Starting System Setup

To start System Setup, turn on your computer and then press **<F2>** and hold until the System Setup screen appears.

Table 3. System Setup Menus

Menu	Function
Main	Changes the basic system.
Advanced	Configures advanced features on your computer.
Security	Enables security features, including passwords.
Boot	Specifies the order of boot devices and configures boot features.
Exit	Specifies how to exit System Setup.

To open the menu you need to use, use the left or right arrow keys to select the menu name.

Table 4. System Setup Navigation Keys

Navigation Key	Function
<F1>	Displays the General Help window.
<Esc>	Exits the current menu.
<Up Arrow> or <Down Arrow>	Moves the cursor up and down between fields.
<Left Arrow> or <Right Arrow>	Selects different menus. Pressing the **<Esc>**key at the Main menu brings you to the Exit menu.
<F5>	Scrolls backwards through the options for the highlighted field.
<F6>	Scrolls forward through the options for the highlighted field.
<F9>	Sets the parameters for the current menu to their default values.
<F10>	Save changes and exit system setup.
<Enter>	Executes commands or opens a submenu.

Changing Booting Priority

The Boot menu in System Setup enables you to select the booting device and to set booting options.

Boot Device Priority field enables:
You to select the order in which the computer attempts to boot from different devices. The field has four (4) options: **CD-ROM Drive, Removable Devices, Hard Drive and MBA UNDI (Bus2 Slot5).**

To change the booting device priority, choose the device positions by completing the following:

1. At startup, press **<F2>** to open **System Setup**.
2. Use **<Right Arrow>** to select the **Boot** menu.
3. Press <**Enter**> to enter **Boot Options**.
4. Highlight the 1st Boot Device option with **<Up Arrow>** or **<Down Arrow>** keys.
5. Press **<F6>** key until the option moves up in the list to the desired position **or** press **<F5>** key until the option moves down in the list to the desired position.
6. Press **<F10>** to exit and save your changes.
7. Press **<Enter>** again to restart the computer.

Configuring the Password

Setting the Supervisor Password

By configuring a supervisor password, you can restrict system access to authorized users only.

1. Select the Security menu in the System Setup. To enter System Setup, see “Starting System Setup” on page 54.
2. On the **Set Supervisor Password** item, press **<Enter>**.
3. Enter a password, press **<Enter>**, re-enter the password for confirmation, and press **<Enter>** again.
4. When a message confirming the password configuration appears in the [Setup Notice] window, press **<Enter>**.

Setting the User Password

You can configure user passwords so that other users can use the system.

Before configuring a user password, a supervisor password must have been configured.
Users can start the system with their user password, but cannot enter into the System Setup.
Deactivating the supervisor password also deactivates the user password.

On the **Set User Password** item, press **<Enter>**, and complete step 3-4 of "Setting the Supervisor Password".

Activating the Booting Password

Before activating the booting password, the supervisor password must have been configured.

Set the **Password on boot** option to [Enabled].

From now on, system booting will not proceed without the password.

Activating the Hard Disk Drive Password

Activating the hard disk drive password prevents the currently installed hard disk drive from being used in other systems.

Before activating the hard disk drive password, the supervisor password must have been configured.

On the **Set HDD 0 Password** item, press **<Enter>**, and complete step 3-4 of Configuring the Supervisor Password.

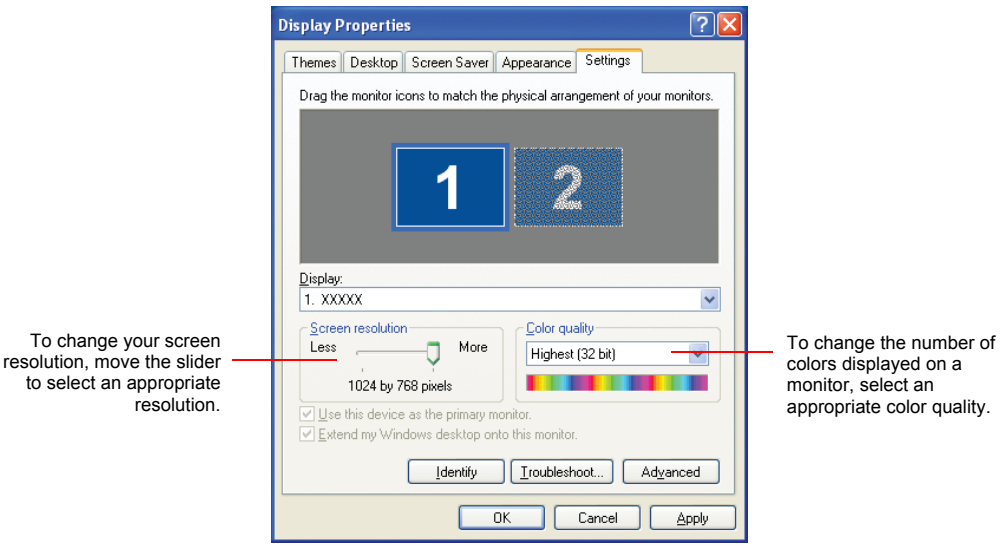
Deactivating the Password

1. On the password to delete, press **<Enter>**. (e.g. supervisor password)
2. Enter the current configured password, and press **<Enter>**.
3. Leave the 'New Password' and 'Confirm New Password' field empty, and press **<Enter>** to deactivate the password.

Configuring Resolution and Color Depth

Screen resolution is the number of pixels displayed on the screen. High resolution makes the overall screen area large, although individual items appear small. Color quality is determined by the number of bits used to represent a pixel on the screen. High color quality displays more number of colors on your screen.

1. Select **Start > Control Panel > Appearance and Themes > Change the screen resolution**.
2. Make changes on the **Settings** tab of the [Display Properties] dialog.



3. When you have completed configuration, click **Apply**.

It is recommended setting the resolution to 1024x768, and the number of colors to Highest (32bit).

Adjusting the LCD Brightness

There are 9 levels of LCD brightness (1: Dimmest ~ 9: Brightest). The default LCD brightness setting is level 5. Whenever you change the power source, the brightness level is changed to the following setting:

- When operating on AC power : Level 9 (Brightest)
- When operating on battery power : Level 3 (Slightly dimmer)

Once the LCD brightness has been changed, the changed setting will be maintained after restarting the computer. When the power source is changed (AC to battery or battery to AC) while in operation, both the default brightness settings described above will be restored.

