USER'S MANUAL

notebook

V17.3.00

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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.

ErP Off Mode Power Consumption Statement:

The figures below note the power consumption of this computer in compliance with European Commission (EC) regulations on power consumption in off mode:

- Off Mode < 0.5W

CE Marking

This device has been tested to and conforms to the regulatory requirements of the European Union and has attained CE Marking. The CE Mark is a conformity marking consisting of the letters “CE”. The CE Mark applies to products regulated by certain European health, safety and environmental protection legislation. The CE Mark is obligatory for products it applies to: the manufacturer affixes the marking in order to be allowed to sell his product in the European market.

This product conforms to the essential requirements of the R&TTE directive 1999/5/EC in order to attain CE Marking. A notified body has determined that this device has properly demonstrated that the requirements of the directive have been met and has issued a favorable certificate of expert opinion. As such the device will bear the notified body number 0560 after the CE mark.

The CE Marking is not a quality mark. Foremost, it refers to the safety rather than to the quality of a product. Secondly, CE Marking is mandatory for the product it applies to, whereas most quality markings are voluntary.

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 AC/DC Adapter – AC in 100 - 240V, 50 - 60Hz DC Output 19.5V, 11.8A (**230Watts**) minimum

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.*

Servicing

Do not attempt to service the computer yourself. Doing so may violate your warranty and may 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.

Bottom Cover Removal Warning

Users should not remove any cover(s) and /or screw(s) for the purposes of device upgrade as this may violate the terms of your warranty. If you need to replace/remove the hard disk/RAM/optical device etc., for any reason, please contact your distributor/supplier for further information.

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 restoring power to the system.

Also note the following when the cover is removed:

- Hazardous moving parts.
- Keep away from moving fan blades.

Power Safety

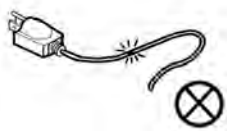
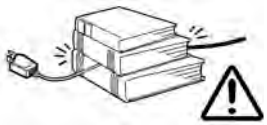
The computer has specific power requirements:

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 and power cord).

You must also remove your battery in order to prevent accidentally turning the machine on. **Before removing the battery disconnect the AC/DC adapter from the computer.**

- 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.*
		

Polymer/Lithium-Ion Battery Precautions

Note the following information which is specific to Polymer/Lithium-Ion batteries only, and where applicable, this overrides the general battery precaution information overleaf.

- Polymer/Lithium-Ion batteries may experience a slight expansion or swelling, however this is part of the battery's safety mechanism and is not a cause for concern.
- Use proper handling procedures when using Polymer/Lithium-Ion batteries. Do not use Polymer/Lithium-Ion batteries in high ambient temperature environments, and do not store unused batteries for extended periods.
- If you are working in areas of low temperature use the AC/DC adapter to power the computer.

See also the general battery precautionary information overleaf for further information.

General 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.
- If you do not use the battery for an extended period, then remove the battery from the computer for storage.
- 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.

Cleaning Instructions

(***For Computer Models Supplied with Light Blue Cleaning Cloth***)
Some computer models in this series come supplied with a light blue cleaning cloth. To clean the computer case with this cloth follow the instructions below:

1. Power off the computer and peripherals.
2. Disconnect the AC/DC adapter from the computer.
3. Use a little water to dampen the cloth slightly.
4. Clean the computer case with the cloth.
5. Dry the computer with a dry cloth, or allow it time to dry before turning on.
6. Reconnect the AC/DC adapter and turn the computer on.

Travel Considerations

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.

LCD Electro-Plated Logos

Note that in computers featuring a raised LCD electro-plated logo, the logo is covered by a protective adhesive. Due to general wear and tear, this adhesive may deteriorate over time and the exposed logo may develop sharp edges. Be careful when handling the computer in this case, and avoid touching the raised LCD electro-plated logo. Avoid placing any other items in the carrying bag which may rub against the top of the computer during transport. If any such wear and tear develops contact your distributor/supplier.

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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** and **card reader**)**, TouchPad** & **Mouse** and **Audio Features**.
- **Chapter 3** The computer's **power** management 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** A quick guide to the computer's **PC Camera, Wireless LAN, Bluetooth & WLAN Combo, Sound Blaster Audio** and **Intel** modules (some of which may be **optional** depending on your purchase configuration).
- **Chapter 7** 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 **Control Center**.
- **Appendix C** Information on the **Video** driver controls.
- **Appendix D** The computer's **specification**.

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* and *"BIOS Utilities" on page 5 - 1* in the User's Manual. You may also find the notes marked with a ✎ of interest to you.

Notes

Check the light colored boxes with the mark above to find detailed information about the computer's features.

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 10***) 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 - 4***. 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.

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 10 (64-bit)*** operating system is supported.

Windows OS

Note that the information included on the following pages is for ***Windows 10 only***.

In order to run ***Windows 10 (64-bit)*** your computer requires a minimum **4GB** of system memory (RAM).

Model Differences

This notebook series includes **two** different models that vary slightly in design style, color and general appearance. Note that though your computer may look slightly different from that pictured throughout this manual, all ports, jacks (other than those indicated in the specification) and general functions are the same for all the design styles (see ***Appendix D*** for further details).

System Startup

1. Remove all packing materials, and place the computer on a stable surface, and securely attach any peripherals you want to use with the notebook (e.g. keyboard and mouse) to their ports.
2. **When first setting up the computer use the following procedure** (as to safeguard the computer during shipping, the battery will be locked to not power the system until first connected to the AC/DC adapter and initially set up as below):
   - Attach the AC/DC adapter cord to the DC-In jack on the right of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter and **leave it there for 6 seconds or longer**.
   - Remove the adapter cord from the computer's DC-In jack, and then plug it back in again; the battery will now be unlocked.
3. Use one hand to raise the lid/LCD to a comfortable viewing angle (it is preferable not to exceed 135 degrees); use the other hand to support the base of the computer (**Note**: **Never** lift the computer by the lid/LCD).
4. Press the power button on the top of the computer **for about 2 - 3** seconds to turn the computer "**on**" (note that the **power LED** on the front of the computer **will turn from orange to green** when the computer powers on).

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

Shutdown

Note that you should always shut your computer down by choosing the **Shut Down** command in **Windows** (see page ***1 - 41***). This will help prevent hard disk or system problems.

LCD Panel Open

Figure 1 - 2
LCD Panel Open

1. Built-In PC Camera
2. PC Camera LED
3. Built-In Array Microphone
4. LCD
5. Power Button
6. *Illuminated (White) LED Keyboard
7. TouchPad & Buttons

*A colored LED keyboard is available as an option for this model.

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices (e.g. WLAN, Bluetooth or 3G/4G) aboard aircraft is usually prohibited. Make sure any wireless modules are OFF (i.e. the system is in **Airplane Mode**) if you are using the computer aboard aircraft.

Use **Fn + F11 Airplane Mode** key combination to toggle Airplane Mode On/Off, and check the LED indicator for the power status.

LED Indicators

The LED indicators at the front of the computer display helpful information about the current status of the system.

Icon	Color	Description
	Orange	AC/DC Power is Plugged In
	Green	The Computer is On
	Blinking Green	The Computer is in Sleep Mode
	Orange	The Battery is Charging
	Blinking Orange	The Battery has Reached Critically Low Power Status
	Green	The Battery is Fully Charged
	Green	**Airplane Mode** is **ON** (the WLAN, Bluetooth & 3G/4G Modules are OFF)
	Green	HDD Activity

Table 1 - 1 **- LED Indicators**

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.

Scr Lk

Hold down the **Fn Key** and Scr Lk to enable scroll lock and check the LED indicator for status.

Illuminated White LED Keyboard

The **illuminated white LED 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 - 5, on page 1 - 21*** for full function key combination details.

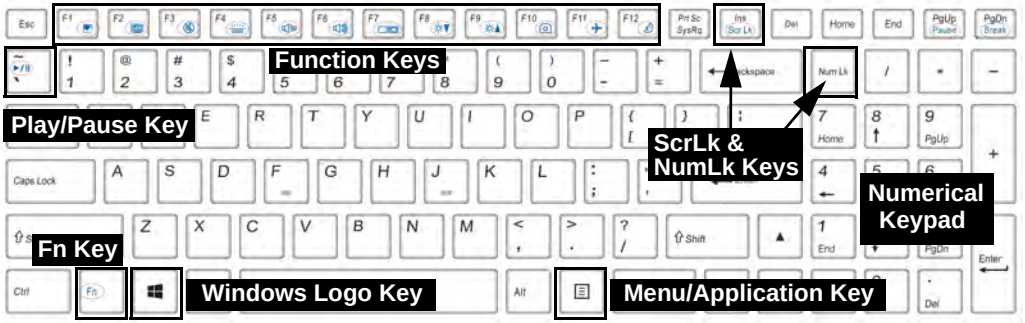


Figure 1 - 3 **- Illuminated White LED Keyboard**

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.

Illuminated Color LED Keyboard

The **illuminated colored LED 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 - 5, on page 1 - 21* for full function key combination details. and see *"Keyboard Backlight LED" on page 1 - 12*.

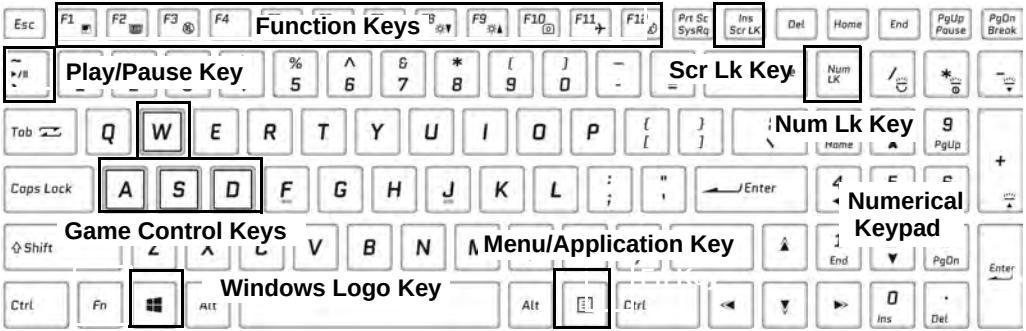


Figure 1 - 4 **- Illuminated Color LED Keyboard**

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.

Scr Lk

Hold down the **Fn Key** and Scr Lk to enable scroll lock and check the LED indicator for status.

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.

Keyboard Application Settings

(**Illuminated Keyboard Option**)

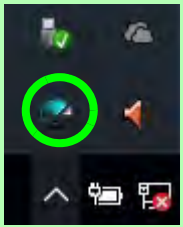
If your computer includes an illuminated keyboard (factory option), you will need to install the keyboard **Control Center** application driver and you can then select the type of keyboard as appropriate for your model's configuration (you can only select keyboards supported by your system). After the driver has been installed, and the system restarts, the control panel below will pop-up to allow you to select the **illuminated white keyboard** for your system. Click **Save** to retain the setting chosen.

Figure 1 - 5 **- Keyboard Settings for Illuminated Keyboard Option**

Control Center

When in the **Windows Desktop application** (not in the **Start** screen) press the **Fn + Esc** key combination, or **double-click the icon** in the **notification area of the taskbar** to toggle the **Control Center** on/off. The **Control Center** gives quick access to frequently used controls and enables you to quickly turn the camera/Touch Pad on/off (see ***Appendix B*** for full details).

Control Center Access



To run the Control Center press the **Fn + Esc** key combination, or double-click the icon in the notification area of the taskbar.

Close the Control Center by clicking the close icon in the top right of the panel (move the cursor onto the top right corner of the panel to highlight it).

Figure 1 - 6 **- Control Center**

Keyboard Backlight LED

(For Illuminated Colored Keyboards Only)

Press **Fn** plus the 2 key to toggle the keyboard LED on/off. The keyboard LED may be configured using the **Fn + key combination** outlined in the table below. In addition press **Fn** plus the 1 key to launch the keyboard backlight application to configure the settings (see overleaf).

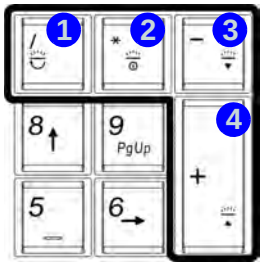
Main Keyboard Colored LED Function key Combinations		
Fn +	1 Launch Keyboard Backlight Application	
Fn +	2 Toggle Keyboard Backlight LED On/Off	
Fn +	3 Keyboard Backlight LED Low	
Fn +	4 Keyboard Backlight LED High	
Fn +	5 Toggle the Left keyboard LED On/Off	
Fn +	6 Toggle the Middle keyboard LED On/Off	
Fn +	7 Toggle the Right keyboard LED On/Off	

Table 1 - 2 **- Main Keyboard LEDs**

Keyboard Backlight Application (for Illuminated Colored Keyboards)

The **Keyboard Backlight application** can be accessed by pressing the **Fn** plus key (or by clicking the **Flexikey** button in the **Gaming** section of the Control Center, and then clicking the **Backlight** tab).

Figure 1 - 7 **- Keyboard Backlight Application**

Brightness

Click on any of the numbers (0 - 3) on the brightness bar to set the brightness level of the keyboard backlight.

Color Swatch

The color swatch in the top right of the screen allows you to select a range of colors for your keyboard backlight by clicking on the color required. You can choose to display the swatch either in **Full Color** or as a **256 Color Scheme**. Click the **Custom** mode button to select any colors from the swatch and to apply your chosen colors to parts of the keyboard (and **Top Case Logo LED** if applicable).

Full Color Swatch **256 Color Scheme Swatch**

Figure 1 - 8 **- Keyboard Backlight Color Swatches**

Modes

The buttons surrounding the swatch allow you to alter the effects of the keyboard backlight. Click on any of the buttons to view the effects on the keyboard. Click **Save** when exiting the application to retain the setting.

Mode Buttons				
	Random Color		Wave Up/Down	**Illumination Keys** Note that the keyboard illumination (increase/decrease) keys may be used to configure the keyboard LED in **Custom Mode** only.
	Custom - Display & Configure Keyboard Sections & Colors		Dancing Effect	
	Breathe (All Colors)		Tempo Beat	
	Cycle Colors		Flashing	

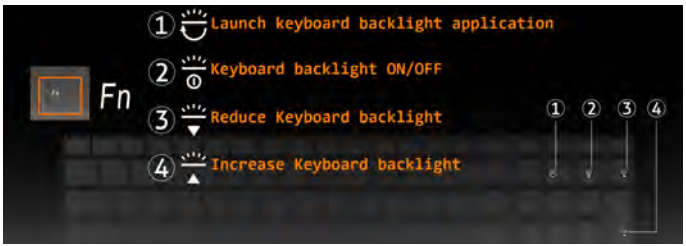


Table 1 - 3 **- Mode Buttons**

Preview

The bottom left section of the application allows you to preview setting changes made to colors on the keyboard.

Keyboard LED Sections

The bottom right section of the application allows you to select partial areas, or all, of the keyboard on which to apply the color changes and effects.

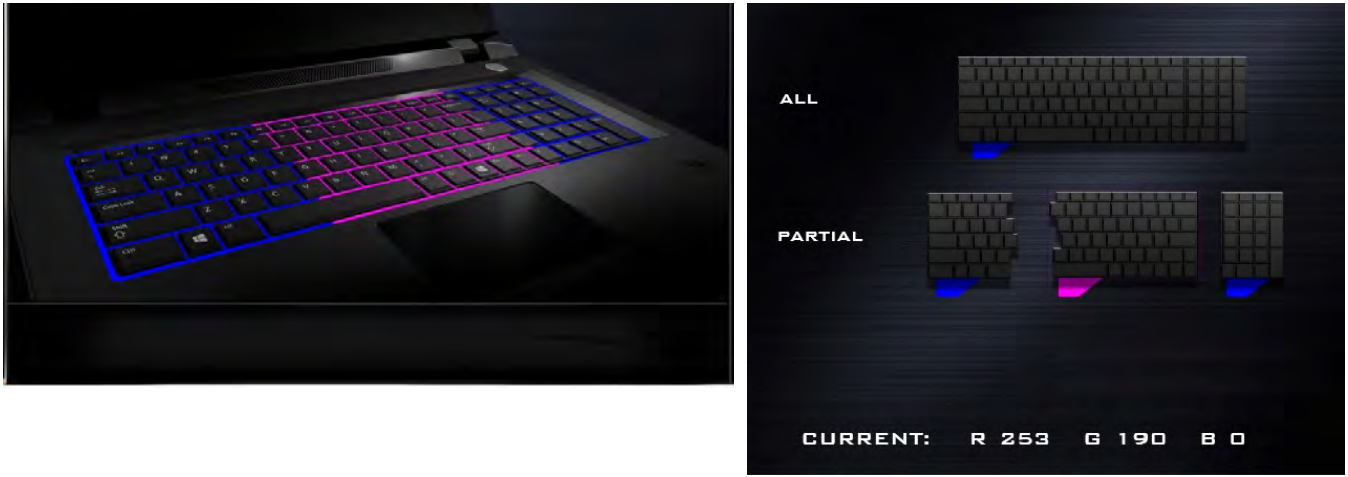


Figure 1 - 9 **- Preview & Keyboard LED Sections**

Sets

The application allows you to save up to 3 sets of color and effect combinations. Click **Save** when exiting the application to retain the settings.

Figure 1 - 10 **- Sets**

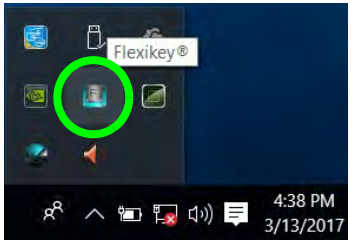
Save & Exit

Click **Exit** to quit the application without saving, or **Save** to exit and retain the settings.

Figure 1 - 11 **- Save & Exit**

Flexikey® Application

The **Flexikey®** application is a quick hotkey configuration application, which allows you to **assign a single key** to **launch multiple key combinations**, or to **launch programs and applications**, to **create text macros** and to **disable** certain keys. The application can also be used to **configure the mouse buttons** to create hotkeys for gaming etc. All the configuration settings are retained under (up to12) **profiles** to which the settings are applied. Click **Flexikey®** in the **Gaming** section of the Control Center, or the **click the icon** in the notification area of the taskbar, to launch the application (see ***Appendix B*** for full details).



Flexikey® **Enabled**

Flexikey® **Disabled**

Note that the Backlight tab will only appear for colored LED keyboards.

Figure 1 - 12 **- Flexikey® Hotkey Application**

Flexikey® Application Features:

For full details see *“Flexikey® Application” on page B - 8*.

- **EXPRESS KEY** - This feature allows you to configure a single key (or mouse click) to send multiple key combinations, or to create more useful shortcut keys This is useful in gaming or when using applications which have a complex set of keyboard shortcuts.
- **LAUNCH APP** - This simply assigns single keys (or mouse clicks) to launch any program’s or application’s executable file.
- **EXPRESS TEXT** - With this you can assign single keys (or mouse clicks) to send commonly used strings of text.
- **DISABLE** - Use this function to disable any keyboard keys or mouse buttons.
- **STATISTICS** - Use this to quickly record keys in use in any application, and to disable unused keys.

Windows Logo Keyboard Shortcut

Use the Windows logo key **+ D key combination** to switch between the Start screen and Windows Desktop.

Menu/Application Keyboard Shortcut

When the Desktop app is running you can use the Menu/Application key on the keyboard to display the context menu as per a mouse right-click.

Keyboard Shortcuts

The following Windows Logo Key (Winkey) keyboard shortcuts are useful for navigation/operation in ***Windows 10***.

Windows Logo Key +	Description
Tap Winkey	Toggle the **Start** menu
A	Open the **Action Center**
B	Select the **Taskbar Notification Area**
C	Launch **Cortana** (in listening mode)
D	Toggle the **Desktop**
E	Launch **File Explorer** (Quick Access tab)
+ Number (1, 2, etc)	Launch an application from the taskbar (numbered from left to right)

Table 1 - 4 **- Keyboard Shortcuts**

Function Keys & Visual Indicators

The **function keys** (F1 - F12 etc.) will act as **hot keys** when pressed while the **Fn** key is held down.

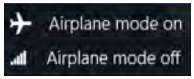
Keys	Function/Visual Indicators		Keys	Function/Visual Indicators	
Fn + ! 1	Fan Control Toggle Automatic / Full Power		Fn + Esc	**Control Center** Toggle (see over)	
Fn +	Play/Pause (in Audio/Video Programs)		Fn + F7	Display Toggle	
Fn + F1	Touchpad Toggle		Fn + F8 F9	Brightness Decrease/Increase	
Fn + 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	Airplane Mode Toggle	
Fn + F4	For Backlight Keyboards Only Toggle Off/High/Low		Fn + F12	Sleep Toggle	
Fn + F5 F6	Volume Decrease/Increase				

Table 1 - 5 **- Function Keys & Visual Indicators**

Front & Rear Views

Figure 1 - 13
Front & Rear Views

1. LED Power Indicators
2. Speakers
3. Vent/Fan Intake

Overheating

To prevent your computer from overheating make sure nothing (e.g. the computer's AC/DC adapter placed too close to a vent) blocks the vent(s)/fan intake(s) while the computer is in use.

Right View

Figure 1 - 14
Right View

1. Multi-In-1 Card Reader
2. 1 * Type-A USB 3.0 Port (USB 3.1 Gen1)
3. 1 * Type-C USB 3.0 Port (USB 3.1 Gen1) - See Sidebar
4. Mini DisplayPort 1.3
5. Mini DisplayPort 1.2
6. HDMI-Out Port
7. RJ-45 LAN Jack
8. DC-In Jack
9. Security Lock Slot

Multi-in-1 Card Reader

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

MMC (MultiMedia Card) / RSMMC
SD (Secure Digital) / Mini SD / SDHC / SDXC

USB 3.0 (USB 3.1, Gen1) Type A OR C Ports OR USB 2.0 Port

This model includes 3 * USB 3.0 (USB 3.1, Gen1 ports) ports and 1* USB 2.0 port. The USB 2.0 port is the larger black port. The Type-A USB 3.0 (USB 3.1, Gen 1 ports) are the larger blue color ports. The Type-C USB 3.0 (USB 3.1, Gen 1 port) is the smaller black port. ***2 * USB 3.1 (Gen 2) ports are available as a factory option.***

HDMI Port

Note that the HDMI Port support video and audio signals to attached external displays.

USB Ports

Note that the connections to the USB ports only fit one way, do not force them.

Mini Display Ports / HDMI Port

All external and internal displays (up to 4 active displays) can be configured from **Windows** by using the **Display (**page ***C - 6*****)** control panel or the **+ P** (or **Fn + F7 -** page ***C - 5***) key combination. In addition to the ***Windows*** controls, use any of the following to configure external displays attached to a particular port.

Mini Display Port 1.3 1: If you wish to configure an external display connected to **Mini Display Port 1.3** use the **NVIDIA Control Panel (see *"NVIDIA Control Panel" on page C - 14***) to configure the display configuration.

Mini Display Port 1.2 2: If you wish to configure an external display connected to **Mini Display Port 1.2** use the **Intel HD Graphics control panel (see *"Intel® HD Graphics Control Panel" on page C - 34***) to configure the display configuration.

HDMI Port 3: If you wish to configure an external display connected to **the HDMI Port** use the **NVIDIA Control Panel (see *"NVIDIA Control Panel" on page C - 14***) to configure the display configuration.

Note that this computer supports **virtual reality (VR) headsets**, however VR headsets must be connected to either the **Mini Display Port 1.3** 1 or the **HDMI Port** 3.

See ***Appendix C*** for full information on external display configuration.

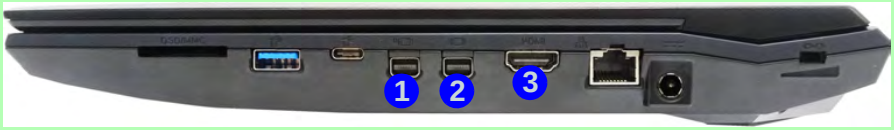


Figure 1 - 15 **- Right Side View (Mini Display Ports & HDMI Port Highlighted)**

Left View

Figure 1 - 16
Left View

1. Vent/Fan Intake
2. 1 * Type-A USB 3.0 Port (USB 3.1 Gen1)
3. 1 * Type-A USB 2.0 Port
4. Microphone Jack
5. Headphone Jack

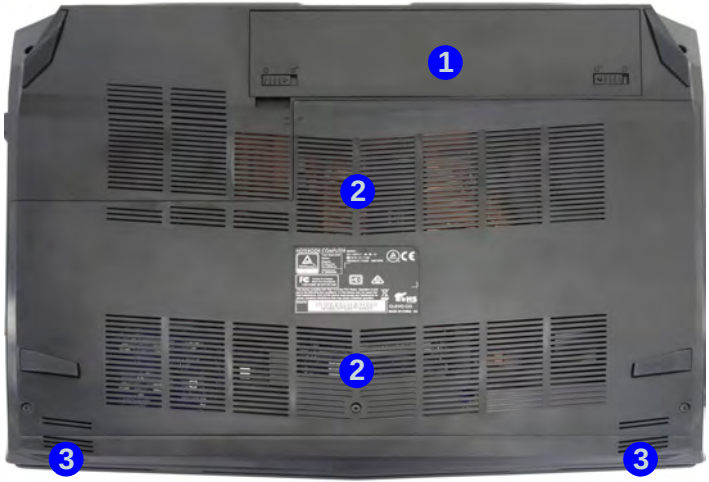
USB 3.0 (USB 3.1, Gen1) Type A OR C Ports OR USB 2.0 Port

This model includes 3 * USB 3.0 (USB 3.1, Gen1 ports) ports and 1* USB 2.0 port. The USB 2.0 port is the larger black port. The Type-A USB 3.0 (USB 3.1, Gen 1 ports) are the larger blue color ports. The Type-C USB 3.0 (USB 3.1, Gen 1 port) is the smaller black port. ***2 * USB 3.1 (Gen 2) ports are available as a factory option.***

Bottom View

Figure 1 - 17
Bottom View

1. Battery
2. Fan Outlet/Intake
3. Speakers



Overheating

To prevent your computer from overheating make sure nothing (e.g. the computer's AC/DC adapter placed too close to a vent) blocks the vent(s)/fan intake(s) while the computer is in use.

Bottom Cover Removal Warning

Do not remove any cover(s) and /or screw(s) for the purposes of device upgrade as this may violate the terms of your warranty.

If you need to replace/remove the hard disk/RAM/ optical device etc., for any reason, please contact your distributor/supplier for further information.

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.

Windows 10 Start Menu

Most of the apps, control panels, utilities and programs within ***Windows 10*** can be accessed from the **Start Menu** by clicking the icon in the taskbar in the lower left corner of the screen (or by pressing the **Windows Logo Key** on the keyboard).

Windows Screens

Note that the ***Windows*** screens on the following pages are included as a basic guide and introduction to navigating around ***Windows 10***.

However note that these screens are always subject to change, upgrade and redesign. Check the Microsoft website for details.

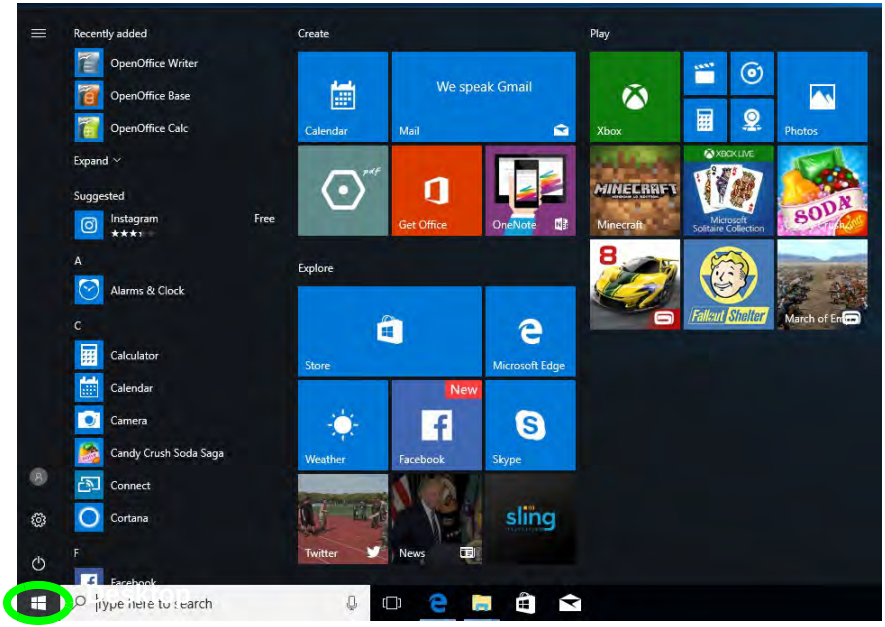


Figure 1 - 18 **- Windows Start Menu**

Right-Clicking the Windows Logo In Start Menu

Right-click the Start Menu icon (or use the **Windows Logo Key** + **X** key combination) to bring up an advanced **Context Menu** of useful features such as Apps and Features, Power Options, Task Manager, Search, File Explorer, Device Manager, Computer Management and Network Connections etc.

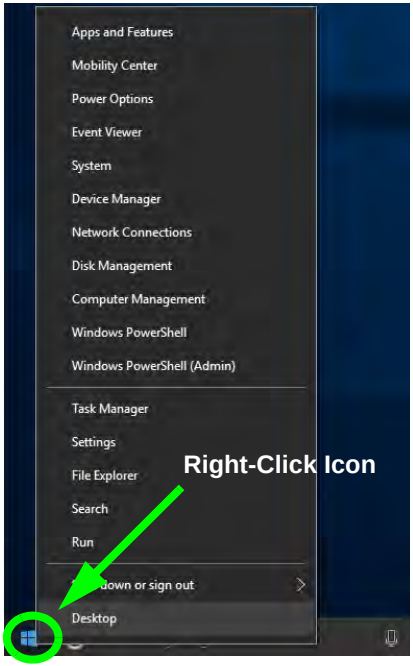


Figure 1 - 19 **- Right-Click Windows Logo in Start Menu**

Start Menu Apps & Tiles

The **Windows 10** Start Menu will contain a number of apps, and many more will be installed as you add more applications etc. Not all of these apps can fit on the screen so may need click and drag the handles at the edge of the screen to expand the menu in order to view all the apps (you can use the scroll bar to move up and down the screen).

