatible printer driver for a 300-dpi printer. For example, if you were using a 600-dpi HP LaserJet printer, you might try using the HP LaserJet IIIsi driver (300-dpi).

**If an infrared printer doesn't print**

- Make sure the line between the two infrared ports is not blocked, and that the ports face each other as squarely as possible. (The computer's infrared port is on its right side, beneath the volume control.) The ports should be no more than 1 meter apart.
- Make sure the printer is on and has paper in it.
- Check for printer errors.
- Make sure Windows is running; otherwise infrared printing is not available.
- See "Infrared Problems" on page 97.



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## Serial, Parallel, and USB Problems

**If a serial mouse doesn't work**

- Make sure you followed the manufacturer's installation instructions completely and have installed the mouse properly. If not, repeat the procedure.
- Make sure the port connection is secure.
- Press the blue sleep button to suspend and resume.
- Restart the computer: click Start, Shut Down, Restart.
- Check mouse settings in Control Panel: click Start, Settings, Control Panel, then double-click Mouse.
- Make sure the serial port is enabled in BIOS Setup—see "To run the BIOS Setup utility" on page 78.
- Use a mouse that connects to the PS/2 port. If you have a PS/2 keyboard connected, use a PS/2 Y adapter (HP accessory F1469A).
- Check the port settings in Control Panel:
  1. Click Start, Settings, Control Panel, then double-click System.
  2. Open the hardware Device Manager, then double-click Ports (COM & LPT).

**If a serial modem doesn't work properly**

- See "Modem Problems" on page 100.
- Use the Modem Troubleshooter in Windows Help: click Start, Help, Contents, Troubleshooting.
- Make sure the port connection is secure.
- Check the modem settings in Control Panel: click Start, Settings, Control Panel, then double-click Modems (Windows 95 or 98) or Phone and Modem Options (Windows 2000).
- Make sure the serial port is enabled in BIOS Setup—see "To run the BIOS Setup utility" on page 78.
- Disable the internal modem:
  1. Click Start, Settings, Control Panel, then double-click System.



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2. Open the hardware Device Manager.
3. Double-click Modem to list the current modem devices.
4. Double-click the internal modem, then select the option to disable the modem.

- Check the port settings in Control Panel:
  1. Click Start, Settings, Control Panel, then double-click System.
  2. Open the hardware Device Manager, then double-click Ports (COM & LPT).

**If the serial or parallel port is not working**

- Make sure the port connection is secure.
- Check the port settings in Control Panel:
  1. Click Start, Settings, Control Panel, then double-click System.
  2. Open the hardware Device Manager, then double-click Ports (COM & LPT).
- Use the BIOS Setup utility to make sure the serial and parallel ports are enabled—see “To run the BIOS Setup utility” on page 78.
- Test the ports with the DiagTools diagnostics. See “Testing the Hardware” on page 113.

**If the USB port is not working**

- Contact the vendor of the peripheral device—as well as HP—for the latest versions of the USB drivers.
- Check the port settings in Control Panel:
  1. Click Start, Settings, Control Panel, then double-click System.
  2. Open the hardware Device Manager, then double-click Universal Serial Bus Controller.
- Contact the vendor of the peripheral device—and the HP Notebook Web site (www.hp.com/notebooks)—for the latest version of the driver for the device.
- Test the USB port with the DiagTools diagnostics. See “Testing the Hardware” on page 113.



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## Startup Problems

**If the computer doesn't respond when you turn it on**

- Connect the ac adapter.
- Press the blue sleep button to try turning on the unit.
- Reset the computer by inserting a straightened paper clip into the system-off switch on the right side of the computer. Then press the blue sleep button to turn it on.
- If the computer still doesn't respond, remove the battery and ac adapter, remove any PC cards, and undock the computer if docked. Then plug in the ac adapter again, and reset the computer using the system-off switch.

**If the computer won't boot from battery power**

- Make sure the battery is properly inserted and fully charged. Check the battery's charge by removing it and pressing the pad on the back of the battery. The lights show the charge level.
- If you have a secondary battery, install it and try starting the computer.
- If available, try another battery.

**If the computer won't boot from the floppy disk drive**

- Make sure the drive is installed or connected correctly.
- Check the boot order in the BIOS Setup utility:
  1. Click Start, Shut Down, Restart.
  2. When the HP logo appears, press F2 to enter BIOS Setup.
  3. Open the Boot menu. The default boot order is (1) Removable Device, (2) Hard Disk, and (3) CD-ROM/DVD Drive.
  4. If Removable Device is not option 1, use the arrow keys to select Removable Device, and move it to position 1.
  5. If an LS-120 drive is also installed, expand the Removable Device category and move the floppy drive to the first position.
  6. In the Security menu, make sure the Removable Device Boot setting is Enabled.
  7. Press F10 to save and exit BIOS Setup.



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**If the computer takes a long time to resume after being suspended**

- The computer can routinely take a minute or more to resume if it has a network card installed. While the operating system is loading drivers and checking hardware and network connections, you will see a blinking cursor on your display. As soon as the hardware has been re-initialized, the Windows desktop will appear.



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# Testing the Hardware

The DiagTools hardware diagnostic program included with your computer provides two levels of testing:

- Automated testing using its basic hardware test.
- Advanced testing using individual hardware tests.

The tests are designed to run after the system reboots. This ensures that the computer will be in a predictable state, so the diagnostic program can properly test the hardware components. The tests are non-destructive and are intended to preserve the state of the computer. The computer reboots when you exit the program so drivers can be loaded.

## To run the DiagTools diagnostic test

1. Click Start, Shut Down, Restart.
2. When the HP logo appears, press F10 to start the diagnostic test.
3. Go through the first several screens.
4. When the hardware detection finishes, check the list of detected hardware.

**Hint**

If a device is not detected or fails its test, it might be configured incorrectly in the BIOS Setup utility. You can confirm this by running BIOS Setup and checking the settings. See “To run the BIOS Setup utility” on page 78.

5. **Run the basic test**. Press F2 to start the basic hardware test.

   If the basic test fails, you can press F6 and start a Wizard that runs a set of advanced tests for the failed component.

6. If you intend to exit without running the advanced tests, press F4 to save system and test information in the Support Ticket log file. Then press F3 to exit.
7. **Optional: Run the advanced tests**. Press F2 to open the advanced test screen.



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8. Select and run the appropriate tests. Tests are not listed if no such hardware is detected. Press the following keys to run tests:

| | |
|---|---|
| ENTER | Runs the highlighted test. |
| F5 or SPACE | Marks or unmarks the highlighted test. |
| F6 | Marks or unmarks all tests in the current menu. |
| F7 | Marks or unmarks all tests in all menus. |
| F10 | Runs all marked tests. |

9. When you are finished running tests, press ESC to exit the advanced tests.
10. **Optional: Save the Support Ticket.** Press F4 to save system and test information in the Support Ticket log file.
11. **Exit.** Press F3 to exit and reboot.
12. **Optional: Check the log.** The log file contains a list of all test results and errors. Run C:\Dmi\Hpdiags\Hpsuppt.exe to retrieve the log file to this directory and open it in Notepad. (If Hpsuppt.exe is not on your hard disk, you can download it from the HP Customer Care Web site, www.hp.com/go/support.)



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# Recovering and Reinstalling Software

You can use the *Recovery CD* to recover the original software build for your computer.

The *Recovery CD* also provides Windows drivers specific to your computer to configure a custom system. You can find drivers in these locations:

- On your computer's hard drive under C:\hp\Drivers.
- On the *Recovery CD* under \hp\Drivers.
- On the HP Customer Care Web site (www.hp.com/go/support). This Web site contains the latest updates of software drivers for different operating systems.