You can adjust the LCD brightness by pressing **<Fn+Up Arrow>** or **<Fn+Down Arrow>** on the keyboard.

SIC (Smart Inverter Control) Function

SIC is a function that adjusts the LCD brightness automatically when the system is operating on battery power so that you can use the battery for a long time.

SIC function is activated as a default. If you feel the screen is too dim, deactivate the SIC function following the procedures below.

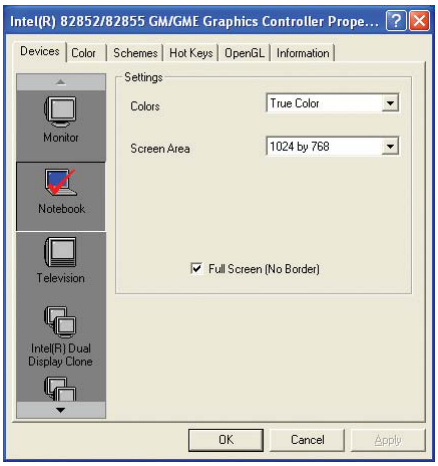
1. Restart the system.
2. Press **<F2>** key to run System Setup.
3. Change the **Smart Inverter Control** item in **Advanced** menu to [Disabled].
4. Use the screen brightness adjustment keys on the keyboard to adjust the LCD brightness to the comfortable level.

Using External Display Devices

Using external display devices such as monitor, projector, TV, etc you can view the screen images alternatively or simultaneously. You can extend the screen into two display devices to use larger workspace.

Using external display devices would be especially useful when you are giving presentation or watching a movie through your TV.

1. Connect a monitor or a projector to the monitor port of the system. To connect a TV, connect the TV to the monitor port or TV output port of the system.
2. Right-click on the desktop, and select **Graphics Options > Graphics Properties**.
3. On the **Devices** tab, select your desired display device, and click **OK**. (The displayed device list is determined by the currently connected devices.)



Monitor	Displays on an external device such as monitor, projector or TV (connected to the monitor port) only.
Notebook	Displays on the notebook LCD only.
Television	Displays on the TV (connected to the TV output port) only.
Intel(R) Dual Display Clone	Displays the same screen on the notebook LCD, and an external device such as monitor, projector, or TV
Extended Desktop	Extends the screen into the notebook LCD and an external device such as monitor, projector, or TV to use 2 times larger workspace.

To switch display devices using shortcut key

You can switch display devices easily by pressing **<Fn>+<F4 / LCD/CRT>** shortcut key.

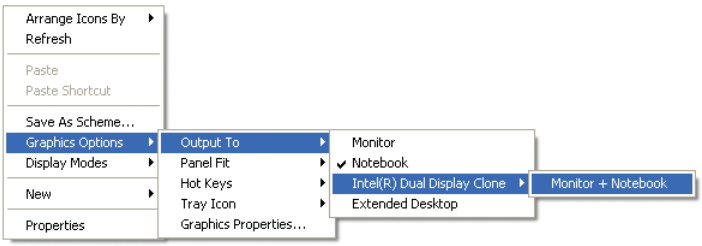
Provided that CRT monitor is connected, the display order will be LCD > CRT > LCD+CRT whenever the **<Fn>+<F4 / LCD/CRT>** key is pressed.

Provided that multiple external display devices are connected, the display order will be LCD > CRT > LCD+CRT > TV > LCD+TV > CRT+TV > LCD+CRT+TV whenever the **<Fn>+<F4 / LCD/CRT**> key is pressed.

You cannot use the **<Fn>+<F4 / LCD/CRT>** shortcut key in the full screen mode DOS prompt.

To change display devices easily

Right-click on the desktop, and select Graphics Options > Output To to change the current display device easily.



To change the screen resolution and color quality

If the screen does not appear clearly, please try to change the screen resolution and color quality. In the figure 3, select a device, and configure the color, screen area, and refresh rate.

System Management

Using Power Management Options

Your computer includes **Power Management** options that can help the battery charge last longer and extend the life of the battery. Power-management options will slow down or shut off system components when the components are not being used.

Power management may slow down system performance. Your computer runs fastest with the power cord attached, when power management is disabled.

In the next sections, basic and advanced methods of power management will be discussed.

Basic Power Management Schemes

This section discusses the basic schemes of power management when the computer is operating on battery power or using AC power.

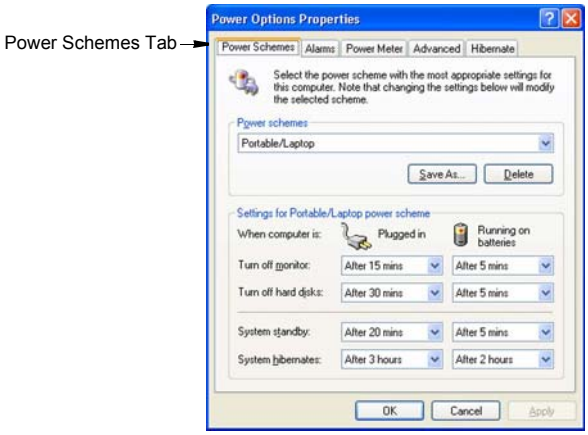
Standby vs. Hibernation
Hibernation is a state where the contents of memory are stored in a special file on the hard disk, and Standby simply keeps a small holding current through the memory to keep the data. You are more likely to sustain loss of data in Standby mode so it is recommended to save all open files before entering Standby.

Changing Devices:
Do not change PC Cards while in standby or hibernate modes.

To enter the power management window complete the following:

1. Click **Start** > **Control Panel** > **Performance and Maintenance**.
2. Click  icon to display the **Power Options Properties** window.

3. Click the **Power Schemes** tab to display the basic power management options.



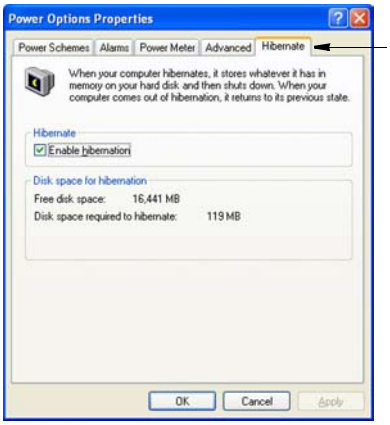
4. Select the time that you wish each of the following actions to occur in **Battery** and **AC power** mode.
   - Turn off monitor
   - Turn off hard disks
   - System standby
   - System hibernates

Turning off the monitor and HDDs will save a substantial battery power, therefore when in battery only mode select the shortest time practical.

a **Hibernate Mode** (*Power Management or Manual Method*)

When hibernation is used, your computer turns off and when you power up again, everything is restored exactly as you left it—including programs and documents you may not have saved or closed. Everything in memory gets saved to the HDD, and the monitor and hard disk get turned off.

