Using Dual View Mode

Single View mode is the basic display mode which displays same view on all the display devices connected to a system.

Dual View mode is the “Extended screen mode” supported in Windows, which displays separate views on each display devices connected to a system.

The default setting on your system is Single View mode.

Setting Dual View Mode

To set Dual View mode on your system:

1. Connect peripheral display device such as monitor or TV to your system and start the system.
2. Click **Start > Settings > Control Panel**.
3. Click **Display** icon . The Display Properties window appears.
4. Click the **Settings** tab. The Settings screen appears.
5. Check **Extend my Windows desktop onto this monitor**.
6. You can drag the second monitor image to position where you want your extended screen space with respect to the primary monitor (usually the LCD).

To confirm whether the system is set properly with Dual View mode:

1. Open **Display properties** and click **Settings** tab.
2. Place the cursor on the first monitor picture and click and hold over a second, a number **1** will be shown on the first actual monitor screen. And place the cursor on the second monitor picture and click and hold over a second, then digit number **2** will be shown on the second actual monitor screen.
3. The monitor displays digit number 1 is the primary monitor and number 2 is the secondary monitor.
   In **Windows explorer**, the program is displayed on the primary monitor, if you can drag it to the secondary monitor, then Duo View mode is now working properly.

The secondary monitor has a display of 256 colours (colour depth) and 640x480 pixels (resolution) at first. The colour depth and resolution of primary/secondary monitors are separately changeable.

To reset the system to Single View mode:

1. Start **Display properties**.
2. Click **Settings** tab.
3. Click the second monitor among two monitor pictures.
4. Uncheck **Extend my Windows desktop onto this monitor**.
5. Click **OK**.

Using the TV-Out Port

Using the TV-out port, a compatible TV or other compatible display device can be connected and an image displayed. No Audio is transmitted through the TV-Out port. To check if and how your TV displays the TV-out signal see the documentation included with your TV. You must also insure that (TV/Video) is changed to Video mode using the TV remote controller or the buttons on the TV set.

To enable TV-out:

1. Connect the TV to the TV-Out port using an appropriate cable.
2. Click **Start > Settings > Control Panel**.
3. Click **Display** icon . The Display Properties window appears.
4. Click the **Settings** tab. The Settings screen appears.
5. Ensure **Extend my Windows desktop onto this monitor** box is unchecked.
6. Click **Advanced** > **Display**.
7. Click the check box to the left of the text “TV”.
8. Follow the screen prompts and the LCD screen display will be duplicated on the television.

If the TV symbol is grayed out then the system has not detected a TV, check that the TV standard in the System Setup is set correctly and that the TV is turned on and connected properly. You can not use TV-out port in DOS mode.

9. Click **Apply** or **OK**.

Using Options

You can order the following options for your Notebook computer from your authorised reseller:

- An extra AC adapter.
- An auto adapter that enables you to charge the computer's battery and operate the computer while in an automobile.
- An extra battery pack.
- An upgraded hard drive. Optional hard drives are available to fit in the hard drive compartment or the Flex-Bay.
- 128, 256 and 512 MB DDR SDRAM memory modules that enable you to upgrade your computer's memory to a maximum of 1 GB.
- A CD-ROM drive module (CD Only or CD R/W).
- DVD/CD-RW Combo drive:
- A DVD-ROM drive module.
- A Superdisk LS-120 drive.
- Docking options that enable you to use your computer like a desktop computer.
- Wireless LAN
- IrSTICK ™

The options that are available may change periodically. Contact your reseller for updated information on current and new options.

Memory Modules

You can increase system memory by installing optional memory modules. You can install a 128 256 or 512 MB modules.

To avoid possible system problems, use only approved memory modules in your computer.

Before You Install Memory

To prevent personal injury and damage to the equipment, follow the precautions listed here before installing a memory module.

Take the following precautions when installing a memory module:

- Before you remove the memory module compartment door, turn off the computer, unplug the power cord, and remove the battery. Also, disconnect any peripheral devices.
- Before handling a memory module, discharge any static electricity by touching a grounded surface or using a grounding wrist strap.
- Do not insert objects with conductive material, such as metal screwdrivers or graphite pencils, into the memory-module compartment.
- Be careful in handling the metal plate of the memory door.

