

# Using Options

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

- An extra AC adapter.
- A battery pack. [Standard or Long Life size]
- 32, 64, 128, 256 and 512 MB SDRAM memory modules that enable you to upgrade your computer's memory to a maximum of 640MB.
- A CD-ROM drive module. [5.25" Multi-bay]
- A DVD-ROM drive module. [5.25" Multi-bay]
- A CD/DVD-ROM drive module. [5.25" Multi-bay]
- A CD-RW/DVD Combo drive module. [5.25" Multi-bay]
- 2nd HDD Pack [5.25" Multi-bay]

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

## Memory Module

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You can increase system *memory* by installing an optional 32, 64, 128, 256 or 512 MB memory module.

### 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.



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

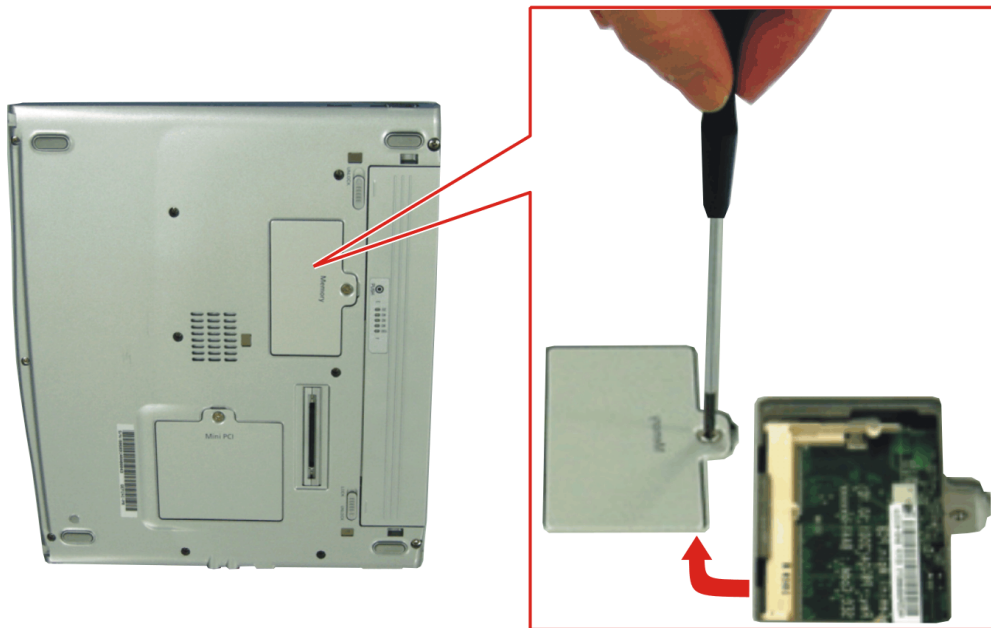
## Installing a Memory Module



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

### To install a memory module:

1. Turn off the computer, unplug the AC adapter and remove the battery.
2. Turn the computer over so that the bottom faces up.
3. Using a screwdriver, remove the screw that holds the memory-module compartment door in place.



4. Grasp the edge of the door and pull the door off the chassis.



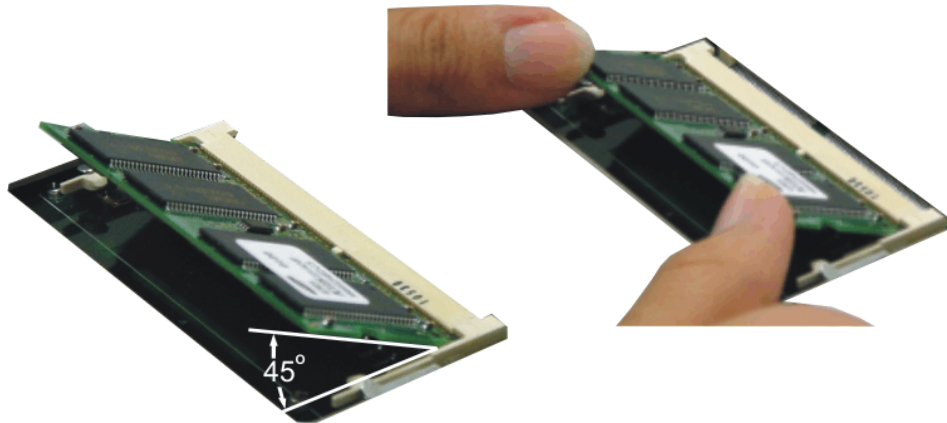
### Memory Module Precautions:

When removing the module, pull on the plastic portion of the connector slots tabs only. Do not pull on the metal part of the tabs, this may damage the tabs.

5. Remove the installed module if necessary.
  - a. Pull the 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 forward out of the compartment.
6. Align the connector on the memory module with the connector of the slot.
7. Push the memory module into the slot at a slight angle until the connectors are fully engaged.



8. Push down on the edge of the memory module until the module snaps into place.
9. Align the memory module compartment door with the compartment and push the door down until it snaps into place.
10. Reinstall the screw you removed in step 2.
11. Re-install the computer battery and plug in the AC adapter.
12. Turn on the computer and perform a complete POST to check the memory integrity.