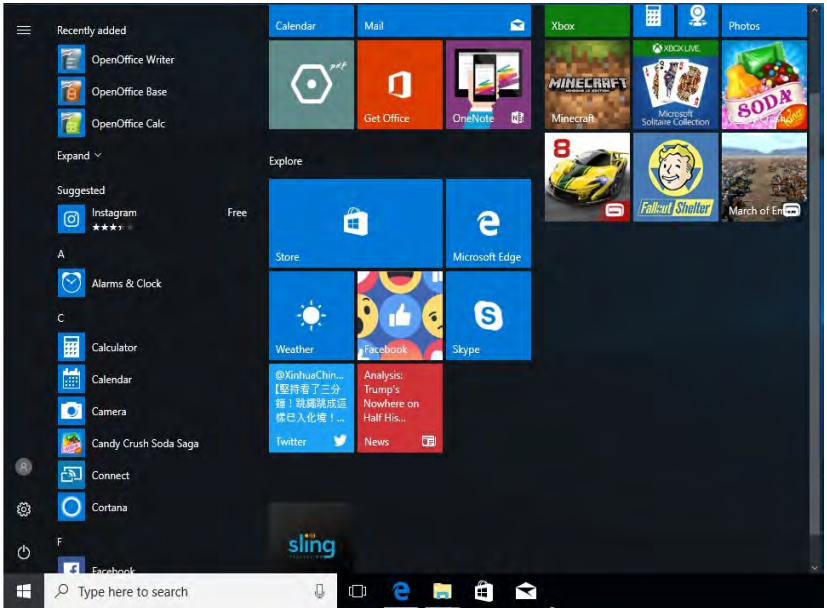


Figure 1 - 20 **- Expanding the Start Menu**

Pining/Unpinning Apps & Programs to/from the Start Menu

To make things easy to find you can add and remove tiles for apps and programs to the Start Menu. Right-Click on a program's icon and select **Pin to Start** from the drop-down menu. To remove an app or program from the Start Menu right-click the icon and select **Unpin from Start**. You can use the same method to **pin apps/programs to/from the taskbar** (select pin to taskbar/unpin this program from the taskbar).

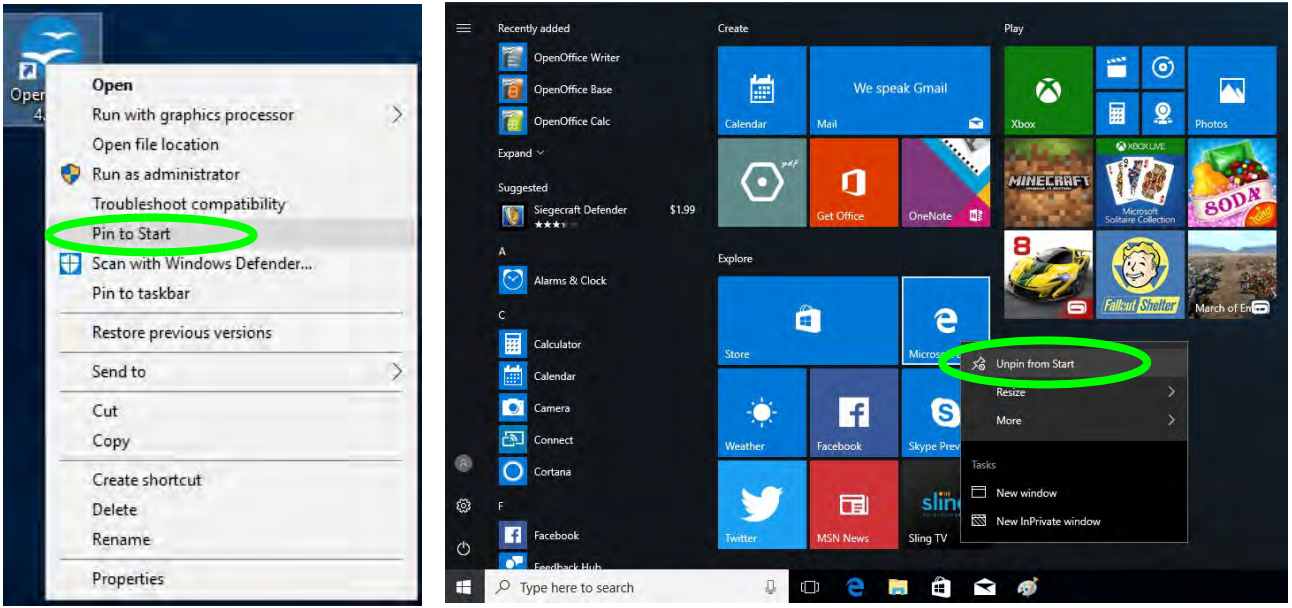


Figure 1 - 21 **- Pin to Start/Unpin from Start**

Windows 10 Control Panel

In many instances throughout this manual you will see an instruction to open the **Control Panel**. The Control Panel can be accessed in a number of ways in ***Windows 10***.

- Select ***Control Panel*** under the **Windows System** item in the **Start Menu**.
- Type ***Control Panel*** into the ***Search*** box in the taskbar and click on the icon when it pops up.
- You can pin the ***Control Panel*** tile to ***Start*** or ***taskbar.***

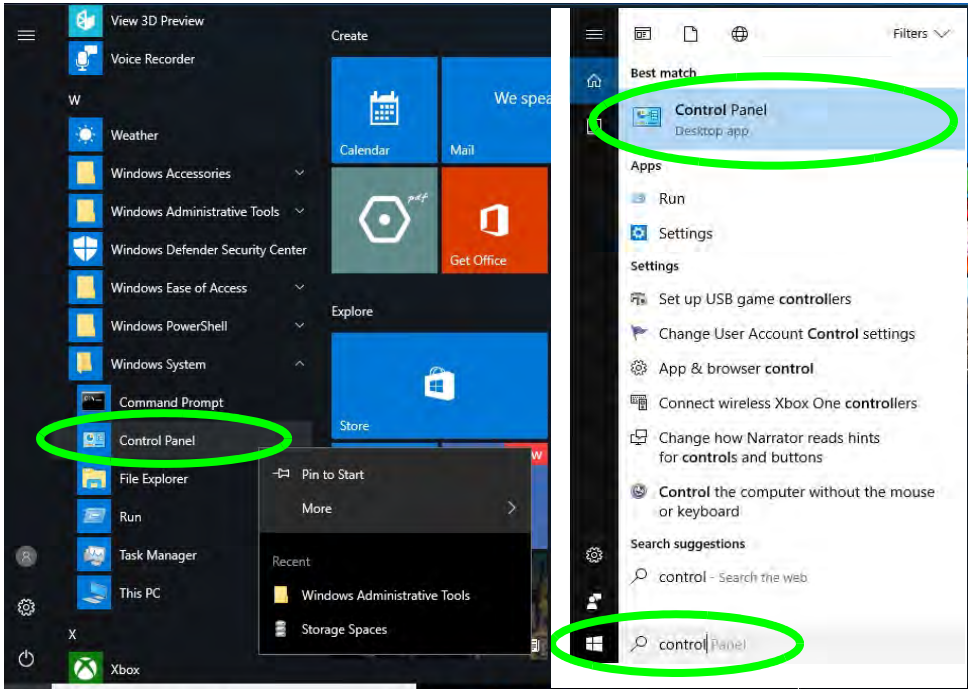


Figure 1 - 22 **- Windows 10 Control Panel Access**

Settings

The **Settings** item in the Start Menu (and also as an App) gives you quick access to a number of system settings control panels allowing you to adjust settings for System, Devices, Network & internet, Personalization, Apps, Accounts, Time & language, Gaming, Ease of Access, Privacy and Update & security.

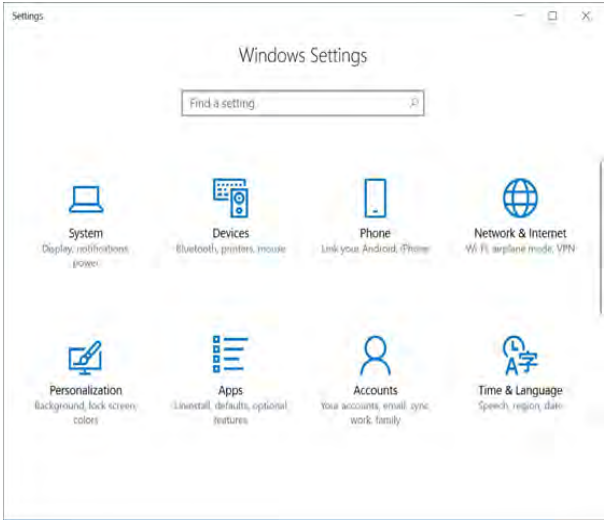


Figure 1 - 23 **- Settings**

Windows 10 Taskbar

In many instances throughout this manual you will see an instruction to access the **notification area of the taskbar**. The notification area of the taskbar in the bottom right of the screen. Some of the Control Panels and applications referred to throughout the course of this manual can be accessed from here.

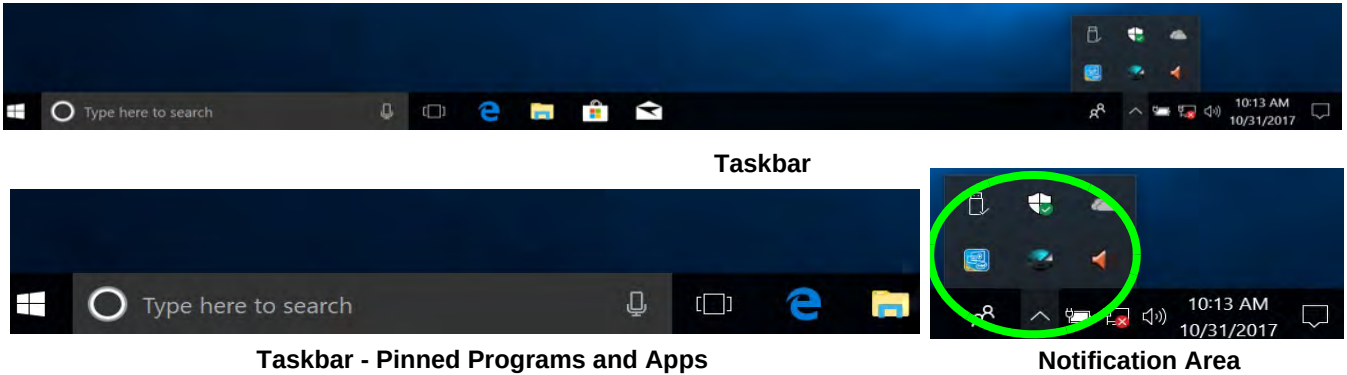


Figure 1 - 24 **- Taskbar**

You can pin/unpin apps to/from the taskbar in much the same way as you can to the Start screen (see ***"Pining/Unpinning Apps & Programs to/from the Start Menu" on page 1 - 30***).

Action Center

The **Action Center** appears as a vertical panel on the right side of the screen when you swipe in from the right or click the button in the notification tray. This gives you access to commonly needed functions like Network, All Settings, Airplane Mode, and Project etc.

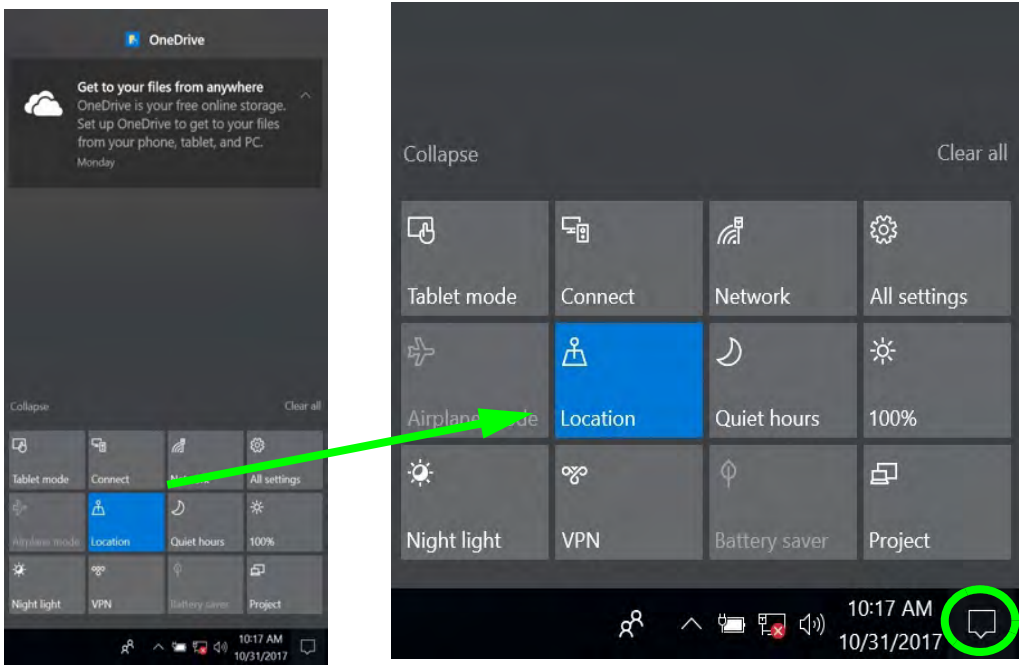


Figure 1 - 25 **- Action Center**

Video Features

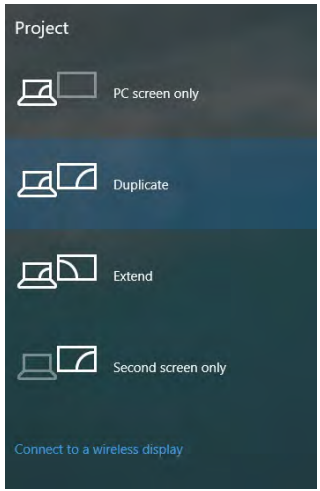
You can switch display devices, and configure display options, from the **Display settings** (click the **Start Menu** and click **Settings** > **System** or right-click the desktop and select **Display settings**) control panel (see page *1 - 37*). In ***Windows 10*** it is possible to quickly configure external displays from the **Project** menu (press the Windows logo key on your keyboard and the **P** key or **Fn + F7**).

Microsoft Hybrid Graphics

Your computer will feature **Microsoft Hybrid Graphics** switchable graphics technology. This seamless technology is designed to get best performance from the graphics system while allowing longer battery life, without having to manually change settings. The computer's operating system (and some applications) will **automatically** switch between the integrated UMA (Unified Memory Architecture) GPU (**iGPU**) and the discrete GPU (**dGPU**) when required by the applications in use. This switch is seamless to the user.

To Configure Displays using Project

1. Attach your display to the appropriate port, and turn it on.
2. Press the + **P** (or **Fn + F7**) key combination.
3. Click on any one of the options from the menu to select **PC screen only**, **Duplicate**, **Extend** or **Second screen only**.
4. You can also click **Connect to a wireless display** at the bottom of the **Project** screen and follow the steps to connect to any wireless enabled display.



Configuring External Displays

All external and internal displays (up to 4 active displays) can be configured from **Windows** by using the **Display** (page *C - 6*) control panel, or the + **P** (or **Fn + F7** - page *C - 5*) key combination.

External displays attached to the HDMI port or Mini DisplayPort 1.3 can be configured by using the **NVIDIA** (page *C - 23*) control panel.

External displays attached to the Mini DisplayPort 1.2 can be configured by using the **Intel(R) HD Graphics control panel** (page *C - 47*).

Intel or NVIDIA Video Driver Controls

More detailed video controls are provided by the **Intel/NVIDIA Control Panel** (for more detailed information see *Appendix C*).You can also access the control panel by right-clicking the desktop and selecting **Intel(R) Graphics Properties/NVIDIA Control Panel.**

Figure 1 - 26 **- Project (Devices)**

To access the **Display Settings:**

1. You can quickly adjust the display by right-clicking the desktop and selecting **Display Settings**.
2. Adjust the settings for **Brightness and color**, **Scale and layout**, **Resolution** and **Orientation** from the menus.
3. When and external display is attached you can arrange the display configuration from the **Multiple Displays** menu, and arrange the configuration from **Select and rearrange displays**.
4. Click **Apply** to save any changes made.

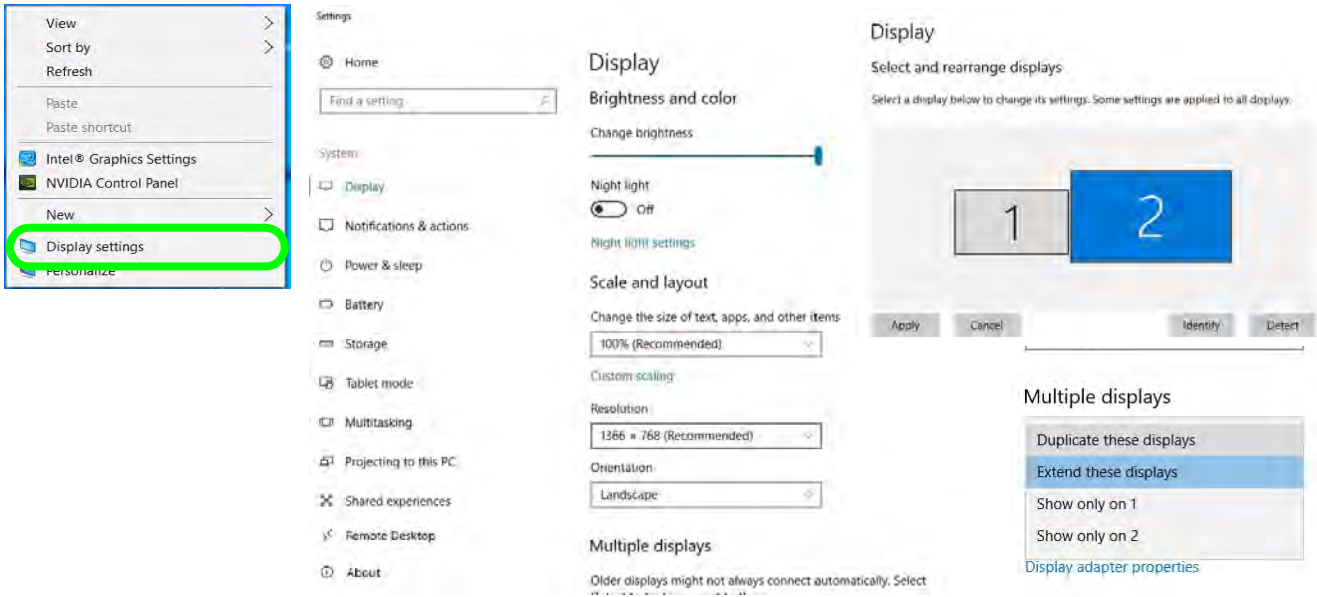


Figure 1 - 27 **- Display Settings**

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

1. Right-click the desktop and select **NVIDIA Control Panel** 1 (***Figure 1 - 28***).

OR

2. Double-click the icon 2 (***Figure 1 - 28***) in the ***Windows*** control panel.

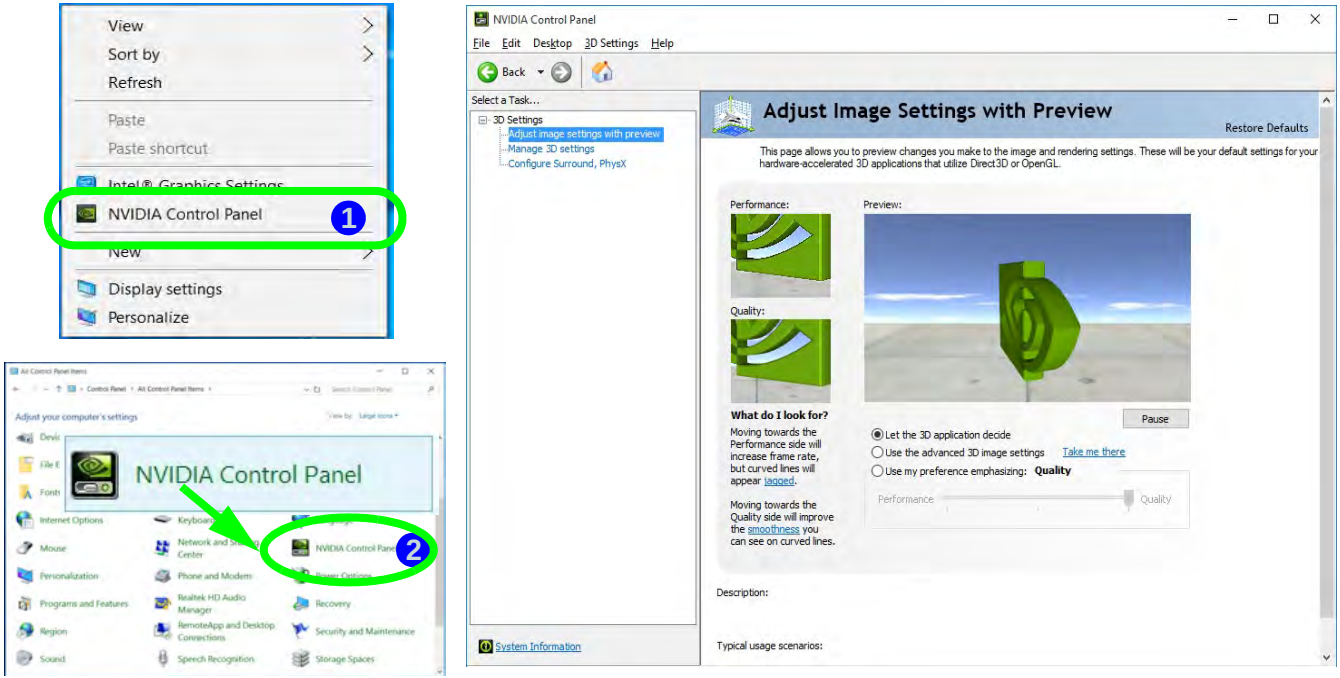


Figure 1 - 28 **- NVIDIA Control Panel**

To access the ***Intel(R) HD Graphics Control Panel***:

1. Right-click the desktop and select **Intel(R) Graphics Settings** from the menu.

OR

2. Click the icon in the notification area of the Desktop taskbar and select **Intel(R) Graphics Settings** from the menu.

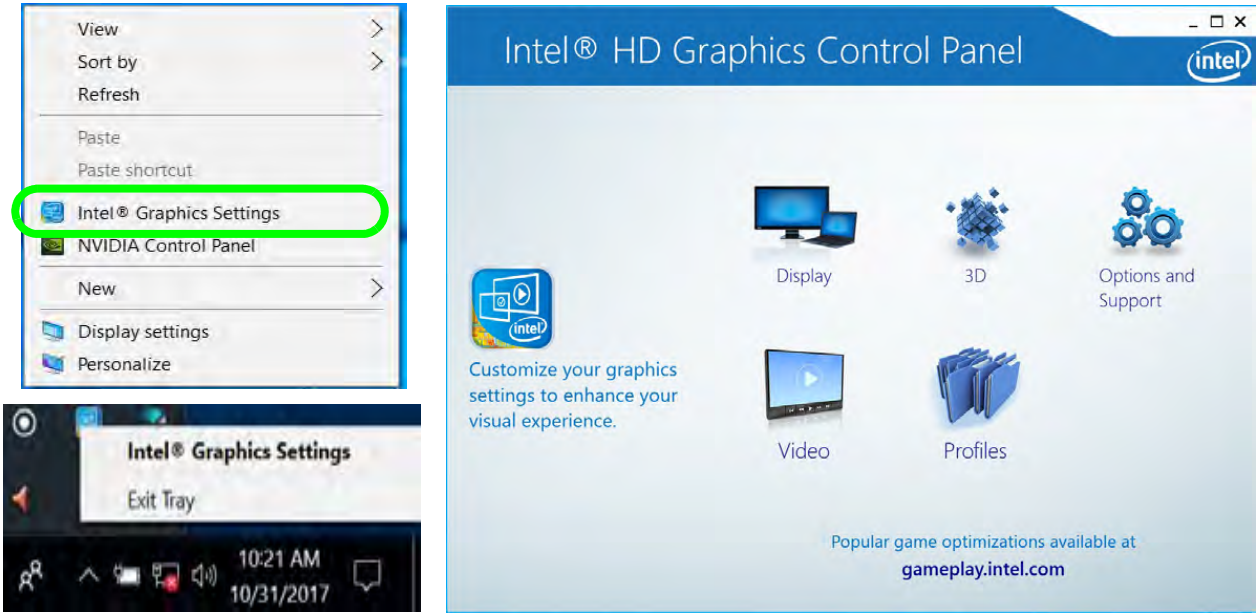


Figure 1 - 29 **- Intel® HD Graphics Control Panel**

Minimum Screen Resolution Settings

1. ***Windows 10*** has minimum screen resolution requirements.
2. Right-click a blank area of the Desktop and select **Display Settings**.
3. Adjust the **Resolution** to make sure that it is at least **1024 * 768,** although preferably **1366 * 768** or above.

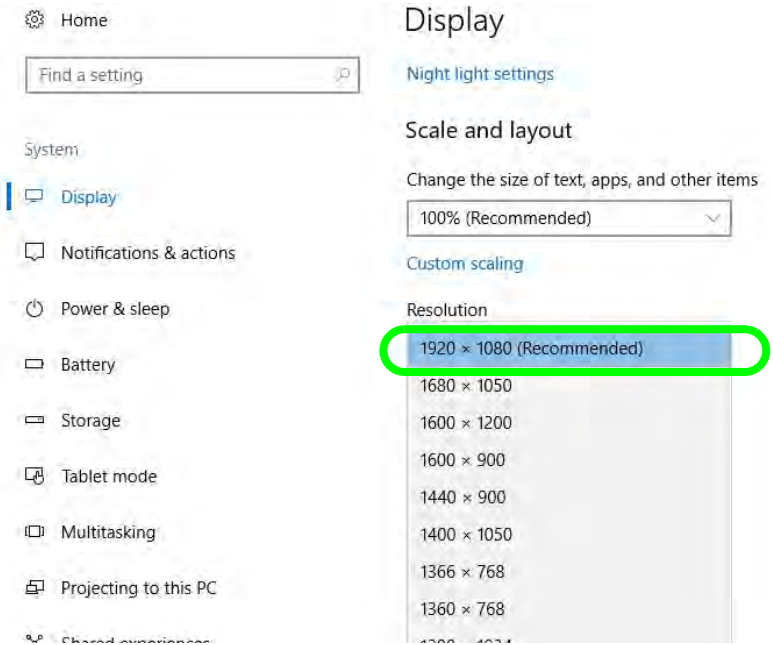


Figure 1 - 30 **- Display (Resolution)**

Power Options

Power Options (Hardware and Sound) can be accessed from the Control Panel. The **Power** button item in **Start Menu** (or the context menu) may be used to **Shut down** or **Restart** (you can also add **Hibernate/Sleep** to the menu - see page *1 - 42*). To fully control all the power options (including Hibernate mode) go to the **Power Options** control panel and configure the power button, sleep button and lid to perform the function selected.

Using the Power Button

1. Go to the **Start Menu**.
2. Click the **Power button** .
3. Select the power state required from the menu.

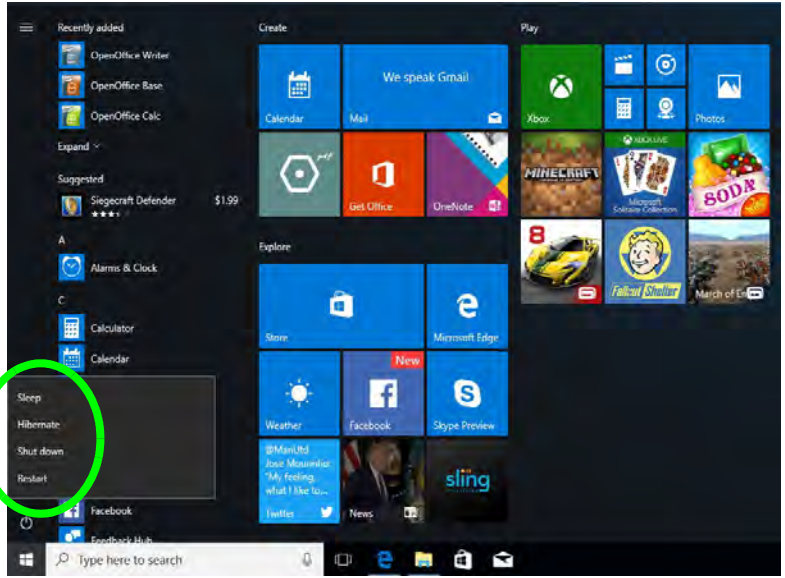
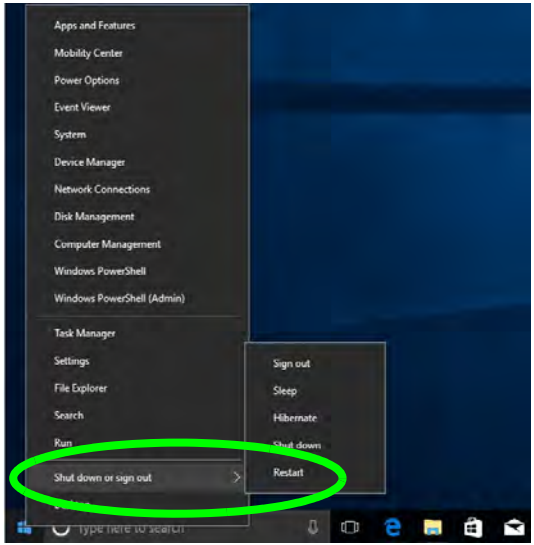


Figure 1 - 31 **- Shut Down/Restart**

You can also use the **context menu** (right-click the Start Menu icon or press the Windows logo + **X** key combination) to **Sign out, Sleep**, **Hibernate**, **Shut down**, and **Restart**.



Adding Hibernate/Sleep to the Power Men

1. Go to the **Power Options** (**Hardware and Sound**) control panel (or go to **Windows Settings > Power & sleep > Additional power settings**).
2. Click **Choose what the power buttons do**.
3. Click "***Change settings that are currently unavailable***" Change settings that are currently unavailable.
4. Click to put a check in the **Hibernate/Sleep** box under **Shutdown settings**.
5. Click **Save Changes** and close the control panel.

Figure 1 - 32 **- Context Menu Shut Down or sign out**

Ctrl + Alt + Delete Key Combination

You can use the **CTRL + ALT + DEL** key combination to bring up a full-screen displaying **Lock**, **Sign out**, **Change a password, Task Manager and Switch User**. If you click the **Power** icon in the lower right corner of the screen a power management option menu appears to display **Sleep**, **Hibernate**, **Shut down**, and **Restart**.

Chapter 2: Storage Devices, Mouse, & Audio

Overview

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

- Hard Disk Drive/Solid State Drive
- Multi-in-1 Card Reader
- Audio Features
- Touchpad and Buttons/Mouse

Bottom Cover Removal Warning

Do not remove any cover(s) and /or screw(s) for the purposes of device upgrade as this may violate the terms of your warranty.

If you need to replace/remove the hard disk for any reason, please contact your distributor/supplier for further information.

Hard Disk Drive/Solid State Drive

The hard disk drive (HDD) and/or solid state drive (SSD) is used to store your data in the computer. The hard disk can be taken out to accommodate other serial (SATA) hard disk drives (see ***"Storage" on page D - 2*** for specification information), however you will need to contact your distributor/supplier to do this in order to avoid violating the terms of your warranty.

Multi-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" on page 4 - 7*).

- MMC (MultiMedia Card) / RSMMC
- SD (Secure Digital) / Mini SD / SDHC / SDXC

Note: Some of these cards require PC adapters that are usually supplied with the cards.