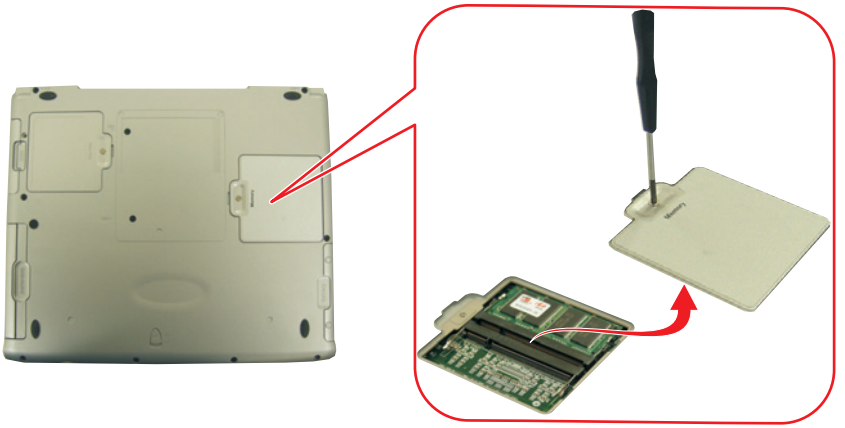
Installing a Memory Module

Handle a memory module carefully. Hold them only by the edges.

To install a memory module:

1. Turn the computer over so that the bottom faces up.

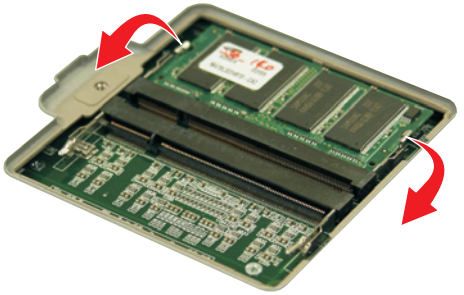
2. Using a screwdriver, remove the screw that holds the memory-module compartment door in place.



3. Grasp the edge of the door and pull the door off the chassis.
4. Remove installed modules if necessary:

Memory Module Precautions:
When removing the module, pull on the plastic portion of the connector slot tabs only. Do not pull on the metal part of the tabs, this may damage the tabs.

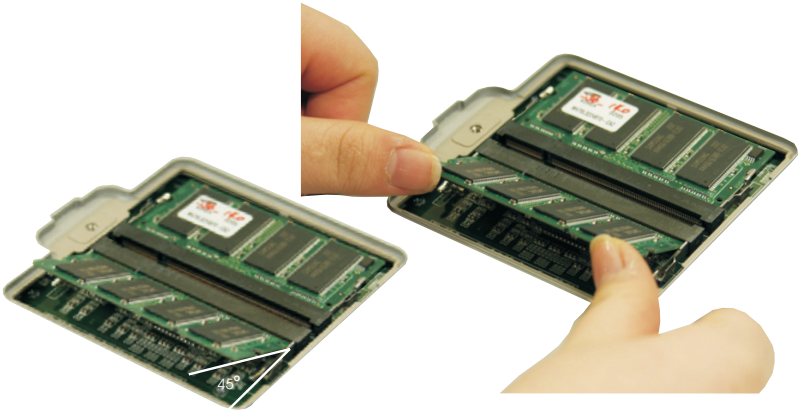
a. Pull the plastic tabs on the connector slot outward slightly, until the edge of the memory module pops up.



b. Hold the memory module by the edges and pull it carefully out of the compartment.

5. Align the connector on the memory module with the connector of the slot.

6. Push the memory module into the slot at a slight angle until the connectors are fully engaged.



7. Push down on the edge of the memory module until the module snaps into place.
8. Align the memory module compartment door with the compartment and push the door down until it snaps into place.
9. Reinstall the screw you removed in step 2.
10. Turn on the computer and perform a complete POST to check the memory integrity.