# Troubleshooting

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If you ever have difficulty running your computer, follow these steps:

1. Consult the following sections for advice on how to handle system problems.
2. Refer to warnings, cautions and notes within applicable portion of this manual.
3. Refer to “Windows” and other “Program” manuals as applicable.
4. If steps 1 to 3 do not resolve the problem, contact the Samsung Helpline.

## Operating Problems

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<b>Problem</b>	<b>Action</b>
<b>The computer does nothing when you turn it on.</b>	Has the battery run down? Connect the power cord to the computer and recharge the battery. Try turning on the computer again.
<b>Some of the letter keys type numbers instead of the indicated letters.</b>	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>.
<b>Battery power seems to run out faster than expected.</b>	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.
<b>Certain software programs “hang” during operations when there is no interaction with the keyboard or peripheral devices.</b>	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.
<b>PC Card does not work correctly.</b>	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.
<b>Your ATA or Compact Flashcard do not work.</b>	A patch is provided for these cards on the Recovery CD

<b>Problem</b>	<b>Action</b>
<b>The System Setup settings are not retained when you turn off the computer.</b>	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.
<b>No sound.</b>	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.
<b>System/BIOS behaves erratically</b>	If you caused an abnormal power interruption (i.e., removing battery while on battery power), you may cause BIOS data corruption.

## Video Problems

<b>Problem</b>	<b>Action</b>
<b>Nothing appears on the LCD panel when you turn on the computer.</b>	Adjust the brightness on a TFT LCD. Are you using an external monitor? If so, press <Fn+F5> to return to the LCD panel.
<b>Error Message when entering Power Management while in Multimonitor mode.</b>	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)'.
<b>Nothing appears on the external monitor when you switch the display to it.</b>	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.
<b>Only the LCD Display works when system returns from Power management mode while in Multimonitor mode.</b>	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.

<b>Problem</b>	<b>Action</b>
<b>The external monitor displays flashes or waves.</b>	Check the cables between the monitor and the computer. Are they properly installed?
<b>Cannot toggle between CRT and LCD while playing the 3D game.</b>	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.
<b>There is LCD or CRT has noise (speckles, lines or ragged edges) on the picture when playing a MPEG file with the Media player/ DVD software or using the USB camera.</b>	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.
<b>In DOS mode the CRT/LCD button does not work.</b>	The LCD only mode is not supported using this Key combination.
<b>If the connected CRT monitor display is not steady.</b>	<p>If the refresh rate is not optimal for the connected CRT, then this problem may occur.</p> <p><b>To correct this problem do the following:</b></p> <ol style="list-style-type: none"> <li><b>1.</b> Click <b>Start &gt; Control Panel &gt; Appearance and Themes.</b></li> <li><b>2.</b> Double Click the <b>Display</b> icon to open the <b>Display properties.</b></li> <li><b>3.</b> Select <b>Settings</b></li> <li><b>4.</b> Click the <b>Advanced</b> button.</li> <li><b>5.</b> Click the Adapter tab</li> <li><b>6.</b> Adjust the Refresh rate to optimal or other selections until you see the CRT clearly.</li> </ol>

## Modem Problems

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<b>Problem</b>	<b>Action</b>
<b>My modem doesn't connect to services or disconnects during communication</b>	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.
<b>When using a PBX phone system I can't dial on my modem.</b>	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. ( <i>ATX3&amp;W</i> ) And add "9," as the external line prefix (example) of the phone number when using the dial command " <i>ATDT9, 123-4567</i> ".
<b>Screen displays random or garbage characters during communications.</b>	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.
<b>Reports error message that insufficient Hard Disk space is available.</b>	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)

## Windows & Device Drivers

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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.



The System Recovery CD is used to reinstall the OS and the System Software CD for a new HDD or to recover from a system crash.

### Windows Driver (Re)Installation

**Simply install the driver(s) according to the instructions below:**

1. Insert the **System Software CD-ROM**.
2. Follow the directions provided in the opening window.



Samsung may, from time to time, issue updated drivers. These are posted on the Samsung Support website at [www.samsungpc.com](http://www.samsungpc.com)

When updating drivers, please select the “Supported” driver with the *highest* revision number.



# Specifications

## Dimension

LCD viewing area	12.1"
System (PC Only)	27.3 cm (w) x 22.8-23.4 cm (d) x 21-23.9 cm (h)
System Docked	27.4 cm (w) x 23.8 cm (d) x 21.0 cm (h)
Total Weight	2.24 Kg

## 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	Long Life	Standard
Normal Weight	460g	200g
Nominal open circuit voltage	7.4 VDC, 7800 mAh	7.4 VDC, 3600mAh
Capacity, typical	58.0 whr	26.64 whr
Charging time, approximate, with computer turned off, typical	~3.0 hr	~1.5 hr
Charging time, approximate, with computer turned on, typical	~5.0 hr	~2.5 hr
Average battery life, with no power management enabled	~5.0 hr	~2.0 hr

## External AC Adapter

Operating voltage	100-240 VAC
Line frequency	50-60 Hz
Input current	1.2 A 100 VAC ~ 0.6 A 240 VAC
Output current	3.2 A
Output voltage	12.0 VDC

# Abbreviations

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**Your computer's documentation uses the following abbreviations:**

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

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## **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.

**Intel® SpeedStep™**

Intel® SpeedStep™ will control the CPU speed on your system according to the source of power. (such as AC or DC power)

**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 800x600 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.