## To recover the factory installation of your hard disk

Use the *Recovery CD* to reinstall the original factory software on your computer's hard disk. You use the same process to create a larger Hibernate/diagnostics partition on your hard disk (Windows 95 or 98 only) or to create a Hibernate/diagnostics partition on a new hard disk.

**CAUTION**

**This procedure formats the computer's hard disk drive and erases all data on the disk. After the hard disk is formatted, you'll need to reinstall your applications.**

**Do not interrupt the following process or unplug the ac adapter until the process is complete.**

1. **Important.** Back up all data from your hard disk. The following steps delete all data from the disk.
2. Plug in the ac adapter.
3. Insert the *Recovery CD* in the CD-ROM drive.
4. Click Start, Shut Down, Restart.
5. When you see the HP logo, press ESC twice.
6. Select the CD or DVD drive as the boot device.



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7. When the *Recovery CD* dialog box appears, follow the displayed instructions. If prompted, accept the recommended partition size. If you install the factory software, the recovery process can take up to 10 minutes.

   If you want to create the Hibernate/diagnostics partition without installing the factory software, click Advanced and select the option to not install the operating system.

8. When prompted to reboot the computer, press CTRL+ALT+DEL and follow any instructions that appear onscreen.

## To replace a damaged Recovery CD

If you lose or damage the *Recovery CD*, take your computer to a local HP service center to get a replacement CD. Call the HP Customer Care Center for the address and telephone number of an HP service center near you—see "To contact the HP Customer Care Center" on page 120.

## To update the computer BIOS

Hewlett-Packard may provide updates to the BIOS to enhance the capabilities of your computer. Updates will be available from the HP Customer Care Web site (www.hp.com/go/support). Download the BIOS update and follow the instructions in the Readme.txt file on how to create the BIOS update floppy disk.

**CAUTION**

**Because a BIOS update replaces the previous version, you must follow these instructions exactly, or you risk damaging your computer. The BIOS update process resets the configuration settings in the BIOS Setup utility, except for the PC Identification and BIOS passwords.**

1. Remove any PC Cards.
2. If the notebook is docked, undock it.
3. Connect the ac adapter to the notebook.
4. Insert the BIOS update disk in the floppy disk drive.
5. Restart the computer: click Start, Shut Down, Restart.



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6. Follow the onscreen instructions. This starts a process that takes approximately one minute. Once the update process begins, do not interrupt it.
7. When the process is completed, reset the computer by inserting a straightened paper clip into the system-off switch on the right side of the computer.



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# Support and Service



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# Getting Assistance for Your Computer

## To get help from the web

HP has several Web sites on the Internet dedicated to providing information to HP notebook computer users. The following sites are especially useful for helping you get support for your computer:

- **HP Customer Care Web site.** Get e-mail support, technical information, and software updates.

  www.hp.com/go/support

  Click Assistance, then Self-Help Tools for information about bulletin boards, CD-ROM subscriptions, and service parts.

- **HP Notebook Computer Web site.** Get the latest information about technical support, including e-mail and telephone support, plus information about warranty and support programs.

  www.hp.com/notebooks

## To contact the HP Customer Care Center

HP Customer Care Centers will assist you free of charge during the term of the warranty (you are responsible for the telephone charges).

**During the free assistance period, HP will assist with questions about:**

- Included applications and operating systems.
- HP-described operation environments and conditions.
- HP accessories, HP upgrades, and basic operation and troubleshooting.

**HP will not be able to help with questions about:**

- Non-HP hardware, software, operating systems, or usage not intended for or included (by HP) with the product.
- How to repair the product yourself.



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- Product development, custom installations.
- Consulting.

To contact the Customer Care Center by email, visit the HP Customer Care Web site (www.hp.com/go/support).

For the latest list of phone numbers, see the HP Notebook Web site (www.hp.com/notebooks) under Support.

**North America**
United States: (970) 635-1000
Canada (English): (970) 635-1000
Canada (French): (800) 387-3867
Mexico: 326 4600, Guadalejara 669 9500, Monterrey 378 4240

**Central/South America**
Argentina: 541781 4061 69
Brazil: 5511 709 1444
Venezuela: 58 2 239 5664

**Europe**
Austria: (+43) 0711 420 10 80
Belgium (French): (+32) 02 626 88 07
Belgium (Dutch): (+32) 02 626 88 06
Czech Republic: (+420) 2 61307 310
Denmark: (+45) 39 29 40 99
Finland: (+358) 0203 472 88
France: (+33) 01 43 62 34 34
Germany: (+49) 0180 525 81 43
Greece: (+30) 1-619-6411
Hungary: (+36) 1-382-1111
Israel: (+972) 9-9524848
Italy: (+39) 02-26410350
Netherlands: (+31) 020 606 87 51
Norway: (+47) 22 11 62 99
Poland: (+48) 22-519-0600
Portugal: (+351) 21 317 6333
R.O. Ireland: (+353) 01 662 55 25
Russia: Moscow (+7) 095 797 3520, St. Petersburg (+7) 812 346 7997
South Africa: RSA 086 000 1030, outside RSA (+27) 11 258 9301
Spain: (+34) 902 32 11 23
Sweden: (+46) 08 619 21 70
Switzerland: (+41) 084 880 11 11
Turkey: (+90) 212-221-6969
United Kingdom: (+44) 0207 512 5202

**Asia and Australia**
Australia: (61-3) 8877-8000
China: (800) 810-5959
Hong Kong: (852) 800-96-7729
India: (91-11) 682-6035
Indonesia: (62-21) 350-3408
Japan: (81-3) 3335-8333
Korea: (82-2) 3270-0700
Malaysia: (60-3) 295-2566
New Zealand: (64-9) 356-6640
Philippines: (63-2) 867-3551
Singapore: (65) 272-5300
Taiwan: (886) 2-2717-0055
Thailand: (66-2) 661-4000
Vietnam: (84-8) 823-4530

**Africa/Middle East**
41 22 780 71 11



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## To receive repair service

**If your computer is under warranty.** To receive warranty repair service, contact an HP-authorized reseller, or contact the HP Customer Care Center—see "To contact the HP Customer Care Center" on page 120. The support technician will help qualify your unit for warranty repair based on the warranty applicable to your unit and original purchase date, and will provide you with repair processes. Warranty service includes the cost of shipping, handling, duties, taxes, freight, or fees to or from the service location.

**If your computer is no longer under warranty.** Contact an HP-authorized reseller or the HP Customer Care Center (see "To contact the HP Customer Care Center" on page 120). The support provider will let you know about repair charges and processes.

## To prepare your computer for shipment

See "To receive repair service" above to determine if your computer must be sent in for service. If so, prepare your computer for shipment as follows.

1. **Important.** Back up your hard disk drive. The hard disk may need to be replaced or reformatted while your computer is being repaired.
2. Hewlett-Packard cannot guarantee the return of removable components. Please remove the following prior to sending your computer in for service:
   - PC cards.
   - ac adapter and power cord.
   - Any removable media, such as CDs, DVDs, or floppy disks.
   - Any plug-in module not involved in the problem and not requested for repair.
3. When sending your computer to Hewlett-Packard, please use the original product packaging or other substantial packaging in order to avoid damage to the unit in transit.

**Note**

If the hard disk drive is defective, you will receive a replacement drive that is either unformatted or loaded with software for verification. You should restore the computer's original software using your *Recovery CD* (see "To recover the factory installation of your hard disk" on page 115) or other recovery method.