If You Reinstall Windows:
You should re-establish hibernate in power options by opening **Power Options Properties** window and click on the **Hibernate** tab then click "Enable Hibernation".



Frequent Interruptions:
If you experience frequent interruptions, you might also consider putting your computer into automatic hibernation after a specified number of minutes using the power management options.

a **Standby Mode** (*Power Management or Manual Method*)

Standby is used mainly for conserving battery power in your notebook computer. It also gives you the benefit of getting right back to your work without waiting for the computer to restart. Standby turns off your monitor and hard disks, placing your entire system in a low-power state. When you return to your computer, restores your desktop exactly as you left it. It is recommended that you do not enter standby mode with less than 20% battery power.

5. Click **OK** to set your power management options and close the window.

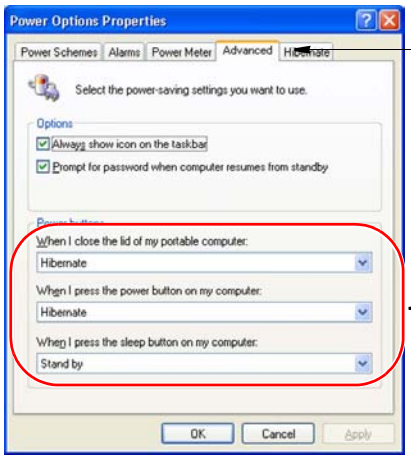
Rest Key:
The manual **<Fn+Esc>** key combination will not activate Standby or Hibernate modes while you are playing a multimedia program or have an active USB device connected.

Advanced Power Management Schemes

This section discusses the advanced power management schemes. There are two buttons that you can use to manually conserve power.

To enter the power management window complete the following:

1. Click **Start** > **Control Panel** > **Performance and Maintenance**.
2. Click icon to display the **Power Options Properties** window.
3. Click the **Advanced** tab to display the advanced power management options.



4. Select the mode (**Do nothing/Ask me what to do/Standby/Hibernate/Shut down**) assigned to the Power button and/or Rest <Esc> key. Also select the action (**Do nothing/Standby/Hibernate**) associated with closing the computer lid.

The “Rest” key is assigned to the **<Fn+Esc>** key combination. See ”Basic Power Management Schemes” on page 62 for a better understanding of Standby and Hibernate modes.

5. Click **OK** to set your power management options and close the window.

You can return to normal operation after you have used one of the “Power Management” buttons by quickly pushing and releasing the **Power** button.

Using the Battery

Your computer uses a smart rechargeable Lithium-ion (Li-ion) battery pack for power when the AC adapter is not attached to an electrical outlet. The smart battery gives a accurate measurement of the current battery capacity which helps extend operating time by enabling effective power management in operating systems that take advantage of the accurate information supplied by the battery.

Charging the Battery

Your computer's battery starts charging automatically when you connect the power to the computer and to an electrical outlet.

Approximate charging time for the Li-Ion battery is 2 hours. While the battery is charging normally, the battery charge light on the computer is amber. When the battery is fully charged, the light changes to green.

When you use a new battery pack for the first time or use a battery after a long period of storage, the initial battery life is shorter than normal. Normal battery life resumes after a few discharge-recharge cycles.

Follow these rules for charging your battery:

- A battery normally discharges power when not used for long periods of time. Be sure to recharge the battery every two months when it is not in use.
- Make it a practice to discharge your battery fully before recharging the battery. This can help extend the life of the battery.
- Do not attempt to charge the battery in temperatures of under 5°C or over 45°C

All batteries eventually wear out and lose the ability to hold a charge. You may need to replace your battery pack after a year of average usage.

Battery charging time may differ depending on system environment or using condition.

Safely Using the Battery

Follow these guidelines to safely use the battery:

- Turn off your computer and unplug it if you accidentally:
  - Expose the equipment to liquid.
  - Drop, jar, or damage the computer.
- Use only approved battery chargers.
- Do not disassemble the battery, heat it above 100°C, or burn it. The battery used in this computer may cause a fire or chemical burn if mistreated.
- Your computer's rechargeable battery may be considered hazardous waste. If you replace your battery with a new one:
  - Keep the old battery out of the reach of children.
  - Dispose of the old battery promptly.
  - Make sure that you follow all local requirements when you dispose of the old battery.

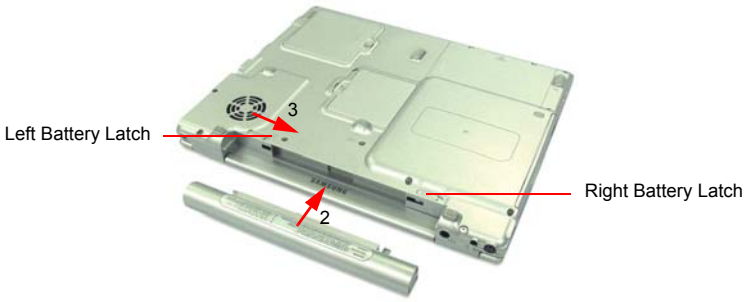
Installing the Battery

To install the battery pack:

1. With the computer’s power off, close the LCD panel and turn the computer over so the bottom of the unit faces up.

Insert the battery into the battery compartment, ensuring the correct orientation so that the battery fits in its compartment properly.

2. Insert the battery into the battery compartment until the battery latch snaps into place.



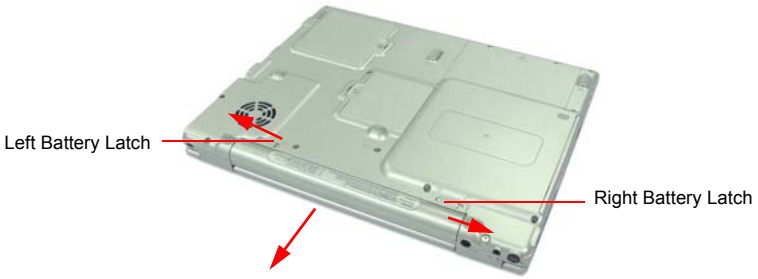
3. Slide the left battery latch toward center to lock the battery in place.