Docking Options

Contact your reseller for a list of docking options available for your Notebook computer. User's manuals are included with the docking options.

Wireless LAN

The wireless LAN option allows easy connection to large or small office networks while also providing freedom from the constraints of cables and sockets.

To setup and use the Wireless LAN, Please refer to the user manual provided with the option at the time of purchase.

Troubleshooting

Complete the following in the order presented until your system is functioning properly. If all of the steps below fail then contact your local reseller for assistance.

Questions and Answers

Please see "Questions and Answers" on page 68 for assistance in correcting any computer operational problems.

Check the Connections

Verify all of the power and peripheral cables are securely plugged into their sockets and that your system and power supply is on.

Norton AntiVirus

Run Norton AntiVirus to insure a virus is not affecting your computer.

To run Norton AntiVirus proceed as follows:

Click **Start > Programs > Norton AntiVirus > Norton AntiVirus 2002**

Windows Help and Support

Run Windows Help and Support to find problem that may be affecting your computer.

To run Windows Help and Support proceed as follows:

Click **Start > Help**

Reinstalling Software

If for some reason your system crashes you may corrupt your HDD, Windows Operating system and/or some of your device drivers. If this is the case, use **System Recovery CD** to reinstall **OS** and **System Software CD** to reinstall the corrupt device drivers.

System Recovery Precaution:
Before you start restoring your windows operating system insure you backup all data on your hard drive.
Samsung is NOT responsible for any data loss.

Operating System Problems

Problem	Action
The computer does nothing when you turn it on.	Has the battery run down? Connect the power cord to the computer and recharge the battery. Try turning on the computer again.
Some of the letter keys type numbers instead of the indicated letters.	Is the Num Lock light on? If so, the numeric keypad on the keyboard is active. To return the keypad keys to typing letters, press <Num Lock>.
Battery power seems to run out faster than expected.	If you are running the computer from the battery rather than the power cord, make sure that you set the Idle Mode field in System Setup to On. This setting enables the microprocessor and the hard drive to slow down when the computer is not busy.
Certain software programs "hang" during operations when there is no interaction with the keyboard or peripheral devices.	Your computer may be in Suspend or Rest mode. Tap the touchpad to resume from Suspend or press the power button to resume from rest.
PC Card does not work correctly.	Make sure that the PC Card is inserted left side up in the PC Card slot. Check that the card is inserted fully into the slot. If you are using a PC Card modem, check the modem cable connections.
Your ATA or Compact Flashcard do not work.	A patch is provided for these cards on the Recovery CD
The System Setup settings are not retained when you turn off the computer.	The CMOS battery inside the computer may need to be replaced. The CMOS battery provides power to save the system BIOS information when the computer is turned off. Normally, the CMOS battery lasts for several years. Do not attempt to open the chassis and replace this battery yourself or your warranty is void. Have an authorized the manufacturer's service center replace the CMOS battery.

Problem	Action
No sound.	Verify if the mute check box is checked or the volume is not turned down in the pop up menu by clicking the speaker icon of the task bar.
System/BIOS behaves erratically	If you caused an abnormal power interruption (i.e.. removing battery while on battery power), you may cause BIOS data corruption.

Video Problems

Problem	Action
Nothing appears on the LCD panel when you turn on the computer.	Adjust the brightness on a TFT LCD. Are you using an external monitor? If so, press <Fn+F5> to return to the LCD panel.
Error Message when entering Power Management while in Multimonitor mode.	If the secondary monitor is set to 256 colours, this error message could appear. Change the colour of the secondary monitor to 'high colour (16 bit)'.
Nothing appears on the external monitor when you switch the display to it.	Is the monitor properly connected to the computer? Is the monitor's power cord connected to an AC wall outlet? Check the brightness and contrast controls on the monitor. Does the program appear on the LCD panel instead of the external monitor? If so, press <Fn+F5> to switch to the monitor. Try turning the monitor off and on again.
Only the LCD Display works when system returns from Power management mode while in Multimonitor mode.	The system resets to the original BIOS setup when the system returns from the power management mode. If the Display mode, in the Advanced menu of BIOS setup is set to LCD, then only the LCD will be turned on when the system wakes up. Set the Display mode in the BIOS to Both to turn on the LCD & CRT on wakeup.
The external monitor displays flashes or waves.	Check the cables between the monitor and the computer. Are they properly installed?

