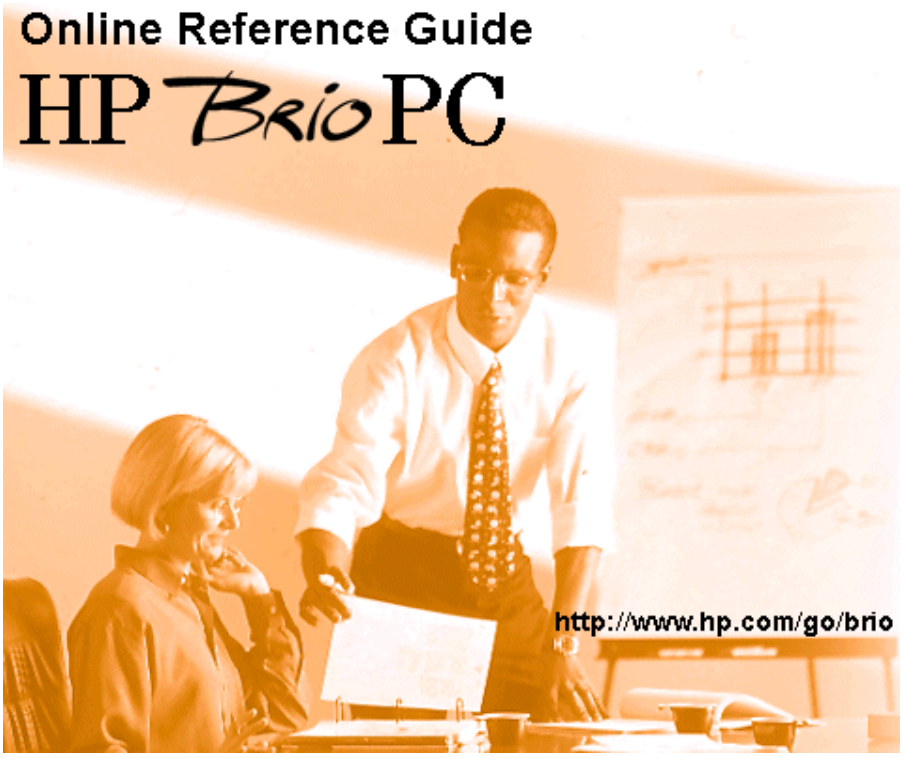


How to Use This Guide

The Guide is divided into three parts:

- a menu area
- a topic area
- an information area, which is where this information is displayed

Finding Information

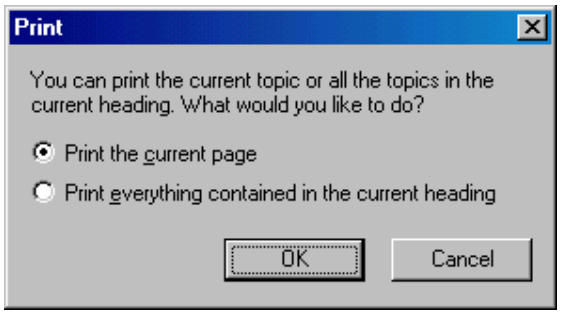
You can find the information that you require in one of two ways:

1. Click on the **Contents** tab.
   The contents of this guide are displayed in the topic area. Click on the topic that you require information on, and a list of subjects appears.
   Move the mouse to a subject and click on it when it is underlined.
2. Click on the **Search** tab.
   In the box at the top, type in the subject or keyword that you wish to find information on, and then click on the **List Topics** button.
   The topic area will list the subjects that closest match the subject or keyword that you typed in. When the required subject is visible, either double-click the subject, or select it by clicking on it once and then click on the **Display** button.

To print this guide, do the following:

1. Click on the **Content** tab.
2. Click on the **Online Reference guide** icon
3. Click on the **Print** button.

4. Select **Print everything contained in the current heading**.



5. Click on the **OK** button

You will now be presented with the standard windows print dialogue box. Make sure that the printer selected is the one that you wish to print to and that **All** is selected in the **Print range** options, then click on OK.

Notice

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Microsoft®, MS-DOS® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Hewlett-Packard France
Commercial Computing Division
Customer Satisfaction
5, avenue Raymond Chanas-Eybens
38053 Grenoble Cedex 9
France

About this Guide

This Online Reference Guide covers three main areas:

1. Your Hardware - information about the main hardware components that make up your computer: the system board, your keyboard, and so on.
2. Your BIOS (Basic Input/Output System) - information about the set of programs that control the input and output of data to peripherals.
3. Upgrading and Adding Accessories - information about how to install new hardware components such as main memory or expansion cards.

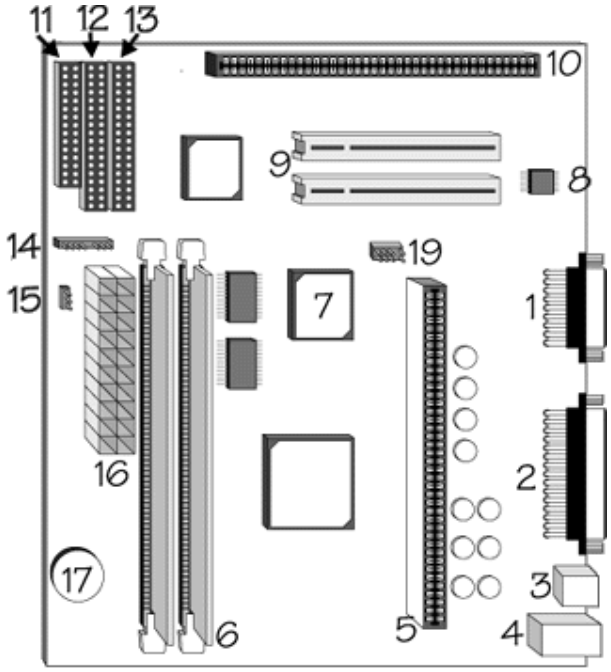
The Guide also includes an AT Command Reference.

Purpose of This Guide

The purpose of this guide is to provide you with technical information about your computer. This is information that you will not need to reference every day, but which you will find useful if you ever want to upgrade or customize your computer. You may find it useful to print a copy of this guide.

System Board Layout

The system board block diagram will help you identify where the different components and connections are located on the board.



1. Audio and game connectors
2. Parallel, serial and video connectors
3. Universal Serial Bus connector
4. Mouse and keyboard connectors
5. Processor Socket

6. Dimm sockets
7. Graphics chip
8. Audio chip
9. 2 PCI Expansion Card Slots
10. 1 ISA Expansion Card Slot
11. FDD Connector
12. SecondaryIDE Connector
13. Primary IDE Connector
14. Front panel connector
15. Clear CMOS (refer to Clearing the CMOS)
16. Power connector
17. Battery
18. Processor Frequency Selection (refer to Setting the System Board for the Processor Type)

Main Components and Features of the System Board

The main components and features of your HP Brio PC are:

- Enhanced IDE controller with two channels on the computer bus:
  - A primary IDE channel used for the IDE hard disk drive.
  - A secondary IDE channel used for the IDE CD-ROM drive.
- Floppy Disk Drive controllers.
- Rear panel connectors:
  - mouse
  - keyboard
  - display
  - Universal Serial Bus (USB)

- parallel port
- serial port
- game/midi
- microphone
- speakers
- line in

- The main memory controller supports two DIMM slots. Each slot can host a 168-pin unbuffered 3.3V DIMM module, for a total of up to 256 MB of SDRAM. These slots can be filled in any order.
- Three expansion card slots for the installation of two 32-bit PCI cards and one ISA card

Note
PCI expansion card slots are generally white plastic grooves. ISA expansion card slots are generally black plastic grooves lined with silver.

