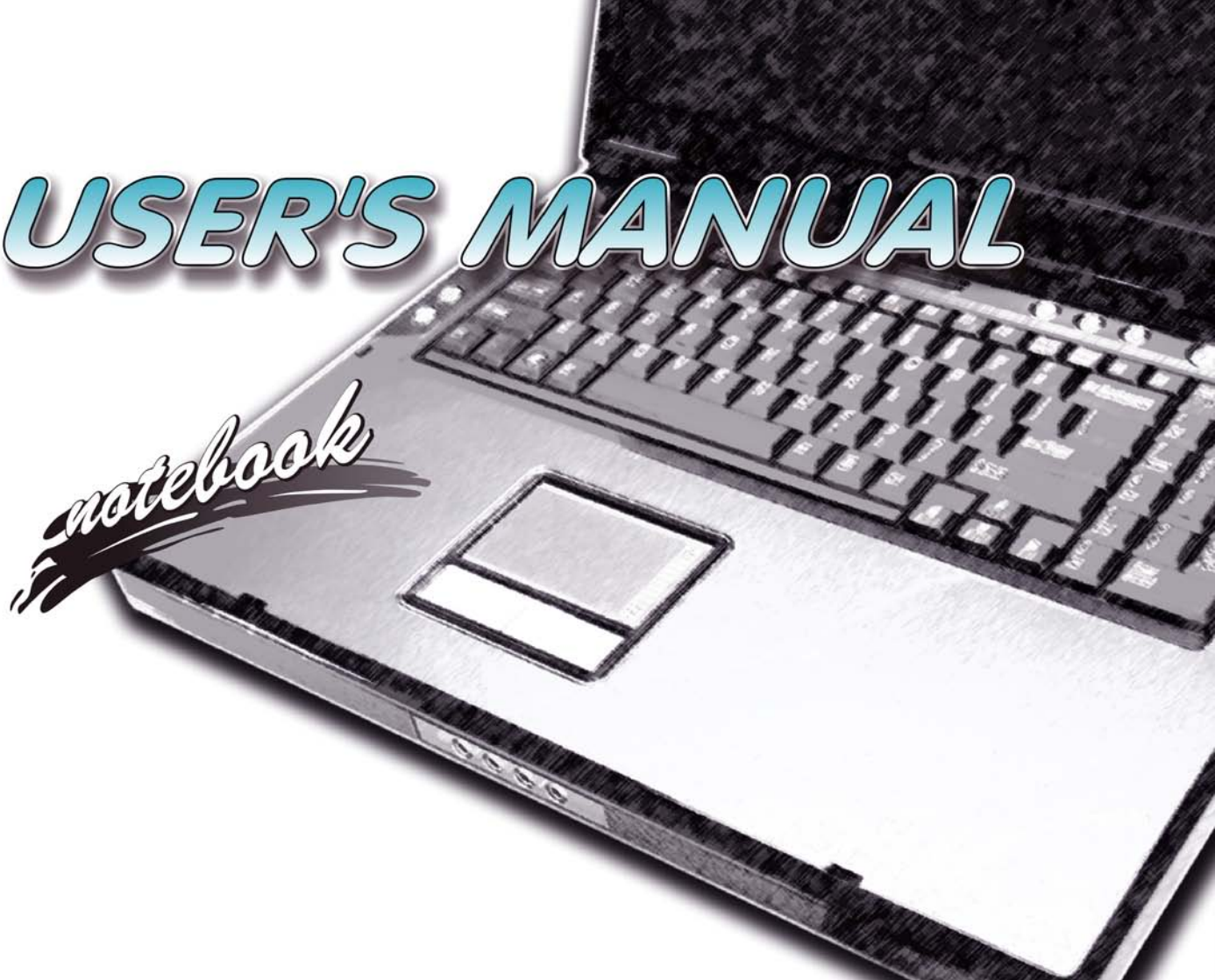
USER'S MANUAL

notebook



V10.1.02

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Trademarks

Intel and **Intel Core** are trademarks/registered trademarks of Intel Corporation.

R&TTE Directive

This device is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/5/EC.

This device will be sold in the following EEA countries: Austria, Italy, Belgium, Liechtenstein, Denmark, Luxembourg, Finland, Netherlands, France, Norway, Germany, Portugal, Greece, Spain, Iceland, Sweden, Ireland, United Kingdom, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Slovakia, Poland, Slovenia.

FCC Statement
(Federal Communications Commission)

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the service representative or an experienced radio/TV technician for help.

Operation is subject to the following two conditions:

1. This device may not cause interference.

   And

2. This device must accept any interference, including interference that may cause undesired operation of the device.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Warning

Use only shielded cables to connect I/O devices to this equipment. You are cautioned that changes or modifications not expressly approved by the manufacturer for compliance with the above standards could void your authority to operate the equipment.

IMPORTANT SAFETY INSTRUCTIONS

Follow basic safety precautions, including those listed below, to reduce the risk of fire, electric shock, and injury to persons when using any electrical equipment:

1. Do not use this product near water, for example near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using this equipment with a telephone line (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
5. This product is intended to be supplied by a Listed Power Unit (Full Range **220W** AC/DC Adapter – AC Input 100 - 240V, 50 - 60Hz DC Output 20V, 11A or 19V, 11.6A).

CAUTION

Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment.

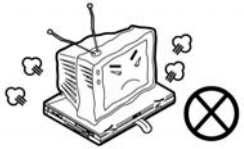
TO REDUCE THE RISK OF FIRE, USE ONLY NO. 26 AWG OR LARGER, TELE-COMMUNICATION LINE CORD

This Computer's Optical Device is a Laser Class 1 Product

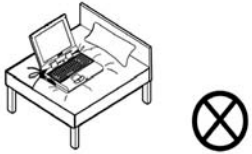
Instructions for Care and Operation

The notebook computer is quite rugged, but it can be damaged. To prevent this, follow these suggestions:

1. **Don't drop it, or expose it to shock.** If the computer falls, the case and the components could be damaged.

Do not expose the computer to any shock or vibration. 	*Do not place it on an unstable surface.* 	*Do not place anything heavy on the computer.* 

2. **Keep it dry, and don't overheat it.** Keep the computer and power supply away from any kind of heating element. This is an electrical appliance. If water or any other liquid gets into it, the computer could be badly damaged.

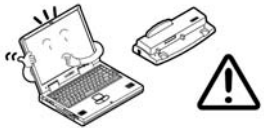
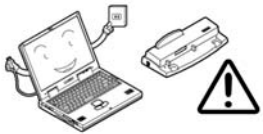
Do not expose it to excessive heat or direct sunlight. 	*Do not leave it in a place where foreign matter or moisture may affect the system.* 	*Don't use or store the computer in a humid environment.* 	*Do not place the computer on any surface that will block the Vents/Fan Intakes.* 

3. **Avoid interference.** Keep the computer away from high capacity transformers, electric motors, and other strong magnetic fields. These can hinder proper performance and damage your data.

4. **Follow the proper working procedures for the computer.** Shut the computer down properly and don't forget to save your work. Remember to periodically save your data as data may be lost if the battery is depleted.

Do not turn off the power until you properly shut down all programs.	*Do not turn off any peripheral devices when the computer is on.*	*Do not disassemble the computer by yourself.*	*Perform routine maintenance on your computer.*
			

5. **Take care when using peripheral devices**.

Use only approved brands of peripherals.	*Unplug the power cord before attaching peripheral devices.*
	

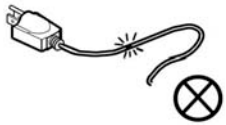
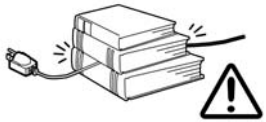
Power Safety

The computer has specific power requirements:

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

- Only use a power adapter approved for use with this computer.
- Your AC/DC adapter may be designed for international travel but it still requires a steady, uninterrupted power supply. If you are unsure of your local power specifications, consult your service representative or local power company.
- The power adapter may have either a 2-prong or a 3-prong grounded plug. The third prong is an important safety feature; do not defeat its purpose. If you do not have access to a compatible outlet, have a qualified electrician install one.
- When you want to unplug the power cord, be sure to disconnect it by the plug head, not by its wire.
- Make sure the socket and any extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, make sure it is disconnected from any external power supplies (i.e. AC/DC adapter or car adapter).

Do not plug in the power cord if you are wet.	*Do not use the power cord if it is broken.*	*Do not place heavy objects on the power cord.*
		

Battery Precautions

- Only use batteries designed for this computer. The wrong battery type may explode, leak or damage the computer.
- Do not remove any batteries from the computer while it is powered on.
- Do not continue to use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire.
- Recharge the batteries using the notebook's system. Incorrect recharging may make the battery explode.
- Do not try to repair a battery pack. Refer any battery pack repair or replacement to your service representative or qualified service personnel.
- Keep children away from, and promptly dispose of a damaged battery. Always dispose of batteries carefully. Batteries may explode or leak if exposed to fire, or improperly handled or discarded.
- Keep the battery away from metal appliances.
- Affix tape to the battery contacts before disposing of the battery.
- Do not touch the battery contacts with your hands or metal objects.

Battery Disposal & Caution

The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Cleaning

Do not apply cleaner directly to the computer; use a soft clean cloth. Do not use volatile (petroleum distillates) or abrasive cleaners on any part of the computer.

Servicing

Do not attempt to service the computer yourself. Doing so may violate your warranty and expose you and the computer to electric shock. Refer all servicing to authorized service personnel. Unplug the computer from the power supply. Then refer servicing to qualified service personnel under any of the following conditions:

- When the power cord or AC/DC adapter is damaged or frayed.
- If the computer has been exposed to rain or other liquids.
- If the computer does not work normally when you follow the operating instructions.
- If the computer has been dropped or damaged (do not touch the poisonous liquid if the LCD panel breaks).
- If there is an unusual odor, heat or smoke coming from your computer.

Removal Warning

When removing any cover(s) and screw(s) for the purposes of device upgrade, remember to replace the cover(s) and screw(s) before turning the computer on.

Travel Considerations

Packing

As you get ready for your trip, run through this list to make sure the system is ready to go:

1. Check that the battery pack and any spares are fully charged.
2. Power off the computer and peripherals.
3. Close the display panel and make sure it's latched.
4. Disconnect the AC/DC adapter and cables. Stow them in the carrying bag.
5. The AC/DC adapter uses voltages from 100 to 240 volts so you won't need a second voltage adapter. However, check with your travel agent to see if you need any socket adapters.
6. Put the notebook in its carrying bag and secure it with the bag's straps.
7. If you're taking any peripherals (e.g. a printer, mouse or digital camera), pack them and those devices' adapters and/or cables.
8. Anticipate customs - Some jurisdictions may have import restrictions or require proof of ownership for both hardware and software. Make sure your "papers" are handy.

Power Off Before Traveling

Make sure that your notebook is completely powered off before putting it into a travel bag (or any such container). Putting a notebook which is powered on in a travel bag may cause the Vents/Fan Intakes to be blocked. To prevent your computer from overheating make sure nothing blocks the Vent/Fan Intakes while the computer is in use.

On the Road

In addition to the general safety and maintenance suggestions in this preface, and Chapter 8: Troubleshooting, keep these points in mind:

Hand-carry the notebook - For security, don't let it out of your sight. In some areas, computer theft is very common. Don't check it with "normal" luggage. Baggage handlers may not be sufficiently careful. Avoid knocking the computer against hard objects.

Beware of Electromagnetic fields - Devices such as metal detectors & X-ray machines can damage the computer, hard disk, floppy disks, and other media. They may also destroy any stored data - Pass your computer and disks around the devices. Ask security officials to hand-inspect them (you may be asked to turn it on). **Note**: Some airports also scan luggage with these devices.

Fly safely - Most airlines have regulations about the use of computers and other electronic devices in flight. These restrictions are for your safety, follow them. If you stow the notebook in an overhead compartment, make sure it's secure. Contents may shift and/or fall out when the compartment is opened.

Get power where you can - If an electrical outlet is available, use the AC/DC adapter and keep your battery(ies) charged.

Keep it dry - If you move quickly from a cold to a warm location, water vapor can condense inside the computer. Wait a few minutes before turning it on so that any moisture can evaporate.

Developing Good Work Habits

Developing good work habits is important if you need to work in front of the computer for long periods of time. Improper work habits can result in discomfort or serious injury from repetitive strain to your hands, wrists or other joints. The following are some tips to reduce the strain:

- Adjust the height of the chair and/or desk so that the keyboard is at or slightly below the level of your elbow. Keep your forearms, wrists, and hands in a relaxed position.
- Your knees should be slightly higher than your hips. Place your feet flat on the floor or on a footrest if necessary.
- Use a chair with a back and adjust it to support your lower back comfortably.
- Sit straight so that your knees, hips and elbows form approximately 90-degree angles when you are working.
- Take periodic breaks if you are using the computer for long periods of time.

Remember to:

- Alter your posture frequently.
- Stretch and exercise your body several times a day.
- Take periodic breaks when you work at the computer for long periods of time. Frequent and short breaks are better than fewer and longer breaks.

Lighting

Proper lighting and a comfortable viewing angle can reduce eye strain and shoulder and neck muscle fatigue.

- Position the display to avoid glare or reflections from overhead lighting or outside sources of light.
- Keep the display screen clean and set the brightness and contrast to levels that allow you to see the screen clearly.
- Position the display directly in front of you at a comfortable viewing distance.
- Adjust the display-viewing angle to find the best position.

LCD Screen Care

To prevent **image persistence** on LCD monitors (caused by the continuous display of graphics on the screen for an extended period of time) take the following precautions:

- Set the *Windows* **Power Plans** to turn the screen off after a few minutes of screen idle time.
- Use a rotating, moving or blank screen saver (this prevents an image from being displayed too long).
- Rotate desktop background images every few days.
- Turn the monitor off when the system is not in use.

Cable TV Safety

If you have included a **TV Tuner** in your purchase option then pay careful attention to the following:

- Make sure that your CATV system installer has connected the Coaxial cable shield to the grounding system of the building, as close to the point of cable entry as practical.
- This reminder is provided to call the CATV system installer's attention to Article 820-93 of the NEC (Section 54, Part I of the Canadian Electrical Code).
- The TV antenna supplied with any TV Tuner module is intended for indoor use only. Please do not use your TV Tuner module outdoors.

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NVIDIA Video Driver Controls

Specifications

Windows 7 Information

Chapter 1: Quick Start Guide

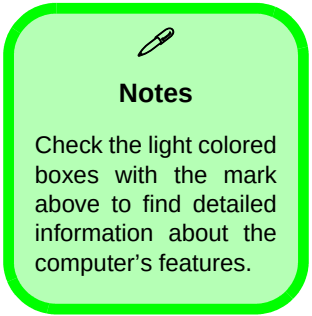
Overview

This Quick Start Guide is a brief introduction to the basic features of your computer, to navigating around the computer and to getting your system started. The remainder of the manual covers the following:

- **Chapter 2** A guide to using some of the main features of the computer e.g. the **storage devices** (**hard disk**, **optical device**, **7-in-1 card reader**, **ExpressCard/34/54**), **TouchPad** & **Mouse, Audio Features,** & **Printer**.
- **Chapter 3** The computer's **power** saving options.
- **Chapter 4** The installation of the **drivers** and utilities essential to the operation or improvement of some of the computer's subsystems.
- **Chapter 5** An outline of the computer's built-in software or **BIOS** (Basic Input Output System).
- **Chapter 6** Instructions for **upgrading** your computer.
- **Chapter 7** A quick guide to the computer's **Wireless LAN, PC Camera, Bluetooth**, **TV Tuner** and **RAID modules** (some of which may be **optional** depending on your purchase configuration).
- **Chapter 8** A **troubleshooting** guide.
- **Appendix A** Definitions of the **interface**, **ports**/**jacks** which allow your computer to communicate with external devices.
- **Appendix B** Information on the **NVIDIA** Video driver controls.
- **Appendix C** The computer's **specification**.
- **Appendix D** Information on the **Windows 7** OS.

Advanced Users

If you are an advanced user you may skip over most of this Quick Start Guide. However you may find it useful to refer to *"Drivers & Utilities" on page 4 - 1*, *"BIOS Utilities" on page 5 - 1* and *"Upgrading The Computer" on page 6 - 1* in the remainder of the User's Manual. You may also find the notes marked with a ✎ of interest to you.



Beginners and Not-So-Advanced Users

If you are new to computers (or do not have an advanced knowledge of them) then the information contained in this Quick Start Guide should be enough to get you up and running. Eventually you should try to look through all the documentation (more detailed descriptions of the functions, setup and system controls are covered in the remainder of the User's Manual), but do not worry if you do not understand everything the first time. Keep this manual nearby and refer to it to learn as you go. You may find it useful to refer to the notes marked with a ✎ as indicated in the margin. For a more detailed description of any of the interface ports and jacks see *"Interface (Ports & Jacks)" on page A - 1*.

Warning Boxes

No matter what your level please pay careful attention to the warning and safety information indicated by the symbol. Also please note the safety and handling instructions as indicated in the *Preface*.

Not Included

Operating Systems (e.g. *Windows Vista etc.*) and applications (e.g. word processing, spreadsheet and database programs) have their own manuals, so please consult the appropriate manuals.

Drivers

If you are installing new system software, or are re-configuring your computer for a different system, you will need to install the appropriate drivers. Drivers are programs which act as an interface between the computer and a hardware component e.g. a wireless network module. It is very important that you install the drivers in the order listed in ***Table 4 - 1, on page 4 - 3***. You will be unable to use most advanced controls until the necessary drivers and utilities are properly installed. If your system hasn't been properly configured (your service representative may have already done that for you), refer to ***"Drivers & Utilities" on page 4 - 1*** for installation instructions.

Ports and Jacks

See ***"Ports and Jacks" on page A - 2*** for a description of the interface (ports & jacks) which allow your computer to communicate with external devices, connect to the internet etc.

TV Tuner Module Support

Note that the TV Tuner module (factory) option in ***Windows Vista*** is supported by the **Windows Media Center** software which comes built-in to the ***Windows Vista Home Premium*** and ***Ultimate*** **Editions only**. The **Windows Media Center** software comes built-in to the ***Windows 7 Home Premium, Professional*** and ***Ultimate*** **Editions only**.

If your purchase includes a TV Tuner option, and/or you are re-configuring your system for a different system, you should install the above ***Windows*** editions only.

System Software

Your computer may already come with system software pre-installed. Where this is not the case, or where you are re-configuring your computer for a different system, you will find the ***Windows Vista*** (with ***Service Pack 2***) and ***Windows 7*** operating systems are supported.

Note: In order to run ***Windows Vista*** and ***Windows 7*** without limitations or decreased performance, your computer requires a minimum **1GB** of system memory (RAM).

Windows Vista Service Pack 2

Make sure you install ***Windows Vista Service Pack 2*** (or a ***Windows Vista*** version which includes ***Service Pack 2***) **before installing any drivers**. Go to the Microsoft website for download details, or contact your service center.

RAID & AHCI Setup

Note that setting up a RAID, or AHCI mode, needs to be done prior to installing the *Windows OS* (see ***"Setting Up SATA RAID or AHCI Modes" on page 7 - 36***).

System Startup

1. Remove all packing materials, and place the computer on a stable surface.
2. Securely attach any peripherals you want to use with the notebook (e.g. keyboard and mouse) to their ports.
3. Attach the AC/DC adapter to the DC-In jack at the rear of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter.
4. Move the left LCD latch towards the unlock position, and move the right latch outwards towards the sides of the computer, and hold it in position, to release the top cover.
5. Use one hand to raise the lid/LCD to a comfortable viewing angle (it is preferable not to exceed 120 degrees); use the other hand (as illustrated in ***Figure 1 - 1*** below) to support the base of the computer (**Note**: **Never** lift the computer by the lid/LCD).
6. Press the power button to turn the computer on.

Figure 1 - 1 **- Opening the Lid/LCD Computer with AC/DC Adapter Plugged-In**

Closing the Lid/LCD Panel

Make sure you close the lid/LCD by placing your hand **in the middle** of the panel, and carefully press down until the LCD latches click into place (do not exert pressure from the sides of the lid/LCD as this can cause damage to the latches, case or lid/LCD).

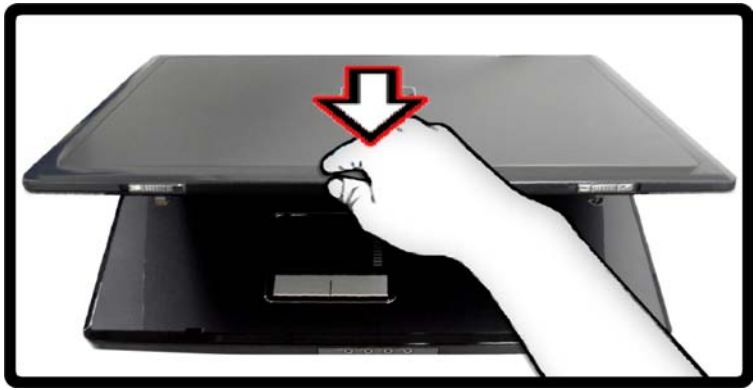
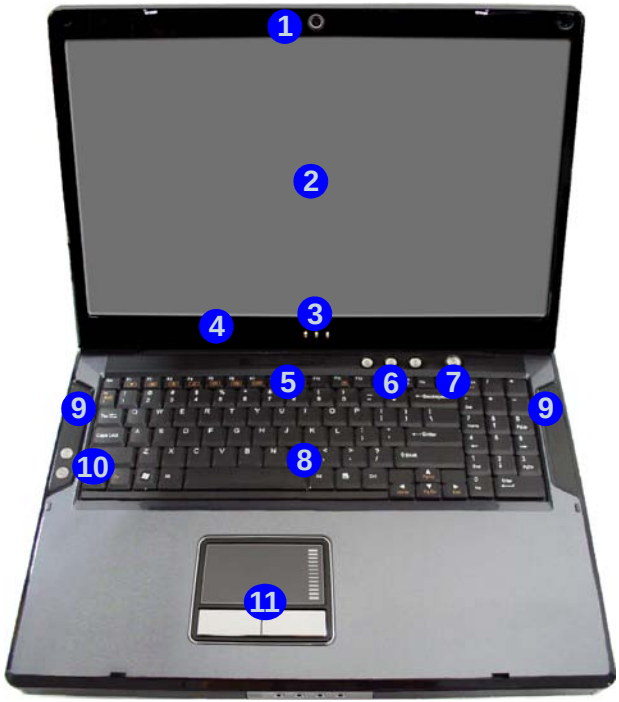


Figure 1 - 2 **- Closing the Lid/LCD**

System Map: LCD Panel Open



Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices (e.g. WLAN or Bluetooth) aboard aircraft is usually prohibited. Make sure any wireless modules are OFF if you are using the computer aboard aircraft.

Use the appropriate function key combination (see ***Table 1 - 4, on page 1 - 11***) to toggle power to any wireless modules, and check the LED indicators to see if any modules are powered on or not (see ***Table 1 - 2, on page 1 - 8***).

Figure 1 - 3
LCD Panel Open

1. Optional Built-In PC Camera
2. LCD
3. LED Power & Communication Indicators
4. Built-In Microphone
5. LED Status Indicators
6. Hot Key Buttons
7. Power Button
8. Keyboard
9. Speakers
10. Game Hot Keys
11. Touchpad & Buttons

See ***Appendix A*** for a more detailed description of the ports & jacks etc.

LED Indicators

The two sets of LED indicators (**LED Status Indicators** and **LED Power & Communication Indicators**) on the computer display helpful information about the current status of the computer.

Icon	Color	Description
	Green	Card Reader Activity
	Green	Hard Disk Activity
	Green	Number Lock Activated
	Green	Caps Lock Activated
	Green	Scroll Lock Activated (to activate press Fn & Scr Lk)

Table 1 - 1 **- LED Status Indicators**

Icon	Color	Description
	Orange	DC Power is Plugged In
	Green	The Computer is On
	Blinking Green	The Computer is in Sleep Mode
	Orange	The Battery is Charging
	Green	The Battery is Fully Charged
	Blinking Orange	The Battery Has Reached Critically Low Power Status
	Green	The (**optional**) Wireless LAN Module is powered On
	Orange	The (**optional**) Bluetooth Module is powered On

Table 1 - 2 **- LED Power & Communication Indicators**

Hot Key Buttons & Game Keys

These buttons give instant access to the default Internet browser and e-mail program, and to a user-defined application, with one quick button press. To use the "user-defined application Hot Key Button", you must install the driver. See ***"Application Hot Key" on page 2 - 8*** for configuration instructions.

Hot Key	Function
	Activate the Default E-Mail Browser
	Activate the Default Internet Program
	Activate the user specified application e.g. Microsoft Word or Excel

Table 1 - 3- **Hot Key Buttons**

The two **Game Keys** on the left of the computer allow macros to be configured for common keystrokes used in applications, as long as the driver is installed (see ***"Game Keys" on page 2 - 9***).

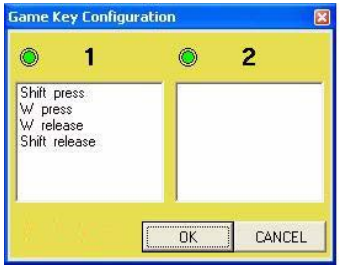


Figure 1 - 4 **- Game Key Configuration**

Other Keyboards

If your keyboard is damaged or you just want to make a change, you can use any standard USB keyboard. The system will detect and enable it automatically. However special functions/hot-keys unique to the system's regular keyboard may not work.

Num Lk & Scr Lk

Hold down the **Fn Key** and Scr Lk to enable scroll lock, and check the LED indicator for status. Num Lk does not require an Fn Key press.

Keyboard

The keyboard has an embedded numerical keypad for easy numeric data input, and features function keys to allow you to change operational features instantly. See *Table 1 - 4, on page 1 - 11* for full function key combination details.

Figure 1 - 5 **- Keyboard**

Special Characters

Some software applications allow the number-keys to be used with **Alt** to produce special characters. These special characters can only be produced by using the numeric keypad. Regular number keys (in the upper row of the keyboard) will not work. Make sure that **NumLk** is on.

Function/Hot Key Indicators

The **function keys** (F1 - F12 etc.) will act as **hot keys** when pressed while the **Fn** key is held down. In addition to the basic function key combinations; visual indicators (see the table below) are available when the hot key utility is installed (see ***"HotKey Utility" on page 4 - 7***). After installing the driver an icon will appear in the taskbar.

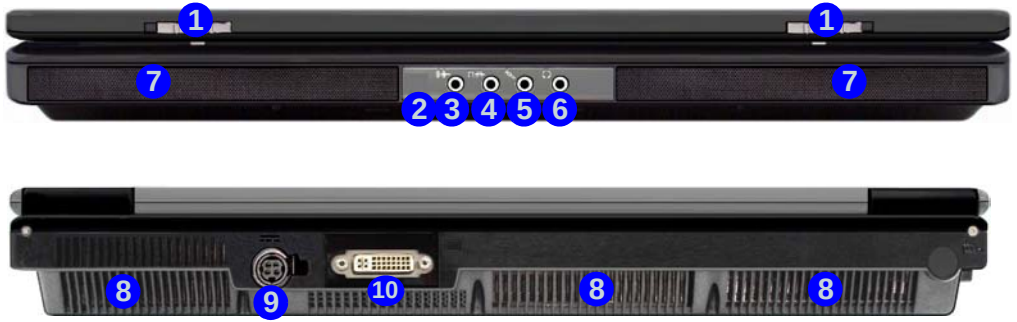
Fn Keys	Function	Fn Keys	Function
Fn + ~	Play/Pause (in Audio/Video Programs)	Fn + F5/ F6	Volume Decrease/ Increase 
Fn + 1	Fan Automatic Control / Full Power	Fn + F7	Display Toggle
Fn + F1	Touchpad Toggle 	Fn + F8/ F9	Brightness Decrease/ Increase 
Fn + F2	Turn LCD Backlight Off (Press a key to or use TouchPad to turn on)	Fn + F10	PC Camera Power Toggle 
Fn + F3	Mute Toggle 	Fn + F11	*WLAN Module Power Toggle 
Fn + F4	Sleep Toggle	Fn + F12	Bluetooth Module Power Toggle 

Table 1 - 4 **- Function/Hot Key Combo Indicators**

*Make sure that Wireless is **ON** in the **Windows Mobility Center** to ensure proper wireless function key behavior (see page ***3 - 11***).

System Map: Front & Rear Views

Figure 1 - 6
Front & Rear Views



1. LCD Latches
2. Consumer Infrared Transceiver*
3. Line-In Jack
4. S/PDIF-Out Jack
5. Microphone-In Jack
6. Headphone-Out Jack
7. Speakers
8. Vent/Fan Intake
9. DC-In Jack
10. DVI-Out Port

*Enabled with **Optional** TV Tuner Only

See ***Appendix A*** for a more detailed description of the ports & jacks etc.

Overheating

To prevent your computer from overheating make sure nothing blocks the vent(s)/fan intake(s) while the computer is in use.

System Map: Left View

Figure 1 - 7
Left View

1. HDMI-Out Port
2. e-SATA Port
3. Cable (CATV) Antenna Jack*
4. RJ-11 Phone Jack
5. RJ-45 LAN Jack
6. Mini-IEEE 1394 Port
7. ExpressCard Slot (see page *2 - 7*)
8. Optical Device Drive Bay (for DVD Device)
9. 7-in-1 Card Reader

*Enabled with **Optional** TV Tuner Only

See ***Appendix A*** for a more detailed description of the ports & jacks etc.

Mini-IEEE 1394 Port

The Mini-IEEE 1394 port only supports **SELF POWERED** IEEE 1394 devices. Make sure you install the IEEE 1394 filter driver (see page *4 - 6*).

7-in-1 Card Reader

The card reader allows you to use the most popular digital storage card formats:

MMC (MultiMedia Card) / SD (Secure Digital) / MS (Memory Stick)
MS Pro (Memory Stick Pro) / MS Duo (requires PC adapter)
Mini SD (requires PC adapter) / RS MMC (requires PC adapter)

HDMI-Out Port

Note that **the** HDMI-Out Port supports video and audio signals to attached external displays (also see *"HDMI Audio Configuration" on page B - 14*).

e-SATA Port

Install the **Intel Matrix Storage** driver to display the safe removal icon for e-SATA devices in the taskbar (see *"Intel® Matrix Driver Installation" on page 7 - 44*).

Disk Eject Warning

Don't try to eject a CD/DVD while the system is accessing it. This may cause the system to "crash". Stop the disk first then eject it, or press the stop button twice.

CD/DVD Emergency Eject

If you need to manually eject a CD/DVD (e.g. due to an unexpected power interruption) you may push the end of a straightened paper clip into the emergency eject hole. Do not use a sharpened pencil or any object that may break and become lodged in the hole. Don't try to remove a floppy disk/CD/DVD while the system is accessing it. This may cause the system to "crash".

Changing DVD Regional Codes

Go to the **Control Panel** and double-click **Device Manager (Hardware and Sound)**, then click the **+** next to **DVD/CD-ROM drives**. Double-click on the DVD-ROM device to bring up the **Properties** dialog box, and select the **DVD Region** (tab) to bring up the control panel to allow you to adjust the regional code (see ***"DVD Regional Codes" on page 2 - 5***).

DVD region detection is device dependent, not OS-dependent. You can select your module's region code **5** times. The fifth selection is permanent. This cannot be altered even if you change your operating system or you use the module in another computer.

System Map: Right & Bottom Views

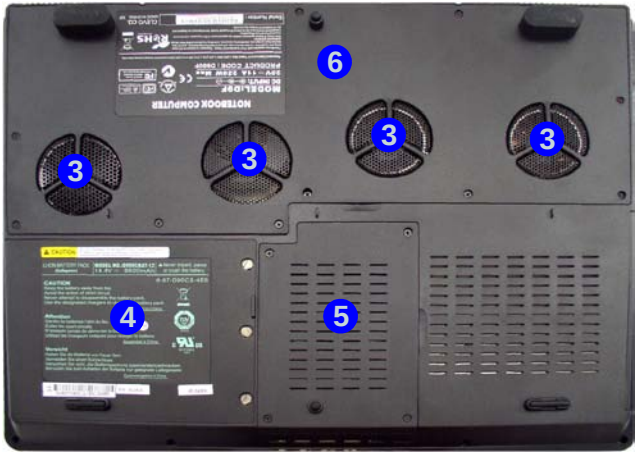


Figure 1 - 8
Right & Bottom Views

1. USB Ports
2. Security Lock Slot
3. Fan Outlet/Intake
4. Battery (Secondary HDD Bay - HDD3)
5. Primary HDD Bay (HDD1 & 2)
6. Component Bay Cover

Battery Information

Always completely discharge, then fully charge, a new battery before using it. Completely discharge and charge the battery at least once every 30 days or after about 20 partial discharges. See ***"Battery Information" on page 3 - 10*** for full instructions.

Overheating

To prevent your computer from overheating make sure nothing blocks the vent(s)/fan intake(s) while the computer is in use.

Windows Vista Start Menu & Control Panel

Most of the control panels, utilities and programs within ***Windows Vista*** (and most other ***Windows*** versions) are accessed from the **Start** menu. When you install programs and utilities they will be installed on your hard disk drive, and a shortcut will usually be placed in the **Start** menu and/or the desktop. You can customize the look of the **Start** menu by right-clicking the **Start** menu and selecting **Properties** from the menu.

Figure 1 - 9 **- Start Menu & Control Panel**

In many instances throughout this manual you will see an instruction to open the **Control Panel**. The **Control Panel** is accessed from the **Start** menu, and it allows you to configure the settings for most of the key features in ***Windows*** (e.g. power, video, network, audio etc.). ***Windows Vista*** provides basic controls for many of the features, however many new controls are added (or existing ones are enhanced) when you install the drivers listed in ***Table 4 - 1, on page 4 - 3***. To see all controls it may be necessary to toggle off Category View.

Video Features

You can configure display options, from the **Display Settings** control panel in ***Windows*** as long as the appropriate **video driver** is installed. For more detailed video information see ***"NVIDIA Video Driver Controls" on page B - 1***. To access **Display Settings** in ***Windows***:

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Click **Adjust screen resolution** under the **Appearance and Personalization** menu (or double-click **Personalization > Display Settings**).
3. Move the slider to the preferred setting in **Resolution:** 1 (***Figure 1 - 10 on page 1 - 18***).
4. Click the arrow, and scroll to the preferred setting In **Colors:** 2(***Figure 1 - 10 on page 1 - 18***).
5. Click **Advanced Settings** (button) 3 (***Figure 1 - 10 on page 1 - 18***).
6. Click **GeForce.....** (tab).
7. Click **Start the NVIDIA Control Panel** 4 (***Figure 1 - 10 on page 1 - 18***) to access the control panel.
8. The **NVIDIA Control Panel** can also be accessed by right-clicking the desktop, and then clicking **NVIDIA Control Panel**.

Video Card Options

Note that card types, specifications and drivers are subject to continual updates and changes. Check with your service center for the latest details on video cards supported (see ***"Video Adapter" on page C - 2*** for details).

Display Devices & Options

Besides the built-in LCD, you can also use an **external VGA monitor** (CRT)/**external Flat Panel Display** or **TV** (connected to the DVI-Out port/HDMI-Out port) as your display device.

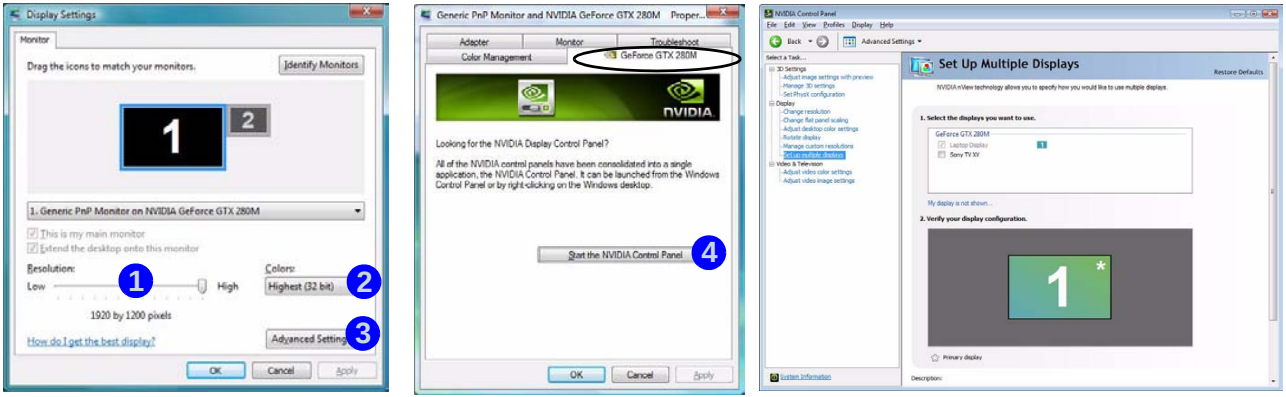


Figure 1 - 10 **- Display Settings & NVIDIA Control Panel**

NVIDIA Display Mode	Description
Single	One display device is used.
Clone	Both connected displays output the same view
Dualview	Both connected displays are treated as separate devices, and act as a virtual desktop

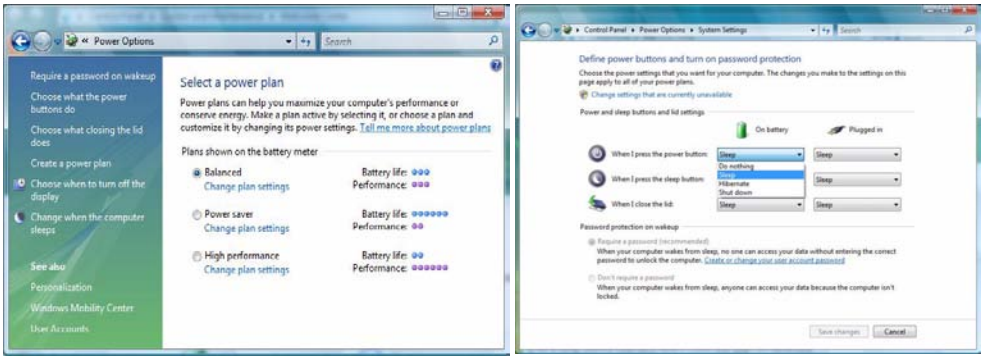
Table 1 - 5 **- Display Modes Available**

Power Options

The **Power Options** (**Hardware and Sound** menu) control panel icon in ***Windows*** (see page ***1 - 16***) allows you to configure power management features for your computer. You can conserve power by means of **power plans** and configure the options for the **power button**, **sleep button**, **computer lid (when closed)**, **display** and **sleep** mode from the left menu. Note that the **Power saver** plan may have an affect on computer performance.

Click to select one of the existing plans, or click ***Create a power plan*** in the left menu and select the options to create a new plan. Click ***Change Plan Settings*** and click ***Change advanced power settings*** to access further configuration options.

Pay attention to the instructions on battery care in ***"Battery Information" on page 3 - 10***.



Note: **Sleep** is the default power saving state in ***Windows Vista***

Figure 1 - 11 **- Power Options**

Chapter 2: Storage Devices, Mouse, Audio & Printer

Overview

Read this chapter to learn more about the following main features and components of the computer:

- Hard Disk Drive
- Optical Device
- 7-in-1 Card Reader
- ExpressCard Slot
- Application Hot Key
- Game Keys
- TouchPad and Buttons/Mouse
- Audio Features
- Setup for Audio Recording

Power Safety

Before attempting to access any of the internal components of your computer please ensure that the machine is not connected to the AC power, and that the machine is turned off. Also ensure that all peripheral cables, including phone lines, are disconnected from the computer.

Hard Disk Drive

The hard disk drive(s) is(are) used to store your data in the computer. The hard disk(s) can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 9.5 mm. The primary hard disk bay 1 is accessible from the bottom of your computer as seen below, and the secondary hard disk bay 2 is located under the battery compartment.

The computer can accommodate up to three hard disks (two in the primary bay, and one in the secondary bay), and these may be configured in **RAID** or **AHCI** modes.

Further details on removing and inserting the hard disk are available in ***"Upgrading the Hard Disk Drive(s)" on page 6 - 4***.

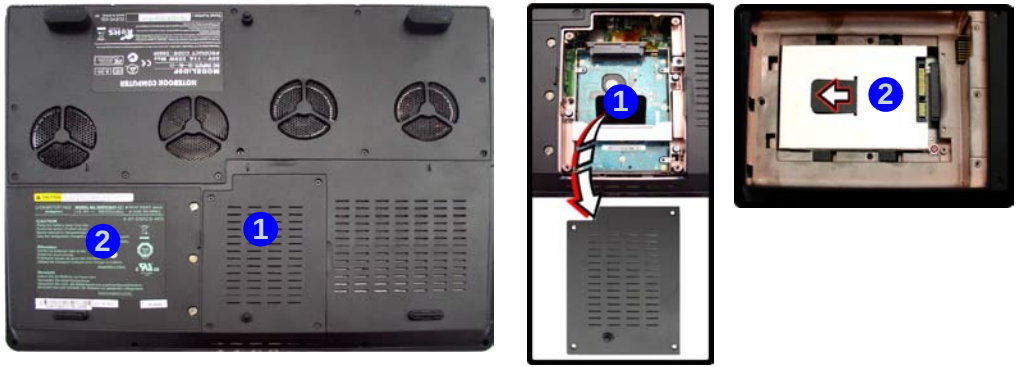


Figure 2 - 1
Hard Disk Bays

Optical Device

There is a bay for a 5.25" optical (CD/DVD) device (12.7mm height). The actual device will depend on the model you purchased (see *"Storage" on page C - 3*). The optical device is usually labeled "**Drive D:**" and may be used as a boot device if properly set in the **BIOS** (see *"Boot Menu" on page 5 - 12*).

Loading Discs

To insert a CD/DVD, press the open button 1 and carefully place a CD/DVD onto the disc tray with label-side facing up (use just enough force for the disc to click onto the tray's spindle). Gently push the CD/DVD tray in until its lock "clicks" and you are ready to start. The busy indicator 2 will light up while data is being accessed, or while an audio/video CD, or DVD, is playing. If power is unexpectedly interrupted, insert an object such as a straightened paper clip into the emergency eject hole 3 to open the tray.

Sound Volume Adjustment

How high the sound volume can be set depends on the setting of the volume control within ***Windows***. Click the **Volume** icon on the taskbar to check the setting.

Peripherals must be connected before you turn on the system.

Figure 2 - 2
Optical Device

CD Emergency Eject

If you need to manually eject a CD (e.g. due to an unexpected power interruption) you may push the end of a straightened paper clip into the emergency eject hole. However please do NOT use a sharpened pencil or similar object that may break and become lodged in the hole.

Disk Eject Warning

Don't try to remove a CD/DVD while the system is accessing it. This may cause the system to "crash".

Handling CDs or DVDs

Proper handling of your CDs/DVDs will prevent them from being damaged. Please follow the advice below to make sure that the data stored on your CDs/DVDs can be accessed.

Note the following:

- Hold the CD or DVD by the edges; do not touch the surface of the disc.
- Use a clean, soft, dry cloth to remove dust or fingerprints.
- Do not write on the surface with a pen.
- Do not attach paper or other materials to the surface of the disc.
- Do not store or place the CD or DVD in high-temperature areas.
- Do not use benzene, thinner, or other cleaners to clean the CD or DVD.
- Do not bend the CD or DVD.
- Do not drop or subject the CD or DVD to shock.

DVD Regional Codes

To change the DVD regional codes see *"Changing DVD Regional Codes" on page 1 - 14*.

DVD Regional Coding	
Region	**Geographical Location**
1	USA, Canada
2	Western Europe, Japan, South Africa, Middle East & Egypt
3	South-East Asia, Taiwan, South Korea, The Philippines, Indonesia, Hong Kong
4	South & Central America, Mexico, Australia, New Zealand
5	N Korea, Russia, Eastern Europe, India & Most of Africa
6	China

Table 2 - 1
DVD Regional Coding

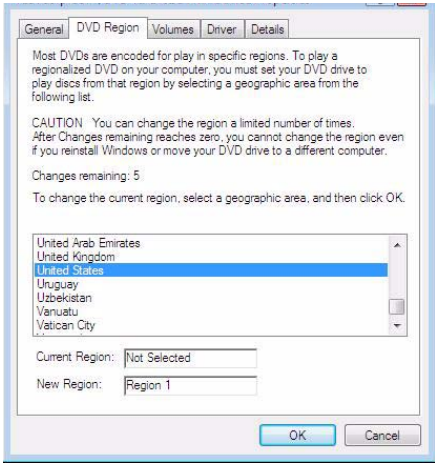


Figure 2 - 3
DVD Regions

Card Reader Cover

Make sure you keep the cover in the card reader when not in use. This will help prevent foreign objects and/or dust getting in to the card reader.

7-in-1 Card Reader

The card reader allows you to use some of the latest digital storage cards. Push the card into the slot and it will appear as a removable device, and can be accessed in the same way as your hard disk (s). Make sure you install the Card Reader driver (see *"Card Reader/ExpressCard" on page 4 - 6*).

- MMC (MultiMedia Card)
- SD (Secure Digital)
- MS (Memory Stick)
- MS (Memory Stick Pro)
- MS Duo (requires PC adapter*)
- Mini SD (requires PC adapter*)
- RS MMC (requires PC adapter*)

***Note**: The PC adapters are usually supplied with these cards.

Figure 2 - 4
Left View

1. Card Reader

ExpressCard Slot

The computer is equipped with an **ExpressCard/34/54** slot that reads Express Card/34 and ExpressCard/54 formats. ExpressCards are the successors to PCMCIA (PC Cards).

ExpressCard/54 is used for applications which require a larger interface slot, e.g. CompactFlash card reader. The number denotes the card width; 54mm for the Express Card/54 and 34mm for the ExpressCard/34. Make sure you install the ExpressCard driver (see *"Card Reader/ExpressCard" on page 4 - 6*).

ExpressCard Slot Cover

Make sure you keep the cover in the ExpressCard slot when not in use. This will help prevent foreign objects and/or dust getting in to the ExpressCard Slot.

Inserting and Removing ExpressCards

- Align the ExpressCard with the slot and push it in until it locks into place.
- To remove an ExpressCard, simply press the card to eject it (as pictured in the generic figure below).

Figure 2 - 5
Express Card Slot

Hot Key Driver

Double-click the icon to bring up the configuration menu to define which application to open when the application hot key button is pressed.

Application.exe

You will need to locate the actual **application executable (.exe) file**, not just the **shortcut**. To find the application right-click its **shortcut** on the desktop and click **Properties**. Click the **shortcut** (tab) and see where the executable file is located by clicking the **Open File Location** (button).

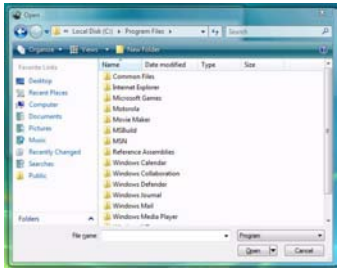
Figure 2 - 6
Application Hot Key Driver

Application Hot Key

To configure a program to open when the application hot key button is pressed (***Windows* Media Player** is the default program), follow the instructions below.