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# Hewlett-Packard Limited Warranty Statement

1. HP warrants to you, the end-user customer, that HP hardware, accessories and supplies will be free from defects in materials and workmanship after the date of purchase, for the period specified in the Warranty Duration sheet included with your HP notebook computer. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace products which prove to be defective. Replacement products may be either new or equivalent in performance to new.
2. HP warrants to you that HP software will not fail to execute its programming instructions after the date of purchase, for the period specified in the Warranty Duration sheet included with your computer, due to defects in material and workmanship when properly installed and used. If HP receives notice of such defects during the warranty period, HP will replace software which does not execute its programming instructions due to such defects.
3. HP does not warrant that the operation of HP products will be uninterrupted or error free. If HP is unable, within a reasonable time, to repair or replace any product to a condition as warranted, you will be entitled to a refund of the purchase price upon prompt return of the product.
4. HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.
5. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance or calibration, (b) software, interfacing, parts or supplies not supplied by HP, (c) unauthorized modification or misuse, (d) operation outside of the published environmental specifications for the product, or (e) improper site preparation or maintenance.
6. TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY OR CONDITION, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED AND HP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE. Some countries, states or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion might not apply to you. This warranty gives you specific legal rights and you might also have other rights that vary from country to country, state to state, or province to province.



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7. TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE YOUR SOLE AND EXCLUSIVE REMEDIES. EXCEPT AS INDICATED ABOVE, IN NO EVENT WILL HP OR ITS SUPPLIERS BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFIT OR DATA), OR OTHER DAMAGE, WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE. Some countries, states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

   THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.



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# Specifications and Regulatory Information



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# Hardware Specifications

Because we are constantly improving our products, the specifications shown below are subject to change. For the latest specifications, see the HP Notebook Web site (www.hp.com/notebooks).

| | |
|---|---|
| **Physical Attributes** | Size (14-inch display): 316 × 261 × 33 mm (12.4 × 10.3 × 1.3 in).<br>Size (15-inch display): 325 × 261 × 35 mm (12.8 × 10.3 × 1.4 in).<br>Weight: 2.3–2.9 kg (5.0–6.4 lb), depending on configuration.<br>Magnesium display cover. |
| **Processor and Bus Architecture** | 550-MHz Celeron processor with 128-KB four-way set-associative L2 cache.<br>–or–<br>600-, 650-, or 700-MHz Intel Mobile Pentium III processor with Speed Step technology with 256-KB four-way set-associative L2 cache.<br>1.6-V core, 2.5-V external, low-power processor.<br>32-KB (16-KB instruction, 16-KB data) L1 cache.<br>32-bit PCI bus. |
| **Graphics** | 14.1- or 15.0-inch XGA active-matrix (TFT) display (1024 × 768 × 16M colors).<br>Zoomed Video support for lower PC Card slot.<br>3D and OpenGL graphics support.<br>**Celeron models:**<br>ATI Mobility M graphics accelerator with 4-MB display RAM, 2x AGP graphics capability.<br>**Pentium III models:**<br>ATI Mobility M1 graphics accelerator with 8-MB display RAM, 2x AGP graphics capability. |
| **Power** | Rechargeable lithium-ion battery with LED charge-level gauge (11.1 or 14.8 Vdc).<br>Battery life (one battery): up to 3 hours typical (varies with model and usage).<br>Fast battery recharge: 80% in 1.5 hour, 100% in 2 hours.<br>Low-battery warning.<br>Suspend/resume capability.<br>Universal 60-watt ac adapter: 100–240 Vac (50/60 Hz) input, 19 Vdc output.<br>Optional secondary battery available for module bay. |
| **Mass Storage** | 6-, 12-, or 18-GB removable hard drive.<br>1.44-MB floppy drive module.<br>24x CD-ROM or 6x DVD drive module (or higher).<br>Optional drive modules available. |
| **RAM** | Two slots for RAM expansion up to 512 MB.<br>64 or 128 MB RAM installed in one slot.<br>100-MHz RAM bus. |



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| | |
|---|---|
| **Audio System** | 16-bit Sound Blaster Pro–compatible stereo sound.<br>Stereo sound via two built-in speakers (500 Hz to 10 KHz range).<br>3D-enhanced PCI bus audio with Zoomed Video support.<br>Built-in microphone.<br>Separate audio-off button with indicator light.<br>Headphone-out, microphone-in, and audio line-in. |
| **Keyboard and Pointing Devices** | 87-key touch-type QWERTY keyboard with 101/102 key emulation.<br>Embedded numeric keypad.<br>12 function (Fn) keys.<br>Two pointing devices: pointing stick (TrackPoint technology licensed from IBM) and touch pad. |
| **Communications** | **LAN/Modem Models (3Com):**<br>LAN<br>- Ethernet 10Base-T (10 Mbps) and 100Base-TX (100 Mbps) support.<br>- Supports wake-on-LAN, remote wake-up (Windows 98), fast IP, DMI, dRMON.<br>- MBA (Managed Boot Agent) support for PXE/BINL, BOOTP, NCP/IPX, DHCP.<br>Modem<br>- Data speed: 56 Kbps (V.90) maximum.<br>- Fax speed: 14.4 Kbps, Class 1 and 2.<br>- Modulation: V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34, V.90, X2, Bell 103, Bell 212A.<br>- Synchronous transfer: V.80.<br>- Compression: V.42bis, MNP5.<br>- Error correction: V.42, MNP2-4.<br>- Fax: Group 3 fax, Class 1. V.17, V.27ter, V.29, V.21 channel 2.<br>**Modem-Only Models (Ambit):**<br>Data speed: 56 Kbps (V.90) maximum.<br>Fax speed: 14.4 Kbps, Class 1 and 2.<br>Modulation: V.21, V.22, V.22bis, V.23, V.32, V.32bis, V.34, V.90, Bell 103,.Bell 212A.<br>Synchronous transfer: V.80.<br>Compression: V.42bis, MNP5.<br>Error correction: V.42, MNP2-4.<br>Fax: Group 3 fax, Class 1. V.17, V.27ter, V.29, V.21. |
| **Input/Output** | Universal serial bus (USB).<br>9-pin, 115,200-bps serial (16550 UART).<br>25-pin bi-directional ECP/EPP parallel.<br>15-pin VGA video-out with DDC support. (Resolution up to 1600 × 1200 × 64K or 16M colors. Refresh rate up to 60 to 100 Hz, depending on resolution.)<br>Dual display.<br>PS/2 keyboard/mouse.<br>4-Mbps IrDA-compliant infrared port. |
| **Expandability** | One Type III or two Type II 16-/32-bit PC Card slots (3.3- and 5-V support).<br>CardBus enabled.<br>Plug-in module bay for accessory modules.<br>Optional port replicator, mini dock, and docking system. |



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| | |
|---|---|
| **Software** | Microsoft Windows 95, 98, or 2000.<br>Windows 95/98/2000-compatible Plug-and-Play.<br>Advanced Power Management (APM) (Windows 95 and 98 only).<br>DMI with HP TopTools.<br>HP e-center (North America English only).<br>Adobe Acrobat Reader.<br>Agaté Tioman for HP (Hot Swap) (Windows 95 and 98 only).<br>QuickLink (Windows 98 only).<br>DiagTools.<br>VirusScan.<br>Online *Reference Guide*.<br>*Recovery CD* included.<br>Centralized worldwide BIOS and driver update service. |
| **Security Features** | User and administrator passwords.<br>System, hard drive, and docking passwords.<br>PC identification displayed at boot.<br>DMI-accessible electronic serial number.<br>Kensington MicroSaver lock slot. |
| **Environmental Limits** | Operating temperature: 5 to 35 °C (41 to 95 °F).<br>Operating humidity: 20 to 90 percent RH (5 to 35 °C).<br>Operating altitude: up to 3000 m (10,000 ft).<br>Storage temperature: –20 to 50 °C (–4 to 122 °F). |
| **Major ICs** | CPU: Intel Mobile Pentium III or Celeron processor.<br>South Bridge: PIIX4M.<br>Display controller: ATI Mobility M or M1.<br>Audio controller: ESS Maestro-3E and ESS ES1921.<br>CardBus controller: TI PCI 1420.<br>Keyboard/embedded controller: National PC87570.<br>BIOS flash: SST28SF040.<br>Super I/O: National NS97338. |



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# Modem Reference Information

If your computer has a modem port, you can customize the operation of the modem using AT commands and S-registers. You can do this from Modem (Windows 95 or 98) or Phone And Modem Options (Windows 2000) in Control Panel, from most communications software, or by using terminal mode in your software. See "To change your modem settings" on page 60.