System Board Configuration Jumpers

Clear CMOS Jumper

The CMOS memory stores information, such as your computer's configuration, which is preserved when you turn off your computer. A jumper placed on pins 1-2 prevents change to the CMOS configuration. This is the default setting. Refer to Clearing the CMOS Configuration for information about clearing the CMOS and using this jumper.

Microprocessor Configuration Jumper

This jumper allows the system board to match the speed of the installed processor. You only need to change the microprocessor configuration jumper if you install a new processor with a different speed to the one that is currently installed. Refer to Upgrading a Processor for information about installing a processor upgrade and changing the jumper settings.

Power Consumption

Note
The figures given below are valid for computers with a standard configuration--no expansion cards and no CD-ROM drive. For certain configurations, the power consumption values will be higher

Full Power Mode	<44 W
Suspend Mode	<30 W
Off	<3 W The power supply in your HP PC continues to supply power to the CMOS memory, even when turned off.

Note
When the computer is turned off with the power button on the front panel, the power consumption falls below three watts, but it is not zero. The special on/off method used by this computer considerably extends the lifetime of the power supply. To reach zero power consumption in "off" mode, either unplug the computer from the power outlet or use a power block with a switch.

Typical Power Consumption/Availability

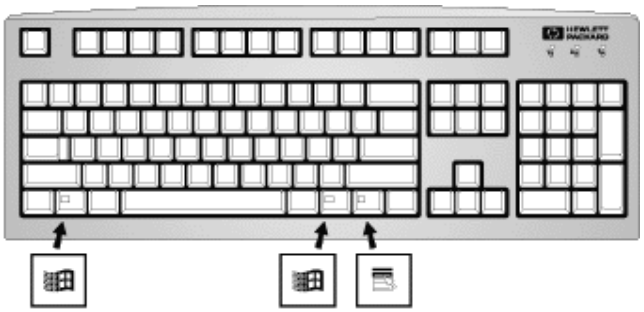
ISA Expansion Card Slots		PCI Expansion Card Slots	
+ 5 V	4.5A limit per slot (limited by system board)	+ 5 V	4.5A maximum per slot
+ 12 V	1.5A limit per slot (limited by system board)	+ 12 V	0.5A maximum per slot
- 12 V	0.3A total power limit (limited by power supply)	- 12 V	0.1A maximum per slot

There is a maximum per-slot limit of 25 W between all supply rails.

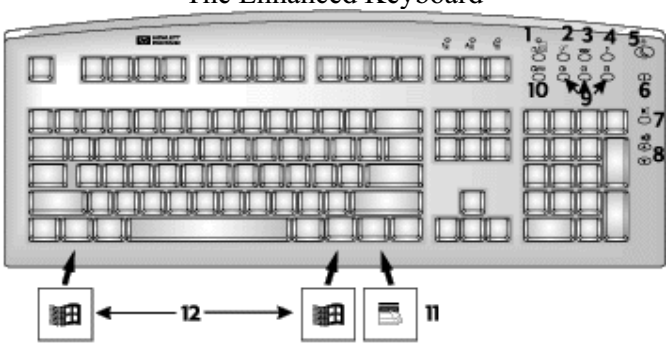
Your HP Keyboard

Depending on the computer you have purchased, you will have one of the keyboards shown below.

The Standard Keyboard



The Enhanced Keyboard



Extra features of the HP Enhanced Keyboard

The Enhanced Keyboard, as well as offering standard keys, allows you direct access to various software applications. You can also create your own shortcuts to your most frequent tasks by configuring certain keys. For example, you can access your word processor application at a touch of a single key.

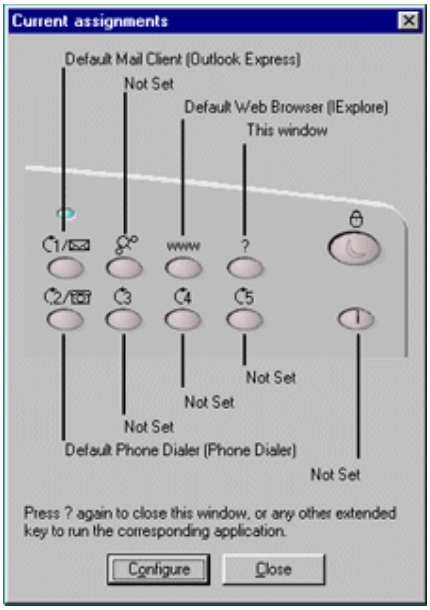
1. Message Key with mail LED
   Launches your e-mail application. The LED blinks when a new fax or e-mail arrives if you have installed a Microsoft MAPI-based e-mail client. This key can be reconfigured.
2. HP Brio Center
   Launches the HP Brio Center if installed. This key can be reconfigured.
3. Web Browser
   Launches the default Internet browser. This key can be reconfigured.
4. Menu Key
   Displays a window showing the current configuration of the keys and the actions mapped to them. Pressing the Menu key again will close this window without further action needed. Pressing any other extended key will close the window and launches the associated command.
5. Suspend Key
   Turns on the power saving capabilities or starts the screen saver depending on the configuration. It is recommended that you configure your screen saver with a password to lock the computer when the screen saver is active. To wake your computer from sleep mode, press the space bar.
6. Information
   Accesses the information section of the HP Brio Center.
7. Mute
   Mutes the audio if you have a correctly configured audio card.
8. Volume Control
   Adjusts the volume level if you have a correctly configured audio card.

9. Shortcut Key
   These keys can be reconfigured to launch any application installed on your PC.
10. Phone Key
    Launches the Microsoft Phone Dialer if installed. This key can be reconfigured.
11. Access right-mouse-button functions
    This key has the same function as the right mouse button
12. Display the Windows Start menu by pressing either of the two Windows keys

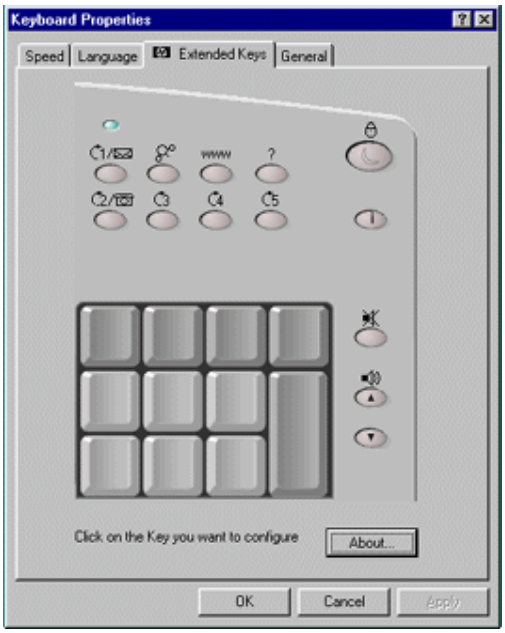
Configuring Keyboard Shortcut Keys

You have three standard shortcut keys (3, 4, 5), and four other shortcut keys that can be configured.