1. **Double-click** the Hot Key driver icon in the taskbar.
2. Click **Launch user specified application** (button) .

3. An **Open** dialog box will appear on the screen.



Hot Key Driver Location

If you click the close icon , run the program from the file location (C:\Program Files (x86)\Hotkey\Hotkey.exe).

4. **Browse** to the directory where the desired application**.exe** program exists.
5. **Double-Click** on the program file or choose **Open**, and click **OK** (button).
6. Press the application hot key button to open the program (as long as the hot key driver is running in the taskbar).

Game Keys

The two game hot keys on the left of the computer allow macros to be configured for common keystrokes used in applications (the keys can assigned macros for any program, not only games). To configure the keys follow the instructions below (make sure you have installed the **GameKey** Utility driver - see *"GameKey Utility" on page 4 - 7*).

1. Run the **Game Key Configuration** program from the desktop icon (or from C:\Program Files (x86)\Chicony\GameKey\GmKeyCfgUtl.exe).
2. Double-click the button for the appropriate key (it will turn red).
3. When the button is red you may then record the keystrokes to be assigned to the Game Key.

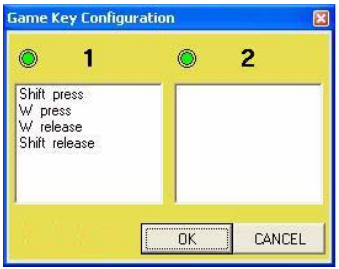


Figure 2 - 7
Game Key Configuration

4. Click **OK**.
5. Repeat the procedure for the other Game Key if required.
6. Close the **Game Key Configuration** window.
7. The keystroke order will be repeated with the appropriate button press in any application program.

TouchPad Scrolling

This computer model series may feature different TouchPad versions.

These TouchPads may differ in their vertical scrolling function in most scrollable windows.

Some TouchPads require sliding the finger up and down on the right of the TouchPad to scroll the window. Other versions require tapping/holding down the finger at the top right or bottom right of the TouchPad to scroll the window.

TouchPad and Buttons/Mouse

The TouchPad is an alternative to the mouse; however, you can also add a mouse to your computer through one of the USB ports. The TouchPad buttons function in much the same way as a two-button mouse. The central button may be configured to function as you require.

Install the TouchPad driver (see page *4 - 6*) and then double-click the TouchPad driver icon in the taskbar to configure the functions. You may then configure the TouchPad tapping, buttons, scrolling, pointer motion and sensitivity options to your preferences. The TouchPad may be toggled on/off by means of the **Fn + F1** key combination.

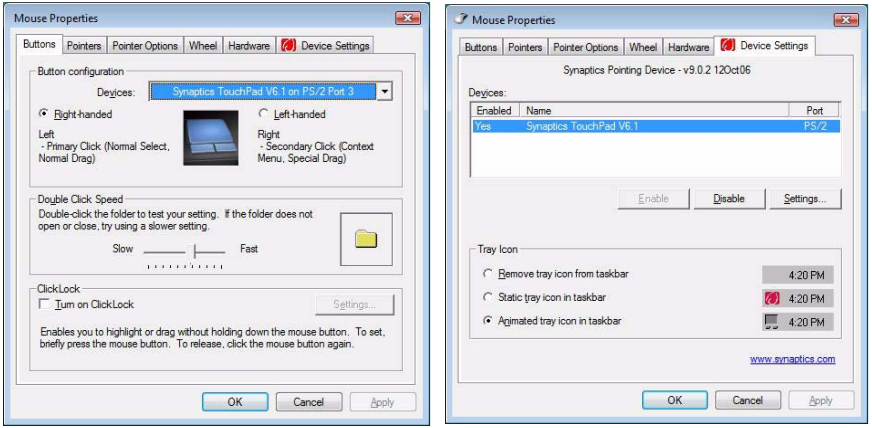
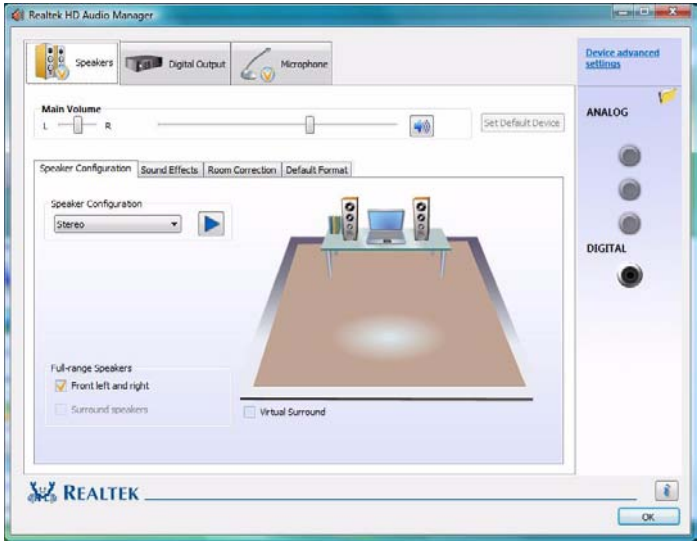


Figure 2 - 8
Mouse Properties

Audio Features

You can configure the audio options on your computer from the **Sound** control panel in ***Windows***, or from the **Realtek HD Audio Manager** icon in the taskbar/control panel (right-click the taskbar icon to bring up an audio menu). The volume may also be adjusted by means of the **Fn** + **F5/F6** key combination.

Right-click the icon to access the menu above.



See *"HDMI Audio Configuration" on page B - 14* for a description of the audio configuration when connecting an HDMI supported display device.

Sound Volume Adjustment

The sound volume level is set using the volume control within ***Windows*** (and the volume function keys on the computer). Click the volume icon in the taskbar to check the setting.

Figure 2 - 9
Realtek Audio Manager

Setup for Audio Recording

To record audio sources on your computer at optimum quality follow the instructions below:

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**) and make sure you are in **Classic View**.
2. Click **Realtek HD Audio Manager** (or right-click the taskbar icon and select **Sound Manager**).
3. Click **Microphone Effects** (tab) in **Microphone** (tab), and then click to select **Noise Suppression** (button), or adjust the **Recording Volume** level to around **60**, to obtain the optimum recording quality.
4. Click **OK** to close the control panel and save the settings.

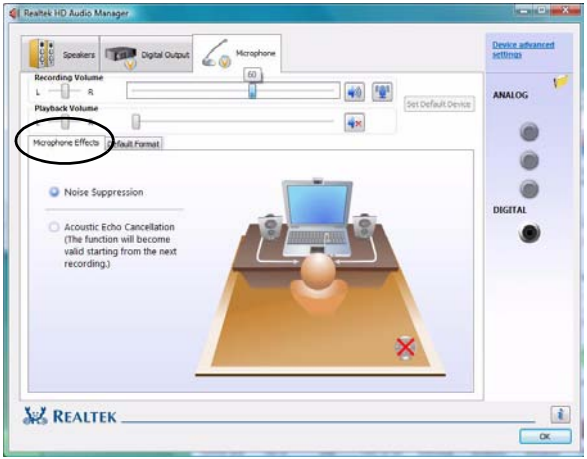


Figure 2 - 10
Realtek Audio Manager - Recording Setup

Setup for 5.1 Surround Sound

To setup your system for 5.1 surround sound you will need to connect the audio cables to the Line-In and Microphone-In jacks.

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**) and make sure you are in **Classic View**.
2. Click **Realtek HD Audio Manager** (or right-click the taskbar icon and select **Sound Manager**).
3. Click **Speakers** (tab) and click **Speaker Configuration** (tab).
4. Select **5.1 Speaker** from the **Speaker Configuration** pull-down menu.

Auto Popup Dialog

You should enable the auto popup dialog to automatically detect when a device has been plugged-in. If disabled, double-click **connector settings** and click the box to enable the auto popup detection of plugged-n devices.

Figure 2 - 11 **Speaker Configuration**

5. Plug the **front speaker** cables into the **Headphone-Out Jack**.
6. Plug in the other cables (you may require an adapter to connect each cable to the appropriate jack e.g a stereo mini to dual RCA adapter) from your speakers as follows:

- Line-In Jack = Rear Speaker Out
- Microphone-In Jack = Center/Subwoofer Speaker Out

7. As you plug in each cable a dialog box will pop up (see ***"Auto Popup Dialog" on page 2 - 13***).
8. Click to put a tick in the appropriate box according to the speaker plugged-in (e.g. Rear Speaker Out), and then click **OK** to save the setting.
9. Click **OK** to exit **Realtek HD Audio Manager**.

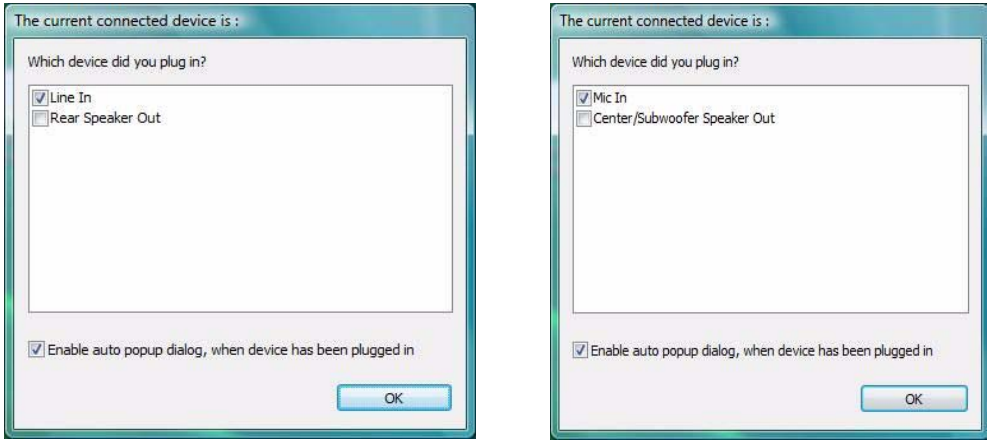


Figure 2 - 12
Connected Device Auto Popup

Audio Setup for LCD Monitors/TVs with HDMI Input

Some LCD monitors/TVs support HDMI input, but DO NOT have built-in digital audio decoders. Where this is the case, when playing DVDs in Windows Media Player, a background noise can occur. If this situation does arise then please follow the instructions below.

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Click **Sound** (**Hardware and Sound**).
3. Double-click **Realtek Digital Output**.
4. Click **Supported Formats** (tab).
5. Click to disable (remove the check in the box) **DTS Audio** and **Dolby Digital**.
6. Click OK and close the control panels.

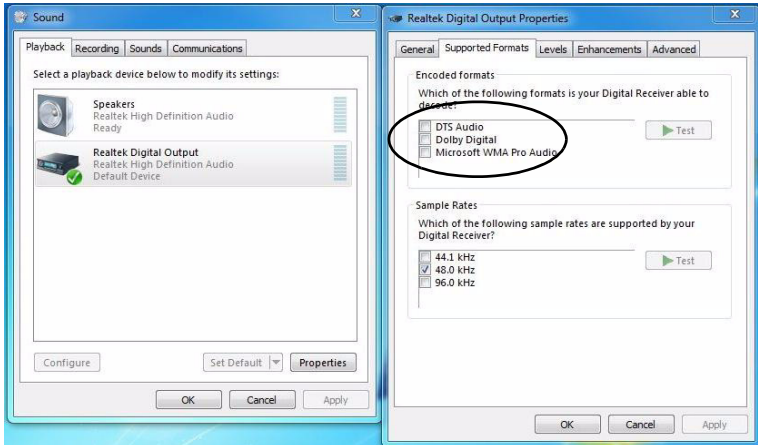


Figure 2 - 13
Sound
Supported Formats

Parallel Printer

After setting up the printer attach the parallel cable to the printer.

Connect the printer's parallel cable to the Parallel to USB converter, and then plug the converter into the USB port.

Turn ON the printer, then turn ON the computer.

Windows will identify the printer and either load one of its own drivers or ask you to supply one. Follow the on-screen instructions.

Adding a Printer

The most commonly used peripheral is a printer. The following conventions will help you to add a printer; however it is always best to refer to the printer manual for specific instructions and configuration options.

USB Printer

Most new printers have a USB interface connection. You may use any one of the ports to connect the printer.

Install Instructions:

1. Set up the printer according to its instructions (unpacking, paper tray, toner/ink cartridge etc.).
2. Turn ON the computer.
3. Turn ON the printer.
4. Connect the printer's USB cable to one of the USB ports on the computer.
5. ***Windows*** will identify the printer and either load one of its own drivers or ask you to supply one. Follow the on-screen instructions.

Parallel Printer

This is still a very common type of printer. The install instructions are in the sidebar (you will need to purchase a parallel to USB converter).

Chapter 3: Power Management

Overview

To conserve power, especially when using the battery, your computer power management conserves power by controlling individual components of the computer (the monitor and hard disk drive) or the whole system.

This chapter covers:

- The Power Sources
- Turning on the Computer
- Power Plans
- Power-Saving States
- Configuring the Power Buttons
- Battery Information

The computer uses enhanced power saving techniques to give the operating system (OS) direct control over the power and thermal states of devices and processors. For example, this enables the OS to set devices into low-power states based on user settings and information from applications.

OS Note

Power management functions will vary slightly depending on your operating system. For more information it is best to refer to the user's manual of your operating system.

(**Note**: All pictures used on the following pages are from the ***Windows Vista*** OS.)

The Power Sources

The computer can be powered by either an AC/DC adapter or a battery pack.

AC/DC Adapter

Use only the AC/DC adapter that comes with your computer. The wrong type of AC/DC adapter will damage the computer and its components (see page ***C - 4***).

1. Attach the AC/DC adapter to the DC-In jack at the rear of the computer.
2. Plug the AC power cord into an outlet, and then connect the AC power cord to the AC/DC adapter.
3. Raise the lid/LCD to a comfortable viewing angle.
4. Press the power button to turn “On”.

Battery

The battery allows you to use your computer while you are on the road or when an electrical outlet is unavailable. Battery life varies depending on the applications and the configuration you're using. **To increase battery life, let the battery discharge completely before recharging** (see ***“How do I completely discharge the battery?” on page 3 - 14***).

We recommend that you do not remove the battery. For more information on the battery, please refer to ***“Battery Information” on page 3 - 10***.

Turning on the Computer

Now you are ready to begin using your computer. To turn it on simply press the power button on the front panel.

When the computer is on, you can use the power button as a Sleep/Hibernate/Shut Down hot key button when it is pressed for less than **4 seconds** (pressing and holding the power button for longer than this will force the computer to shut down). Use **Power Options** (**Hardware and Sound** menu) control panel in ***Windows Vista*** to configure this feature (see ***Figure 3 - 4 on page 3 - 8***).

Forced Off

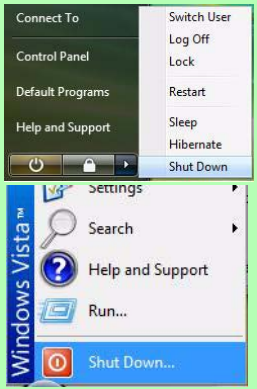
If the system "hangs", and the **Ctrl + Alt + Del** key combination doesn't work, press the power button for **4 seconds**, or longer, to force the system to turn itself off.

Power Button Sleep

Sleep is the default power mode when the power button is pressed for less than 4 seconds. You may configure the options for the power button from the **Power Options** (**Hardware and Sound** menu) control panel in ***Windows Vista*** (see your OS's documentation, or ***"Configuring the Power Buttons" on page 3 - 8*** for details).

Shut Down

Note that you should always shut your computer down by choosing the **Shut Down** command from the **Lock Button Menu** in ***Windows Vista***. This will help prevent hard disk or system problems.



Resuming Operation

See *Table 3 - 1, on page 3 - 9* for information on how to resume from a power-saving state.

Password

It is recommended that you enable a password on system resume in order to protect your data.

Power Plans

The computer can be configured to conserve power by means of **power plans**. You can use (or modify) an existing **power plan**, or create a new one.

The settings may be adjusted to set the **display** to turn off after a specified time, and to send the computer into **Sleep** after a period of inactivity.

Click ***Change plan settings*** and then click ***Change advanced power settings*** to access further configuration options in **Advanced Settings**.

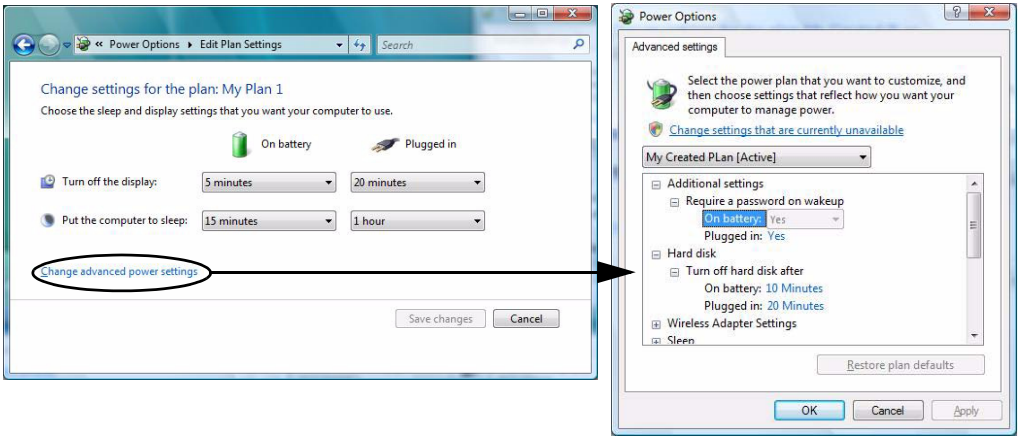


Figure 3 - 1
Power Plan Advanced Settings

Each ***Windows* Power Plan** will also adjust the processor performance of your machine in order to save power. This is worth bearing in mind if you are experiencing any reduced performance (especially under DC/battery power).

Choose **High performance** for maximum performance when the computer is powered from an AC power source. Choose the **Power saver** (bear in mind that this scheme may slow down the overall performance of the computer in order to save power) for maximum power saving when the computer is battery (DC power) powered.

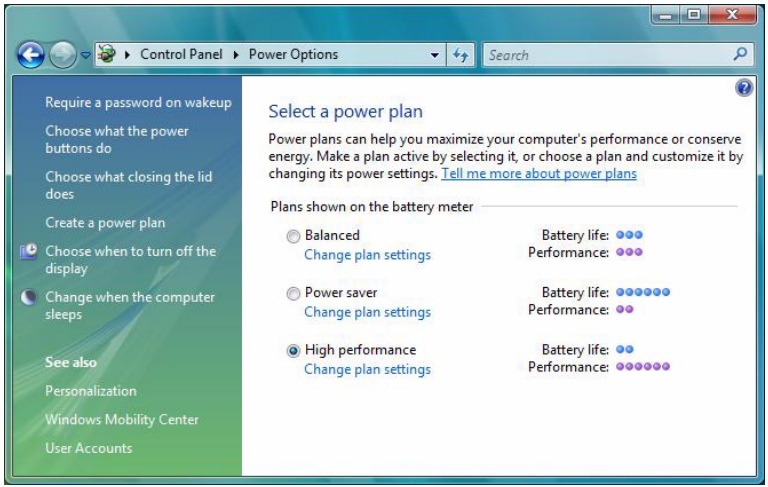


Figure 3 - 2
Power Plans

Power Button

The **Power Button**  in the Start Menu (in Classic View use the Shut Down button ) can be used to send the computer into a power-saving state.

Sleep Mode & Mobile PC Battery

A mobile PC in **Sleep** uses very little battery power.

After an extended period of time the computer will save any open documents and applications to hard disk.

Power-Saving States

You can use power-saving states to stop the computer's operation and restart where you left off. **Sleep** is the default power-saving state in ***Windows Vista***.

Earlier versions of ***Windows*** used Stand By and Hibernate as system power-saving states. ***Windows Vista*** combines the features of Stand By and Hibernate into the default **Sleep** power-saving state.

Sleep

In **Sleep** all of your work, settings and preferences are saved to memory before the system sleeps. When you are not using your computer for a certain length of time, which you specify in the operating system, it will enter **Sleep** to save power.

The PC wakes from **Sleep within seconds** and will return you to where you last left off (what was on your desktop) without reopening the application(s) and file(s) you last used.

If your mobile PC in **Sleep** is running on battery power the system will use only a minimum amount of power. After an extended period the system will save all the information to the hard disk and shut the computer down before the battery becomes depleted.

Hibernate

Hibernate uses the least amount of power of all the power-saving states and saves all of your information on a part of the hard disk before it turns the system off. If a power failure occurs the system can restore your work from the hard disk; if a power failure occurs when work is saved only to memory, then the work will be lost. **Hibernate** will also return you to where you last left off within seconds. You should put your mobile PC into **Hibernate** if you will not use the computer for a period of time, and will not have the chance to charge the battery.

Shut Down

You should **shut down** the computer if you plan to install new hardware (don't forget to remove the battery and follow all the safety instructions in **Chapter 6**), plan to be away from the computer for several days, or you do not need it to wake up and run a scheduled task. Returning to full operation from **shut down** takes longer than from **Sleep** or **Hibernate**.

Figure 3 - 3
Lock Button Menu

Password Protection

It is recommended that you enable a password on wake up in order to protect your data.

However you can disable this setting from the **Power Options** menu by clicking ***Require a password on wakeup*** in the left menu, and selecting the options (click ***Change settings that are currently unavailable***).

Configuring the Power Buttons

The power/sleep button (**Fn + F4** key combo) and closed lid may be set to send the computer in to a power-saving state.

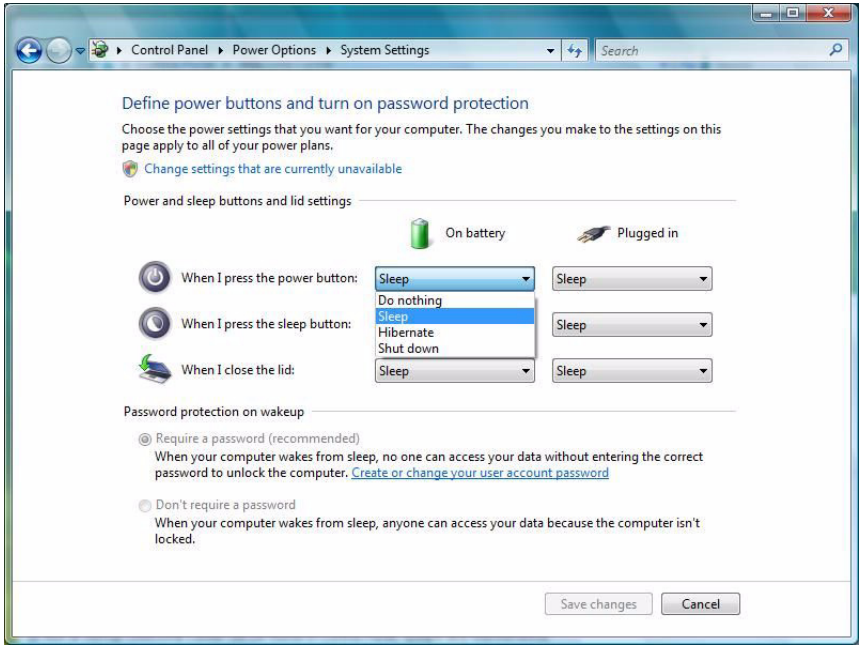


Figure 3 - 4
Power Options Define Power Buttons

Resuming Operation

You can resume operation from power-saving states by pressing the power button, or in some cases pressing the sleep button (**Fn + F4** key combo).

Power Status	Icon Color	To Resume
Power Off	Off	Press the Power Button
Sleep	Blinking Green	Press the Power Button Press the Sleep Button (Fn + F4 Key Combo)
Hibernate	Off (battery) Orange (AC/DC adapter)	Press the Power Button
Display Turned Off	Green	Press a Key or Move the Mouse/Touchpad

Power Button

When the computer is on, you can use the power button as a Sleep/Hibernate/Shut Down hot key button when it is pressed for less than **4 seconds** (pressing and holding the power button for longer than this will force the computer to shut down).

Closing the Lid

If you have chosen to send the computer to **Sleep** when the lid is closed, raising the lid will wake the system up.

Table 3 - 1 **Resuming Operation**

Low Battery Warning

When the battery is critically low, immediately connect the AC/DC adapter to the computer or save your work, otherwise, the unsaved data will be lost when the power is depleted.

Battery Information

Please follow these simple guidelines to get the best use out of your battery.

Battery Power

Your computer's battery power is dependent upon many factors, including the programs you are running, and peripheral devices attached. You can set actions to be taken (e.g. Shut down, Hibernate etc.), and set critical and low battery levels from **power plan Advanced Settings** (see *Figure 3 - 1 on page 3 - 4*).

Click the battery icon in the taskbar to see the current battery level and charge status.

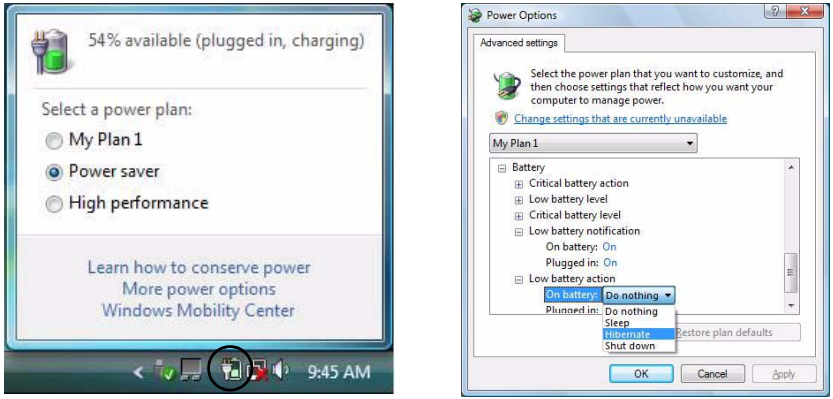
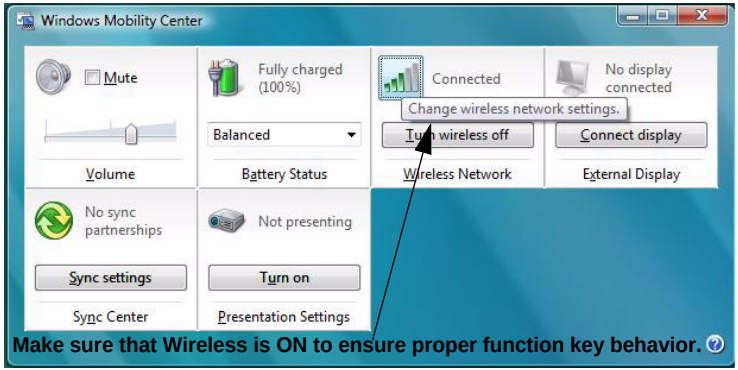


Figure 3 - 5
Battery Icon (Taskbar) & Battery Advanced Settings

Conserving Battery Power

- Use a **power plan** that conserves power (e.g **Power saver**), however note that this may have an affect on computer performance.
- Lower the brightness level of the LCD display. The system will decrease LCD brightness slightly to save power when it is not powered by the AC/DC adapter.
- Reduce the amount of time before the display is turned off.
- Close wireless, Bluetooth, modem or communication applications when they are not being used.
- Disconnect/remove any unnecessary external devices e.g. USB devices, ExpressCards etc.



Wireless Hot Keys

The computer's wireless function keys will not function properly if **Wireless** is turned **OFF** in the **Windows Mobility Center** control panel.

The wireless indicators may show that the WLAN module is powered on, however if wireless is OFF in the Mobility Center, the module will not be powered on.

Make sure that Wireless is **ON** in the Mobility Center to ensure proper function key behavior.

Figure 3 - 6
Windows Mobility Center

Battery Life

Battery life may be shortened through improper maintenance. **To optimize the life and improve its performance, fully discharge and recharge the battery at least once every 30 days**.

We recommend that you do not remove the battery yourself. If you do need to remove the battery for any reason see ***"Removing the Battery" on page 6 - 3***.

New Battery

Always completely discharge, then fully charge, a new battery (see ***"Battery FAQ" on page 3 - 14*** for instructions on how to do this).

Recharging the Battery with the AC/DC Adapter

The battery pack automatically recharges when the AC/DC adapter is attached and plugged into an electrical outlet. If the computer is powered on, and in use, it will take several hours to fully recharge the battery. When the computer is turned off but plugged into an electrical outlet, battery charge time is less. (Refer to ***"LED Indicators" on page 1 - 8*** for information on the battery charge status, and to ***"Battery Information" on page 3 - 10*** for more information on how to maintain and properly recharge the battery pack.)

Proper handling of the Battery Pack

- DO NOT disassemble the battery pack under any circumstances
- DO NOT expose the battery to fire or high temperatures, it may explode
- DO NOT connect the metal terminals (+, -) to each other

Damaged Battery Warning

Should you notice any physical defects (e.g. the battery is bent out of shape after being dropped), or any unusual smells emanating from the notebook battery, shut your computer down immediately and contact your service center. If the battery has been dropped we do not recommend using it any further, as even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire. It is recommended that you replace your computer battery every two years.

Caution

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Battery FAQ

How do I completely discharge the battery?

Use the computer with battery power until it shuts down due to a low battery. Don't turn off the computer even if a message indicates the battery is critically low, just let the computer use up all of the battery power and shut down on its own.

1. Save and close all files and applications.
2. **Create** a **power plan** for discharging the battery and set all the options to **Never**.
3. Click ***Change plan settings*** (after saving it) and click ***Change advanced power settings***.

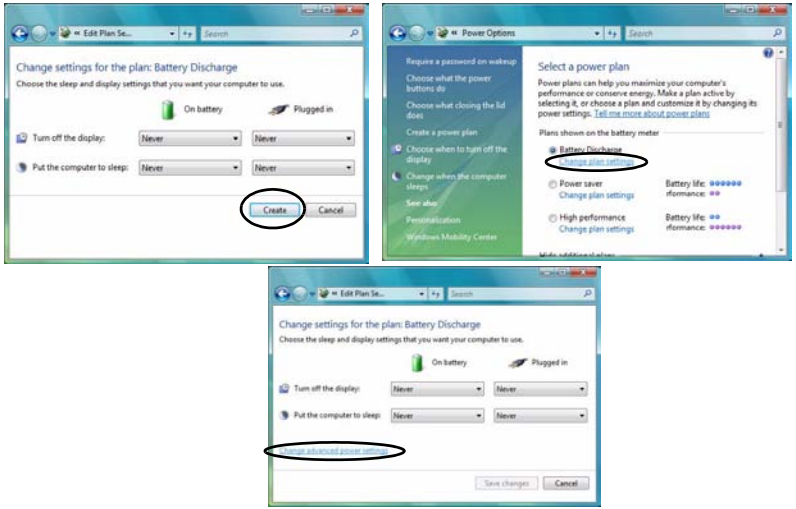


Figure 3 - 7
Power Plan Create

4. Scroll down to **Battery** and click **+** to expand the battery options.
5. Choose the options below (click **Yes** if a warning appears):

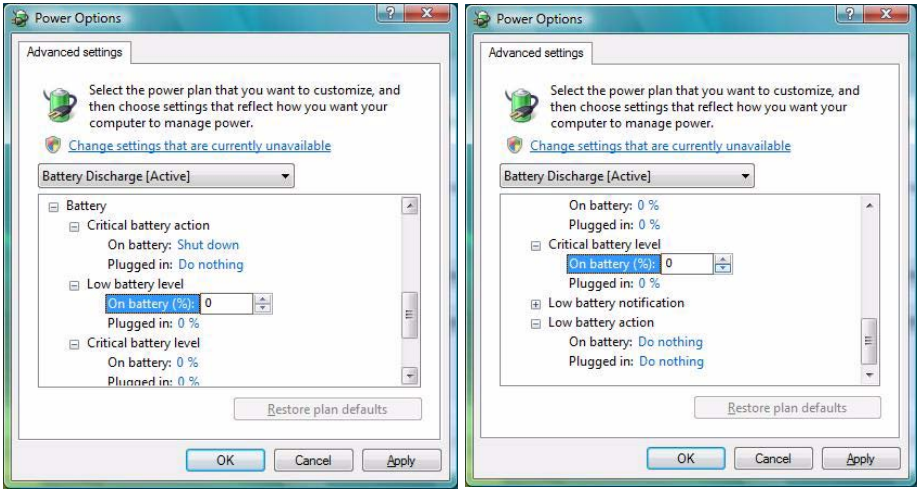


Figure 3 - 8
Power Options Advanced Settings - Battery

- Low battery levels = 0%
- Critical battery Levels = 0%
- Low battery action = Do Nothing
- Critical battery action (On battery) = Shut Down
- Critical battery action (Plugged in) = Do Nothing

How do I fully charge the battery?
When charging the battery, don't stop until the LED charging indicator light changes from orange to green.

How do I maintain the battery?
Completely discharge and charge the battery at least once every 30 days or after about 20 partial discharges.

Chapter 4: Drivers & Utilities

This chapter deals with installing the drivers and utilities essential to the operation or improvement of some of the computer's subsystems. The system takes advantage of some newer hardware components for which the latest versions of most available operating systems haven't built in drivers and utilities. Thus, some of the system components won't be auto-configured with an appropriate driver or utility during operating system installation. Instead, you need to manually install some system-required drivers and utilities.

RAID & AHCI Setup

Note that setting up a RAID, or AHCI mode, needs to be done prior to installing the *Windows OS*, and therefore before installing the other drivers listed here (see ***"Setting Up SATA RAID or AHCI Modes" on page 7 - 36***).

What to Install

The ***Device Drivers & Utilities + User's Manual*** disc contains the drivers and utilities necessary for the proper operation of the computer. ***Table 4 - 1, on page 4 - 3*** lists what you need to install and **it is very important that the drivers are installed in the order indicated**.

Module Driver Installation

The procedures for installing drivers for the **WLAN**, **PC Camera, TV Tuner** and **RAID** modules are provided in ***"Modules" on page 7 - 1***. Only install drivers for modules included in your purchase option. Make sure any modules (e.g. PC Camera, or WLAN) are **ON** before installing the appropriate driver.

Install the **Intel Matrix Storage** driver to fully support hard disks in **RAID** or **AHCI** modes, to display the safe removal icon for **e-SATA devices** in the taskbar and the **Intel Turbo Memory** module.

Driver Installation

Insert the *Device Drivers & Utilities + User's Manual* disc and click ***Install Drivers*** (button), or click ***Optional*** (button) to access the **Optional** driver menu.

If you wish to install the drivers manually see page ***4 - 3***.

Figure 4 - 1 **- Drivers Installer Screen 1**

1. Check the driver installation order from ***Table 4 - 1, on page 4 - 3*** (**the drivers must be installed in this order**) which is the same as that listed in the ***Drivers Installer*** menu below.
2. Click to select the driver you wish to install, after installing each driver it will become grayed out (if you need to reinstall any driver, click the **Unlock** button).
3. Follow the instructions for each individual driver installation procedure as listed on the following pages.

Figure 4 - 2 **- Drivers Installer Screen 2**

Manual Driver Installation

To install the drivers manually click the **Browse CD/DVD** button in the *Drivers Installer* application and browse to the executable file in the appropriate driver folder.

Windows Update

After installing all the drivers make sure you enable **Windows Update** in order to get all the latest security updates etc. (all updates will include the latest **hotfixes** from Microsoft). See ***"Windows Update" on page 4 - 7*** for instructions.

Windows Vista Service Pack 2

Make sure you install **Windows Vista Service Pack 2** (or a Windows Vista version which includes Service Pack 2) **before installing any drivers**. Go to the Microsoft website for download details, or contact your service center.

Driver for Windows Vista SP2	Page
Chipset	*Page 4 - 5*
Video	*Page 4 - 5*
LAN	*Page 4 - 5*
Modem	*Page 4 - 6*
Audio	*Page 4 - 6*
TouchPad	*Page 4 - 6*
Card Reader/ExpressCard	*Page 4 - 6*
IEEE 1394 Filter	*Page 4 - 6*
GameKey Utility	*Page 4 - 7*
HotKey Utility	*Page 4 - 7*
Wireless LAN Module	*Page 7 - 7*
PC Camera Module	*Page 7 - 25*
Consumer Infrared Driver Installation **(for TV Tuner remote)**	*Page 7 - 34*
Intel® Matrix Driver Installation **(Install to support RAID or AHCI, Intel Turbo Memory and e-SATA port)**	*Page 7 - 44*

Table 4 - 1 **- Driver Installation**

Updating/Reinstalling Individual Drivers

If you wish to update/reinstall individual drivers it may be necessary to uninstall the original driver.To do this go to the **Control Panel** in the ***Windows OS*** and double-click the **Programs and Features** icon (**Programs > Uninstall a program**). Click to select the driver (if it is not listed see below) and click **Uninstall**, and then follow the on screen prompts (it may be necessary to restart the computer). Reinstall the driver as outlined in this chapter.

If the driver is not listed in the **Programs and Features** menu:

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Double-click **Device Manager** (**Hardware and Sound > Device Manager**).
3. Double-click the **device** you wish to update/reinstall the driver for (you may need to click "+" to expand the selection).
4. Click **Driver** (tab) and click the **Update Driver** or **Uninstall** button and follow the on screen prompts.

User Account Control (Win Vista)

If a **User Account Control** prompt appears as part of the driver installation procedure, click **Continue** or **Allow**, and follow the installation procedure as directed.

Windows Security Message

If you receive a ***Windows*** security message as part of the driver installation process. Just click ***"Install this driver software anyway"*** or **Install** to continue the installation procedure.

You will receive this message in cases where the driver has been released after the version of ***Windows*** you are currently using. All the drivers provided will have already received certification for ***Windows***.

New Hardware Found

If you see the message "**New Hardware Found**" (**Found New Hardware Wizard**) during the installation procedure (**other than when outlined in the driver install procedure**), click **Cancel** to close the window, and follow the installation procedure.

Driver Installation Procedure

Insert the *Device Drivers & Utilities + User's Manual* disc and click ***Install Drivers*** (button).

Driver Installation General Guidelines

The driver installation procedures outlined in this Chapter (and in **Chapter 7 Options & Modules**), are accurate at the time of going to press.

Drivers are always subject to upgrade and revision so the exact procedure for certain drivers may differ slightly. As a general guide follow the default on screen instructions for each driver (e.g. **Next > Next > Finish**) unless you are an advanced user. In many cases a restart is required to install the driver.

RAID Note: Setting up a **RAID**, or **AHCI** mode, needs to be done prior to installing the ***Windows*** *OS*, and therefore before installing the other drivers listed here.

Chipset

1. Click **1.Install Chipset Driver > Yes**.
2. Click **Next > Yes > Next > Next**.
3. Click **Finish** to restart the computer.

Video

1. Click **2.Install Video Driver > Yes**.
2. Click **Next > Yes > Next** (or **Next > Next)**.
3. Click **Finish** to restart the computer.

LAN

1. Click **3.Install LAN Driver > Yes**.
2. Click **Next** > **Install**.
3. Click **Finish**.
4. The network settings can now be configured.

Modem

1. Click **4.Install Modem Driver > Yes**.
2. Click **OK**.
3. The modem is now ready for configuration.

Modem Country Selection

Go to the **Phone and Modem Options** control panel (**Hardware and Sound**) and make sure the modem country selection is appropriate for you.

Audio

1. Click **5.Install Audio Driver > Yes**.
2. Click **Next**.
3. Click **Finish** to restart the computer.

TouchPad

1. Click **6.Install Touchpad Driver > Yes**.
2. Click **Next** > **Finish**.
3. Click **Restart Now** to restart the computer.
4. You may then configure your TouchPad as outlined in ***"TouchPad and Buttons/Mouse" on page 2 - 10***.

Card Reader/ExpressCard

1. Click **7.Install Cardreader Driver > Yes**.
2. Click **Install**.
3. Click **Finish**.

IEEE 1394 Filter

1. Click **8.Install 1394 Filter Driver > Yes**.
2. Click **Install** > **Finish**.

GameKey Utility

1. Click **9.Install GameKey Utility** > **Yes**.
2. Click **Next**.
3. Click **Finish** to restart the computer.
4. See *"Game Keys" on page 2 - 9* for configuration instructions.

HotKey Utility

1. Click **10.Install HotKey Utility** > **Yes**.
2. Click **Next** > **Install**.
3. Click **Finish** > **Finish** to restart the computer.
4. See *"Application Hot Key" on page 2 - 8* for configuration instructions.

Make sure you install the **Intel Matrix Storage Manager** driver to fully support hard disks in **AHCI** or **RAID** modes (see *"Intel® Matrix Driver Installation" on page 7 - 44*). Also install this driver to display the safe removal icon for **e-SATA devices** in the taskbar for the e-SATA port. This driver is also required if you have included an **Intel Turbo Memory** module in your purchase configuration.

Windows Update

After installing all the drivers make sure you enable **Windows Update** in order to get all the latest security updates etc. (all updates will include the latest **hotfixes** from Microsoft).

To enable **Windows Update make sure you are connected to the internet**:

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Click **Check for updates** (**Security**), or double-click **Security Center** and click **Windows Update**.
3. Double-click **Check for updates (button)**.
4. The computer will now check for updates (you need to be connected to the internet).
5. Click **Install now** (button) to install the updates.

Optional Drivers

See the pages indicated for the driver installation procedures for any modules included in your purchase option.

Figure 4 - 3 **- Optional Drivers Installer Screen**

Wireless LAN

See the appropriate install procedure for your WLAN module in ***"Wireless LAN Module" on page 7 - 7***.

PC Camera

See the camera instructions in ***"PC Camera Module" on page 7 - 25***.

Consumer Infrared (for TV Tuner Remote)

See the install procedure in ***"TV Tuner Module" on page 7 - 33***.

Intel Matrix Storage Manager

Install this driver to fully support hard disks in **RAID** or **AHCI** modes, to display the safe removal icon for **e-SATA devices** in the taskbar for the e-SATA port and the **Intel Turbo Memory** module (see ***"Intel® Matrix Driver Installation" on page 7 - 44*** and ***"Intel Turbo Memory Module" on page 7 - 48***).

Chapter 5: BIOS Utilities

Overview

This chapter gives a brief introduction to the computer's built-in software:

Diagnostics: The **POST** (Power-On Self Test)

Configuration: The ***Setup*** utility
If your computer has never been set up, or you are making important changes to the system (e.g. hard disk setup), then you should review this chapter first and note the original settings found in ***Setup***. Even if you are a beginner, keep a record of the settings you find and any changes you make. This information could be useful if your system ever needs servicing.

There is one general rule: *Don't make any changes unless you are sure of what you are doing*. Many of the settings are required by the system, and changing them could cause it to become unstable or worse. If you have any doubts, consult your service representative.

BIOS Settings Warning

Incorrect settings can cause your system to malfunction. To correct mistakes, return to *Set-up* and restore the ***Set-up Defaults*** with <**F9**>.

The Power-On Self Test (POST)

Each time you turn on the computer, the system takes a few seconds to conduct a **POST**, including a quick test of the on-board RAM (memory).

As the **POST** proceeds, the computer will tell you if there is anything wrong. If there is a problem that prevents the system from booting, it will display a system summary and prompt you to run ***Setup***.

If there are no problems, the ***Setup*** prompt will disappear and the system will load the operating system. Once that starts, you can't get into ***Setup*** without rebooting.

POST Screen

1. **BIOS** information
2. CPU type
3. Memory status
4. Enter **Setup** prompt appears only during **POST**

Note: The **POST** screen as pictured right is for guideline purposes only. The **POST** screen on your computer may appear slightly different. If you disable the **Boot-time Diagnostic Screen**, the POST screen will not appear.

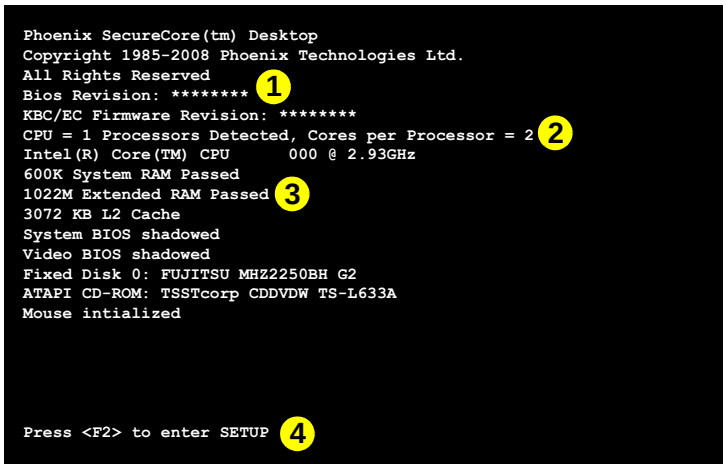


Figure 5 - 1
POST Screen

Failing the POST

Errors can be detected during the **POST**. There are two categories, “fatal” and “non-fatal”.

Fatal Errors

These stop the boot process and usually indicate there is something seriously wrong with your system. Take the computer to your service representative or authorized service center as soon as possible.

Non-Fatal Errors

This kind of error still allows you to boot. You will get a message identifying the problem (make a note of this message!) followed by the prompt:

- Press <F1> to resume
- <F2> to enter Setup

Press **F1** to see if the boot process can continue. It may work, without the correct configuration.

Press **F2** to run the **Setup** program and try to correct the problem. If you still get an error message after you change the setting, or if the “cure” seems even worse, call for help.

The Setup Program

The **Phoenix Setup** program tells the system how to configure itself and manage basic features and subsystems (e.g. port configuration).

Entering Setup

To enter ***Setup***, turn on the computer and press **F2** during the **POST**. The prompt (***Press F2 to Enter Setup***) seen on page *5 - 2* is usually present for a few seconds after you turn on the system. If you get a "Keyboard Error", (usually because you pressed **F2** too quickly) just press **F2** again.

If the computer is already on, reboot using the **Ctrl + Alt + Delete** combination and then hold down **F2** when prompted. The ***Setup*** main menu will appear.

Setup Screens

The following pages contain additional advice on **portions** of the ***Setup***.

Along the top of the screen is a menu bar with menu headings. When you select a heading, a new screen appears. Scroll through the features listed on each screen to make changes to ***Setup***.

Instructions on how to navigate each screen are in the box along the bottom of the screen. If these tools are confusing, press **F1** to call up a **General Help** screen, and then use the arrow keys to scroll up or down the page.

The **Item Specific Help** on the right side of each screen explains the highlighted item and has useful messages about its options.