Problem	Action
Cannot toggle between CRT and LCD while playing the 3D game.	If you are using the Multimonitor mode, you can not use the <Fn+F5> key combination and also you cannot use this function in 3D games using Direct-X.
There is LCD or CRT has noise (speckles, lines or raged edges) on the picture when playing a MPEG file with the Media player/ DVD software or using the USB camera.	Adjust the resolution and the colour to 1400 x 1050 and 32 bit to display clearly, or avoid playing two programs at the same time.
In DOS mode the CRT/LCD button does not work.	The LCD only mode is not supported using this Key combination.
If the connected CRT monitor display is not steady.	If the refresh rate is not optimal for the connected CRT, then this problem may occur. **To correct this problem do the following:** **1.** Click **Start** > **Settings** > **Control Panel.** **2.** Double Click the **Display** icon to open the **Display properties**. **3.** Select **Settings** **4.** Click the **Advanced** button. **5.** Click the Adapter tab **6.** Adjust the Refresh rate to optimal or other selections until you see the CRT clearly.

Modem Problems

Problem	Action
My modem doesn't connect to services or disconnects during communication	If your modem has difficulty in connecting to on-line services and sustaining communications, first check if other devices are connected and remove them. Also remove any extension leads. Interference from certain devices or poor line power conditions may degrade the quality of your connection. Under these conditions gradually reduce the communication speed of your modem until a reliable connection is achieved. Check with your on-line service provider.
When using a PBX phone system I can't dial on my modem.	If you use a PBX phone system you may need to press a number i.e. '9' to connect to an external line, you should enter the following command before trying the connection and check modem initialization. (***ATX3&W***) And add "9," as the external line prefix (example) of the phone number when using the dial command "***ATDT9, 123-4567***".
Screen displays random or garbage characters during communications.	After your modem has connected to the on-line service, your screen may display garbage characters or after-images in screen transitions. This problem is caused by a mismatch of the terminal modes between communications service and communications programs. You need to match the terminal modes to each other. Refer to the user's guide of the communications program you're using.
Reports error message that insufficient Hard Disk space is available.	Delete the unnecessary messages or data you received by Modem or Fax every one to three months as required. If you're using the internet, many picture and data files can get downloaded to your HARD DISK every time you visit a home page, which will consume a lot of your HARD DISK space. For more detailed information about the method of deleting, refer to the help of the Web browser you've been using or your user's guide.

FAX Problems:
Depending on telephone line status, or types of Fax machines/programs that send/receive the Fax, Fax transmission/reception may not work correctly. In that case, please try other Fax programs. (e.g. Win Fax)

Reinstalling Software

Windows Application/Driver (Re)Installation

If you wish to reinstall drivers or applications, please use the **Software CD.**

If you wish to reinstall the Windows operating system, please use the **Recovery CD.**

Windows (Re)Installation

The following instructions explain how to restore your Operating System, Applications and Drivers to factory settings, should this be required.

Please note that this operation will delete everything from your hard disk. Please back up your data. Samsung is NOT responsible for any data loss.

To reinstall your Microsoft® Windows® 2000 OS:

1. Start your computer.
2. Open CD Drawer and insert Recovery CD. Close the drawer. Restart computer.
3. When the Recovery Menu appears, select the option as required. Be aware, selecting No. 1 will destroy your data.
   1. *Restore Manufacturer's originally preinstalled*
   2. *Exit to DOS Prompt*

If the Recovery Menu does not appear, proceed as follows:

1. Start your computer.
2. During the Boot Sequence, Press **<F2>** to enter System Setup.
3. Insert the *System Recovery CD-ROM.*
4. Enter the Boot Menu.
5. Select the Boot Device Priority menu option, press **<Enter>**. Ensure that CDROM Drive is first on the list.
6. Press **<F10>** to save and exit System Setup and confirm *Yes* by pressing **<Enter>**.