To see the current keyboard assignments, press the menu key. The Current assignments window shows the shortcut keys



1. You can configure shortcut keys by either of the following:
   - From the Control Panel, double-click on the Keyboard icon.
   - By pressing the menu key and then clicking on Configure.
2. Select the Extended Keys tab from the Keyboard Properties screen. The pointer will change to a pointing hand when over a configurable key.



3. Click on the key that you wish to configure in the Extended Keys window.

4. You now have two or three options, depending on the shortcut key:
    - Clicking on the Not Programmed radio button will disable the shortcut key.
    - Some shortcut keys have predefined functions. These can be selected by clicking on the middle default radio button.
    - To set the application to be launched:
        1. Click on the Launch Application radio button.
        2. Type a name for the button in the Button Label field.
        3. Click on the browse button next to the Attached Application field, or if you know the path name you can type it in directly.
5. Click on OK.

The BIOS in Your Computer

What Is the BIOS?

The BIOS has two main roles:

- It tests and configures the computer's hardware components during the POST, and lets you perform further configuration by using the Setup program.
- It provides the link between the software running on your computer, which has been written to be independent of any particular computer, and your computer's hardware (the hard disk, the keyboard, the display, and so on).

The BIOS is part of the System ROM and is stored in a chip on the system board. A computer's BIOS is specific to that computer.

What Can I Do with the BIOS?

You can configure certain aspects of your computer by using the Setup program which is part of the BIOS. Refer to The HP Setup Program for more information about the Setup program.

The HP Setup Program

The built-in *Setup* program is accessed by pressing the F2 key during the POST. Online help for an item on the *Setup screen* can be obtained by highlighting the item (refer to Working Within the Setup Program for instructions on how to use the key functions). Help is then displayed on the right of the screen. It is updated as you move the cursor to each field.

If you have any doubts about using the *Setup* program, contact your reseller for help.

The band along the top of the screen offers the following menus:

- *Main*: for basic system configuration.
- *Advanced*: for setting the Advanced Features.

- *Security*: for setting a password to restrict access to your computer. For information on how to set a password, refer to Restricting Access to Your Computer - Setting a Password.
- *Power*: for selecting power-management modes to reduce the amount of energy used after specified periods of inactivity. Refer to Power Management in the BIOS.
- *Boot*: for choosing your boot device order and priority. Refer to Boot Device Priority.
- *Exit*: for leaving the Setup program. Refer to Saving Your Changes and Leaving Setup.

The *Setup* program changes system behavior by modifying the power-on initialization parameters. Setting incorrect values may cause system boot failure. Should this occur, press the F9 key while you are in the *Setup* program to load the *Setup* program's default values. This should enable the computer to boot properly.

HP strongly recommends that you make a note of any changes you make while in the *Setup* program.

Working Within the Setup Program

The following key functions are available when using the HP *Setup* program:

- The UP or DOWN arrows can be used to select fields in the current menu.
- The HOME key moves the cursor to the top item, and the END key moves the cursor to the bottom item of the current menu.
- The ENTER key displays a sub-menu for menu items marked with a solid right arrow ▶ .
- The ESC key or ALT + X keys allow you to exit from a sub-menu.
- The LEFT and RIGHT arrows select menus from the menu bar.
- The F9 key loads factory-installed default values.
- The F10 key saves and exits from the *Setup* program.
- The F1 key or ALT + H keys display the general help screen.
- The Tab key moves from one field to the next.
- The ESC key exits from the general help screen.

Pressing the LEFT or RIGHT arrows while you are on a main menu screen will take you to the next menu option. If, however, you are on a sub-menu screen and you press these arrows, you will stay on that screen.

Use the UP and DOWN arrows to scroll through the items on the general help screen.

Boot Device Priority

You can select the order of the devices from which the BIOS attempts to boot the operating system. During the POST , if the BIOS is unsuccessful at booting from one device, it will try the next one on the *Boot Device Priority* list until an operating system is found. The default boot device is the floppy disk. To speed up booting, you may wish to set the hard disk as the default boot device. If you ever need to boot from a floppy though, remember to reset the floppy as the default boot device.

The *Boot Device Priority* can be changed through the *Boot* menu. Use the LEFT or RIGHT arrows to move along the main menu bar to its location. The item is then highlighted and displays the available boot options.

To select the boot device, use the UP and DOWN arrows, then press the + key to move the device up the list, or the - key to move it down the list.

Changing the Boot Device Priority for the current boot:

You can also change the boot order just for the current boot. To do this, press ESC while the logo and the message **Press <F2> to enter SETUP** are displayed during system startup. This initially displays the POST before displaying the *Boot* Menu. On the *Boot* Menu use the UP and DOWN arrows to select the device from which you want to boot, and then press ENTER. The computer then attempts to boot from the selected drive.

Saving Your Changes and Leaving Setup

When you have made all your changes, you must save them and exit *Setup*.

1. Press the ESC key to enter the *Exit* menu.
2. Select *Exit Saving Changes* to save your changes and exit *Setup*.

The computer will automatically restart. If you set a Password, the computer will display the power-on prompt. Enter the Password to use the computer.

Protecting Your Computer

Restricting Access to Your Computer - Setting a Password

Note
It is recommended that you set a password that you can easily remember

Setting a Password

Set a password to protect your computer's configuration by preventing access to the *Setup* menus. Full access to the *Setup* menus will only be possible by using your password. To set a Password:

1. Start the *Setup* Program. Refer to The HP Setup Program.
2. Select the *Security* menu group. Then select the "*Set Password*" item.
3. You will be asked to enter your password twice. Be sure to save your changes before you exit the *Setup* program.

Password on Boot

Enabling a password entry on boot can provide a power-on password prompt to prevent your computer being started or used in your absence. The password is entered when the POST has completed, before the computer finishes its normal startup procedure. *Password on boot* can only be enabled if the *Password* has already been set. It should be noted that this password option is

not linked with your Windows operating system.

Note
After three unsuccessful attempts, your computer will be disabled. If this is the case, turn your computer off and then on again, then enter the correct password. If you have forgotten your password, you need to clear the CMOS configuration. Refer to Clearing the CMOS Configuration for an explanation on how to clear the CMOS.

To enable a *Password on Boot*:

1. Start the *Setup* Program.
2. Select the *Security* menu group. Then enable the "*Password on Boot*" item.
3. Be sure to save your changes before you exit the *Setup* program

Power Management in the BIOS

If your computer stays idle for a certain amount of time, your system switches from Full Power Mode to Sleep Mode in order to reduce power consumption.

In Sleep Mode, graphics, the processor and hard disks are stopped. A user event, such as from the mouse or keyboard, can cause the system to resume to Full Power Mode within a few seconds. With some operating systems only the space bar or a power key will wake the computer.

Other events may also wake up the system: a daily alarm clock (for a scheduled backup), a ring on an external modem, an IRQ signal sent by an expansion card (modem, network card, etc.).