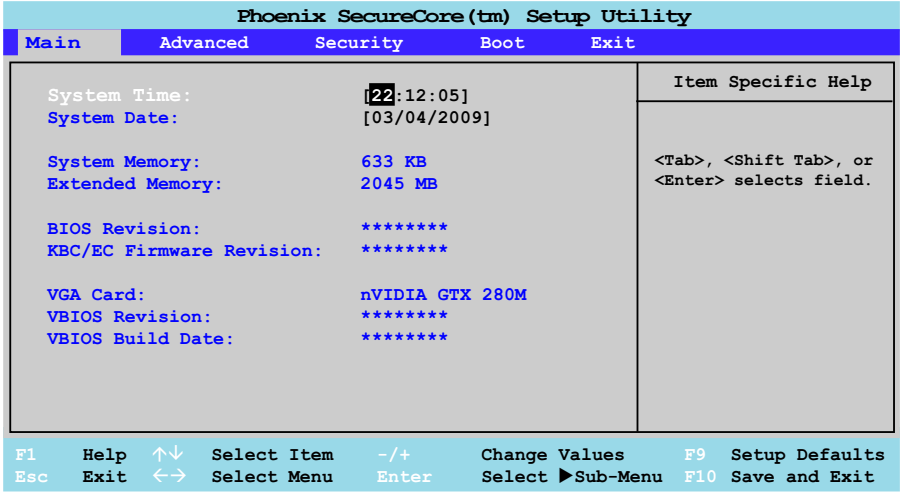
If you see an arrow next to an item, press **Enter** to go to a sub-menu on that subject. The sub-menu screen that appears has a similar layout, but the **Enter** key may execute a command.

Setup Menus

The **Setup** menus shown in this section are for **reference** only. Your computer's menus will indicate the configuration appropriate for your model and options.

Main Menu

Figure 5 - 1
Main Menu



System Time & Date (Main Menu)
The hour setting uses the 24-hour system (i.e., ØØ = midnight; 13 = 1 pm). If you can change the date and time settings in your operating system, you will also change these settings. Some applications may also alter data files to reflect these changes.

System/Extended Memory: (Main Menu)
This item contains information on the system memory, and is not user configurable. The system will auto detect the amount of memory installed.

Advanced Menu

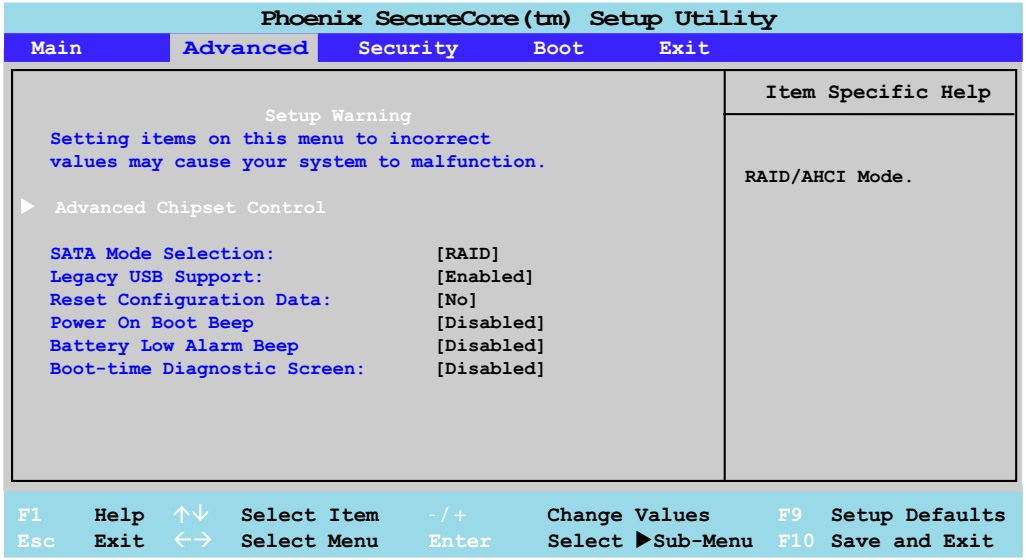


Figure 5 - 2
Advanced Menu

Advanced Chipset Control: (Advanced Menu)

This ***Intel(R) Virtualization Technology*** and ***Hyperthreading*** hardware acceleration technologies may be enabled from this sub-menu. ***Intel(R) Virtualization Technology*** enables a CPU to act as if it were several CPUs working in parallel in order to allow several operating systems to run at the same time in the same machine. ***Hy-***

RAID/AHCI Enable/Disable Warning

DO NOT Enable/Disable SATA RAID or SATA AHCI unless you intend to reinstall your operating system. Make sure you have backed up all your data before doing so.

perthreading activates additional CPU threads that may appear as additional processors and is used to improve CPU multi-tasking. The operating system will view a processor with ***Hyperthreading*** enabled as two virtual processors and will spread any tasks between them (make sure your installed operating system supports multiple processors, and preferably, is optimized for this technology). After enabling/disabling ***Hyperthreading***, and saving and exiting the BIOS, the system will shut down (press the power button to turn the system on again).

SATA Mode Selection: (Advanced Menu)

Press **Enter** here to open the sub-menu to choose the configuration of the SATA mode. You may **enable/disable SATA RAID or AHCI** mode for your hard disks, however **you should only enable/disable SATA RAID or AHCI BEFORE installing an operating system**, and after you have backed up all necessary files and data (see sidebar).

Legacy USB Support: (Advanced Menu)

Choose "**Enabled**" if you intend to use **USB** devices in systems which do not normally support USB functionality (e.g. DOS). The default setting is "**Enabled**" and does not need to be changed if you intend to use your USB devices in **Windows**.

Reset Configuration Data: (Advanced Menu)
This item is set to **No** as default. You can change the setting to **Yes** if you have installed a new add-on which has reconfigured the system, resulting in such a serious system conflict that the operating system is unable to boot.

Power On Boot Beep (Advanced Menu)
Use this menu item to enable/disable the beep as the computer starts up.

Battery Low Alarm Beep: (Advanced Menu)
Use this menu item to enable/disable the battery low alarm beep.

Boot-time Diagnostic Screen: (Advanced Menu)
Use this menu item to enable/disable the Boot-time Diagnostic Screen (or POST screen - see ***"The Power-On Self Test (POST)" on page 5 - 2***).

Security Menu

The changes you make here affect the access to the **Setup** utility itself, and also access to your machine as it boots up after you turn it on. These settings do not affect your machine or network passwords which will be set in your software OS.

Security Menu

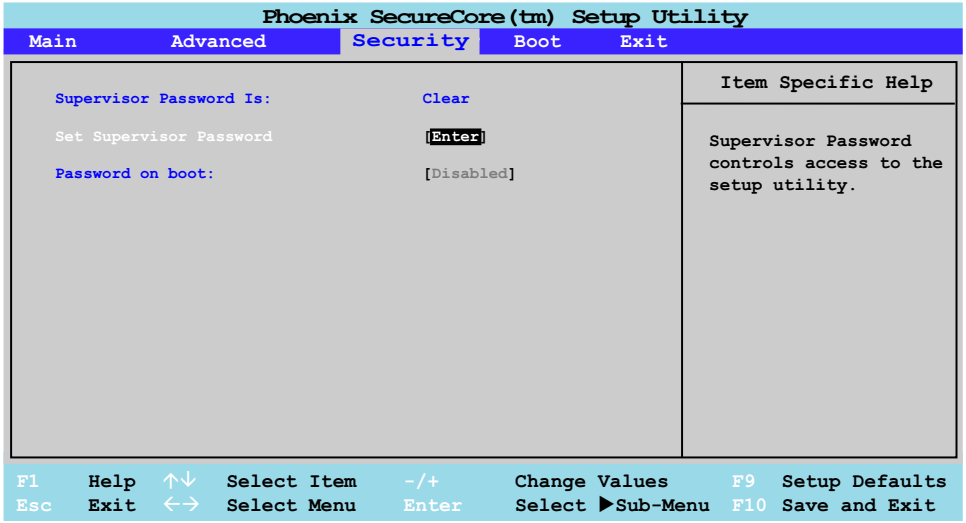


Figure 5 - 3
Security Menu

Set Supervisor Password (Security Menu)
You can set a password for access to the **PhoenixBIOS Setup Utility**. This will not affect access to the computer OS, (only the **PhoenixBIOS Setup Utility**).

Password on boot: (Security Menu)
Specify whether or not a password should be entered to boot the computer. If "***Enabled***" is selected, only users who enter a correct password can boot the system (**see the warning in the sidebar**). The default setting is "***Disabled***".

Note: To clear existing passwords press **Enter** and type the existing password, then press **Enter** for the new password (without typing any password entry) and **Enter** again to confirm the password clearance.

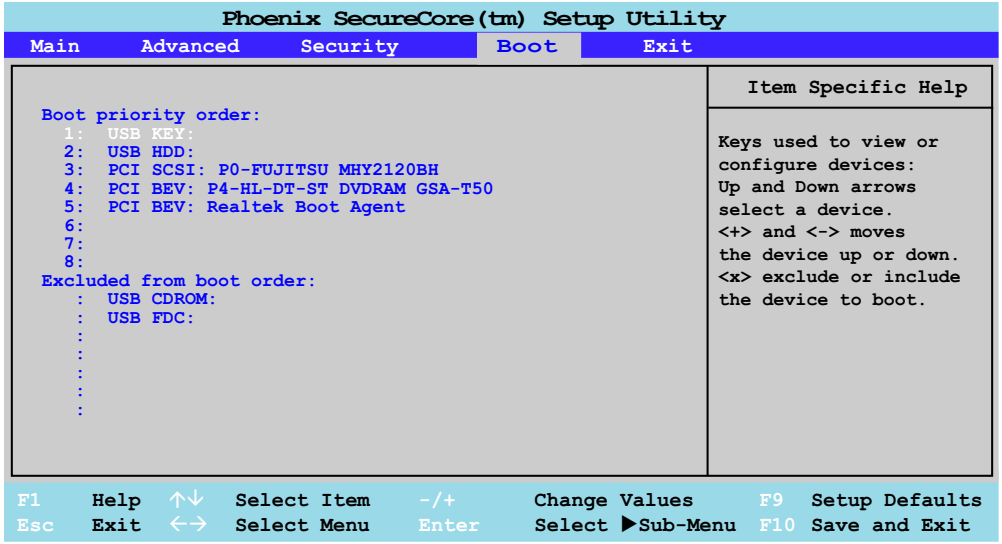
Password Warning

If you set a boot password (Password on boot is "Enabled"), **NEVER** forget your password.

The consequences of this could be serious. If you cannot remember your boot password you must contact your vendor and you may lose all of the information on your hard disk.

Boot Menu

Figure 5 - 4
Boot Menu



When you turn the computer on it will look for an operating system from the devices listed in this menu, and **in this priority order**. If it cannot find the operating system on that device, it will try to load it from the next device in the order specified in the **Boot priority order**. Item specific help on the right is available to help you move devices up and down the order.

Exit Menu

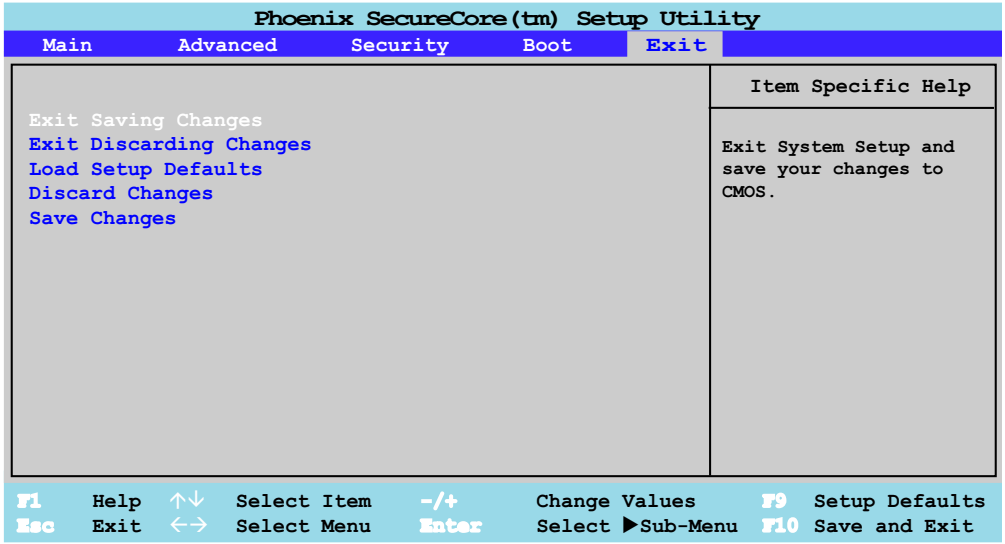


Figure 5 - 5
Exit Menu

Choosing to ***Discard Changes***, or ***Exit Discarding Changes***, will wipe out any changes you have made to the ***Setup***. You can also choose to restore the original ***Setup*** defaults that will return the ***Setup*** to its original state, and erase any previous changes you have made in a previous session.

Chapter 6: Upgrading The Computer

Overview

This chapter contains information on upgrading the computer. Follow the steps outlined to make the desired upgrades. If you have any trouble or problems you can contact your service representative for further help. Before you begin you will need:

- A small crosshead or Phillips screwdriver
- A small regular slotted (flathead) screwdriver
- An antistatic wrist strap

Before working with the internal components you will need to wear an antistatic wrist strap to ground yourself because static electricity may damage the components.

The chapter includes:

- Removing the Battery
- Upgrading the Hard Disk Drive(s)
- Upgrading the System Memory (RAM)
- Upgrading the Optical (CD/DVD) Device(s)
- Upgrading the Video Card

Please make sure that you review each procedure before you perform it.

Warranty Warning

Please check with your service representative before undertaking any upgrade procedures to find out if this will VOID your warranty.

Power Safety Warning

Before you undertake any upgrade procedures, make sure that you have turned off the power, and disconnected all peripherals and cables (including telephone lines). It is advisable to also remove your battery in order to prevent accidentally turning the machine on.

When Not to Upgrade

These procedures involve opening the system's case, adding and sometimes replacing parts.You should **not** perform any of these upgrades if:

- Your system is still under warranty or a service contract
- You don't have all the necessary equipment
- You're not in the correct environment
- You doubt your abilities

Under any of these conditions, contact your service representative to purchase or replace the component(s).

Removal Warning

When removing any cover(s) and screw(s) for the purposes of device upgrade, remember to replace the cover(s) and screw(s) before turning the computer on.

Upgrading the Processor

If you want to upgrade your computer by replacing the existing processor with a faster/new one you will need to contact your customer service representative. We recommend that you do not do this yourself, since if it is done incorrectly you may damage the processor or mainboard.

Removing the Battery

If you are confident in undertaking upgrade procedures yourself, for safety reasons it is best to remove the battery.

1. Turn the computer **off**, and turn it over.
2. Loosen screws 1 - 3.
3. Release the battery, and lift the battery 4 out of the battery bay.

Warranty Warning

Please check with your service representative before undertaking any upgrade procedures to find out if this will VOID your warranty.

Figure 6 - 1
Battery Removal

RAID Hard Disks

All hard disks in a RAID should be identical (the same size and brand) in order to prevent unexpected system behavior.

Upgrading the Hard Disk Drive(s)

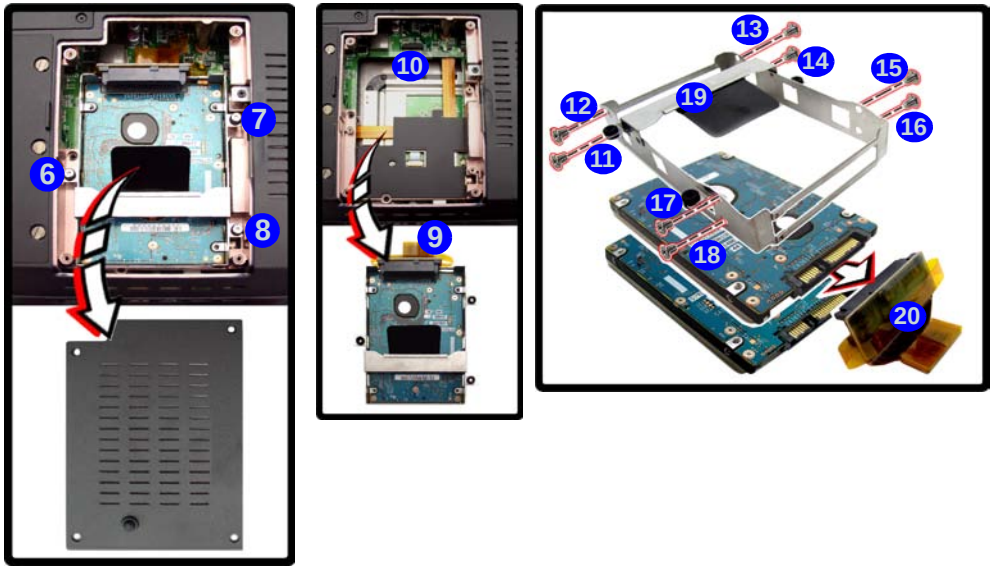
The hard disk drive(s) can be taken out to accommodate other 2.5" serial (SATA) hard disk drives with a height of 9.5mm (h) (see *"Storage" on page C - 2*). Follow your operating system's installation instructions, and install all necessary drivers and utilities (as outlined in *"Drivers & Utilities" on page 4 - 1*), when setting up a new hard disk.

Removing the Hard Disk(s) in the Primary HDD Bay

1. Turn **off** the computer, and turn it over and remove the battery.
2. Locate the hard disk bay cover and remove screws 1 - 4.
3. Remove the bay cover 5.

Figure 6 - 2
HDD Bay Cover Removal

4. Remove screws 6 - 8 and pull the tab to release the cable 9 from the connector 10.
5. Lift the hard disk assembly out of the computer.
6. Remove screws 11 - 18 (if two hard disks are installed).
7. Separate the hard disk(s) from the bracket 19 and connector cable 20.
8. Insert the new hard disk(s) into the computer.
9. Re-Insert the bracket and insert screws.



HDD System Warning

New HDD's are blank. Before you begin make sure:
You have backed up any data you want to keep from your old HDD.
You have all the discs required to install your operating system and programs.
If you have access to the internet, download the latest application and hardware driver updates for the operating system you plan to install. Copy these to a removable medium.

Figure 6 - 3
Primary HDD Removal

RAID Hard Disks

All hard disks in a RAID should be identical (the same size and brand) in order to prevent unexpected system behavior.

Removing the Hard Disk(s) in the Secondary HDD Bay

1. Turn **off** the computer, and turn it over and remove the battery.
2. The secondary hard disk bay is located under the battery compartment.
3. Remove screw 21.
4. Slide the hard disk assembly in the direction of the arrow 22.
5. Lift the hard disk assembly 23 out of the compartment.
6. Remove the screws 24 - 27 to release the hard disk from the case.

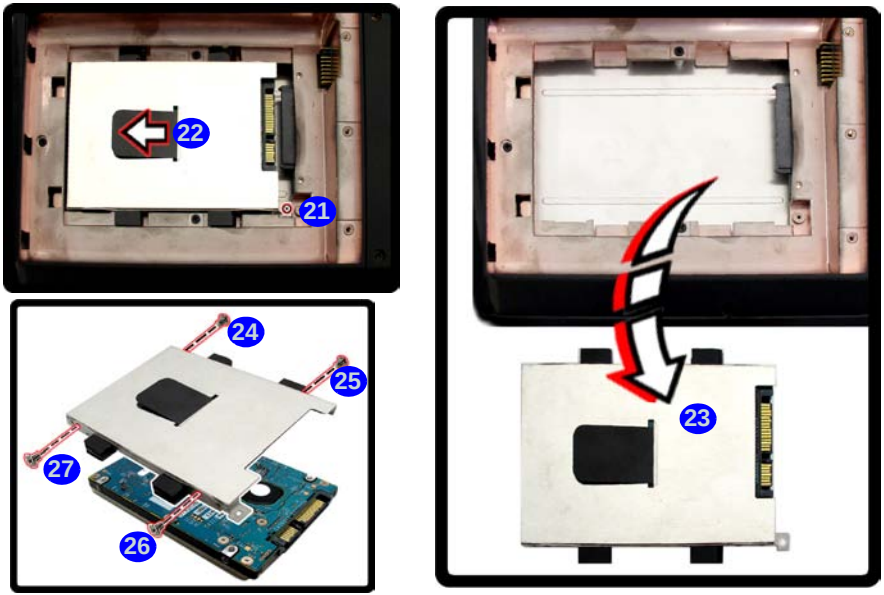


Figure 6 - 4
Secondary HDD Removal

Upgrading the System Memory (RAM)

The computer has **three** memory sockets for 204 pin Small Outline Dual In-line (SO-DIMM) **DDR III (DDR3)** type memory modules (see *"Memory" on page C - 2*). The total memory size is automatically detected by the POST routine once you turn on your computer.

1. Turn **off** the computer, and turn it over and remove the battery.
2. Locate the component cover and remove screws 1 - 10.
3. Remove the bay cover 11.

Contact Warning

Be careful not to touch the metal pins on the RAM module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

RAM Module Speeds

Use either 1066MHz **OR** 1333MHz DDRIII (DDR3) modules of the same brand. Do not mix DRAM speeds/brands in order to prevent unexpected system behavior.

Figure 6 - 5
Bay Cover Removal

4. Remove screws 12 - 14 from the RAM fan, and disconnect cable 15.
5. Remove the RAM fan unit 16.

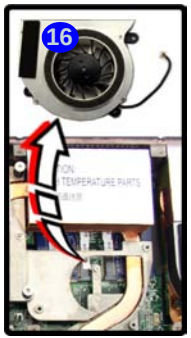
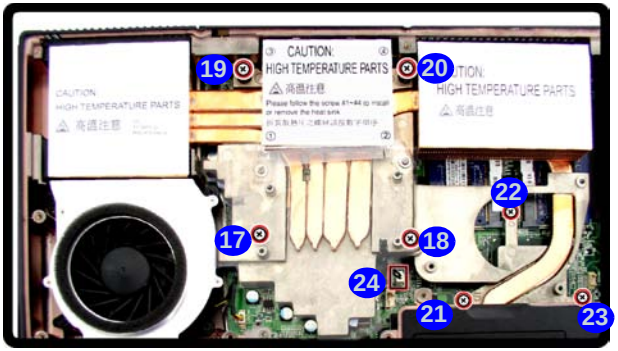


Figure 6 - 6
Fan, Heat Sink Unit Screws & Cable Connectors

Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

6. Fully loosen screws 17 - 23 in the order indicated here (and on the label).
7. Disconnect cable 24.
8. Carefully (make sure all the screws are sufficiently loosened and cables disconnected) remove the heat sink and fan unit 25.



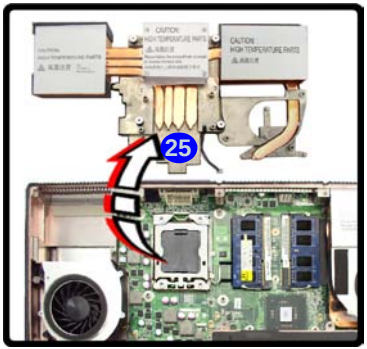


Figure 6 - 7
Heat Sink Removal

Caution

The heat sink, and CPU area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

Single Memory Module Installation

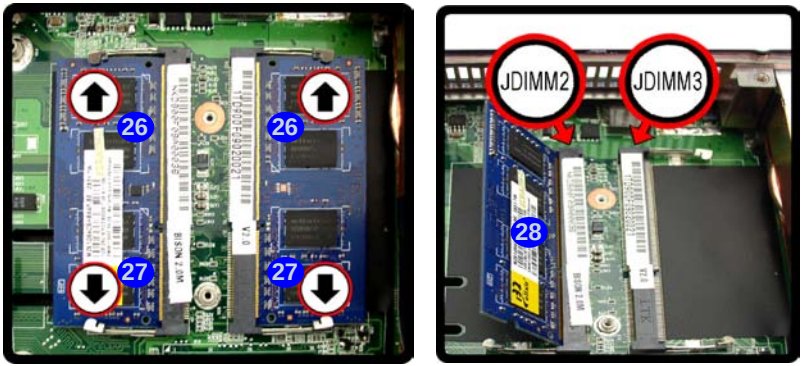
If your computer has a single memory module, then insert the module into the **Channel 0 (JDIMM2)** socket as shown in ***Figure 6 - 8***.

Figure 6 - 8
RAM Module Removal

RAM Module Speeds

Use either 1066MHz **OR** 1333MHz DDRIII (DDR3) modules of the same brand. Do not mix DRAM speeds/brands in order to prevent unexpected system behavior.

9. Gently pull the two release latches (26 & 27) on the sides of the memory socket in the direction indicated by the arrows in ***Figure 6 - 8***
10. The RAM module 28 will pop-up, and you can remove it.

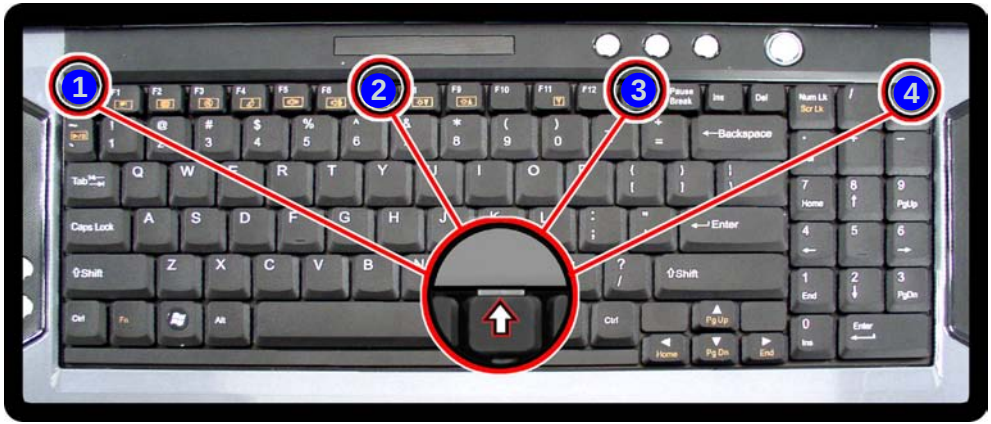


11. Pull the latches to release the second module if necessary.
12. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory socket.
13. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the socket as it will go. DO NOT FORCE the module; it should fit without much pressure.
14. Press the module in and down towards the mainboard until the socket levers click into place to secure the module.
15. Replace the heat sink unit (**make sure you tighten the screws in the order indicated on the label** and in ***Figure 6 - 7***), RAM fan, cover and screws.
16. Restart the computer to allow the BIOS will register the new memory configuration as it starts up.

Upgrading a Third System Memory (RAM) Module

If you wish to add a third memory module follow the procedure below (note the side-bar warning on RAM speeds).

1. Turn **off** the computer, and turn it over and remove the battery.
2. Turn the computer back over to access the keyboard.
3. Press the **four** keyboard latches 1 - 4 at the top of the keyboard to elevate the keyboard from its normal position (you may need to use a small screwdriver or pair of tweezers to do this).



RAM Module Speeds

Use either 1066MHz **OR** 1333MHz DDRIII (DDR3) modules of the same brand. Do not mix DRAM speeds/brands in order to prevent unexpected system behavior.

Figure 6 - 9
Keyboard Latches

4. Lift the keyboard up, but be careful not to twist the keyboard ribbon cable 5.
5. Remove screws 6 - 7 and remove the keyboard plate 8.

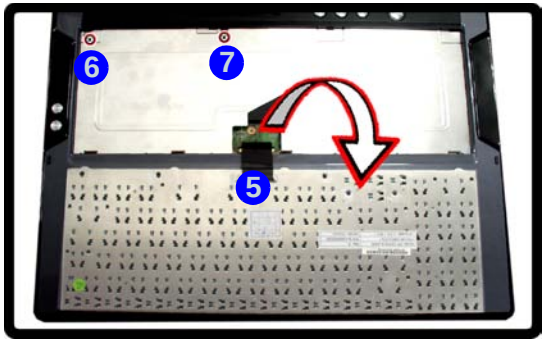


Figure 6 - 10
Keyboard Plate Screws

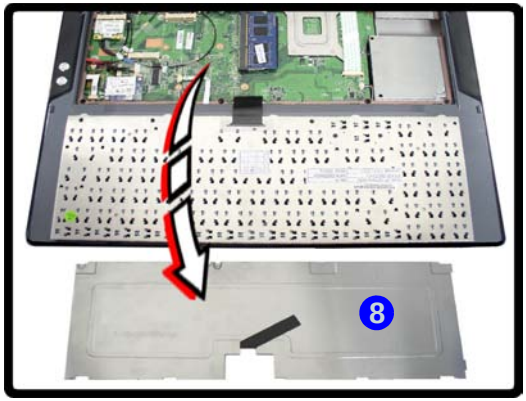


Figure 6 - 11
Keyboard Plate Removal

6. Gently pull the two release latches (9 - 10) on the sides of the memory socket in the direction indicated by the arrows in ***Figure 6 - 12***
7. The RAM module 11 will pop-up, and you can remove it.

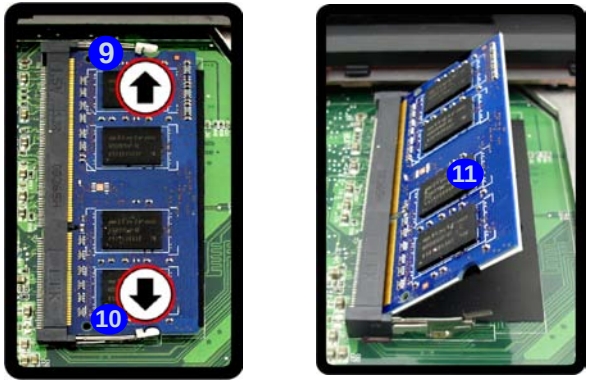


Figure 6 - 12
Third RAM Module Removal

8. Pull the latches to release the second module if necessary.
9. Insert a new module holding it at about a 30° angle and fit the connectors firmly into the memory socket.
10. The module's pin alignment will allow it to only fit one way. Make sure the module is seated as far into the socket as it will go. DO NOT FORCE the module; it should fit without much pressure.
11. Press the module in and down towards the mainboard until the socket levers click into place to secure the module.
12. Replace the keyboard plate, screws and keyboard.
13. Restart the computer to allow the BIOS will register the new memory configuration as it starts up.

Contact Warning

Be careful not to touch the metal pins on the RAM module's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

Upgrading the Optical (CD/DVD) Device(s)

1. Turn the computer off, turn it over and remove the battery.
2. Locate the hard disk bay cover and remove screws 1 - 4.
3. Remove the bay cover 5.
4. Remove screw 6 and use the screwdriver to push the optical device(s) out of the computer at point 7.

Figure 6 - 13
Removing the CD/ DVD Device(s)

Upgrading the Video Card

If you intend to upgrade or add another VGA card follow the procedures outlined here. However please check with your service representative first to make sure your computer can support more than one video card, and that you are not going to void your warranty. Pay careful attention to the alignment of any video card into the slot on the mainboard.

Warranty Warning

Please check with your service representative before undertaking any upgrade procedures to find out if this will VOID your warranty.

1. Turn **off** the computer, and turn it over and remove the battery.
2. Locate the component cover and remove screws 1 - 10.
3. Remove the bay cover 11.

Figure 6 - 14
Bay Cover Screws

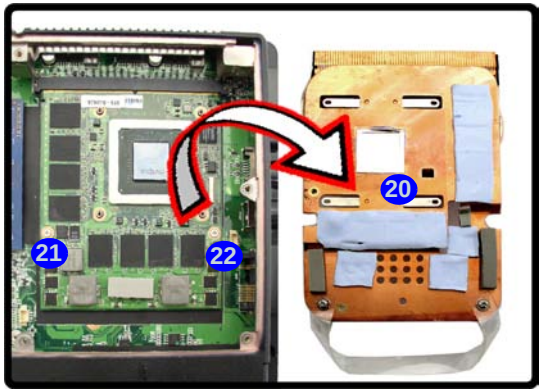
4. Remove screws 12 - 14 from the video card fan and disconnect the fan cable 15.

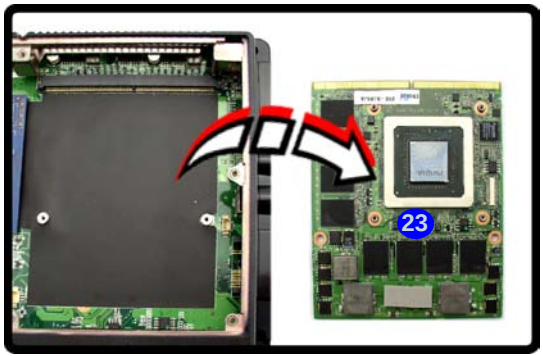
Figure 6 - 15
Video Card Fan Screws

5. Remove screws 16 - 19 from the heatsink **in the order indicated on the label**.

Figure 6 - 16
Heat Sink Screws

6. Grip the handle and carefully remove the heatsink 20.
7. Remove screws 21 & 22 from the video card.
8. Carefully remove the video card 23.





Caution

The heat sink, and video card area in general, contains parts which are subject to high temperatures. Allow the area time to cool before removing these parts.

Figure 6 - 17
Heatsink & Video Card Removal

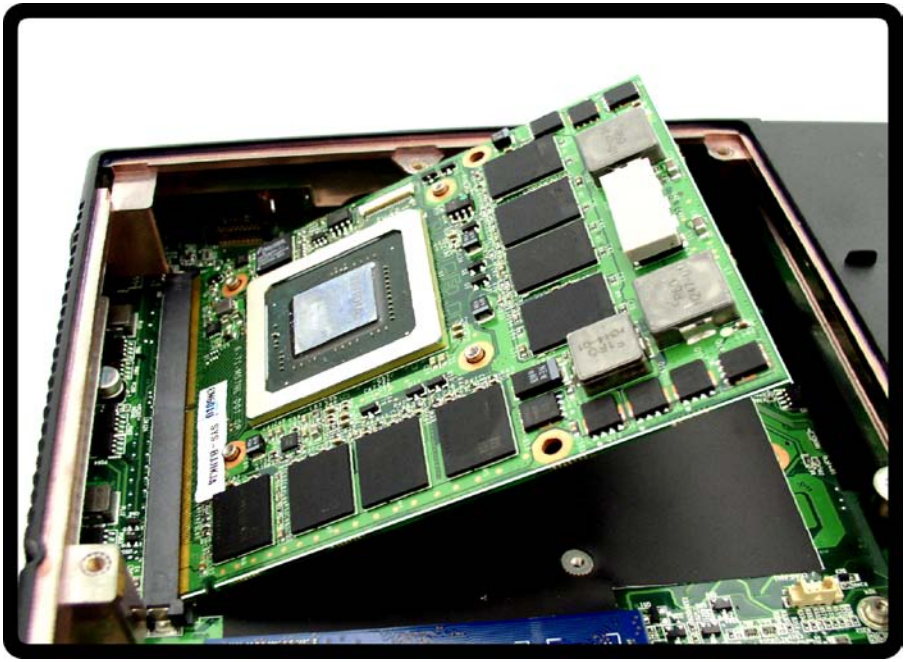
Contact Warning

Be careful not to touch the metal pins on the VGA card's connecting edge. Even the cleanest hands have oils which can attract particles, and degrade the module's performance.

Figure 6 - 18
Video Card Insertion

Installing a New Video Card

1. Prepare to fit the video card into the slot by holding it at about a 30° angle.



2. The card needs to be fully into the slot, and the video card and socket have a guide-key and pin which align to allow the card to fit securely.

3. Fit the connectors firmly into the socket, straight and evenly.
4. DO NOT attempt to push one end of the card in ahead of the other.

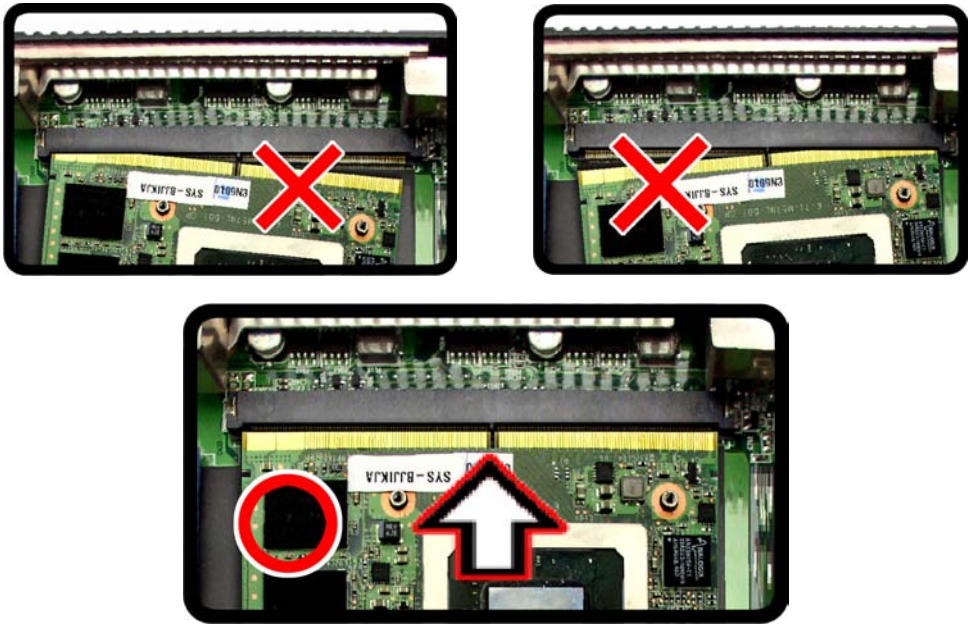


Figure 6 - 19
Video Card Insertion Procedure

5. The card's pin alignment will allow it to only fit one way. **Make sure the module is seated as far into the socket as it will go** (none of the gold colored contact should be showing). DO NOT FORCE the card; it should fit without much pressure.

6. Secure the card with screws 21 & 22 (*Figure 6 - 17 on page 6 - 17*).
7. Place the heatsink back on the card, and secure the screws in the order indicated in *Figure 6 - 16 on page 6 - 16*.
8. Attach the video card fan and secure with the screws as indicated in *Figure 6 - 15 on page 6 - 16*.
9. Reinsert the component bay cover, and secure with the screws as indicated in *Figure 6 - 14 on page 6 - 15*.

Chapter 7: Modules

Overview

This chapter contains the information on the various modules (some of which are **optional**) which may come with your computer, depending on the configuration purchased. If you are unsure please contact your service representative.

The chapter includes information on the following:

- Bluetooth Module
- Wireless LAN Module
- PC Camera Module
- TV Tuner Module
- Setting Up SATA RAID or AHCI Modes
- Intel Turbo Memory Module

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited. Make sure the module(s) are OFF if you are using the computer aboard aircraft.

Use the **Fn + F12** key combination to toggle power to the Bluetooth module, and check the indicator to see if the module is powered on or not (see *Table 1 - 4, on page 1 - 11*/ *Table 1 - 2, on page 1 - 8*).

Bluetooth Module

The operating system's **Bluetooth Devices** control panel is used to configure the Bluetooth settings in ***Windows Vista***, and therefore does not require a driver. **Use the Fn + F12 key combination** (see *Table 1 - 4, on page 1 - 11*) **to toggle power to the Bluetooth module** (when the Bluetooth module is on, the LED will be orange)**.**

Bluetooth Data Transfer

Note that the transfer of data between the computer and a Bluetooth enabled device is supported **in one direction only (simultaneous data transfer is not supported)**. Therefore if you are copying a file from your computer to a Bluetooth enabled device, you will not be able to copy a file from the Bluetooth enabled device to your computer until the file transfer process from the computer has been completed.

Bluetooth Module & Resuming From Sleep Mode

The Bluetooth module's default state will be off after resuming from the **Sleep** power-saving state. Use the key combination (**Fn + F12**) to power on the Bluetooth module after the computer resumes from Sleep.

***Windows 7* Bluetooth Information**

See *"Bluetooth Module (Win 7)" on page D - 33* for ***Windows 7*** configuration information.

Bluetooth Configuration in Windows Vista

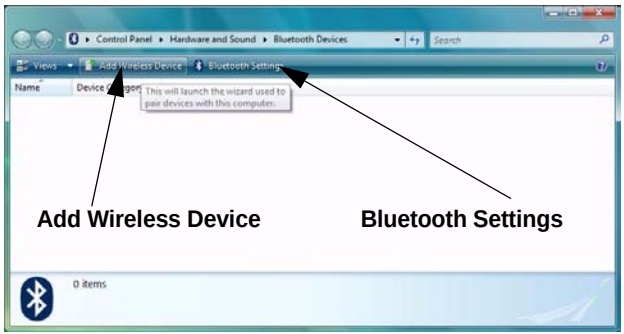
Setup your Bluetooth Device so the Computer Can Find it

1. Turn your Bluetooth device (e.g. PDA, mobile phone etc.) on.
2. Make the device discoverable (to do this check your device documentation).

To Turn the Bluetooth Module On

1. Press the **Fn + F12** key combination to power on the Bluetooth module.
2. A Bluetooth icon will appear in the taskbar (see sidebar).
3. You can then do any of the following to access the **Bluetooth Devices** control panel.

- **Double-click** the icon to access the **Bluetooth Devices** control panel.
- Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**), and then click **Bluetooth Devices** (**Hardware and Sound**).
- **Click/Right-click** the icon and choose an option from the menu.



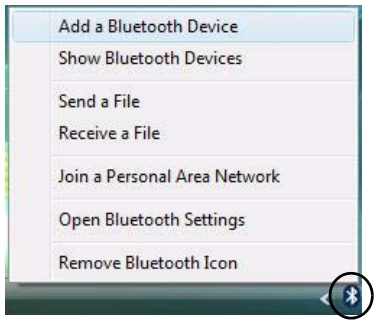


Figure 7 - 1
Bluetooth Devices & Click Icon Menu

Bluetooth Taskbar Icon

If you cannot see the Bluetooth icon in the taskbar, access the **Bluetooth Devices** control panel. Click **Bluetooth Settings > Options**, and make sure that **Show the Bluetooth icon in the notification area** check box (**Connections**) has a tick inside it.

Note that you will need to check the LED indicator to see if the module is powered on or not.

Pairing Options

If a device has been previously connected then the pairing option menu will appear when you attempt subsequent connections. You can choose to have the computer create a pairing code for you, use the device's existing pairing code or you can pair certain devices without using a code.

To Add a Bluetooth Device

1. Access the **Bluetooth Devices** control panel and click **Bluetooth Settings**.
2. Click **Options** (tab), and make sure that ***Allow Bluetooth devices to connect to this computer*** check box (**Connections**) has a tick inside it, and click **OK**.
3. Click **Add Wireless Device** in the **Bluetooth Devices** control panel.
4. Double-click the device you want to pair with the computer.

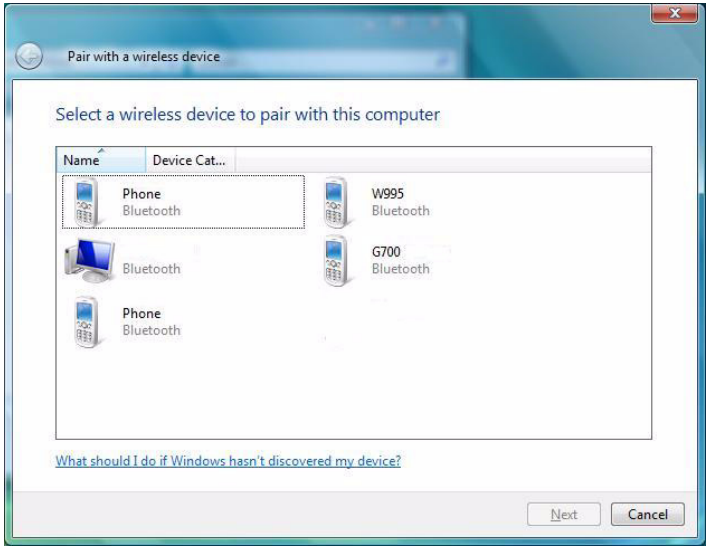


Figure 7 - 2
Pair with a wireless device

5. On first connection the computer will provide you with a pairing code to be entered onto the device.

6. Enter the code into your Bluetooth enabled device and follow any on-screen instructions to complete the pairing.

Pairing Codes

The example outlined here shows a connection to a mobile device. Other devices e.g. computers, may have a slightly different connection procedure, and may require you to confirm a pairing code is correct on both devices. Follow the on-screen instructions to complete the pairing.

Figure 7 - 3
Pairing Code Example

7. ***Windows*** will check to see if any drivers are required to complete the pairing.
8. Follow any on-screen instructions on the computer if device drivers are required to be installed.
9. Click **Close**.

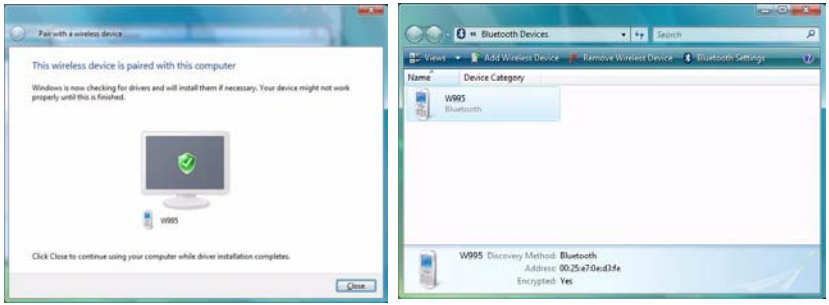


Figure 7 - 4
Pairing Complete & Bluetooth Device Enabled

Bluetooth Help

To get help on Bluetooth configuration and settings, select **Help and Support** from the **Start** menu. Type Bluetooth in the **Search Help** box, and select an item from the returned search results to get more information.

To Change Settings for the Bluetooth Device

1. Access the **Bluetooth Devices** control panel.
2. Click on the device you want to change and click **Properties** to:
   - Change the **name** of the device (click **General**, type a new name and click **OK**).
   - Enable/Disable a **service** (click **Services**, clear/tick the check box next to the service and click **OK**).

To Make your Computer Discoverable to Bluetooth Devices

1. Access the **Bluetooth Devices** control panel.
2. Click **Bluetooth Settings > Options**, and make sure that ***Allow Bluetooth devices to find this computer*** check box (**Discovery**) has a tick inside it.
3. Make sure that the ***Alert me when a new Bluetooth device wants to connect*** check box (**Connections**) has a tick inside it, if you want to be notified when a Bluetooth device wants to connect.

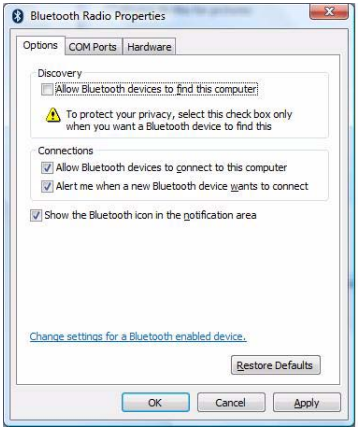


Figure 7 - 5
Bluetooth Settings - Options

Wireless LAN Module

If you have included an **Intel® Wi-Fi Link 5100/5300 Series (802.11 a/g/n) or 802.11b/g WLAN** module in your purchase option, make sure that the Wireless LAN module is on before installing the driver.