**Note**

You should have a good understanding of modems and how they operate before you change default settings.

This section contains summary information about AT commands, S-registers, and selected result codes for the built-in modem:

- 3Com Modem. If your computer has a LAN port and a modem port, you have a 3Com modem.
- Ambit Modem. If your computer has a modem port but no LAN port, you have an Ambit modem.

## Modem Reference (3Com)

In the following AT command table, default settings are shown in bold. All listed AT commands except +++, /, and A/ must be preceded by "AT."

**AT Commands (3Com)**

| Command | Function (3Com) |
|---|---|
| +++ | Escape to online command mode (not preceded by AT) |
| / | Pause (not preceded by AT), 125 ms default |
| A | Answer manually |
| A/ | Repeat last command (not preceded by AT) |
| D... | Dial a phone number and issue other optional commands: 0-9=Dial digit, T=Tone dial, P=Pulse dial, R=Call an originate-only modem, W=Wait for second dial tone (X2, X4), @=Wait for answer (X3, X4), (comma)=Pause in dialing, !=Flash switch hook, #=Auxiliary tone dial digit, *=Auxiliary tone dial digit, ;=Stay in command mode after dialing, $=Wait for calling card bong, &=Wait for calling card bong, "=Dial the letters that follow. |
| D$ | Display a list of dial commands |
| DL | Redial last number |
| DL? | Display last dialed number |
| DSn | Dial stored number (n=0,1,2,3) |
| E0 | Turn command echo off |
| **E1** | Turn command echo on |



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| Command | Function (3Com) |
|---|---|
| F0 | Turn online echo on |
| **F1** | Turn online echo off |
| H0 | Hang up (go on-hook) |
| H1 | Pick up (go off-hook) |
| I0 | Display the 4-digit product code |
| I1 | Display the checksum |
| I2 | Display the RAM test results |
| I3 | Display the firmware version |
| I4 | Display the current modem settings |
| I5 | Display user profiles |
| I7 | Display the product configuration |
| I8 | Display blacklist screen |
| I10 | Display VXD configuration screen |
| I11 | Display V.34 link screen |
| L0 | Set modem speaker volume off |
| L1 | Set modem speaker volume on (low) |
| **L2** | Set modem speaker volume on (medium) |
| L3 | Set modem speaker volume on (high) |
| M0 | The modem's speaker is always off |
| **M1** | The modem's speaker is on until a connection is made |
| M2 | The modem's speaker is always on |
| M3 | The modem's speaker is off during dialing, and on after dialing until the connection is made |
| O0 | Return to online mode |
| O1 | Return to online mode and retrain (automatically return to the highest speed) |
| S$ | Display the list of S-register settings |
| Sr=n | Set S-Register "r" to "n" |
| Sr? | Display the value of S-Register "r" |
| V0 | Display result codes in numeric form |
| **V1** | Display result codes in verbose form (words) |
| X0 | Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER, (also, for busy, if enabled, and dial tone not detected), NO ANSWER and ERROR |
| X1 | Report basic call progress result codes and the connect rates—OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX and ERROR |
| X2 | Report basic call progress result codes and the connect rates i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled), NO DIAL TONE, NO ANSWER, CONNECT XXXX and ERROR |
| X3 | Report basic call progress result codes and connection rate i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY and ERROR |
| **X4** | Report all call progress result codes and connection rate i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, NO DIAL TONE and ERROR |
| **Y0** | On the next reset, use &W0 settings |
| Y1 | On the next reset, use &W1 settings |
| Y2 | On the next reset use, &F0 settings |
| Y3 | On the next reset, use &F1 settings |
| Y4 | On the next reset, use &F2 settings |
| Z0 | Reset the modem according to the settings of ATY |
| Z1 | Reset the modem and use &W0 settings |
| Z2 | Reset the modem and use &W1 settings |
| Z3 | Reset the modem using &F0 settings and load factory default profile 1 |
| Z4 | Reset the modem using &F1 settings and load factory default profile 0 |



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| Command | Function (3Com) |
|---|---|
| Z5 | Reset the modem using &F2 settings and load factory default profile 2 |
| $ | Display the list of AT commands |
| &$ | Display the list of ampersand commands |
| &A0 | Disable data compression result codes |
| &A1 | Enable data compression result codes |
| &A2 | Enable modulation result codes |
| **&A3** | Enable data compression result codes and add V.42bis and MNP 5 protocol indicators |
| **&B0** | Use a floating DTE speed |
| &B1 | Use a fixed DTE speed |
| &B2 | Use a fixed DTE speed when using data compression |
| &C0 | Carrier detect is always on |
| **&C1** | Carrier detect is controlled by the modem. |
| &D0 | Ignore DTR |
| &D1 | Use online command mode |
| **&D2** | DTE controls DTR |
| &D3 | DTE controls DTR and reset |
| &F0 | Set the factory profile that uses hardware (RTS/CTS) flow control (this is the active profile when the modem is shipped) |
| &F1 | Set the factory profile that uses hardware (RTS/CTS) flow control |
| &F2 | Set the factory profile that uses software (XON/XOFF) flow control |
| **&G0** | No guard tone |
| &G1 | Use 550 Hz guard tone |
| &G2 | Use 1800 Hz guard tone |
| &H0 | Flow control for transmitted data - Disable flow control |
| **&H1** | Flow control for transmitted data - Enable hardware flow control (RTS/CTS) |
| &H2 | Flow control for transmitted data - Enable software (XON/XOFF) |
| &H3 | Flow control for transmitted data - Enable both software and hardware flow control |
| **&I0** | Flow control for received data - Disable flow control |
| &I1 | Flow control for received data - send XON/XOFF signals to modems on both ends |
| &I2 | Flow control for received data - send XON/XOFF signals to your modem only |
| &I3 | HP Eng/Ack in Host mode |
| &I4 | HP Eng/Ack in Terminal Mode |
| &I5 | Flow control for received data - If error correction is used, send XON/XOFF signals to your modem only; if data compression is not used, look for incoming XON/XOFF |
| &K0 | Disable data compression |
| **&K1** | Enable data compression (V.42bis, MNP 5, NONE) |
| &K2 | Enable data compression (forces V.42bis) |
| &K3 | Use selective data compression |
| &M0 | Disable error correction in 1200 bps and faster transfers |
| **&M4** | Allow V.42 or MNP error correction in 1200 bps and faster transfers |
| &M5 | Allow either V.42 or MNP error correction in 1200 bps and faster transfers |
| &Nn | Set link speed (bps): **0=Highest speed**, 1=300, 2=1200, 3=2400, 4=4800, 5=7200, 6=9600, 7=12000, 8=14400, 9=16800, 10=19200, 11=21600, 12=24000, 13=26400, 14=28800, 15=31200, 16=33600, 17=28000, 18=29333, 19=30666, 20=32000, 21=33333, 22=34666, 23=36000, 24=37333, 25=38666, 26=40000, 27=41333, 28=42666, 29=44000, 30=45333, 31=46666, 32=48000, 33=49333, 34=50666, 35=52000, 36=53333, 37=54666, 38=56000, 39=57333 |
| &R1 | Ignore RTS |
| &R2 | Receive to DTE/RTS high |
| &S0 | Data Set Ready (DSR) is always on |