To customize the power management settings though the HP *Setup* program, use the LEFT or RIGHT keys to move along the main menu bar to the Power Menu. The item is then highlighted and displays the available power management options.

You will be able to set the delay before the system can automatically enter Suspend Mode, and also specify the events which make the computer wake up.

In most cases, default settings should be appropriate. However, you may need to configure the IRQs which will be monitored in accordance with your system components (additional network card or modem...). For this, select the field >**IRQ Activity Monitoring**.

Note
Windows can provide you with a list of IRQs used by all system components: right-click the My computer icon, select Properties, select the Device Manager tab, then click Properties. The list of IRQs used will be displayed.

Checking Your Configuration

To view your computer's current configuration, press the ESC key just after your computer is turned on and while the computer's logo is being displayed during the POST.

The text-based POST screen will replace the computer's logo, displaying the system components and devices. Press the Pause/Break key to "freeze" the screen. When you have finished reading the POST screen, press any key to continue. At the end of the POST screen, the *Boot* Menu will be displayed.

You can either, choose to exit the menu by pressing the ESC key, or enter the *Boot* Menu to modify the device for the current boot. How to modify the current boot device priority is described in Changing the Boot Device Priority for the current boot: .

Warning Messages and the Power-On Self-Test

The POST is executed each time the system is turned on or a reset is performed. The POST process checks that system components are operating correctly and initializes certain system parameters.

Beep Codes

If a terminal error occurs during POST, the system issues a beep code before attempting to display the error. Beep codes are useful for identifying the error when the system is unable to display the error messages.

The following table is a list of beep codes issued for terminal errors:

Beep Pattern	Numeric Code	Description
-	B4h	This does not indicate an error There is one short beep before system startup
— -- -- ---	16h	BIOS ROM checksum failure
— --- — —	20h	DRAM refresh test failure
— --- —---	22h	8742 Keyboard controller test failure
— --- ---- —	2Ch	RAM failure on address line

— --- ---- ---	2Eh	RAM failure on data bits in low byte of memory bus
— ---- — —	30h	RAM failure on data bits in high byte of memory bus
-- — -- ---	46h	ROM copyright notice check failure
-- -- --- —	58h	Unexpected interrupts test failure
— --	98h	Video configuration failure or no card installed Option ROM's checksum failure

How to Recover if Things Go Wrong

System Boot Failure

If you have made some modifications in the *Setup* program and there is a system boot failure, you should do the following:

1. Restart the computer, then press F2 when **Press <F2> to enter SETUP** is displayed at the bottom of the screen. Change the setting that you have modified to its original configuration, save it and exit the *Setup* program, then continue with the system startup.
2. If the system still fails to start up, restart the computer, enter the *Setup* program, then press the F9 key. This will load the *Setup* default values to recover. However, by doing this, you will lose all customized settings in the *Setup* program. These settings will have to be reconfigured.

Note
HP strongly recommends that you take note of any change to the system setup and store it in a safe place. If you have any doubts about using the HP *Setup* program, contact you HP-authorized support agent or reseller for help.

If you are having problems with POST error messages, you probably need to clear the current configuration memory values and reset the built-in default values. Refer to Clearing the CMOS Configuration for details on how to do this.

Incorrect Password on Startup

After three unsuccessful attempts to enter the correct password on *Password on Boot*, your computer becomes disabled. If this happens, turn your computer off and then on again, then enter the correct password. If you have forgotten your password, you need to clear the CMOS configuration. Refer to Clearing the CMOS Configuration below for details on how to do this.

Clearing the CMOS Configuration

The CMOS memory stores information, such as your computer's configuration, which is preserved when you turn off your computer. The only time you need to clear the CMOS is if the configuration stored in memory is corrupted or you have forgotten the system password. A jumper placed on pins 1-2 prevents changes to the CMOS configuration.

The following table shows the possible pin settings:

Jumper Function	Pins	Description
Default setting	1 - 2	The jumper on these pins prevents any change to the CMOS configuration. Refer to System Board Layout for the jumper position on the system board.
Clear CMOS	2 - 3	Place the jumper on these pins to clear the CMOS. You only need to leave it there for a few seconds, otherwise you run the risk of discharging the battery.

To clear the configuration:

1. Turn off the computer. Unplug the computer from the electrical socket. Disconnect any peripherals from the computer.

Note
The CMOS will be cleared only if the computer is unplugged from the electrical socket.

2. Remove the computer's cover (refer to Removing and Replacing the Cover for any assistance).
3. Place the jumper on pins 2-3 (refer to Clear CMOS) for the jumper strip (J22) location on the system board to clear the CMOS).
4. Wait for a couple of seconds, then place the jumper on pins 1-2 to re-enable the configuration.
5. Replace the cover. Reconnect the power cord and any peripherals to the computer.
6. Turn on the computer.
   To set a new system password, you will need to run the *Setup* program.

Why Upgrade?

Your computer uses some of the latest hardware technology to achieve outstanding performance. If required, performance can be even further enhanced thanks to this computer's upgradeable design.

Main Memory

Main memory is the workspace of the computer in which the processor stores all work in progress. You can increase the size of the computer's workspace by adding more main memory.

To find out more about upgrading the main memory, refer to Upgrading Main Memory.

Expansion Cards

An expansion card, or accessory board, is a component that usually adds some specialized function to a computer. For example, installing a network card can, in conjunction with the necessary software and cables, connect a computer to a network.

To find out more about installing expansion cards, refer to Adding Accessories.

Processor

The processor is the primary computational chip inside the computer. It can be thought of as the computer's brain. It may be upgraded to provide more power for processor-intensive applications.

To find out more about installing a processor upgrade, refer to Upgrading a Processor.

Upgrades and Accessories You Can Install

1. Expansion Cards, for example a multi-media card.
2. System board, where you can replace the processor or plug in expansion cards.

Upgrading the BIOS

What Is the BIOS?

For a description of the BIOS, refer to The BIOS in Your Computer.

Why Upgrade the BIOS?

Hewlett-Packard are continually improving the BIOS in their computers, introducing new features and making them more efficient. You can therefore keep your own computer up-to-date by upgrading the BIOS.

How Do I Upgrade the BIOS?

To upgrade your system BIOS, download the appropriate BIOS utility from our support WEB site:

http://www.hp.com/go/briosupport

Upgrading Hardware

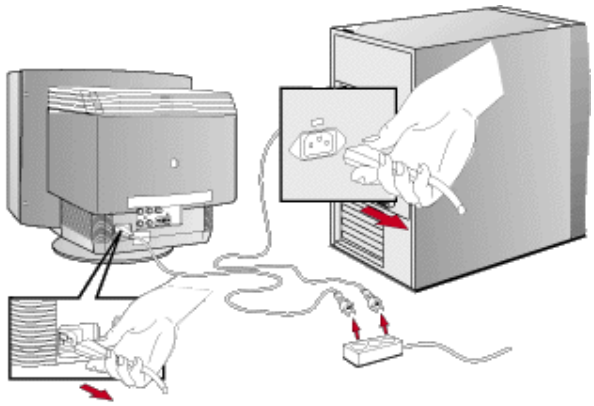
> **Warning**
>
> For your safety, never remove the computer's cover without first removing the power cord and any connection to a telecommunications network. Always replace the cover before reconnecting any cables to your computer.