Use the **Fn + F11 key combination** (see *Table 1 - 4, on page 1 - 11*) **to toggle power to the Wireless LAN module** (when the WLAN module is on, the LED will be green). Make sure you install the drivers in the order indicated in *Table 4 - 1, on page 4 - 3*.

The standard driver installation procedure for the **Intel® Wi-Fi Link 5100/5300 Series** module is outlined overleaf. If you want to include **Intel® My WiFi Technology** as part of the installation procedure, **DO NOT install the driver as per the instructions overleaf**, instead see *"Intel® My WiFi Installation & Configuration" on page 7 - 12*.

If you have installed the standard driver (as per the instructions overleaf) and wish to enable **Intel® My WiFi Technology** at a later point you will need to reinstall the driver (choose **Unlock** from the Drivers Installer menu). Follow the driver installation procedure and choose **Modify** from the menu when the option appears, and then follow the remaining installation instructions in *"Intel® My WiFi Installation & Configuration" on page 7 - 12*.

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited. Make sure the module(s) are OFF if you are using the computer aboard aircraft.

Use the **Fn + F11** key combination to toggle power to the WLAN module, and check the indicator to see if the module is powered on or not (see *Table 1 - 4, on page 1 - 11*/ *Table 1 - 2, on page 1 - 8*).

Intel(R) PROSet/ Wireless

Access the **Intel PROSet Wireless** tools (Statistics and Diagnostic tools) from the Start menu (Start > Programs/All Programs > **Intel PROSet**). These tools provide diagnostic and statistical information only (use the WLAN control in ***Windows Vista*** to connect to a WLAN access point).

Intel® Wi-Fi Link 5100/5300 Series (802.11 a/g/n) Driver Installation

If you see the message "**Found New Hardware**" click **Cancel** to close the window.

1. Make sure the module is powered on, then insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install Wireless Lan Driver > Yes**.
4. Click **Next > Next**.
5. Click the button to accept the license and click **Next**.
6. Click **Next > Next > Finish**.

802.11b/g Driver Installation

1. Make sure the module is powered on, then insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install Wireless Lan Driver > Yes**.
4. Choose the language you prefer and click **Next**.
5. Click **Next > Install**.
6. Click **Finish**.

Note: The operating system is the default setting for Wireless LAN control in ***Windows Vista*** (see overleaf).

Connecting to a Wireless Network

Make sure the Wireless LAN module is turned on.

1. **Click** the taskbar wireless icon, and then click **Connect to a network** (or **right-click** the icon, and then click **Connect to a network**).

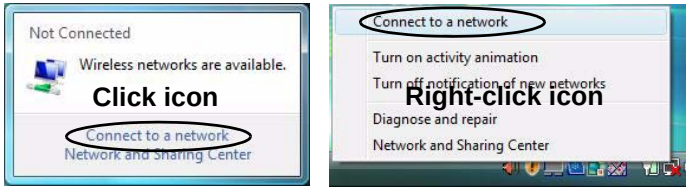


Figure 7 - 6
Taskbar Menus

2. In the **Show** list, click to choose **Wireless** from the drop-down menu.
3. A list of currently available networks will appear.

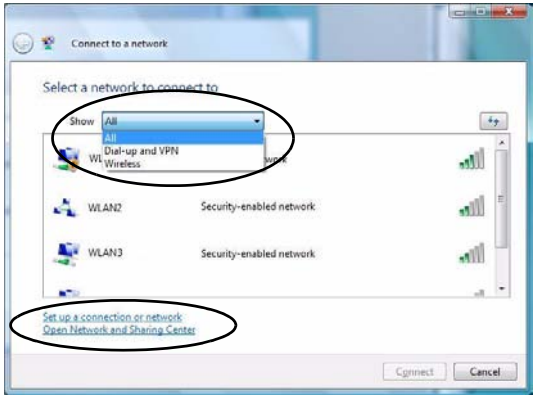


Figure 7 - 7
Connect to a Network

Network and Sharing Center

You can also use the **Network and Sharing Center** control panel in Windows (**Network and Internet**) to connect to any available wireless networks.

4. Click a network, and then click **Connect**.
5. If you do not see a network you want to connect to, click **Set up a connection or network** (a list of options will appear allowing manual searching, and creating a new network).

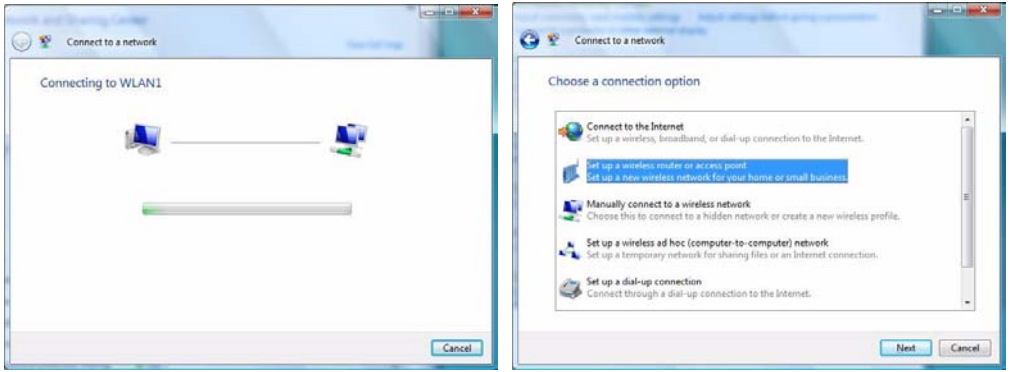


Figure 7 - 8
Connecting

6. Move the cursor over the taskbar icon to see the connection status (see below).

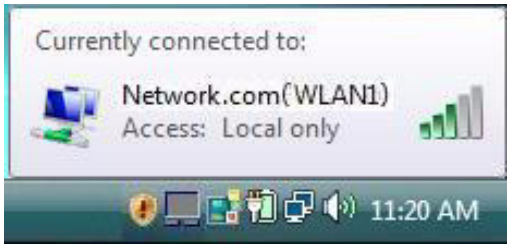
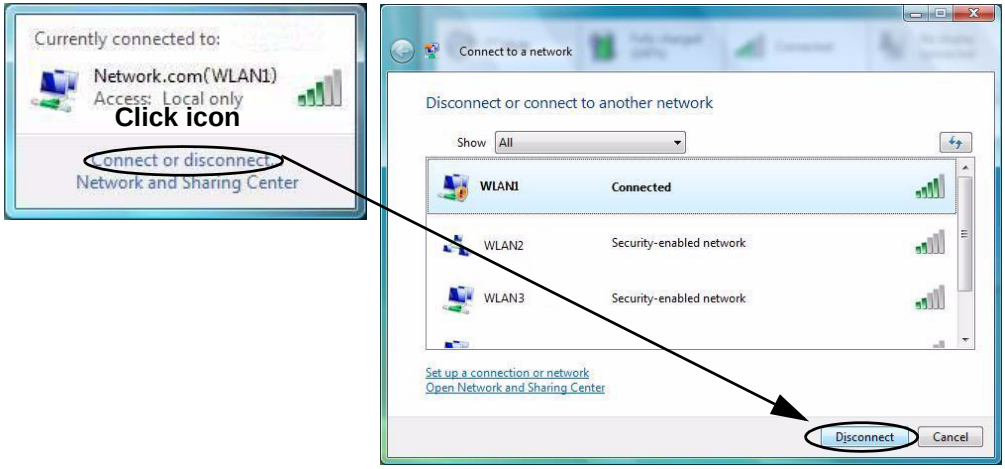
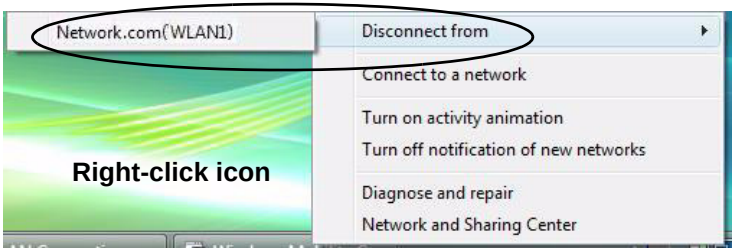


Figure 7 - 9
Connection Status

7. To disconnect from the wireless network you can click the taskbar wireless icon, and then select **Connect or disconnect** to access the network menu, and click Disconnect (or **right-click** the icon, and then click **Disconnect from**).





Security Enabled Networks

You should try to make sure that any network you are connecting to is a secure network.

Connecting to unsecure networks may allow un-authorized access to your computer, documents, websites and files etc.

Figure 7 - 10
Disconnecting

Intel® My WiFi Help

To get help on **Intel® My WiFi** configuration and settings, access the **Intel® My WiFi Utility** from the **Start** menu (Start > Programs/All Programs > Intel PROSet Wireless > Intel My WiFi Technology), or by clicking the taskbar icon  . Click the **Help** icon  and select a help topic from the **Contents** menu.

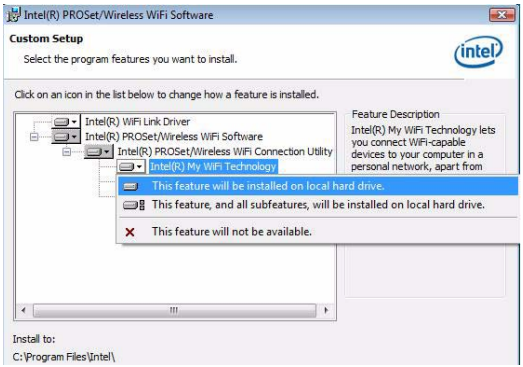
Intel® My WiFi Installation & Configuration

Intel® My WiFi Technology uses your WLAN module to allow you to connect up to eight other WiFi enabled devices (e.g. digital cameras, other computers, cell phones, handheld devices etc.) to your computer (similar to Bluetooth), while still connecting to the Internet through your WiFi wireless connection. Intel® My WiFi Technology offers greater range and speed than other personal area networks, and does not require an access point.

Intel® Wi-Fi Link 5100/5300 Series My WiFi Driver Installation

If you see the message "**Found New Hardware**" click **Cancel** to close the window.

1. Make sure the module is powered on, then insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install Wireless Lan Driver > Yes**.
4. Click **Next > Next**.
5. Click the button to accept the license and click **Next > Next**.
6. Click **Custom** (button) and click **Next**.
7. Click **Intel(R) My WiFi Technology** (button) and select "**This feature will be installed on local hard drive.**"



8. Click **Next > Finish**.

Intel(R) PROSet/ Wireless

Access the **Intel PROSet Wireless** tools (Statistics and Diagnostic tools) from the Start menu (Start > Programs/All Programs > **Intel PROSet**). These tools provide diagnostic and statistical information only (use the WLAN control in ***Windows Vista*** to connect to a WLAN access point).

Figure 7 - 11
Intel(R) PRO Set Intel(R) My WiFi Technology Installation

Intel® My WiFi Configuration

You can configure the My WiFi settings as follows.

1. Access the **Intel® My WiFi Utility** from the **Start** menu (**Start** > **Programs/All Programs** > **Intel PROSet Wireless > Intel My WiFi Technology**), or by clicking the taskbar icon .
2. Click **Enable** (on the first run of the program there will be no connected devices listed).

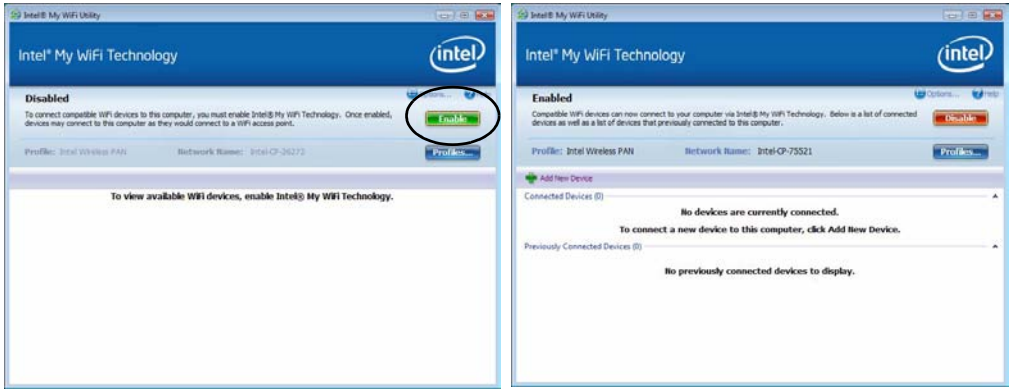


Figure 7 - 12
Intel® My WiFi Utility

3. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
4. Click **Network and Sharing Center** (**Network and Internet**).
5. Click **Manage Network Connections**.

Click **Manage Network Connections**

Figure 7 - 13
Network and Sharing Center

6. Right-click **Intel My WiFi STA** (Station) in **Network Connections** and select **Properties**.

Right-click **Intel My WiFi STA** (Station) and select **Properties**.

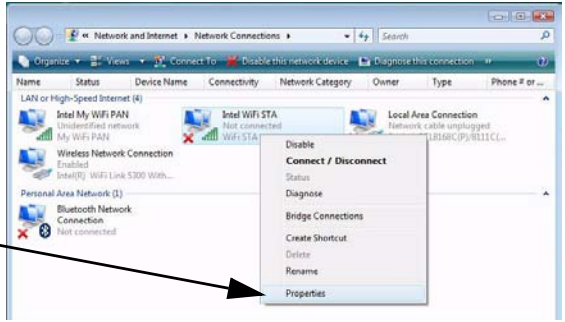


Figure 7 - 14
Intel My WiFi STA Properties (Network Connections)

7. Click **Sharing (tab)** and select "**Allow other network users to connect through this computer's Internet connection**".
8. Select **Intel My WiFi PAN** under **Home Networking Connection**.
9. Click **OK**.

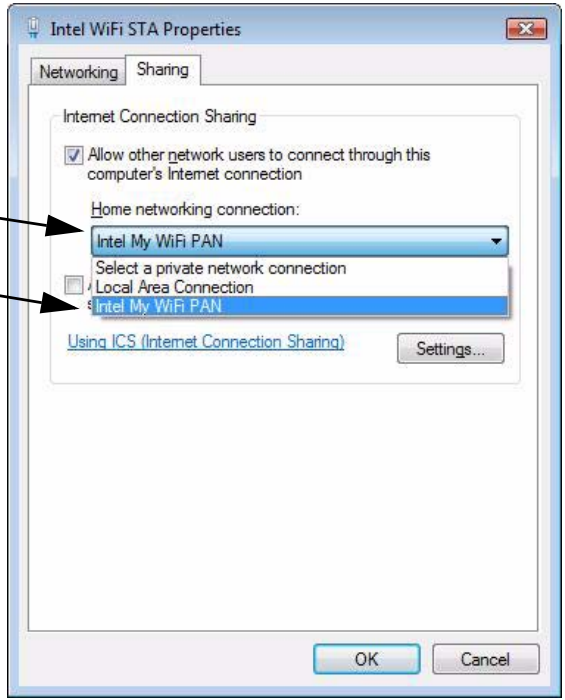


Figure 7 - 15
Intel WiFi STA Properties - Sharing

10. A message will appear to inform you that the LAN adapter will be set to use the IP address **192.168.0.1**.
11. Click **Yes** to enable Internet Connection Sharing.

12. Access the **Intel® My WiFi Utility** from the **Start** menu (**Start** > **Programs/All Programs** > **Intel PROSet Wireless > Intel My WiFi Technology**), or by clicking the taskbar icon .
13. Click **Profiles** Profiles... .

Figure 7 - 16
IP Address Warning

IP Addresses

The Intel® My WiFi default gateway IP address is **192.168.0.1**. DO NOT use this address for any Wireless Access Point (or any other static IP address on your network).

Figure 7 - 17
Intel® My WiFi Utility

14. Click **Profiles,** click **Intel Wireless PAN** and click **Edit**.

Figure 7 - 18
IP Address Warning

15. You can change the **Profile Name** and **Network Name** to your personal preferences in **General** (tab).

Profile and Network Names

The **Profile Name** is the name as displayed on your computer in the **Network Connections** control panel (see ***Figure 7 - 14 on page 7 - 15***).

The **Network Name (SSID)** is the name the devices see when they try to connect to your computer.

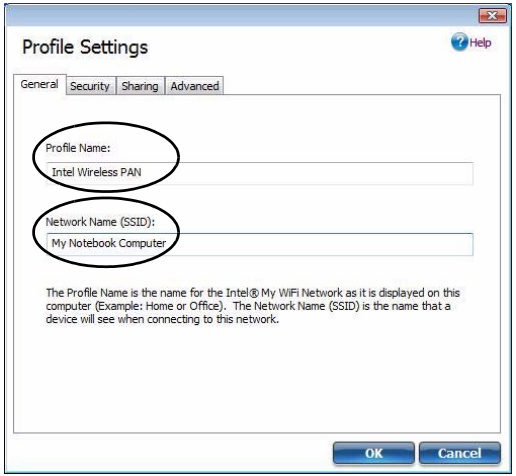


Figure 7 - 19
Intel® My WiFi Profile Settings - General

16. Click **Security** (tab).
17. Change the **Security Type** to **WEP** and the **Encryption Type** to **64bit**.
18. Enter a password (5 characters long) in the **Passphrase** box.
19. Click **OK**.

Figure 7 - 20
Intel® My WiFi Profile Settings - Security

20. Click **Sharing** (tab).
21. Make sure **Filter Network Traffic** and **DHCP and DNS Server** are **Disabled**.
22. Click **OK**.

Set Filter Network Traffic & DHCP and DNS Servers to **Disabled**.

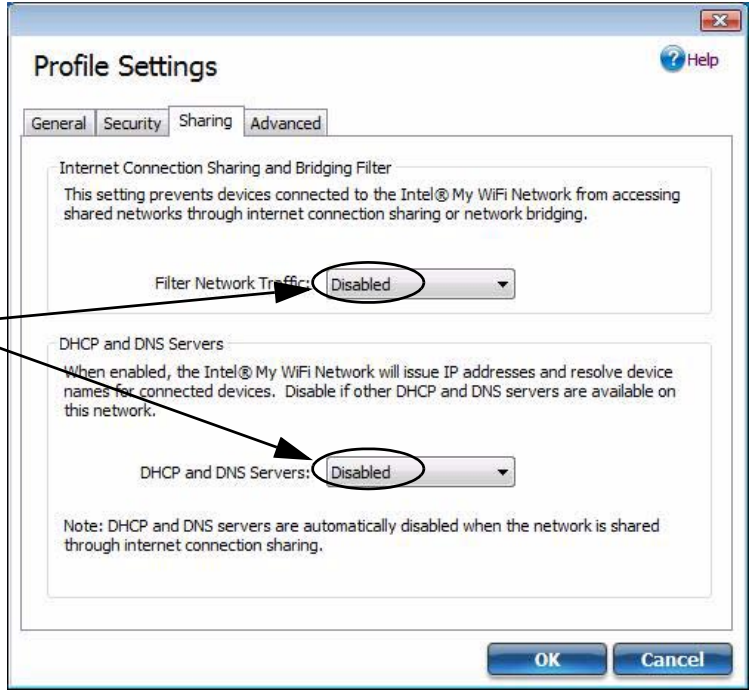


Figure 7 - 21
Intel® My WiFi Profile Settings - Sharing

23. Click **Advanced** (tab).
24. Make sure the **Default Channel** is set to **Channel 1, 6** or **11**.
25. Click **OK**.

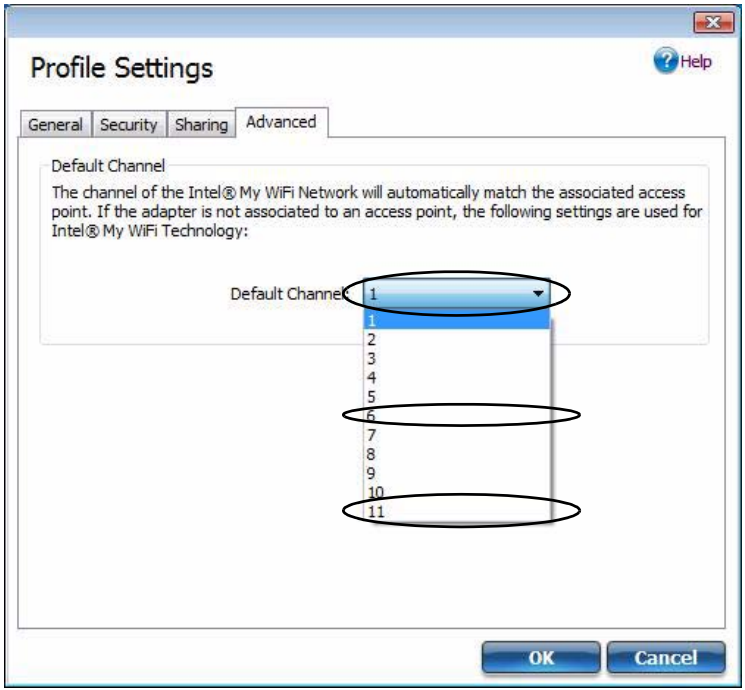


Figure 7 - 22
Intel® My WiFi Profile Settings - Advanced

26. Double-click **Intel My WiFi PAN** (Personal Area Network) in **Network Connections**.
27. Click **Details** to display the **Network Connection Details**.

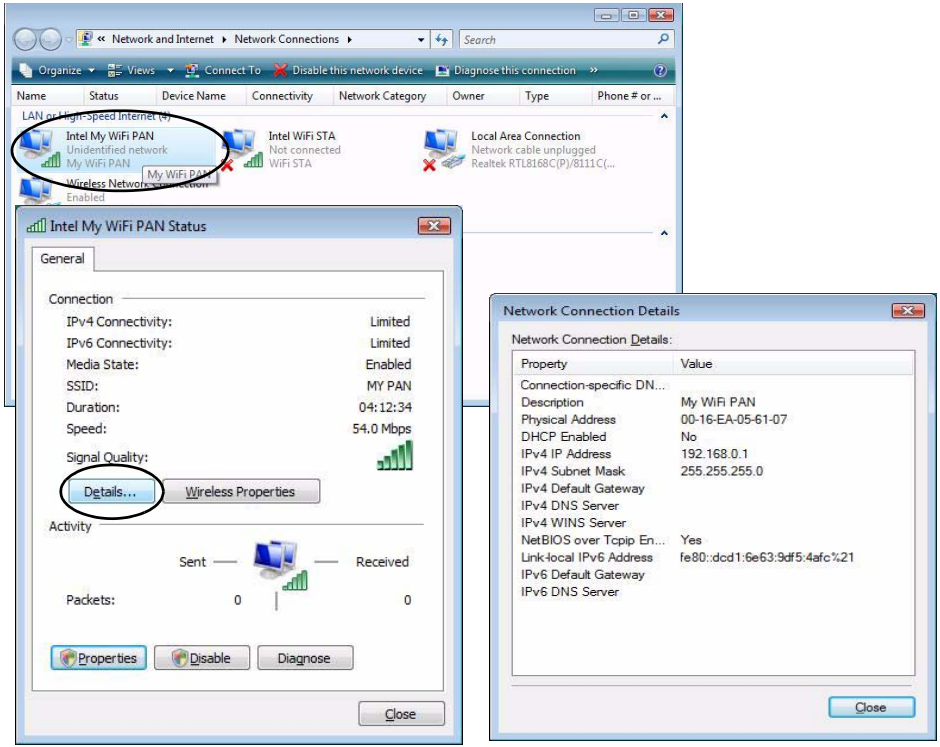


Figure 7 - 23
Intel My WiFi PAN Network Connection Details (Network Connections)

28. Access the **Intel® My WiFi Utility** from the **Start** menu (**Start** > **Programs/All Programs** > **Intel PROSet Wireless > Intel My WiFi Technology**), or by clicking the taskbar icon .
29. To add a new device follow the instructions in the devices' user guide for connecting to a WiFi network.
30. Click **Add New Device** in **Intel® My WiFi Utility** to confirm the security settings detail.

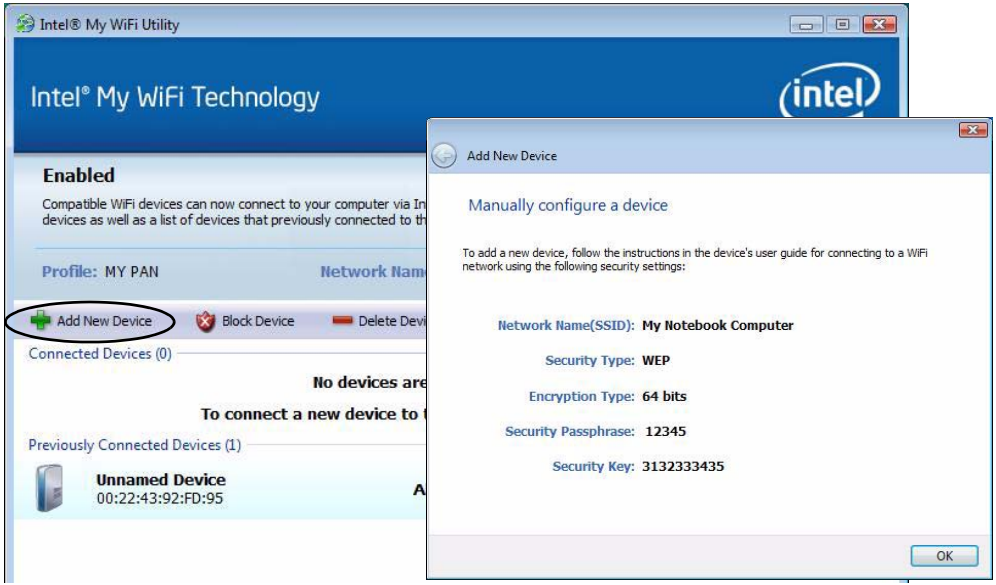


Figure 7 - 24
Intel® My WiFi Utility (Add New Device)

Wireless Hot Keys

The computer's wireless function keys will not function properly if **Wireless** is turned **OFF** in the **Windows Mobility Center** control panel.

The wireless indicators may show that the WLAN module is powered on, however if wireless is OFF in the Mobility Center, the module will not be powered on.

Make sure that Wireless is **ON** in the Mobility Center to ensure proper function key behavior.

Windows Mobility Center

The **Windows Mobility Center** control panel provides an easy point of access for information on battery status, power plans used and wireless device status etc.

To access the Windows Mobility Center:

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Double-click **Windows Mobility Center** (**Mobile PC**).
3. Click the button to **Turn wireless off/on**, or click the icon to access the network menu.

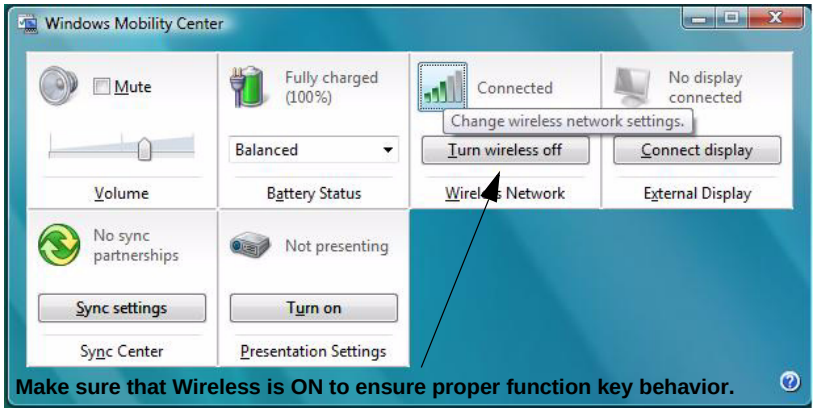


Figure 7 - 25
Windows Mobility Center

PC Camera Module

The PC Camera module uses the **BisonCap** application to capture video files. Before installing the **PC Camera** driver, make sure that the optional PC Camera is on. **Use the Fn + F10 key combination** (see *Table 1 - 4, on page 1 - 11*) **to toggle power to the PC Camera module**. Make sure you install the drivers in the order indicated in *Table 4 - 1, on page 4 - 3*.

PC Camera Device and TV Module

If you have both an optional PC Camera and an optional TV Tuner module present, you will need to select which device to use with the **BisonCap** program. Go to the **Devices** menu in the **BisonCap** application and select the **BisonCam, NB Pro** device.

Latest PC Camera Driver Information

Check the disc, and any accompanying insert pages, for the latest updated information on the PC Camera driver, which may override the information provided here.

PC Camera Display

The PC Camera application software needs to be run while the ***default notebook LCD*** is the selected display device.

After a camera picture is obtained on the default notebook LCD, you may then use the **Fn + F7** to toggle through the display modes (give the screen time to refresh).

PC Camera Screen Refresh

The PC Camera module supports a frame rate of 12 fps. If you find that the screen refresh rate is subject to lag or stuttering, then **reduce the window size**, or adjust the **Output Size** and/or **Color Space Compression**.

To reduce **Output Size** and/or **Color Space Compression** run the **BisonCap** application, click **Options** and select **Video Capture Pin**. Adjust the settings from the appropriate pull-down menu.

PC Camera Driver Installation

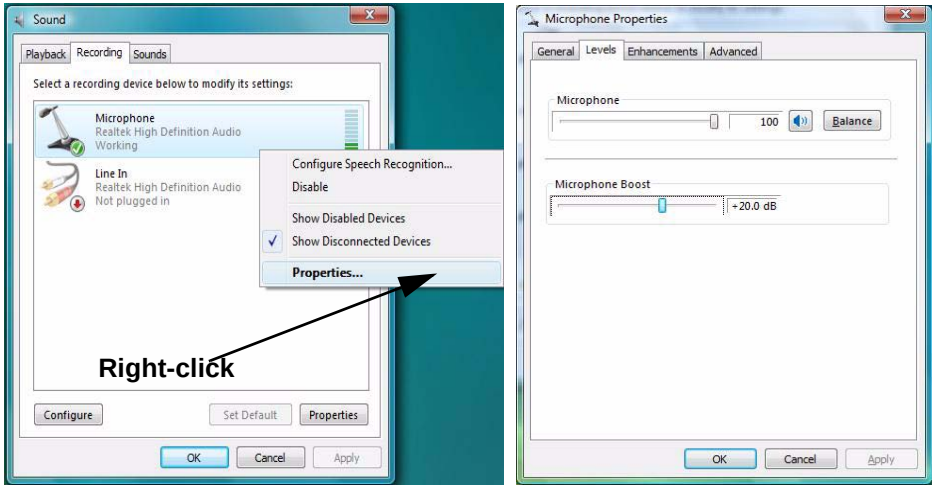
1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **2.Install WebCam Driver > Yes**.
4. Choose the language you prefer and click **Next > Next**.
5. Click **Finish** to restart the computer.
6. Run the **BisonCap** application program from the **BisonCam** shortcut on the desktop, or from the **BisonCam** item in the **Start > Programs/All Programs** menu (if the hardware is turned off use the **Fn + F10** key combination to turn it on again).

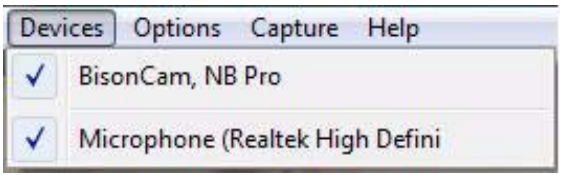
PC Camera Audio Setup

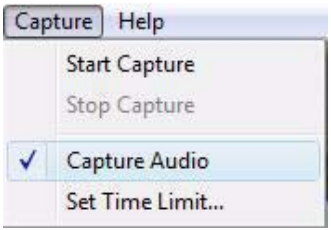
If you wish to capture video & **audio** with your camera, it is necessary to setup the audio recording options in ***Windows***.

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Click **Sound** (**Hardware and Sound**).
3. Click **Recording** (tab).
4. Right-click **Microphone** (Realtek High Definition Audio) and make sure the item is not disabled.
5. Double-click **Microphone** (or select **Properties** from the right-click menu).
6. Click **Levels** (tab), and adjust the **Microphone** and **Microphone Boost** sliders to the level required.
7. Click **OK** and close the control panels.
8. Run the **BisonCap** application program from the **Start > Programs/All Programs > BisonCam** menu.
9. Go to the **Devices** menu heading and select **Microphone** (**Realtek....**) (it should have a tick alongside it).
10. Go to the **Capture** menu heading and select **Capture Audio** (it should have a tick alongside it).

Figure 7 - 26
Audio Setup for PC Camera







BisonCap

BisonCap is a video viewer for general purpose video viewing and testing, and for capturing video files to .avi format.

1. Run the **BisonCap** program from the **Start > Programs/All Programs > Bison-Cam** menu (it is recommended that you **set the capture file** before the capture process - **see Set Capture File below**).
2. Go to the **Capture** menu heading (if you wish to capture audio check *"PC Camera Audio Setup" on page 7 - 27*) and select **Start Capture**.
3. Click **OK** (the file location will be displayed in the pop-up box) to start capturing the video, and press **Esc** to stop the capture (you can view the file using the **Windows Media Player**).

Set Capture File

Prior to capturing video files you may select the **Set Capture File...** option in the **File** menu, and set the file name and location before capture (this will help avoid accidentally overwriting files). Set the name and location then click **Open**, then set the **"Capture file size:"** and click **OK**. You can then start the capture process as above.

Note the important information in *"Reducing Video File Size" on page 7 - 30* in order to save file space, and help prevent system problems.

Pre-Allocating File Space

You may pre-allocate the file size (**File > Allocate File Space**) for the capture file in the **BisonCap** program.

Pre-allocating space on the hard disk can improve the capture quality (particularly of large capture files), by reducing the amount of work the hard disk has to do in finding space for the video data as it is being captured.

See also *"Reducing Video File Size" on page 7 - 30*.

Reducing Video File Size

Note that capturing high resolution video files requires a substantial amount of disk space for each file. After recording video, check the video file size (right-click the file and select **Properties**) and the remaining free space on your hard disk (go to **My Computer**, right-click the hard disk, and select **Properties**). If necessary you can remove the recorded video file to a removable medium e.g. CD, DVD or USB Flash drive.

Note that the ***Windows Vista*** system requires a minimum of **15GB** of free space on the **C: drive** system partition. In order to prevent system problems it is recommended that you save the captured video file to a location other than the **C: drive** (see ***"Set Capture File" on page 7 - 29***), limit the file size of the captured video (see ***"Pre-Allocating File Space" on page 7 - 29***) or reduce video resolution (see below).

To Reduce Video Resolution Output Size:

1. Run the **BisonCap** program.
2. Go to **Options** and scroll down to select **Video Capture Pin...**.
3. Click the **Output Size** drop box and select a lower resolution size in order to reduce the captured file size.

Eliminating Screen Flicker

If you find that the video screen in the **BisonCap** program is flickering, you can try to adjust the setting in the **Video Capture Filter** options.

1. Run the **BisonCap** program.
2. Go to **Options** and scroll down to select **Video Capture Filter...**.
3. Click either **50Hz** or **60Hz** under **Frequency** in **Property Page** (tab).

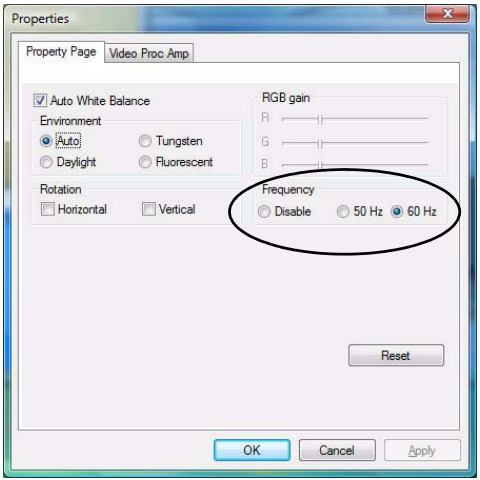


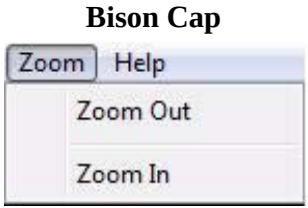
Figure 7 - 27
Video Capture Filter

Zoom

The **BisonCap** program allows you to zoom the camera in and out.

1. Run the **BisonCap** program.
2. Go to **Zoom** and select **Zoom Out/Zoom In.**

Figure 7 - 28
Zoom/Setting



Snapshot Folder

The Snapshot folder's default location is on the desktop. Do not move this folder or an error may appear when you try to take a still picture.

If you accidentally delete or move the folder, you can create a new Snapshot folder on the desktop in order to capture the files.

Taking Still Pictures

The **BisonCap** program allows you to take still pictures.

1. Run the **BisonCap** program.
2. Go to **Options** and select **Take Picture**.
3. The picture (in JPEG format) will be placed in the **Snapshot** folder  on the desktop.

TV Tuner Module

If your purchase configuration includes the **optional Hybrid** (Analog & Digital) USB Mini-Card TV Tuner module, you will be supplied with a remote control unit and appropriate antenna and fittings for the module. Software support for the TV Tuner module is provided by ***Windows Media Center*** in ***Windows Vista (Home Premium Edition*** & ***Ultimate Edition)/Windows 7 (Home Premium Edition, Professional*** & ***Ultimate Editions)***. In addition a driver is provided on the ***Device Drivers & Utilities + User's Manual*** disc for the remote control supplied with the TV Tuner.

The optional TV Tuner allows you to watch TV, play music CDs, video conference and capture still images and video on your PC.

The Cable (CATV) antenna will only be enabled when a TV Tuner module is installed. Make sure you connect the TV antenna.

TV Antenna

The TV antenna supplied with any TV Tuner module is intended for indoor use only. Please do not use your TV Tuner module outdoors.

TV Tuner Remote

Point the remote at the consumer **IR transceiver** to change channels etc.

Figure 7 - 29
TV Tuner Ports/ Jacks

1. Consumer Infrared Transceiver
2. CATV Antenna Jack

TV Tuner Module Support

Note that the TV Tuner module (factory) option in ***Windows Vista*** is supported by the **Windows Media Center** software which comes built-in to the ***Windows Vista Home Premium*** and ***Ultimate*** **Editions only**. The **Windows Media Center** software comes built-in to the ***Windows 7 Home Premium, Professional*** and ***Ultimate*** **Editions only**.

If your purchase includes a TV Tuner option, and/or you are re-configuring your system for a different system, you should install the above ***Windows*** editions only.

Consumer Infrared Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **3.Install CIR Driver > Yes**.
4. Choose the language you prefer and click **Next > Next**.
5. Click **Finish** to restart the computer.

Windows Media Center

1. This TV Tuner module is fully supported by ***Windows Media Center*** in ***Windows Vista (Home Premium Edition*** & ***Ultimate Edition)/Windows 7 (Home Premium Edition Professional*** & ***Ultimate Editions)***.
2. Run ***Windows Media Center*** directly from the **Start** menu (**Start > Programs > Windows Media Center**).
3. ***Windows Help and Support*** provides information on the **Windows Media Center** functions. Click **Start** and select **Help and Support**, and then type "***Media Center***" in the **Search Help** box and click the magnifying glass icon to bring up the results.

Digital TV Broadcast Signal

The antenna is the most crucial factor in receiving a clear digital terrestrial TV broadcast signal. The **passive** antenna provided should provide a clear signal when placed beside a window. If the signal is not clear then you can purchase an **active** antenna (it should also be placed beside a window) to improve the signal. You should also check with any related government website which provides information on digital terrestrial TV coverage for your area. Note that (unlike standard analog TV) if the digital signal is weak then no picture will appear on the TV at all.

TV Recording and Power Plans

If you intend to use the **optional** TV Tuner to record live TV, then go to the **Power Options** control panel and create a power plan (see ***"Power Plans" on page 3 - 4***) to prevent the power saving options from adjusting the computer's performance level.

Remote Control Unit

The remote control unit allows you to remotely start and send the system into a power saving state, to run ***Windows Media Center*** and to navigate the ***Media Center*** menus etc. The remote control unit also gives full control over all TV and video functions.

CATV Cable Safety

Make sure that your CATV system installer has connected the Coaxial cable shield to the grounding system of the building, as close to the point of cable entry as practical.

This reminder is provided to call the CATV system installer's attention to Article 820-93 of the NEC (Section 54, Part I of the Canadian Electrical Code).

RAID Hard Disks

All hard disks in a RAID should be identical (the same size and brand) in order to prevent unexpected system behavior.

Setting Up SATA RAID or AHCI Modes

AHCI Mode

Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced serial ATA features such as Native Command Queuing (for maximum hard disk efficiency and performance). AHCI mode can be supported by one, two or three hard disks.

RAID

You may use your **identical** (see sidebar) hard disks (if you have included more than one hard disk in your purchase option) in combination with Striping (RAID 0), Mirroring (RAID 1), Parity Across Disks (RAID 5) or Intel® Rapid Recover Technology (Recovery) for fault tolerance and data recovery (see *Table 7 - 1, on page 7 - 37*). To configure your system in Striping (RAID 0) or Mirroring (RAID 1) modes you will require **at least two** hard disks; to configure your system in Intel® Rapid Recover Technology (Recovery) mode you will require **two hard disks** installed; to configure your system in Parity Across Disks (RAID 5) mode you will require **three hard disks** installed.

Intel® Matrix Storage Manager

Make sure you install the Intel Matrix driver and application if you have set up your hard disk(s) in **AHCI** or **RAID** modes (see *"Intel® Matrix Driver Installation" on page 7 - 44*).

RAID Level	Description
RAID 0	Identical drives reading and writing data in parallel to **increase performance**. RAID 0 implements a striped disk array and the data is broken into blocks and each block is written to a separate disk drive.
RAID 1	Identical drives in a mirrored configuration used to **protect data**. Should a drive that is part of a mirrored array fail, the mirrored drive (which contains identical data) will handle all the data. When a new replacement drive is installed, data to the new drive is rebuilt from the mirrored drive to restore fault tolerance.
RAID 5	Identical drives (at least **three** drives must be used) in a parity across disks configuration are used to **protect data** and **increase performance**. A RAID 5 array can withstand a single disk failure without losing access to data.
Recovery	Two Identical drives copying data between a master and a recovery disk. This provides more control over how data is copied between the master and recovery drives, fast volume updates and the ability to view the data in *Windows Explorer*.

Table 7 - 1
RAID Levels

Array Types

A **Mirrored Array** (**RAID 1**) provides full data protection, as data can simply be copied from a healthy disk to a replacement for any failed disk.

A **Striped Array** (**RAID 0**) is **NOT** fault-tolerant. The failure of one drive will result in the loss of all data in the array. It is de-signed to increase disk performance by spreading the I/O load across the channels and drives.

Prepare the following before setting up your serial ATA hard disks in **RAID** mode (to configure **AHCI** mode you do not need to prepare any extra hard disks but will need to install the Intel Matrix driver):

1. The ***Microsoft Windows OS CD***.
2. A **second** (identical) hard disk installed in the Primary HDD bay for **RAID level 0 or 1** (required for RAID but not required for AHCI).
   OR
   A **second** (identical) hard disk installed in the Primary HDD bay, and a **third** (identical) hard disk in the Secondary HDD bay for **RAID level 5**.
3. The ***Device Drivers & Utilities + User's Manual*** disc.
4. **For Recovery level RAID** you will also require a USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette.

SATA RAID or AHCI Setup Procedure (BIOS)

1. Start-up your notebook computer and press <**F2**> to enter the **BIOS**.
2. Go to the **Advanced** menu, select "**SATA Mode Selection**" and press Enter (see page ***5 - 8***).

- Select either "**RAID**" or "**AHCI**".

3. Press **Esc** and go to the **Boot** menu.
4. Set the ***CD/DVD-ROM Drive*** (make sure the ***Microsoft Windows OS CD*** is inserted) as the first device in the boot order from the **Boot** menu.
5. Select ***Exit Saving Changes*** from the **Exit** menu (or press **F10** and Enter) and press Enter to exit the BIOS and reboot the computer.
6. For **RAID** mode see the instructions in ***"RAID Setup (Intel Matrix)" on page 7 - 40***.
7. For **AHCI** mode simply install the Intel Matrix driver after installing the OS and all other drivers listed in **Chapter 4** (see ***"Intel® Matrix Driver Installation" on page 7 - 44***).

RAID and Ready-Drive Compatibility

On a system configured in RAID mode, a condition exists where NV Cache commands will not be sent to the **Windows ReadyDrive*** cache provided by **Intel® Turbo Memory**.

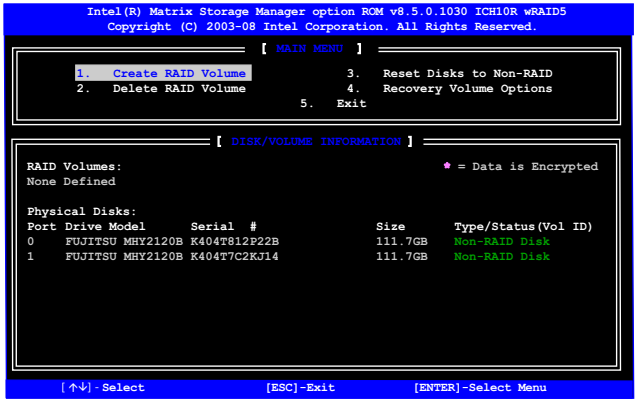
Microsoft has released a Knowledge Base article and QFE that addresses this issue. (**http://support.microsoft.com/kb/954943**).

Intel recommends that customers who encounter this issue directly contact Microsoft to obtain the QFE.

RAID Setup (Intel Matrix)

1. Press **Ctrl + i** to enter RAID configuration menu.

Figure 7 - 30
Intel(R) Matrix Storage Manager Option ROM



2. Select **1.Create RAID Volume** and press Enter.
3. Type the **RAID volume name** and then press Tab or Enter to advance to the next field.
4. Specify (use the up and down arrow keys) the **RAID level** (**RAID 0 or RAID 1 or Recovery** - see *Table 7 - 1, on page 7 - 37*) and then press Tab or Enter to advance to the next field.
5. Press Enter and the system will select the physical disks to use.
6. Press Enter and select (if applicable) the Strip Size (best set to default).
7. Press Enter and select the Capacity size (best set to default).
8. Press Enter to select **Create Volume**.
9. Press Enter to create the volume, and confirm the selection by pressing **Y**.

Recovery Level

When selecting disks for the Recovery RAID level you will need to use the **Tab** key to select a **Master** disk, and the **Space** key to select a **Recovery** disk.

You can select the synchronization between the disks to be **Continuous** (automatic) or **On Request** (manually).