Figure 2 - 1
Right View

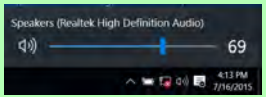
1. Card Reader

Push-Push Card Reader

The card reader features a push-in/push-out card insertion and ejection mechanism. Simply push the card to insert and eject it, however Ms Duo cards require an adapter.

Volume Adjustment

The sound volume level can be clicking using the volume control icon in the ***notification area of the taskbar***.



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 notification area/control panel (right-click the taskbar notification area icon to bring up an audio menu). The volume may also be adjusted by means of the **volume icon in the taskbar or the audio slider in the Settings menu (see sidebar)**.

Right-click the icon to access the menu above.

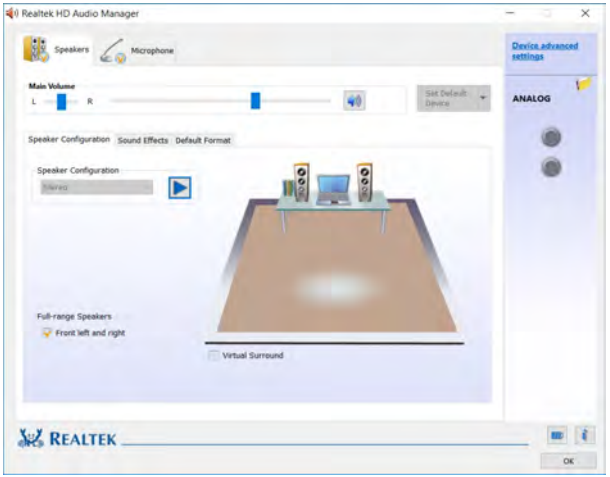


Figure 2 - 2
Realtek Audio Manager

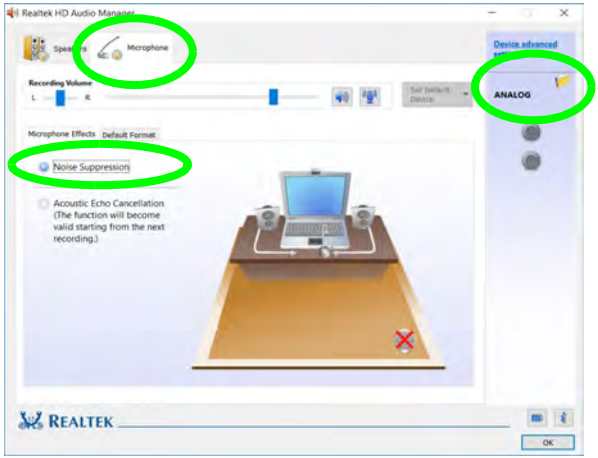
See ***"HDMI Audio Configuration" on page C - 8*** for a description of the audio configuration when connecting an HDMI supported display device.
See ***"Sound Blaster Cinema 3" on page 6 - 40*** for more information on the Sound Blaster Audio setup.

Setup for Audio Recording - Realtek Standard

(***For systems supporting Cortana see over***)

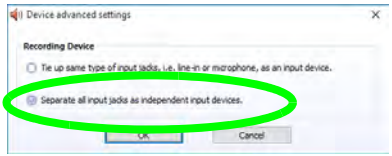
To record audio sources on your computer at optimum quality follow the instructions below:

1. Go to the **Control Panel**.
2. Click **Realtek HD Audio Manager** (**Hardware and Sound**), 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.



Sound Blaster Cinema 3 Audio

Note that **you will need to install the Sound Blaster Cinema 3 audio application in order to get maximum audio performance. See *"Sound Blaster Cinema 3" on page 6 - 40*.**



Device Advanced Settings

For the purposes of recording it is recommended that you **enable "Separate all input jacks as independent input devices" in Device advanced settings**.

This will help prevent a situation where the internal microphone seems to be disabled, or where sound can still be heard from the speakers even though the headphones are plugged into the headphone jack.

Figure 2 - 3
Realtek Audio Manager - Recording Setup (Standard)

Setup for Audio Recording - For Cortana

(***For standard Realtek systems see previous page***)

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

1. Click **Control Panel** and make sure you are in **Classic View**.
2. Click **Realtek HD Audio Manager** (or right-click the notification area icon and select **Sound Manager**).
3. Click the **Microphone** tab and adjust the **Recording Volume** level to around **60**, and enable any of the effects suitable for your environment to obtain the optimum recording quality.
4. Click **OK** to close the control panel and save the settings.

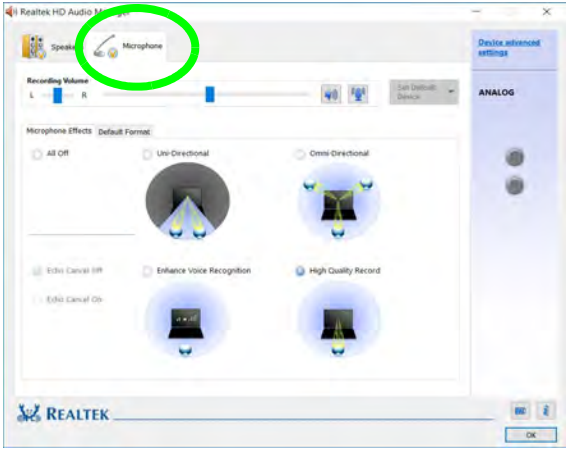


Figure 2 - 4
Realtek Audio Manager - Recording Setup (Cortana)

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. Make sure you have installed the Touchpad driver (see *"Touchpad" on page 4 - 8*).

Touchpad Sensitivity

The **mouse button zones** at the bottom of the pad are defined by the line at the **bottom** of the pad, and the **left and right buttons** are divided roughly down the middle. Press the left button zone for a left click, and right button zone for a right click action.

Mouse Driver

If you are using an external mouse your operating system may be able to auto-configure your mouse during its installation or only enable its basic functions. Be sure to check the device's user documentation for details.

Touchpad Cleaning

In order to improve pad performance it is necessary to keep the surface clean and free of fingerprints and marks etc.

Use a soft dry cleaning cloth to keep the pad surface clean.

Disabling the Pad

Use the **Fn + F1** or Control Center button to disable the Touchpad.

Disabling the Touchpad

If you need to disable the Touchpad for any reason (e.g. you may find that when using the computer's internal keyboard you accidentally trigger the Touchpad when resting your wrists or palms on it) you can do so by using **Fn + F1** key combination.

Mouse Properties Control Panel

You can configure the functions from the **Mouse** control panel in ***Windows*** as follows.

1. Right-click the **Start Menu** icon.
2. Select **Control Panel** under the **Windows System** item in the **Start Menu**.
3. Click **Mouse** (**Hardware and Sound > Devices and Printers**).
4. Click the menu headings tabs to adjust your mouse preferences.

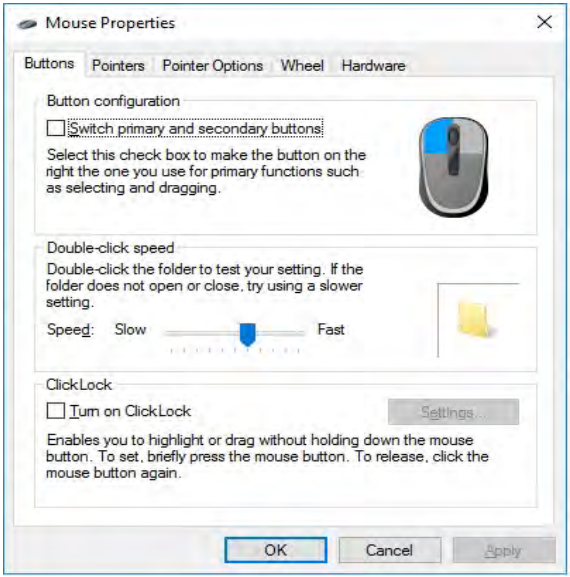


Figure 2 - 5
Mouse Properties Control Panel - Buttons

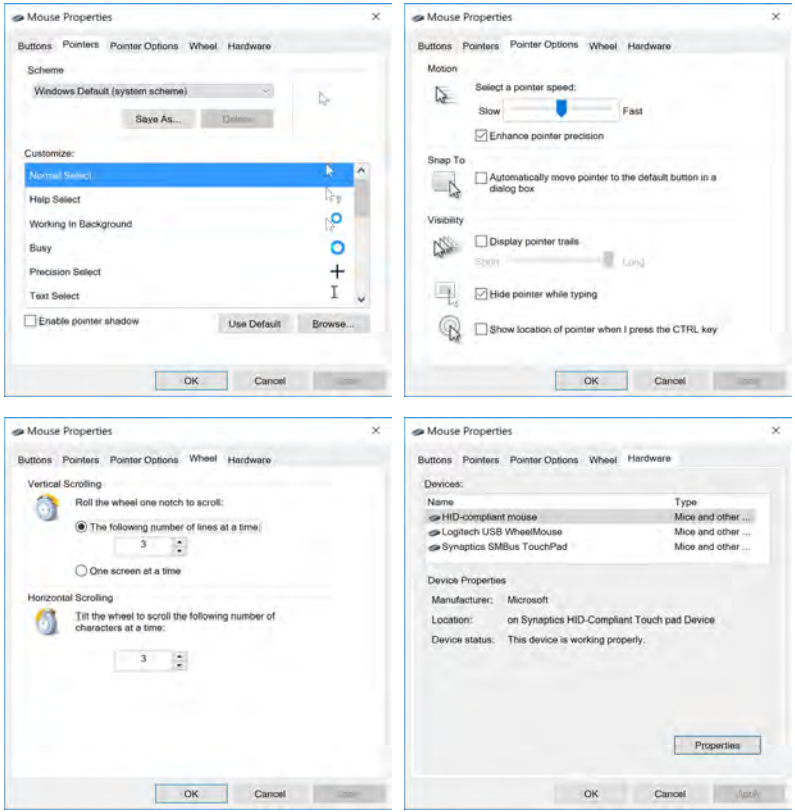


Figure 2 - 6
Mouse Properties Control Panels

Mouse & Touchpad Devices

You can also configure the functions from the **Mouse or Touchpad** control panels in ***Devices*** in the ***Settings*** control panel as follows.

1. Click the **Settings** item in the **Start Menu** (or **All Settings** in the Action Center).
2. Click **Devices**.
3. Click **Mouse** or **Touchpad**.

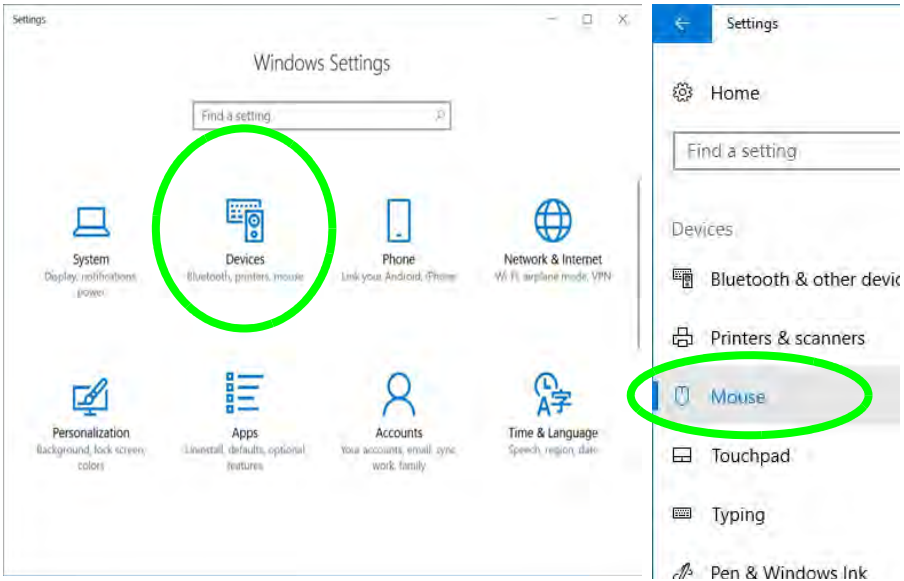


Figure 2 - 7
Windows Settings > Mouse/Touchpad

Mouse Settings

You can select the primary mouse button and scrolling options and access Mouse Properties from Additional mouse options.

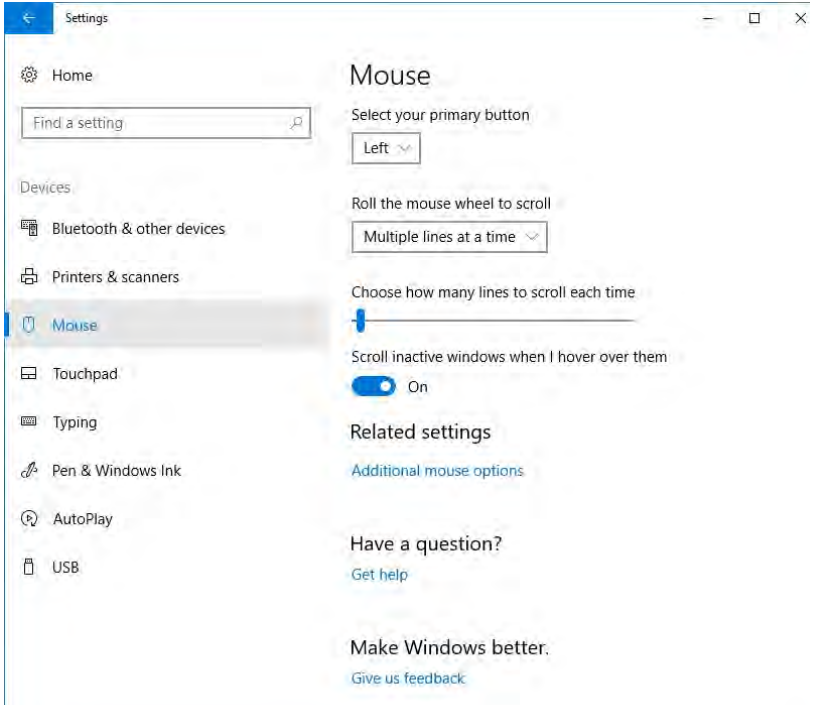


Figure 2 - 8
Windows Settings Mouse

Touchpad Settings

You can disable the Touchpad by clicking the Touchpad button to turn it off.

You can set the system to automatically disable the internal Touchpad when an external USB point device (e.g a USB mouse) is attached. Click "**Leave touchpad on when a mouse is connected**" to off.

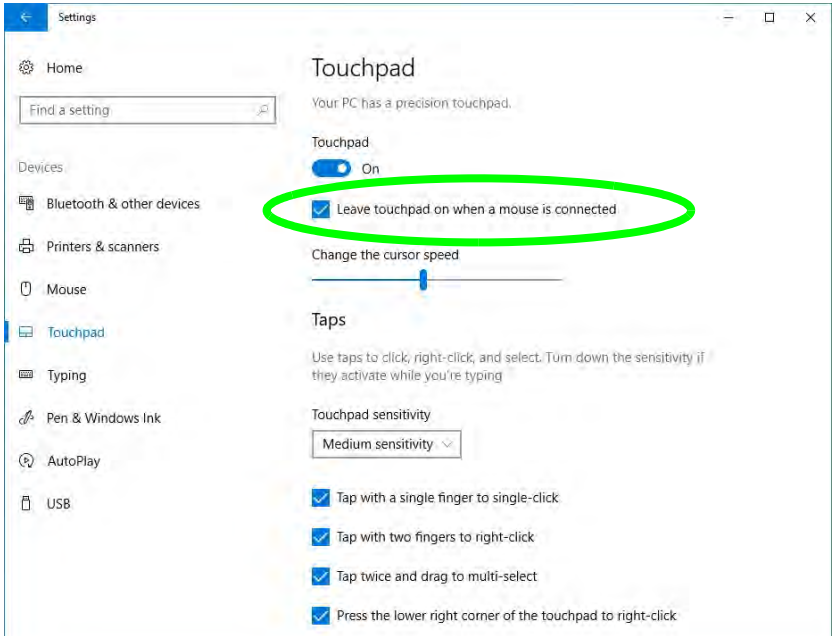


Figure 2 - 9
Windows Settings Touchpad (*Touchpad turned off when mouse connected*)

Touchapd Taps

The **Touchpad Sensitivity** feature helps prevent recognizing taps on the pad by accident, by recognizing when your palm is resting on it or brushing its surface while you are typing.

Click in the check box to enable/disable the different gestures or taps on the surface of the pad to perform specific actions to manipulate documents, objects and applications.

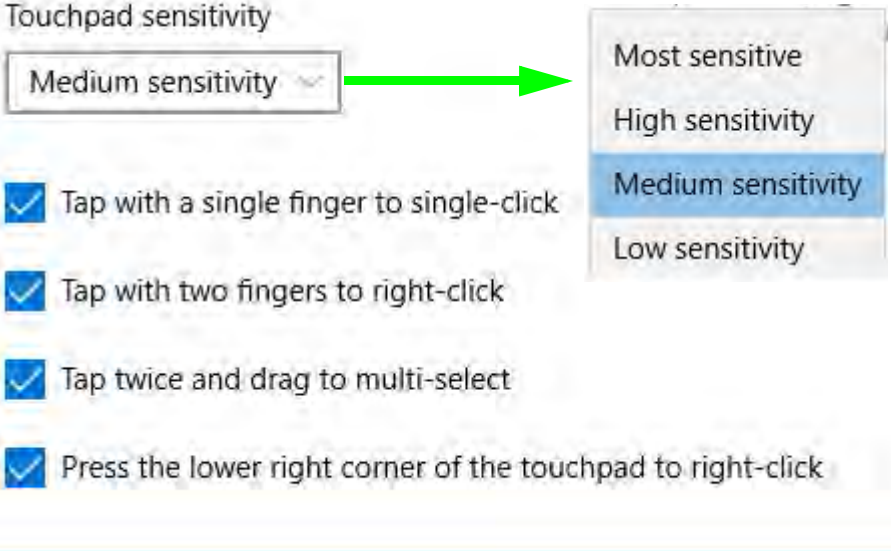


Figure 2 - 10
Windows Settings Touchpad Sensitivity & Taps

Touchapd Scroll and Zoom

Click to enable/disable the **two finger scrolling** and **pinch zooming** gesture.

Figure 2 - 11
Scroll and Zoom/ Scrolling Gesture

The **two-finger scrolling** feature works in most scrollable windows and allows you to scroll horizontally and vertically. Place two fingers, slightly separated, on the Touchpad surface and slide both fingers in the direction required (in a straight continuous motion).

The **two-finger pinch to zoom** gesture can be used to perform the same function as a scroll wheel in ***Windows*** applications that support CTRL + scroll wheel zoom functionality. Place two fingers on the pad (for best results use the tips of the fingers) and slide them apart to zoom in, or closer together to zoom out.

Figure 2 - 12
Zooming Gesture

The **three-finger** and **four-finger swipes** and **taps** can be configured for a number of different functions. Select the appropriate function from the drop-down menu.

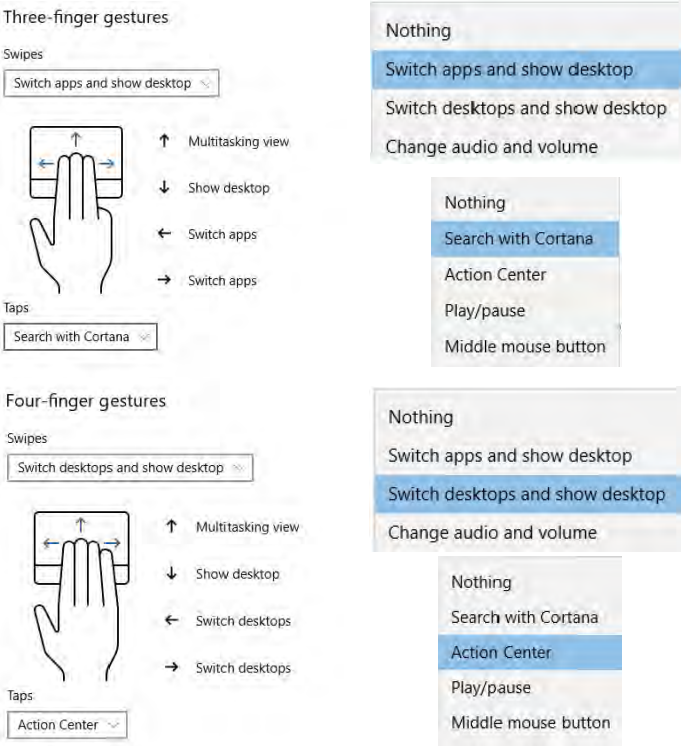


Figure 2 - 13
Three-Finger Gestures (Swipes & Taps)

Figure 2 - 14
Four-Finger Gestures (Swipes & Taps)

The following is an overview of some of the main gestures you can use with your Touchpad, however these can be configured from the Touchpad menus.

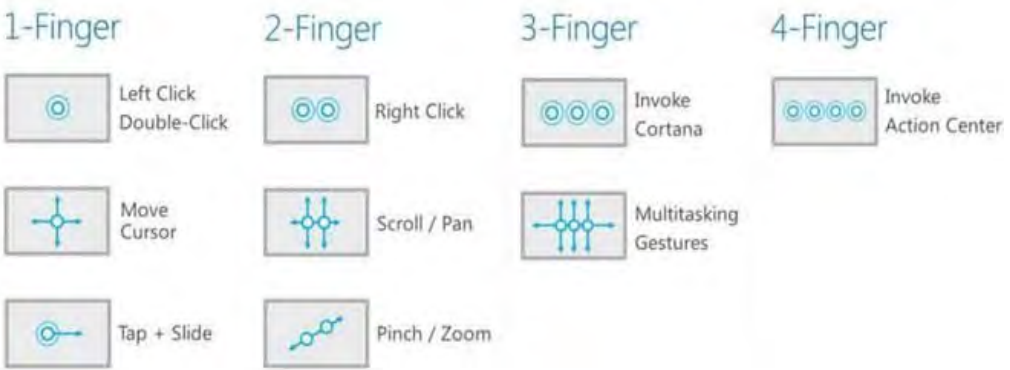


Figure 2 - 15
Touchpad Gesture Examples

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.

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.

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. **When first setting up the computer use the following procedure** (as to safe-guard the computer during shipping, the battery will be locked to not power the system until first connected to the AC/DC adapter and initially set up as below):
   - Attach the AC/DC adapter cord to the DC-In jack on the right of the computer, then plug the AC power cord into an outlet, and connect the AC power cord to the AC/DC adapter and **leave it there for 6 seconds or longer**.
   - Remove the adapter cord from the computer's DC-In jack, and then plug it back in again; the battery will now be unlocked.
2. Raise the lid/LCD to a comfortable viewing angle.
3. 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 ***"Battery FAQ" on page 3 - 21***).

We recommend that you do not remove the battery. For more information on the battery, please refer to ***"Battery Information" on page 3 - 16***.

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** (**Hardware and Sound**) in the ***Windows*** control panel to configure this feature.

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 3 - 9*** for details).

Shutting the Computer Down

Note that you should always shut your computer down by choosing the **Shut down** command as this will help prevent hard disk or system problems. Use the **Power** item in the **Start Menu** and select **Shut down**.

You can also use the **context menu** (right-click the Start Menu icon or press the Windows logo + **X** key combination) to **Sign out, Sleep**, **Hibernate**, **Shut down**, and **Restart**.

If you want to add Hibernate/Sleep to the Power Menu see *"Adding Hibernate/Sleep to the Power Menu" on page 3 - 10*.

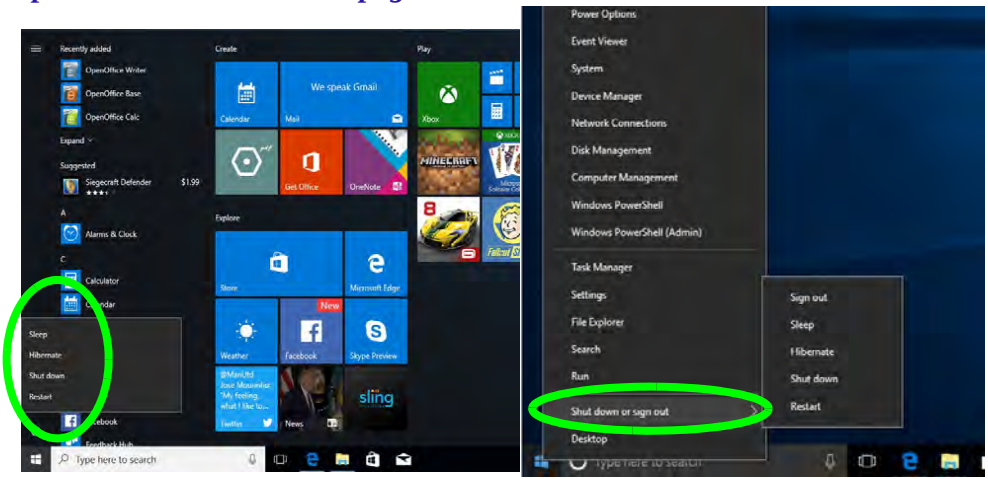


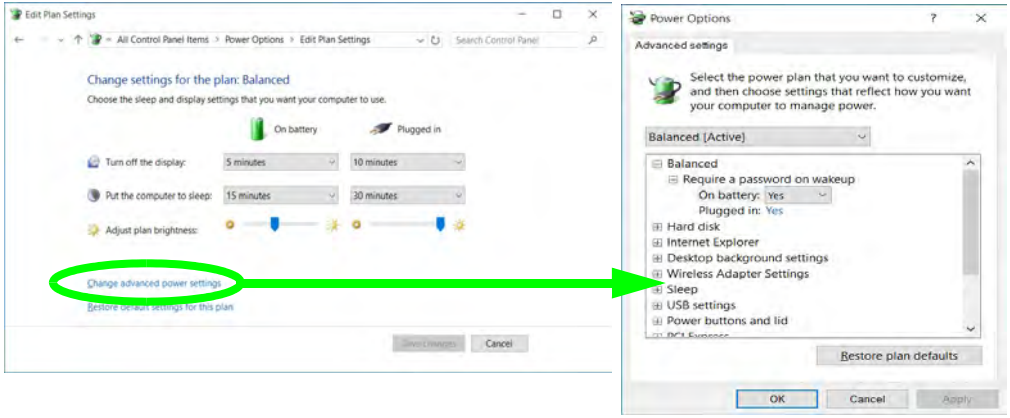
Figure 3 - 1
Shut Down/Restart

Power Plans

The computer can be configured to conserve power by means of **power plans (Control Panel > Power Options)**. 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 3 - 1, on page 3 - 11*** for information on how to resume from a power-saving state.

Password

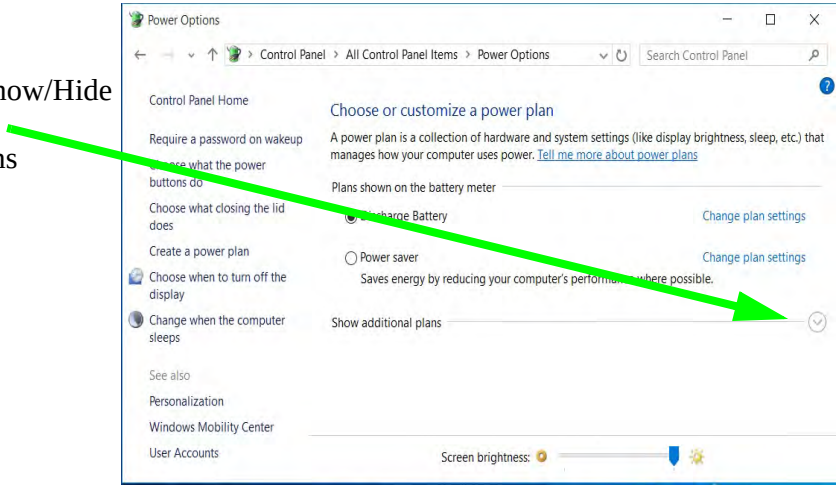
It is recommended that you enable a password on system resume in order to protect your data.

Figure 3 - 2
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 3 - 3
Power Plans



Power-Saving States

You can use power-saving states to stop the computer's operation and restart where you left off. ***Windows 10*** uses the **Sleep, Hibernate** and **Shut Down** power-saving states.

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.

To add **Sleep** to the **Power Menu** see ***"Adding Hibernate/Sleep to the Power Menu" on page 3 - 10***.

Wake On LAN Support

Wake-On-LAN is only supported from **Sleep** or **Hibernate** states ***in Windows***.

If you require your computer to wake up from network activity in Windows then make sure that the computer is either in **Sleep** or **Hibernate**.

Wake-On-LAN is not supported from Shutdown states in ***Windows.***

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. To add **Hibernate** to the **Power Menu** see *"Adding Hibernate/Sleep to the Power Menu" on page 3 - 10*.

Shut down

You should **Shut down** the computer if you plan to install new hardware, 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**.

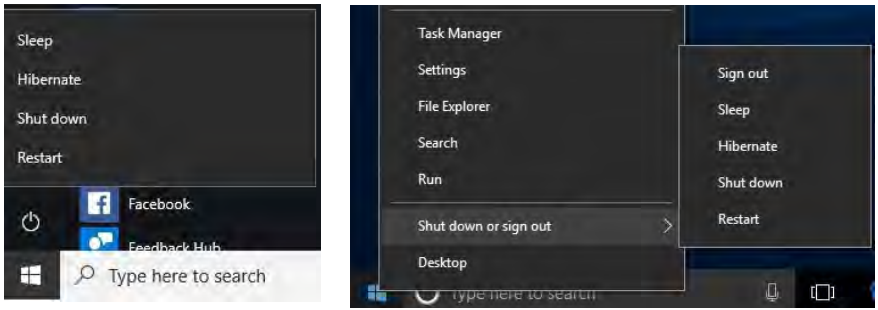
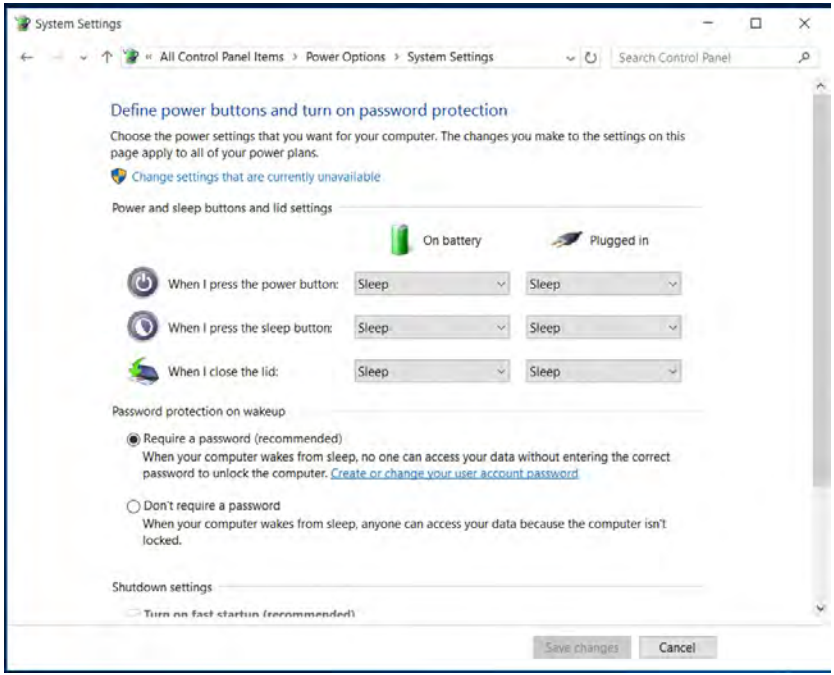


Figure 3 - 4
Power Button & Start Menu Power

Configuring the Power Buttons

The power/sleep button (**Fn + F12** 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 3 - 5
Power Options Define Power Buttons

Adding Hibernate/Sleep to the Power Menu

Add **Hibernate/Sleep** to the **Power Menu** as follows.