Removing the Battery

Your computer comes with the battery pack inserted in the computer.

To remove the battery from the computer:

1. Turn the computer's power off.
2. Close the LCD panel, and turn the computer over so that the bottom of the unit faces up.
3. Slide the left battery latch outward.
4. While holding the right battery latch outward, slide the battery out of the battery compartment.



Monitoring the Battery Charge

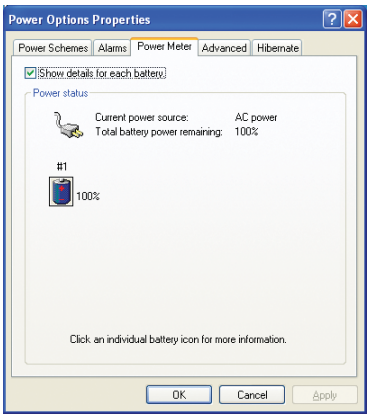
Battery life is affected by factors such as the power-management settings in System Setup, the applications you use, and the brightness settings of the LCD. Under normal usage, the battery charge lasts approximately 2 hours.

Battery life estimates are subject to variation. The actual life of your battery may be less than the estimates given in the manual.

You can monitor the charge of the battery pack installed in your computer by using the Power Meter or Battery Gauge.

Power Meter

The Power Meter displays the charge of the batteries and the current source of computer power, AC or batteries. You may monitor the battery charge or usage by using the “Power Meter”. To access the power meter click  icon on the taskbar or click **Start** > **Control Panel** > **Performance and Maintenance** > **Power Options** > **Power Meter** tab.



The Power Status icons shown below are displayed during Battery Charging Operations.


At ~15% and 10% remaining battery power the current power source and the battery icons respectively change to the icon shown below and you should follow the instructions in “Battery Warnings” section below.

Battery Gauge

You may display the battery gauge while you are in any program by pressing **<Fn+F2>**. The battery gauge is only displayed for a few seconds.

When using this function, the LCD display may not operate properly.

Power Source:

Indicates that the computer is powered by the AC adapter.

Indicates that the computer is powered by the battery.

Battery Level:

Indicates the approximate amount of the primary battery charge remaining.

You may also determine the charge of your battery by simply pushing the symbol below the word **PUSH** located on the side of the battery. The green LEDs will illuminate to show you the percentage of charge remaining in the battery.

Battery Warnings

If the battery charge is low (about 10%) you have ~ 5–10 minutes of battery life left. **You should:**

- Save your work and,
- Connect the power cord to the computer or turn off the computer and install a fully charged battery.

You can adjust the battery alarm features by using the operating systems power management program (**Start** > **Control Panel** > **Power Options** in Windows).

If you cannot run your computer from the battery and the battery will not charge when you attach the power cord, **the problem may be that:**

- The battery temperature is below 0°C or over 45°C. If you think the battery temperature is too hot or too cold, turn off the computer, remove the battery, and let the battery reach room temperature. Then try charging the battery again.
- The battery may be defective, please try running your system from the AC adaptor with the battery removed from the system. Please contact the Samsung helpline if you are unsure.

Battery Calibration

Calibrating your battery once a month is one of the recommended methods of increasing your computer's battery life. To calibrate the battery complete the following steps:

Calibration Notes:
You should start the battery calibration process with a fully charged battery, battery status LED is green. The power meter may not show 100%.

Before you commence the battery calibration process you should fully charge, then fully discharge and finally fully recharge the battery again.

1. Disconnect the AC power adapter after turning off the system.
2. Restart your computer and press **<F2>** to enter BIOS setup.
3. Using the arrow keys, highlight **Smart Battery Calibration** in the **Boot** menu.
4. Press **<Enter>** to start calibration process. The calibration usually takes 3 to 5 hours depending on the current battery charge.
5. When the calibration process is complete, recharge the battery fully.

Using the Hard Drive

Your computer includes a removable IDE (integrated drive electronics) hard drive. The IDE hard drive can store the data and programs your computer uses. The drive plugs into a connector on the system board.

The hard drive that comes with your computer has already been formatted. Do not format the hard drive. Doing so destroys all data contained on the drive. If you need to format a new drive, or want to erase all data on your existing hard drive, refer to the manual for your operating system.

Installing/Reinstalling a HDD

To install a new HDD you should contact a Service Centre, replacement of the HDD is not a user task. You should follow the instructions below before the HDD is replaced.

- Back up data files of your old hard drive.
- For system boot with CD-ROM, under the Boot menu in System setup, set Bootable CD Check to Enabled and set Boot Device Priority is ordered starting from the [DVD/CD-ROM].

When you are ready to install the new HDD, use the Recovery CD-ROM to install the device driver.

(Re)Installing Windows and Device Drivers

Use System Recovery CD to (re)install OS and System Software CD to (re)install device drivers. For details, see “Reinstalling Windows XP” on page 94 and ”Reinstalling Software” on page 92.

Memory Modules

You can increase system memory by installing optional memory modules.

To avoid possible system problems, use only approved memory modules in your computer. Please consult the appropriate sections of this manual, Samsung Technical Support, or the support Web site (www.samsungpc.com) for additional information.

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.

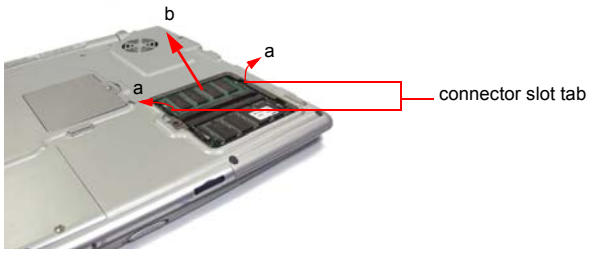
To install a memory module:

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.

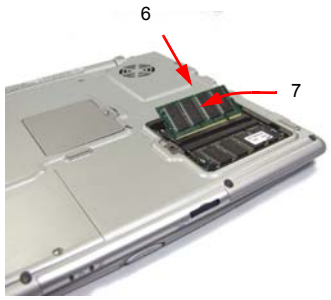
Memory Module Precautions:
When removing the module, pull on the plastic portion of the connector slots tabs only. Do not pull on the metal part of the tabs, this may damage the tabs.

4. 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.

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 (~30^{o}) 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.