10. This will now return to the main menu.

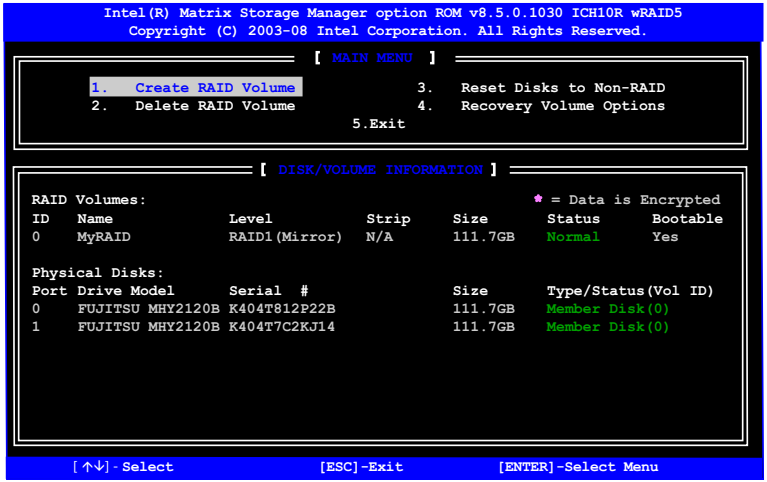


Figure 7 - 31
RAID Created

11. Select **5.Exit** and press Enter, then press **Y** to exit the RAID configuration menu.
12. As the computer starts up, press a key when you see the message "***Press any key to boot from CD***".
13. Press **Enter** to continue installing the operating system as normal (see your ***Windows*** documentation if you need help on installing the ***Windows*** OS).
14. If you have selected a Recovery level RAID then see ***"Windows Installation for Recovery Level RAID Systems" on page 7 - 42***.
15. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 3*** (make sure you install the Intel Matrix driver - see ***"Intel® Matrix Driver Installation" on page 7 - 44***).

Windows Installation for Recovery Level RAID Systems

When you install ***Windows Vista*** for Recovery level RAID systems you will need to provide the driver for the RAID system as per the instructions below. Firstly you will need to go to an operable computer and copy the driver from the ***Device Drivers & Utilities + User's Manual disc*** to a USB Flash drive, external USB hard disk or external floppy disk drive and floppy diskette.

1. Go to the operable computer and insert a USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette.
2. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive of the operable computer.
3. Copy the RAID folder from the location below (D: denotes your DVD drive) on the ***Device Drivers & Utilities + User's Manual*** disc to the USB Flash drive, external USB hard disk or floppy diskette.
   - D:\Others\00RAID
4. Press a key at system startup to begin installing ***Windows*** from your ***Microsoft Windows Vista*** disc.
5. Select your Language, Time and currency format and Keyboard or input method and click **Next**.
6. Click **Install Now**.
7. Enter your product key and click **Next**.
8. Make sure your USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette is attached to one of the USB ports on the computer.

9. Select your ***Windows*** version (e.g. ***Windows Vista Ultimate***) and click the "**I have selected the edition of Windows that I purchased**" tickbox and then click **Next**.
10. Click "**I accept the license terms**" tickbox and click **Next**.
11. Click **Custom (advanced)**.
12. Click to select **Load Driver** when the "**Where do you want to install Windows?**" screen appears.
13. Click **Browse** and browse to the location you copied the files to on your USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette (X: denotes your USB Flash drive, external USB hard disk or external USB floppy disk drive):
    - Vista 32bit - X:00RAID\f6flpy32\iaStor.inf
    - Vista 64bit - X:00RAID\f6flpy64\iaStor.inf
14. Click **Next** (or format the master drive to your preferences).
15. Follow the on-screen instructions to install the ***Windows Vista*** operating system.
16. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 3*** (make sure you install the Intel Matrix driver - see ***"Intel® Matrix Driver Installation" on page 7 - 44***).

e-SATA Port

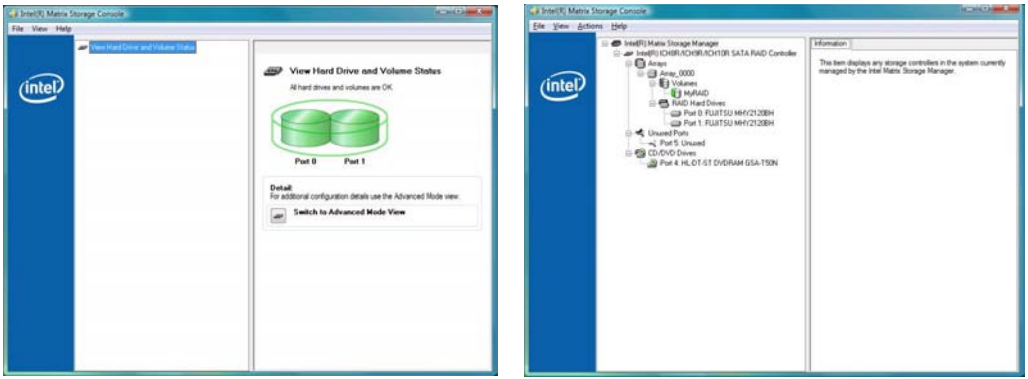
Install the **Intel Matrix Storage** driver to display the safe removal icon for e-SATA devices in the taskbar

Intel® Matrix Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **4.Install TM&iMSM Driver > Yes**.
4. Click **Next > Next > Yes > Next**.
5. Click **Finish** to restart the computer.

The **Intel Matrix Storage Console** displays status information on your RAID configuration. Run the **Intel® Matrix Storage Console** from the **Intel® Matrix Storage Manager** in the Programs/All Programs menu. The **Intel® Matrix Storage Manager** provides information on the RAID status.

Figure 7 - 32
Intel Matrix Storage Console (Basic & Advanced Views)



Intel® Matrix Storage Manager

If a hard drive member of a RAID volume is reported as "**Degraded**" or "**Failed**" it may be possible to recover the volume. If the volume cannot be restored then you will need to recreate the RAID volume and restore data from a back up. The **Help** menu (press **F1** or select **Contents and Index** from the **Help** menu) provides instructions on how to recover or recreate RAID Volumes.

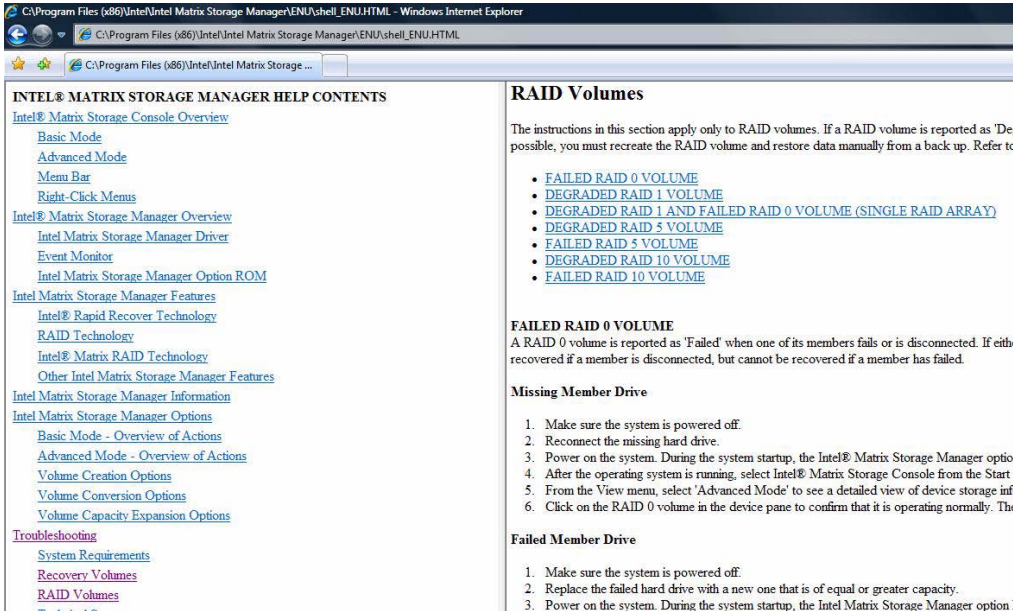


Figure 7 - 33
Intel Matrix Storage Manager Help

RAID Volume Data Verification and Repair

The RAID volume data verification process identifies any inconsistencies or bad data on a RAID 0, RAID 1, RAID 5 or Recovery volume. The table outlines what occurs for each RAID level:

Table 7 - 2
RAID Verification & Repair Status

RAID Level	Verify	Verify & Repair
RAID 0	Bad blocks are identified.	N/A
RAID 1	Bad blocks are identified. Data on the mirrored drive is compared to data on the source drive.	Bad blocks are reassigned. If the data on the mirrored drive does not match the data on the source drive, the data on the mirrored drive is overwritten by the data on the source.
RAID 5	Bad blocks are identified. Parity is recalculated and compared to the stored parity for that stripe.	Bad blocks are reassigned. If the newly calculated parity does not match the stored parity, the stored parity is overwritten with the newly calculated parity.

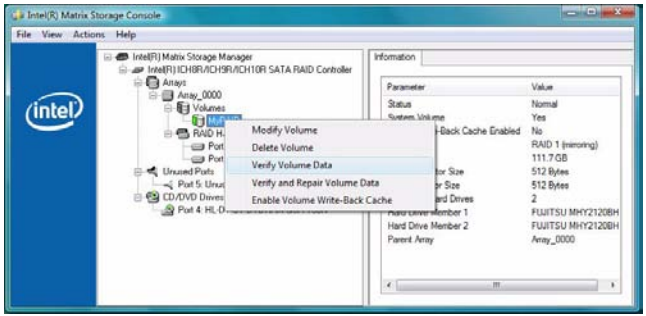
Replacing and Reverting Recovery and Master Volumes

If a master or recovery drive fails you will need to add a new identical drive and re-build the recovery volume to the drive. You can also revert the master drive to the state of the previous volume update. For details on how to do this see ***"Intel Matrix Storage Manager Help" on page 7 - 45***.

See over for details on how to verify and repair RAID volume data.

Verifying and Repairing RAID Volume Data

1. Run the **Intel® Matrix Storage Console** from the **Intel® Matrix Storage Manager** in the Programs/All Programs menu.
2. Click **View > Advanced Mode**.
3. Right-click on the RAID volume and select either **Verify Volume Data** or **Verify and Repair Volume Data**.



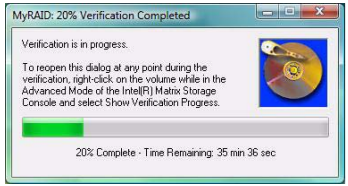


Figure 7 - 34
RAID Verification (Intel® Matrix Storage Console)

4. The verification or verification and repair process will run and display progress.
5. A dialog box will display the final status of the verification or verification and repair status.

Figure 7 - 35
Verification Status

e-SATA Port Support

Note that **the Intel Matrix Storage driver is required to support the e-SATA port** even if you have not included an *Intel Turbo Memory* module in your purchase configuration.

Follow the instructions provided here in order to install the driver.

Intel Turbo Memory Module

If you have included an ***Intel Turbo Memory (Robson) NAND flash memory card module*** in your purchase option, then you will need to enable AHCI or RAID mode in the BIOS (see ***"Advanced Menu" on page 5 - 7***) **BEFORE** installing the ***Windows Vista*** operating system software (do not enable this option in ***Windows XP*** or on a ***Windows Vista*** operating system that has been installed without the option enabled).

Note that if you are adding an ***Intel Turbo Memory (Robson) NAND flash memory card module*** to a computer that already has an operating system and drivers etc. installed, you will need to reinstall the OS and all necessary drivers and utilities (make sure you back up all your important data before doing so).

Intel Turbo Memory Technology (also known as **Robson flash memory**) is an Intel technology that reduces the time it takes for a computer to boot up, to load applications, and to write data to the hard drive. ***Intel Turbo Memory Technology*** is supported in ***Windows Vista*** only (it also supports *Windows Vista* features such as ReadyBoost, ReadyDrive, and Superfetch).

Intel Turbo Memory & Matrix Storage Setup and Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **4.Install TM&iMSM Driver > Yes**.
4. Click **Next > Yes > Next > Next**.
5. Click **Finish** to restart the computer.
6. For Turbo Memory modules that support **User Pinning** see ***"Intel Turbo Memory Dashboard (User Pinning Supported Only)" on page 7 - 50***.
7. For Turbo Memory modules that **do not** support **User Pinning** see***"Intel Turbo Memory Console (All Modules)" on page 7 - 53***.

If the Turbo Memory module supports **User Pinning** then the **Intel Turbo Memory Dashboard** will be installed. If the Turbo Memory module does not support **User Pinning** then the **Intel Turbo Memory Dashboard** will not be installed.

ReadyBoost Issue

When the **Intel® Turbo Memory Console** is opened immediately after powering on the system, ***Windows ReadyBoost*** may appear to be disabled.

This is expected behavior. The status appears as disabled while Microsoft generates the ***Windows ReadyBoost*** file. Once the file has been generated, the status should appear as Enabled again.

See the **Intel website** (***http://support.intel.com/support/chipsets/itm/sb/CS-025852.htm***) for the latest updated information on this issue.

Help

Click the **Help** icon to bring up the menu and click to select and help topic.

Intel Turbo Memory Dashboard (User Pinning Supported Only)

The **Intel Turbo Memory Dashboard** allows you to pin an application or file to load into the Intel Turbo Memory NAND cache for performance acceleration.

1. Run the **Intel® Turbo Memory Dashboard** from the **Programs/All Programs** menu (**Intel® Turbo Memory**) or from the desktop shortcut.
2. The **Pinning Capacity Consumption Meter** 1 displays the amount of pinning space used.
3. The **Control and Profile Pull-Down Menu** 2 allows you to select and manage profiles.
4. The **Application Window** 3 lists all applications available for performance acceleration. When accelerated the applications/files will appear in the **Accelerated Window** 4.
5. The **Custom Sets Window** 5 allows you to select specific files to be pinned.

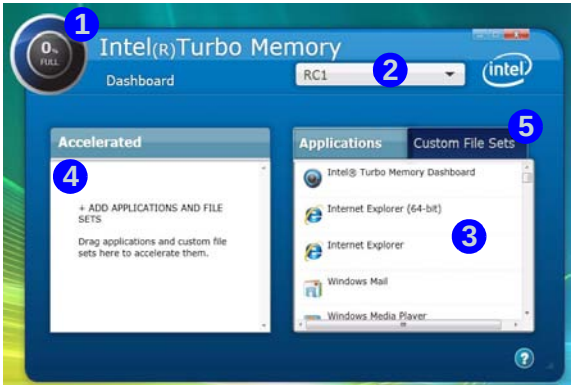
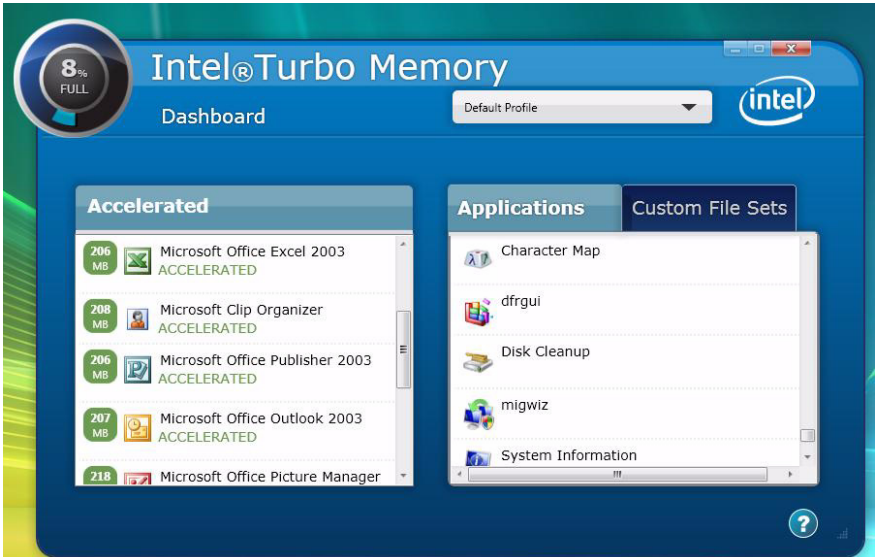


Figure 7 - 36
Intel Turbo Memory Dashboard

Pinning an Application (User Pinning Supported Only)

1. The **Intel® Turbo Memory Dashboard** allows you to select files and applications to accelerate and therefore open faster and display quicker.
2. Applications will be listed in the **Applications Window** on the right.
3. To accelerate any application drag the icon into the **Accelerated** pane on the left (the available memory is indicated in the top left).
4. A status bar indicates the pinning progress and will turn green when ready.



Unpinning an Application

Click the application in the **Accelerated Window** and drag it back to the **Applications Window** to unpin the application.

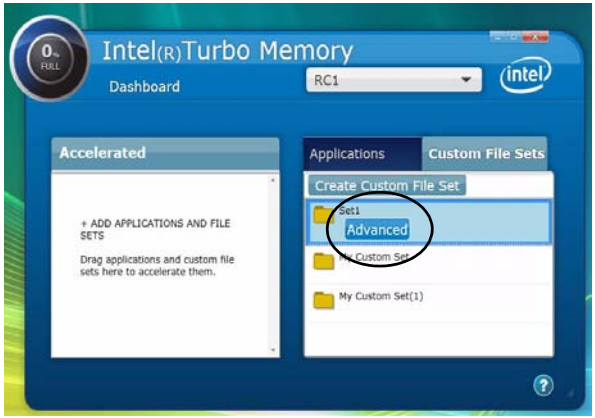
You can also unpin the application by right-clicking it in the **Applications Window** and selecting "**Remove from Cache**."

Figure 7 - 37
Accelerated Applications

Custom File Sets (User Pinning Supported Only)

A Custom File Set allows you to group applications and files to accelerate. These sets can be moved easily in and out of the **Accelerated Window** which is of benefit when space is limited. You need to create the custom file set before dragging the set to the accelerated window.

1. Click **Custom File Sets** and type a name for the set, and then click **Next**.
2. Select the file set folder icon and click **Advanced**.
3. Click the **Browse** button and select the files and applications to accelerate.
4. Click the **Done** button when finished.
5. Drag the custom set across to the **Accelerated Window** from **Custom File Sets** to accelerate.



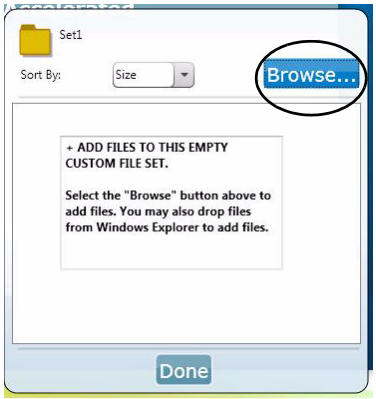


Figure 7 - 38
Create Custom File Set

Intel Turbo Memory Console (All Modules)

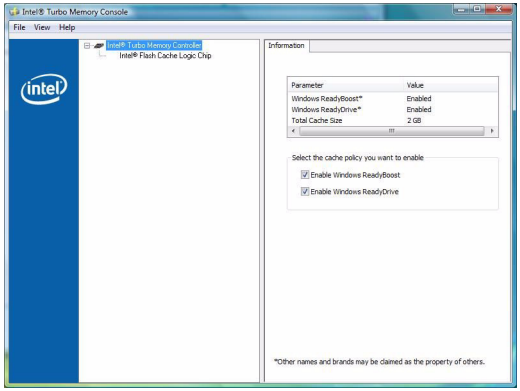
1. Run the **Intel® Turbo Memory Console** from the **Programs/All Programs** menu (**Intel® Turbo Memory**).
2. You can enable/disable **Windows ReadyBoost** and **Windows ReadyDrive** from the **Intel® Turbo Memory Console**.

RAID and ReadyDrive Compatibility

On a system configured in RAID mode, a condition exists where NV Cache commands will not be sent to the **Windows ReadyDrive*** cache provided by **Intel® Turbo Memory**.

Microsoft has released a Knowledge Base article and QFE that addresses this issue. (**http://support.microsoft.com/kb/954943**).

Intel recommends that customers who encounter this issue directly contact Microsoft to obtain the QFE.



- **Windows ReadyBoost** - uses **flash memory** as a hard-drive caching solution (Not supported if **User Pinning** is supported).
- **Windows ReadyDrive** - uses **hybrid drives** as a hard-drive caching solution.

Windows ReadyBoost

If your module supports **User Pinning** (i.e. the **Intel Turbo Memory Dashboard** is installed) then **ReadyBoost is not supported** (the item will be grayed out).

Note that the Intel Turbo Memory Console DOES NOT appear if you have not included a Turbo Memory module in your purchase configuration.

Figure 7 - 39
Intel Turbo Memory Console

Chapter 8: Troubleshooting

Overview

Should you have any problems with your computer, before consulting your service representative, you may want to try to solve the problem yourself. This chapter lists some common problems and their possible solutions. This can't anticipate every problem, but you should check here before you panic. If you don't find the answer in these pages, make sure you have followed the instructions carefully and observed the safety precautions in the preface. If all else fails, talk to your service representative. You should also make a record of what happened and what remedies you tried.

Of course, if something goes wrong, it will happen at the most inconvenient time possible, so you should preview this section just in case. If, after you've tried everything, and the system still won't cooperate, try turning it off for a few minutes and then rebooting. You will lose any unsaved data, but it may start working again. Then call your service representative.

Basic Hints and Tips

Many of the following may seem obvious but they are often the solution to a problem when your computer appears not to be working.

- **Power** - Is the computer actually plugged into a working electrical outlet? If plugged into a **power strip**, make sure it is actually working. Check the **LED Power Indicators** (see ***"LED Indicators" on page 1 - 8***) to see the computer's power status.
- **Connections** - Check all the **cables** to make sure that there are no **loose connections** anywhere.
- **Power Savings** - Make sure that the system is not in **Hibernate** or **Sleep** mode by pressing the keys configured in your P*ower Options* (see ***"Configuring the Power Buttons" on page 3 - 8***), the **Fn + F4** key combination, or power button to wake-up the system.
- **Brightness** - Check the brightness of the screen by pressing the **Fn** + **F8 and F9** keys to adjust the brightness (see ***Table 1 - 4, on page 1 - 11***).
- **Display Choice** - Press **Fn** + **F7** to make sure the system is not set to "external only" display.
- **Boot Drive** - Make sure there are no **optical media and/or USB storage devices** in any connected drive when you start up your machine (this is a common cause of the message "***Invalid system disk - Replace the disk, and then press any key***" / "***Remove disks or other media. Press any key to restart***").

Backup and General Maintenance

- Always **backup** your important data, and keep copies of your OS and programs safe, but close to hand. Don't forget to note the **serial numbers** if you are storing them out of their original cases, e.g. in a DVD wallet.

- Run **maintenance programs** on your hard disk and OS as often as you can. You may schedule these programs to run at times when you are not using your computer. You can use those that are provided free with your OS, or buy the more powerful dedicated programs to do so.

- Write down your passwords and keep them safe (away from your computer). This is especially important if you choose to use a **Boot** password for the SCU (see *"Security Menu" on page 5 - 10*).

- Keep copies of vital **settings files** such as network, dialup settings, mail settings etc. (even if just brief notes).

Warranty

The CPU is not a user serviceable part. Opening this compartment, or accessing the CPU in any way, may violate your warranty.

Viruses

- Install an **Anti-Virus** program and keep the **definitions file** (the file which tells your program which viruses to look for) up to date. New computer viruses are discovered daily, and some of them may seriously harm your computer and cause you to lose data. **Anti-Virus** programs are commercially available and the **definitions file updates** are usually downloadable directly from the internet.

- Be careful when opening e-mail from sources you don't know. **Viruses** are often triggered from within **e-mail attachments** so take care when opening any attached file. You can configure most **Anti-Virus** programs to check all **e-mail attachments**. **Note**: You should also beware of files from people you know as the virus may have infected an **address book** and been automatically forwarded without the person's knowledge.

- Keep a "**Bootable CD-ROM/DVD-ROM/USB storage device**" (this CD/DVD/USB device provides basic information which allows you to startup your computer) handy. You may refer to your OS's documentation for instructions on how to make one, and many **Anti-Virus** programs will also provide such a disk (or at least instructions on how to make one).

Upgrading and Adding New Hardware/Software

- Do not be tempted to make changes to your **Windows Registry** unless you are very sure of what you are doing, otherwise you will risk severely damaging your system.

- Don't open your computer or undertake any repair or upgrade work if you are not comfortable with what you are doing.

- Read the **documentation**. We can assume, since you are reading this that you are looking at the computer's manual, but what about any new peripheral devices you have just purchased? Many problems are caused by the installation of new hardware and/or software. Always refer to the documentation of any new hardware and/or software, and pay particular attention to files entitled "**READ ME**" or "**READ ME FIRST**".

- When installing a new device always make sure the device is powered on, and in many cases you will need to restart the computer. Always check that all the cables are correctly connected.

- Make sure you have installed the **drivers** for any new hardware you have installed (latest **driver files** are usually available to download from vendor's websites).

- Thoroughly check any **recent changes** you made to your system as these changes may affect one or more system components, or software programs. If possible, go back and undo the change you just made and see if the problem still occurs.

- Don’t over complicate things. The less you have to deal with then the easier the source of the problem may be found; **Example** - if your computer has many devices plugged into its ports, and a number of programs running, then it will be difficult to determine the cause of a problem. Try disconnecting all of the devices and restarting the computer with all the peripheral devices unplugged. A process of elimination (adding and removing devices and restarting where necessary) will often find the source of a problem, although this may be time consuming.

Problems & Possible Solutions

Problem	Possible Cause - Solution
You turned the **power on** but it doesn't work.	*Battery missing / incorrectly installed.* Check the battery bay, make sure the battery is present and seated properly (the design of the battery only allows it to go in one way). Make sure there's nothing interfering with the battery contacts.
The **Battery LED power** indicator  , is blinking orange.	*Low Battery.* Plug in the power source. If the computer doesn't start up immediately, turn it off then on again.
You are losing **battery power** too quickly.	*The system is using too much power.* If your *OS* has a *Power Options* scheme (see ***"Power Plans" on page 3 - 4***) check its settings. You may also be using an ExpressCard/USB device/ external device that is drawing a lot of power.
Actual **battery operating time** is shorter than expected.	*The battery has not been fully discharged before being recharged.* Make sure the battery is fully discharged and recharge it completely before reusing (see ***"Battery Information" on page 3 - 10***). Check the settings of any active power plan (see ***"Power Plans" on page 3 - 4***). *A peripheral device/USB device/ExpressCard is consuming a lot of power.* Turn off/remove the unused device to save power.

Problem	Possible Cause - Solution
The **computer feels too hot**.	Make sure the computer is properly ventilated and the vents/fan intakes are not blocked. If this doesn't cool it down, put the system into **Hibernate** mode or turn it off for an hour. Make sure the computer isn't sitting on a thermal surface (see ***"Overheating" on page 1 - 15***). Make sure you're using the correct adapter. Make sure that your notebook is completely powered off before putting it into a travel bag (or any such container). Putting a notebook which is powered on in a travel bag may cause the vents/fan intakes to be blocked.
Nothing appears on screen.	*The system is in a power saving mode*. Toggle the **Fn + F4** (see ***"Configuring the Power Buttons" on page 3 - 8***). *The screen controls need to be adjusted.* Toggle the screen control **Fn + F8/F9** key combinations. If you're connected to an external monitor, make sure it's plugged in and turned on. You should also check the monitor's own brightness and contrast controls. *The computer is set for a different display.* Toggle the screen display key **Fn + F7** combination. If an external monitor is connected, turn it on. *The **screen saver** is activated.* Press any key or touch the **TouchPad**.
No image appears on the **external monitor** I have plugged in and powered on.	*You haven't installed the video driver and configured it appropriately from the **Control Panel**.* See ***"NVIDIA Video Driver Controls" on page B - 1*** for instructions on installing and configuring the video driver.

Problem	Possible Cause - Solution
You forget the **boot password**.	*If you forget the password, you may have to discharge the battery of the CMOS.* Contact your service representative for help.
 **Password Warning** If you choose to set a boot password, **NEVER** forget your password. The consequences of this could be serious. If you cannot remember your boot password you must contact your vendor and you may lose all of the information on your hard disk.	
The **sound** cannot be heard or the volume is very low.	*The volume might be set too low.* Check the volume control in the ***Volume Control Panel*** in the *Windows* taskbar, or use the key combination **Fn + F5** and **F6** (see ***"Audio Features" on page 2 - 11***) to adjust.
The **compact disc** cannot be read.	*The compact disc is dirty.* Clean it with a CD-ROM cleaner kit.
The **compact disc tray** will not open when there is a disc in the tray.	*The compact disc is not correctly placed in the tray.* Gently try to remove the disc using the eject hole (see ***"Loading Discs" on page 2 - 3***).
The **DVD regional codes** can no longer be changed.	*The code has been changed the maximum **5** times.* See ***"DVD Regional Codes" on page 2 - 5***.

Problem	Possible Cause - Solution
The **TouchPad** doesn't work.	*The Touchpad has been disabled*. Press the Touchpad toggle (**Fn + F1**) key combination (make sure you have installed the Touchpad driver.
I am sliding my finger up and down on the right side of the **TouchPad to scroll** a Window and the **TouchPad does not respond**.	*There are different TouchPad versions available on this computer, and this version requires tapping/holding to scroll.* Either tap repeatedly, or hold the finger down, at the top or bottom right of the touchpad (depending on the scrolling direction required) to scroll the window.
The **system freezes** or the screen goes dark.	*The system's power saving features have timed-out*. Use the AC/DC adapter, press a key on the keyboard, or press the sleep (**Fn + F4**) key combination, or press the power button if no LEDs are lit.
The system never goes into a **power saving mode**.	Power Options features are not enabled. Go to the ***Windows*** Power Options menu and enable the features you prefer (see ***"Power-Saving States" on page 3 - 6***/***"System Power Options" on page D - 18***). Make sure you have enabled **Hibernate** mode from the control panel.
The **Wireless LAN/ Bluetooth/PC Camera modules** cannot be **detected**.	*The modules are off.* Check the appropriate LED indicator for the WLAN or Bluetooth module to see if the modules are on or off (see ***"LED Indicators" on page 1 - 8***). If the LED indicator is off, then press the appropriate function key combination in order to enable the modules (see ***Table 1 - 4, on page 1 - 11***).
The **Wireless LAN/ Bluetooth/PC Camera modules** cannot be **configured**.	*The driver(s) for the module(s) have not been installed*. Make sure you have installed the driver for the appropriate module (see the instructions in ***Chapter 7 "Modules"*** for the appropriate module).

Problem	Possible Cause - Solution
The **PC Camera software** displays a black screen when the PC Camera application is run.	*The software is using the incorrect device*. If you have both an optional PC Camera and an optional TV Tuner module present, you will need to select which device to use with the PC Camera application. Go to the **Devices** menu in the PC Camera application and select the **USB Video Device** device.
Nothing appears on the screen when the **PC Camera** software is run.	*You have selected an external display as the default display device*. The PC Camera application needs to be run while the ***default notebook LCD*** is the selected display device. After a camera picture is obtained on the default notebook LCD, you may then use the **Fn + F7** to toggle through the display modes (give the screen time to refresh). If you have selected an external display as your display device do not run the PC Camera application until you have switched back to the notebook LCD.
A file cannot be copied to/from a connected **Bluetooth** device.	*The transfer of data between the computer and a Bluetooth enabled device is supported **in one direction only (simultaneous data transfer is not supported)***. If you are copying a file from your computer to a Bluetooth enabled device, you will not be able to copy a file from the Bluetooth enabled device to your computer until the file transfer process from the computer has been completed
The **Bluetooth** module is **off** after resuming from Sleep.	*The Bluetooth module's default state will be off after resuming from the Sleep power-saving state*. Use the key combination (**Fn + F12**) to power on the Bluetooth module after the computer resumes from Sleep.
No sound can be heard through an **HDMI** connected display device.	*You have not configured the HDMI audio output*. See ***"HDMI Audio Configuration" on page B - 14***.

Problem	Possible Cause - Solution
When a **DVD** is played in **Windows Media Player/ Media Center**, the **audio track** in other languages (commentaries etc.) **is not clear** if connected to the S/PDIF-Out Jack.	*This is an issue with Windows Media Player/Media Center and audio output through the S/PDIF-Out Jack.* We recommend that you use the **Power DVD** application to play DVDs.
The **Hibernate** function has disappeared.	*You have a computer with **4GB** of RAM and have installed **Windows Vista Service Pack 1***. This is a known issue if your computer has **4GB** of RAM and is running ***Windows Vista Service Pack 1***. To re-enable **Hibernate** mode go to the **Command Prompt** and type the command "**powercfg -h on**" (make sure you are logged on as an Administrator): 1. Click **Start** (menu button). 2. Type "**cmd**" in the **Start Search** box Start Search. 3. Double click the **Command Prompt** cmd when it appears in the menu. 4. Type "**powercfg -h on**" in the Command Prompt window. 5. Close the Command Prompt window. 6. The **Hibernate** function will now be enabled.
The **audio recording quality** is poor.	*The audio recording settings have not been set to the optimal quality.* Go to the **Realtek HD Audio Manager** and select **Noise Suppression** in Microphone (Microphone Effects). See ***"Setup for Audio Recording" on page 2 - 12*** for more details.

Problem	Possible Cause - Solution
The on screen **volume indicator**  does not display the volume adjustment when using an HDMI connected display device.	*When adjusting the volume for an HDMI connected display device the on screen volume indicator*  *will not display the volume level as it is being adjusted*. If you do need to see the volume level as it is being adjusted you can display the ***Windows*** volume level indicator or the ***Realtek HD Audio Manager*** (Digital Output) volume indicator.
The **Wireless LAN indicators**  show that the WLAN module is powered on, however the module does not connect.	*The WLAN module is turned off in the* ***Windows Mobility Center****.* The computer's wireless function keys will not function properly if **Wireless** is turned **OFF** in the **Windows Mobility Center** control panel. Make sure that Wireless is **ON** in the Mobility Center to ensure proper function key behavior (see ***"Wireless Hot Keys" on page 3 - 11***).
There is a background noise when playing a DVD in Windows Media Player through an HDMI connection to an LCD monitor/TV.	T*he LCD monitor/TV does not have a built-in digital audio decoder*. Disable **DTS Audio** and **Dolby Digital** as supported formats from the **Sound** control panel > **Realtek Digital Output** > **Supported Formats** (tab). See ***"Audio Setup for LCD Monitors/TVs with HDMI Input" on page B - 15*** for details.

Screen Resolution Error

If you are experiencing either screen resolution reduction, or screen flickering **after resuming from Sleep in *Windows Vista* only** then follow the instructions below to fix this problem. This error arises in compliance with ***Windows Vista*** policy, which triggers **TMM** (Transient Multi-Monitor Manager) when the notebook lid (**S3**) is closed. **TMM** disconnects the LCD display from the OS and then adds the LCD display back when the lid is opened. This may trigger **TMM** to restore an old display setting which may result in screen flickering or a screen resolution change. To fix this problem you will need to disable **TMM** in the OS:

1. Go to the **Control Panel** in the ***Windows OS*** and double-click the **Administrative Tools** icon (**System and Maintenance**).
2. Double-click **Task Scheduler (Schedule Tasks)**.

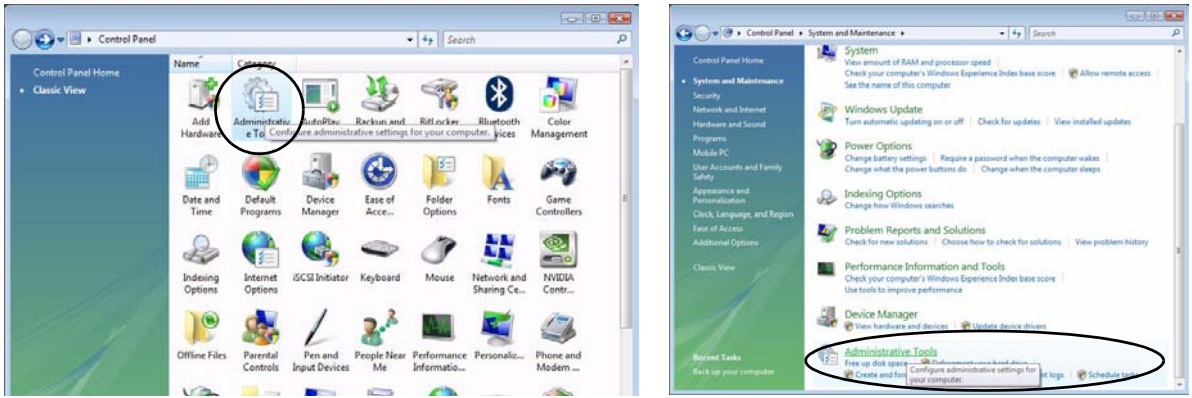


Figure 8 - 1 **- Control Panel System and Maintenance**

3. Double-click **Task Scheduler Library > Microsoft > Windows**.
4. Click **MobilePC** to open the control panel.
5. Right-click **TMM** and select **Disable**.

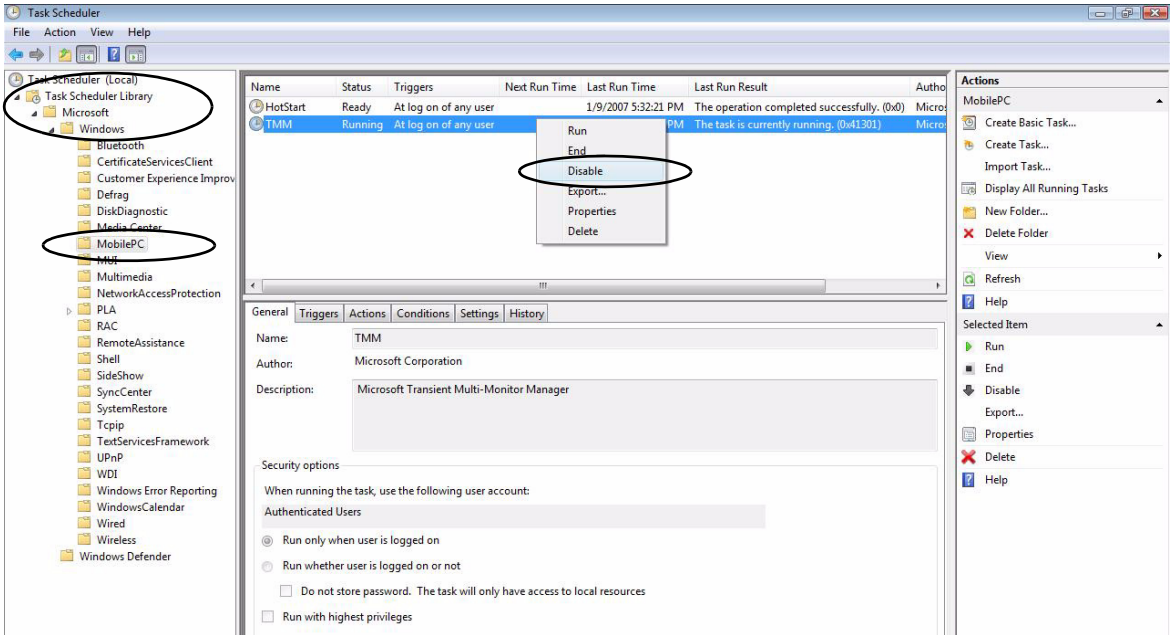


Figure 8 - 2 **- TMM Disable**

6. Close all the control panels.

Bluetooth Connection Problems

If you are experiencing problems connecting to some Bluetooth devices (in particular certain mobile phones and headsets) it maybe necessary to download and install the **Windows Mobile Device Center** software (for ***Windows Vista*** and ***Windows 7***). Go to the Microsoft website and search for the **Microsoft Windows Device Center Driver for *Windows Vista* (*64-bit or 32-bit*) and *Windows 7* (*64-bit or 32-bit*)**, and then download the driver.

1. Install the ***Microsoft Windows Device Center Driver*** as appropriate for your operating system.
2. ***Windows Vista*** will automatically configure the driver for you, however ***Windows 7*** requires further configuration.
3. Make sure the Bluetooth device is powered on.
4. Go the ***Windows 7*** control panel and double-click **Device Manager** (**Hardware and Sound > Devices and Printers**).
5. **Bluetooth Peripheral Device(s)** will be listed under **Other Devices** (note this will only be listed if you have connected, or tried to connect to, a Bluetooth device previously).

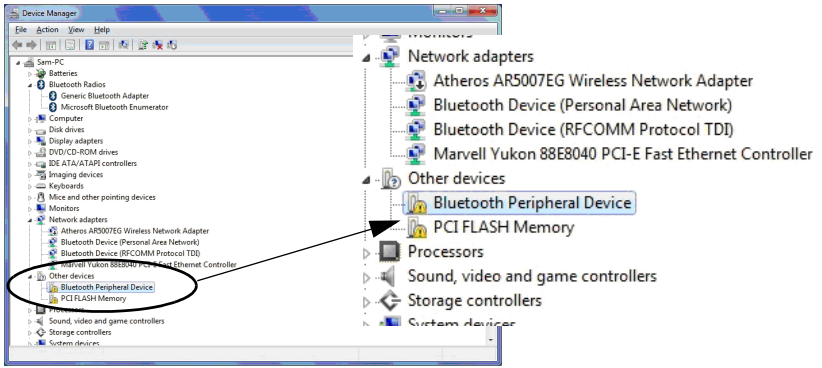


Figure 8 - 3 **- Device Manager**

Bluetooth Peripheral Devices

You will need to repeat the procedure listed here for all **Bluetooth Peripheral Devices** listed under **Other Devices** i.e. until there are no more **Bluetooth Peripheral Devices** listed under this menu heading.

6. Right-click **Bluetooth Peripheral Device** and click on ***Update Driver Software***.
7. Click **Browse my computer for driver software**.
8. Click **Let Me pick from a list of device drivers on my computer**.

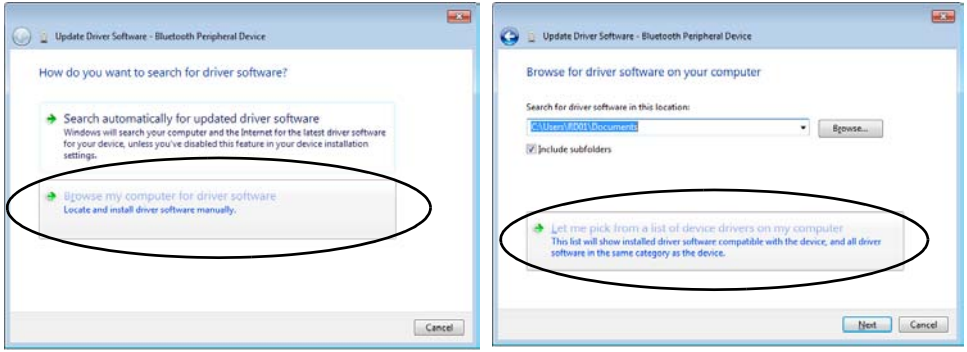


Figure 8 - 4 **- Browse my computer.../Let me pick from...**

9. Select **Bluetooth Radios** from the list.

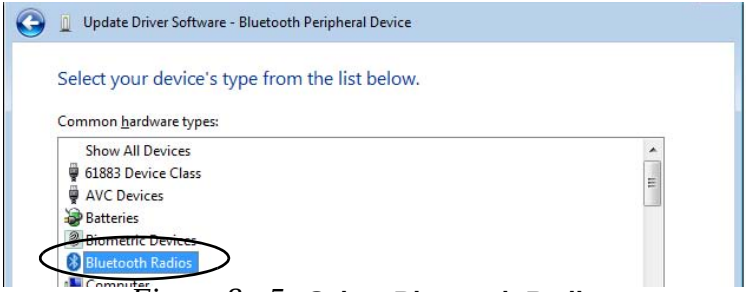


Figure 8 - 5 **- Select Bluetooth Radios**

10. A list of drivers will appear with **Manufacturer** on one side and **Model** in the other.
11. Choose **Microsoft Corporation** (make sure you choose the full name **Microsoft Corporation** and do not choose **Microsoft** - Note that you must have installed the **Microsoft Windows Device Center Driver** for **Microsoft Corporation** to appear in the list).
12. Select **Windows Mobile-based device support** from the **Model** list.

Make sure you select **Microsoft Corporation**

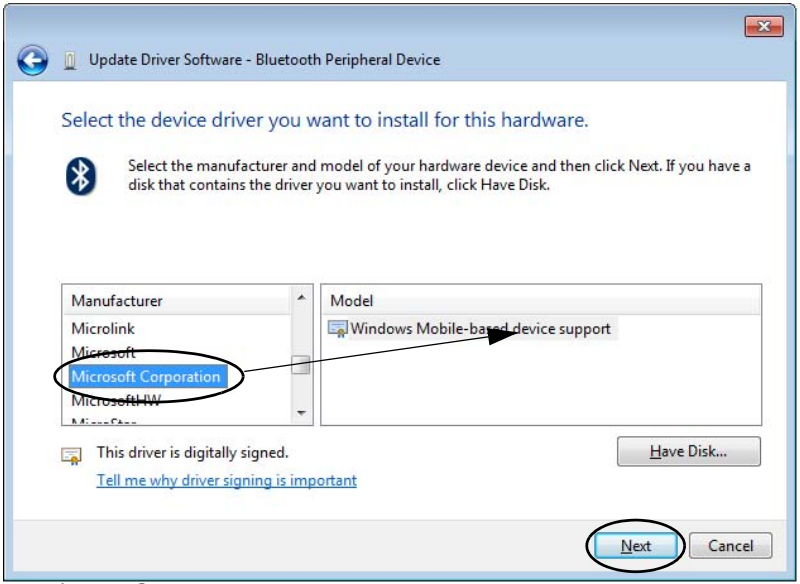


Figure 8 - 6 **- Select Device Driver**

13. Click **Next > Yes** and the driver will install.
14. Click **Close** to complete the installation.

15. The **Device Manager** should now display the **Windows Mobile-based device support** under **Bluetooth Radios**.
16. You will need to repeat the process for any other **Bluetooth Peripheral Devices** listed under **Other Devices**.

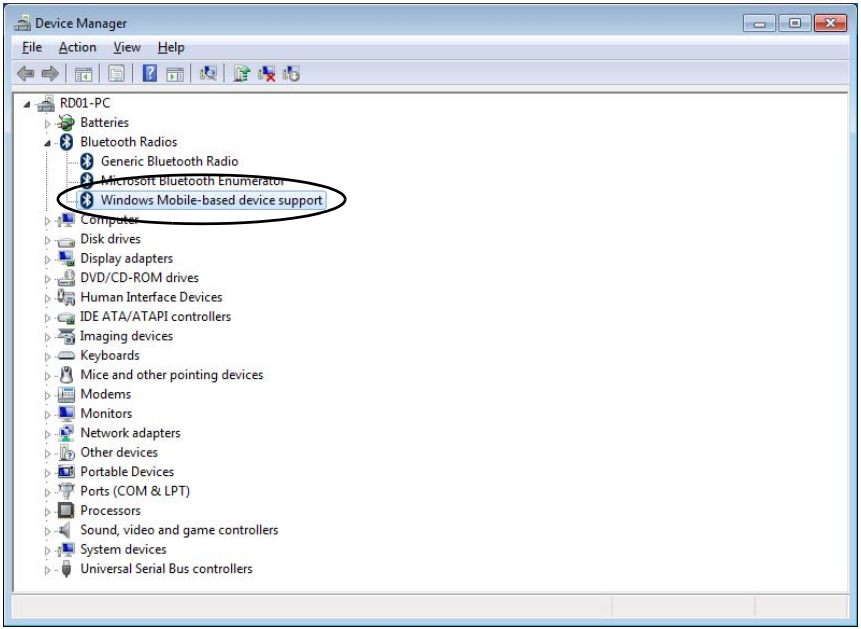


Figure 8 - 7 **- Device Manager - Bluetooth Radio**

Appendix A: Interface (Ports & Jacks)

Overview

The following chapter will give a quick description of the ports & jacks which allow your computer to communicate with external devices, connect to the internet etc.