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| Command | Function (3Com) |
|---|---|
| &S1 | Data Set Ready (DSR) signals that the modem is ready to send data |
| &Un | Set minimum link rate (bps): **0=Variable**, 1=300 , 2=1200, 3=2400, 4=4800, 5=7200, 6=9600, 7=12000, 8=14400, 9=16800, 10=19200, 11=21600, 12=24000, 13=26400, 14=28800, 15=31200, 16=33600, 17=28000, 18=29333, 19=30666, 20=32000, 21=33333, 22=34666, 23=36000, 24=37333, 25=38666, 26=40000, 27=41333, 28=42666, 29=44000, 30=45333, 31=46666, 32=48000, 33=49333, 34=50666, 35=52000, 36=53333, 37=54666, 38=56000, 39=57333 |
| &W0 | Store user profile 0 to memory |
| &W1 | Store user profile 1 to memory |
| &Zn=s | Store phone number (n= 0,1,2,3) |
| &Zn? | Display phone number |

### S-Registers (3Com)

| Register | Function (3Com) | Range | Default |
|---|---|---|---|
| S0 | Number of rings before the modem auto-answers a call (0 means auto-answer is disabled and manual answer is in effect) | 0-255 | 0 rings |
| S1 | Counts and logs the number of rings | 0-255 | 0 rings |
| S2 | Designates the ASCII character used to indicate an escape character | 0-127 | 43 |
| S3 | Designates the ASCII character used for carriage returns | 0-127 | 13 |
| S4 | Designates the ASCII character used for line feeds | 0-127 | 10 |
| S5 | Designates the ASCII character used for backspaces | 0-127 | 8 |
| S6 | Dial tone wait time; if AT command X is set to X2 or X4, the modem ignores this register and dials as soon as it detects a dial tone (seconds) | 2-255 | 3 |
| S7 | Carrier wait time (seconds) | 1-255 | 60 |
| S8 | Pause in dialing time (comma in dialing string) (seconds) | 0-255 | 2 |
| S9 | Carrier detect validation time (1/10 second) | 1-255 | 6 |
| S10 | Delay time between lost carrier and hang up; if S10=255, the modem will not hang up when the carrier is lost; dropping DTR hangs up the modem (1/10 second) | 1-255 | 7 |
| S11 | Duration of the touchtone dialing tone spacing (in milliseconds) | 50-255 | 70 |
| S12 | Guard time for the escape code (1/50 second) | 0-255 | 1 |
| S13 | Bitmapped register.<br>1=Reset on DTR loss<br>2=Reduced non-ARQ transmit buffer<br>4=Set DEL=backspace<br>8=Do DS0 on DTR<br>16=Do DS0 on Reset<br>128=Escape code hangup | 0-255 | 0 |
| S15 | Bitmapped register.<br>1=MNP/V.42 disabled in V.22<br>2=MNP/V.42 disabled in V.22bis<br>4=MNP/V.42 disabled V.32, V.34<br>8=Disable MNP handshake<br>16=Disable MNP level 4<br>32=Disable MNP level 3<br>64=Unusual MNP incompatibility<br>128=Disable V.42<br>136=Disable V.42 detection phase | 0-255 | 0 |
| S16 | Bitmapped test register. 2=Dial test | 2 | 0 |



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| Register | Function (3Com) | Range | Default |
|---|---|---|---|
| S18 | Test timer for AT command &T - when AT&T=0, the timer is disabled (seconds) | 0-255 | 0 |
| S19 | Duration for inactivity timer; S19=0 disables the timer (minutes) | 0-255 | 0 |
| S21 | Sets error correction break length (1/100 second) | 0-255 | 1 |
| S22 | Designates the ASCII character code for XON | 0-127 | 17 |
| S23 | Designates the ASCII character code for XOFF | 0-127 | 19 |
| S25 | DTR debounce time indicator (1/100 second) | 0-255 | 0 |
| S27 | Bitmapped register.<br>1=V.21 mode<br>2=Disable TCM<br>4=Disable V.32<br>8=Disable 2100Hz<br>16=Enable V.23 fallback<br>32=Disable V.32bis<br>128=Software compatibility mode | | 0 |
| S28 | V.32 Handshake Time (1/10 second) | 0-255 | 8 |
| S29 | V.21 Answer Mode Fallback Timer (1/10 second) | 0-255 | 20 |
| S32 | Connection bitmapped operations.<br>1=V.8 call indicate enable<br>2=Enable V.8 mode<br>8=Disable V.34 modulation<br>16=Disable V.34+ modulation<br>32=Disable X2 modulation<br>64=Disable V.90 modulation | | 2 |
| S33 | V.34 and V.34+ connection setup bitmapped control flags.<br>1=Disable 2400 symbol rate<br>2=Disable 2743 symbol rate<br>4=Disable 2800 symbol rate<br>8=Disable 3000 symbol rate<br>16=Disable 3200 symbol rate<br>32=Disable 3429 symbol rate<br>128=Disable shaping | | 0 |
| S34 | V.34 and V.34+ connection setup bitmapped control flags<br>16=Disable nonlinear coding<br>32=Disable transmit level deviation<br>64=Disable preemphasis<br>128=Disable precoding | | 0 |
| S38 | Delay before forced hangup (optional) (seconds) | 0-255 | 0 |



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**Selected Result Codes (3Com)**

| Code | Meaning |
|---|---|
| 0 | OK |
| 1 | CONNECT |
| 2 | RING |
| 3 | NO CARRIER |
| 4 | ERROR |
| 5 | CONNECT 1200 |
| 6 | NO DIAL TONE |
| 7 | BUSY |
| 8 | NO ANSWER |

## Modem Reference (Ambit)

In the following AT command table, default settings are shown in bold. All listed AT commands except A/ must be preceded by "AT."

**AT Commands (Ambit)**

| Command | Function (Ambit) |
|---|---|
| A/ | Re-execute command (not preceded by AT) |
| A | Go off-hook and attempt to answer a call |
| B0 | Select V.22 connect @1200 bps |
| B1 | Select Bell 212A connect @1200 bps |
| C1 | Return OK message |
| Dn | Dial modifier |
| E0 | Turn off command echo |
| E1 | Turn on command echo |
| H0 | Initiate a hang-up sequence |
| H1 | If on-hook, go off-hook and enter command mode |
| I0 | Report product code |
| I1 | Report pre-computed checksum |
| I2 | Report "OK" if the calculated checksum equals the prestored checksum or if the prestored checksum value is FFh |
| I3 | Report firmware revision, model, and interface type |
| I4 | Report response programmed by OEM |
| I5 | Report the country code parameter |
| I6 | Report modem data pump model and code revision |
| I7 | Report the DAA code |
| L0 | Set low speaker volume |
| **L1** | Set low speaker volume |
| L2 | Set medium speaker volume |
| L3 | Set high speaker volume |
| M0 | Turn speaker off |
| **M1** | Turn speaker on during handshaking and turn speaker off while receiving carrier |
| M2 | Turn speaker on during handshaking and while receiving carrier |