1. Go to the **Power Options** (**Hardware and Sound**) control panel.
2. Click "***Change settings that are currently unavailable***" Change settings that are currently unavailable .
3. Click **Choose what the power buttons do**.
4. Click to put a check in the **Hibernate/Sleep** box under **Shutdown settings**.
5. Click **Save Changes** and close the control panel.

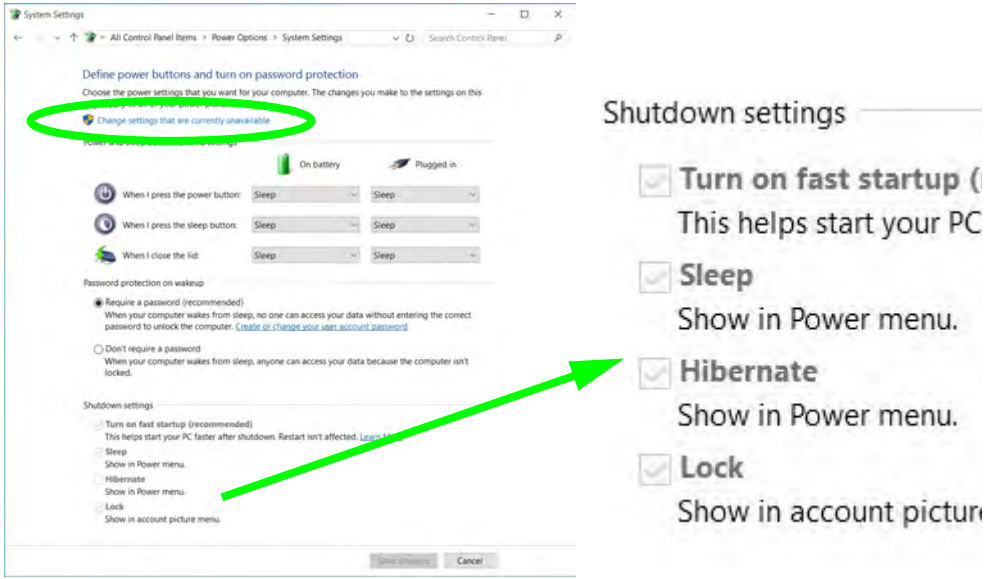


Figure 3 - 6
Power Options Define Power Buttons - Shutdown Settings

Resuming Operation

You can resume operation from power-saving states by pressing the power button, or in some cases pressing the sleep button (**Fn + F12** key combo).

Power Status	Icon Color	To Resume
Power Off	Off	Press the Power Button
Sleep	Blinking White	Press the Power Button Press the Sleep Button (Fn + F12 Key Combo)
Hibernate	Off (battery) Orange (AC/DC adapter)	Press the Power Button
Display Turned Off	White	Press a Key or Move the Mouse/Touchpad

Table 3 - 1
Resuming Operation

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.

Ctrl + Alt + Delete Key Combination

You can use the **CTRL + ALT + DEL** key combination from almost any of the ***Windows 10*** interfaces/Apps to bring up a full-screen displaying **Lock**, **Switch User**, **Sign out, Change a password** and **Task Manager** options. If you click the **Power** icon in the lower right corner of the screen a power management option menu appears to display **Sleep**, **Shut down**, and **Restart**.

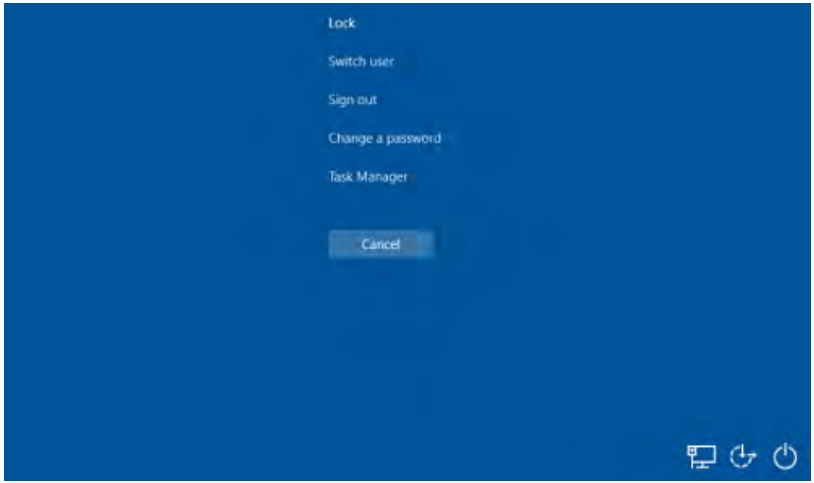


Figure 3 - 7
Ctrl + Alt + Delete Menu

To fully control all the power options (including Hibernate mode) go to the **Power Options** control panel and configure the power button, sleep button and lid to perform the function selected.

Settings Menu Power Controls

The **Settings** item in the **Start Menu** (or via the **Action Center**) gives you access to a number of power settings control panels which enable you to quickly adjust power options. Click **System** to access the menu including the power option settings.

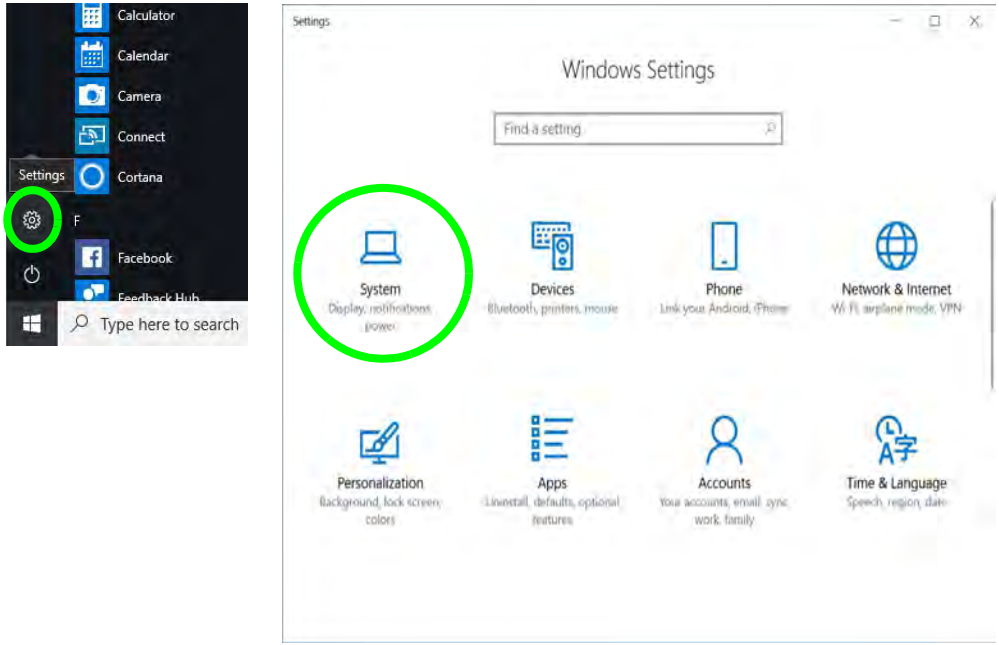


Figure 3 - 8
Settings

Battery Saver

Battery in Settings will display the battery level, and by clicking **Battery usage by app** you can see the current state of battery usage by application etc. The **Battery saver** can be level can be adjusted to be turned on if the battery level falls below a certain level to limit background activity and push notifications.

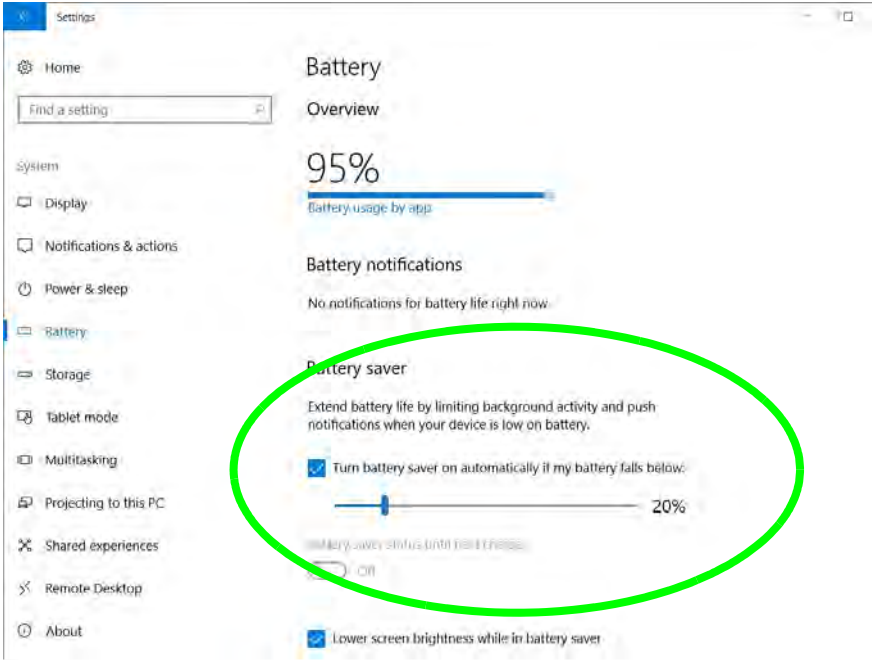


Figure 3 - 9
Settings > Battery > Battery Saver

Power & Sleep

Power & sleep gives you quick access to **Screen** and **Sleep** settings. Click **Additional power settings** to go to the main power options control panel.

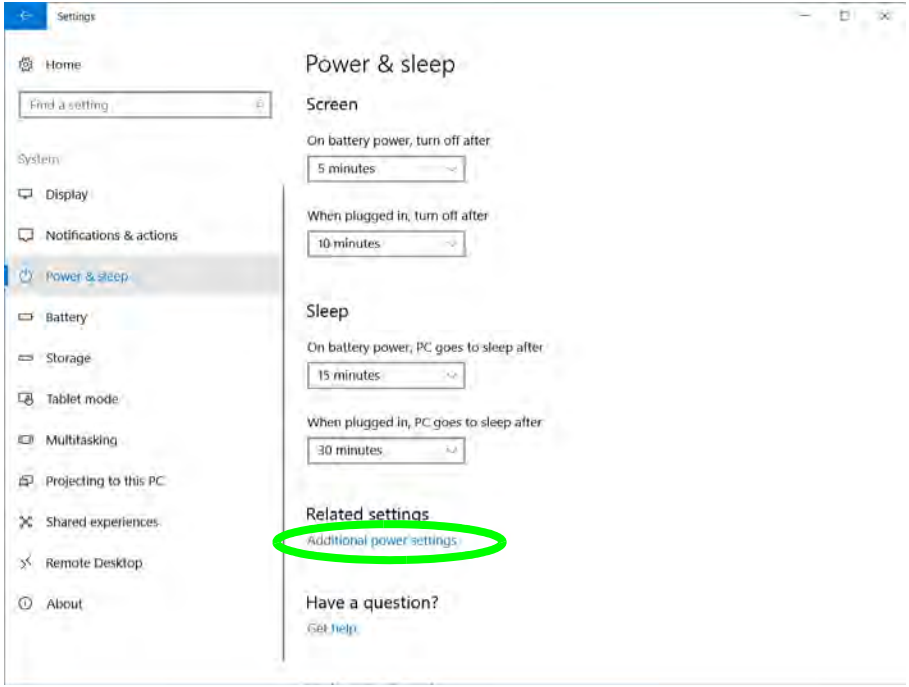


Figure 3 - 10
Settings > Power & Sleep

Power Slider

The **Power Slider** (click the battery icon in the notification area) lets you trade performance Vs battery life, by choose the power mode you want (see over).

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 3 - 3 on page 3 - 6*).

Click the battery icon in the notification area to see the current battery level and charge status. You can also adjust the **Power Slider** towards **Best battery life** or **Best performance**, or click Battery **Settings** to quickly adjust battery settings).

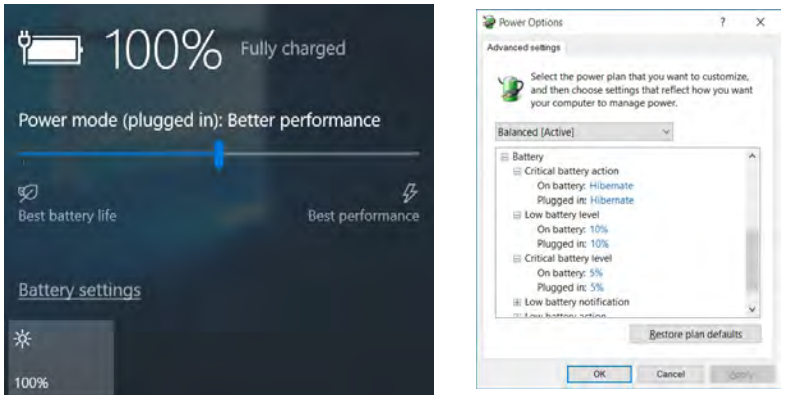
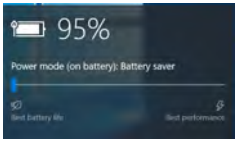
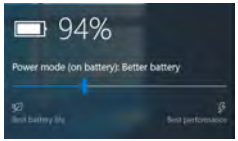
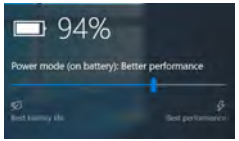
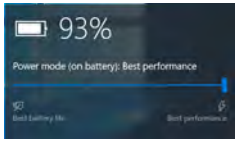


Figure 3 - 11
Battery Icon (Notification Area) & Battery Advanced Settings

Power Slider Settings

Battery Saver	Better Battery	Better Performance	Best Performance
			
For DC Only	For AC & DC		
Lowest Power Setting	Lower Power than Default Settings	Slightly Favors Performance Over Power	Favors Performance Over Power
Windows Features Throttled & Screen Brightness Reduced	Default Position		
Auto Enabled at 20% of Battery Capacity			

Battery Saver

Note that some Windows features and background applications may behave differently, or may be blocked, when the system is in Battery Saver mode (check with Microsoft for details).

Table 3 - 2
Power Slider Settings & Notes

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.

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.

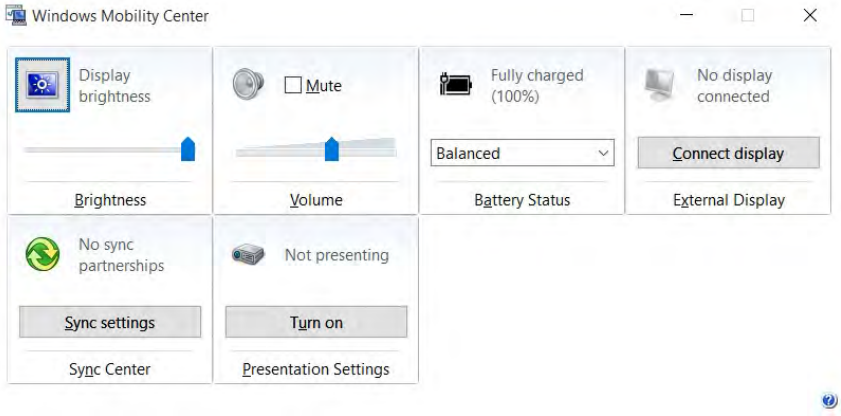


Figure 3 - 12
Windows Mobility Center (Control Panel)

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 should not remove the built-in battery yourself (see sidebar).

New Battery

Always completely discharge, then fully charge, a new battery (see ***"Battery FAQ" on page 3 - 21*** 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 - 7*** for information on the battery charge status, and to ***"Battery FAQ" on page 3 - 21*** for more information on how to maintain and properly recharge the battery pack.

Battery Removal

Note that **the built-in battery is not user removable**. Removing the battery will violate the terms of your warranty.

If you need to remove the battery for any reason, please contact your distributor/supplier for further information.

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 distributor/supplier. 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**.

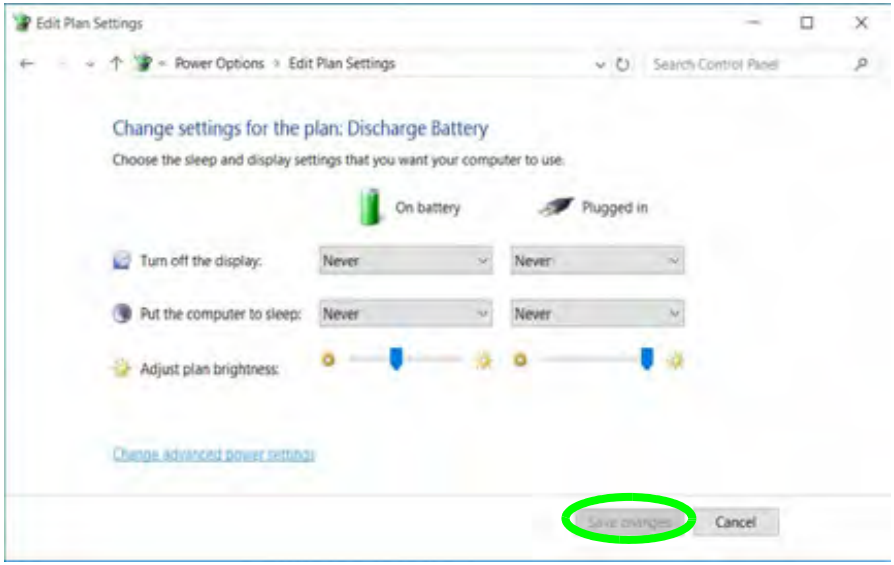
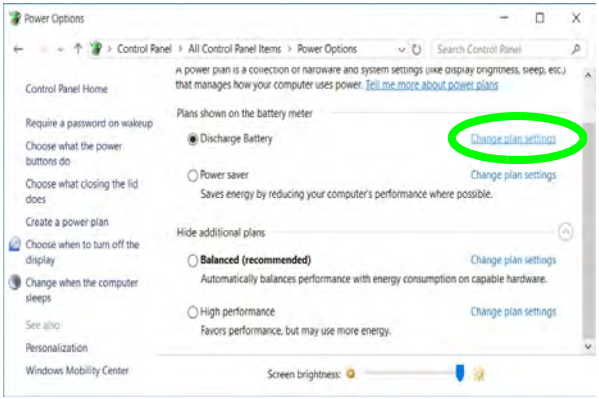


Figure 3 - 13
Power Plan Create

3. Click ***Change plan settings*** (after creating it) and click ***Change plan settings > Change advanced power settings***.



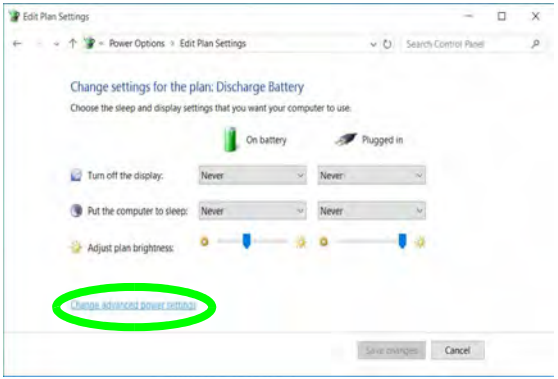


Figure 3 - 14
Change Plan Settings / Change Advanced Power Settings

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 - 15
Power Options Advanced Settings - Battery

- Low battery levels = 0%
- Critical battery Levels = 1%
- 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.

Removing the Battery

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 below.

1. Turn the computer off, and turn it over.
2. Slide the latch 1 in the direction of the arrow.
3. Slide the latch 2 in the direction of the arrow, and hold it in place.
4. While holding the latch 2 in place, pull the battery up from point 3 in the direction of the arrow 4.
5. Remove the battery 5.

Bottom Cover Removal Warning

Do not remove any cover(s) and /or screw(s) for the purposes of device upgrade as this may violate the terms of your warranty.

If you need to replace/ remove the hard disk/ RAM/optical device etc., for any reason, please contact your distributor/ supplier for further information.

Figure 3 - 16
Battery Removal

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.

What to Install

You will need to attach an external optical CD/DVD device drive to install the drivers from the *Device Drivers & Utilities + User's Manual* disc. The disc contains the drivers and utilities necessary for the proper operation of the computer. ***Table 4 - 1, on page 4 - 4*** lists what you need to install and **it is very important that the drivers are installed by the method outlined in this chapter, and in the order indicated**. Note that the information on the following pages is for ***Windows 10 (64-bit) only***.

Module Driver Installation

The procedures for installing drivers for the **Wireless LAN**, **Bluetooth & WLAN Combo, Intel Technology, Sound Blaster Cinema** and **3G/4G** modules are provided in ***"Modules" on page 6 - 1***.

Driver Installation & Power

When installing drivers make sure your computer is powered by the AC/DC adapter connected to a working power source. Some drivers draw a significant amount of power during the installation procedure, and if the remaining battery capacity is not adequate this may cause the system to shut down and cause system problems (note that there is no safety issue involved here, and the battery will be rechargeable within 1 minute).

Driver Installation

1. Insert the *Device Drivers & Utilities + User's Manual* disc into an attached DVD drive.
2. Click the message "**Tap to choose what happens with this disc**."
3. Click **Run autorun.exe**.
4. Click ***Install Drivers*** (button), or ***Option Drivers*** (button) to access the **Optional** driver menu.

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

5. Check the driver installation order from ***Table 4 - 1, on page 4 - 4*** (the drivers must be installed in this order) which is the same as that listed in the *Drivers Installer* menu below.
6. Click to select the driver you wish to install, (you should note down the drivers as you install them).
7. Follow the instructions for each individual driver installation procedure as listed on the following pages.

Figure 4 - 2 **- Install Drivers**

Win 10 (64-bit) Driver	Page #	Win 10 (64-bit) - Optional Items	Page #
Chipset	*Page 4 - 7*	*Wireless LAN Module*	*Page 6 - 29*
Video (VGA)	*Page 4 - 7*	*Bluetooth & WLAN Combo Module*	*Page 6 - 34*
NVIDIA Video (VGA)	*Page 4 - 7*	*Intel® Rapid Storage Technology* (required for hard disks in AHCI mode)	*Page 6 - 52*
LAN	*Page 4 - 7*	*Sound Blaster Cinema 3*	*Page 6 - 40*
Card Reader	*Page 4 - 7*	*PC Camera* (no driver installation required)	*Page 6 - 64*
Touchpad	*Page 4 - 8*	*Trusted Platform Module* (no driver installation required)	*Page 6 - 70*
Airplane	*Page 4 - 8*	***All drivers provided are for the Windows 10 (64-bit) operating system.***	
Control Center	*Page 4 - 8*		
MEI Driver	*Page 4 - 8*		
Audio	*Page 4 - 8*		

Table 4 - 1 **- Driver Installation**

Note that you need to install both the WLAN & Bluetooth drivers for the WLAN & Bluetooth Combo modules.

Manual Driver Installation

Click ***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 **Check for updates** (**Settings > Update & security > Check for updates**) 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 - 9*** for instructions.

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** 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. Go to the **Control Panel**).
2. Double-click **Device Manager** (**Hardware and Sound > Devices and Printers > 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

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**" 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 General Guidelines

The driver installation procedure 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.

Make sure any modules (e.g. WLAN or Bluetooth) are **ON (i.e. the system is not in Airplane Mode)** before installing the appropriate driver.

Driver Installation Procedure

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

Chipset

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

Video (VGA)

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

NVIDIA Video (VGA)

1. Click **3.Install NVIDIA VGA Driver > Yes**.
2. Click **AGREE AND CONTINUE (**button) to accept the terms of the license agreement.
3. Click **Next.**
4. Click **Restart Now** to restart the computer.
5. After all the drivers have been installed (an internet connection is required) run the **NVIDIA GeForce Experience** by clicking the desktop icon (or App).

Note: After installing the video driver go to the **Display** control panel to adjust the video settings to the highest resolution.

LAN

*Note: If the computer enters a deep sleep mode during installation, you will be prompted to plug in a network cable, and click **OK**, to continue installation. If a network cable is not available, restart the system and re-install the LAN driver.*

1. Click **4.Install LAN Driver > Yes**.
2. Click **Next > Install**.
3. Click **Finish**.

Card Reader

1. Click **5.Install Cardreader Driver > Yes**.
2. Click **Finish**.

Touchpad

1. Click **6.Install Touchpad Driver > Yes**.
2. Click **Next**.
3. Click the button to accept the license, and then click **Next**.
4. Click **Finish > Restart Now** to restart the computer.

Airplane

Note: Do not use Update Driver in Device Manager to install the Airplane Mode driver.

1. Click **7.Install Airplane Driver > Yes**.
2. Click **Next**.
3. Click **Finish** to restart the computer.

Control Center

1. Click **8.Install Control Center AP > Yes**.
2. Click **Next > Install**.
3. Click **Finish** to restart your computer (see ***Appendix B***).

MEI Driver

1. Click **9.Install MEI Driver > Yes**.
2. Click **Next**.
3. Click the check box to accept the license and then click **Next**.
4. Click **Next**.
5. Click **Finish**.

Audio

1. Click **10.Install Audio Driver > Yes**.
2. Click **Next**.
3. Click **Finish** to restart the computer.

Note that after installing the audio driver the system will not return to the ***Drivers Installer*** screen. To install any of the optional drivers listed overleaf, eject the *Device Drivers & Utilities + User's Manual* disc and then reinsert it (or double-click the disc icon in **My Computer**), and click ***Option Drivers*** (button) to access the optional driver menu.

(See Overleaf)

It is recommended that you install the **Sound Blaster Audio** application (see *"Sound Blaster Cinema 3" on page 6 - 40*) and **Intel Rapid Storage Technology** driver (see *"Intel® Rapid Storage Technology" on page 6 - 52* - required for AHCI mode).

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. Go to the **Control Panel**.
2. Click **Windows Update** (System and Security/ Security).
3. 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 begin checking for the updates.
6. Click **Install updates** (button) to install the updates.

Optional Drivers

See the pages indicated in ***Table 4 - 1, on page 4 - 4*** for the driver installation procedures for any modules included in your purchase option.

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

Note that you need to install both the WLAN & Bluetooth drivers for the WLAN & Bluetooth Combo modules.

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 Screens

Note that the BIOS screens pictured on these pages are intended for guidance in setting up your system's BIOS.

BIOS versions are subject to constant change and revision, therefore your computer's actual screens may appear slightly different from those pictured on these pages.

BIOS Settings Warning

Incorrect settings can cause your system to malfunction. To correct mistakes, return to *Set-up* and restore the **Optimized Defaults** with **<F3>**.

UEFI Boot & POST

When UEFI Boot is enabled, then the prompts to **press F2 or F7 will not appear**. However you can still press F2 to enter the setup, or F7 to choose the preferred boot device, if you press the key immediately the system boots up.

The Power-On Self Test (POST)

If you enable the **Boot-time Diagnostic Screen** in the Setup Utility, 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.

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 distributor/supplier 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!) and you can then press **F7** (the **F7** on screen will be highlighted to illustrate that the system is processing the request) for boot options.

Press **F2** (give the system a few seconds to enter ***Setup***; the **F2** on screen will be highlighted to illustrate that the system is processing the request) 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.

BIOS Settings Warning

Incorrect settings can cause your system to malfunction. To correct mistakes, return to *Set-up* and restore the **Optimized Defaults** with **<F3>**.

The Setup Utility

The **Aptio Setup Utility** 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** (give the system a few seconds to enter ***Setup***; the **F2** on screen will be highlighted to illustrate that the system is processing the request) during the **POST** (or press **F7** for boot options). If you get a "Keyboard Error", (usually because you pressed **F2** too quickly) just press **F2** again.

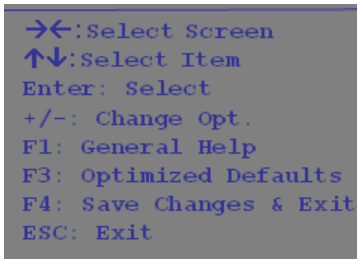
If the computer is already on, reboot using the **Ctrl + Alt + Delete** combination and then hold down **F2** when prompted. The ***Setup*** main menu will appear.

To see the boot options press **F7.**

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 at the bottom right side 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 upper 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.

Figure 5 - 1
Navigation Menu

Main Menu

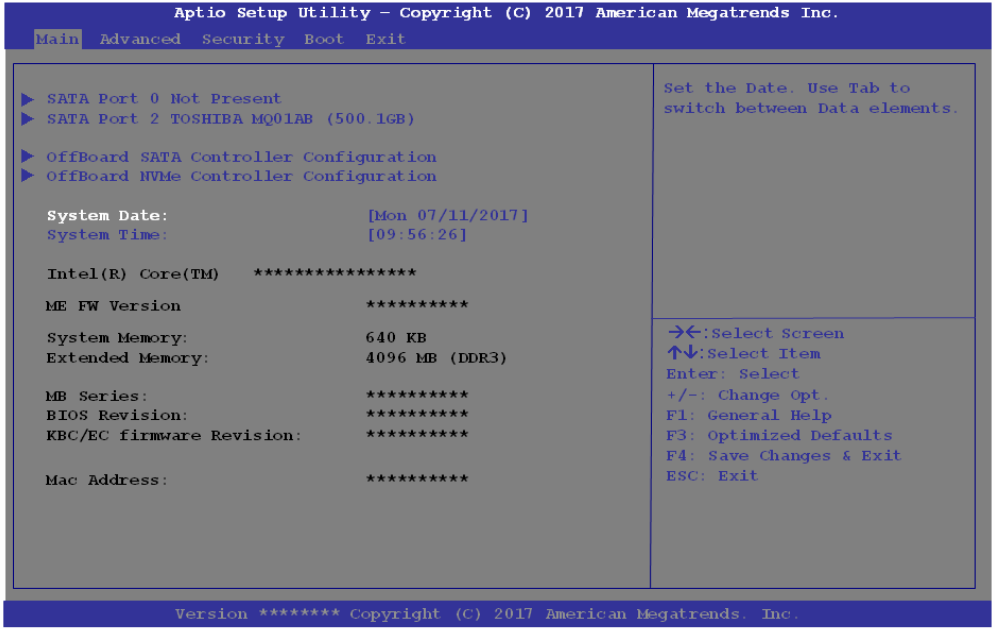


Figure 5 - 2
Main Menu

SATA Port # (Main Menu)

Pressing **Enter** opens the sub-menu to show the configuration of a optical Device/ HDD on the computer's SATA Ports.