Ports and Jacks

Item	Description
Card Reader 	The card reader allows you to use the following digital storage cards: MMC (MultiMedia Card) SD (Secure Digital) MS (Memory Stick) MS (Memory Stick Pro) RS MMC (requires PC adapter) Mini SD (requires PC adapter) MS Duo (requires PC adapter)
Cable (CATV) Antenna Jack CATV	Use this jack to connect a CATV cable if you have included the **optional** TV Tuner in your purchase.
Consumer Infrared Transceiver	The **consumer infrared** transceiver at the **front** of the computer allows the computer to communicate with the remote control unit supplied with the **optional** TV Tuner.
DC-In Jack 	Plug the supplied AC/DC adapter into this jack to power your computer.
DVI-Out Port 	The DVI-Out (Digital Visual Interface) Port (at the rear of the computer) allows you to connect an external monitor, or Flat Panel Display, to allow dual video or simultaneous display on the LCD and external monitor/FPD (see ***"Display Devices" on page B - 5***). If you are using an older type of monitor you will need to use a converter to convert the signal from DVI to VGA.
e-SATA Port **e-SATA**	Plug external Serial ATA hard drives into this e-SATA (external Serial Advanced Technology Attachment) port. Install the **Intel Matrix Storage** driver to display the safe removal icon for e-SATA devices in the taskbar (see ***"Intel® Matrix Driver Installation" on page 7 - 44***).

Item	Description
HDMI-Out Port **HDMI**	The HDMI-Out (**High-Definition Multimedia Interface**) is an audio/video connector interface for transmitting uncompressed digital streams. This allows you to connect an external monitor, TV or Flat Panel Display etc. as a display device (see *"" on page B - 6*) by means of a HDMI cable. **Note that HDMI carries both audio and video signals** (see *"HDMI Audio Configuration" on page B - 14*). **HDMI Audio Support** Note that some NVIDIA video card models DO NOT support High Definition Audio through HDMI. When connecting these video cards to an external display (using an HDMI cable), it is recommended that you use a third party video application (e.g. Power DVD) that provides appropriate audio decoding to play DVDs etc. Alternatively you can output audio through an alternative source to the HDMI connection.
Headphone-Out Jack	**Headphones** or **speakers** may be connected through this jack. **Note**: Set your system's volume to a reduced level before connecting to this jack.
Line-In Jack	The Line-In jack allows you to play audio sources through the computer's speakers. Note that audio input through Line-in will default to the **mute** setting. To set up your audio sources to play through the Line-in jack go to the **Sound** control panel and make sure the Mute box is not ticked.

A

Interface (Ports & Jacks)

Item	Description
Microphone-In Jack 	Plug an external microphone in to this jack to record on your computer.
Mini-IEEE 1394 Port 	This allows high-speed connection to various peripheral devices, e.g. external disk drives and digital cameras (**see note below**).  **IEEE 1394** The Mini-IEEE 1394 port only supports **SELF POWERED** IEEE 1394 devices. Make sure you install the IEEE 1394 filter driver (see page ***4 - 6***).
RJ-11 Phone Jack 	This port connects to the built-in modem. You may plug the telephone line directly into this RJ-11 telephone connection.
RJ-45 LAN Jack 	This port supports LAN (Network) functions. **Note**: Broadband (e.g. ADSL) modems usually connect to the LAN port.
S/PDIF-Out Jack 	This S/PDIF (Sony/Philips Digital Interface Format) Out Port allows you to connect your DVD-capable PC to a Dolby AC-3 compatible receiver for “5.1” or ‘dts’ surround sound.

Item	Description
Security Lock Slot 	To prevent possible theft, a Kensington-type lock can be attached to this slot. Locks can be purchased at any computer store.
USB 2.0/1.1 Ports 	These USB 2.0 compatible ports (USB 2.0 is fully USB 1.1 compliant) are for low-speed peripherals such as keyboards, mice or scanners, and for high-speed peripherals such as external HDDs, digital video cameras or high-speed scanners etc. Devices can be plugged into the computer, and unplugged from the computer, without the need to turn the system off (if the power rating of your USB device is 500mA or above, make sure you use the power supply which comes with the device).

Appendix B: NVIDIA Video Driver Controls

The basic settings for configuring the LCD are outlined in *"Video Features" on page 1 - 17*.

NVIDIA Video Driver Installation

Make sure you install the drivers in the order indicated in *Table 4 - 1, on page 4 - 3*.

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
1. Click **2.Install Video Driver > Yes**.
2. Click **Next > Yes > Next** (or **Next > Next)**.
3. Click **Finish** to restart the computer.

Screen Flickering

Note that the display may briefly flicker during **display device detection** (switching displays etc.), or **if changes in resolution** or **mode settings** are taking place (this includes resuming from power saving modes, opening and closing the lid and logging on to ***Windows*** etc.).

Driver Versions

Note that there are two driver versions supplied with this video card. Your system will have the most suitable driver installed. The control panels for each driver may appear slightly differently from each other, and both versions are illustrated here.

Video Card Options

Note that card types, specifications and drivers are subject to continual updates and changes. Check with your service center for the latest details on video cards supported.

NVIDIA Control Panel

To access the **GeForce.....** control panel from the desktop; right-click the **desktop**, then click **NVIDIA Control Panel**.

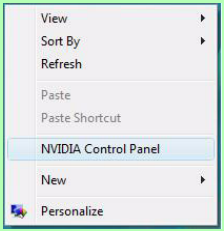


Figure B - 1

NVIDIA GeForce..... Control Panel

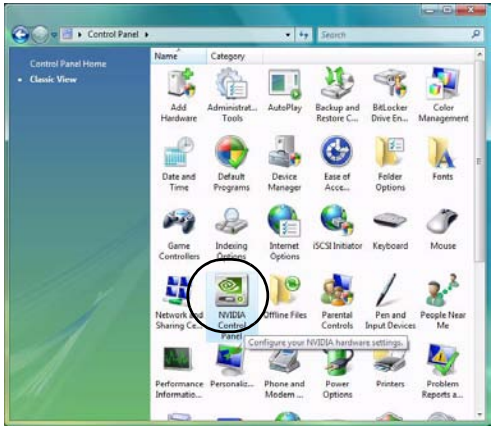
NVIDIA Control Panel

More advanced video configuration options are provided in the **NVIDIA Control Panel** tab.

1. Open the **Display Settings** (see page ***1 - 18***) control panel.
2. Click **Advanced Settings** (button).
3. Click **GeForce.....** (tab).
4. Click **Start the NVIDIA Control Panel** to make any video adjustments.

OR

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Double-click **NVIDIA Control Panel** (click "**Classic View"** from the left of the menu if you are in **Control Panel Home**).



The **NVIDIA Control Panel** provides additional video configuration controls and tools which allow quick access to features such as display configuration, 3D Settings and Help menus etc.

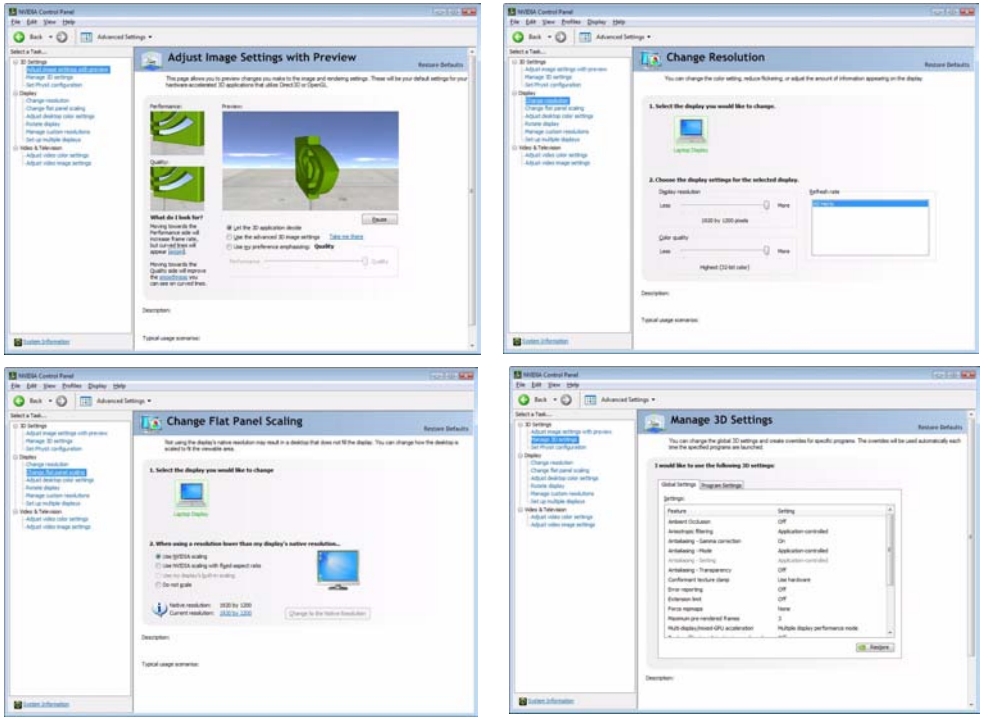


Figure B - 2
NVIDIA Control Panels

Navigating the Control Panel

Navigate through the control panels in much the same way as you would a web page. Click on the sub-heading tasks in the left menu (and on the highlighted links) for information. Use the buttons on the top left to go back, forward etc.

The **Help** menus provide index and search features, and direct links to the NVIDIA website etc.

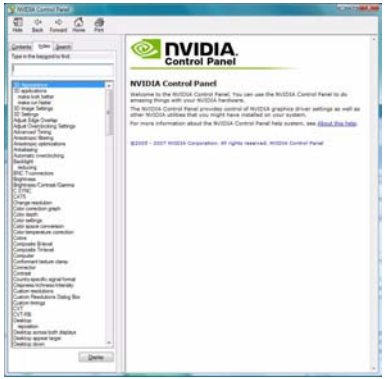


Figure B - 3
Help Menus

Display Devices

Note that you can use a DVI cable connected to the DVI-Out port, or an HDMI (High-Definition Multimedia Interface) cable connected to the HDMI-Out port to connect an external display (if you are using an older type of monitor you can use a converter to convert the signal from DVI to VGA). See your display device manual to see which formats are supported.

1. The built-in LCD.
2. An external display connected to the DVI-Out Port.
3. An external display/TV (if the TV supports an HDMI connection) connected to the HDMI-Out Port.

Monitor and TV Tuner

If you are connecting both a monitor/flat panel display to the DVI-Out Port, and a cable/aerial to the optional TV Tuner module, **make sure you attach the cable/aerial to the TV Tuner first**, then the monitor.

Display Devices

Besides the built-in LCD, you can also use an external monitor/flat panel display as your display device. The following are the display options:

- The built-in LCD.
- An external display connected to the DVI-Out port.
- An external display connected to the HDMI-Out port.

Note that HDMI supports video and audio signals.

Display Modes

Single Display Mode

Only one of your displays is used.

Clone Mode

Clone Mode simply shows an exact copy of the Primary display desktop on the other display(s). This mode will drive multiple displays with the same content.

Dualview Mode/Extended Mode

Dualview/Extended Mode treats both connected displays as separate devices, and they act as a virtual desktop resulting in a large workspace. When Dualview/Extended Mode is enabled, you can drag any icons or windows across to the other display desktop. It is therefore possible to have one program visible in one of the displays, and a different program visible in the other display.

Attaching Other Displays

Configuring an External Display in Windows Vista

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. If a **New Display Detected** window does not appear in ***Windows Vista***, go to the **Windows Mobility Center** control panel (**Mobile PC > Adjust commonly used mobility settings**) and click ***Connect display***.
3. Click on any of the buttons to configure the displays to your preferences, or click **Display Settings** (in the New Display Detected window) to access the control panel.

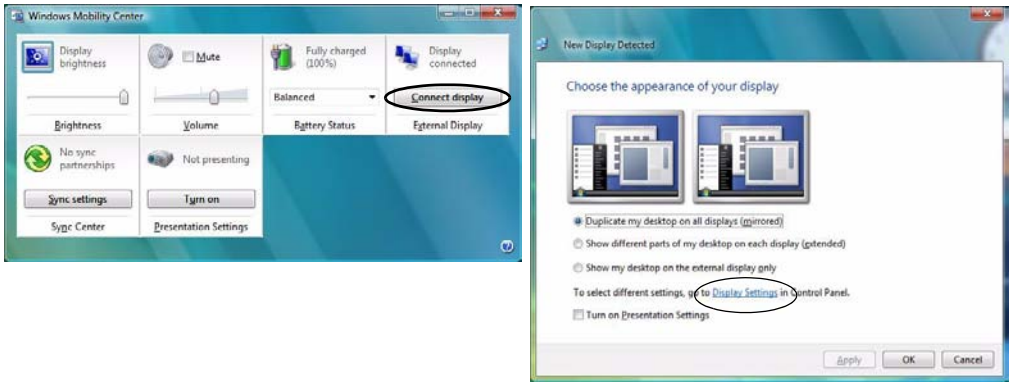


Figure B - 4
New Display Detected

B

Configuring an External Display using the NVIDIA Control Panel (Ver 1)

Alternatively you can use the **NVIDIA control panel** to configure any attached displays.

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Go to **NVIDIA Control Panel** (see *"NVIDIA Control Panel" on page B - 2*).
3. Double-click **Display,** and then click **Set up multiple displays**.

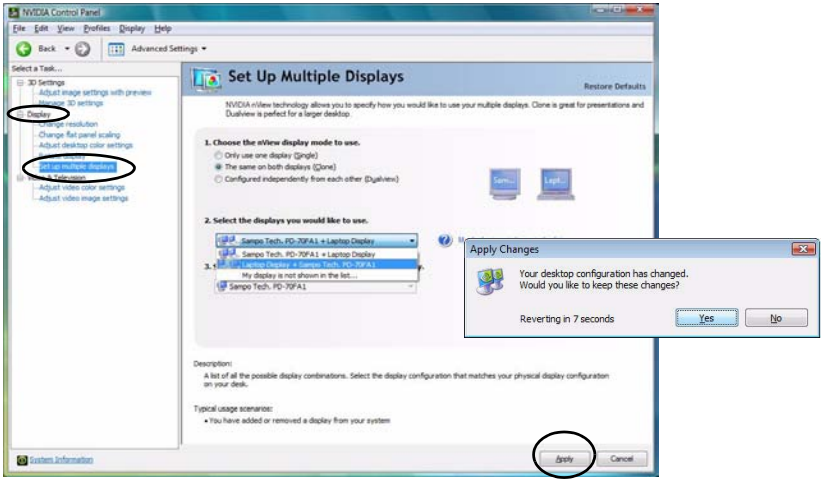


Figure B - 5
Set Up Multiple Displays

4. Click to select the nView **display mode** you wish to use (see page ***B - 15***).
5. Select the display(s) you want to use (if your display is not shown click "***My Display is not shown in the list...***"), and choose which display is to be the primary display.
6. Click **Apply > Yes** to save the changes.

Configuring an External Display using the NVIDIA Control Panel (Ver 2)

Alternatively you can use the **NVIDIA control panel** to configure any attached displays.

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Go to **NVIDIA Control Panel** (see *"NVIDIA Control Panel" on page B - 2*).
3. Double-click **Display** (if the sub-menus are not visible)**,** and then click **Set up multiple displays**.
4. Any attached display will appear under "**1.Select the displays you want to use.**"

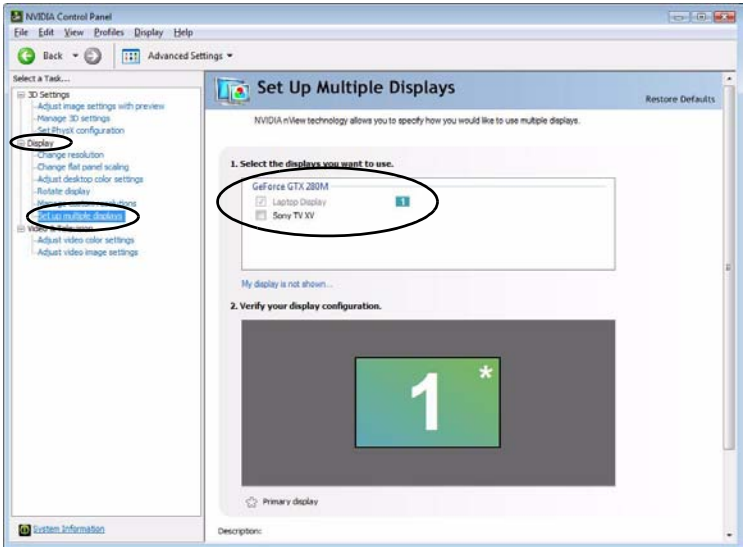


Figure B - 6
Set Up Multiple Displays

B

Display Not Shown

If the attached display does not appear in the *"1.Select the displays you want to use."* window, click *"My Display is not shown..."* and then click the appropriate button to force detection of the missing display.

5. Click the tickbox alongside any display you wish to use.
6. Click **Apply > Yes** to save the changes.
7. The default display mode will be in **Extended** mode (i.e the desktop will be extended on to the external display - see *"Display Devices" on page B - 5*), and you can use the built-in **NVIDIA controls** (*"Enabling Clone Mode (Ver 2)" on page B - 11*) or **New Display Detected** (*"" on page B - 6*) window to configure the display.

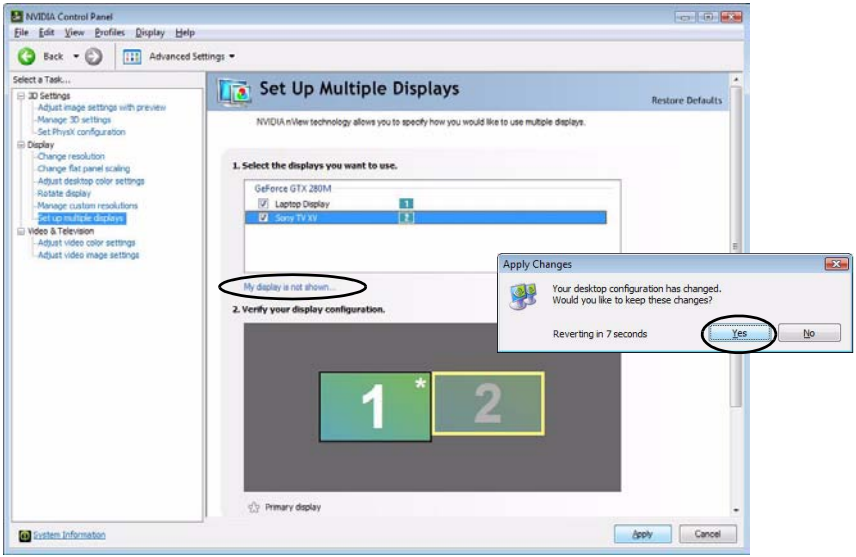


Figure B - 7
Select Display to Use

8. If you prefer to use **Clone** mode see overleaf.

Enabling Clone Mode (Ver 2)

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Go to **NVIDIA Control Panel** (see *"NVIDIA Control Panel" on page B - 2*).
3. Double-click **Display** (if the sub-menus are not visible)**,** and then click **Set up multiple displays**.
4. Any attached display will appear under *"**1.Select the displays you want to use.**"*
5. Click the tickbox alongside any display you wish to use.
6. Click **Apply > Yes** to save the changes.
7. The default display mode will be in **Extended** mode, to change to **Clone Mode** right-click one of the display icons and click "**Clone Laptop Display and...."** (a tick will appear alongside it) option from the pop-up menu and click **Apply**.

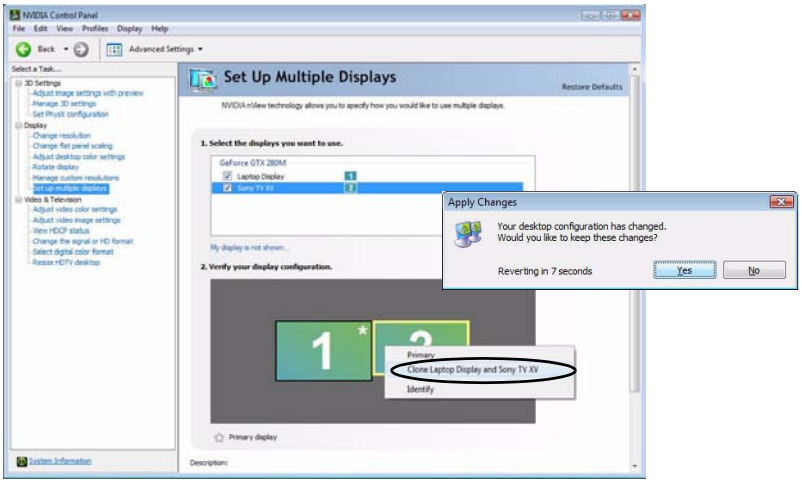


Figure B - 8
Enable Clone Mode

8. To switch back to **Extended Mode** right-click one of the display icons and click "**Clone Laptop Display and....**" (to remove the tick) option from the pop-up menu and click **Apply**.

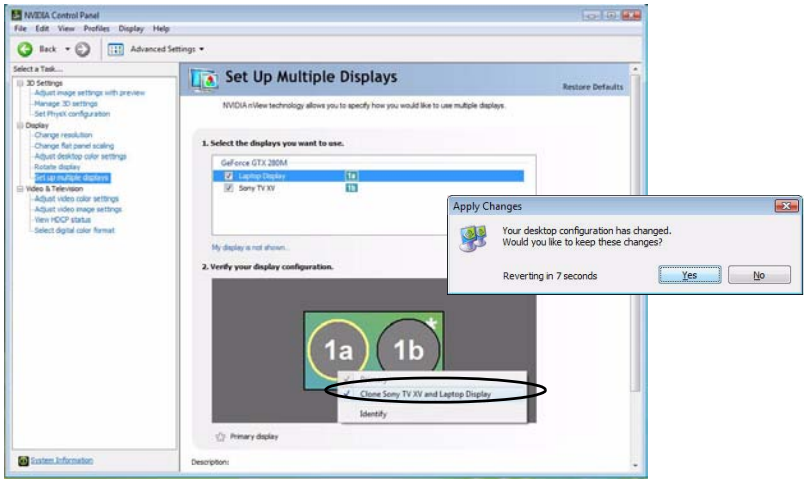


Figure B - 9
Switch to Extended Mode

Using New Display Detected to Enable Extended Mode

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. If a **New Display Detected** window does not appear in ***Windows Vista***, go to the **Windows Mobility Center** control panel (**Mobile PC > Adjust commonly used mobility settings**) and click ***Connect display***.
3. Click to select ***Show different parts of my desktop on each display (extended)***.
4. Click **Right** or **Left** under **Extend your desktop**.
5. Click **Apply > OK**.

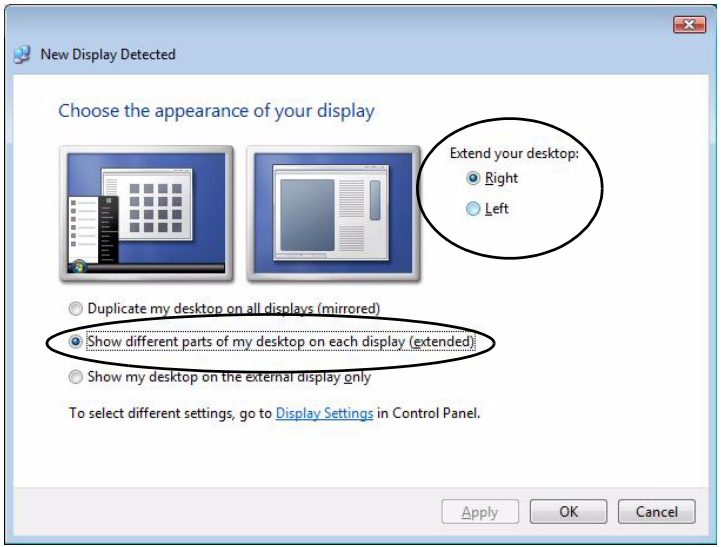


Figure B - 10
New Display Detected (Extended)

Display Settings Extended Desktop

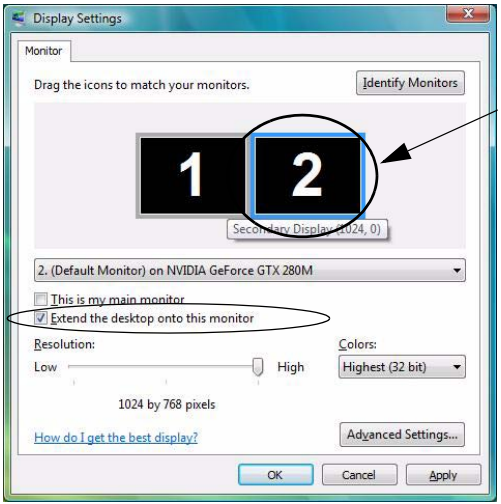
Use the control panel to drag the monitors to match the physical arrangement you wish to use.

You can drag any icons or windows across to either display desktop, which makes it possible to have one program visible in one of the displays, and a different program visible in the other display.

Figure B - 11
Display Settings (Extend the Desktop)

Using Display Settings to Enable Extended Mode

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
3. Click **Adjust screen resolution** under the **Appearance and Personalization** menu (or double-click **Personalization > Display Settings**).
4. Click the monitor icon (e.g. **2**), and make sure you have checked "**Extend the desktop onto this monitor**." and click **Apply**.



Click the appropriate monitor icon (e.g. **2**) to be able to select the option to extend the desktop on to it.

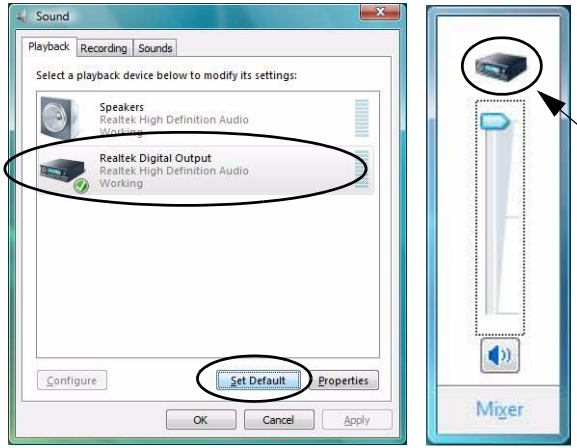
In this example the Primary monitor **1** is on the left, the secondary display **2** is on the right.

HDMI Audio Configuration

As HDMI (High-Definition Multimedia Interface) carries both **audio** and video signals you will need to configure the audio output as per the instructions below.

Windows Audio Setup for HDMI

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Click **Sound** (**Hardware and Sound**).
3. Click **Playback** (tab), and click to select **Realtek Digital Output**.
4. Click **Set Default** (button).
5. Click **OK** to close the **Sound** control panel.
6. You will now be able to hear audio sources when played in ***Windows Media Player*** if supported (see ***"HDMI Audio Support" on page B - 16***).



Click the taskbar volume indicator when **Realtek Digital Output** is selected, and you will note that the icon at the top of the volume level indicator has changed.

Figure B - 12
Realtek Digital Output

Other Applications

If you are using a third party application to play DVDs etc. you will need to consult the application's documentation to see the appropriate audio configuration (the application must support digital to analog translation).

HDMI Notes

- Connect a device with HDMI support to the HDMI-Out port **BEFORE** attempting to play audio/video sources through the device.
- If you disconnect the HDMI cable the default audio playback device will not revert to speakers until the computer is restarted (if you do not wish to restart the computer then go to the **Sound** control panel and select **Speakers** as the default audio playback device).

HDMI Video Configuration

1. Connect an HDMI cable from the HDMI-Out port to your external display.
2. Configure your external display as per the instructions in ***"Configuring an External Display using the NVIDIA Control Panel (Ver 2)" on page B - 9***.
3. Set up your external display (TV or LCD) for HDMI input (see your display device manual).
4. You can now play video/audio sources through your external display.

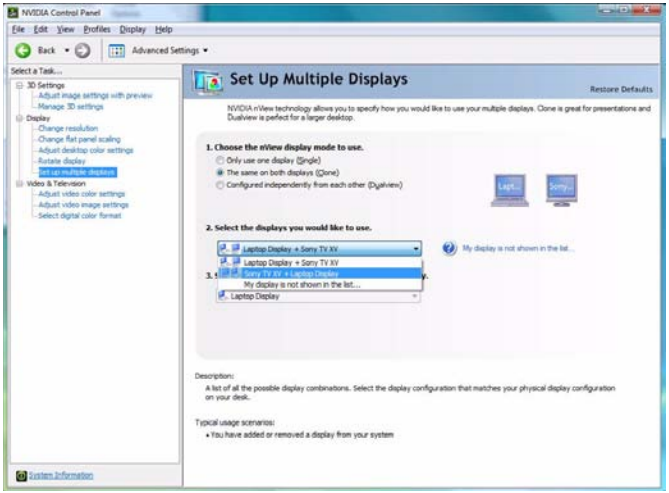
HDMI Audio Support

Note that some NVIDIA video card models DO NOT support High Definition Audio through HDMI. When connecting these video cards to an external display (using an HDMI cable), it is recommended that you use a third party video application (e.g. Power DVD) that provides appropriate audio decoding to play DVDs etc. Alternatively you can output audio through an alternative source to the HDMI connection.

Enabling TV Display (Ver 1)

To display desktop images on a TV, connect the TV to your computer by using an HDMI cable/DVI cable from the TV to the HDMI-Out port/DVI-Out port (if supported by your TV).

You will need to enable the TV display from the **NVIDIA Control Panel** as per the instructions on ***B - 9***. The TV will appear as a display option (***2. Select the displays you would like to use.***) when attached to the appropriate port. **Apply** the settings, and then click **Yes** to save the changes.



Detect Displays

To get a full range of display options click "***My display is not shown in the list...***".

HDMI Audio Setup

See ***"HDMI Audio Configuration" on page B - 15*** for instructions on configuring audio for HDMI display devices.

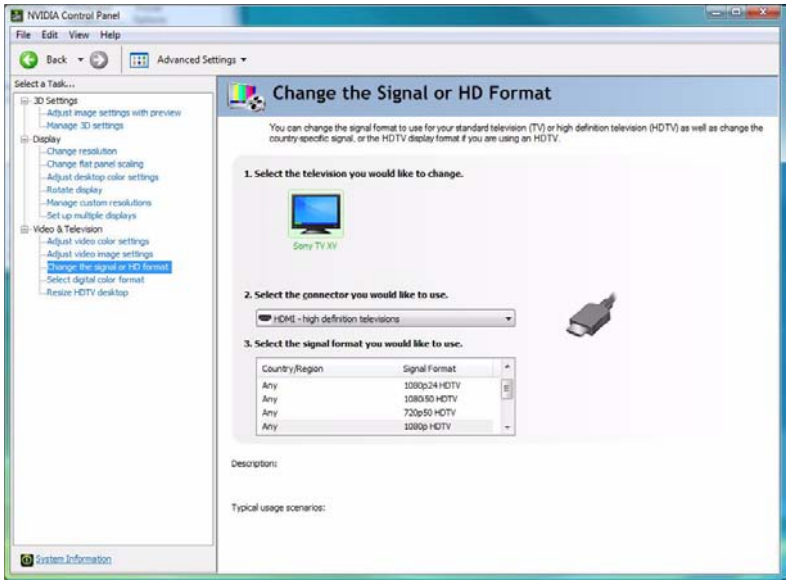
Set up your external display (TV or LCD) for HDMI input (see your display device manual).

Figure B - 13
Set Up Multiple Displays (with TV connected)

Changing the TV Signal Format (Dualview Mode Only)

1. When the TV is enabled as a display device, and **Dualview** is the selected display mode, click the sub-menus under **Video & Television**.
2. Click "***Change the signal or HD format***"
3. Select the TV signal format (the menu allows you to select TV format by country if you are unsure of your TV format).
4. **Apply** the settings, and then click **Yes** to save the changes.

Figure B - 14
Change the Signal or HD Format



Enabling TV Display (Ver 2)

To display desktop images on a TV, connect the TV to your computer by using an HDMI cable/DVI cable from the TV to the HDMI-Out port/DVI-Out port (if supported by your TV).

1. You will need to enable the TV display from the **NVIDIA Control Panel** as per the instructions on page ***B - 9***. The TV will appear as a display option (***"1.Select the displays you want to use."***) when attached to the appropriate port.
2. **Apply** the settings, and then click **Yes** to save the changes.
3. The settings for TV and Video may be adjusted using the sub-menus under **Video & Television**.

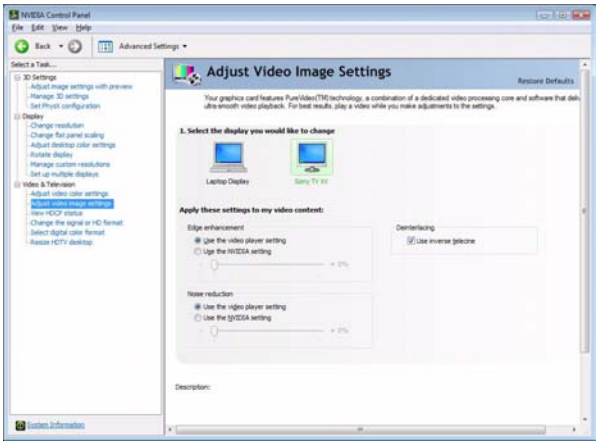


Figure B - 15
Video & Television

Detect Displays

To get a full range of display options click *"**My Display is not shown...**"*

HDMI Audio Setup

See ***"HDMI Audio Configuration" on page B - 15*** for instructions on configuring audio for HDMI display devices.

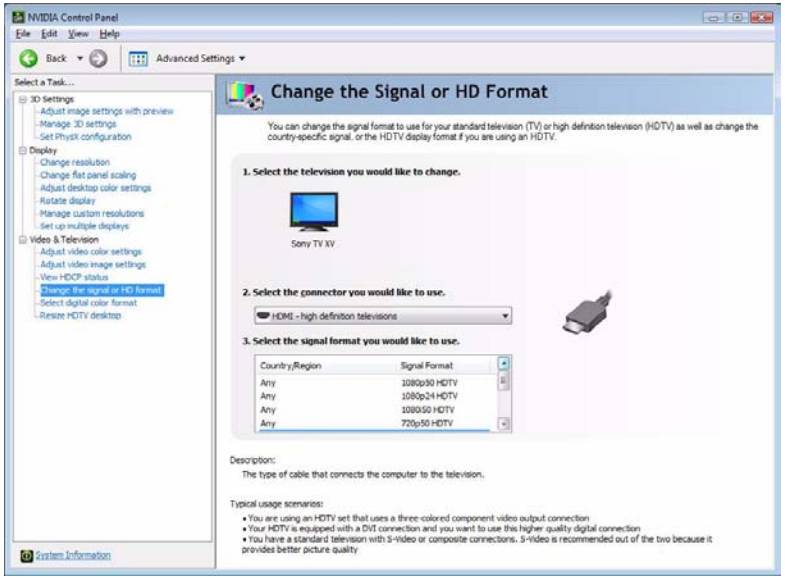
Set up your external display (TV or LCD) for HDMI input (see your display device manual).

B

Changing the TV Signal or HD Format

1. When the TV is enabled as a display device click the sub-menus under **Video & Television**.
2. Click "***Select the format you would like to use.***".
3. Select the TV signal format you would like to use.
4. **Apply** the settings, and then click **Yes** to save the changes.

Figure B - 16
Change the Signal or HD Format



B

Appendix C: Specifications

Latest Specification Information

The specifications listed in this Appendix are correct at the time of going to press. Certain items (particularly processor types/ speeds and CD/DVD device types) may be changed, updated or delayed due to the manufacturer's release schedule. Check with your service center for details.

Processor
Intel® Core® i7 Processor: **i7-965** (**3.20 GHz**, 8M L3 Cache, 45nm, 6.4 GT/s on QPI, LGA1366 Package - TDP 130W) **i7-950** (**3.06 GHz**, 8M L3 Cache, 45nm, 4.8 GT/s on QPI, LGA1366 Package - TDP 130W) **i7-940** (**2.93 GHz**, 8M L3 Cache, 45nm, 4.8 GT/s on QPI, LGA1366 Package - TDP 130W) **i7-930** (**2.80 GHz**, 8M L3 Cache, 45nm, 4.8 GT/s on QPI, LGA1366 Package - TDP 130W) **i7-920** (**2.66 GHz**, 8M L3 Cache, 45nm, 4.8 GT/s on QPI, LGA1366 Package - TDP 130W)
Core Logic
Intel® X58 + ICH10R
Display
17.1” (43.43cm) WUXGA (1920 * 1200) TFT LCD

Memory
Triple 64-bit wide **DDRIII (DDR3)** data channels Three 204 Pin SO-DIMM Sockets Supporting **DDRIII (DDR3)** 1066/ 1333MHz Memory Modules Memory Expandable up to 12GB **Note**: Use either 1066MHz **OR** 1333MHz **DDRIII (DDR3) Modules - Do not mix DRAM speeds**
Turbo Memory
Intel® Turbo Memory 4GB Mini-Card (**Factory Option**)
Video Adapter
nVIDIA® GeForce GTX 280M PCIe *16 Video Card 1GB GDDR3 Video RAM on board Supports Microsoft DirectX® 10.0 Supports HDCP

Video Adapter (cont’d)
nVIDIA® GeForce GTX 285M PCIe *16 Video Card 1GB GDDR3 Video RAM on board Supports Microsoft DirectX® 10.0 Supports HDCP **nVIDIA Quadro QDFX3800M** PCIe *16 Video Card 1GB GDDR3 Video RAM on board Supports Microsoft DirectX® 10.1 Supports HDCP Supports DVI Dual-link Supports OpenGL 3.1 **nVIDIA GeForce GTX480M** PCIe *16 Video Card 2GB GDDR5 Video RAM on board Supports Microsoft DirectX® 11 Supports HDCP Supports DVI Dual-link Supports HDMI 1.4

BIOS
One 16Mbit Flash ROM Phoenix™ BIOS
Storage
Up to three (**Factory Option**) Changeable 2.5" 9.5 mm (h) **SATA** (Serial) Hard Disk Drives supporting RAID level 0/1/5 and Recovery One 12.7 mm Super Multi/Blu-Ray SATA Optical Device Drive (**Factory Option**)
Pointing Device
Built-in TouchPad (scrolling key functionality integrated)
Keyboard
"WinKey" keyboard (with embedded numeric keypad) Three Instant Keys (WWW, e-mail, Application)

Audio
High Definition Audio Compliant Interface Compliant with Microsoft UAA (Universal Audio Architecture) S/PDIF Digital Output Supports 5.1 Channel Analog Outputs 4 * Built-In Speakers Built-In Microphone
Slots
One ExpressCard/34/54 Slot Three Mini Card Slots: • **Slot 1** for PCIe WLAN Module • **Slot 2** for USB TV Tuner Module • **Slot 3** for Intel® Turbo Memory Module
Card Reader
Embedded 7-in-1 Card Reader (MS/ MS Pro/ SD/ Mini SD/ MMC/ RS MMC/ MS Duo) **Note:** MS Duo/ Mini SD/ RS MMC Cards require a PC adapter

Communication
10Mb/100Mb/1000Mb Base-T Ethernet LAN 56K MDC Modem, V.90 & V.92 Compliant (**Factory Option**) 3rd Party 802.11b/g Wireless LAN Mini-Card Module (**Factory Option**) Intel® WiFi Link 5300 Series (3*3 - 802.11a/g/n) Wireless LAN Mini-Card Module (**Factory Option**) Intel® WiFi Link 5100 Series (1*2 - 802.11a/g/n) Wireless LAN Mini-Card Module (**Factory Option**) 3.0M Pixel USB PC Camera Module (**Factory Option**) Bluetooth 2.1 + EDR (Enhanced Data Rate) Module (**Factory Option**)

Interface

Four USB 2.0 Ports
One HDMI (High-Definition Multimedia Interface) Port with Audio Output (with HDCP Support)
One DVI-Out Port (no HDCP Support)
One eSATA Port (hot swapping supported in ***Windows Vista/Win 7*** only)
One S/PDIF Out Jack
One Headphone-Out Jack
One Microphone-In Jack
One Mini-IEEE1394a Port
One Line-In Jack for Audio Input
One RJ-45 LAN Jack
One RJ-11 Modem Jack
One DC-in Jack
One Cable (CATV) Antenna (Analog/ Digital) Jack (Functions with **Factory Optional** USB TV Tuner Module)
One Consumer Infrared Transceiver (Functions with **Factory Optional** USB TV Tuner Module)

Security

Kensington Lock
BIOS Password

Operating System

Windows® Vista (with Service Pack 2) Home Premium/ Business/ Enterprise/ Ultimate

Note that the TV Tuner module (factory) option in ***Windows Vista*** is supported by the **Windows Media Center** software which comes built-in to the ***Windows Vista Home Premium*** and ***Ultimate*** **Editions only**.

Windows® 7

Note that the TV Tuner module (factory) option in ***Windows 7*** is supported by the **Windows Media Center** software which comes built-in to the ***Windows 7 Home Premium, Professional*** and ***Ultimate*** **Editions only**.

Power

Full Range AC/DC Adapter
AC Input: 100 - 240V, 50 - 60Hz
DC Output: 20V, 11A or 19V, 11.6A (220 Watts)

Power Management

Supports Wake on USB
Supports Resume from Modem Ring

Battery

12 Cell Smart Lithium-Ion Battery Pack, 97.68WH (6600 mAH)

Environmental Spec

Temperature
Operating: 5°C - 35°C
Non-Operating: -20°C - 60°C
Relative Humidity
Operating: 20% - 80%
Non-Operating: 10% - 90%

Dimensions & Weight

397mm (w) * 298mm (d) * 51 - 60mm (h)
5.4 kg

Factory Options
One 12.7 mm Super Multi/Blu-Ray SATA Optical Device Drive
PCIe or USB Mini-Card Wireless LAN Module (see *"Communication" on page C - 3*)
USB Mini-Card Hybrid TV Tuner Module
USB Bluetooth 2.1 + EDR Module (see *"Communication" on page C - 3*)
USB PC Camera Module (see *"Communication" on page C - 3*)
Intel® Turbo Memory 4GB Mini-Card

Appendix D: Windows 7 Information

This Appendix contains information (including control panel information, driver installation etc.) for users of the ***Windows 7 OS*** where there are significant differences from ***Windows Vista***, or where is it helpful to have essential information or features repeated. For items not specifically covered here see the remainder of the manual for information.

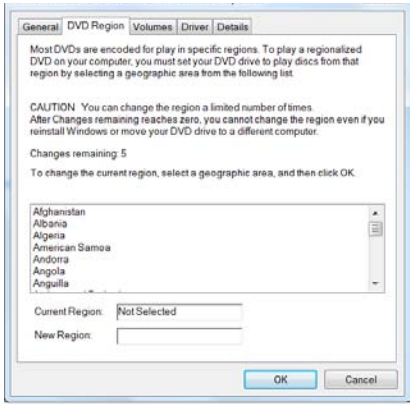
RAID & AHCI Setup

Note that setting up a RAID, or AHCI mode, needs to be done prior to installing the *Windows OS* (see ***"Setting Up SATA RAID or AHCI Modes (Win 7)" on page D - 59***).

DVD Regional Codes

Region	Geographical Location
1	USA, Canada
2	Western Europe, Japan, South Africa, Middle East & Egypt
3	South-East Asia, Taiwan, South Korea, The Philippines, Indonesia, Hong Kong
4	South & Central America, Mexico, Australia, New Zealand
5	N Korea, Russia, Eastern Europe, India & Most of Africa
6	China

Table D - 1 **- DVD Region Codes**



Changing DVD Regional Codes

Go to the **Control Panel** and double-click **Device Manager (System and Security > System)**, then click the **+** next to **DVD/CD-ROM drives**. Double-click on the DVD-ROM device to bring up the **Properties** dialogue box, and select the **DVD Region** (tab) to bring up the control panel to allow you to adjust the regional code.

DVD region detection is device dependent, not OS-dependent. You can select your module's region code **5** times. The fifth selection is permanent. This cannot be altered even if you change your operating system or you use the module in another computer.

Windows 7 Start Menu & Control Panel

Most of the control panels, utilities and programs within ***Windows 7*** (and most other ***Windows*** versions) are accessed from the **Start** menu. When you install programs and utilities they will be installed on your hard disk drive, and a shortcut will usually be placed in the **Start** menu and/or the desktop. Right-click the **Start menu** icon , and then select **Properties** if you want to customize the appearance of the **Start** menu.

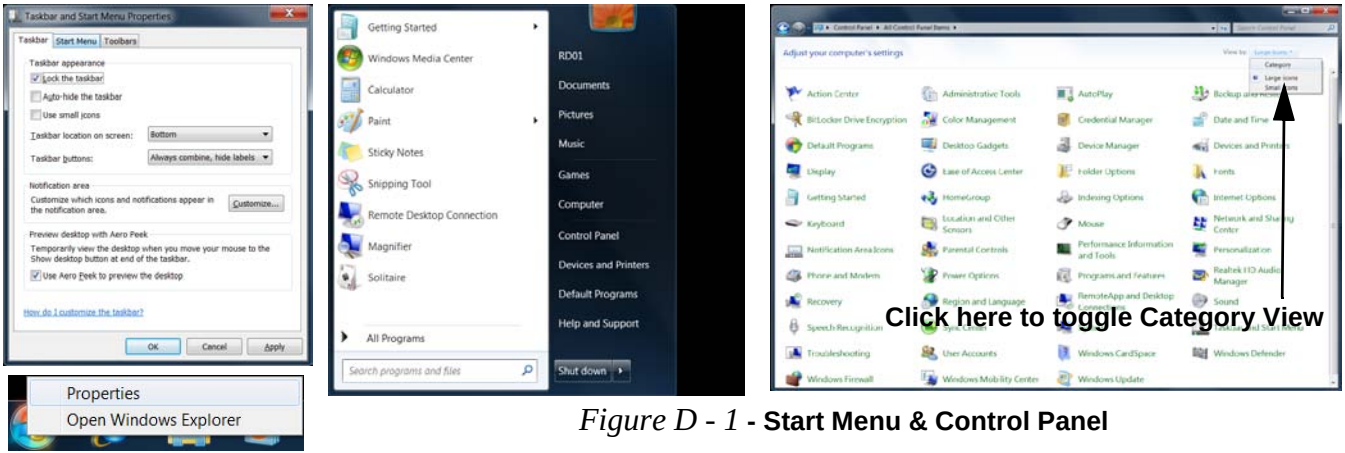


Figure D - 1 **- Start Menu & Control Panel**

In many instances throughout this manual you will see an instruction to open the **Control Panel**. The **Control Panel** is accessed from the **Start** menu, and it allows you to configure the settings for most of the key features in ***Windows*** (e.g. power, video, network, audio etc.). ***Windows 7*** provides basic controls for many of the features, however many new controls are added (or existing ones are enhanced) when you install the drivers. To see all controls it may be necessary to toggle off ***Category View*** to view the control panel icons.