7. When the Recovery Menu appears, select the option as required. Be aware, selecting No. 1 will destroy your data.

   1. *Restore Manufacturer's originally preinstalled*
   2. *Exit to DOS Prompt.*

Driver Problems / Driver (Re)Installation

This section will discuss driver problems due to system crashes, accidental file deletion, etc. Generally you will simply reinstall the driver. More detail is provided in the sections below.

Cable LAN Driver (Re)Installation

Before you begin verify that the "Intel(R) PRO/100 VE Network Connection" is installed otherwise you will have to install it.

Windows 2000 has its own PCI Ethernet Adapter driver, simply install the LAN driver according to the instructions below.

1. Click **Start** > **Settings** > **Control Panel.**
2. Double-Click the **System** icon.
3. Click the **Hardware** tab **> Device Manager** button.
4. Double-Click the **Network Adapters** in the list area.
5. Click **Update Driver** in the **Driver tab**.
6. Click **Next**.
7. Select **Display a list of the known drivers in a specific location, so that I can** choose a specific driver.
8. Click **Next**.
9. Click **Have Disk**. (Insert the System Software CD in the CD Drive)
10. Click **Browse**
11. Type "D:\Win2000\Drivers\LAN\" in the "Copy manufacturer's files from:"
12. Select the "Intel(R) PRO/100 VE Network Connection"
13. Click **OK**.
14. Verify the "Intel(R) PRO/100 VE Network Connection" is displayed on the device wizard.
15. Click **Next**.
16. Click **Finish**. (Windows has finished (re)installing an updated driver for your hardware device).

Wireless LAN Driver (Re)Installation

Once you insert Wireless LAN Mini-PCI card into computer, the Operating System will automatically detect the card and start the “Add New Hardware wizard” and prompt you to install the driver.

Hardware wizard does not appear

If Add new Hardware wizard does not appear, Start the proceedure below otherwise start at step 8

1. Click **Start > Settings > Control Panel**.
2. Double-Click the System icon.
3. Click the Hardware tab > Device Manager button.
4. Double-Click the Other Devices in the list area.
5. Select the "Lucent_Technologies WaveLAN/IEEE" and Click Right mouse button.
6. Click Uninstall from menu and OK for Device Removal.
7. Click Scan for hardware changes in the top of the Device Manager.
8. Click **Next** in the Found New Hardware Wizard.
9. Select Search for a suitable driver for my device.
10. Click **Next**. (Insert the System Software CD in the CD Drive)
11. Only select Specify a location, and Click Next.
12. Click Browse to specify the desired driver location or type “D:\Win2000\Drivers\WirelessLAN\” in the “Copy manufacturer’s files from:”
13. Click **OK**
14. Click **Next** in the Driver Files Search Results window
15. Click **Cancel** in the Add/Edit Configuration Profile window.
16. Click **Finish**. (Windows has finished (re)installing an updated driver for your hardware device).

In Windows 2000, you need to install Microsoft Windows 2000 HotFix Q296872. The Patch file is located on the System Software CD. (D:\Win2000\Drivers\WirelessLAN\Patch)

If you installed Windows 2000 using System Recovery CD, you don't need to install it.

Wireless LAN Client Manager (Re)Installation

1. Click **Start > Run**
2. Click Browse and specify the “D:\WirelessLANApps\setup.exe” in the System Software CD
3. Click **OK**
4. Please follow the installation instructions.

Sound Driver (Re)Installation

When you add a new sound device Windows 2000 will recognize the addition of *PCI Multimedia Audio Device* and start the driver (re)installation process automatically.

This also applies to reinstallation if problems occur.

When Windows 2000 automatically detects a 'PCI Multimedia Audio Device', click **Next** and **Finish**.