Removing and Replacing the Cover

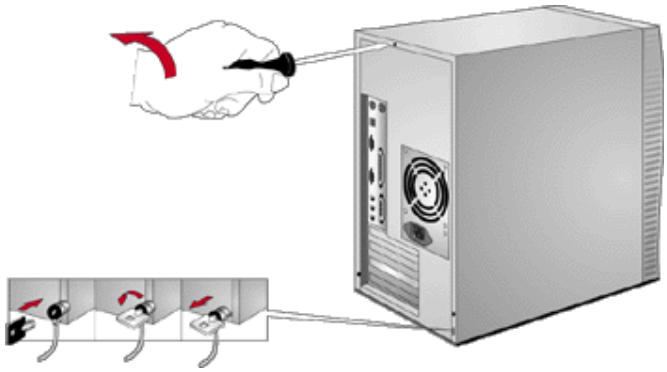
You need to remove the computer's cover to install accessories or to gain access to the system configuration jumpers.

Removing the Cover

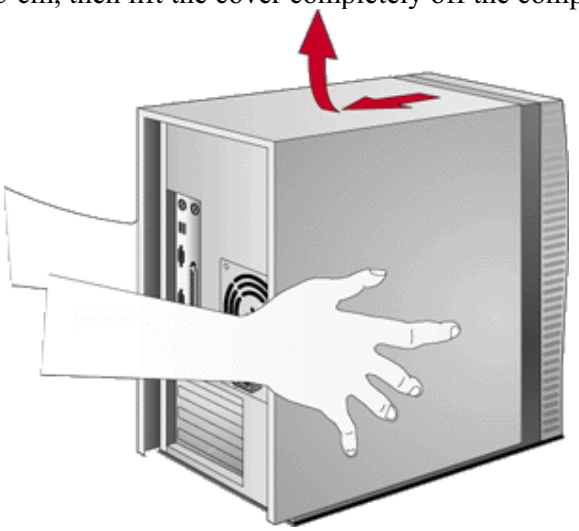
1. Turn off the computer and display, and disconnect all power supply cords and any telecommunications cables.



2. If necessary, unlock the cover using the key on the back panel. Remove the three screws from the back of the computer.

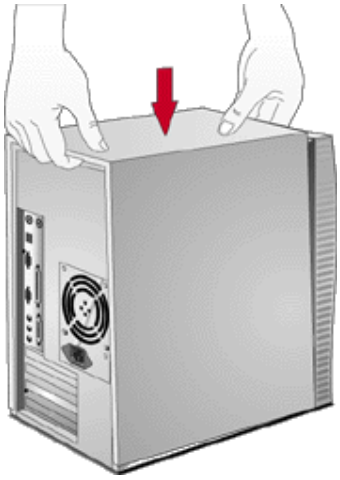


3. Pull the cover back 1.5 cm, then lift the cover completely off the computer's chassis.

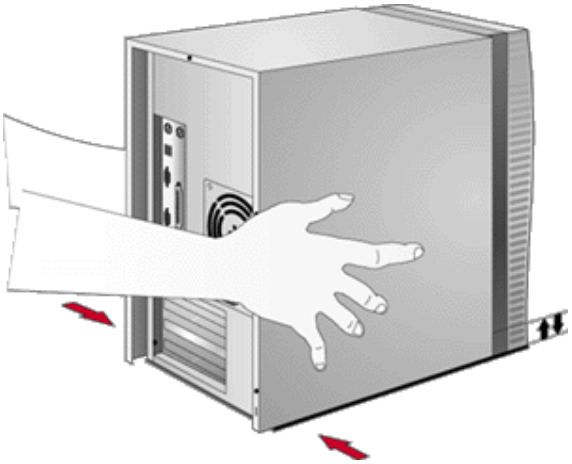


Replacing the Cover

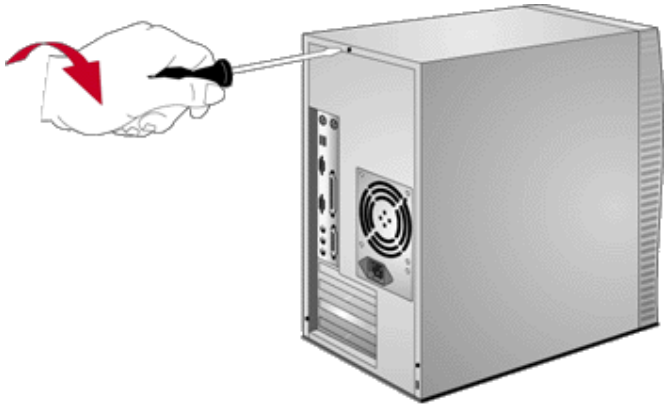
1. Check that you have installed all your accessories and that internal cables are properly connected and safely routed (for example, check that they will not interfere with the cover when it is replaced).
2. Lower the cover onto the computer. Position the cover so that there is a 1.5 cm gap between the front edge of the cover and the front bezel.



3. While holding the cover as shown, lift the cover up approximately 1 cm until a `pop' is heard, then lower the cover. Metal tabs at the bottom of the cover should now be hooked onto the chassis of the computer.



4. Push the cover forward until it meets the front bezel. Secure the cover in place by replacing the three screws on the rear panel. If required, lock the cover using the key provided.



5. Reconnect the power supply cords and any telecommunications cables. Turn on display computer.

Upgrading Main Memory

How Much Main Memory Does My Computer Have?

The amount of main memory that your computer has depends on the particular model that you have. To see how much main memory is installed, right-click the My Computer icon on the desktop. Then click Properties in the drop-down menu.

Why Add More Main Memory?

By adding more memory you can significantly improve the computer's performance. If your computer does not have enough memory, it uses hard disk space as virtual memory which allows large applications to execute even though the physical memory is not sufficient. Virtual memory, however, is approximately 200 times slower than main memory.

The amount of main memory your computer requires depends on the operating system and the applications you use. You may need more memory if you use memory-hungry applications (for example, image processing and desktop publishing applications) or if you run several applications at the same time.

How Much Main Memory Can I Add?

Your computer is capable of supporting up to 256 MB of main memory, using two memory module sockets on the system board. Main memory is available in modules of 16MB, 32MB, 64MB and 128MB SDRAM non-ECC SDRAM.

Will Adding Memory Always Improve Performance?

If your computer has sufficient memory, installing extra memory will not improve performance.

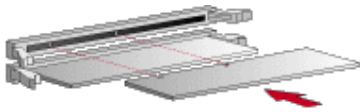
Installing Main Memory Modules

1. Remove the computer's cover (refer to Removing the Cover).
2. On a table top turn the computer on to its side, with the system board closest to the surface of the table top.

Caution
Static electricity can damage electronic components. Turn off all equipment. Don't let your clothes touch the accessory. To equalize the static electricity, rest the accessory bag on top of the computer while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

3. Handle the memory module by its edges. Slide the memory module into the connector at

90° to the system board (the module will only fit into the socket one way round).