Using Options

You can select these options at purchase:

- Wireless communication module (802.11b, bluetooth)
- Memory stick slot

You can purchse these options separately:

- Extra battery pack (3 cell/6 cell)
- Battery charger
- Ear set

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

Tips for Using Your Computer

The following information helps you avoid potential problems as you use your computer:

Do not try to disassemble your computer. Opening the system chassis voids your warranty. Only an authorised manufacturer service center can replace or add any parts inside the chassis.

- Follow all the instructions and cautions in your computer user documentation.
- The LCD has a polarized surface and can be damaged easily. To prevent damage, avoid touching the screen.
- Use only approved AC adapters, auto adapters, memory modules and other options.
- Because a notebook computer is small and has restricted air flow around components, it is more likely to overheat than a desktop computer. A fan inside your computer runs when needed to help eliminate heat. Make sure the fan vent on the left side of your computer is not blocked when you use the computer. Occasionally check the vents and remove any accumulated dust on the outside.
- Avoid using or storing the computer in extremely hot or cold areas, such as a car on a hot day. Keep the computer away from heaters and out of direct sunlight. Exposure to excessive heat may damage computer components. If you have left your computer in a hot place, let it cool down slowly to room temperature (with the LCD panel open) before using it.
- Do not remove the memory-module compartment door, or try to install a memory module when the computer is on. (For information on installing memory modules, see “Installing a Memory Module” on page 74.)
- Set up your computer work area to avoid physical strain. Sit with your back straight and supported by your chair. Adjust your chair or work table so that your arms and wrists can remain in a relaxed position, parallel with the floor. Avoid bending or twisting your wrists as you work. Your hands should “float” slightly above the keyboard. Refer to a book on office ergonomics for more information on setting up your work area.
- Take frequent breaks from working at the computer to rest your eyes and stretch your muscles.
- Remember to save your data files frequently and to make backup copies of your files.

Travelling with Your Computer

Air Travel

If you are travelling by air, follow these tips:

- Take the computer with you as carry-on luggage. Do not check the computer with your baggage.
- Allow the computer and disks to go through the X-ray security devices. Do not hand-carry disks through the walk-through metal detectors, which can cause loss of data.
- Make sure that the battery is charged or the power cord is easily accessible. You may be required to turn on the computer for airport security personnel.
- Be prepared to turn off the computer during take off and landing.

Locking your Computer

As a precaution when you are travelling or using your computer in an unsecured area, you should keep your computer as safe as possible. An option to do this is the Security Lock System. Follow the Security Lock System manufacturers instructions for specific installation and use. The following figure shows generally how to use the lock.

Handling Spills

Do not spill anything on your computer. The best way to avoid spills is to avoid eating and drinking around your computer. If you do spill something on your computer, turn off your computer, unplug it immediately, and do the following:

- If you spill liquid on the keyboard, drain as much of the liquid from the keyboard as possible. Be careful not to let the liquid drip onto the LCD panel. Allow the system to dry for several days before trying to use it.
- If you spill liquid on an external keyboard or keypad, unplug it and drain as much of the liquid as possible. Allow the keyboard to sit at room temperature for a full day before trying to use it.

Sweet liquids leave a sticky residue that may jam the keyboard despite your efforts to dry it.

- If you spill liquid on the LCD panel, clean it immediately with a soft cloth and denatured alcohol or a proprietary LCD screen cleaner. Do not use water, window cleaner, acetone, aromatic solvent, or dry, rough towels to clean it.

Some liquids damage the polarized LCD screen. If your screen is damaged, contact your authorized manufacturer's service center for a replacement.

Storing the Computer for Long Periods

If possible, leave the power cord connected to the computer and an electrical outlet when the computer is not in use. This extends the life of the battery and keeps the battery fully charged.

If you will not be using the computer for a long period of time (a month or more), you should charge the battery until it is completely full. After you have done so, remove the battery from the unit.

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 81 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 ensure a virus is not affecting your computer.

To run Norton AntiVirus proceed as follows:

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

The Norton Antivirus Subscription on your Samsung notebook will expire within 3 months. It is your responsibility to update the virus definitions, and renew subscription with Symantec when the subscription expires.

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 and Support.**

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.

Questions and Answers

This section provides information on possible problems, solutions and other references for system use.

Windows Related

Q1 The system does not shutdown properly.

A When the system does not shutdown normally, press and hold the Power button until the system manually shuts off. If the Power-Saving Mode is configured into the Power button, press and hold for more than 4 seconds to shut the system off. When the system is turned on after such manual shutdown, Scandisk will run to check errors in the system.

Q2 The system freezes during program operation

A1 There is an error with the program currently being used. Press the <Ctrl>, <Alt>, and <Delete> keys simultaneously and click and Task in the [Windows Task Manager] window.

A2 There is an error with the Windows OS. Reboot the system by using the Power button.

Display Related

Q1 The LCD screen is blank.

A Adjust the LCD screen brightness. Use the **<Fn+Up Arrow>**, **<Fn+Down Arrow>** keys.

Q2 The screen saver disturbs screen viewing during Media Player or video file operation.

A Under the Media Player Options, in Player > Enable Screen Saver During Use, uncheck the box and restart the player.

Q6 In DOS mode, changing the full screen DOS mode by pressing <ALT+Enter> key displays a broken image for a short period.

A The DOS mode which supports 2 Byte characters such as Korean and Japanese runs in graphic not in text mode. In this case, a broken image may be displayed while changing the video mode settings.

Q7 In the following cases, the screen blinks or displays noise for a short time: (Changing the resolution, changing the display device, removing the AC adapter, restarting the system)

A This may happen while the video driver is examining the connected device.

Q8 When I connect a projector, and change the setting to display screen image on both the LCD and the projector by pressing <Fn>+<F4 / LCD/CRT> keys, screen is not displayed properly.

A Press <Fn>+<F4 / LCD/CRT> keys once again.

Modem Related

Q1 **I cannot hear the modem sound.**

A1 Check that the telephone line is properly connected to the modem.

A2 Check that the modem driver is installed properly.

1. Click Start > Control Panel > Performance and Maintenance > System.
2. Select Hardware tab > Device Manager > Modems in the System Properties window, and check if there is a yellow exclamation mark on the installed modem icon. If there is, delete the modem device driver and reinstall the driver, because the yellow exclamation mark represents a not properly installed driver.
3. If there is no yellow exclamation mark, double-click the installed modem, and click Diagnostics tab > Query Modem in the Modem Properties window to diagnose the modem.