OffBoard SATA/NVme Controller Configuration (Main Menu)
Pressing **Enter** opens the sub-menu to show the configuration of any devices on the off board SATA/NVme Controller if applicable.

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.

ME FW Version/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.

MB Series/BIOS Revision/KBC/EC firmware Revision/Mac Address (Main Menu)
This item contains information on the BIOS version, and the identifier address for the device on a network, and is not user configurable.

Advanced Menu

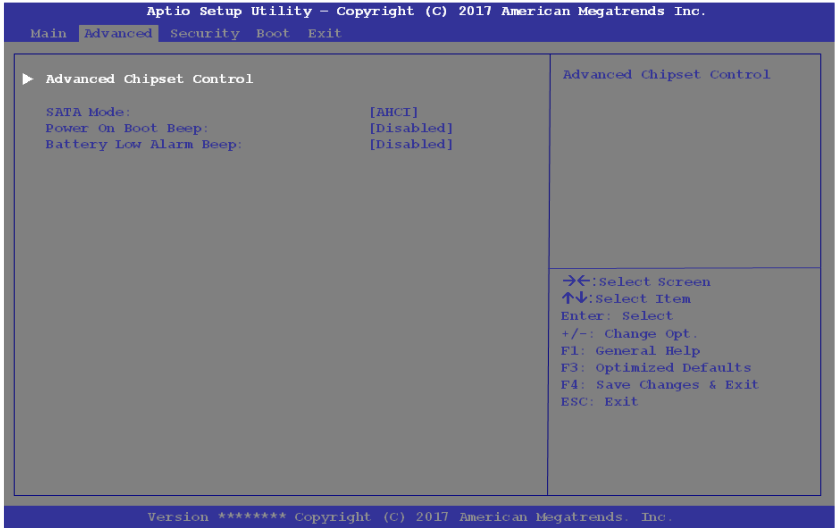


Figure 5 - 3
Advanced Menu

Advanced Chipset Control (Advanced Menu)

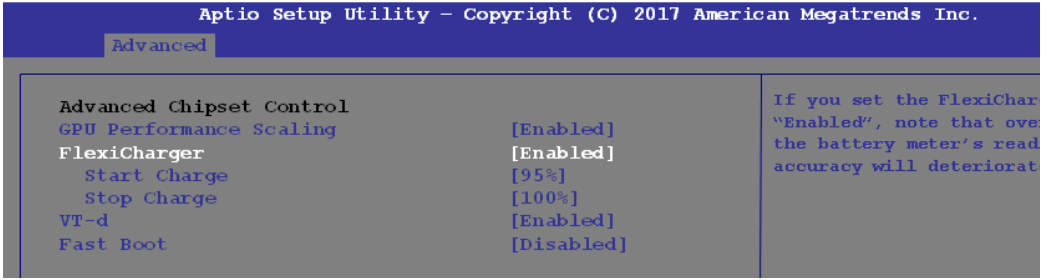
The sub-menu here allows you to enable/disable **GPU Performance Scaling**, **Flex-iCharger** (see page ***5 - 9***), **VT-d** and **Fast Boot**.

GPU Performance Scaling (Advanced Menu > Advanced Chipset Control)

You can enable/disable NVIDIA GPU Performance scaling from this menu. The NVIDIA Card does the scaling if this option is on, and has less latency than the Intel GPU. This can be useful if you play games etc.

FlexiCharger (Advanced Menu > Advanced Chipset Control)
The sub-menu here allows you to enable/disable the **FlexiCharger**. The FlexiCharger may be set to automatically start charging your battery when the battery reaches a certain capacity level (e.g. you could start the battery charge level at 40%).

See the sidebar warning for information on running the FlexiCharger for an extended period as this is not recommended.



VT-d (Advanced Menu > Advanced Chipset Control)
Enable/disable **Intel® Virtualization Technology for Directed I/O (VT-d)** from this menu. This extends Intel's Virtualization Technology (VT) by providing hardware assists for a virtualization solution.

Fast Boot(Advanced Menu > Advanced Chipset Control)
Use this menu item to enable/disable the Fast Boot option, which when enabled, helps reduce the time it takes to boot the computer.

FlexiCharger Warning

If you leave the FlexiCharger continuously "**Enabled**" for a period of three months or more, the battery meter's reading accuracy will deteriorate.

To reset this, set the FlexiCharger to "**Disabled**", and then allow the battery to completely discharge (see ***"Battery FAQ" on page 3 - 21***) before enabling the function again.

Figure 5 - 4
Advanced Chipset Control > FlexiCharger

SATA Mode Selection

If you have installed the ***Windows*** OS with either **AHCI or Intel RST** mode enabled, **DO NOT** disable the set mode (if you wish to disable the set mode you will need to reinstall the ***Windows*** OS).

SATA Mode (Advanced Menu)

You can configure SATA (Serial ATA) control to operate in **AHCI** (Advanced Host Controller Interface) or **Intel RST Premium** (for **Intel® Optane™** or **RAID** - Redundant Array of Independent disks) mode from this menu. The **SATA Mode** should be set **BEFORE installing an operating system**, and after you have backed up all necessary files and data (see sidebar). See ***"Setting Up SATA RAID, Optane™ or AHCI Mode" on page 6 - 2*** for details.

Make sure you install the **Intel Rapid Storage Technology application** if you have set the SATA Mode to **Intel RST Premium** (for **RAID OR Intel® Optane™**) or to **AHCI** ***"Intel® Rapid Storage Technology" on page 6 - 52*****.**

Intel® Optane™

Intel® Optane™ is a combination of a compatible memory device and Intel Rapid Technology software. This combination is designed to speed up your system performance.

Contact your distributor or supplier to see if your system supports this technology.

Note that your system can be set up as a RAID OR to support Intel® Optane™, it cannot be set to support both systems.

If you wish to change your SATA mode to/from AHCI/Intel RST mode you will receive a message (see overleaf) to notify you that doing so may prevent your operating system from booting, and may require a reinstall of the OS. If you do wish to change the SATA mode then backup any necessary data on your hard disk(s) as you will need wipe the disks clean in order to prevent system problems.

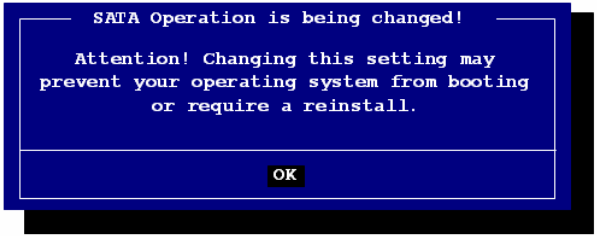


Figure 5 - 5
SATA Mode Change Notification

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.

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

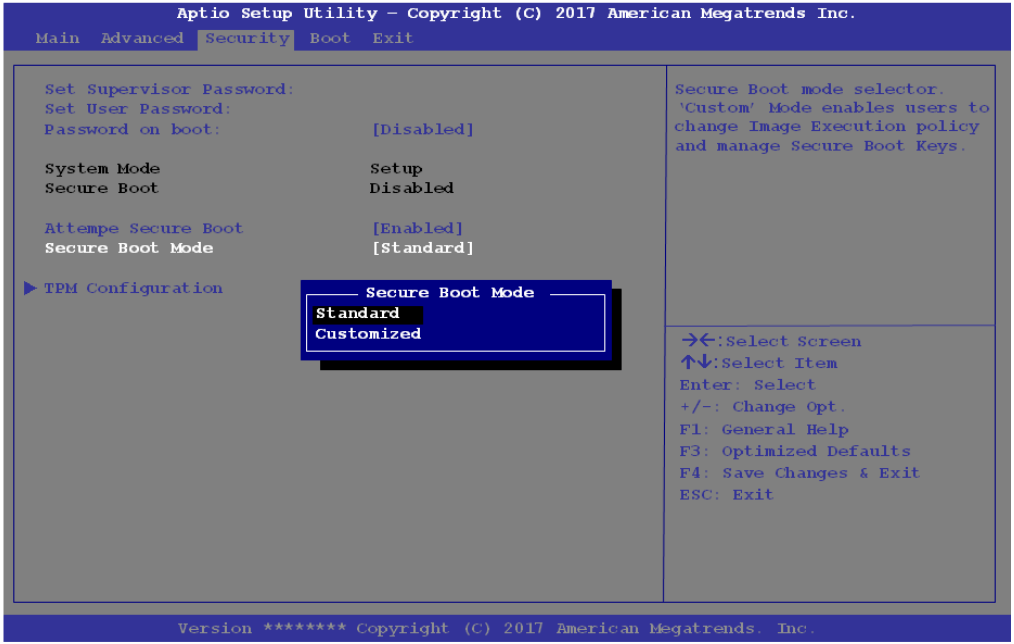


Figure 5 - 6
Security Menu

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

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.

Note: *You can only set the user password after you have set the supervisor password.*

Set User Password (Security Menu)
You can set a password for user mode access to the **Aptio Setup Utility**. This will not affect access to the computer OS, (only the ***Setup*** utility) unless you choose to set a ***Password on Boot*** (see below). Many menu items in the **Aptio Setup Utility** cannot be modified in user mode.

Note: *You can only set the user password after you have set the supervisor password.*

Password on boot: (Security Menu)
Specify whether or not a password should be entered to boot the computer (**you may only set a password on boot if a supervisor password is enabled**). 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***".

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.

Secure Boot Control (Security Menu)

Secure Boot Control prevents unauthorized operating systems and software from loading during the startup process. **Secure Boot** is available as a menu option if you have enabled **UEFI Boot** (see ***"Boot Menu" on page 5 - 16***). Enabling Secure Boot will bring up the **Secure Boot Mode** menu to enable you to configure Secure Boot as **Standard** (with a fixed secure boot policy), or **Custom** (which enables you to make changes to the **Key Management** database).

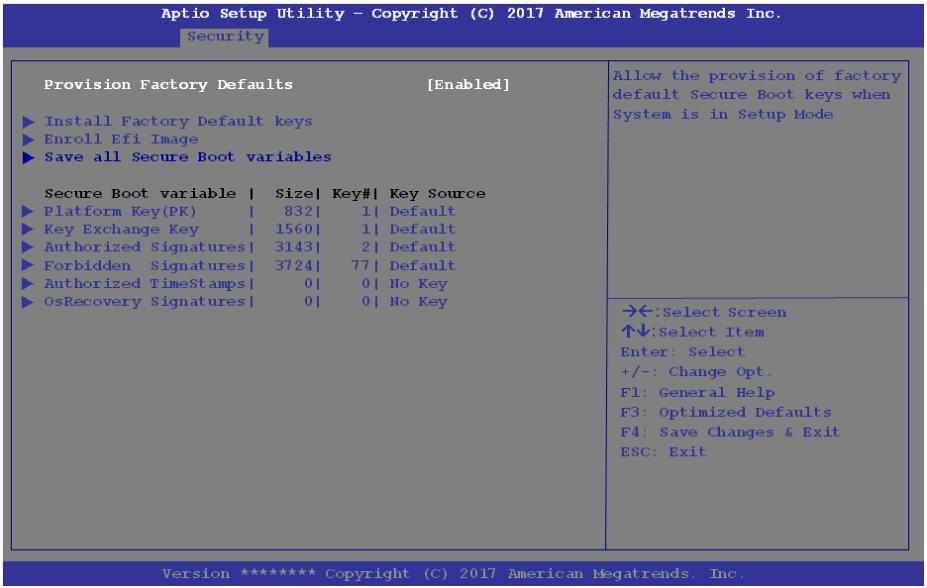


Figure 5 - 7
Security - Secure Boot (Key Management)

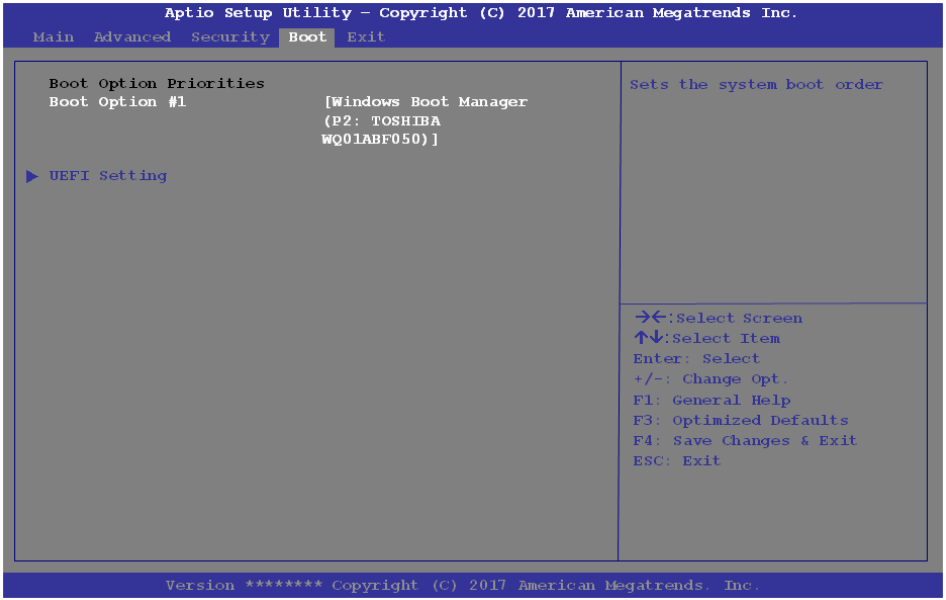
TPM Configuration (Security Menu)

This sub-menu will allow you to enable/disable Trusted Platform Module (TPM) support, and to configure the TPM State. Select **TPM Configuration** and press Enter to access the sub-menu. Press Enter to access the **Security Device Support** menu and select **Enable** to support TPM. You can select **Pending operation**, and then select **TPM clear** to clear existing TPM information in order to reset the TPM (see ***"Trusted Platform Module" on page 6 - 70*** for details).

Figure 5 - 8
Security Device Support

Boot Menu

Figure 5 - 9
Boot Menu



BIOS Screens

Note that the BIOS screens pictured on these pages are intended for guidance in setting up your system's BIOS.

BIOS versions are subject to constant change and revision, therefore your computer's actual screens may appear slightly different from those pictured on these pages.

When you turn the computer on it will look for an operating system (e.g. ***Windows 7***) 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 Option Priorities**.

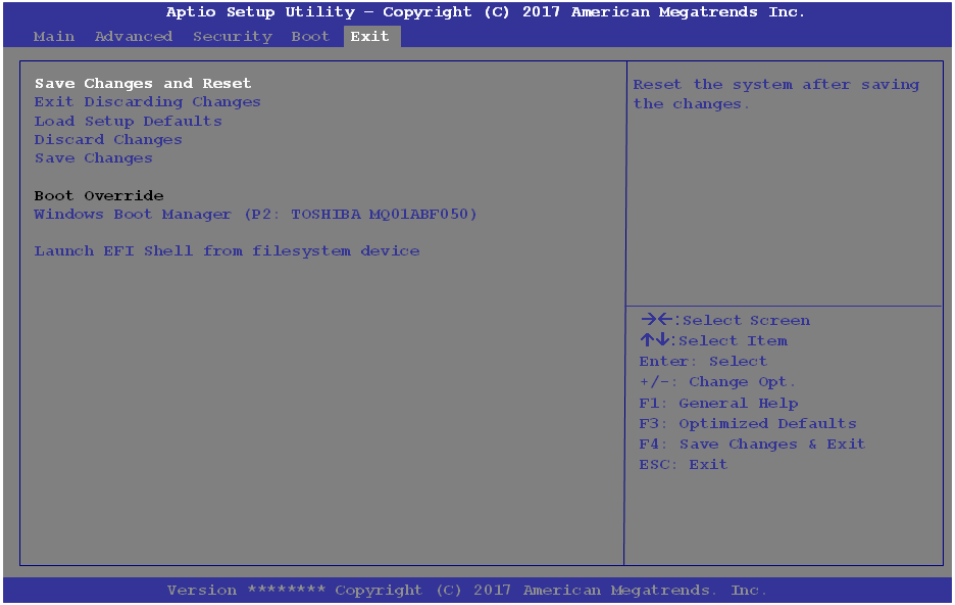
Boot Option Priorities (Boot Menu)
Press Enter to select the Boot Option # and use the arrow keys to select any device in order to move its boot priority up and down the list (the selected device will be highlighted in white).

UEFI Boot (Boot Menu)
Enable/disable UEFI Boot from this menu. The Unified Extensible Firmware Interface (UEFI) specification provides a clean interface between operating systems and platform firmware at boot time. In contrast to BIOS, UEFI defines a set of standard boot and runtime services. The ***Network Stack*** item will be enabled as an option under UEFI Boot.

UEFI Boot is enabled for your system by default. It is recommended that you keep UEFI Boot enabled for the Windows operating system.

Exit Menu

Figure 5 - 10
Exit Menu



Click ***Save Changes and Reset*** to save all changes made. 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: 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:

- Setting Up SATA RAID, Optane™ or AHCI Mode
- Wireless LAN Module
- Bluetooth & WLAN Combo Module
- Sound Blaster Cinema 3
- Intel® Rapid Storage Technology
- PC Camera
- Trusted Platform Module

Setting Up SATA RAID, Optane™ or AHCI Mode

Note that other than AHCI mode, your system can be set up as a RAID OR to support Intel® Optane™, it cannot be set to support both systems.

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 or two hard disks/solid state drives. Make sure you install the **Intel® Rapid Storage Technology** application if you have set up your HDDs/SSDs in **AHCI** mode (see *"Intel® Rapid Storage Technology" on page 6 - 52*)

Intel® Optane™

Intel® Optane™ is a combination of a compatible memory device and **Intel Rapid Technology software**. This combination is designed to speed up your system performance by caching boot data, executables, frequently accessed data and system page files to an non volatile, low latency Intel® Optane™ SSD.

Contact your distributor or supplier to see if your system supports this technology.

RAID

To configure your RAID (Redundant Array of Independent Disks) system in Striping (RAID 0) or Mirroring (RAID 1) modes (see *Table 6 - 1, on page 6 - 4*) you will require **at least two identical** (see sidebar) SSDs.

RAID Hard Disks/ Solid State Drives

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

SATA Mode Selection

The SATA mode selection should be made **before installing your operating system**.

DO NOT change your selected SATA mode unless you intend to reinstall your operating system. Make sure you have backed up all your data before doing so.

Intel® Rapid Storage Technology Application

Make sure you install the **Intel® Rapid Storage Technology** application if you have set up your HDDs/SSDs in **AHCI**, **RAID**, **OR Optane™** mode (see *"Intel® Rapid Storage Technology" on page 6 - 52*).

Note the following:

- **RAID mode with UEFI disabled (legacy mode) does not support PCIe SSDs.**
- **AHCI mode with the IRST driver installed does not support PCIe SSDs.**

After setting the SATA mode to **Intel® Optane™ and installing the Intel® Rapid Storage Technology** application, DO NOT uninstall the **Intel® Rapid Storage Technology** application.

See *"RAID Setup Procedure" on page 6 - 5* or *"Intel® Optane™ Setup Procedure" on page 6 - 22* for further details.

Note that other than AHCI mode, your system can be set up as a RAID OR to support Intel® Optane™, it cannot be set to support both systems.

Table 6 - 1
RAID Levels

RAID Level	Description
RAID 0	Identical SSDs 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 SSDs 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.

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.

SATA Mode Selection

The SATA mode selection should be made **before installing your operating system**.

DO NOT change your selected SATA mode unless you intend to reinstall your operating system. Make sure you have backed up all your data before doing so.

Note the following:

- **RAID mode with UEFI disabled (legacy mode) does not support PCIe SSDs.**
- **AHCI mode with the IRST driver installed does not support PCIe SSDs.**

RAID Solid State Drives

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

RAID Setup Procedure

The actual procedure for setting up a RAID system will depend on whether or not your system has UEFI enabled or not, and if you are using 2 * PCIE SSDs with the ***Windows 10 OS*** installed on one of them.

See below and follow the procedure that corresponds to your system setup:

- ***"RAID Setup - UEFI Enabled" on page 6 - 6***
- ***"RAID Setup (2 * PCIE SSDs) - UEFI Enabled" on page 6 - 11***
- ***"RAID Setup - UEFI Disabled" on page 6 - 17***

No matter which system setup you use make sure you install the **Intel Rapid Storage Technology driver** - see ***"IRST Driver Installation" on page 6 - 52***).

Run the **Intel® Rapid Storage Technology application** to manage your RAID volume as instructed in ***"Intel® Rapid Storage Technology for RAID Systems" on page 6 - 53***.

See also ***"Deleting a RAID (Windows 10)" on page 6 - 21*** (however **backup up any necessary files and data before deleting a RAID**, as doing so will result in the loss of all data on the RAID volumes).

RAID Setup - UEFI Enabled

To configure your RAID (Redundant Array of Independent Disks) system in Striping (RAID 0) or Mirroring (RAID 1) modes (see ***Table 6 - 1, on page 6 - 4***) you will require **two identical** hard disks or solid state drives.

You need to setup a RAID before installing your ***Windows 10*** operating system, and you will need to prepare the following in order to do so.

==========

- The ***Microsoft Windows 10 OS DVD***.
- A connected external DVD drive.
- Two Identical solid state drives.
- The ***Device Drivers & Utilities + User's Manual*** disc.

==========

1. Start-up your notebook computer and press <F2> to enter the **BIOS**.
2. Go to the **Boot** menu, select **UEFI Setting** and press <Enter> (see page ***5 - 16***).
3. Set **UEFI Boot** to "**Enabled**".
4. Press <Esc> to exit the menu and go to the **Advanced** menu.
5. Select **SATA Mode** (see page ***5 - 10***), press <Enter> and select "**Intel RST Premium**".
6. Press <F4> and <Yes> to "**Save Changes and Reset**".
7. As the computer restarts press <F2> to enter the **BIOS** again.
8. Go to **Intel(R) Rapid Storage Technology** (**Advanced** menu) and press <Enter>.

9. Select **Create RAID Volume** and press <Enter>.

Figure 6 - 1
Create RAID Volume (Advanced > Intel(R) Rapid Storage Technology

10. You can now setup your RAID volume using any two installed SSDs.
11. Go to **Name:** and press <Enter>.
12. Type a name of your choice for your RAID volume and press <Enter>.

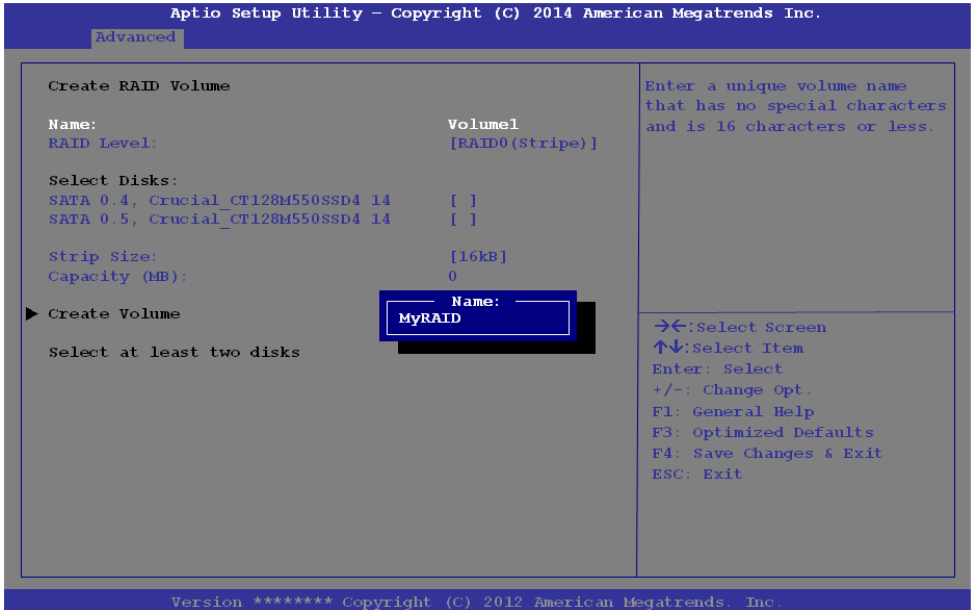


Figure 6 - 2
Name the RAID Volume (Advanced > Intel(R) Rapid Storage Technology)

13. Go to **RAID Level**: and press <Enter>.
14. Choose the RAID Level required (see *Table 6 - 1, on page 6 - 4* for details) and press <Enter>.

- **RAID0 (Stripe)**
- **RAID1 (Mirror)**

15. Go to any of the disks listed under **Select Disks:** and select a disk name and press <Enter>.
16. Move the cursor down (use the arrow keys) onto to **X** (o select the disk required and press <Enter>.

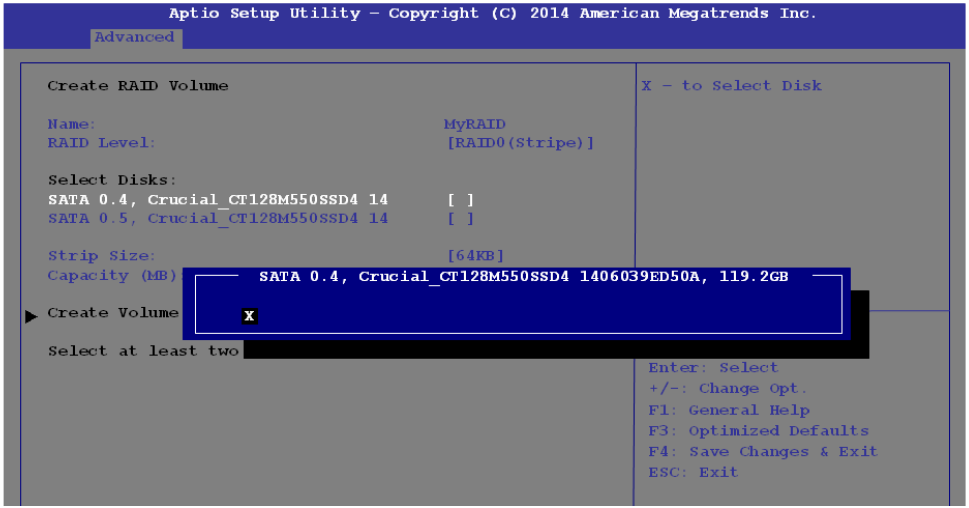
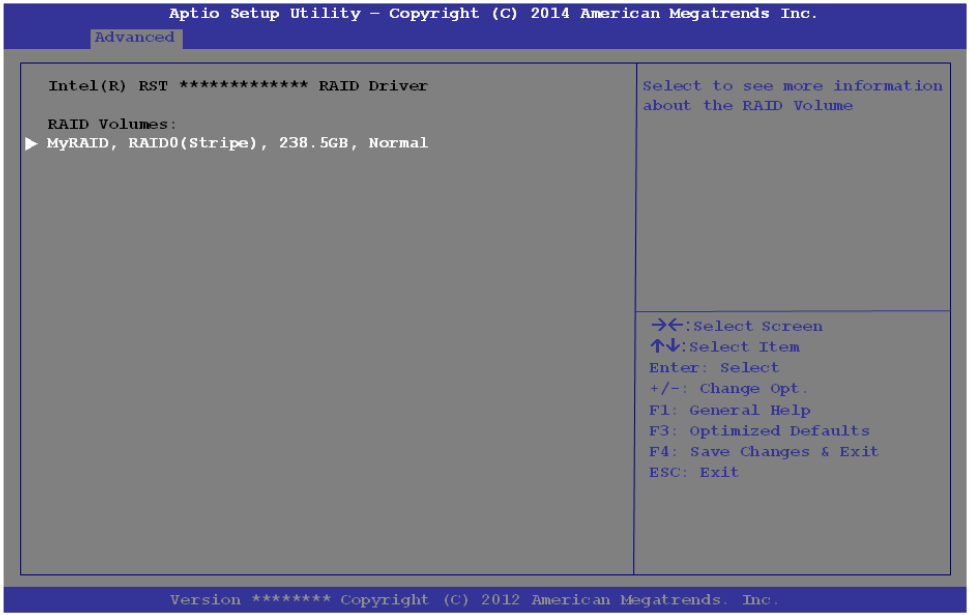


Figure 6 - 3
Select Disks (Advanced > Intel(R) Rapid Storage Technology)

17. You should select two identical SSDs to form your RAID volume.
18. If you have selected **RAID0** (**Stripe)** then you can adjust the "**Strip Size**" to your requirements (***it is recommended that you set the*** "**Strip Size**" ***to 128KB***).
19. Go to **Create Volume** and press <Enter>.
20. The RAID volume will then be created and the RAID information will be displayed under **Intel(R) Rapid Storage Technology** (in the **Advanced** menu).



21. Press <Esc> to exit the menu.

Figure 6 - 4
Created RAID Information (Advanced > Intel(R) Rapid Storage Technology)

22. Press <F4> and <Yes> to "**Save Changes and Reset**", however **ensure that the condition in the bulleted point below is met** before doing so.

- Make sure the ***Windows 10*** OS DVD is in the attached DVD drive, as the computer starts up it will automatically boot from the ***Windows 10*** OS DVD (you will be prompted to press a key to boot from the DVD).

23. Press <F7> as the computer starts up to bring up the boot device menu.
24. Select the DVD drive containing the ***Windows 10*** OS DVD and press <Enter>.
25. Press a key at system startup to begin installing ***Windows*** from your ***Microsoft Windows 10*** disc.
26. Click **Next > Install Now** to continue installing the operating system as normal (see your ***Windows*** documentation if you need help on installing the ***Windows*** OS).
27. Follow the on-screen instructions to install the ***Windows 10*** operating system.
28. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 4*** (make sure you install the **Intel Rapid Storage Technology driver** - see overleaf).
29. Run the **Intel® Rapid Storage Technology** application to manage your RAID volume as instructed in ***"Intel® Rapid Storage Technology for RAID Systems" on page 6 - 53***.

RAID Setup (2 * PCIE SSDs) - UEFI Enabled

If you are setting up a RAID using 2 * PCIE SSDs, with the ***Windows 10 OS*** installed on one of them, then follow the setup procedure below:

To configure your RAID (Redundant Array of Independent Disks) system in Striping (RAID 0) or Mirroring (RAID 1) modes (see ***Table 6 - 1, on page 6 - 4***) you will require **two identical** solid state drives.

You need to setup a RAID before installing your ***Windows 10*** operating system, and you will need to prepare the following in order to do so.

==========

- The ***Microsoft Windows 10 OS DVD***.
- A connected external DVD drive.
- Two Identical PCIe solid state drives.
- The ***Device Drivers & Utilities + User's Manual*** disc.
- A USB flash drive.
- An operable computer (to copy files from the ***Device Drivers & Utilities + User's Manual*** disc to the USB flash drive).

==========

Before setting up the system you will need to copy a driver folder to a USB flash drive. This driver folder is included on the ***Device Drivers & Utilities + User's Manual disc*** but you will need to go to an operable computer and copy the folder to a USB Flash drive.