4. Firmly press the memory module completely into the connector until the retaining clips click into position.

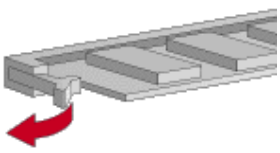
5. If you need to remove a memory module, perhaps because you are replacing an existing module, refer to Removing a Memory Module below.
6. Install any other accessories before returning the computer to the upright position, replacing the cover, and reconnecting the power supply cords and any telecommunications cables.
7. Turn on the display, and then turn on the computer.
8. In Windows, check that the new memory has been recognized. To do this, right-click the My Computer icon on the desktop, then click Properties in the drop-down menu.

Troubleshooting

- If the new memory is not recognized, check that you have correctly followed the installation procedure described above.
- If there are any errors reported during the computer's startup routine, press F2 to view the error(s) and take any necessary action. If you have any doubts about using the HP *Setup* program, contact your reseller for help.
- If you cannot start your computer properly, remove the memory and try starting your computer again. If the computer now starts without any problems, there may be a problem with the new memory.
- If you experience any other problems as a result of the upgrade, and your computer is supplied with the HP Brio Center, refer to the support tools for further assistance.

Removing a Memory Module

If you need to remove a main memory module, release the retaining clips at both ends of the socket. This raises the module out of the socket. Handle the memory module by its edges, then lift it up and clear of the system board.



Upgrading a Processor

Why Upgrade the Processor?

The speed at which the processor can perform tasks is determined by the processor's internal speed; the faster the internal speed, the faster tasks can be performed. Replacing the processor by one with a faster internal speed will improve the performance of your computer.

What Is the Fastest Processor I Can Install?

New, faster processors are being developed all the time. Check with your reseller to find out the fastest processor that you can install in your computer. Information about processor upgrades is also available at:

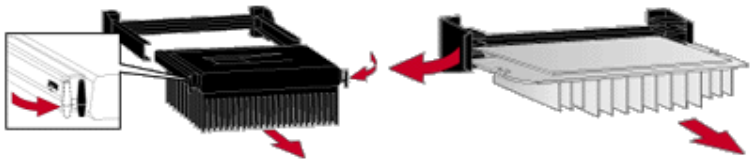
http://www.hp.com/go/briosupport

Installing a Processor Upgrade

Removing the Old Processor

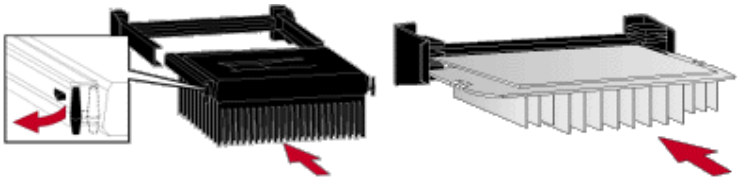
Note
The processor in your computer may be different from those shown below.

1. Remove the computer's cover (refer to Removing the Cover).
2. On a table top turn the computer on its side, with the system board closest to the surface of the table top.
3. Squeeze the tabs on either side of the processor and gently pull the processor away from the system board.



Installing the New Processor

1. Slide the new processor into the processor socket and push gently until it snaps into place (the processor can only go in one way).



Setting the System Board for the Processor Type

Set the system board configuration jumpers (or jumper block).

See A Quick Look Inside for the location on the system board of the jumpers used to configure the computer for the new processor. If you are in any doubt as to whether you should change jumper settings or not, contact your reseller.

CPU SPEED		
CPUCLK	**Ratio**	**Jumper Position**
266 MHz	1 / 4	5-6, 7-8 and 9-10
300 MHz	2 / 9	5-6 and 9-10
333 MHz	1 / 5	7-8 and 9-10

Completing the Installation

1. Install any other accessories before returning the computer to an upright position replacing cover and reconnecting power cords and telecommunications cables.
2. Turn on the display and computer. The computer should recognize the new processor.

Troubleshooting

- If the new processor is not recognized, the startup routine will stop shortly after you turn on the computer. If this happens, turn off the computer and check that you have correctly installed the processor.
- If the new processor is still not recognized, remove it and put the old processor back into the computer (remember to reset any system board jumpers if necessary), and then restart the computer. If the computer now starts without any problems, there may be a problem with the new processor.
- If you experience any other problems as a result of the upgrade, and your computer is supplied with the HP Brio Center, refer to the support tools for further assistance.

Adding Accessories

Adding Expansion Cards

What Is an Expansion Card?

An expansion card, or accessory board, is a component that usually adds some specialized function to a computer. For example, installing a network card can, in conjunction with the necessary software and cables, connect a computer to a network.

There are two types of expansion cards that you can install in your computer: PCI cards and ISA cards. PCI cards use the computer's PCI bus (information pathway), and ISA cards use the computer's ISA bus. The PCI bus is faster than the ISA bus.

How Many Expansion Cards Do I Have?

You can tell how many cards are installed by looking at the back of your computer and counting the number of slots that are occupied. This is the number of expansion cards that are installed.

How Many Expansion Cards Can I Install?

Your computer supports up to three cards (refer to three expansion card slots).

The Windows operating system can automatically recognize and configure many expansion cards that you may want to install in your computer. With other cards, you will be required either to install a driver, or to run the Windows; Add New Hardware wizard to help Windows to recognize the card.

You must physically install the card before you run the wizard. Refer to your Windows documentation and online help for more information about using the wizard.

For non plug and play (legacy) expansion cards, the settings selected by Windows may be different from those recommended by the card's manufacturer. In this case, the card's jumper settings and driver options might need to be altered. Refer to the manual supplied with the card for more information.

Installing an Expansion Card

Caution

Static electricity can damage electronic components. Turn off all equipment. Don't let your clothes touch the accessory. To equalize the static electricity, rest the accessory bag on top of the computer while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

1. Remove the computer's cover (refer to Removing the Cover).
2. On a table top turn the computer on to its side, with the system board closest to the surface of the table top.
3. Find a free expansion card slot with the correct type of connector (PCI or ISA). Some cards may have preferred locations, in which case special installation instructions should be detailed in their manuals.
4. Each slot has a faceplate which is located inside the back of the computer. Remove the faceplate for the slot that you are installing an expansion card in. If it is tight, loosen the screws on the adjacent slots. Save the retaining screw(s).

Note

Some models may be provided with a faceplate that has to be removed with a screwdriver. To do this, insert a flathead screwdriver into the slot on the faceplate, then push forward until it snaps off.

5. Handle the card horizontally by its "top" edge with the card's connector pointing towards the slot's connector. Do not bend the card. Carefully slide the card into the slot and firmly press it into place. Ensure that the card's connector engages completely with the slot's connector and does not touch components on other cards.
6. Secure the card with the retaining screw. If you loosened the screws on adjacent faceplates, remember to tighten them.
7. Install any other accessories before returning the computer to the upright position, replacing the cover and reconnecting the power cords and any telecommunications cables. Turn on the display, and then turn on the computer.
8. If you have just installed a Plug and Play expansion card, Windows is able to recognize and configure the card automatically. The New Hardware Found dialog box is displayed while Windows loads the necessary driver(s).