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| Command | Function (Ambit) |
|---|---|
| M3 | Turn speaker off during dialing and receiving carrier and turn speaker on during answering |
| N0 | Turn off automode detection |
| **N1** | Turn on automode detection |
| O0 | Go on-line |
| O1 | Go on-line and initiate a retrain sequence |
| P | Force pulse dialing |
| **Q0** | Allow result codes to DTE |
| Q1 | Inhibit result codes to DTE |
| Sn | Select S-Register n as default |
| Sn? | Return the value of S-Register n |
| Sn=v | Set default S-Register n to value v |
| T | Force DTMF dialing |
| V0 | Report short form result codes |
| **V1** | Report long form result codes |
| **W0** | Report DTE speed only |
| W1 | Report line speed, EC protocol and DTE speed |
| W2 | Report DCE speed only |
| X0 | Report basic call progress result codes, i.e., Ok, Connect, Ring, No Carrier (also, for busy, if enabled, and dial tone not detected), No Answer and Error |
| X1 | Report basic call progress result codes and connections speeds (Ok, Connect, Ring, No Carrier (also, for busy, if enabled, and dial tone not detected), No Answer, Connect XXXX, and Error |
| X2 | Report basic call progress result codes and connections speeds, i.e., Ok, Connect, Ring, No Carrier (also, for busy, if enabled, and dial tone not detected), No Answer, Connect XXXX, and Error |
| X3 | Report basic call progress result codes and connections rate, i.e., Ok, Connect, Ring, No Carrier, No Answer, Connect XXXX, Busy, and Error |
| **X4** | Report all call progress result codes and connections rate, i.e., Ok, Connect, Ring, No Carrier, No Answer, Connect XXXX, Busy, No Dial Tone and Error |
| **Y0** | Disable long space disconnect before on-hook |
| Y1 | Enable long space disconnect before on-hook |
| Z0 | Restore stored profile 0 after warm reset |
| Z1 | Soft reset and restore stored profile 1 after warm reset |
| &C0 | Soft reset and force RLSD active regardless of the carrier state |
| **&C1** | Allow RLSD to follow the carrier state |
| &D0 | Interpret DTR On-to-OFF transition per &Qn<br>&Q0, &Q5, &Q6: The modem ignores DTR<br>&Q1, &Q4: The modem hangs up<br>&Q2, &Q3: The modem hangs up |
| &D1 | Interpret DTR On-to-OFF transition per &Qn<br>&Q0, &Q1, &Q4, &Q5, &Q6: Asynchronous escape<br>&Q2, &Q3: The modem hangs up |
| **&D2** | Interpret DTR On-to-OFF transition per &Qn<br>&Q0 through &Q6: The modem hangs up |
| &D3 | Interpret DTR On-to-OFF transition per &Qn<br>&Q0, &Q1, &Q4, &Q5, &Q6: Soft reset<br>&Q2, &Q3: The modem hangs up |
| &F0 | Restore factory configuration 0 |
| &F1 | Restore factory configuration 1 |
| &G0 | Disable guard tone |
| &G1 | Disable guard tone |



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| Command | Function (Ambit) |
|---|---|
| &G2 | Enable 1800 Hz guard tone |
| **&J0** | Set S-Register response only for compatibility |
| &J1 | Set S-Register response only for compatibility |
| &K0 | Disable DTE/DCE flow control |
| &K3 | Enable RTS/CTS DTE/DCE flow control |
| &K4 | Enable XON/XOFF DTE/DCE flow control |
| &K5 | Enable transparent XON/ XOFF low control |
| **&K6** | Enable both RTS/CTS and XON/XOFF flow control |
| &L0 | Select dial up line operation |
| &M0 | Select direct asynchronous mode |
| &M1 | Select sync connect with async off-line command mode |
| &M2 | Select sync connect with async off-line command mode and enable DTR dialing of directory zero |
| &M3 | Select sync connect with async off-line command mode and enable DTR to act as Talk/Data switch |
| **&P0** | Set 10 pps pulse dial with 39%/61% make/break |
| &P1 | Set 10 pps pulse dial with 33%/67% make/break |
| &P2 | Set 20 pps pulse dial with 39%/61% make/break |
| &P3 | Set 20 pps pulse dial with 33%/67% make/break |
| &Q0 | Select direct asynchronous mode |
| &Q1 | Select sync connect with async off-line command mode |
| &Q2 | Select sync connect with async off-line command mode and enable DTR dialing of directory zero |
| &Q3 | Select sync connect with async off-line command mode and enable DTR to act as Talk/Data switch |
| &Q4 | Select Hayes AutoSync mode |
| **&Q5** | Modem negotiates an error corrected link |
| &Q6 | Select asynchronous operation in normal mode |
| &R0 | CTS tracks RTS (sync) or CTS is normally ON and will turn OFF only if required by flow control (async) |
| &R1 | CTS is always active (sync) or CTS is normally ON and will turn OFF only if required by flow control (async) |
| **&S0** | DSR is always active |
| &S1 | DSR will become active after answer tone has been detected and inactive after the carrier has been lost |
| &T0 | Terminate any test in progress |
| &T1 | Initiate local analog loopback |
| &T2 | Returns ERROR result code |
| &T3 | Initiate local digital loopback |
| &T4 | Allow remote digital loopback (RDL) |
| **&T5** | Disallow remote digital loopback request |
| &T6 | Request an RDL without self-test |
| &T7 | Request an RDL with self-test |
| &T6 | Request an RDL without self-test |
| &T7 | Request an RDL with self-test |
| &T8 | Initiate local analog loop with self-test |
| &V | Display current configuration and stored profiles |
| &V1 | Display last connection statistics |
| &W0 | Store the current configuration as profile 0 |
| &W1 | Store the current configuration as profile 1 |
| &X0 | Select internal timing for the transmit clock |
| &X1 | Select external timing for the transmit clock |
| &X2 | Select slave receive timing for the transmit clock |
| &Y0 | Recall stored profile 0 upon power up |
| &Y1 | Recall stored profile 1 upon power up |
| &Zn=x | Store dial string x (up to 34 digits) to location n (0 to 3) |