1. Go to the operable computer and insert a USB Flash drive.
2. Insert the ***Device Drivers & Utilities + User's Manual*** disc into the CD/DVD drive of the operable computer.
3. Copy the **f6flpy-x64** folder from the location below (D: denotes your DVD drive) on the ***Device Drivers & Utilities + User's Manual*** disc to the USB flash drive or external USB hard disk.

- **D:\Options\RAID\f6flpy-x64**

4. Start-up your notebook computer and press <F2> to enter the **BIOS**.
5. Go to the **Boot** menu, select **UEFI Setting** and press <Enter> (see page ***5 - 16***).
6. Set **UEFI Boot** to "**Enabled**".
7. Press <Esc> to exit the menu and go to the **Advanced** menu.
8. Select **SATA Mode** (see page ***5 - 10***), press <Enter> and select "**RAID Mode**".
9. Press <F4> and <Yes> to "**Save Changes and Reset**".
10. As the computer restarts press <F2> to enter the **BIOS** again.
11. Go to **Intel(R) Rapid Storage Technology** (**Advanced** menu) and press <Enter>.
12. Select **Create RAID Volume** and press <Enter>.

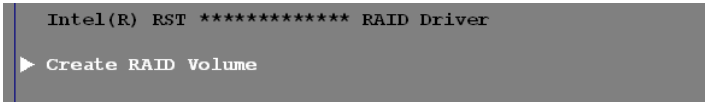


Figure 6 - 5
Create RAID Volume (Advanced > Intel(R) Rapid Storage Technology

13. You can now setup your RAID volume using any two installed disks.
14. Go to **Name:** and press <Enter>.
15. Type a name of your choice for your RAID volume and press <Enter>.

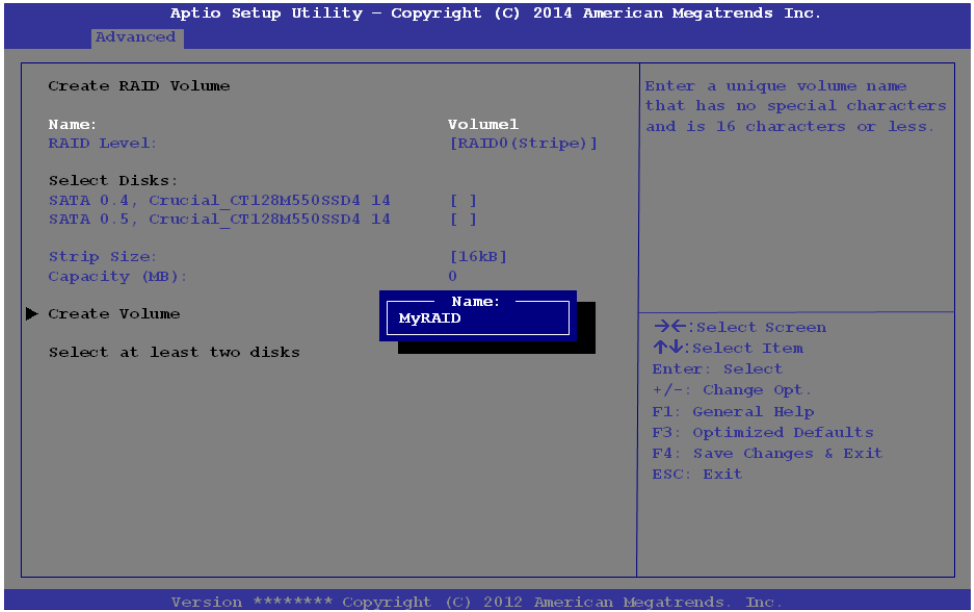


Figure 6 - 6
Name the RAID Volume (Advanced > Intel(R) Rapid Storage Technology)

16. Go to **RAID Level**: and press <Enter>.
17. Choose the RAID Level required (see ***Table 6 - 1, on page 6 - 4*** for details) and press <Enter>.

- **RAID0 (Stripe)**
- **RAID1 (Mirror)**

18. Go to any of the disks listed under **Select Disks:** and select a disk name and press <Enter>.
19. Move the cursor down (use the arrow keys) onto to **X** (o select the disk required and press <Enter>.

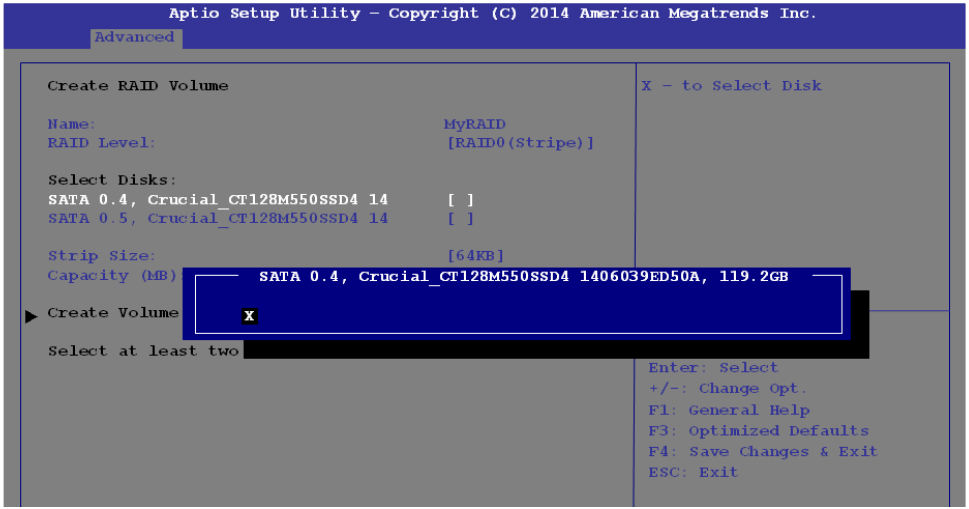


Figure 6 - 7
Select Disks (Advanced > Intel(R) Rapid Storage Technology)

20. You should select two identical hard disks/SSDs to form your RAID volume.
21. If you have selected **RAID0** (**Stripe)** then you can adjust the "**Strip Size**" to your requirements (***it is recommended that you set the*** "**Strip Size**" ***to 128KB***).
22. Go to **Create Volume** and press <Enter>.

23. The RAID volume will then be created and the RAID information will be displayed under **Intel(R) Rapid Storage Technology** (in the **Advanced** menu).

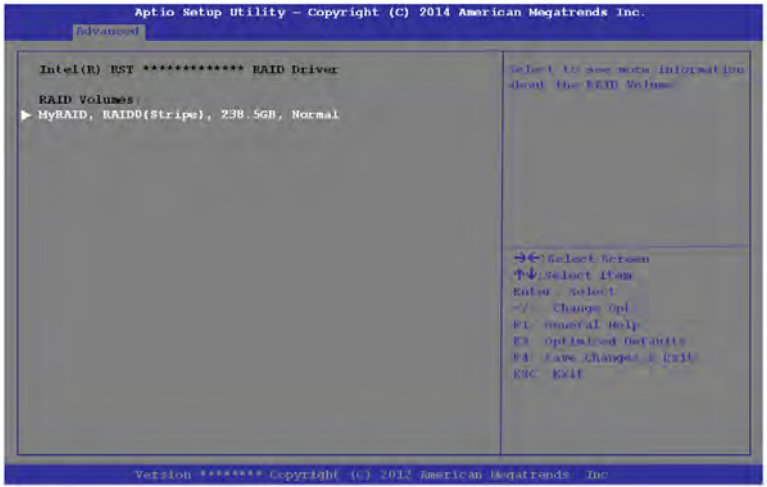


Figure 6 - 8
Created RAID Information (Advanced > Intel(R) Rapid Storage Technology)

24. Press <Esc> to exit the menu.
25. Press <F4> and <Yes> to "**Save Changes and Reset**", however **ensure that the condition in the bulleted points below are met** before doing so.

- Make sure the ***Windows 10*** OS DVD is in the attached DVD drive, as the computer starts up it will automatically boot from the ***Windows 10*** OS DVD (you will be prompted to press a key to boot from the DVD).
- Make sure your USB Flash drive is attached to one of the computer's USB ports.

26. Press <F7> as the computer starts up to bring up the boot device menu.

27. Select the DVD drive containing the ***Windows 10*** OS DVD and press <Enter>.
28. Press a key at system startup to begin installing ***Windows*** from your ***Microsoft Windows 10*** disc.
29. Click **Next > Install Now** to continue installing the operating system as normal (see your ***Windows*** documentation if you need help on installing the ***Windows*** OS).
30. A prompt will appear to ask you to **Load Driver**.
31. Click **Browse** and browse to the location you copied the files to on your USB Flash drive or external USB hard disk (X: denotes your USB Flash drive):

- **X:\f6flpy-x64 (for Windows 10 64bit)**

32. Click **Next**.
33. Follow the on-screen instructions to install the ***Windows 10*** operating system.
34. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 4*** (make sure you install the **Intel Rapid Storage Technology driver** - see overleaf).
35. Run the **Intel® Rapid Storage Technology** application to manage your RAID volume as instructed in ***"Intel® Rapid Storage Technology for RAID Systems" on page 6 - 53***.

RAID Setup - UEFI Disabled

To configure your RAID (Redundant Array of Independent Disks) system in Striping (RAID 0) or Mirroring (RAID 1) modes (see *Table 6 - 1, on page 6 - 4*) you will require **two identical** hard disks or solid state drives.

You need to setup a RAID before installing your ***Windows 10*** operating system, and you will need to prepare the following in order to do so.

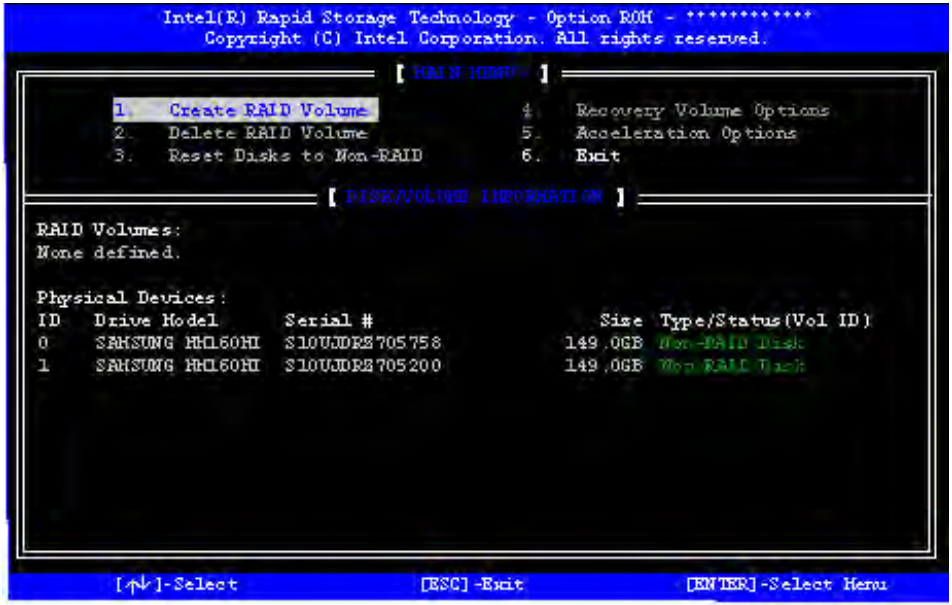
==========

- The ***Microsoft Windows 10 OS DVD***.
- An attached external DVD drive.
- Two Identical solid state drives.
- The ***Device Drivers & Utilities + User's Manual*** disc.

==========

1. Start-up your notebook computer and press <F2> to enter the **BIOS**.
2. Go to the **Boot** menu, select **UEFI Setting** and press <Enter> (see page *5 - 16*).
3. Set **UEFI Boot** to "**Disabled**".
4. Press <Esc> to exit the menu and go to the **Advanced** menu.
5. Select **SATA Mode** (see page *5 - 10*), press <Enter> and select "**RAID Mode**".
6. Press <F4> and <Yes> to "**Save Changes and Reset**".
7. As the computer restarts press **Ctrl + i** to enter RAID configuration menu.
8. Select **1.Create RAID Volume** and press Enter.

Figure 6 - 9
Intel(R) Rapid Storage Technology Option ROM



9. Type the **RAID volume name** and then press Tab or Enter to advance to the next field.
10. Specify (use the up and down arrow keys) the **RAID level** (**RAID 0 (Stripe)** or **RAID 1 (Mirror)** and then press Tab or Enter to advance to the next field.
11. Press Enter and the system will select the physical disks to us if applicable.
12. Press Enter and select (if applicable) the Strip Size (best set to **128KB**).
13. Press Enter and select the Capacity size (best set to default).

14. Press Enter to select **Create Volume**.
15. Press Enter to create the volume, and confirm the selection by pressing **Y**.
16. This will now return to the main menu.

Figure 6 - 10
RAID Created

17. Select **6.Exit** and press Enter, then press **Y** to exit the RAID configuration menu.

18. As the computer starts up make sure the ***Windows 10*** OS DVD is in the attached DVD drive and it will automatically boot from the ***Windows 10*** OS DVD (you will be prompted to press a key to boot from the DVD). Alternatively you can press <F7> as the computer starts up to bring up the boot device menu.
19. Select the DVD drive containing the ***Windows 10*** OS DVD and press <Enter>.
20. Press a key at system startup to begin installing ***Windows*** from your ***Microsoft Windows 10*** disc.
21. Click **Next > Install Now** to continue installing the operating system as normal (see your ***Windows*** documentation if you need help on installing the ***Windows*** OS).
22. Follow the on-screen instructions to install the ***Windows 10*** operating system.
23. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 4*** (make sure you install the **Intel Rapid Storage Technology driver** - see overleaf).
24. Run the **Intel® Rapid Storage Technology** application to manage your RAID volume as instructed in ***"Intel® Rapid Storage Technology for RAID Systems" on page 6 - 53***.

Deleting a RAID (Windows 10)

If you wish to delete an existing RAID then follow the procedure below to do so. However **backup up any necessary files and data before deleting a RAID**, as doing so will result in the loss of all data on the RAID volumes.

1. Start-up your notebook computer and press <F2> to enter the **BIOS**.
2. Go to **Intel(R) Rapid Storage Technology** (in the **Advanced** menu) and press <Enter>.
3. Go to the RAID (listed under **RAID Volumes:**) and press <Enter>.
4. Select **Delete** and press <Enter>.
5. Select "**Yes**" (note that al the data on the volumes will be lost) and press <Enter>.

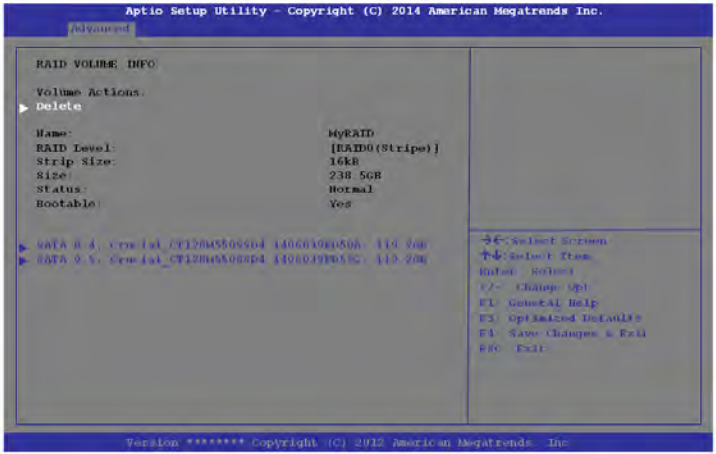


Figure 6 - 11
Delete RAID (Advanced > Intel(R) Rapid Storage Technology)

Intel® Optane™ Setup Procedure

After initial setup make sure you install the **Intel Rapid Storage Technology driver** - see *"IRST Driver Installation" on page 6 - 52*).

See also *"Clearing Intel® Optane™" on page 6 - 26* (however **backup up any necessary files and data before deleting an Optane setup**, as doing so will result in the loss of all data on the volumes).

You need to setup **Intel® Optane™** before installing your ***Windows 10*** operating system, and you will need to prepare the following in order to do so.

==========

- The ***Microsoft Windows 10 OS DVD***.
- An attached external DVD drive.
- An Intel® Optane™ SSD installed in your system.
- The ***Device Drivers & Utilities + User's Manual*** disc.

==========

1. Start-up your notebook computer and press <F2> to enter the **BIOS**.
2. Go to the **Boot** menu, select **UEFI Setting** and press <Enter> (see page ***5 - 16***).
3. Set **UEFI Boot** to "**Enabled**".
4. Press <Esc> to exit the menu and go to the **Main** menu.
5. Select **OffBoard NVMe Controller Configuration** and press enter to check that an Intel® Optane™ SSD is present.
6. Press <Esc> to exit the menu and go to the **Advanced** menu.

7. Select **SATA Mode** (see page ***5 - 10***), press <Enter> and select "**Intel RST Premium**".

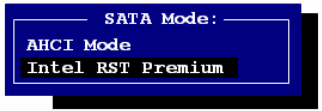


Figure 6 - 12
SATA Mode Selection (BIOS)

8. Press <F4> and <Yes> to "**Save Changes and Reset**".
9. As the computer restarts press <F2> to enter the **BIOS** again.
10. Go to **Intel(R) Rapid Storage Technology** (**Advanced** menu) and press <Enter>.
11. . *(Note this item only appears after you have restarted and accessed the BIOS again after having set **SATA Mode** to **Intel RST Premium**.)*

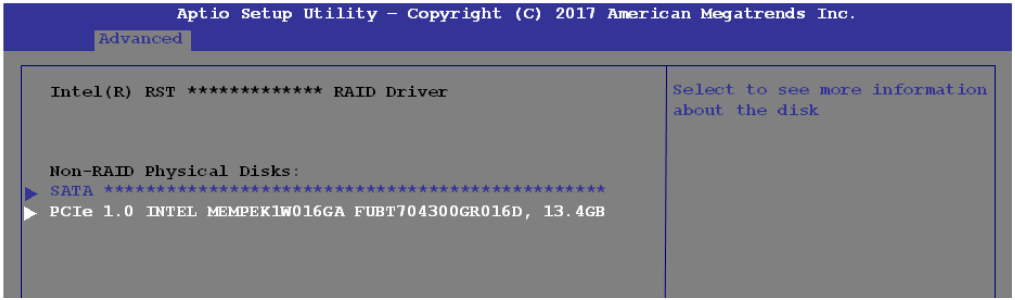


Figure 6 - 13
Intel(R) Rapid Storage Technology (Advanced Menu)

12. If you are reinstalling a system that has previously been setup in **Intel RST Premium mode, make sure you have cleared the Intel Optane Memory (see *"Clearing Intel® Optane™" on page 6 - 26*)**.

Creating a Windows Partition for Optane

When installing *Windows*, make sure that you leave a minimum of 5MB of unallocated space for the Intel® Optane™ software to create needed metadata.

After you have created a Windows partition the **Windows Setup** screen will display the partitions and sizes, including the unallocated space. If the unallocated space is less than 5MB, then delete the partitions and recreate them until the criteria is met.

Note this is **5MB** only, not GB.

13. Press <F4> and <Yes> to "**Save Changes and Reset**", however **ensure that the condition in the bulleted point below is met** before doing so.

- Make sure the ***Windows 10*** OS DVD is in the attached DVD drive, as the computer starts up it will automatically boot from the ***Windows 10*** OS DVD (you will be prompted to press a key to boot from the DVD).

14. Press <F7> as the computer starts up to bring up the boot device menu.
15. Select the DVD drive containing the ***Windows 10*** OS DVD and press <Enter>.
16. Press a key at system startup to begin installing ***Windows*** from your ***Microsoft Windows 10*** disc.
17. Click **Next > Install Now** to continue installing the operating system as normal (see your ***Windows*** documentation if you need help on installing the ***Windows*** OS).
18. Select **Custom: Install Windows only (advanced)**.
19. It is recommended that you select and then delete existing partitions.
20. Click **New** to create a partition for Windows.
21. It is very important to make sure that when you create the partition, to leave at least a minimum of unallocated space of **5MB** (see sidebar).
22. Follow the on-screen instructions to install the ***Windows 10*** operating system.
23. Install the ***Windows*** drivers from the ***Device Drivers & Utilities + User's Manual*** disc as per ***Table 4 - 1, on page 4 - 4*** (make sure you install the **Intel Rapid Storage Technology driver** - see overleaf).
24. Run the **Intel® Rapid Storage Technology** application to manage your **Intel® Optane™** system as instructed in ***"Intel® Rapid Storage Technology for RAID Systems" on page 6 - 53***.

25. After installing the **Intel® Rapid Storage Technology** application you can access **Device Manager** (right-click the **Start** menu and select **Device Manager**).
26. Click **Disk drives** to check the Optane drive.

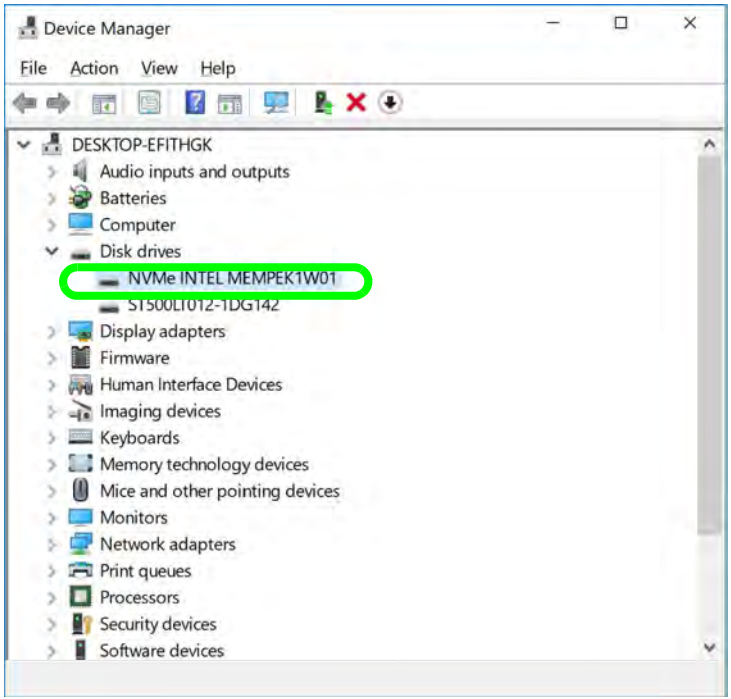


Figure 6 - 14
Device Manager (Disk drives)

Clearing Intel® Optane™

If you wish to clear an existing **Intel® Optane™** setup then follow the procedure below to do so. However **backup up any necessary files and data before clearing an Intel® Optane™ setup**, as doing so will result in the loss of all data on the volumes.

1. Make sure that **Intel® Optane™** is **Enabled** in the **Intel® Rapid Storage Technology** application.
2. Start-up your computer and press <F2> to enter the **BIOS**.
3. Go to **Intel(R) Rapid Storage Technology** (in the **Advanced** menu) and press <Enter>.
4. Select **Intel Optane, ****** (listed under **Optane Volume:**) and press <Enter>.

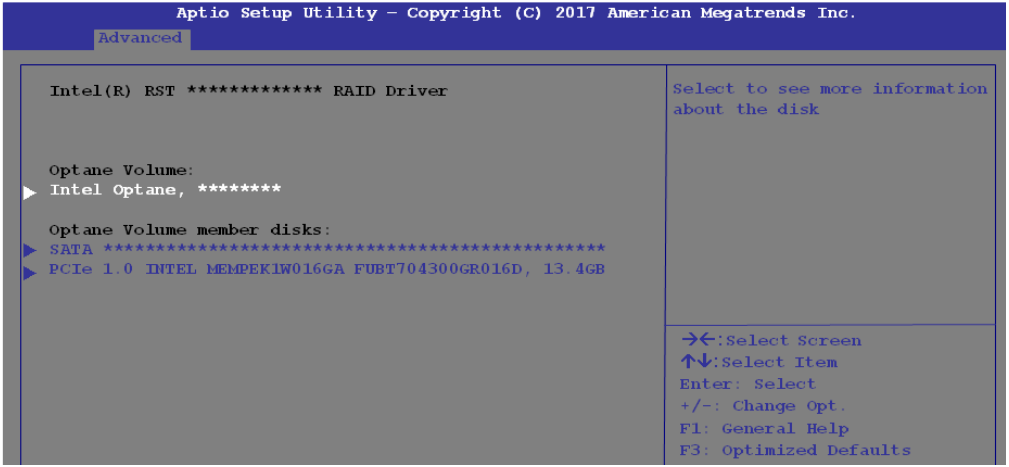


Figure 6 - 15
Intel(R) Rapid Storage Technology (Advanced Menu)

5. Select "**Deconcatentate**" and press <Enter>.

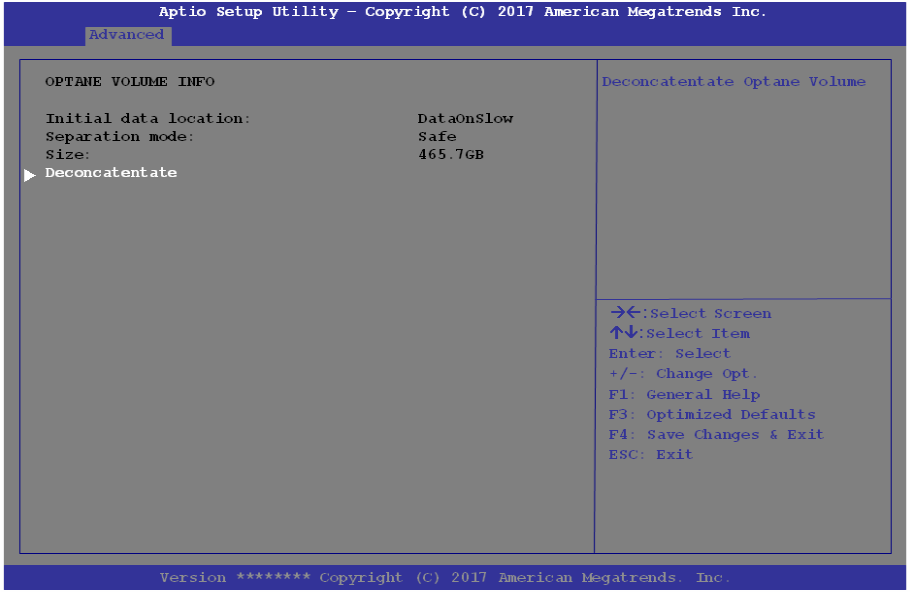


Figure 6 - 16
Intel(R) Rapid Storage Technology (Deconcatentate)

6. Select **Yes** from the "**Are you sure you want to perform deconcatentation**" option.

7. Select "**Start deconcatentation**" and press <Enter>.

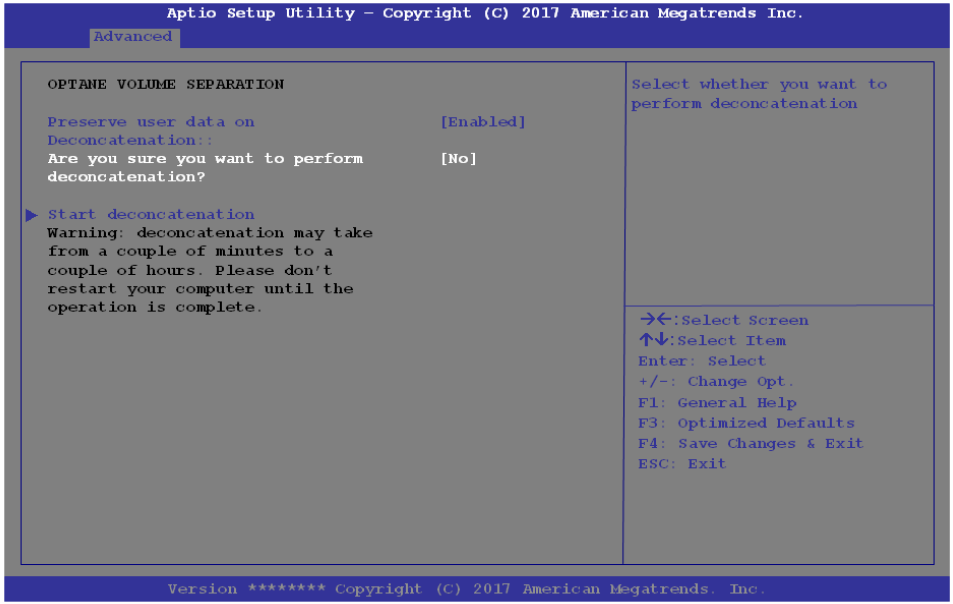


Figure 6 - 17
Intel(R) Rapid Storage Technology (Start Deconcatentation)

8. The system will return to the standard **Intel(R) Rapid Storage Technology** menu when complete (see ***Figure 6 - 13 on page 6 - 23***).
9. You should then select the appropriate SATA Mode for your system and reinstall the OS.

Wireless LAN Module

If you have included an **Intel® Wireless LAN & Bluetooth Combo module** is on (i.e. the system is not in **Airplane Mode**) before installing the driver.

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

Note that you need to install both the WLAN & Bluetooth drivers for the WLAN & Bluetooth Combo modules.

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited. Make sure the **WLAN & Bluetooth module(s) are OFF** if you are using the computer aboard aircraft by putting the system in to **Airplane Mode** (see ***Table 1 - 5, on page 1 - 21***).

Intel® WLAN Driver Installation

1. **Make sure the system is not in Airplane Mode**, and then insert the ***Device Drivers & Utilities + User's Manual*** disc into the DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install WLAN Driver > Yes**.
4. Click in the check box to agree to the **End User License Agreement** and click **Install**.
5. Click **Finish**.
6. The operating system is the default setting for Wireless LAN control in ***Windows*** (see page ***6 - 31***).

Qualcomm Atheros WLAN Combo Driver Installation

1. **Make sure the system is not in Airplane Mode**, and then insert the ***Device Drivers & Utilities + User's Manual*** disc into the DVD drive.
2. Click **Option Drivers** (button).
3. Click **1.Install WLAN Driver > Yes**.
4. Select the language preferred and click **Next**.
5. Click **Next > Next**.
6. Click in the check box to accept to the **License Agreement** and click **Next**.
7. Click **Finish**.
8. Click **Yes** to restart the computer.
9. The operating system is the default setting for Wireless LAN control in ***Windows*** (see page ***6 - 31***).

WLAN Configuration in Windows

You can configure a wireless connection using one of the following options, however make sure the Wireless LAN module is turned on (and not in Airplane Mode) before configuration begins.

1. Click the Wireless icon in the notification area of the taskbar.
2. Make sure that **Airplane mode** is **off** (the Airplane mode icon should be gray).
3. A list of available access points will appear.
4. Double-click an access point to connect to it (or click it and click **Connect**).