Hot Key Buttons & Game Keys

These buttons give instant access to the default Internet browser and e-mail program, and to a user-defined application, with one quick button press. To use the "user-defined application Hot Key Button", you must install the driver. See *"Application Hot Key" on page 2 - 8* for configuration instructions.

Hot Key	Function
	Activate the Default E-Mail Browser (Note that In ***Windows 7*** without Outlook/Outlook Express installed this button has no function. If Outlook/Outlook Express are installed then the button will activate the application)
	Activate the Default Internet Program
	Activate the user specified application e.g. Microsoft Word or Excel

Table D - 2 **- Hot Key Buttons**

The two **Game Keys** on the left of the computer allow macros to be configured for common keystrokes used in applications, as long as the driver is installed (see *"GameKey Utility" on page D - 31*/*"Game Keys" on page 2 - 9*).

Figure D - 2 **- Game Key Configuration**

Function/Hot Key Indicators

The **function keys** (F1 - F12 etc.) will act as **hot keys** when pressed while the **Fn** key is held down. In addition to the basic function key combinations; visual indicators (see the table below) are available when the hot key utility is installed (see *"HotKey Utility" on page D - 31*). After installing the driver an icon will appear in the taskbar.

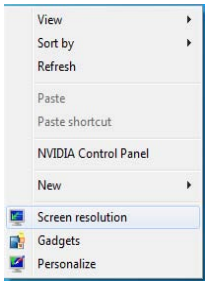
Fn Keys	Function	Fn Keys	Function
Fn + ~	Play/Pause (in Audio/Video Programs)	Fn + F5/ F6	Volume Decrease/ Increase 
Fn + 1	Fan Automatic Control / Full Power	Fn + F7	Display Toggle
Fn + F1	Touchpad Toggle 	Fn + F8/ F9	Brightness Decrease/ Increase 
Fn + F2	Turn LCD Backlight Off (Press a key to or use TouchPad to turn on)	Fn + F10	PC Camera Power Toggle 
Fn + F3	Mute Toggle 	Fn + F11	WLAN Module Power Toggle 
Fn + F4	Sleep Toggle	Fn + F12	Bluetooth Module Power Toggle 

Table D - 3 **- Function/Hot Key Combo Indicators**

D

Video Features

You can configure display options, from the **Display Settings** control panel in ***Windows*** as long as the appropriate **video driver** is installed. For more detailed video information see ***"NVIDIA Video Driver Controls" on page B - 1***.



To access **Display (Control Panel) and Screen Resolution** in ***Windows***:

1. Click **Start** and click **Control Panel**.
2. Click **Display** (icon) - In the **Appearances and Personalization** category.
3. Click **Adjust Screen Resolution/Adjust resolution**.

OR

4. Alternatively you can right-click the desktop and select **Screen resolution** (see right).
5. Use the dropbox to select the screen **Resolution** 1 (***Figure D - 3 on page D - 7***).
6. Click **Advanced settings** 2 (***Figure D - 3 on page D - 7***) to bring up the **Advanced** properties tabs.

To access the ***NVIDIA Control Panel***:

1. Click **Start**, and click **Control Panel**.
2. Click **NVIDIA Control Panel** 3 (***Figure D - 4 on page D - 8***) - In the **Appearances and Personalization** category.

OR

3. Click **Start** and click **All Programs > NVIDIA Corporation**.
4. Click to select **NVIDIA Physx Properties** 4 (***Figure D - 4 on page D - 8***) .

OR

5. Click **Advanced settings** in the **Screen Resolution** control panel in ***Windows***.
6. Click **GeForce....(tab)** and click **Start the NVIDIA Control Panel** 5 (***Figure D - 4 on page D - 8***).

Screen Resolution

Besides the built-in LCD, you can also use an **external VGA monitor** (CRT)/**external Flat Panel Display** as your display device.

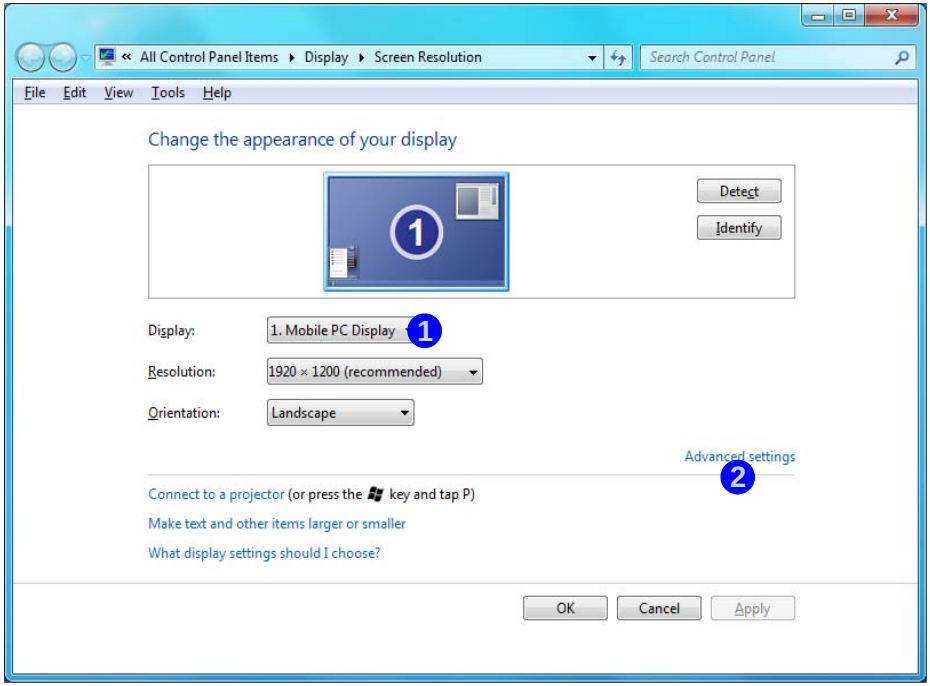


Figure D - 3 **- Screen Resolution**

Video Options

Note that card types, specifications and drivers are subject to continual updates and changes. Check with your service center for the latest details on video cards supported.

D

NVIDIA Control Panel

Besides the built-in LCD, you can also use an **external VGA monitor** (CRT)/**external Flat Panel Display** as your display device.

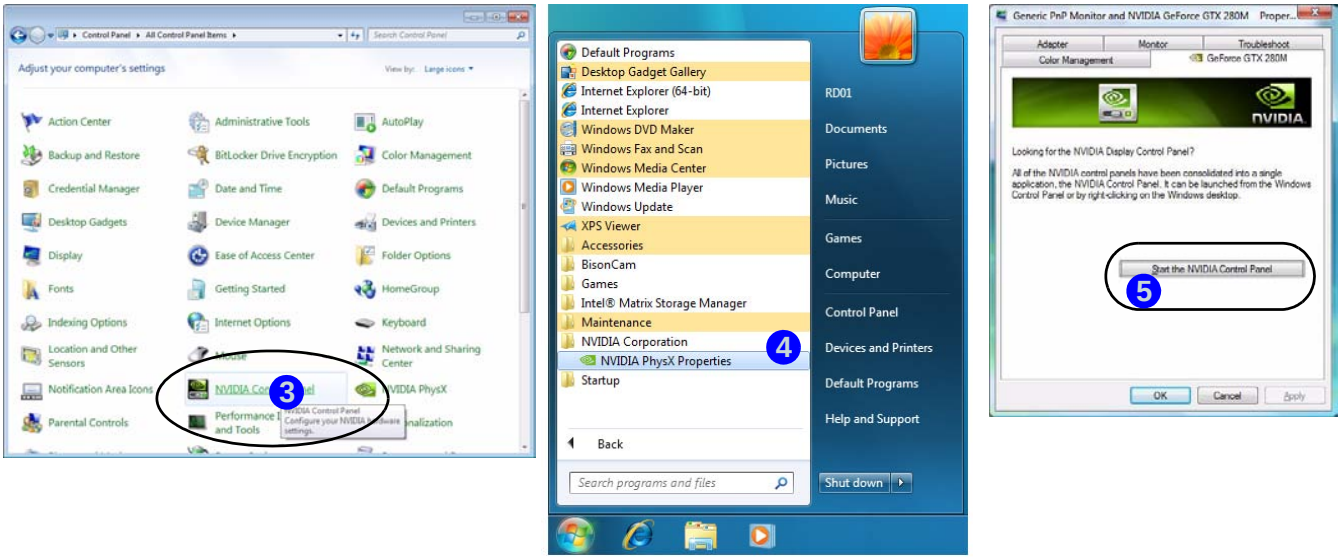


Figure D - 4 **- NVIDIA Control Panel**

D

Attaching Other Displays

Configuring an External Display in Windows 7

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Go to the **Screen resolution** control panel.
3. Click the **Detect** button.
4. The computer will then detect any attached displays.

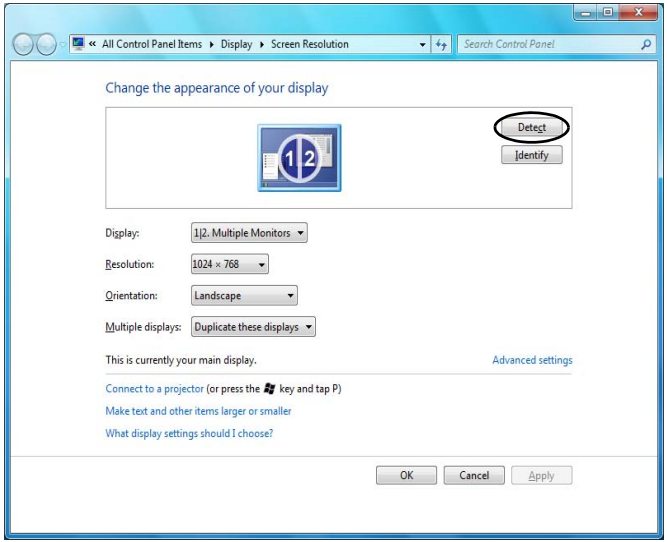


Figure D - 5 **- Screen Resolution - Multiple Displays**

5. You can configure the displays from the **Multiple Displays** menu.

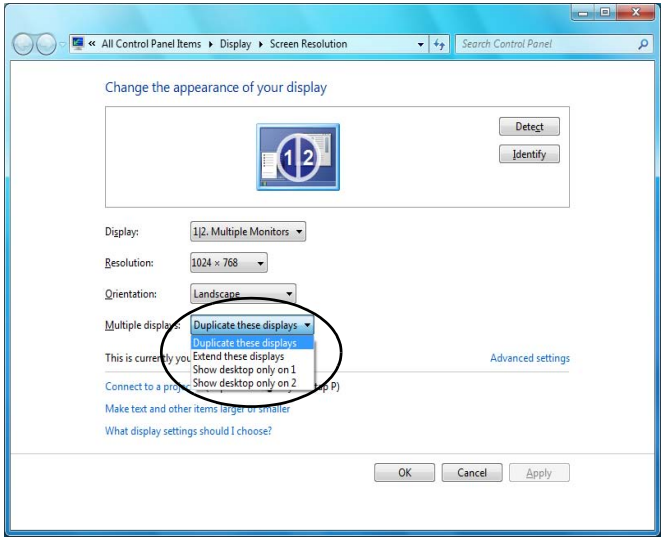


Figure D - 6 **- Screen Resolution - Multiple Display Options**

- Duplicate these displays - Shows an exact copy of the main display desktop on the other display(s)
- Extend these displays - Treats both connected displays as **separate** devices
- Show desktop only on 1/2 - Only one of your displays is used.

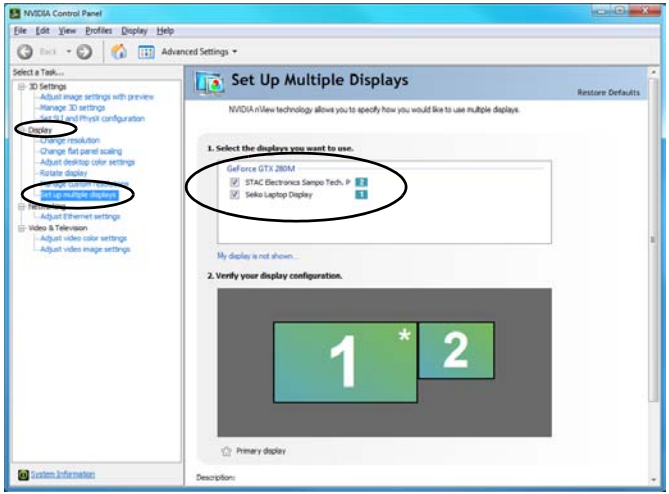
D

See ***"Attaching Other Displays" on page B - 6*** for more details on the above modes when using the NVIDIA driver to configure attached displays.

Configuring an External Display using the NVIDIA Control Panel

Alternatively you can use the **NVIDIA control panel** to configure any attached displays.

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Go to **NVIDIA Control Panel** (see page ***D - 6***).
3. Double-click **Display** (if the sub-menus are not visible)**,** and then click **Set up multiple displays**.
4. Any attached display will appear under "**1.Select the displays you want to use.**"



5. Click the tickbox alongside any display you wish to use.
6. Click **Apply > Yes** to save any changes made.

Display Not Shown

If the attached display does not appear in the "***1.Select the displays you want to use.***" window, click "***My Display is not shown...***" and then click the appropriate button to force detection of the missing display.

Figure D - 7
Set Up Multiple Displays

D

Enabling Clone or Dualview Modes

1. Attach your external display to the DVI-Out Port or HDMI-Out port, and turn it on.
2. Go to **NVIDIA Control Panel** (see page ***D - 6***).
3. Double-click **Display** (if the sub-menus are not visible)**,** and then click **Set up multiple displays**.
4. Any attached display will appear under *"**1.Select the displays you want to use.**"*
5. Click the tickbox alongside any display you wish to use.
6. Right-click one of the display icons and click "**Clone...."** (a tick will appear alongside it) to Clone the display or click to remove the tick to use Dualview mode,
7. Click **Apply > Yes** to save the changes.

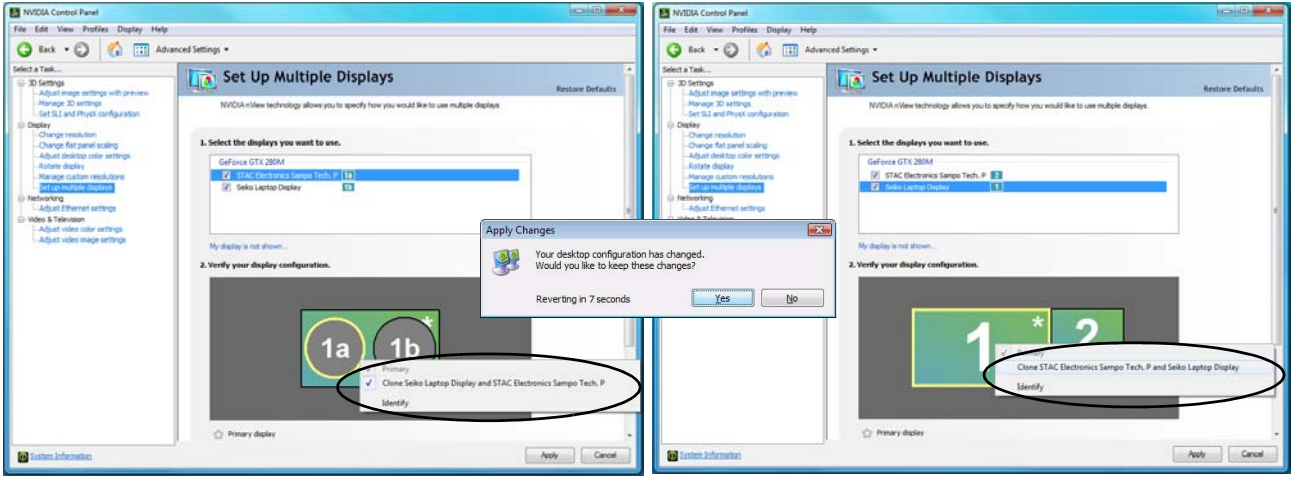


Figure D - 8 **- Enabling Clone/Extended Modes**

The Power Sources

The computer can be powered by either an AC/DC adapter or a battery pack.

AC/DC Adapter

Use only the AC/DC adapter that comes with your computer. The wrong type of AC/DC adapter will damage the computer and its components.

1. Attach the AC/DC adapter to the DC-In jack at the rear of the computer.
2. Plug the AC power cord into an outlet, and then connect the AC power cord to the AC/DC adapter.
3. Move the left LCD latch towards the unlock position, and move the right latch outwards towards the sides of the computer, and hold it in position, to release the top cover.
4. Use one hand to raise the lid/LCD to a comfortable viewing angle (it is preferable not to exceed 120 degrees); use the other hand to support the base of the computer (**Note**: **Never** lift the computer by the lid/LCD).
5. Press the power button to turn the computer on.

Battery

The battery allows you to use your computer while you are on the road or when an electrical outlet is unavailable. Battery life varies depending on the applications and the configuration you're using. **To increase battery life, let the battery discharge completely before recharging** (see ***"How do I completely discharge the battery?" on page D - 25***). We recommend that you do not remove the battery. For more information on the battery, please refer to ***"Battery Information" on page D - 21***.

Turning On the Computer

Now you are ready to begin using your computer. To turn it on simply press the power button on the front panel.

When the computer is on, you can use the power button as a Stand by/Hibernate/ Shutdown hot-key button when it is pressed for less than **4 seconds** (pressing and holding the power button for longer than this will shut the computer down). Use **Power Options** in the ***Windows*** control panel to configure this feature.

Forced Off

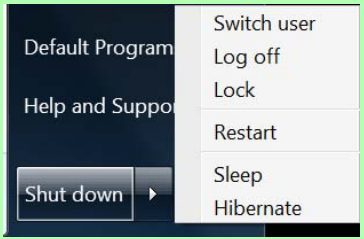
If the system "hangs", and the **Ctrl + Alt + Del** key combination doesn't work, press the power button for **4 seconds**, or longer, to force the system to turn itself off.

Power Button as Stand by or Hibernate Button

You can use the OS's "Power Options" control panel to set the power button to send the system into Stand by or Hibernate mode (see your OS's documentation, or ***"Configuring the Power Buttons" on page D - 19*** for details).

Shut Down

Note that you should always shut your computer down by choosing the **Shut Down** command from the **Lock Button Menu** in ***Windows 7***. This will help prevent hard disk or system problems.

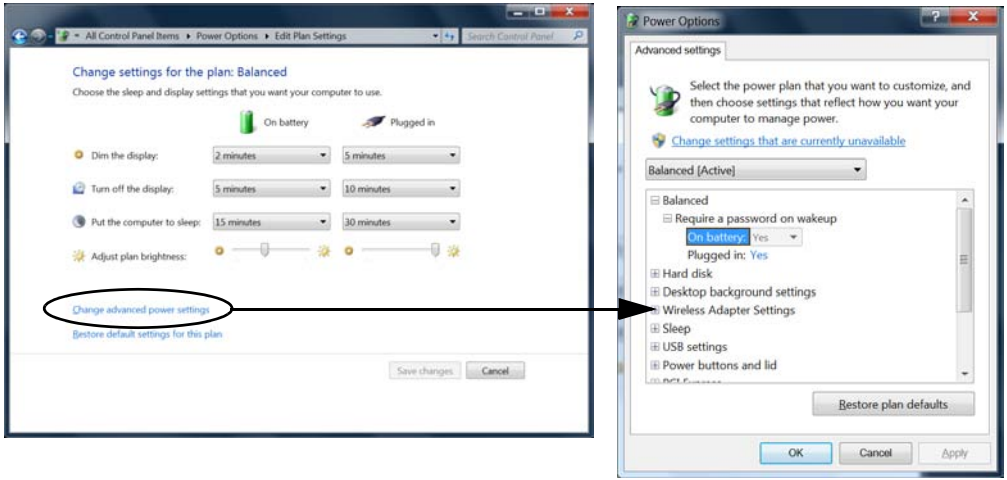


Power Plans

The computer can be configured to conserve power by means of **power plans**. You can use (or modify) an existing **power plan**, or create a new one.

The settings may be adjusted to set the **display** to turn off after a specified time, and to send the computer into **Sleep** after a period of inactivity.

Click ***Change plan settings*** and then click ***Change advanced power settings*** to access further configuration options in **Advanced Settings**.



Resuming Operation

See ***Table D - 4, on page D - 20*** for information on how to resume from a power-saving state.

Password

It is recommended that you enable a password on system resume in order to protect your data.

Figure D - 9
Power Plan Advanced Settings

Each ***Windows*** **power plan** will also adjust the processor performance of your machine in order to save power. This is worth bearing in mind if you are experiencing any reduced performance (especially under DC/battery power).

Choose **High performance** (you may need to click **Show additional plans** to view the High performance plan) for maximum performance when the computer is powered from an AC power source. Choose the **Power saver** (bear in mind that this scheme may slow down the overall performance of the computer in order to save power) for maximum power saving when the computer is battery (DC power) powered.

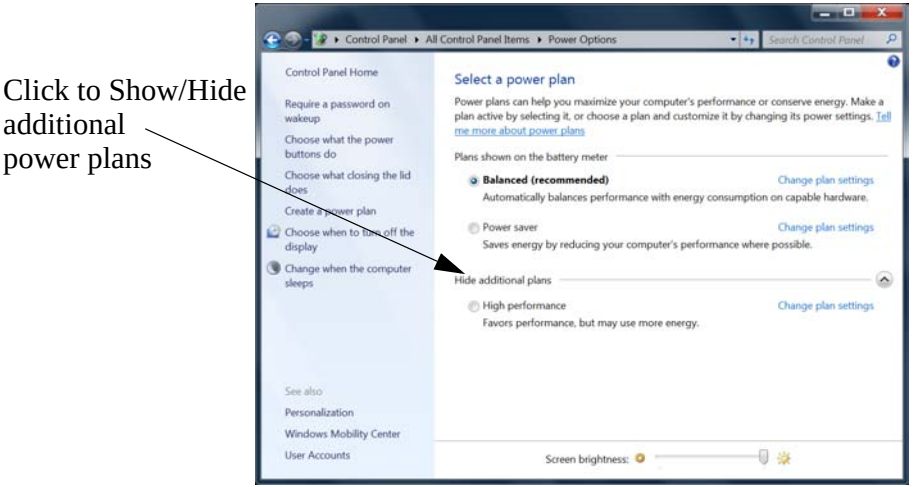


Figure D - 10
Power Plans

Power-Saving States

You can use power-saving states to stop the computer's operation and restart where you left off. **Sleep** is the default power-saving state in ***Windows 7***.

Earlier versions of ***Windows*** used Stand By and Hibernate as system power-saving states. ***Windows 7*** combines the features of Stand By and Hibernate into the default **Sleep** power-saving state.

Sleep

In **Sleep** all of your work, settings and preferences are saved to memory before the system sleeps. When you are not using your computer for a certain length of time, which you specify in the operating system, it will enter **Sleep** to save power.

The PC wakes from **Sleep within seconds** and will return you to where you last left off (what was on your desktop) without reopening the application(s) and file(s) you last used.

If your mobile PC in **Sleep** is running on battery power the system will use only a minimum amount of power. After an extended period the system will save all the information to the hard disk and shut the computer down before the battery becomes depleted.

Hibernate

Hibernate uses the least amount of power of all the power-saving states and saves all of your information on a part of the hard disk before it turns the system off. If a power failure occurs the system can restore your work from the hard disk; if a power failure occurs when work is saved only to memory, then the work will be lost. **Hibernate** will also return you to where you last left off within seconds. You should put your mobile PC into **Hibernate** if you will not use the computer for a period of time, and will not have the chance to charge the battery.

Shut down

You should **Shut down** the computer if you plan to install new hardware (don't forget to remove the battery and follow all the safety instructions in **Chapter 6**), plan to be away from the computer for several days, or you do not need it to wake up and run a scheduled task. Returning to full operation from **Shut down** takes longer than from **Sleep** or **Hibernate**.

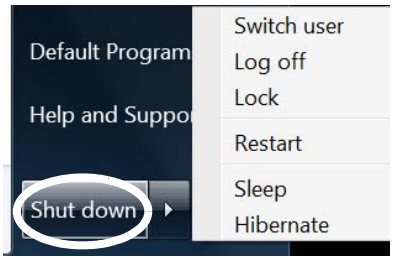


Figure D - 11
Lock Button Menu

Configuring the Power Buttons

The power/sleep button (**Fn + F4** key combo) and closed lid may be set to send the computer in to a power-saving state. Click **Choose what the power buttons do** on the left menu in **Power Options** to bring up the menu.

Password Protection

It is recommended that you enable a password on wake up in order to protect your data.

However you can disable this setting from the **Power Options** menu by clicking ***Require a password on wakeup*** in the left menu, and selecting the options (click ***Change settings that are currently unavailable***).

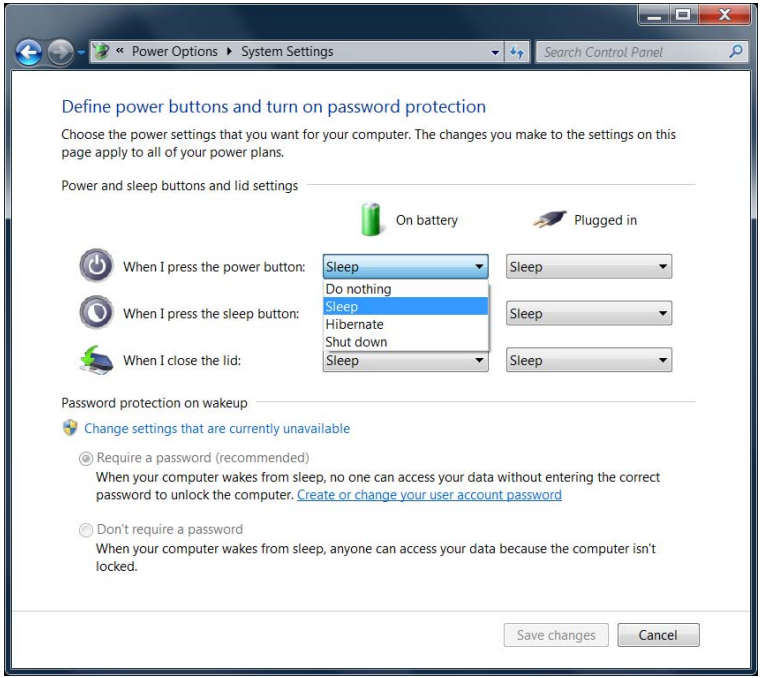


Figure D - 12
Power Options Define Power Buttons

D

Resuming Operation

You can resume operation from power-saving states by pressing the power button, or in some cases pressing the sleep button (**Fn + F4** key combo).

Power Status	Icon Color	To Resume
Power Off	Off	Press the Power Button
Sleep	Blinking Green	Press the Power Button Press the Sleep Button (Fn + F4 Key Combo)
Hibernate	Off (battery) Orange (AC/DC adapter)	Press the Power Button
Display Turned Off	Green	Press a Key or Move the Mouse/Touchpad

Power Button

When the computer is on, you can use the power button as a Sleep/Hibernate/Shut Down hot key button when it is pressed for less than **4 seconds** (pressing and holding the power button for longer than this will force the computer to shut down).

Closing the Lid

If you have chosen to send the computer to **Sleep** when the lid is closed, raising the lid will wake the system up.

Table D - 4
Resuming Operation

Battery Information

Follow these simple guidelines to get the best use out of your battery.

Battery Power

Your computer's battery power is dependent upon many factors, including the programs you are running, and peripheral devices attached. You can set actions to be taken (e.g. Shut down, Hibernate etc.), and set critical and low battery levels from power plan **Change plan settings > Change advanced power settings** (see *Figure D - 9 on page D - 15*).

Click the battery icon in the taskbar to see the current battery level and charge status.

Low Battery Warning

When the battery is critically low, immediately connect the AC/DC adapter to the computer or save your work, otherwise, the unsaved data will be lost when the power is depleted.

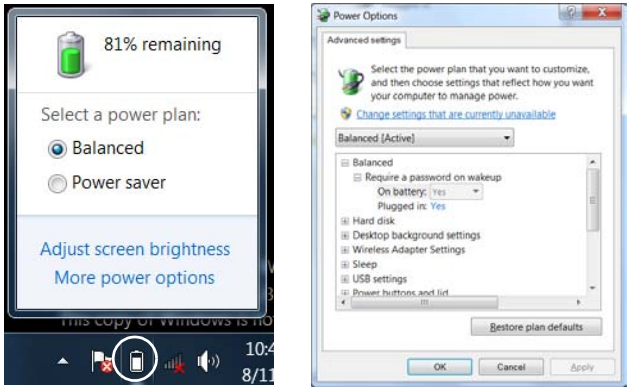


Figure D - 13
Battery Icon (Taskbar) & Battery Advanced Settings

D

Wireless Hot Keys

The computer's wireless function keys will not function properly if **Wireless** is turned **OFF** in the **Windows Mobility Center** control panel.

The wireless indicators may show that the WLAN module is powered on, however if wireless is OFF in the Mobility Center, the module will not be powered on.

Make sure that Wireless is **ON** in the Mobility Center to ensure proper function key behavior.

Conserving Battery Power

- Use a **power plan** that conserves power (e.g **Power saver**), however note that this may have an affect on computer performance.
- Lower the brightness level of the LCD display. The system will decrease LCD brightness slightly to save power when it is not powered by the AC/DC adapter.
- Reduce the amount of time before the display is turned off.
- Close wireless, Bluetooth, modem or communication applications when they are not being used.
- Disconnect/remove any unnecessary external devices e.g. USB devices, ExpressCards etc.

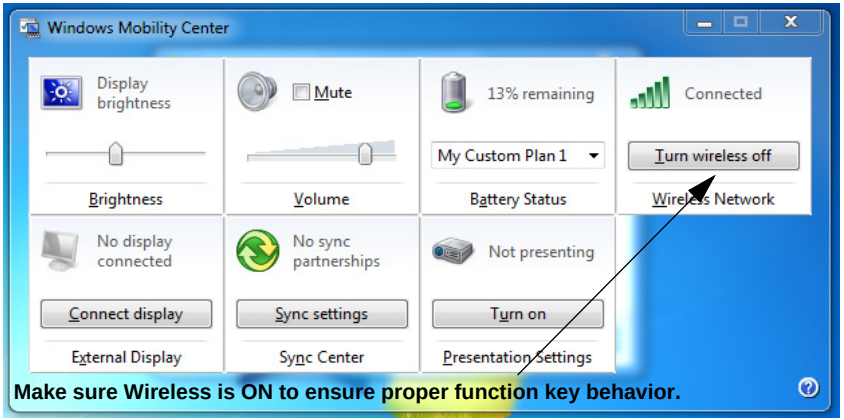


Figure D - 14
Windows Mobility Center

Battery Life

Battery life may be shortened through improper maintenance. **To optimize the life and improve its performance, fully discharge and recharge the battery at least once every 30 days**.

We recommend that you do not remove the battery yourself. If you do need to remove the battery for any reason (e.g. long term storage) see ***"Removing the Battery" on page 6 - 3***.

New Battery

Always completely discharge, then fully charge, a new battery (see ***"Battery FAQ" on page D - 25*** for instructions on how to do this).

Recharging the Battery with the AC/DC Adapter

The battery pack automatically recharges when the AC/DC adapter is attached and plugged into an electrical outlet. If the computer is powered on, and in use, it will take several hours to fully recharge the battery. When the computer is turned off but plugged into an electrical outlet, battery charge time is less. (Refer to ***"LED Indicators" on page 1 - 9*** for information on the battery charge status, and to ***"Battery Information" on page D - 21*** for more information on how to maintain and properly recharge the battery pack.)

Caution

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Discard used battery according to the manufacturer's instructions.

Proper handling of the Battery Pack

- DO NOT disassemble the battery pack under any circumstances
- DO NOT expose the battery to fire or high temperatures, it may explode
- DO NOT connect the metal terminals (+, -) to each other

Damaged Battery Warning

Should you notice any physical defects (e.g. the battery is bent out of shape after being dropped), or any unusual smells emanating from the notebook battery, shut your computer down immediately and contact your service center. If the battery has been dropped we do not recommend using it any further, as even if the computer continues to work with a damaged battery in place, it may cause circuit damage, which may possibly result in fire. It is recommended that you replace your computer battery every two years.

Battery FAQ

How do I completely discharge the battery?

Use the computer with battery power until it shuts down due to a low battery. Don't turn off the computer even if a message indicates the battery is critically low, just let the computer use up all of the battery power and shut down on its own.

1. Save and close all files and applications.
2. **Create** a **power plan** for discharging the battery and set all the options to **Never**.
3. Click ***Change plan settings*** (after creating it) and click ***Change plan settings > Change advanced power settings***.

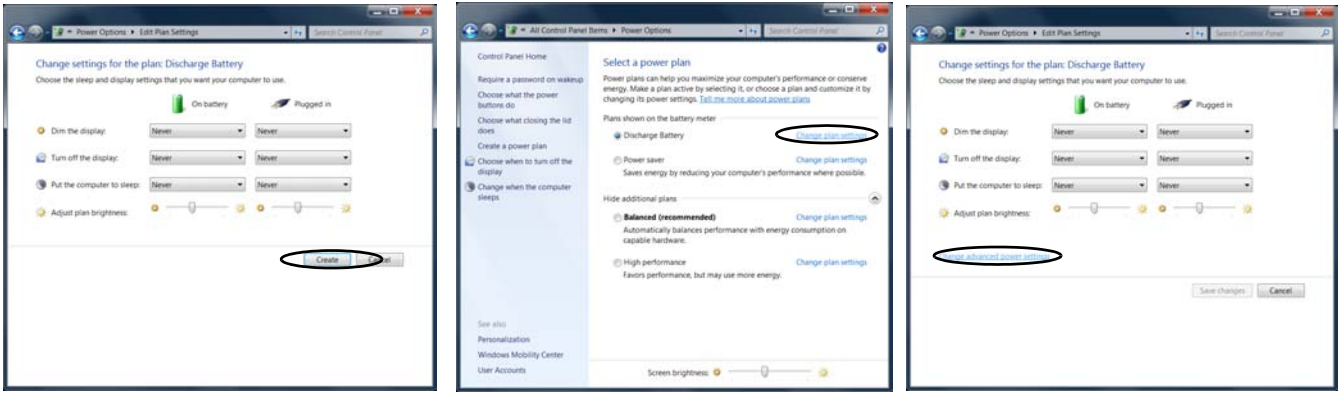
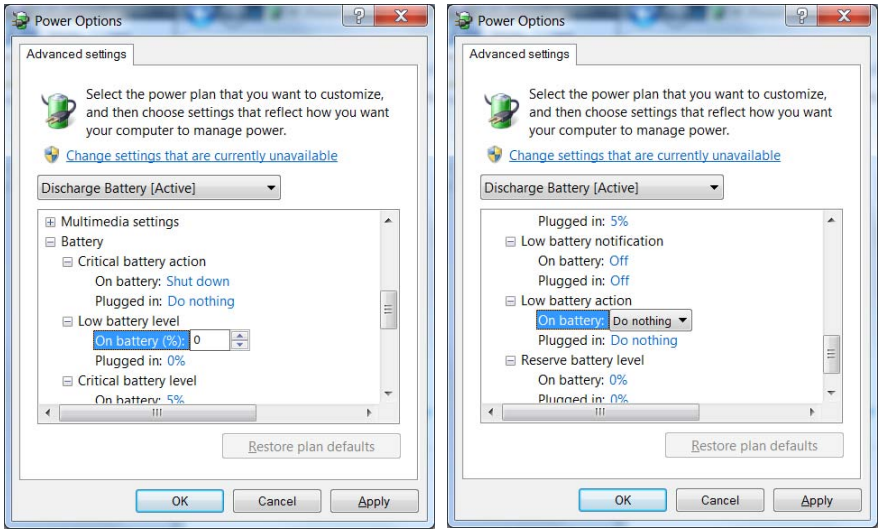


Figure D - 15 **- Create Power Plan - Discharge Battery**

4. Scroll down to **Battery** and click **+** to expand the battery options.
5. Choose the options below (click **Yes** if a warning appears):



Battery Charging & Maintenance

How do I fully charge the battery?
When charging the battery, don't stop until the LED charging indicator light changes from orange to green.

How do I maintain the battery?
Completely discharge and charge the battery at least once every 30 days or after about 20 partial discharges.

Figure D - 16 **- Power Options Advanced Settings - Battery**

- Low battery levels = 0%
- Critical battery Levels = 0%
- Low battery action = Do Nothing
- Critical battery action (On battery) = Shut Down
- Critical battery action (Plugged in) = Do Nothing

Driver Installation

Insert the ***Device Drivers & Utilities + User's Manual*** disc, click ***Install Drivers/Option Drivers*** (button) and then click the appropriate driver name from the ***Drivers Installer*** menu. Follow the instructions to install the driver. Alternatively click **Start**, navigate (**Browse..**) to the executable file and then follow the manual setup instructions.

Figure 5 **- Drivers Installer Screen 1**

1. Check the driver installation order from ***Table D - 5*** (**the drivers must be installed in this order**) which is the same as that listed in the ***Drivers Installer*** menu below.
2. Click to select the driver you wish to install, after installing each driver it will become greyed out (if you need to reinstall any driver, click the **Unlock** button).
3. Follow the instructions for each individual driver installation procedure as listed on the following pages.

Figure 6 **- Drivers Installer Screen 2**

Driver for Windows 7	Page
Chipset	*Page D - 29*
Video	*Page D - 29*
LAN	*Page D - 29*
Modem	*Page D - 30*
Audio	*Page D - 30*
TouchPad	*Page D - 30*
Card Reader/ExpressCard	*Page D - 30*
IEEE 1394 Filter	*Page D - 30*
GameKey Utility	*Page D - 31*
HotKey Utility	*Page D - 31*
Wireless LAN Module (Win 7)	*Page D - 39*
PC Camera Module (Win 7)	*Page D - 45*
Consumer Infrared Driver Installation **(for TV Tuner remote)**	*Page D - 51*
Intel® Matrix Driver Installation **(Install to support RAID or AHCI, Intel Turbo Memory and e-SATA port)**	*Page D - 67*

Table D - 5 **- Driver Installation**

Updating/Reinstalling Individual Drivers

If you wish to update/reinstall individual drivers it may be necessary to uninstall the original driver.To do this go to the **Control Panel** in the ***Windows OS*** and double-click the **Programs and Features** item (**Programs** > **Uninstall a program**). **If you see the individual driver listed** (if not see below), uninstall it, following the on screen prompts (it may be necessary to restart the computer). Go to the appropriate section of the manual to complete the update/reinstall procedure for the driver in question.

If the driver is not listed in the **Programs and Features** item:

1. Click **Start** and click **Control Panel**.
2. Double-click **System** (icon); System (icon) is in **System and Security** (category).
3. Click **Device Manager** (in the left menu).
4. Double-click the **device** you wish to update/reinstall the driver for (you may need to click “+”).
5. Look for the **Update Driver** button (check the **Driver** tab) and follow the on screen prompts.

Driver Installation General Guidelines

The driver installation procedure outlined in this Chapter are accurate at the time of going to press.

Drivers are always subject to upgrade and revision so the exact procedure for certain drivers may differ slightly. As a general guide follow the default on screen instructions for each driver (e.g. **Next > Next > Finish**) unless you are an advanced user. In many cases a restart is required to install the driver.

Driver Installation Procedure

Insert the *Device Drivers & Utilities + User's Manual disc* and click ***Install Drivers*** (button).

RAID Note: Setting up a **RAID**, or **AHCI** mode, needs to be done prior to installing the ***Windows*** *OS*, and therefore before installing the other drivers listed here.

Chipset

1. Click **1.Install Chipset Driver > Yes**.
2. Click **Next > Yes > Next**.
3. Click **Finish** (or **Finish** to restart the computer in AHCI mode) to complete the installation (in RAID mode).

Video

1. Click **2.Install Video Driver > Yes**.
2. Click **Next > Next**.
3. Click **Finish** to restart the computer.

LAN

1. Click **3.Install LAN Driver > Yes**.
2. Click **Next** > **Install**.
3. Click **Finish**.
4. The network settings can now be configured.

Modem

1. Click **4.Install Modem Driver > Yes**.
2. Click **OK**.
3. The modem is now ready for configuration.

Modem Country Selection

Go to the **Phone and Modem** control panel and make sure the modem country selection is appropriate for you.

Audio

1. Click **5.Install Audio Driver > Yes**.
2. Click **Next**.
3. Click **Finish** to restart the computer.

TouchPad

1. Click **6.Install Touchpad Driver > Yes**.
2. Click **Next**.
3. Click the button to accept the license and click **Next**.
4. Click **Finish > Restart Now** to restart the computer.
5. You may then configure your TouchPad as outlined in ***"TouchPad and Buttons/Mouse" on page 2 - 10***.

Card Reader/ExpressCard

1. Click **7.Install Cardreader Driver > Yes**.
2. Click **Install**.
3. Click **Finish**.

IEEE 1394 Filter

1. Click **8.Install 1394 Filter Driver > Yes**.
2. Click **Install > Finish**.

GameKey Utility

1. Click **9.Install GameKey Utility > Yes**.
2. Click **Next**.
3. Click **Finish** to restart the computer.
4. See *"Game Keys" on page 2 - 9* for configuration instructions.

HotKey Utility

1. Click **10.Install HotKey Utility > Yes**.
2. Click **Next > Install**.
3. Click **Finish > Finish** to restart the computer.
4. See *"Application Hot Key" on page 2 - 8* for configuration instructions.

Make sure you install the **Intel Matrix Storage Manager** driver to fully support hard disks in **AHCI** or **RAID** modes (see *"Intel® Matrix Driver Installation" on page 7 - 44*). Also install this driver to display the safe removal icon for **e-SATA devices** in the taskbar for the e-SATA port. This driver is also required if you have included an **Intel Turbo Memory** module in your purchase configuration.

Optional Drivers

See the pages indicated for the driver installation procedures for any modules included in your purchase option. Where ***Windows 7*** information differs from ***Windows Vista*** it will be included in this chapter; if ***Windows 7*** information is the same as ***Windows Vista*** then refer to **Chapter 7** as indicated below and on the following page.

Figure D - 1 **- Drivers Installer - Option Drivers Menu**

D

Bluetooth Module (Win 7)

Note: The operating system is the default setting for **Bluetooth** control in ***Windows 7***, and does not require a driver. See ***"Bluetooth Module (Win 7)" on page D - 33*** for configuration instructions.

Wireless LAN Module (Win 7)

See the specific **Windows 7** driver installation and configuration information in ***"Wireless LAN Module (Win 7)" on page D - 38***.

PC Camera Module

See ***"PC Camera Module (Win 7)" on page D - 44*** for driver installation and configuration information.

Consumer Infrared Driver

To install the consumer infrared driver for the TV Tuner see ***"TV Tuner Module (Win 7)" on page D - 50*** for driver installation and configuration information.

Intel Turbo Memory Driver

See ***"Intel Turbo Memory Module (Win 7)" on page D - 53*** for driver installation and configuration information.

RAID Setup

Note: See ***"Setting Up SATA RAID or AHCI Modes (Win 7)" on page D - 59*** for configuration instructions.

Bluetooth Module (Win 7)

The **optional** Bluetooth module allows you to connect your computer to Bluetooth enabled devices such as other computers, desktop computers, mobile phones, printers, digital cameras, PDAs, headsets etc. using a short-range radio frequency.

Use the Fn + F12 key combination (see *Table D - 3, on page D - 5*) **to toggle power to the Bluetooth module** (when the Bluetooth module is on, the LED will be orange)**.** The operating system's **Bluetooth Devices** control panel is used to configure the Bluetooth settings in ***Windows 7***, and therefore does not require a driver.

Bluetooth Data Transfer

Note that the transfer of data between the computer and a Bluetooth enabled device is supported **in one direction only (simultaneous data transfer is not supported)**. Therefore if you are copying a file from your computer to a Bluetooth enabled device, you will not be able to copy a file from the Bluetooth enabled device to your computer until the file transfer process from the computer has been completed.

Bluetooth Module & Resuming From Sleep Mode

The Bluetooth module's default state will be off after resuming from the **Sleep** power-saving state. Use the key combination (**Fn + F12**) to power on the Bluetooth module after the computer resumes from Sleep.

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited. Make sure the module(s) are OFF if you are using the computer aboard aircraft.

Use the **Fn + F12** key combination to toggle power to the Bluetooth module, and check the LED to see if the module is powered on or not (see *Table D - 3, on page D - 5*/ *Table 1 - 2, on page 1 - 8*).

Add a Device

Click **Start**, and click **Control Panel** and then click **Devices and Printers (Hardware and Sound)**. Click **Add a device** to search for any available Bluetooth devices.

Bluetooth Configuration in Windows Vista

Setup your Bluetooth Device so the Computer Can Find it

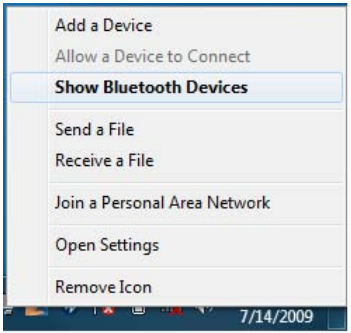
1. Turn your Bluetooth device (e.g. PDA, mobile phone etc.) on.
2. Make the device discoverable (to do this check your device documentation).

To Turn the Bluetooth Module On

1. Press the **Fn + F12** key combination to power on the Bluetooth module.
2. A Bluetooth icon will appear in the taskbar.
3. You can then do any of the following to access the **Bluetooth Devices** control panel.

- **Double-click** the taskbar icon to access the **Bluetooth Devices** control panel.
- **Click/Right-click** the taskbar icon and choose an option from the menu.

Figure D - 2
Bluetooth Devices & Click Icon Menu



Right-Click Taskbar Icon

D

To Add a Bluetooth Device

1. Access the **Bluetooth Devices** control panel and click **Add a device**.
2. Double-click the device you want to pair with the computer.