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| Command | Function (Ambit) |
|---|---|
| %E0 | Disable line quality monitor and auto retrain |
| %E1 | Enable line quality monitor and auto retrain |
| **%E2** | Enable line quality monitor and fallback/fall forward |
| %L | Return received line signal level |
| %Q | Report the line signal quality |
| %TTn | PTT testing of signal level: 00-09=DTMF dial 0-9, 0A=DTMF *, 0B=DTMF #, 0C=DTMF A, 0D=DTMF B, 0E=DTMF C, 0F=DTMF D, 10=V.21 Channel 1mark symbol, 11=V.21 Channel 2mark symbol, 15=V.22 originate signaling at 1200bps, 16=V.22bis originate signaling at 2400bps, 17=V.22 answering signaling , 18=V.22bis answer signaling, 19=V.21 Channel 1space symbol, 1A=V.21 Channel 2 space symbol, 20=V.32 9600bps, 21=V.32bis 14400bps, 30=Silence, 31=V.25 answer tone, 32=1800Hz guard tone, 33=V.25 calling tone (1300Hz), 34=Fax calling tone (1100Hz), 40=V.21 channel 2, 41=V.27ter 2400bps, 42=V.27ter 4800bps, 43=V.29 7200bps, 44=V.29 9600bps, 45=V.17 7200bps long, 46=V.17 7200bps short, 47=V.17 9600bps long, 48=V.17 9600bps short, 49=V.17 12000bps long, 4A=V.17 12000bps short, 4B=V.17 14400bps long, 4C=V.17 14400bps short, 60=2400bps (V.34 only), 61=4800bps (V.34 only), 62=7200bps (V.34 only), 63=9600bps (V.34 only), 64=12000bps (V.34 only), 65=14400bps, 66=16800bps, 67=19200bps, 68=21600bps, 69=24000bps, 6A=26400bps, 6B=28800bps, 6C=31200bps, 6D=33600bps |
| | **When modem receives a break from the DTE:** |
| \K0,2,4 | Enter on-line command mode, no break sent to the remote modem |
| \K1 | Clear buffers and send break to remote modem |
| \K3 | Send break to remote modem immediately |
| **\K5** | Send break to remote modem in sequence with transmitted data |
| | **When modem receives \B in on-line command state:** |
| \K0,1 | Clear buffers and send break to remote modem |
| \K2,3 | Send break to remote modem immediately |
| \K4,5 | Send break to remote modem in sequence with transmitted data |
| | **When modem receives break from the remote modem:** |
| \K0,1 | Clear data buffers and send break to DTE |
| \K2,3 | Send a break immediately to DTE |
| \K4,5 | Send a break with received data to the DTE |
| \N0 | Select normal speed buffered mode |
| \N1 | Select direct mode |
| \N2 | Select reliable link mode |
| \N3 | Select auto reliable mode |
| \N4 | Force LAPM mode |
| \N5 | Force MNP mode |
| \V0 | Connect messages are controlled by the command settings X, W, and S95 |
| \V1 | Connect messages are displayed in the single line format |
| +MS=a,b,c,d | Select modulation (b, c, and d are optional)<br>a is the mode (bps): 0=V.21 (300), 1=V.22 (1200), 2=V.22bis (2400, 1200), 3=V.23 (1200, 300), 9=V.32 (9600, 4800), 10=V.32bis (14400, 12000, 9600, 7200, 4800), 11=V.34 (33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400), 17=X2, V.90 (57333-33333), 64=Bell 103 (300)<br>b is automode: 0=disabled, 1=enabled<br>c is minimum rate (bps): 300-33600<br>d is maximum rate (bps): 300-33600 |
| +H0 | Disable Rockwell Protocol Interface (RPI)/Video ready mode |
| +H1 | Enable RPI and set DTE speed to 19200 bps |
| +H2 | Enable RPI and set DTE speed to 38400 bps |
| +H3 | Enable RPI and set DTE speed to 57600 bps |



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| Command | Function (Ambit) |
|---|---|
| +H11 | Enable RPI+ mode |
| +H16 | Enable Video Ready mode |
| **0 | Download to flash memory at last sensed speed |
| **1 | Download to flash memory at 38.4 kbps |
| **2 | Download to flash memory at 57.6 kbps |
| -SDR=0 | Disable distinctive ring |
| -SDR=1 | Enable distinctive ring type 1 |
| -SDR=2 | Enable distinctive ring type 2 |
| -SDR=3 | Enable distinctive ring type 1 and 2 |
| -SDR=4 | Enable distinctive ring type 3 |
| -SDR=5 | Enable distinctive ring type 1 and 3 |
| -SDR=6 | Enable distinctive ring type 2 and 3 |
| -SDR=7 | Enable distinctive ring type 1, 2 and 3 |
| **ECC Commands** | |
| %C0 | Disable data compression |
| %C1 | Enable MNP 5 data compression |
| %C2 | Enable V.42 bis data compression |
| **%C3** | Enable both V.42 bis and MNP 5 compression |
| \A0 | Set maximum block size in MNP to 64 |
| **\A1** | Set maximum block size in MNP to 128 |
| \A2 | Set maximum block size in MNP to 192 |
| \A3 | Set maximum block size in MNP to 256 |
| \Bn | Send break of n × 100 ms |
| **MNP 10 Commands** | |
| **-K0** | Disable MNP 10 extended services |
| -K1 | Enable MNP 10 extended services |
| -K2 | Disable MNP 10 extended services detection only |
| -SEC=0 | Disable MNP 10-EC |
| -SEC=1, [<tx level>] | Enable MNP 10-EC and set transmit level <tx level> 0 to 30 (0 dBm to -30 dBm) |
| **FAX Class 1** | |
| +Fclass=1 | Service class |
| +FAE=0 | Disable data/fax auto answer |
| +FAE=1 | Enable data/fax auto answer |
| +FRH=n | Receive data with HDLC framing |
| +FRM=n | Receive data |
| +FRS=n | Receive silence, n×10 ms |
| +FTH=n | Transmit data with HDLC framing |
| +FTM=n | Transmit data |
| +FTS=n | Stop transmission and wait, n×10 ms |
| **AT* Commands** | |
| *B | Display black-listed number |
| *Cn | Data calling tone selection |
| *NCn | Select country parameters: 0=US, 1=Japan, 2=Germany, 3=UK, 4=France, 5=Netherlands, 6=Italy, 7=Australia, 8=Sweden, 9=Denmark, 10=New Zealand, 11=Korea, 12=China, 13=Singapore, 14=Malaysia, 15=South Africa, 16=Poland, 17=Czech Republic, 18=Hungary, 19=Hong Kong, 20=Turkey, 21=Spain. |



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### S-Registers (Ambit)

| Register | Function (Ambit) | Range/units | Default |
|---|---|---|---|
| S0 | Rings to auto-answer | 0-255/rings | 0 |
| S1 | Ring counter | 0-255/rings | 0 |
| S2 | Escape character | 0-255/ASCII | 43 |
| S3 | Carriage return character | 0-127/ASCII | 13 |
| S4 | Line feed character | 0-127/ASCII | 10 |
| S5 | Backspace character | 0-255/ASCII | 8 |
| S6 | Wait time for dial tone | 2-255/s | 2 |
| S7 | Wait time for carrier | 1-255/s | 50 |
| S8 | Pause time for dial delay modifier | 0-255/s | 2 |
| S9 | Carrier detect response time | 1-255/.1 s | 6 |
| S10 | Carrier loss disconnect time | 1-255/.1 s | 14 |
| S11 | DTMF tone duration | 50-255/.001 s | 95 |
| S12 | Escape prompt delay | 0-255/.02 s | 50 |
| S14 | General bit mapped options status | | 138 (8Ah) |
| S16 | Test mode bit mapped options status (&T) | | 0 |
| S18 | Test timer | 0-255/s | 0 |
| S19 | AutoSync options | | 0 |
| S20 | AutoSync HDLC address or BSC Sync character | 0-255 | 0 |
| S21 | V.24/general bit mapped options status | | 52 (34h) |
| S22 | Speaker/results bit mapped options status | | 117 (75h) |
| S23 | General bit mapped options status | | 62 (3Dh) |
| S24 | Sleep inactivity timer | 0-255/s | 0 |
| S25 | Delay to DTR off | 0-255/s or .01s | 5 |
| S26 | RTS-to-CTS delay | 0-255/.01 s | 1 |
| S27 | General bit mapped options status | | 73 (49h) |
| S28 | General bit mapped options status | | 0 |
| S29 | Flash dial modifier time | 0-255/10 ms | 70 |
| S30 | Disconnect inactivity timer | 0-255/10 s | 0 |
| S31 | General bit mapped options status | | 194 (C2h) |
| S32 | XON character | 0-255/ASCII | 17 (11h) |
| S33 | XOFF character | 0-255/ASCII | 19 (13h) |
| S36 | LAPM failure control | | 7 |
| S37 | Line connection speed | | 0 |
| S38 | Delay before forced hangup | 0-255/s | 20 |
| S39 | Flow control bit mapped options status | | 3 |
| S40 | General bit mapped options status | | 104 (68h) |
| S41 | General bit mapped options status | | 195(C3h) |
| S46 | Data compression control | | 138 |
| S48 | V.42 negotiation control | | 7 |
| S82 | LAPM break control | | 128 (40h) |
| S86 | Call failure reason code | | 0-255 |
| S91 | PSTN transmit attenuation level | 0-15/dBm | 10 (country dependent) |
| S92 | Fax transmit attenuation level | 0-15/dBm | 10 (country dependent) |
| S95 | Result code messages control | | 0 |