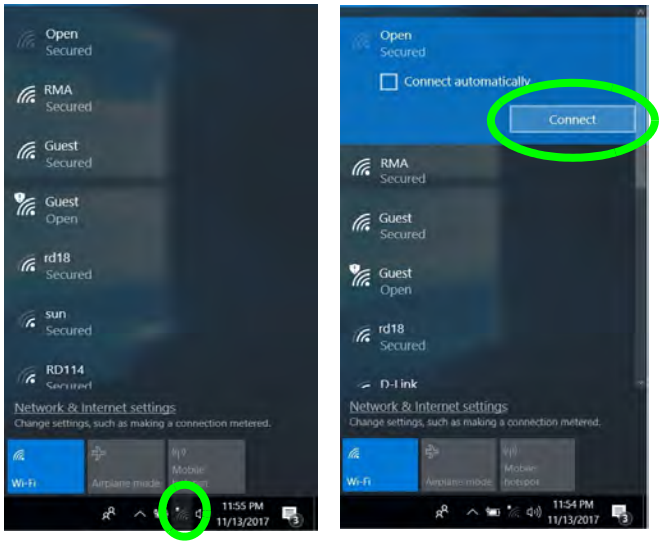


Figure 6 - 18
WiFi & Network Connections

5. Enter a network security key (password) if required, and click **Next**.
6. You can choose to share or connect to devices or not.
7. When you are connected to the network access point it will display **Connected** status Connected.
8. Select any connected network and click **Disconnect** Disconnect to disconnect from a connected access point.

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited.

Make sure the module is either **OFF** or in **Airplane mode** if you are using the computer aboard aircraft.

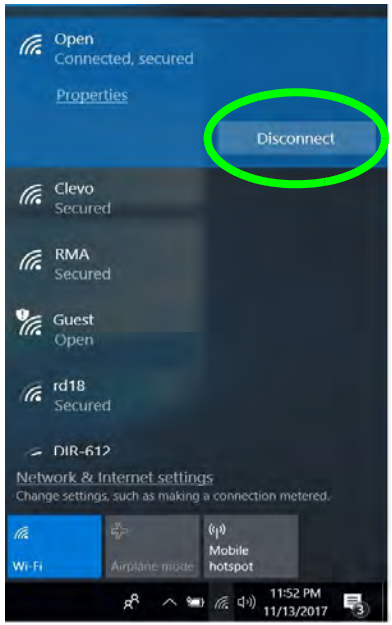


Figure 6 - 19
Network Connected (Click Disconnect)

9. You can click the **Airplane Mode** button to turn the mode On or Off.
10. You need to either use **Airplane Mode**, or **turn the WLAN module off** aboard aircraft.
11. **Network & Internet** in **Windows Settings** will bring up a more comprehensive list of network and internet settings including **Wi-Fi** (can be turned on/off), **Airplane mode** (Airplane mode and Wireless devices can be turned on/off) **VPN**, **Dial-up**, **Ethernet** and **Proxy**.

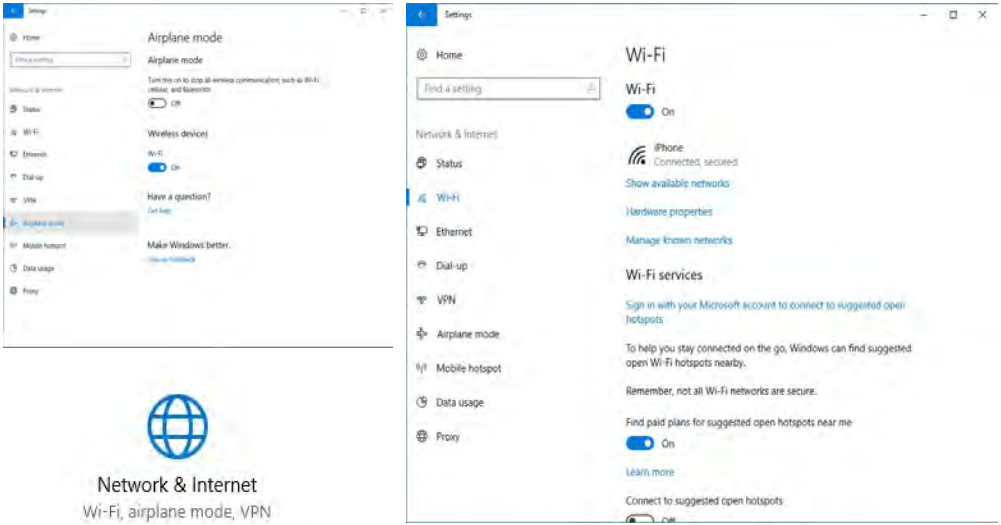


Figure 6 - 20
Network & Internet Settings

Wireless Device Operation Aboard Aircraft

The use of any portable electronic transmission devices aboard aircraft is usually prohibited. Make sure the **WLAN & Bluetooth module(s) are OFF** if you are using the computer aboard aircraft by putting the system in to **Airplane Mode** (see ***Table 1 - 5, on page 1 - 21***).

Bluetooth & WLAN Combo Module

If you have included an **Intel® Wireless LAN & Bluetooth Combo module** is on (i.e. the system is not in **Airplane Mode**) before installing the driver.

Make sure that the module is on (i.e. the system is not in **Airplane Mode**) before installing the 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.

Note that you need to install both the WLAN & Bluetooth drivers for the WLAN & Bluetooth Combo modules.

Intel Bluetooth Combo Driver Installation

1. **Make sure the system is not in Airplane Mode**, and then insert the ***Device Drivers & Utilities + User's Manual*** disc into an attached DVD drive.
2. Click **Option Drivers** (button).
3. Click **2.Install Combo BT Driver > Yes**.
4. Click **Next > Next**.
5. Click in the check box to accept the license and click **Next**.
6. Select the setup type (**Typical** is recommended) and click **Install**.
7. Click **Finish**.
8. See ***"Bluetooth Configuration in Windows" on page 6 - 36*** for configuration instructions.

Qualcomm Atheros Bluetooth Combo Driver Installation

1. **Make sure the system is not in Airplane Mode**, and then insert the ***Device Drivers & Utilities + User's Manual*** disc into an attached DVD drive.
2. Click **Option Drivers** (button).
3. Click **2.Install Combo BT Driver > Yes**.
4. Click **Next > Next**.
5. Click **Install**.
6. Click **Finish**.
7. Click **Yes** to restart the computer.
8. See ***"Bluetooth Configuration in Windows" on page 6 - 36*** for configuration instructions.

Bluetooth Configuration in Windows

1. Go to the **Settings** control panel and click **Devices** (or click the Bluetooth icon in the taskbar and click **Add a Bluetooth Device**).
2. Click **Bluetooth & other devices** and make sure Bluetooth is **On.**
3. Click **Add Bluetooth or other device > Bluetooth (Add a device)** and a list of discovered devices will appear.

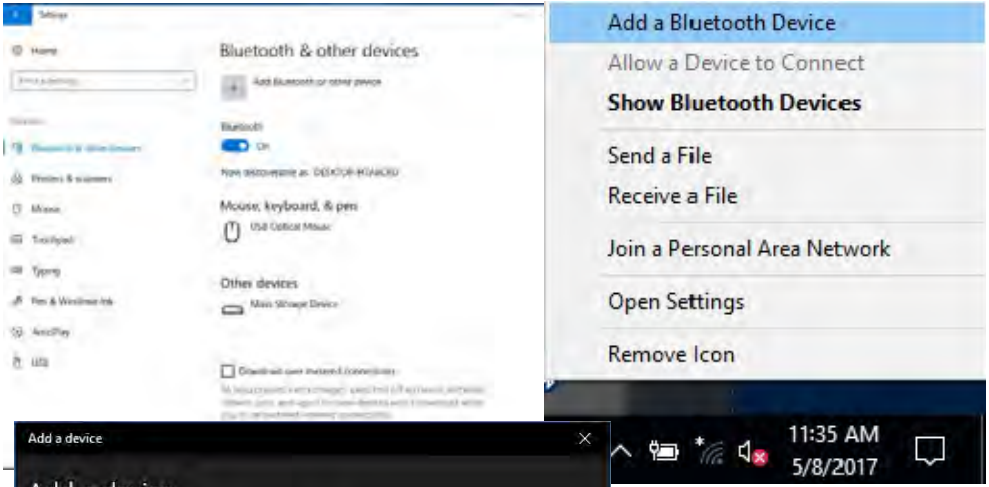


Figure 6 - 21
Settings > Bluetooth & Other Devices (Add a Bluetooth Device)

Figure 6 - 22
Add a Device

4. Double-click the device you want to pair with the computer and click **Connect, if the PIN matches that on the device to which you wish to connect (you may need to click paid on the device)**.

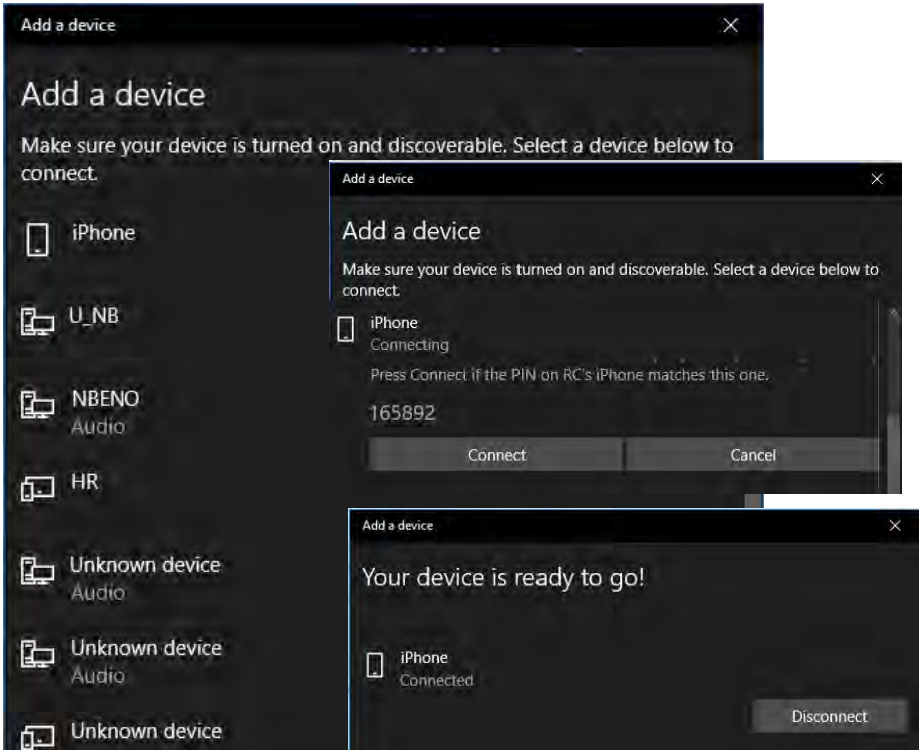


Figure 6 - 23
Bluetooth Connect

6

5. Select a device and click **Remove Device** Remove device to disconnect from any device (click **Yes** to confirm).

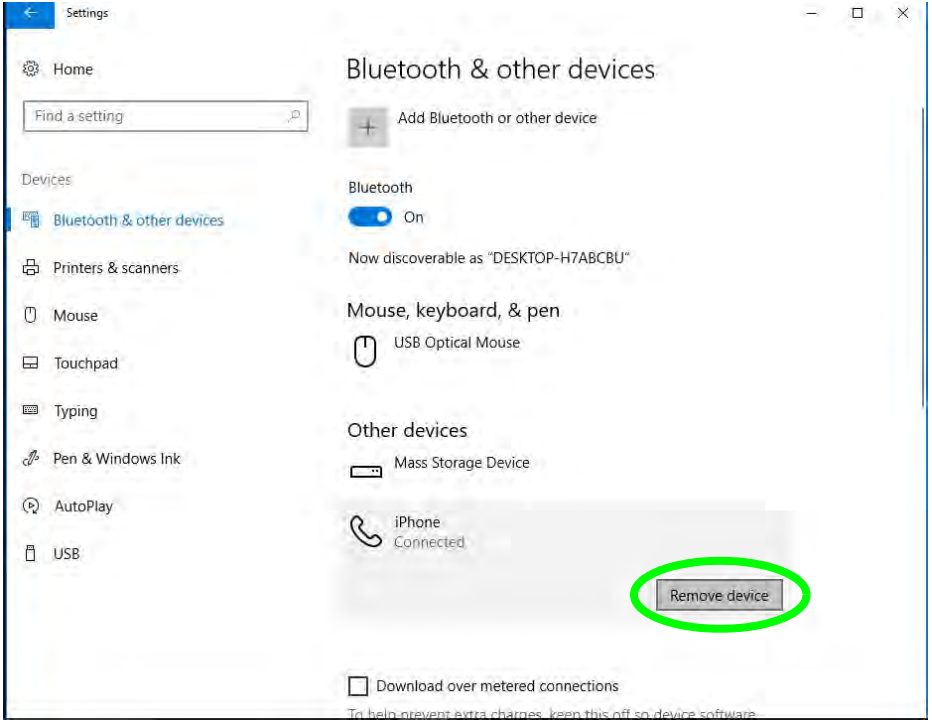


Figure 6 - 24
Bluetooth Remove Device

To Make your Computer Discoverable to Bluetooth Devices

1. Go to the **Settings** control panel and click **Devices** (or click the Bluetooth icon in the taskbar and click **Open Settings**).
2. Click **Bluetooth & other devices** and click **More Bluetooth options.**
3. In **Bluetooth Settings** make sure that ***Allow Bluetooth devices to find this PC*** check box (**Discovery**) has a check inside it.
4. Make sure that the ***Alert me when a new Bluetooth device wants to connect*** check box (**Notifications**) has a check inside it, if you want to be notified when a Bluetooth device wants to connect.

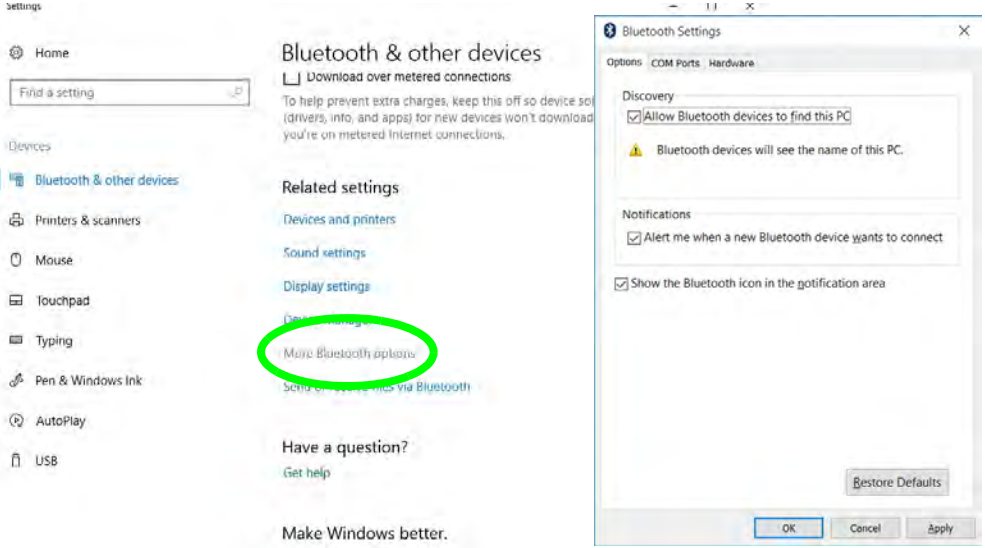


Figure 6 - 25
Bluetooth Settings

Software Update

Check for the latest software updates by making sure you are connected to the internet and clicking **Software Update** from the **Settings** menu. Follow the instructions provided to update the software.

Sound Blaster Cinema 3

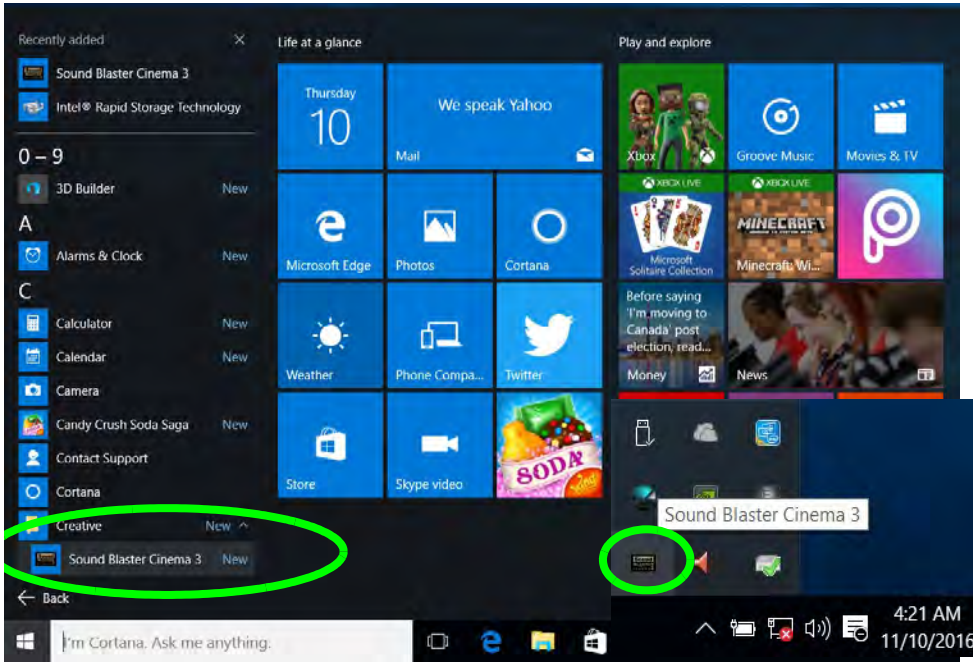
Install the **Sound Blaster Cinema** application is a suite of audio technologies which allow you to configure the audio settings to your requirements for the best performance in games, music and movies.

Sound Blaster Cinema 3 Installation

1. Before installing the driver make sure you have a working internet connection.
2. Insert the ***Device Drivers & Utilities + User's Manual*** disc into an attached DVD drive.
3. Click **Option Drivers** (button).
4. Click **3.Install SBCinema3 AP** > **Yes**.
5. Click **Next** > **Full Installation** (button).
6. Click **Next** > **Finish** to restart the computer.

Sound Blaster Cinema 3 Application

Run the **Sound Blaster Cinema** control panel from the notification area of the taskbar (or from **Creative** folder item in the Apps menu). Click on the tabs to access the any of the control panel menus.



Sound Blaster Cinema 3 & HDMI

Note that the Sound Blaster Cinema 3 SBX Pro Studio audio effects do not apply to audio generated through an HDMI connection.

Figure 6 - 26
Sound Blaster Cinema 3 Apps Menu & Taskbar Icon

Sound Blaster Cinema 3 Power

The **Sound Blaster Cinema 3** can be turned **On/Off** by clicking the **Power Button** (when the power is off the icon will be dimmed).

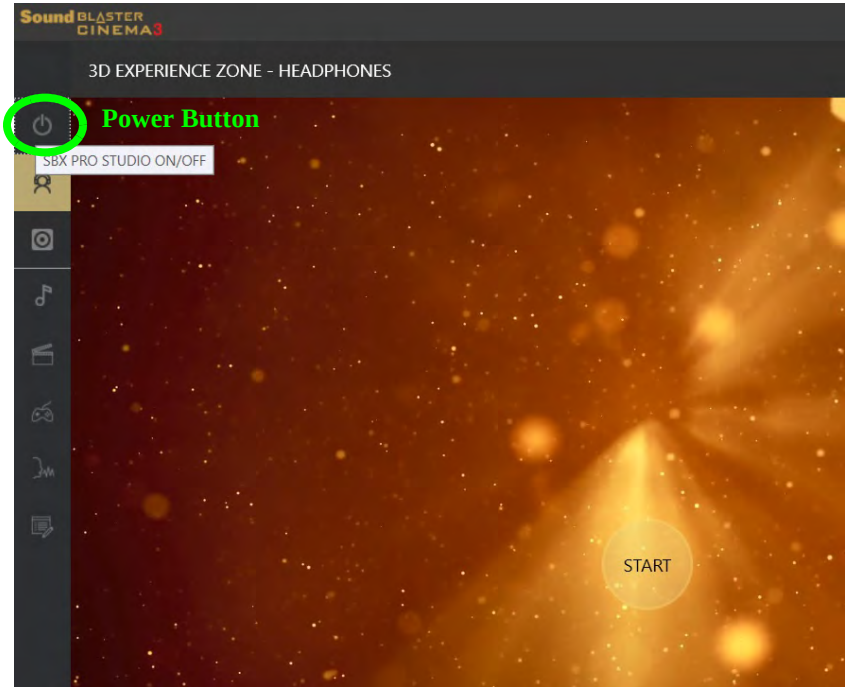


Figure 6 - 27
Sound Blaster Cinema 3 Power Button

Sound Blaster Cinema 3 - Reality 3D

Sound Blaster Cinema 3 Reality 3D allows you to enable 5.1/71 surround sound for headphones or speakers, and to test different surround effects. There are separate pages to allow configuration of either headphones or speakers, and you can fine tune effects for specific headphone types supported. Click **Start** START to begin to configure the settings.

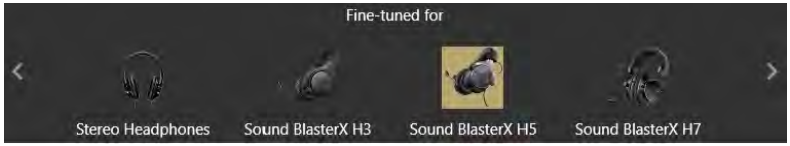
Figure 6 - 28
Sound Blaster Cinema 3 - Reality 3D Experience Zone (Headphones)

Reality 3D

The Sound Blaster Cinema 3 Reality 3D controls can be used to configure sound for both the internal speakers, and any connected audio source, including TVs through an HDMI connection, if audio is supported.

You can scroll left or right through the headphones supported.

Figure 6 - 29
Sound Blaster Cinema 3 Headphones

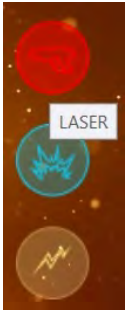


Volume can be adjusted by clicking on the dial.

Figure 6 - 30
Sound Blaster Cinema 3 Volume Dial

Click on any of the effects buttons to test the effects.

Figure 6 - 31
Sound Blaster Cinema 3 Effect Buttons



The **Speakers** page has two tabs (**3D Experience Zone** and **Speaker Calibration**) which can be accessed by clicking the icons at the top right of the page.

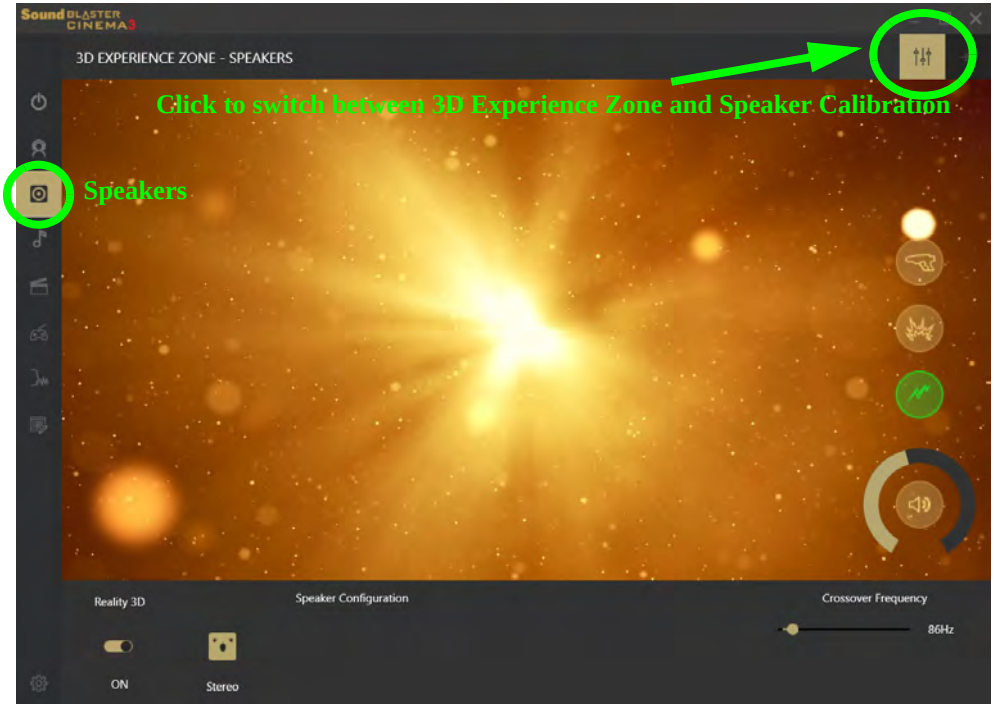


Figure 6 - 32
Sound Blaster Cinema 3 - Reality 3D Experience Zone (Speakers)

Click **Test** to run the **speaker calibration** test, and **Stop** once complete. Adjust the speaker distances and levels from the controls at the bottom of the page.

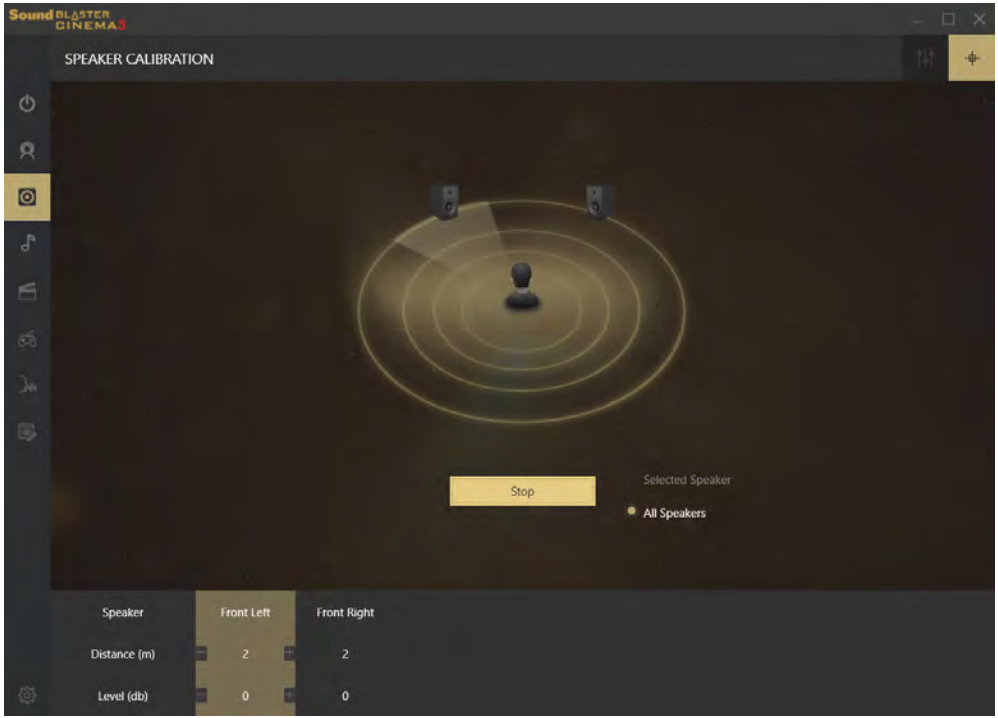


Figure 6 - 33
Sound Blaster Cinema 3 - Speaker Calibration (Speakers)

Sound Blaster Cinema 3 SBX Pro Studio

The **Sound Blaster Cinema 3 SBX Pro Studio** offers a suite of playback technologies to enhance sound. Each playback technology at the bottom of the screen has an **On/Off button** to allow you to enable/disable it, and most controls feature a slider to adjust the levels.

- **Surround:** Provides virtual sound channels to control the level of immersion.

SBX Pro Studio

The Sound Blaster Cinema SBX Pro Studio controls can be used to configure sound for both the internal speakers, and connected audio sources through the headphone jack. However it cannot be used to configure audio sources through an HDMI connection.

Figure 6 - 34
Sound Blaster Cinema 3 SBX Pro Studio Surround

- **Crystalizer:** Enriches audio to make it sound livelier.

Figure 6 - 35
Sound Blaster Cinema 3 SBX Pro Studio Crystalizer

- **Bass:** Enhances the bass level of the sound system.

Figure 6 - 36
Sound Blaster Cinema 3 SBX Pro Studio Bass

- **Smart Volume:** Minimizes sudden volume changes to avoid the need for constant adjustment.

Figure 6 - 37
Sound Blaster Cinema 3 SBX Pro Studio Smart Volume

- **Dialog Plus:** Optimizes dialogue levels for movies etc.

Figure 6 - 38
Sound Blaster Cinema 3 SBX Pro Studio Dialog Plus

Sound Blaster Cinema 3 Profiles

The **Profile** buttons on the left side of the screen give you preset settings to enhance your audio settings for **Music**, **Movie**, **Game** and **Voice**. You can choose **Custom** to adjust the settings to your own set preferences.

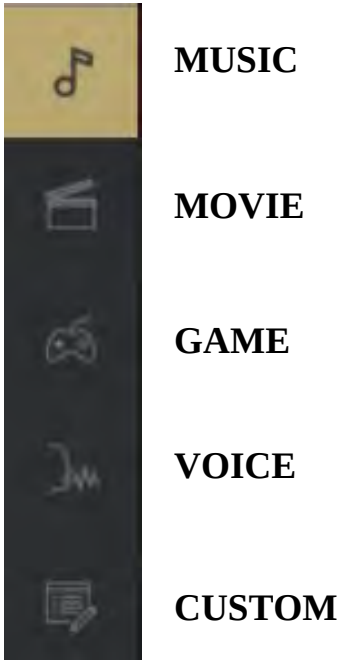


Figure 6 - 39
Sound Blaster Cinema 3 Profiles

Sound Blaster Cinema 3 Settings

Click the **Settings** button at the bottom left of the page to adjust the settings to your preferences.