If Windows does not find the correct driver, it displays the following choices for you to select:

- **Windows default driver.**
  (Shaded if the card is not known by Windows). If this option is available, select it.
- **Driver from disk provided by the manufacturer.**
  If a Windows default driver is not available, and you have a driver disk, select this option. You then need to insert the disk and click the OK button.
- **Do not install a driver. Windows will not prompt you again.**
  In this case, the card will be installed but it will not work.
- **Select from a list of alternative drivers.**

If you have just installed a non-Plug and Play expansion card, you will be required to either install a driver, or run the Windows Add New Hardware wizard (accessible from the Control Panel) to help Windows to recognize and configure the card.

Troubleshooting

- If the new card is not recognized, check that you have correctly followed the installation procedure described above.
- If there are any errors reported during the computer's startup routine, press F2 to view the error(s) and take any necessary action. If you have any doubts about using the HP *Setup* program, contact your reseller for help.
- If you cannot start your computer properly, remove the card and try starting your computer again. If the computer now start without any problems, there may be a problem with the new card.
- If you experience any other problems as a result of the upgrade, and your computer is supplied with the HP Brio Center, refer to the support tools for further assistance.

⚠ Fax/Modem Card Warning

Do not attempt to connect this product to the phone line during a lightning storm. Never install telephone jacks in wet locations unless the telephone line has been disconnected at the network interface. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Use caution when installing or modifying telephone lines. Avoid using a telephone (other than a cordless type) during a lightning storm. There may be a risk from lightning. Do not use the telephone to report a

gas leak in the vicinity of the leak. Never touch or remove the Communications board without first removing the connection to the telephone network.

Removing an Expansion Card

You might need to remove an expansion card to install a component on it, or to improve access to components on the system board.

Removing a Card

1. Follow steps 1 to 2 of Installing an Expansion Card.
2. Unscrew and remove the retaining screw securing the card. Keep the retaining screw.
3. Carefully remove the card from its connector, handling the card at each end by its top edge. If the card is tight, loosen the screws on the adjacent slots. Do not bend the card. If you intend to replace the card later, note which connector it is in.
4. With its components facing up, place the card on a clean, flat, solid, static-free surface. Handle the card by its edges.
5. Install any new accessories.
6. Replace the expansion card if necessary (refer to steps 5 and 6 of Installing an Expansion Card)
   If you do not replace the card, remember to insert a faceplate.
7. Return the computer to the upright position, then replace the cover. Reconnect the power cords and any telecommunications cables. Turn on the display, and then turn on the computer.

Changing the Battery

Warning

There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn the old battery. Replace the battery only with the same type or equivalent type recommended by the manufacturer. The battery in this computer is a lithium battery which does not contain heavy metals. Nevertheless, in order to protect the environment, do not dispose of batteries in household waste. Please return used batteries to the shop from where you bought them, to the dealer from whom you purchased your computer, or to HP so that they can be either recycled or disposed of in an environmentally sound way. Returned used batteries will be accepted free of charge.

Replace the battery with a CR2032 coin type manganese/lithium battery, available from most local stores.

1. Remove the computer's cover (refer to Removing the Cover).
2. On a table top turn the computer onto its side, with the system board closest to the surface of the table.
3. Remove the old battery by sliding it from under the retaining clip (note the position of the cross marked on the battery).
4. Place the new battery in the battery holder, with the cross in the same position as on the old battery (the cross should be facing up from the board), and ensure that it is properly seated. Ensure that the clip holds the battery firmly in place.

After installing a replacement battery, install any other accessories before returning the computer to the upright position. Replace the cover, and reconnecting the power cords and any telecommunications cables. Run the Setup program to reconfigure the computer.

Note
Removing the battery will clear the CMOS memory, returning its configuration to its default settings. Refer to The BIOS in Your Computer for information on reconfiguring your system.

Basic AT Commands

This section describes the AT commands supported by your modem. If you send an AT command that is not applicable, the modem returns an error message. See Modem Response Messages.

The following table lists the basic AT commands.

Command	Description
+++	Escape characters used to switch between Data mode and Command mode. In either case the computer stays connected to remote modem.
ATA	Manually answers incoming calls. Modem does not answer the telephone.
A/	Repeats the last command line executed.
AT	Attention. Begins each command line, except *A/*. Tests that your modem is working and configured correctly. If characters you type do not appear on your screen, your modem is not configured properly.
ATB*n*	Switches between BELL/ITU standards at 300 or 1200 bps, where n is either 0 or 1: **0** - The ITU V.22, V.21 (factory default) standard. **1** - The Bell 212A and Bell 103 standard.
	Tells the modem to go online and dial (automatic dialing). The following characters are authorized

ATD*n*	as parameters in the dialing sequence: **0 to 9** - For the telephone numbers. **P** - For pulse dialing. **T** - For touch tone dialing. **W** - Tells modem to wait until it hears the line free signal (for use with branch exchanges). **S=n** - Dials the number stored in register *n* (where n is a number from 0 to 3). **!** - Calls exchange by flash. **^** - Switches off calling tone (during current dialing process). **;H** - Terminates the dialing sequence and causes the modem to go off line after dialing so that you can conduct a normal voice conversation. Example: ATDT123456;H. **,** - Pauses the register (S8) time. **@** - Waits for 5 seconds of silence. **;** - Stays in Command Mode after dialing.
ATE*n*	Controls the Echo function, where *n* is either 0 or 1: **1** - Enables character echo so that modem commands appear on screen as they are entered. **0** - Disables the echo function.
ATH*n*	Where *n* is either 0 or 1: **0** - Forces modem on-hook. **1** - Forces modem off-hook.
ATI*n*	Returns information about modem product codes, where *n* is a digit from 0 to 8. **0** - Four-digit product code. **1** - Results of poor checksum. **3** - Product type. **4** - Current modem settings. **5** - Nonvolatile memory (NVRAM) settings. **6** - Link diagnostics. **7** - Product configuration. **8** - Return the blacklisted phone numbers.
ATL*n*	Loudspeaker volume control, where *n* is a digit from 0 to 3: **0** - Modem speaker disabled. **1** - Low speaker volume. **2** - Medium speaker volume. **3** - High speaker volume.
ATM*n*	Switches speaker on or off, where *n* is a digit from 0 to 3: **0** - Speaker off. **1** - Speaker on until carrier detected. **2** - Speaker always on. **3** - Speaker on during handshake.
ATO*n*	Returns online, where *n* is either 0 or 1: **0** - Returns online. **1** - Returns online and retains.
	Control modem responses, where *n* is either 0 or