   No message in either of Command and Response in the Diagnostics tab means that the modem is not operating properly.

   Diagnose the modem again after restarting the system or reinstalling the driver.

   (You have to exit all programs using modem in the advance of diagnostics of the modem).

A3 Although I can make a connection with the modem, I cannot hear the dial tone and modem connection sound. In this case check the following list:

1. Click Start > All Programs > Accessories > Entertainment > Volume Control.
2. Clear the Mute check box in the Telephone Line item.
   (Depending on the sound driver, it may be displayed as another name such as Modem, Phone, Mono. If there is no corresponding item, click Options > Properties > Volume Control, select 'Playback', and select the 'Telephone Line' under the 'Display the following volume controls'. Click OK.)

Q2 **I cannot make a call using an extension line.**

A In general, the dial tone of a PBX or a digital phone switching system is not a continuous one, unlike that of trunk line.

Therefore, the modem may not make a call because the modem mistakes the dial tone from a PBX or a digital phone switching system as a busy tone.

In this case, complete the following procedures.

- Using an AT command

As an initialization command, use the command, ATX3.

Otherwise, enter the ATX3 command manually before making a call.

It can correct this problem by skipping the dial tone check step.

- Configuring the Modem through the Control Panel

1. Click Start > Control Panel > Network and Internet Connections.
2. Under See Also, click Phone and Modem Options.
3. In the Modems tab, select the installed modem, and click Properties.
4. In the Modem tab of the Modem Properties window, clear the 'Wait for dial tone before dialing' check box.
5. When the configuration is completed, click OK.

Q3 How do I use my modem when dialing from overseas?

A1 Check that the modem is correctly configured according to the current country. Because the values for communication may differ according to the country, you may not be able to connect via the modem due to an incorrect modem configuration.

1. Click Start > Control Panel > Network and Internet Connections.
2. Under See Also, click Phone and Modem Options.
3. In the Dialing Rules tab, click Edit.
4. In the General tab in the Edit Location window, select the current country from the Country/region radio box, specify the Area code, and click OK.

A2 Because the shape of the telephone plug may differ according to the country, you have to purchase and use the appropriate telephone plug for that particular country.

Q4 How do I receive a fax while the system is in power saving mode (Rest mode) (For Windows XP and 2000)?

A To receive a fax when the system is in power saving mode, and the operating system is Windows XP or 2000, configure the system as follows:

1. The automatic fax reception function of the fax program needs to be activated. (For more information, refer to the corresponding fax program manual.)
2. Click Start > Control Panel > Network and Internet Connections.

3. Under See Also, click Phone and Modem Options.
4. In the Modems tab, select the installed modem, and click Properties.
5. In the Power Management tab of the Modem Properties window, select the "This device activates the computer in power saving mode" check box, and click OK.

   The above setting enables the modem to turn on the system and receive a fax when in power saving mode.

Wireless LAN Related

Q1 **The Wireless LAN device is operating properly, but I cannot connect to the network.**

This is due to an incorrect configuration, or a configuration error. Check the following check lists:

A1 If you are using a computer-to-computer network (peer-to-peer) connection, check that the name of the configured network is correct. The network name used to connect should be the same in all computers. The network name is case sensitive, if the name contains letters.

A2 If you are using a network key (encryption key), an AP (Access Point) and a computer-to-computer network (peer-to-peer), you have to use the same network key. The network key of the AP is configured in the AP management program. Ask your network administrator for more detailed information.

A3 Check that the device driver is properly installed. If the driver is not properly installed, you will find a yellow exclamation mark on the network icon by clicking Start > Control Panel > Performance and Maintenance > System > Hardware tab > Device Manager > Network adapters > Wireless LAN adapter. If there is a yellow exclamation mark, please reinstall the device driver with the system software CD.

A4 To connect to an access point using network authentication (Shared key):
- In Windows XP, select Network Authentication (Shared mode) in the Wireless Network Properties window.
- If you use the wireless LAN program (PROSet) in Windows 2000, make sure that the network authentication mode is configure to Shared in security settings.
For more information on the network authentication configuration procedures, ask your access point administrator.

Q2 **The signal strength is excellent, but I cannot connect to the network.**

Even if the signal strength is excellent, the network connection may not operate properly if the TCP/IP properties are not properly configured, or the network key (encryption key) is incorrect.

A1 Check that the TCP/IP properties are configured properly. When you connect to an AP, click the Wireless Network Connection icon on the taskbar and select the Support tab. If the IP is not allocated properly, the IP address will be displayed as follows. (e.g. 169.254.xxx.xxx)
If the network does not provide DHCP, you have to specify the correct IP address by asking your network administrator.

Even if the network provides DHCP, the server may not allocate an IP address to the client properly, and the client station cannot connect to the network.

A2 Referring to A2 of Q1, check that the network key is correct.

Q3 I cannot share an Internet connection.

A1 It may require some time to synchronize the computers to share an Internet connection after the Internet connection sharing configuration is completed. If you cannot share Internet connection even after a longer period, restart the computer.

A2 Check if there is a configured bridge connection between the network adapters. If there is a configured bridge connection between the network adapters through the network configuration wizard, remove the network bridge, and reconfigure the Internet connection sharing.

Q4 I cannot connect to the AP wireless network.

A1 Check the wireless LAN radio environment. Using a wireless LAN may be restricted by the surrounding radio environment, and the distance between wireless stations. Also obstacles such as walls or doors may affect wireless LAN connections.

A2 Check that the AP is operating properly. Turn the AP off, and turn it on after a short wait.

A3 Check that the network key (encryption key) configuration for the AP is correct.

A4 Check if the wireless LAN/Bluetooth button on the upper part of the keyboard is switched off. If the wireless button is switched off, press the button to switch the wireless function on.
If you are using Windows 2000, check if switch radio is set to "On" on the General tab of PROSet program. If is set to "Off", change it to "On".

Q5 In the Windows XP 'Available wireless networks' window, the Wireless Network Connection is displayed as 'Not Available'.

A1 Check that the specific program for a wireless LAN connection is installed. Windows XP supports wireless LAN connections through the Wireless Zero Configuration (WZC) service. Therefore, an additional program for a wireless LAN connection is not required. However, installation of the specific program for a wireless LAN connection may disable the 'Available wireless networks' window of the Wireless Network Connection supported by WZC service in certain cases. Exit the program and try again.