1. Insert the **System Software** CD-ROM.
2. Click **Start** > **Settings** > **Control Panel**.
3. Double-Click the **System** icon.
4. Choose the **Hardware** tab > **Device Manager** button.
5. Select **Sound**, **Video** and **Game controller** and Right click **ESS Maestro3 PCI Audio (WDM)**.
6. Click **Properties**.
7. Click the **Driver** tab > **Update Driver** button.
8. Click **Next**.
9. Click **Next**.
10. Check **Specify a location** and type (ex D:\Win2000\Drivers\Audio).
11. Click **Next**.
12. Click **Next** when the dialog appears saying that Windows is now ready to (re)install the driver.
13. Click **OK** when the dialog appears saying that Windows has finished installing.
14. Restart the system to update your files.

Video Driver (Re)Installation

If your system crashes and you have to reinstall Windows 2000 you will have to reinstall the Mobility Radeon Video Driver.

To reinstall the driver complete the following steps:

1. Insert **System Software CD-ROM** to CD-ROM drive.

2. Click **Start** > **Settings** > **Control Panel**.
3. Double-Click **System** icon.
4. Click **Settings** >**Advanced** in **Display Properties**.
5. Click the **Adapter** tab > **Properties** button > Select **Driver** tab > Click **Update Driver** button.
6. Click **Next**
7. Click **Next**
8. Select **Specify a location** and input "(ex D:\Win2000\Drivers\Video)".
9. Click **Next**
10. Click **Next**
11. Restart your system.

Specifications

Dimension	
* LCD viewing area	
LCD viewing area (15” TFT)	304.8 x 228.6 mm
Width	32.4 cm
Depth	27.2 cm
Height	4.1 cm
Weight (with integrated floppy drive, Li-Ion battery & 14.1” TFT LCD & weight saver)	3221 g
Environment	
Ambient temperature, operating	10°–32°C
Ambient temperature, storage	-5°–40° C
Relative humidity (noncondensing), operating	20–80%
Relative humidity (noncondensing), storage	5–90%
Altitude, operating	0 to 2,348 m
Altitude, storage	0 to 12,192 m
Shock, operating	10 G for 11 ms half sine
Shock, nonoperating	60 G for 11 ms half sine
Lithium-Ion Smart Battery	
Normal Weight	500g
Nominal open circuit voltage	11.1 VDC
Capacity, typical	6450 mAhr, 72.0whr
Charging time, approximate, with computer turned off, typical	3.0 hr
Charging time, approximate, with computer turned on , typical	7.0 hr
Average battery life, with power management enabled	3.0 hr
External AC Adapter	
Operating voltage	100-240 VAC
Line frequency	50-60 Hz
Input current	1.5 A 100 V ~ 0.8 A 240 V
Output current	4.2 A
Output voltage	19.0 VDC

Abbreviations

A . . . . . Amperes
AC . . . . . Alternating current
ACPI . . . . . Advanced Configuration and Power management Interface
APM . . . . . Advanced Power Management
ATA. . . . . AT attachment (refers to the hard-drive interface in an AT-compatible computer)
ATAPI. . . . . AT attachment packet interface
BBS . . . . . Bulletin board system
BIOS . . . . . Basic input/output system
C . . . . . Centigrade
CD . . . . . Compact disc
CD-ROM . . Compact disc read-only memory
cm . . . . . Centimeters
COM . . . . . Communication (as in communication port)
CMOS . . . . . Complementary metal-oxide semiconductor
DC . . . . . Direct current
DMA . . . . . Direct memory access
DPMS . . . . . Display power-management signaling
DRAM. . . . . Dynamic random access memory
DSTN . . . . . Double layer super twist nematic
ECP . . . . . Extended capabilities port
EPP . . . . . Enhanced parallel port
g . . . . . gram
G . . . . . Gravity
GB . . . . . Gigabytes
hr . . . . . hour
Hz . . . . . Hertz
IDE . . . . . Integrated drive electronics
I/O . . . . . Input/output
IRQ . . . . . Interrupt request line