ATQ*n*	1: **0** - Enables response messages (default). **1** - Disables response messages.
ATS*r?*	Reads the value of the S register r. Example: ATS0?
ATSr=*n*	Changes the value of S register r to value *n*. Example: ATS0=1 S0 = auto-answers calls on the ring corresponding to this register value: ATS0=1 - auto-answers calls on first ring. ATS0=0 - turns off auto-answer; to manually answer calls, use the A command.
ATV*n*	Selects modem message format (alphabetic or alphanumeric), where *n* is either 0 or 1: **0** - Sends responses as numbers. **1** - Sends responses as characters.
ATX*n*	Sets result code displayed. Default value is X4.
ATY*n*	Selects power on/reset default configuration, where n is either 0 or 1: **0** - Default is profile 0 setting in NVRAM. **1** - Default is profile 1 setting in NVRAM.
ATZn	Resets modem and uses one of two stored profiles. The n parameter (0 or 1) is used to reset the modem to the preferred profile. Any commands following the ATZn command are ignored.
AT\N5	Makes MNP links only.
AT&C*n*	Selects data compression for MNP or V.42, where n is a digit from 0 to 3. For data compression to work, both the local and the remote modem must have compression capabilities. The *n* parameters are: **0** - Compression is not authorized. **1**- Auto enable/disable. **2** - Data compression enabled. **3** - MNP5 compression disabled.
AT&D*n*	This command controls the way that your modem responds to the Data Terminal Ready (DTR) signal: **0** - Ignores DTR signal. **1** - Modem interprets an ON-to-OFF transition as escape characters and moves to Command Mode, while keeping data connection. **2** - An ON-to-OFF DTR transition causes the modem to hang up and disables auto-answer. **3** - An ON-to-OFF DTR transition resets the modem to hang up and disables auto-answer.
AT&F	Modem returns to factory default settings.
AT&K*n*	This command controls the flow control: **0** - Disables flow control. **1** - Enables RTS/CTS (hardware) flow control

(default).
2 - Enables XON/XOFF (software) flow control.

Modem Response Messages

In response to AT modem commands, the modem returns status information in the form of response messages. These messages appear on the screen when you enter a modem command and press Enter. You can instruct the modem to return responses in English language words (with the **V1** command) or as numeric values (with the **V0** command).

The most common responses are described in the table below (the numeric equivalents are in parentheses).

Message	Description
(00) OK	The command was carried out successfully.
(01) CONNECT	For **X0** : the modem has made a data connection.
(02) RING	Modem is receiving incoming call.
(03) NO CARRIER	The remote carrier signal is not detected.
(04) ERROR	You typed an invalid command line or a command line that is too long.
(05) CONNECT 1200	Modem is configured to report line speed, which is 1200 bps; or modem is configured to report the DTE speed, which is 1200 bps.
(06) NO DIAL TONE	The modem cannot dial the number you specified because there is no dial tone (this response is enabled when the **X2**, **X4** , or **W** modifier is in effect).
(07) BUSY	Modem has not detected a busy signal (this response is enabled when **X3** or **X4** are in effect).
(08) NO ANSWER	Modem did not detect silence when dialing a command line containing the @ modifier within the time specified by register **S7**.
(09) CONNECT 0600	Modem is configured to report line speed, which is 600 bps; or modem is configured to report the DTE speed, which is 600 bps (this response is disabled when *X0* is in effect).
(10) CONNECT 2400	Modem is configured to report line speed, which is 2400 bps; or modem is configured to report the DTE speed, which is 2400 bps (this response is disabled when **X0** is in effect).

(11) CONNECT 4800	Modem is configured to report the DTE speed, which is 4800 bps. 1
(12) CONNECT 9600	Modem is configured to report the DTE speed, which is 9600 bps.1
(13) CONNECT 7200	Modem is configured to report the DTE speed, which is 7200 bps.1
(14) CONNECT 12,000	Modem is configured to report the DTE speed, which is 12,000 bps.1
(15) CONNECT 14,400	Modem is configured to report the DTE speed, which is 14,400 bps.1
(16) CONNECT 19,200	Modem is configured to report the DTE speed, which is 19,200 bps.1
(17) CONNECT 38,400	Modem is configured to report the DTE speed, which is 38,400 bps.1
(18) CONNECT 57,600	Modem is configured to report the DTE speed, which is 57,600 bps.1
(19) CONNECT 115,200	Modem is configured to report the DTE speed, which is 115,200 bps.1
(22) CONNECT 75TX/1200RX	Carrier transmit 75 bps, receive 1200 bps.1
(23) CONNECT 1200TX/75RX	Carrier transmit 1200 bps, receive 75 bps.1
(24) DELAYED	For **X4**, a call fails to connect and the number dialed is considered "delayed" due to country blacklisting requirements.
(32) BLACKLISTED	Modem has dialled a telephone number that has been blacklisted, and has failed to make a connection.
(33) FAX	Fax/modem connection established in fax mode.
(35) DATA	Data modem connection established in fax mode.
(40) CARRIER 300	V.21 or Bell 103 carrier detected at 300 bps. 2
(44) CARRIER 1200/75	Carrier--transmit at 1200 bps, receive at 75 bps.2
(45) CARRIER 75/1200	V.22 or Bell 212 carrier detected at 1200 bps.2
(46) CARRIER 1200	V.22 or Bell 212 carrier detected at 1200 bps.2
(47) CARRIER 2400	V.22bis carrier detected at 2400 bps.2
(48) CARRIER 4800	V.32bis or V.32 carrier detected at 4800 bps.2
(49) CARRIER 7200	V.32bis carrier detected at 7200 bps. *2*
(50) CARRIER	V.32bis or V.32 carrier detected at 9600

9600	bps.2
(51) CARRIER 12,000	V.32bis carrier detected at 12,000 bps.2
(52) CARRIER 14,400	V.32bis carrier detected at 14,400 bps.2
(53) CARRIER 16,800	V.34 carrier detected at 16,800 bps.2
(54) CARRIER 19,200	V.34 carrier detected at 19,200 bps.2
(55) CARRIER 21,600	V.34 carrier detected at 21,600 bps.2
(56) CARRIER 24,000	V.34 carrier detected at 24,000 bps.2
(57) CARRIER 26,400	V.34 carrier detected at 26,400 bps.2
(58) CARRIER 28,800	V.34 carrier detected at 28,800 bps.2
(78) CARRIER 31,200	V.34bis carrier detected at 31,200 bps.2
(79) CARRIER 33,600	V.34bis carrier detected at 33,600 bps.2
(59) CONNECT 16,800	Modem is configured to report the DTE speed, which is 16,800 bps.2
(61) CONNECT 21,600	Modem is configured to report the DTE speed, which is 21,600 bps.2
(62) CONNECT 24,000	Modem is configured to report the DTE speed, which is 24,000 bps.2
(63) CONNECT 26,400	Modem is configured to report the DTE speed, which is 26,400 bps.2
(64) CONNECT 28,800	Modem is configured to report the DTE speed, which is 28,800 bps.2
(84) CONNECT 33,600	Modem is configured to report the DTE speed, which is 33,600 bps.2
(91) CONNECT 31,200	Modem is configured to report the DTE speed, which is 31,200 bps.2
(66) COMPRESSION CLASS 5	MNP 5 compression negotiated.2
(67) COMPRESSION V.42bis	V.42bis compression negotiated.2
(69) COMPRESSION NONE	No compression negotiated.2
(70) PROTOCOL NONE	Protocol reporting enabled using **X4** and Register **S95**, and modem has made a data connection without any error correction.2

(77) PROTOCOL LAPM	Modem has made a data connection using V.42 LAPM error correction.2
(80) PROTOCOL: ALT	Modem has made an MNP connection.2
(81) PROTOCOL: ALT-CELLULAR	Modem has made an MNP 10 connection.2

1. Response is enabled by the **V1** command and ignored when the **W1** command is in effect.
2. These negotiation-progress responses are sent when the **W1** command is in effect.