A2 Initialize the device driver.
Click Start > Control Panel > Performance and Maintenance > System > Hardware tab > Device Manager > Network adapters, and select the wireless LAN adapter. Right-click the network adaptor and select 'Disable'. Then right-click over the network adaptor and select 'Enable' after a short wait to check that the device is operating properly.

Q6 The Wireless network connection operates properly, but the Wireless Network Connection icon on the Taskbar displays the "Disconnected" message.

A This is one of the known problems when you are using a wireless LAN connection after installing Windows XP service pack 1.

Check that the wireless LAN card is operating properly by initializing the device driver referring to A2 of Q5. For more information, refer to the following link for known problems with Microsoft.
http://support.microsoft.com/default.aspx?scid=kb;en-us;Q328647

Q7 When connecting to a computer-to-computer (Ad Hoc) network, I cannot connect to another computer connected to the same computer-to-computer network.

A1 Make sure that the security settings and network name of the computer-to-computer (Ad Hoc) network is correct.

A2 Check the TCP/IP properties of the computers to be connected through the computer-to-computer (Ad Hoc) network. All of those computers should be configured so that their IP addresses are within the same subnet range.
- If the IP address is configured to DHCP (Obtain an IP address automatically) in TCP/IP properties, IP address is configured within the same subnet range automatically.
- If the IP address is configured to static IP in TCP/IP properties, select Use the following IP address in the TCP/IP properties of the wireless adapter, configure IP address:10.0.0.1~10.0.0.254, and Subnet mask: 255.255.0.0, and then try again.

Q8 When using a computer-to-computer (Ad Hoc) network, sometimes I cannot search some access points.

A It may happen occasionally when you are using a computer-to-computer (Ad Hoc) network connection. Even if you cannot find some access points, the

computer-to-computer (Ad Hoc) network is operating properly. Click Refresh to view the latest search result.

Q9 Running Help file while running Profile Wizard in the wireless LAN program (PROSet) makes the PROSet window white.

A It will be displayed properly when you finish the profile wizard. It dose not affect the program operation.

Games and Programs Related

Q1 3D game is not executed, or some functions are not working.

A Change the graphic setting of the game to '2D' or 'Software Renderer', then execute the program again.

Q2 I launched a game right after installing it, and the game is not executed.

A This problem may occur when the game is not compatible with Windows XP. Launch the game again, and it will be executed properly.

Q3 The screen is displayed in reduced size when playing a game.

A This problem may occur when the Screen Expansion option in system setup is set to Disabled by default.

To fit the screen on the LCD size, change the setting as follows:
1. Push the power button to start the system.
2. When the booting screen appears, press <F2>.
3. After a while, the initial system setup screen appears.
4. Use arrow keys on the keyboard to move to Boot menu, then move to Screen Expansion item.
5. Use <F5> or <F6> to change the setting to <Enabled>.
6. Use <F10> to save the setting and exit system setup.

Q4 While playing a 3D game, I tried to change display devices using <Fn> + <F4/LCD/CRT> keys, then the system does not operate.

A When you use <Fn> + <F4 / LCD/CRT> keys while playing a 3D game, a system error may occur.
Do not use <Fn> + <F4 / LCD/CRT> keys while playing a 3D game.

Q5 <Fn+F4/ CRT/LCD> Key combination does not work.

A While displaying video of VCD or MPEG, or the display setting is Dual View, you cannot toggle display devices. Also the installation of NetWare Client 32 program disables the function of <Fn+F4/ CRT/LCD>.

Q6 While running a game, <Fn>+<F4 / LCD/CRT> keys may not work or screen may not be displayed properly when the keys are pressed.

A While running Direct3D game, display device configuration keys do not work to maintain the system stability. Since display device control varies depending on the type of display devices in some games, the screen may not displayed properly.

Use <Fn>+<F4 / LCD/CRT> keys before starting a game. Do not press the keys while running a game.

(It may happen while running Harry Porter and the Chamber of Secrets, Warcraft 3, Unreal Tournament 2003, Starcraft, Quake 3, Soldier of Fortune 2, Heroes of Might or Magic 4.)

Q7 Running speed of a game is too slow or fast.

A Change the setting of Power Schemes to 'Always On'.
(Click Start > Control Panel > Performance and Maintenance > Power Options > Power Schemes tab, then configure the Power schemes field to 'Always On'.)

Q8 Pressing <Fn>+<F2/Gauge> keys while running a game may cause abnormal operation of the system.

A Do not press <Fn>+<F2/Gauge> keys while a game is running, because it may cause a system error.

Reinstalling Software

If you have reinstalled the Windows operating system, or the system and program do not operate properly, you can re-install the driver and program using the system software CD.

The drivers and programs included in the system software CD are listed in the D:\ReadMe.htm file. (Provided that the name of CD-ROM drive is "D".)

Running the system software CD

Insert the system software CD into the CD-ROM drive. The initial screen appears automatically.

Installing drivers

1. In the initial screen, click **Install drivers**.
2. Select the driver you want to install from the device installation screen, and click **Install**.

How can one install the drivers for operating systems other than Windows XP?
Install the appropriate driver software included in the system software CD.

Installing programs

1. In the initial screen, click **Install programs**.
2. Click **Standard installation** in the program installation screen (standard installation is recommended).
   - **Standard installation**: Installs and recovers programs to the state of shipment.
   - **User installation**: You can select the program installation location, and other options for the program installation.

Reinstalling Windows XP

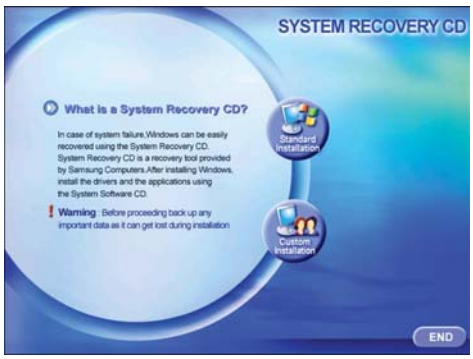
If the Windows XP does not operate properly due to an error in the system, or if you have replaced the hard disk drive, you can reinstall Windows XP using the system recovery CD.

With the system recovery CD, you can reinstall Windows XP only. To return the system to the state of shipment, reinstall the device drivers and programs with the system software CD after reinstalling Windows XP with the system recovery CD.

Reinstalling Window may delete the data on the hard disk drive such as files, programs, etc. In order to minimize damage from data loss, please remember to always back up data. Samsung Electronics is not liable in the case of data loss, please consult your warranty statement for clarification.