ISA . . . . . Industry Standard Architecture
KB . . . . . Kilobytes
kg . . . . . Kilograms
LAN . . . . . Local-area network
lb. . . . . . Pounds
LBA . . . . . Logical block addressing
LCD . . . . . Liquid-crystal display
m . . . . . Meters
mA . . . . . Milliampere
mAhr . . . . . Milliampere hour
MB . . . . . Megabyte
mm . . . . . millimeter
MPEG . . . . . Motion Picture Experts Group
MPU . . . . . Microprocessor unit
ms . . . . . Millisecond
PDF . . . . . Portable document format
PC . . . . . Personal computer
PCI . . . . . Peripheral component interconnect
PCMCIA . . . Personal Computer Memory Card International Association
POST . . . . . Power-on self-test
PNP . . . . . Plug and play
PS/2 . . . . . Personal System/2
RAM . . . . . Random-access memory
ROM . . . . . Read-only memory
SVGA . . . . . Super video graphics array
TFT . . . . . Thin-film transistor
USB . . . . . Universal serial bus
V . . . . . Volt
VAC . . . . . Voltage alternating current
VCC . . . . . Voltage collector current
VDC . . . . . Voltage direct current
whr . . . . . Watt hour

Glossary

AC adapter

The AC (or alternating current) adapter regulates current coming into your computer from the wall outlet. The current at the wall outlet is alternating current and needs to be changed by the adapter to DC (direct current) before your computer can use it for power.

ACPI

ACPI (Advanced Configuration and Power Interface)- a method for describing hardware interfaces in terms abstract enough to allow flexible and innovative hardware implementations and concrete enough to allow shrink-wrap OS code to use such hardware interfaces.

BIOS

BIOS stands for basic input/output system. The BIOS is software (often called firmware) that is independent of any operating system. It enables the computer to communicate with the screen, keyboard, and other peripheral devices without using programs on the hard disk.

The BIOS on your computer is flash BIOS, which means that it has been recorded on a flash memory chip that can be updated if needed.

Boot

To start your computer. A cold boot resets the entire computer and runs through all computer self-tests. A warm boot clears out computer memory only.

Boot disk

A disk containing operating system programs required to start your computer. A boot disk can be a floppy disk, hard drive, or compact disc.

Byte

The basic unit of measure for computer memory. A character—such as a letter of the alphabet—uses one byte of memory. Computer memory is often measured in kilobytes (1,024 bytes) or megabytes (1,048,576 bytes).

Each byte is made up of eight bits. For more information on bytes and bits, see an introductory book on computers.

Cache memory

Cache is very fast, zero-wait-state memory located between the microprocessor and main memory. Cache reduces the average time required by the microprocessor to get the data it needs from the main memory by storing recently accessed data in the cache.

CardBus

CardBus technology enables the computer to use 32-bit PC Cards. Hardware in the computer and the Windows operating system provide support for the 32-bit cards. The voltage of 32-bit cards (3.3 volts) is lower than that of 16-bit cards (5 volts). The 32-bit cards can transmit more data at a time than the 16-bit cards, thus increasing their speed.

CMOS memory

CMOS (complementary metal oxide semiconductor) memory is powered by the CMOS battery. The System Setup settings and other parameters are maintained in CMOS memory. Even when you turn your computer off, the information in CMOS memory is saved.

COM port

COM stands for communication. COM ports are the serial ports in your computer.

Compact Disc

A compact disc (CD).

Conventional memory

The first 640 KB of system memory. Operating systems and application programs can directly access this memory without using memory-management software.

Disk

The device used by the computer to store and retrieve information. *Disk* can refer to a floppy disk, hard disk, or RAM disk.

Disk cache

A software device that accumulates copies of recently used disk sectors in RAM. The application program can then read these copies without accessing the disk. This, in turn, speeds up the performance of the application.

A cache is a buffer for transferring disk sectors in and out of RAM. Data stored in a disk cache is a copy of data already stored on the physical disk.

DMA (direct memory access)

A method of transferring data from a device to memory without having the data pass through the microprocessor. Using DMA can speed up system performance.