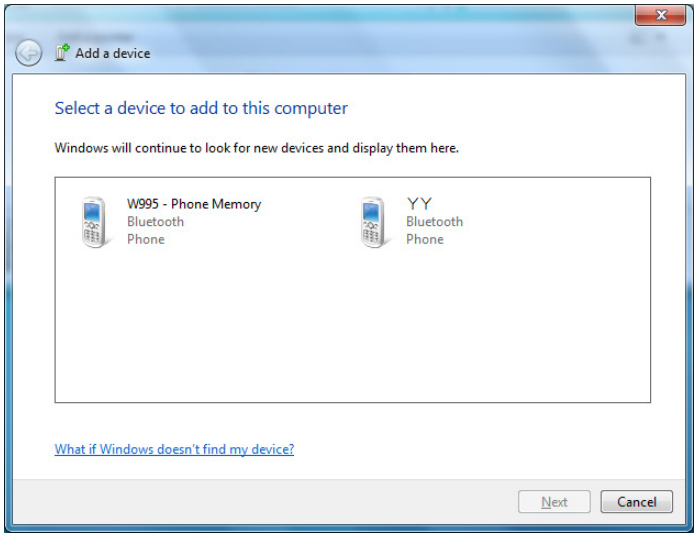


Figure D - 3
Add a Device

Pairing Options

If a device has been previously connected then the pairing option menu will appear when you attempt subsequent connections. You can choose to have the computer create a pairing code for you, use the device's existing pairing code or you can pair certain devices without using a code.

3. On first connection the computer will provide you with a pairing code to be entered onto the device.

4. Enter the code into your Bluetooth enabled device and follow any on-screen instructions to complete the pairing.

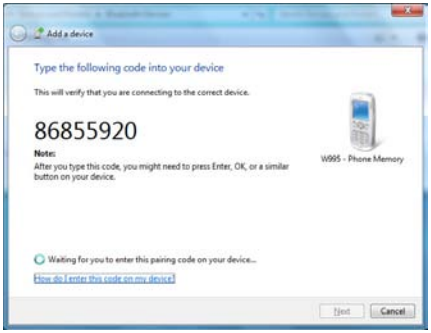


Figure D - 4
Pairing Code Example

Pairing Codes

The example outlined here shows a connection to a mobile device. Other devices e.g. computers, may have a slightly different connection procedure, and may require you to confirm a pairing code is correct on both devices. Follow the on-screen instructions to complete the pairing.

5. ***Windows*** will check to see if any drivers are required to complete the pairing.
6. Follow any on-screen instructions on the computer if device drivers are required to be installed.
7. Click **Close**.

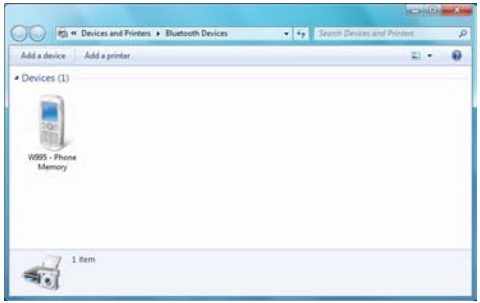


Figure D - 5
Pairing Complete & Bluetooth Device Enabled

To Change Settings for the Bluetooth Device

1. Click the taskbar icon and select **Show Bluetooth Devices**.
2. Right-click on the device you want to change and click **Properties** to:

- Change the **name** of the device (click **Bluetooth**, type a new name and click **OK**).
- Enable/Disable a **service** (click **Services**, clear/tick the check box next to the service and click **OK**).

To Make your Computer Discoverable to Bluetooth Devices

1. Click the taskbar icon and select **Open Settings**.
2. Click **Options**, and make sure that ***Allow Bluetooth devices to find this computer*** check box (**Discovery**) has a tick inside it.
3. Make sure that the ***Alert me when a new Bluetooth device wants to connect*** check box (**Connections**) has a tick inside it, if you want to be notified when a Bluetooth device wants to connect.

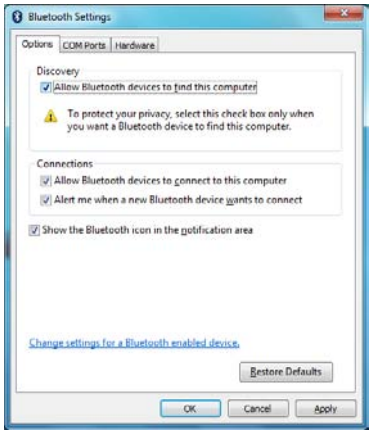


Figure D - 6
Bluetooth Settings - Options

Bluetooth Help

To get help on Bluetooth configuration and settings, select **Help and Support** from the **Start** menu. Type Bluetooth in the **Search Help** box, and select an item from the returned search results to get more information.

D

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited. Make sure the module(s) are OFF if you are using the computer aboard aircraft.

Use the **Fn + F11** key combination to toggle power to the WLAN module, and check the indicator to see if the module is powered on or not (see *Table D - 3, on page D - 5*/ *Table 1 - 2, on page 1 - 8*).

Wireless LAN Module (Win 7)

If you have included an **Intel® Wi-Fi Link 5100/5300 Series (802.11 a/g/n) or 3rd Party 802.11b/g WLAN** module in your purchase option, make sure that the Wireless LAN module is on before installing the driver.

Use the **Fn + F11 key combination** (see *Table D - 3, on page D - 5*) **to toggle power to the Wireless LAN module** (when the WLAN module is on, the LED will be green). Make sure you install the drivers in the order indicated in *Table D - 5, on page D - 28*.

Intel® Wi-Fi Link Series Driver Installation

If you see the message "**Found New Hardware**" click **Cancel** to close the window.

1. Make sure the module is powered on, then insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install Wireless Lan Driver > Yes**.
4. An on-screen message will appear to show the progress of the WLAN installation.
5. When the message disappears the driver will be installed.

Note: The operating system is the default setting for Wireless LAN control in ***Windows 7*** (see overleaf).

3rd Party 802.11b/g/n Driver Installation

1. Make sure the module is powered on, then insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install Wireless Lan Driver > Yes**.
4. Choose the language you prefer and click **Next**.
5. Click **Next > Install**.
6. Click **Finish** to restart the computer.

Note: The operating system is the default setting for Wireless LAN control in ***Windows 7*** (see overleaf).

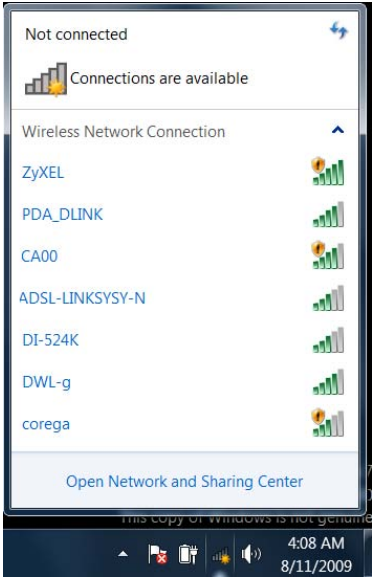
Network and Sharing Center

You can also use the **Network and Sharing Center** control panel in Windows (**Network and Internet**) to connect to any available wireless networks.

Connecting to a Wireless Network

Make sure the Wireless LAN module is turned on.

1. **Click** the taskbar wireless icon, and then double-click an access point to connect to or click to **Open Network and Sharing Center** if you do not see a network you want to connect to in the taskbar menu (a list of options will appear allowing setting changes, and creating a new network).



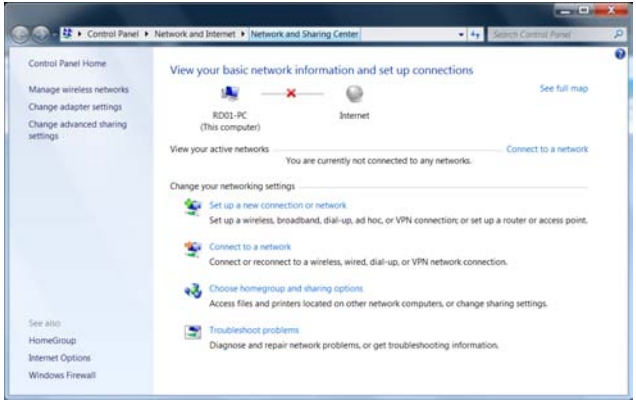


Figure D - 7
Click Taskbar Icon Menu & Network and Sharing Center

2. You may need to enter a security key for any access point to which you are trying to connect.
3. Click to select a network location (e.g. **Home, Work or Public**).
4. Click **"View or change settings in Network and Sharing Center"** to access further options for the connection.

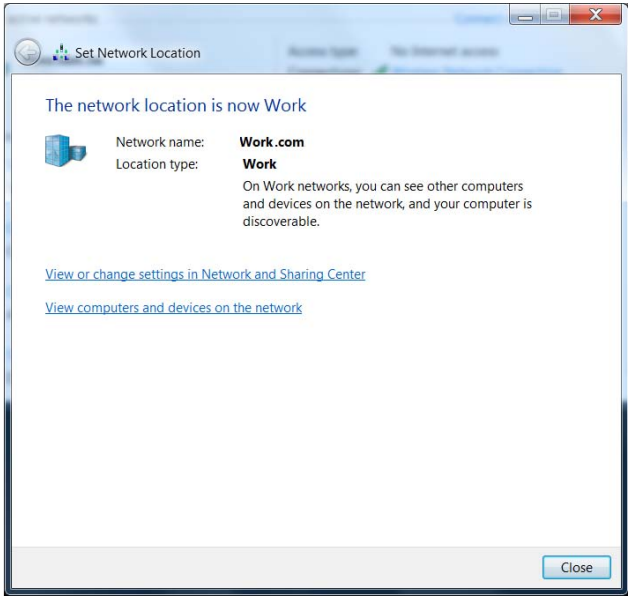


Figure D - 8
Network Location Set

Security Enabled Networks

You should try to make sure that any network you are connecting to is a secure network.

Connecting to unsecure networks may allow unauthorized access to your computer, documents, websites and files etc.

5. Click the taskbar icon to see any currently connected networks.
6. To disconnect from the wireless network you can click the taskbar wireless icon, click the active connection and then click **Disconnect** (button).

Figure D - 9
Click Taskbar Icon Menu - Disconnect

Windows Mobility Center

The **Windows Mobility Center** control panel provides an easy point of access for information on battery status, power plans used and wireless device status etc.

To access the Windows Mobility Center:

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Double-click **Windows Mobility Center** (**Mobile PC**).
3. Click the button to **Turn wireless off/on**, or click the icon to access the network menu.

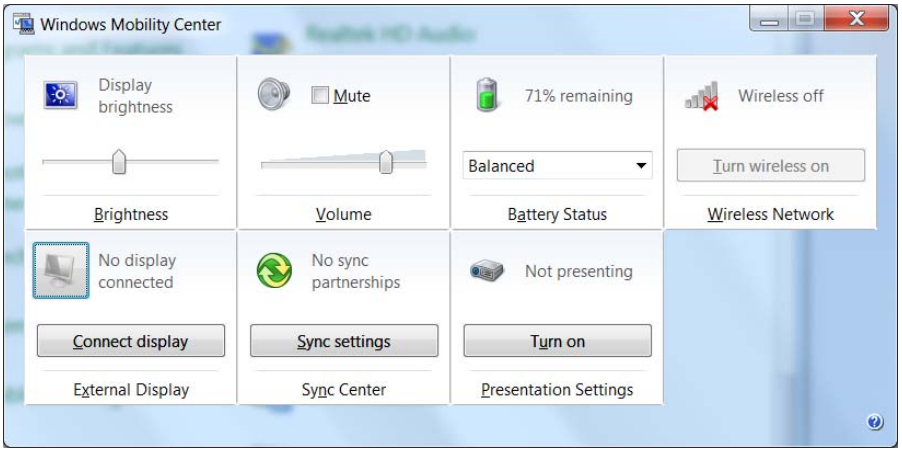


Figure D - 10
Windows Mobility Center

PC Camera Module (Win 7)

The PC Camera module uses the **BisonCap** application to capture video files. Before installing the **PC Camera** driver, make sure that the optional PC Camera is on. **Use the Fn + F10 key combination** (see *Table D - 3, on page D - 5*) **to toggle power to the PC Camera module**. Make sure you install the drivers in the order indicated in *Table D - 5, on page D - 28*.

Latest PC Camera Driver Information

Check the disc, and any accompanying insert pages, for the latest updated information on the PC Camera driver, which may override the information provided here.

PC Camera Display

The PC Camera application software needs to be run while the ***default notebook LCD*** is the selected display device.

After a camera picture is obtained on the default notebook LCD, you may then use the **Fn + F7** to toggle through the display modes (give the screen time to refresh).

PC Camera Device and TV Module

If you have both an optional PC Camera and an optional TV Tuner module present, you will need to select which device to use with the **BisonCap** program. Go to the **Devices** menu in the **BisonCap** application and select the **BisonCam, NB Pro** device.

PC Camera Driver Installation

1. Make sure the module is powered on, then insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **2.Install WebCam Driver > Yes**.
4. Choose the language you prefer and click **Next > Next**.
5. Click **Finish** to restart the computer.
6. Run the **BisonCap** application program from the **BisonCam** shortcut on the desktop, or from the **BisonCam** item in the **Start > Programs/All Programs** menu (if the hardware is turned off use the **Fn + F10** key combination to turn it on again).

PC Camera Audio Setup

If you wish to capture video & **audio** with your camera, it is necessary to setup the audio recording options in ***Windows***.

1. Click **Start**, and click **Control Panel** (or point to **Settings** and click **Control Panel**).
2. Click **Sound** (**Hardware and Sound**).
3. Click **Recording** (tab).
4. Right-click **Microphone** (Realtek High Definition Audio) and make sure the item is not disabled.
5. Double-click **Microphone** (or select **Properties** from the right-click menu).
6. Click **Levels** (tab), and adjust the **Microphone** and **Microphone Boost** sliders to the level required.
7. Click **OK** and close the control panels.
8. Run the **BisonCap** application program from the desktop shortcut.
9. Go to the **Devices** menu heading and select **Microphone** (**Realtek....**) (it should have a tick alongside it).
10. Go to the **Capture** menu heading and select **Capture Audio** (it should have a tick alongside it).

Pre-Allocating File Size/Space

You may pre-allocate the file size (**File > Allocate File Size/Space**) for the capture file in the camera program (you may need to set a folder location first).

Pre-allocating space on the hard disk can improve the capture quality (particularly of large capture files), by reducing the amount of work the hard disk has to do in finding space for the video data as it is being captured.

See also ***"Reducing Video File Size" on page D - 47***.

BisonCap Application

BisonCap is a video viewer for general purpose video viewing and testing, and for capturing video files to .avi format.

1. Run the **BisonCap** application from the desktop shortcut (it is recommended that you **set the capture file** before the capture process - **see** ***"Set Capture File" on page D - 47***).
2. Go to the **Capture** menu heading (if you wish to capture audio check ***"PC Camera Audio Setup" on page D - 45***) and select **Start Capture**.
3. Click **OK** (the file location will be displayed in the pop-up box) to start capturing the video, and press **Esc** to stop the capture (you can view the file using the **Windows Media Player**).

Set Capture File

Prior to capturing video files you may select the **Set Capture File...** option in the **File** menu, and set the file name and location before capture (this will help avoid accidentally overwriting files). Set the name and location then click **Open**, then set the **"Capture file size:"** and click **OK**. You can then start the capture process as on the previous page.

Note the important information in reducing video file size below in order to save file space, and help prevent system problems.

Reducing Video File Size

Note that capturing high resolution video files requires a substantial amount of disk space for each file. After recording video, check the video file size (right-click the file and select **Properties**) and the remaining free space on your hard disk (go to **My Computer**, right-click the hard disk, and select **Properties**). If necessary you can remove the recorded video file to a removable medium e.g. CD, DVD or USB Flash drive.

Note that the ***Windows Vista*** system requires a minimum of **15GB** of free space on the **C: drive** system partition. In order to prevent system problems it is recommended that you save the captured video file to a location other than the **C: drive** (see set capture file above), limit the file size of the captured video (see ***"Pre-Allocating File Size/Space" on page D - 46***) or reduce video resolution (see below).

To Reduce Video Resolution Output Size:

1. Run the **BisonCap** application program from the desktop shortcut.
2. Go to **Options** and scroll down to select **Video Capture Pin...**.
3. Click the **Output Size** drop box and select a lower resolution size in order to reduce the captured file size.
4. Click **OK**.

Eliminating Screen Flicker

If you find that the video screen in the camera program is flickering, you can try to adjust the setting in the **Video Capture Filter** options.

1. Run the **BisonCap** application from the desktop shortcut.
2. Go to **Options** and scroll down to select **Video Capture Filter...**.
3. Click either **50Hz** or **60Hz** under **Frequency/Anti Flicker** in **Property Page** (tab).

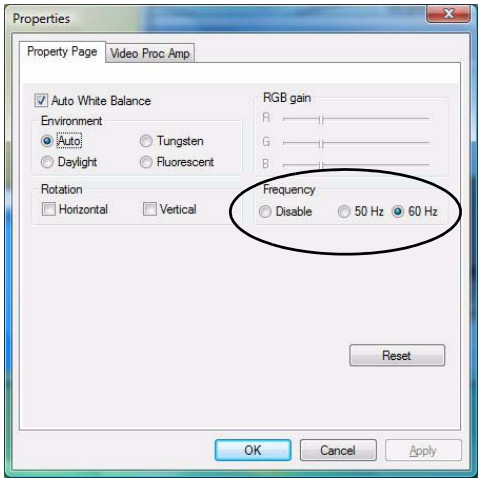


Figure D - 11
Video Capture Filter

Zoom

The **BisonCap** program allows you to zoom the camera in and out.

1. Run the **BisonCap** application from the desktop shortcut.
2. Go to **Zoom** and select **Zoom Out/Zoom In**.

Figure D - 12
Zoom/Setting

Taking Still Pictures

The **BisonCap** program allows you to take still pictures.

1. Run the **BisonCap** application from the desktop shortcut.
2. Go to **Options** and select **Take Picture**.
3. The picture (in JPEG format) will be placed in the **Snapshot** folder  on the desktop (see sidebar).

Snapshot Folder

The Snapshot folder's default location is on the desktop. Do not move this folder or an error may appear when you try to take a still picture.

If you accidentally delete or move the folder, you can create a new Snapshot folder on the desktop in order to capture the files.

TV Tuner Module (Win 7)

If your purchase configuration includes the **optional Hybrid** (Analog & Digital) USB Mini-Card TV Tuner module, you will be supplied with a remote control unit and appropriate antenna and fittings for the module. Software support for the TV Tuner module is provided by ***Windows Media Center*** in ***Windows 7 (not included in Starter or Home Basic versions)***. A driver is provided on the ***Device Drivers & Utilities + User's Manual*** disc for the remote control supplied with the TV Tuner.

The optional TV Tuner allows you to watch TV, play music CDs, video conference and capture still images and video on your PC.

The Cable (CATV) antenna will only be enabled when a TV Tuner module is installed. Make sure you connect the TV antenna.

TV Antenna

The TV antenna supplied with any TV Tuner module is intended for indoor use only. Please do not use your TV Tuner module outdoors.

TV Tuner Remote

Point the remote at the consumer **IR transceiver** to change channels etc.

Figure D - 13
TV Tuner Ports/ Jacks

1. Consumer Infrared Transceiver
2. CATV Antenna Jack

Consumer Infrared Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **3.Install CIR Driver > Yes**.
4. Choose the language you prefer and click **Next > Next**.
5. Click **Finish** to restart the computer.

Windows Media Center

1. This TV Tuner module is fully supported by ***Windows Media Center*** in ***Windows 7 (not included in Starter or Home Basic versions)***.
2. Run ***Windows Media Center*** directly from the **Start** menu (**Start > Windows Media Center**).
3. ***Windows Help and Support*** provides information on the **Windows Media Center** functions. Click **Start** and select **Help and Support**, and then type "***Media Center***" in the **Search Help** box and click the magnifying glass icon to bring up the results.

TV Tuner Module Support

Note that the TV Tuner module options in ***Windows 7*** is supported by the **Windows Media Center** software which comes built-in to all the ***Windows 7 versions except Starter and Home Basic***.

If your purchase includes a TV Tuner option, and you are reconfiguring your system for a different system, you should install any ***Windows 7*** version except ***Starter*** and ***Home Basic***.

D

CATV Cable Safety

Make sure that your CATV system installer has connected the Coaxial cable shield to the grounding system of the building, as close to the point of cable entry as practical.

This reminder is provided to call the CATV system installer's attention to Article 820-93 of the NEC (Section 54, Part I of the Canadian Electrical Code).

Digital TV Broadcast Signal

The antenna is the most crucial factor in receiving a clear digital terrestrial TV broadcast signal. The **passive** antenna provided should provide a clear signal when placed beside a window. If the signal is not clear then you can purchase an **active** antenna (it should also be placed beside a window) to improve the signal. You should also check with any related government website which provides information on digital terrestrial TV coverage for your area. Note that (unlike standard analog TV) if the digital signal is weak then no picture will appear on the TV at all.

TV Recording and Power Plans

If you intend to use the **optional** TV Tuner to record live TV, then go to the **Power Options** control panel and create a power plan (see ***"Power Plans" on page D - 15***) to prevent the power saving options from adjusting the computer's performance level.

Remote Control Unit

The remote control unit allows you to remotely start and send the system into a power saving state, to run ***Windows Media Center*** and to navigate the ***Media Center*** menus etc. The remote control unit also gives full control over all TV and video functions.

Intel Turbo Memory Module (Win 7)

If you have included an ***Intel Turbo Memory (Robson) NAND flash memory card module*** in your purchase option, then you will need to enable AHCI or RAID mode in the BIOS (see ***"Advanced Menu" on page 5 - 7***) **BEFORE** installing the ***Windows 7*** operating system software.

Note that if you are adding an ***Intel Turbo Memory (Robson) NAND flash memory card module*** to a computer that already has an operating system and drivers etc. installed, you will need to reinstall the OS and all necessary drivers and utilities (make sure you back up all your important data before doing so).

Intel Turbo Memory Technology (also known as **Robson flash memory**) is an Intel technology that reduces the time it takes for a computer to boot up, to load applications, and to write data to the hard drive. ***Intel Turbo Memory Technology*** is supported in ***Windows Vista/7*** (it also supports *Windows Vista/7* features such as ReadyBoost, ReadyDrive, and Superfetch).

e-SATA Port Support

Note that **the Intel Matrix Storage driver is required to support the e-SATA port** even if you have not included an *Intel Turbo Memory* module in your purchase configuration.

Follow the instructions provided here in order to install the driver.

Intel Turbo Memory & Matrix Storage Setup and Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **4.Install TM&iMSM Driver > Yes**.
4. Click **Next > Next > Yes > Next > Next**.
5. Click **Finish** to restart the computer.
6. For Turbo Memory modules that support **User Pinning** see ***"Intel Turbo Memory Dashboard (User Pinning Supported Only)" on page D - 55***.
7. For Turbo Memory modules that **do not** support **User Pinning** see***"Intel Turbo Memory Console (All Modules)" on page D - 58***.

If the Turbo Memory module supports **User Pinning** then the **Intel Turbo Memory Dashboard** will be installed. If the Turbo Memory module does not support **User Pinning** then the **Intel Turbo Memory Dashboard** will not be installed.

Intel Turbo Memory Dashboard (User Pinning Supported Only)

The **Intel Turbo Memory Dashboard** allows you to pin an application or file to load into the Intel Turbo Memory NAND cache for performance acceleration.

1. Run the **Intel® Turbo Memory Dashboard** from the **Programs/All Programs** menu (**Intel® Turbo Memory**) or from the desktop shortcut.
2. The **Pinning Capacity Consumption Meter** 1 displays the amount of pinning space used.
3. The **Control and Profile Pull-Down Menu** 2 allows you to select and manage profiles.
4. The **Application Window** 3 lists all applications available for performance acceleration. When accelerated the applications/files will appear in the **Accelerated Window** 4.
5. The **Custom Sets Window** 5 allows you to select specific files to be pinned.

Help

Click the **Help** icon to bring up the menu and click to select and help topic.

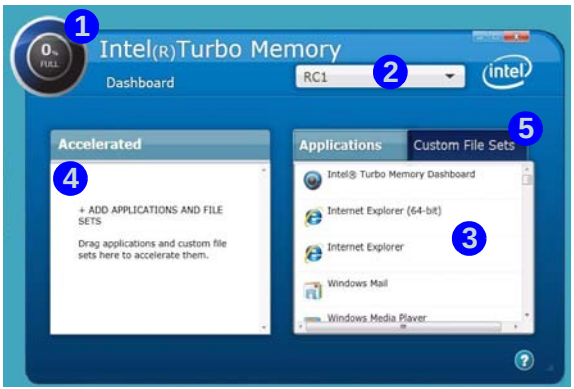


Figure D - 14
Intel Turbo Memory Dashboard

D

Unpinning an Application

Click the application in the **Accelerated Window** and drag it back to the **Applications Window** to unpin the application.

You can also unpin the application by right-clicking it in the **Applications Window** and selecting "**Remove from Cache**."

Pinning an Application (User Pinning Supported Only)

1. The **Intel® Turbo Memory Dashboard** allows you to select files and applications to accelerate and therefore open faster and display quicker.
2. Applications will be listed in the **Applications Window** on the right.
3. To accelerate any application drag the icon into the **Accelerated** pane on the left (the available memory is indicated in the top left).
4. A status bar indicates the pinning progress and will turn green when ready.

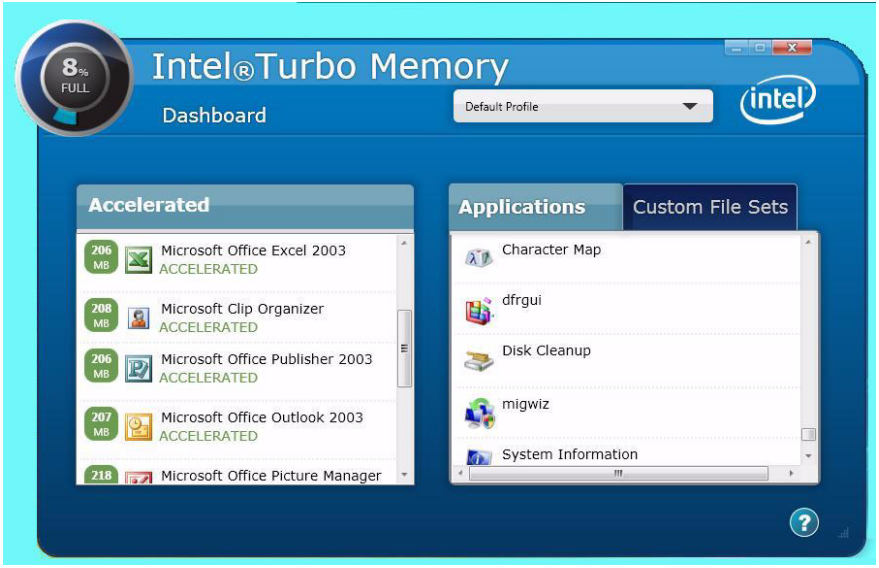


Figure D - 15
Accelerated Applications

D

Custom File Sets (User Pinning Supported Only)

A Custom File Set allows you to group applications and files to accelerate. These sets can be moved easily in and out of the **Accelerated Window** which is of benefit when space is limited. You need to create the custom file set before dragging the set to the accelerated window.

1. Click **Custom File Sets** and type a name for the set, and then click **Next**.
2. Select the file set folder icon and click **Advanced**.
3. Click the **Browse** button and select the files and applications to accelerate.
4. Click the **Done** button when finished.
5. Drag the custom set across to the **Accelerated Window** from **Custom File Sets** to accelerate.

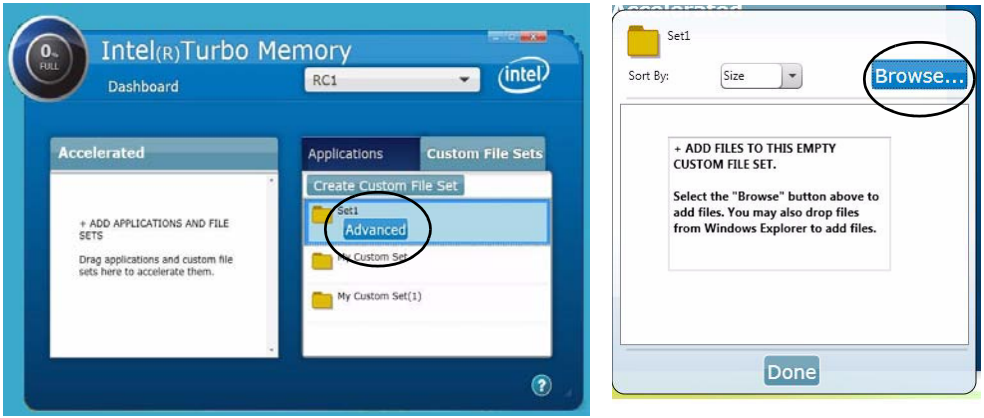


Figure D - 16
Create Custom File Set

Windows ReadyBoost

If your module supports **User Pinning** (i.e. the **Intel Turbo Memory Dashboard** is installed) then **ReadyBoost is not supported** (the item will be grayed out).

Note that the Intel Turbo Memory Console DOES NOT appear if you have not included a Turbo Memory module in your purchase configuration.

Intel Turbo Memory Console (All Modules)

1. Run the **Intel® Turbo Memory Console** from the **Programs/All Programs** menu (**Intel® Turbo Memory**).
2. You can enable/disable **Windows ReadyBoost** and **Windows ReadyDrive** from the **Intel® Turbo Memory Console**.

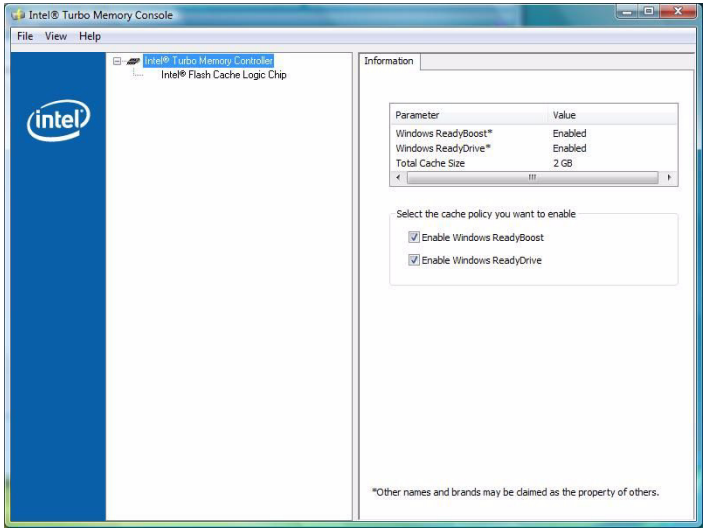


Figure D - 17
Intel Turbo Memory Console

- **Windows ReadyBoost** - uses **flash memory** as a hard-drive caching solution (Not supported if **User Pinning** is supported).
- **Windows ReadyDrive** - uses **hybrid drives** as a hard-drive caching solution.

D

Setting Up SATA RAID or AHCI Modes (Win 7)

AHCI Mode

Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced serial ATA features such as Native Command Queuing (for maximum hard disk efficiency and performance). AHCI mode can be supported by one, two or three hard disks.

RAID

You may use your **identical** (see sidebar) hard disks (if you have included more than one hard disk in your purchase option) in combination with Striping (RAID 0), Mirroring (RAID 1), Parity Across Disks (RAID 5) or Intel® Rapid Recover Technology (Recovery) for fault tolerance and data recovery (see *Table D - 6, on page D - 60*). To configure your system in Striping (RAID 0) or Mirroring (RAID 1) modes you will require **at least two** hard disks; to configure your system in Intel® Rapid Recover Technology (Recovery) mode you will require **two hard disks** installed; to configure your system in Parity Across Disks (RAID 5) mode you will require **three hard disks** installed.

Intel® Matrix Storage Manager

Make sure you install the Intel Matrix driver and application if you have set up your hard disk(s) in **AHCI** or **RAID** modes (see *"Intel® Matrix Driver Installation" on page D - 67*).

RAID Hard Disks

All hard disks in a RAID should be identical (the same size and brand) in order to prevent unexpected system behavior.

Table D - 6
RAID Levels

RAID Level	Description
RAID 0	Identical drives reading and writing data in parallel to **increase performance**. RAID 0 implements a striped disk array and the data is broken into blocks and each block is written to a separate disk drive.
RAID 1	Identical drives in a mirrored configuration used to **protect data**. Should a drive that is part of a mirrored array fail, the mirrored drive (which contains identical data) will handle all the data. When a new replacement drive is installed, data to the new drive is rebuilt from the mirrored drive to restore fault tolerance.
RAID 5	Identical drives (at least **three** drives must be used) in a parity across disks configuration are used to **protect data** and **increase performance**. A RAID 5 array can withstand a single disk failure without losing access to data.
Recovery	Two Identical drives copying data between a master and a recovery disk. This provides more control over how data is copied between the master and recovery drives, fast volume updates and the ability to view the data in *Windows Explorer*.

Array Types

A **Mirrored Array** (**RAID 1**) provides full data protection, as data can simply be copied from a healthy disk to a replacement for any failed disk.

A **Striped Array** (**RAID 0**) is **NOT** fault-tolerant. The failure of one drive will result in the loss of all data in the array. It is designed to increase disk performance by spreading the I/O load across the channels and drives.

Prepare the following before setting up your serial ATA hard disks in **RAID** mode (to configure **AHCI** mode you do not need to prepare any extra hard disks but will need to install the Intel Matrix driver):

1. The ***Microsoft Windows OS CD***.
2. A **second** (identical) hard disk installed in the Primary HDD bay for **RAID level 0 or 1** (required for RAID but not required for AHCI).
   OR
   A a **second** (identical) hard disk installed in the Primary HDD bay, and a **third** (identical) hard disk in the Secondary HDD bay for **RAID level 5**.
3. The ***Device Drivers & Utilities + User's Manual*** disc.
4. **For Recovery level RAID** you will also require a USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette.

SATA RAID or AHCI Setup Procedure (BIOS)

1. Start-up your notebook computer and press <**F2**> to enter the **BIOS**.
2. Go to the **Advanced** menu, select "**SATA Mode Selection**" and press Enter (see page ***5 - 8***).

- Select either "**RAID**" or "**AHCI**".

3. Press **Esc** and go to the **Boot** menu.
4. Set the ***CD/DVD-ROM Drive*** (make sure the ***Microsoft Windows OS CD*** is inserted) as the first device in the boot order from the **Boot** menu.
5. Select ***Exit Saving Changes*** from the **Exit** menu (or press **F10** and Enter) and press Enter to exit the BIOS and reboot the computer.
6. For **RAID** mode see the instructions in ***"RAID Setup (Intel Matrix)" on page D - 63***.
7. For **AHCI** mode simply install the Intel Matrix driver after installing the OS and all other drivers listed in **Chapter 4** (see ***"Intel® Matrix Driver Installation" on page D - 67***).

RAID Setup (Intel Matrix)

1. Press **Ctrl + i** to enter RAID configuration menu.

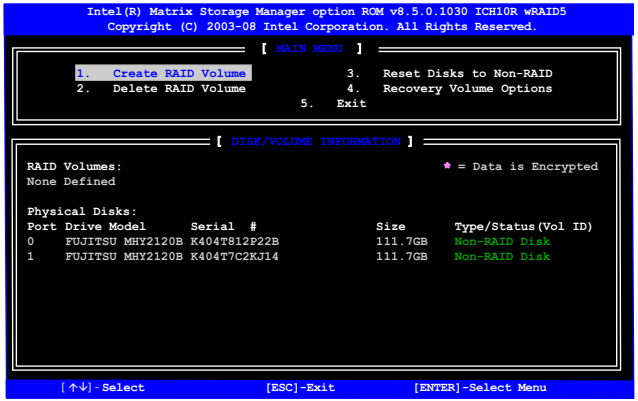


Figure D - 18
Intel(R) Matrix Storage Manager Option ROM

2. Select **1.Create RAID Volume** and press Enter.
3. Type the **RAID volume name** and then press Tab or Enter to advance to the next field.
4. Specify (use the up and down arrow keys) the **RAID level** (**RAID 0 or RAID 1 or Recovery** - see ***Table D - 6, on page D - 60***) and then press Tab or Enter to advance to the next field.
5. Press Enter and the system will select the physical disks to use.
6. Press Enter and select (if applicable) the Strip Size (best set to default).
7. Press Enter and select the Capacity size (best set to default).
8. Press Enter to select **Create Volume**.

Recovery Level

When selecting disks for the Recovery RAID level you will need to use the **Tab** key to select a **Master** disk, and the **Space** key to select a **Recovery** disk.

You can select the synchronization between the disks to be **Continuous** (automatic) or **On Request** (manually).

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9. Press Enter to create the volume, and confirm the selection by pressing **Y**.
10. This will now return to the main menu.

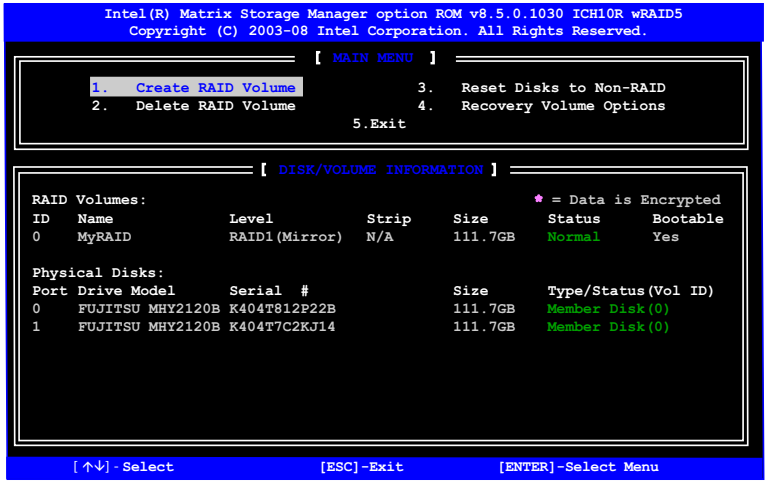


Figure D - 19
RAID Created

11. Select **5.Exit** and press Enter, then press **Y** to exit the RAID configuration menu.
12. As the computer starts up, press a key when you see the message "***Press any key to boot from CD***".
13. Press **Enter** to continue installing the operating system as normal (see your ***Windows*** documentation if you need help on installing the ***Windows*** OS).
14. If you have selected a Recovery level RAID then see ***"Windows Installation for Recovery Level RAID Systems" on page D - 65***.
15. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 3*** (make sure you install the Intel Matrix driver - see ***"" on page D - 67***).

Windows Installation for Recovery Level RAID Systems

When you install ***Windows 7*** for Recovery level RAID systems you will need to provide the driver for the RAID system as per the instructions below. Firstly you will need to go to an operable computer and copy the driver from the ***Device Drivers & Utilities + User's Manual disc*** to a USB Flash drive, external USB hard disk or external floppy disk drive and floppy diskette.

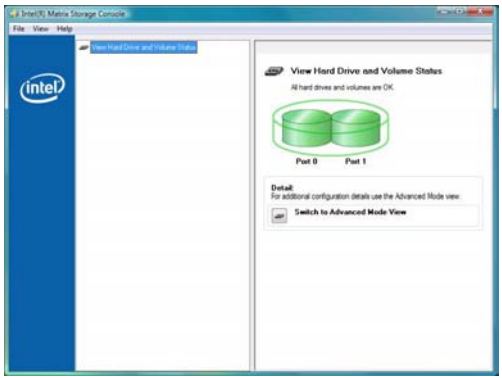
1. Go to the operable computer and insert a USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette.
2. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive of the operable computer.
3. Copy the RAID folder from the location below (D: denotes your DVD drive) on the ***Device Drivers & Utilities + User's Manual*** disc to the USB Flash drive, external USB hard disk or floppy diskette.
   - D:\Win7\Others\00RAID
4. Press a key at system startup to begin installing ***Windows*** from your ***Microsoft Windows 7*** disc.
5. Click **Install Now**.
6. Make sure your USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette is attached to one of the USB ports on the computer.
7. Click "**I accept the license terms**" tickbox and click **Next**.
8. Click **Custom (advanced)**.
9. Click to select **Load Driver** when the "**Where do you want to install Windows?**" screen appears.
10. Click **Browse** and browse to the location you copied the files to on your USB Flash drive, external USB hard disk or external USB floppy disk drive and floppy diskette (X: denotes your USB Flash drive, external USB hard disk or external USB floppy disk drive):
    - ***Windows 7*** 32bit - X:00RAID\f6flpy32\iaStor.inf
    - ***Windows 7*** 64bit - X:00RAID\f6flpy64\iaStor.inf

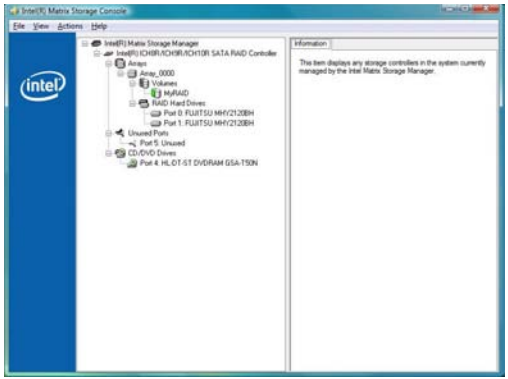
11. Click **Next** (or format the master drive to your preferences).
12. Follow the on-screen instructions to install the ***Windows 7*** operating system.
13. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table D - 5, on page D - 28*** (make sure you install the Intel Matrix driver - see ***"Intel® Matrix Driver Installation" on page D - 67***).

Intel® Matrix Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive.
2. Click **Option Drivers** (button).
3. Click **4.Install TM&iMSM Driver > Yes**.
4. Click **Next > Next > Yes > Next > Next**.
5. Click **Finish** to restart the computer.

The **Intel Matrix Storage Console** displays status information on your RAID configuration. Run the **Intel® Matrix Storage Console** from the **Intel® Matrix Storage Manager** in the All Programs menu. The **Intel® Matrix Storage Manager** provides information on the RAID status.





e-SATA Port

Install the **Intel Matrix Storage** driver to display the safe removal icon for e-SATA devices in the taskbar

Figure D - 20
Intel Matrix Storage Console (Basic & Advanced Views)

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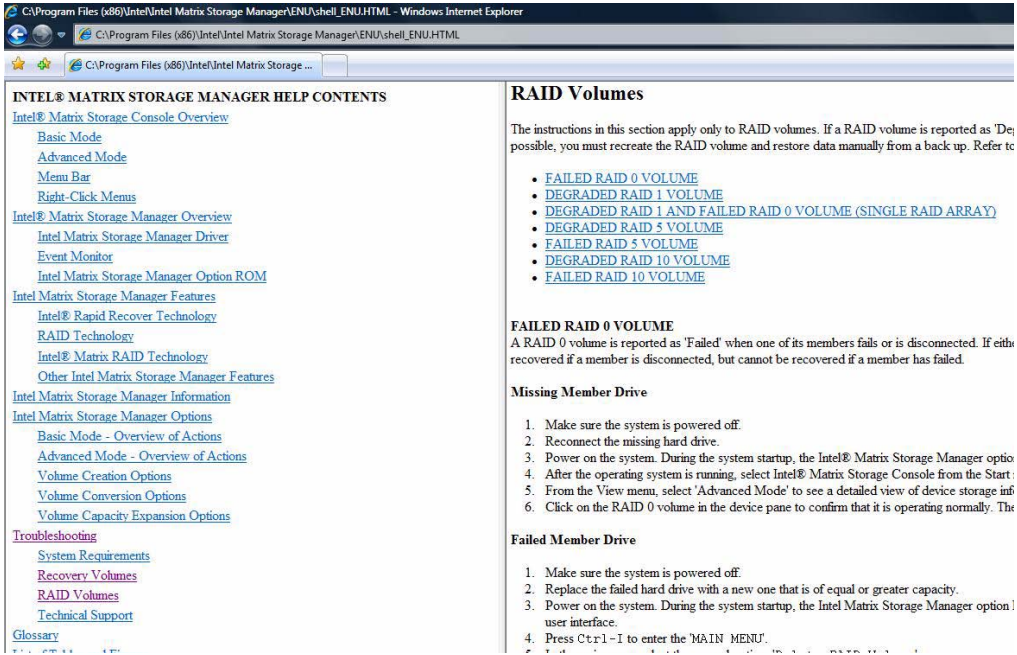
Intel® Matrix Storage Manager

If a hard drive member of a RAID volume is reported as "**Degraded**" or "**Failed**" it may be possible to recover the volume. If the volume cannot be restored then you will need to recreate the RAID volume and restore the data from a back up. The **Help** menu (press **F1** or select **Contents and Index** from the **Help** menu) provides instructions on how to recover or recreate RAID Volumes.

Figure D - 21
Intel Matrix Storage Manager Help



RAID Volume Data Verification and Repair

The RAID volume data verification process identifies any inconsistencies or bad data on a RAID 0, RAID 1, RAID 5 or Recovery volume. The table outlines what occurs for each RAID level:

RAID Level	Verify	Verify & Repair
RAID 0	Bad blocks are identified.	N/A
RAID 1	Bad blocks are identified. Data on the mirrored drive is compared to data on the source drive.	Bad blocks are reassigned. If the data on the mirrored drive does not match the data on the source drive, the data on the mirrored drive is overwritten by the data on the source.
RAID 5	Bad blocks are identified. Parity is recalculated and compared to the stored parity for that stripe.	Bad blocks are reassigned. If the newly calculated parity does not match the stored parity, the stored parity is overwritten with the newly calculated parity.

Table D - 7
RAID Verification & Repair Status

Replacing and Reverting Recovery and Master Volumes

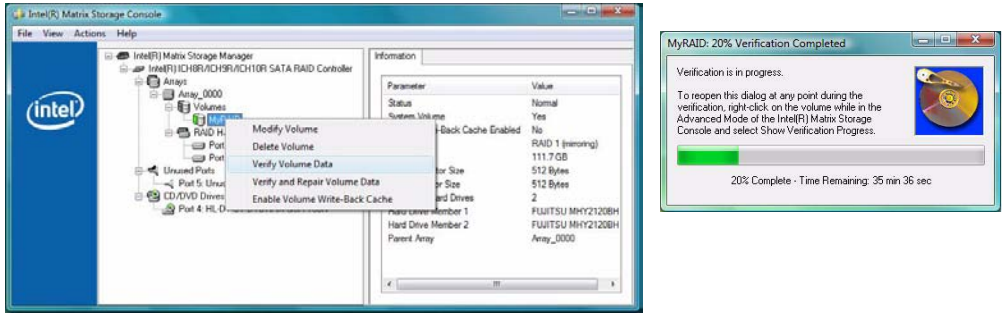
If a master or recovery drive fails you will need to add a new identical drive and re-build the recovery volume to the drive. You can also revert the master drive to the state of the previous volume update. For details on how to do this see ***"Intel Matrix Storage Manager Help" on page D - 68***.

See over for details on how to verify and repair RAID volume data.

Verifying and Repairing RAID Volume Data

1. Run the **Intel® Matrix Storage Console** from the **Intel® Matrix Storage Manager** in the Programs/All Programs menu.
2. Click **View > Advanced Mode**.
3. Right-click on the RAID volume and select either **Verify Volume Data** or **Verify and Repair Volume Data**.

Figure D - 22
RAID Verification (Intel® Matrix Storage Console)



4. The verification or verification and repair process will run and display progress.
5. A dialog box will display the final status of the verification or verification and repair status.

Figure D - 23
Verification Status

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