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**Selected Result Codes (Ambit)**

| Code | Meaning |
|---|---|
| 0 | OK |
| 1 | CONNECT |
| 2 | RING |
| 3 | NO CARRIER |
| 4 | ERROR |
| 5 | CONNECT 1200 |
| 6 | NO DIAL TONE |
| 7 | BUSY |
| 8 | NO ANSWER |



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# Safety Information

## Power Cords

The power cord supplied with the computer's ac adapter should match the plug and voltage requirements for your local area. Regulatory approval for the ac adapter has been obtained using the power cord for the local area. However, if you travel to a different area and need to connect to a different outlet or voltage, you should use one of the power cords listed below. To purchase a power cord (including one for a country not listed below) or a replacement ac adapter, contact your local Hewlett-Packard dealer or Sales and Service office.

| Country | Rated Voltage and Current | HP Part Number |
|---|---|---|
| Canada<br>Mexico<br>Philippines<br>Taiwan<br>United States | 125 Vac (3 A) | 8120-6313 |
| East and West Europe<br>Egypt<br>Saudi Arabia | 250 Vac (2.5 A) | 8120-6314 |
| Hong Kong<br>Singapore<br>United Kingdom | 250 Vac (2.5 A) | 8120-8699 |
| Australia<br>New Zealand | 250 Vac (2.5 A) | 8120-6312 |
| Japan | 125 Vac (3 A) | 8120-6316 |
| India<br>South Africa | 250 Vac (2.5 A) | 8120-6317 |
| Argentina | 250 Vac (2.5 A) | 8120-8367 |
| Chile | 250 Vac (2.5 A) | 8120-8452 |
| People's Republic of China | 250 Vac (2.5 A) | 8120-8373 |



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## Ergonomics

**WARNING**

**Improper use of keyboards and other input devices has been associated with ergonomic injury. For information about reducing your risk, see Working in Comfort in the online HP Library, or visit our ergonomics Web site, www.hp.com/ergo.**

## Battery Safety

- To avoid risk of fire, burns, or damage to your battery pack, do not allow a metal object to touch the battery contacts.
- The battery pack is suitable for use only with compatible HP notebook models. See “To contact the HP Customer Care Center” on page 120 for your local HP contact.
- Do not disassemble the battery. There are no serviceable parts inside. Do not dispose of the battery pack in fire or water.
- Handle a damaged or leaking battery with extreme care. If you come in contact with the electrolyte, wash the exposed area with soap and water. If it contacts the eye, flush the eye with water for 15 minutes and seek medical attention.
- Do not expose the battery pack to storage temperatures above 60 °C (140 °F).
- When the battery is not in use, store it in the battery pouch provided.
- When discarding a battery pack, contact your local waste disposal provider regarding local restrictions on the disposal or recycling of batteries.
- To obtain a replacement battery, contact your local dealer or HP sales office.
- Do not charge the battery pack if the ambient temperature exceeds 45 °C (113 °F).






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## Laser Safety

The CD-ROM and DVD drives used with the computer are certified as a Class 1 laser devices according to the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard and International Standards IEC 825 / IEC 825-1 (EN60825 / EN60825-1). These devices are not considered harmful, but the following precautions are recommended:

- Ensure proper use by reading and following the instructions carefully.
- If the unit requires service, contact an authorized HP service center—see “To contact the HP Customer Care Center” on page 120.
- Do not attempt to make any adjustment of the unit.
- Avoid direct exposure to the laser beam—do not open the unit.

CLASS 1 LASER PRODUCT

LASER KLASSE 1

## LED Safety

The infrared port located on the right side of the computer is classified as a Class 1 LED (light-emitting diode) device according to International Standard IEC 825-1 (EN60825-1). This device is not considered harmful, but the following precautions are recommended:

- If the unit requires service, contact an authorized HP service center— see “To contact the HP Customer Care Center” on page 120.
- Do not attempt to make any adjustment of the unit.
- Avoid direct eye exposure to the infrared LED beam. Be aware that the beam is invisible light and cannot be seen.
- Do not attempt to view the infrared LED beam with any type of optical device.

CLASS 1 LED PRODUCT

LEDSCHÜTZKLASSE 1 PRODUKT



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# Regulatory Information

This section presents information that shows how your computer complies with regulations in certain regions. Any modifications to your computer not expressly approved by Hewlett-Packard could void the authority to operate the computer in these regions.

## U.S.A.

The computer generates and uses radio frequency energy and may interfere with radio and television reception. The computer complies with the limits for a Class B computing device as specified in Part 15 of FCC Rules, which provide reasonable protection against such interference in a residential installation. In the unlikely event that there is interference to radio or television reception (which can be determined by removing the unit's batteries and ac adapter), try the following:

- Reorienting or relocating the receiving antenna.
- Relocating the computer with respect to the receiver.
- Connecting the computer's ac adapter to another power outlet.

**Connections to Peripheral Devices**

To maintain compliance with FCC Rules and Regulations, use properly shielded cables with this device.

For more information, consult your dealer, an experienced radio/television technician, or the following booklet, prepared by the Federal Communications Commission: How to Identify and Resolve Radio-TV Interference Problems. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock Number 004-000-00345-4. At the first printing of this manual, the telephone number was (202) 512-1800.



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**Declaration of Conformity**

| | |
|---|---|
| **Responsible Party:** | Hewlett-Packard Company<br>Manager of Corporate Product Regulations<br>3000 Hanover Street<br>Palo Alto, CA 94304<br>(415) 857-1501 |
| | declares that the product(s) |
| **Trade name:** | Hewlett-Packard Company |
| **Product name:** | HP OmniBook 6000 |

Complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

## Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

## Japan

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると受信障害を引き起こすことがあります。
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## International

Products sold internationally by Hewlett-Packard and its authorized dealers meet the specifications listed below.

**Declaration of Conformity (according to ISO/IEC Guide 22 and EN 45014)**

| | |
|---|---|
| **Address:** | Hewlett-Packard Company<br>Mobile Computing Division<br>19310 Pruneridge Ave.<br>Cupertino, CA 95014 |
| | declares that the following product |
| **Product name:** | HP OmniBook 6000 |
| **Options:** | All |
| | conforms to the following product specifications |
| **Safety:** | IEC 950:1991+A1,A2,A3,A4 / EN 60950 (1992)+A1,A2,A3,A4,A11<br>GB4943-1995<br>IEC 825-1:1993 / EN 60825-1:1994, Class 1 |
| **EMC:** | CISPR 22:1993+A1,A2 / EN 55022 (1994)+A1,A2: Class B [1 ]<br>GB9254-1988<br>EN 50082-1:1992<br>IEC 801-2:1991 / prEN 55024-2 (1992): 4kV CD, 8kV AD<br>IEC 801-3:1984 / prEN 55024-3 (1991): 3V/m<br>IEC 801-4:1988 / prEN 55024-4 (1992): 0.5 kV signal lines, 1.0kV power lines<br>FCC Title 47 CFR, Part 15 Class B<br>Ansi C63.4:1992<br>AS/NZS 3548:1995 Rules and Regulations of Class B |
| **Supplementary Information:** | The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC and carries the CE mark accordingly.<br><br>This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.<br><br>The HP ac adapter used with this product is designed to operate on all power systems, other than IT power systems.<br><br>[1] The product was tested in a typical configuration with Hewlett-Packard personal computer peripherals. |

Quality Department,
Hewlett-Packard Company
Mobile Computing Division



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