DPMS

Display Power Management Signalling. Displays or monitors that comply with this can be managed by the Power Management features found in the system setup.

Floppy disk

A removable disk, also called *floppy* or *diskette*.

Hard drive

Also called *fixed* disk. A hard drive is connected to the computer and can be installed or removed. Data written to a hard drive remains until it is overwritten or corrupted.

The 2.5-inch hard drive in your computer was designed for use in a notebook computer. Because hard drives in notebook computers are smaller than those in desktop computers, their maximum storage capacity may be less than that of desktop hard drives. However, because of their smaller size, the drives handle shock and vibration better than larger drives, which is important for a notebook computer.

I/O

Input/output. Refers to peripheral devices, such as printers, that are addressed through an I/O address.

I/O address

I/O stands for input/output. Peripheral devices, such as printers, are addressed through the I/O port address.

IRQ (interrupt request line)

The IRQ is a hardware line that a device uses to signal the microprocessor when the device needs the microprocessor's services. The number of IRQs is limited by industry standards.

LCD (liquid-crystal display)

The LCD screen on your computer differs from the display screen of a desktop monitor. Most desktop monitors use CRT (cathode-ray tube) displays, which work by moving an electron beam across phosphor dots on the back of the screen. The phosphor dots light up to show the image. LCDs use a liquid-crystal solution between two sheets of polarizing material. Electric current passing through the liquid aligns the crystals so that light can or cannot pass through them, creating an image.

MB (megabyte)

1,024 kilobytes.

Megabit

1,048,576 bits or about 128 kilobytes.

Operating system

A program that supervises the computer's operation, including handling I/O. Application programs and users can request operating-system services. A user might request operation-system services to copy files or format a disk. An application program might use the operating system to obtain keyboard input, write data to a file, or write data to a screen.

PC Card

PC Card stands for personal computer card. The Personal Computer Memory Card International Association (PCMCIA) defines the standards used to develop all PC Cards. PC Card types include: modems, Ethernet adapters, SCSI adapters, ATA cards, and memory cards.

PC slot

The PC slot is the hardware slot in the computer where the PC Card is placed.

Pixel

A pixel is an individual dot in a graphic displayed on your computer. The pixels are so close together that they look as though they are connected. An LCD screen displays thousands or millions of pixels.

Plug and Play

A plug and play operating system automatically configures computer components to work with your system. With this type of operating system, you normally do not need to set jumpers on devices or set memory addresses or IRQs.

RAM (random access memory)

The computer's system memory, including conventional and extended memory. You can write to and read from RAM. Information stored in RAM is temporary, and is erased when the system is turned off.

Refresh rate

The refresh rate is the rate at which the image on the LCD screen is rewritten to the screen. A fast refresh rate helps keep the image from flickering.

Resolution

The resolution is the sharpness or clarity of the image on your LCD screen. Resolution is measured by the number of pixels the computer’s screen can display. For example, a resolution of 800 x 600 means that the screen can display 800 pixels in row and can display 600 rows. The more pixels displayed, the higher the resolution and the better the image.

ROM (read-only memory)

Permanent computer memory dedicated to a particular function. For example, the instructions for starting the computer when you first turn on power are contained in ROM. You cannot write to ROM. (ROM is not the same as RAM).

Sector

Also known as *disk sector*. The portion of a track that is numbered and can hold a specified number of characters (usually 512 KB).

Shadow RAM

A write-protected area of RAM that contains a copy of the BIOS. As the computer boots, the BIOS is copied from its permanent location in ROM to RAM. The BIOS can be executed much faster in RAM than in ROM. The BIOS remains in shadow RAM until you turn off the computer.

TFT (thin film transistor) LCD

A TFT LCD uses a separate transistor circuit to control each pixel. This technology provides the best resolution for an LCD screen. A TFT LCD is also sometimes called an active matrix LCD.

Zoomed video

Zoomed video technology enables zoom video PC Card to transfer data directly from the card to video and audio systems without going through the microprocessor. This process improves video performance. Video conferencing and real-time multimedia devices, such as video cameras, are supported by zoom video.