Reinstalling Windows

1. Insert the system recovery CD into the CD-ROM drive.
2. In the initial screen, click **Standard installation**. (Installation with the standard installation option is recommended. The standard installation does not require steps 5 and 7.)



- **Standard installation**: Installs Windows preserving the data saved on the hard disk drive. However, since personal data that is in the Windows folder may be deleted, please backup personal data.
- **Custom installation**: Enables Windows installation after partitioning or formatting the hard disk drive. Note that all data on the hard disk drives may be deleted depending on your configuration.

3. The description for the standard installation appears. Click **Yes**.
   The installation starts, and the system will be restarted after a while.
4. After the system has restarted, the message ’Press any key to boot from CD’ appears. Do not press any key at this time. After a while the partition configuration screen appears.
   To not change the partition, press **<Enter>**.

What is partition configuration?
Partition configuration is a function that devides the hard disk drive into one or several partitions. Note that changing the partition deletes all of the data on the hard disk drive.

5. Select the desired file system (format).
   To maintain the current file system, press **<Enter>**.

What is Format?
Format is an operation that initializes the hard disk drive. Since formatting operation deletes all content on the hard disk drive, use Format with great care.

6. Select the folder to install the Windows operating system.
   To delete the previous version of Windows and install in the current folder, press **<L>** on the keyboard.

Note that selecting ’Use another folder to install’ creates a new windows folder and installs Windows in dual boot mode.

7. The Windows XP installation wizard appears. Proceed installation according to the instructions provided by the Windows XP installation wizard.
   When the installation is completed, the computer will restart.
8. After the system has restarted, the message 'Press any key to boot from CD' appears. Do not press any key at this time.

The Windows installation has been completed. Remove the system recovery CD, and insert the system software CD into the CR-ROM drive to install the device drivers and programs.

If You Cannot Run Windows

If you cannot run Windows, you have to boot the system with the system recovery CD, and reinstall Windows. If you boot the system from the system recovery CD, you can install Windows only with the user installation option. You cannot install with the standard installation option.

1. Insert the system recovery CD into the CD-ROM drive and start the computer.
2. If the following message appears on the screen, press any key from the keyboard.

This message appears only when the CD drive has booting priority. If the message does not appear, configure the CD drive as the first booting device referring to ”Changing Booting Priority” on page 55.

3. After a while, the partition configuration screen appears. Complete the installation referring to ”Reinstalling Windows” on page 94.

Specifications

System Specification

The following is the basic hardware specification for the purchased product. Variations may exist depending on the model type.

Item	Specification	Remarks
CPU	Intel PentiumM 1.3~1.7 GHz	
Cache memory	1MB	
Main memory	128/256/512/1024 MB DDR SDRAM, 2 DDR socket	Maximum 2GB
Main Chipset	Intel 855GM/ICH4M	
Hard disk drive (HDD)	2.5'', UltraDMA 100, S.M.A.R.T 9.5mmH	
Graphics	Intel 855GM Internal Graphics Default : 1024x768 pixel, XGA Memory : 8~32MB (shared memory)	
Sound	Sigmatel STAC9752 CAC97 CODEC	
Network Interface	Modem : SENS LT56ADM (PC2001 Compliance) Wired LAN : LAN 10/100 Base T Ethernet Wireless : Wireless LAN 802.11b / Bluetooth (Optional)	
PCMCIA Slot	Type I and II Compatible	
Memory Stick	Support up to 128MB	Optional
CD Drive	CD-ROM drive/ CD-RW drive/DVD-ROM drive/ CD-RW/DVD-ROM Combo drive	Optional
Ports	IEEE 1394 (4 pin), USB 2.0 (x 2), microphone, headphone, S/PDIF, modem(RJ-11), LAN(RJ-45), monitor, and TV out(S-VHS)	
Options	Lithium-Ion smart battery, USB port replicator, car adapter, external battery charger	
Dimensions (mm)		W x D x H
LCD Panel Size	14" XGA TFT LCD	
Weight		
Battery	Lithium-Ion smart battery	
Operation Environment	Temperature (storage) : -5 ~ 40°C (operation) : 10 ~ 32° C Humidity (storage) : 5% ~ 90% (operation) : 20% ~ 80%	
Operation Voltage	100 - 240 VAC	
Frequency	50 - 60 Hz	
Input/Output Power	1.5A 100V ~ 0.8A 240V/60W	
Output Voltage	19.0 VDC	

* Please refer to the product catalog or consult your product provider for availability when purchasing optional accessories for this system.

Wireless LAN Specification

Product Specification

Item		Detailed Specifications
Physical Specifications	Dimensions	(Width X Height) 59.75 X 44.45 mm
	operation temperature and humidity	Same as system operation
		Temperature: 0°C ~ 70°C Humidity: less than 85%
Power Specification	Power Saving Mode	135 mW
	Receiving Mode	1.0 W
	Transmission Mode	1.6 W
	Power	3.3V
Network Specifications	Compatibility	IEEE802.11b standard (DSSS) Mini-PCI Rev.1.0
	Operating System	Microsoft Windows XP, 2000 - NDIS5 Miniport Driver
	Media Access Protocol	CSMA/CA (Collision Avoidance) with Acknowledgement(ACK)
	Security	Wired Equivalent Privacy support (WEP) 64bit / 128bit

Radio Specifications

RF Band	2.4 GHz			
Support Channels	1~13 channel (See "Regulatory Notice for Channel Use in France".)			
Device	Transceiver Direct Sequence Spread Spectrum (DSSS)			
Modulation Scheme	Direct Sequence Spread Spectrum (DSSS) CCK for high and mid transmission rate DQPSK for standard transmission rate DBPSK for low transmission rate			
Standard Output Power	5 mW			
Transmission Rate	High Speed	Mid Speed	Standard	Low Speed
	11 Mb/s	5.5 Mb/s	2 Mb/s	1 Mb/s
Antenna Type	Internal antenna (TX/RX)			

Regulatory Notice for Channel Use in France

The number of channels that can be used for wireless LAN differs from country to country. In France however, use only 4 channels (channel 10, 11, 12, 13) when using wireless networks.

- Standard: IEEE 802.b
- Regulation: ETSI 300 328, CE Marked
- Channel Allocation:
  - Channel 10 (2457 MHz)
  - Channel 11 (2462 MHz)
  - Channel 12 (2467 MHz)
  - Channel 13 (2472 MHz)

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.

Using Windows 2000