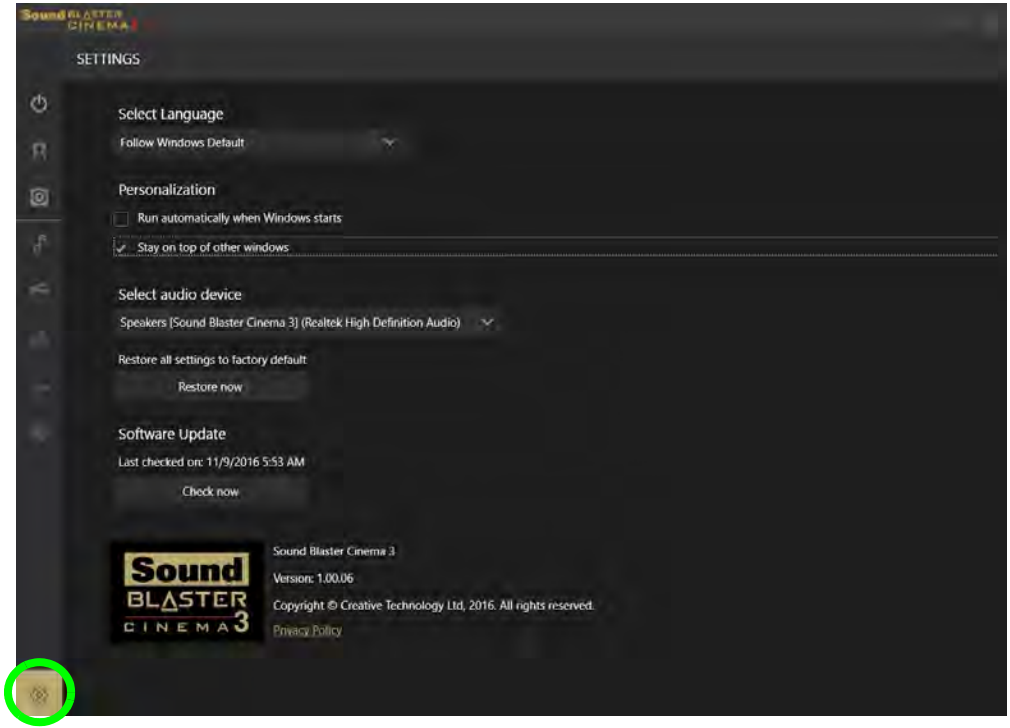


Figure 6 - 40
Sound Blaster Cinema 3 - Settings

IRST and M.2 PCI-e SSDs

Note that Intel® Rapid Storage Technology **does not support M.2 SSDs with a PCI-e Interface** (M.2 SSDs with a SATA Interface are supported).

Intel® Rapid Storage Technology

The **Intel Rapid Storage Technology application** provides high-performance AHCI and **RAID/Intel® Optane™** system capabilities. Install the **Intel Rapid Storage Technology application** (after installing all necessary drivers in the correct order) to support your **RAID/Intel® Optane™** system or SATA drive if set up in **AHCI mode** in the BIOS (see ***"SATA Mode (Advanced Menu)" on page 5 - 10***).

IRST Driver Installation

1. Insert the ***Device Drivers & Utilities + User's Manual*** disc into an attached DVD drive.
2. Click **Option Drivers** (button).
3. Click **4.Install IRST Driver > Yes**.
4. Click **Next**.
5. Click in the check box to accept the license and click **Next**.
6. Click **Next > Next > Next**.
7. Click **Finish** to restart the computer.
8. Run the **Intel® Rapid Storage Technology** app from the **Apps** screen.

See the following pages for more information if you have set your hard disks up in a **RAID** (see page ***6 - 53***) or **Intel® Optane™** (see page ***6 - 58***) configuration.

After setting the SATA mode to **Intel® Optane™ and installing the Intel® Rapid Storage Technology** application, DO NOT uninstall the **Intel® Rapid Storage Technology** application.

Intel® Rapid Storage Technology for RAID Systems

Intel® Rapid Storage Technology application displays status information on your RAID configuration. Run the **Intel® Rapid Storage Technology** application from the item in the **Start** menu.

When the **Intel® Rapid Storage Technology** application is launched the system will open the **Status** window. Here you can view the general health of the storage system. Various volume creation and management options are available depending on the system's status.

IRST and M.2 PCI-e SSDs

Note that Intel® Rapid Storage Technology **does not support M.2 SSDs with a PCI-e Interface** (M.2 SSDs with a SATA Interface are supported).

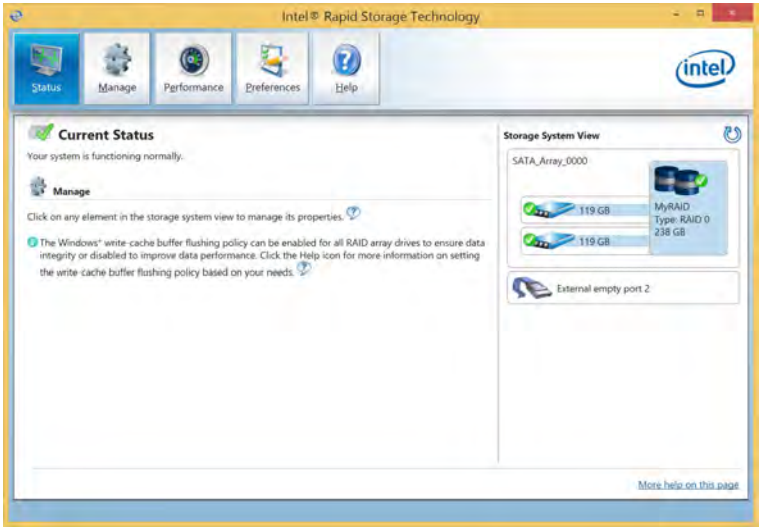


Figure 6 - 41
Intel® Rapid Storage Technology Status

Help

Click the **Help** (or press **F1**) menu button at the top of the **Intel® Rapid Storage Technology** application.

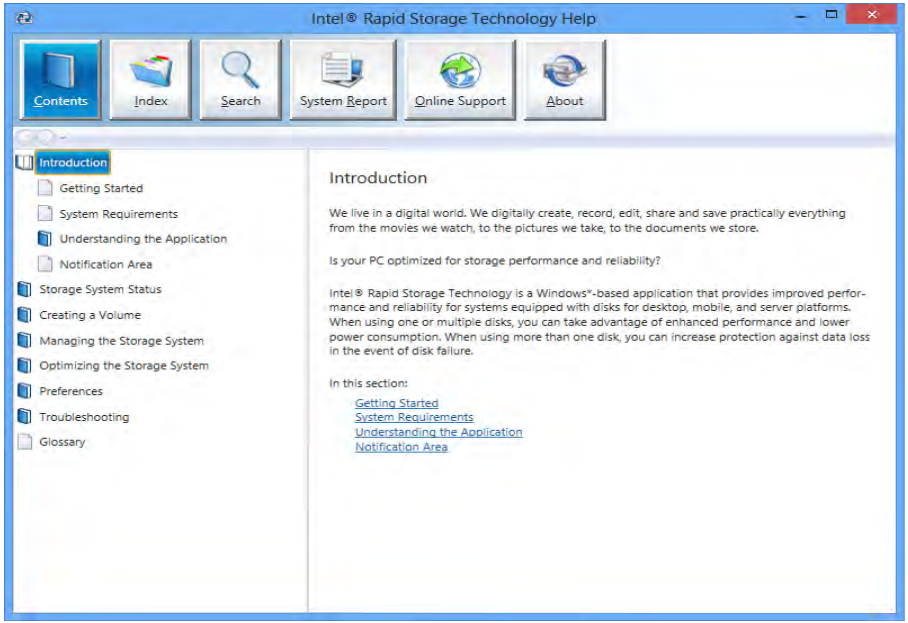
Click **Contents** to view the general list of subjects covered, click **Index** or **Search** for a more specific help topics on a particular item.

Click **More help on this page** at the bottom of any page for page specific help.

Figure 6 - 42
Intel® Rapid Storage Technology Help

Intel® Rapid Storage Technology Help

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. Click the **Help** menu (or press **F1**) for instructions on how to recover or recreate RAID Volumes.



RAID Volume Data Verification and Repair

The RAID volume data verification process identifies any inconsistencies or bad data on a RAID 0 or RAID 1 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.

Table 6 - 2 **RAID Level 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 the help file ***"Intel® Rapid Storage Technology Help" on page 6 - 54***.

See over for details on how to verify and repair RAID volume data. Verification will identify and repair data inconsistencies on the volume.

Verifying and Repairing RAID Volume Data

1. Run the **Intel® Rapid Storage Technology** application.
2. Click to **select the RAID** in the pane on the right side of the window.
3. Click **Manage** and click **Advanced**.
4. Click **Verify** and click **Verify** (button) to begin the process (in some cases you may be required to **initialize** a volume before verification).

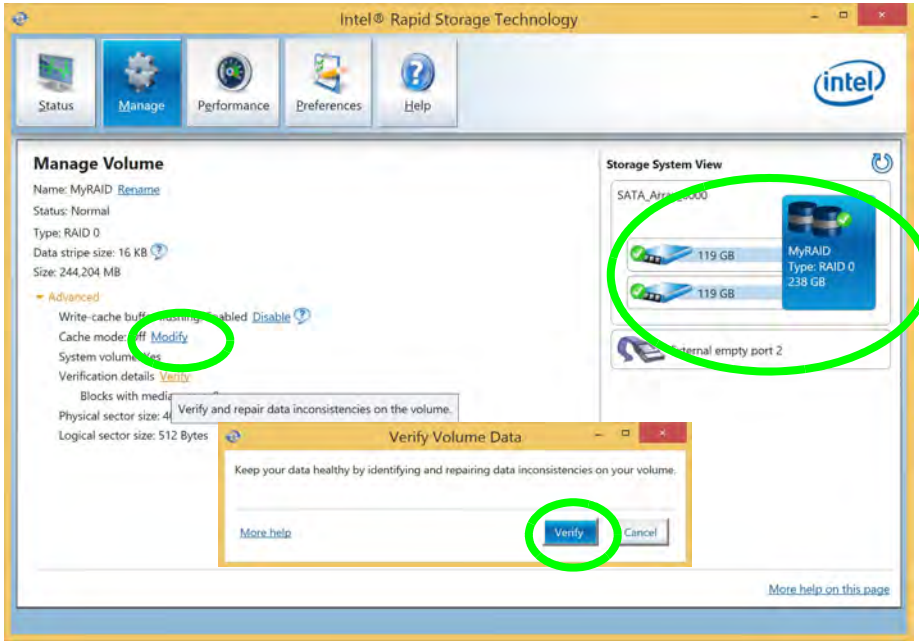
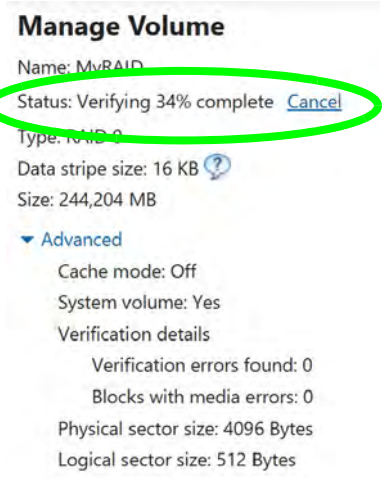
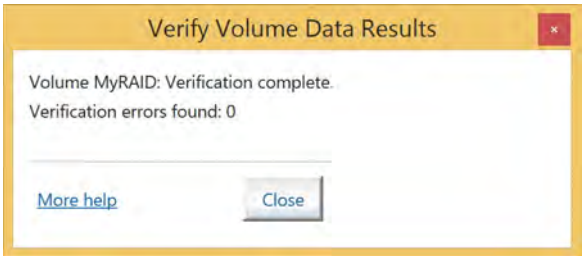


Figure 6 - 43
Intel® Rapid Storage Technology Verify

5. The completion percentage will be listed under **Status** (verifying and repairing).
6. Click **Close** in the Verify Volume Data Results window.





Scheduling Verify & Repair

You can schedule verification and repair by clicking **Preferences > Scheduler** and enabling a set time for verification and repair.

Figure 6 - 44
Intel® Rapid Storage Technology Verify

Intel® Rapid Storage Technology for Optane Systems

Intel® Rapid Storage Technology application displays status information on your **Intel® Optane™** configuration. Run the **Intel® Rapid Storage Technology** application from the item in the **Start** menu.

When the **Intel® Rapid Storage Technology** application is launched the system will open the **Status** window. Here you can view the general health of the storage system. Various volume creation and management options are available depending on the system's status.

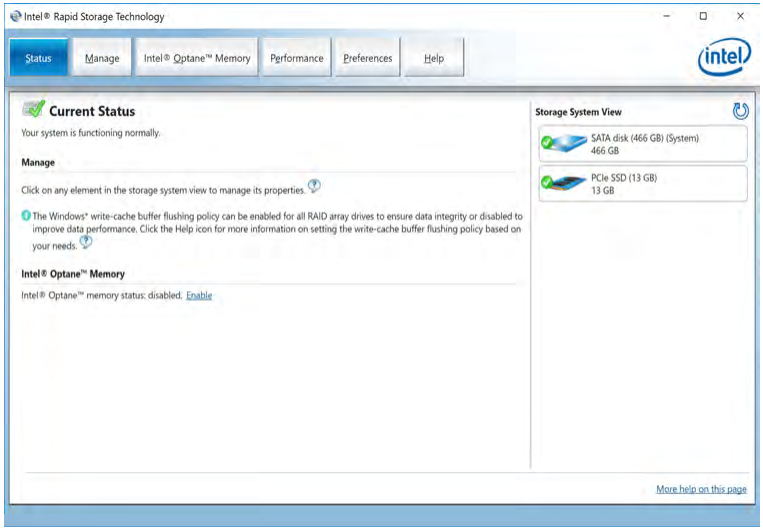


Figure 6 - 45
Intel® Rapid Storage Technology Status

Enabling Intel® Optane™

1. Run the **Intel® Rapid Storage Technology** application.
2. Click **Enable**.

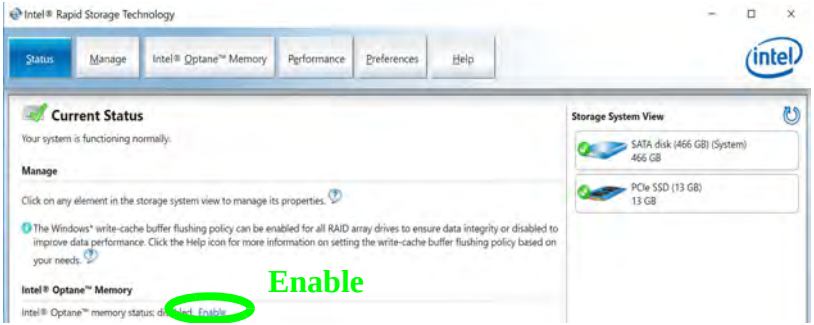


Figure 6 - 46
IRST - Intel® Optane™ Memory (Enable)

3. The system will pop-up a message and ask you to select a compatible fast drive (in this case there should only be one option).

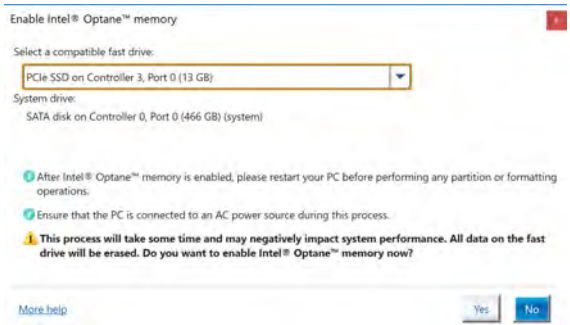


Figure 6 - 47
IRST - Intel® Enable Optane™ Memory

4. You will need to restart the computer after enabling **Optane**, and make sure the system is powered by the powered AC/DC adapter, and not by battery only.
5. Click **Yes** to begin the process (this may take some time).
6. After the process has been completed restart the computer.
7. After restarting can access **Device Manager** (right-click the **Start** menu and select **Device Manager**).
8. Click **Disk drives** to check that the drive should read **Intel Optane ******.

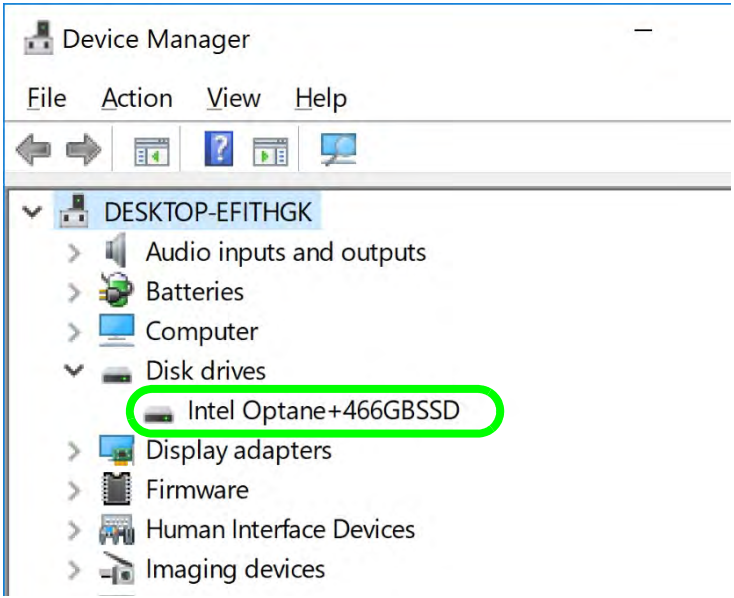


Figure 6 - 48
Device Manager (Disk drives)

9. Run the **Intel® Rapid Storage Technology** application to check the status.

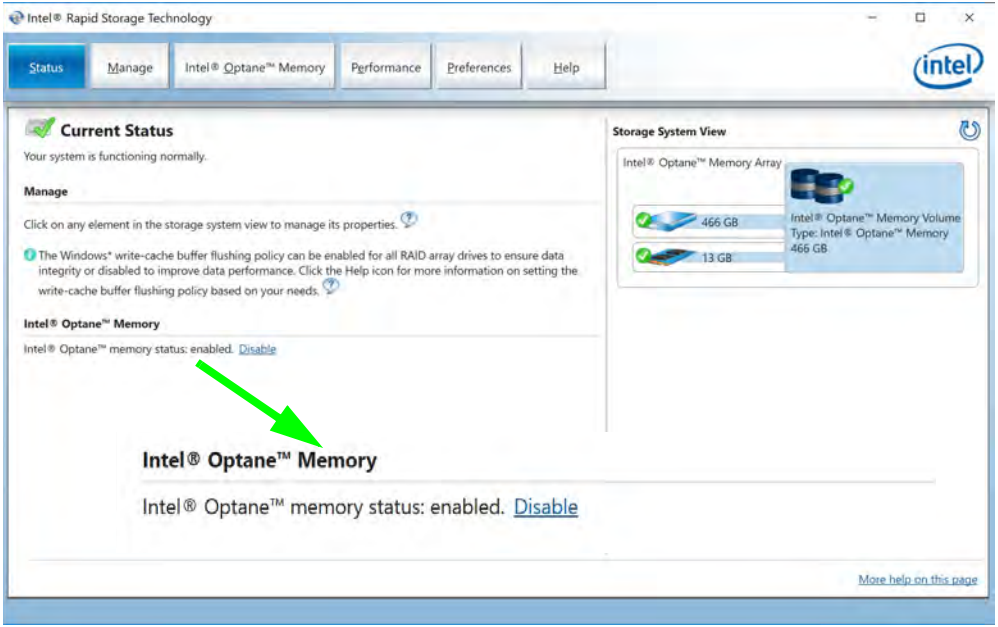


Figure 6 - 49
IRST - Intel® Optane™ Memory (Enabled)

Disabling Intel® Optane™

Disable Intel® Optane™ if you want to reinstall/ reset the system or update the IRST driver. See also *"Clearing Intel® Optane™" on page 6 - 26*.

Disabling Intel® Optane™

If you need to disable **Intel® Optane™** for any reason follow these instructions.

1. Run the **Intel® Rapid Storage Technology** application.
2. Click **Disable**.

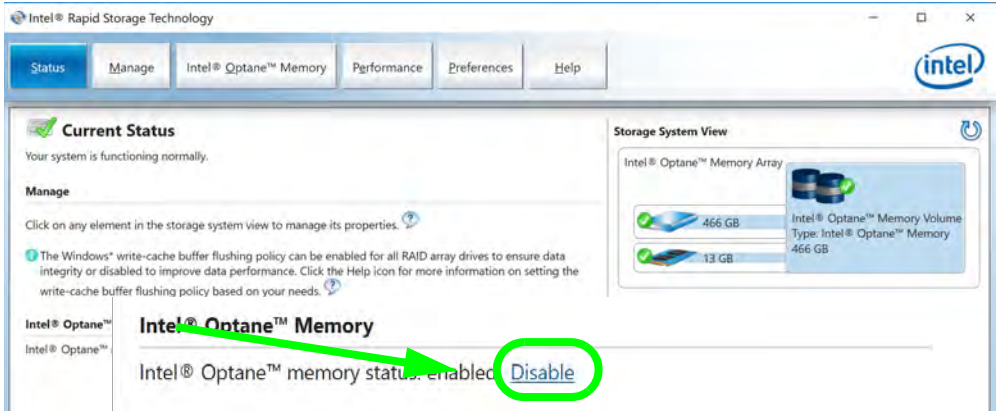


Figure 6 - 50
IRST - Intel® Optane™ Memory (Disable)

3. Click **Yes** when the message pops up.

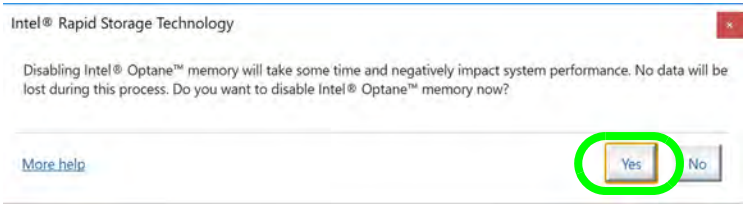
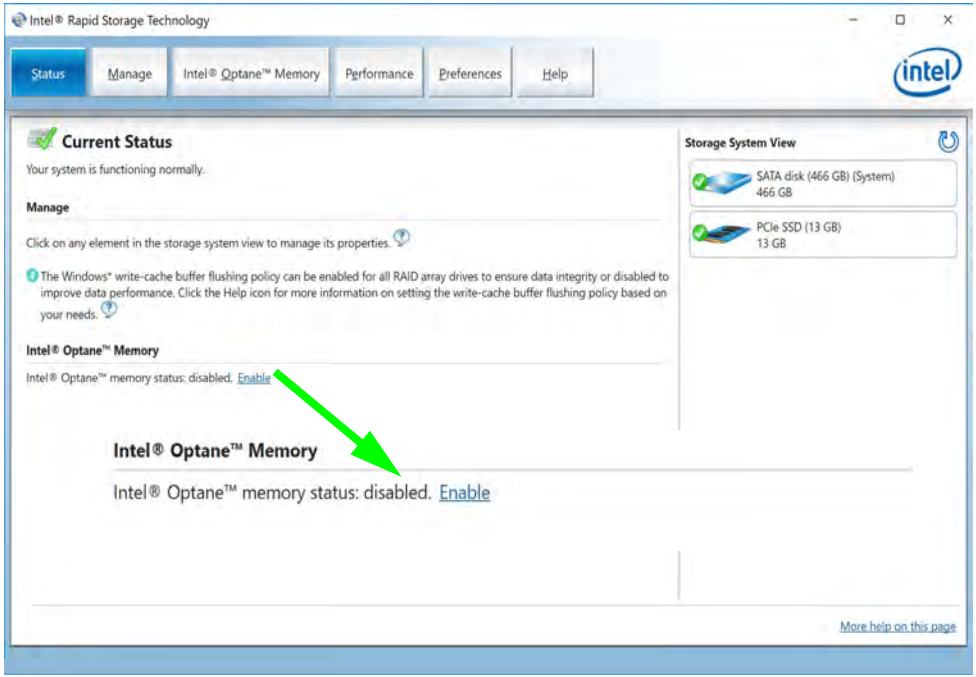


Figure 6 - 51
IRST - Yes to Disable

4. Restart the computer to complete the process.
5. Run the **Intel® Rapid Storage Technology** application.
6. The **Status** of **Intel® Optane™ Memory** is indicated in the Window.
7. To enable **Intel® Optane™ Memory** follow the process indicated in ***"Enabling Intel® Optane™" on page 6 - 59***.



HDDs & Intel® Optane™ SSDs

Note that if your system's HDD or Intel® Optane™ SSD is to be transferred to another system for use for any reason, you will need to disable Intel® Optane™ in IRST first.

Removal of any cover(s) and /or screw(s) violates the terms of your warranty.

Figure 6 - 52
IRST - Intel® Optane™ Memory (Status)

PC Camera

Use the **Fn + F10** key combination (see *"Function Keys & Visual Indicators" on page 1 - 21*) or **Control Center button** to toggle power to the PC Camera module.

When the PC Camera is in use the LED indicator to the left of the camera will be illuminated (see ❷ *Figure 1 - 2 on page 1 - 6*).

Note that you need to use the **Camera** app in ***Windows*** to take pictures and capture video.

Camera App

1. Make sure the PC Camera is turned on by using the **Fn + F10** key combination (or **Control Center button**).
2. Run the Camera app from the Start menu by clicking on the **Camera** app icon (you can type “camera” into the search box to find the Camera app).
3. The interface displays two buttons on the right of the screen; one for photo and one for video.

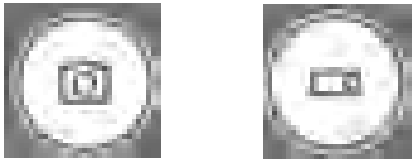


Photo **Video**

Figure 6 - 53
Camera App Mode Icons

4. Simply click on the appropriate button to switch to either photo or video modes.
5. You can use the buttons at the top of the screen to access the **Settings** and **Auto/ Pro** menus (for **Self Timer** or **Exposure compensation**).

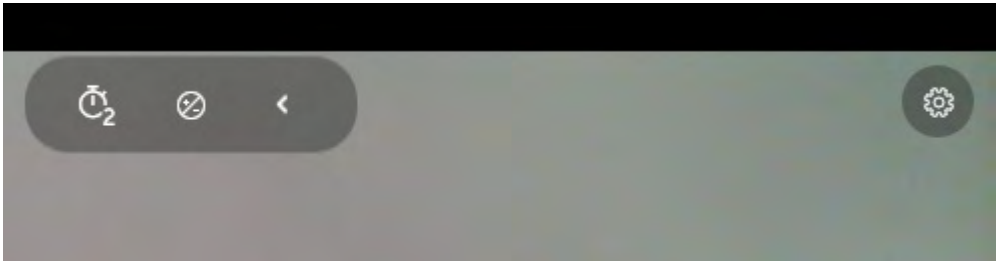


Figure 6 - 54
Camera Menu Buttons

6. Click **Settings** to access the camera settings menu to make adjustments for **Camera press and hold button**, photo **Aspect ratio, Framing grid**, Time lapse, video **recording frame rates** and **Flicker reduction**.

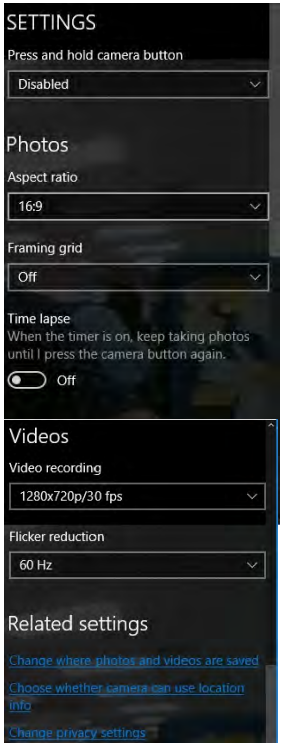


Figure 6 - 55
Camera Settings

Camera Settings

The **Self Timer** can be set to take Photos after **2**, 5 or *10* seconds and can also be set to continue taking pictures until the camera button is pressed again (**Photo Burst**).

The **Aspect Ratio** can be changed to those the system supports.

You can use a **Framing grid** to help you line up pictures.

Time lapse can be set to keep taking photos until the camera button is pressed again.

The **Video recording** resolution and frame rate can be set to any supported by the system. 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 File Explorer, 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.

If you need to reduce any screen flicker, change the settings in **Flicker reduction** to either e.g. 50Hz or 60Hz.

7. With the Pro menu expanded you can access the **Exposure compensation** button to adjust the brightness.

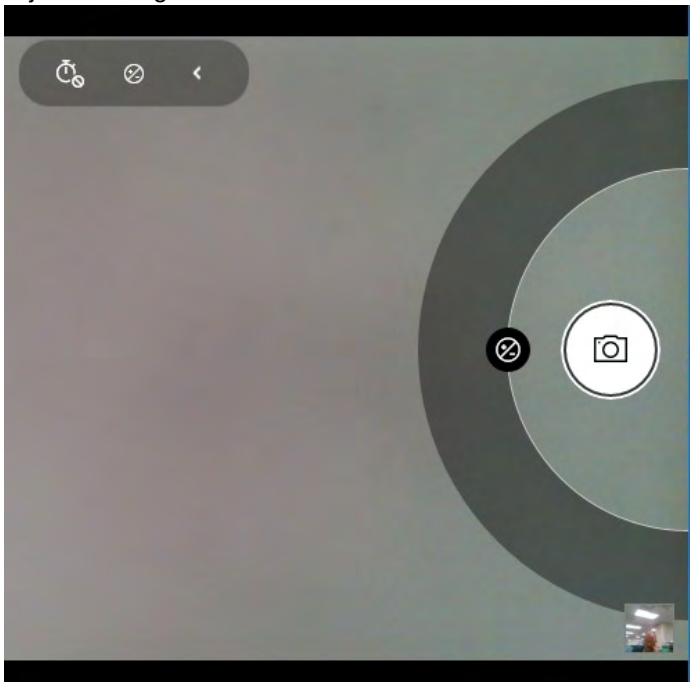


Figure 6 - 56
Camera Brightness Adjustment

Taking Pictures/Capturing Video

1. Make sure the PC Camera is turned on by using the **Fn + F10** key combination (or **Control Center button**).
2. Run the Camera app from the Start menu by clicking on the **Camera** app icon (you can type “camera” into the search box to find the Camera app).
3. Click to select either **photo** or **video** modes.
4. Click the photo icon to take a picture.
5. Click on the video icon to start video capture (when video capture begins a timer will appear at the bottom of the screen).
6. To stop video capture click the stop button (you can also pause the video capture).

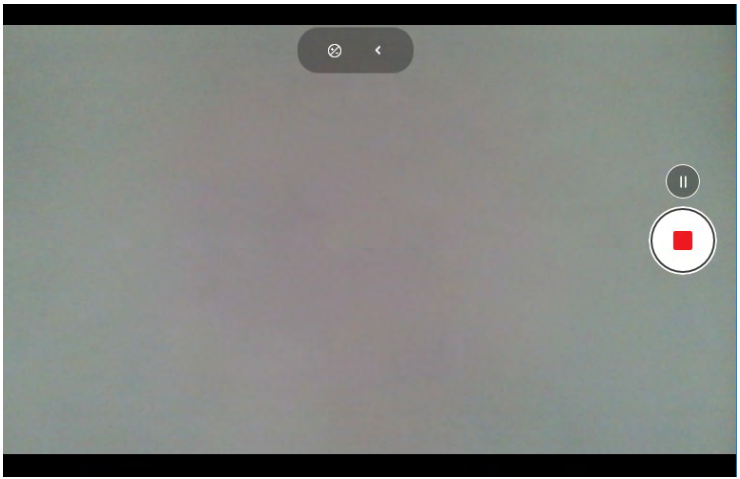


Figure 6 - 57
Video Camera Recording in Process

7. Captured photos and videos will be saved to the **Photos** app stored in the Start menu (type **Photos** into the search box if you cannot find the app)**.** You can also access the photos from the **Camera roll** icon at the bottom right of the Camera app screen.

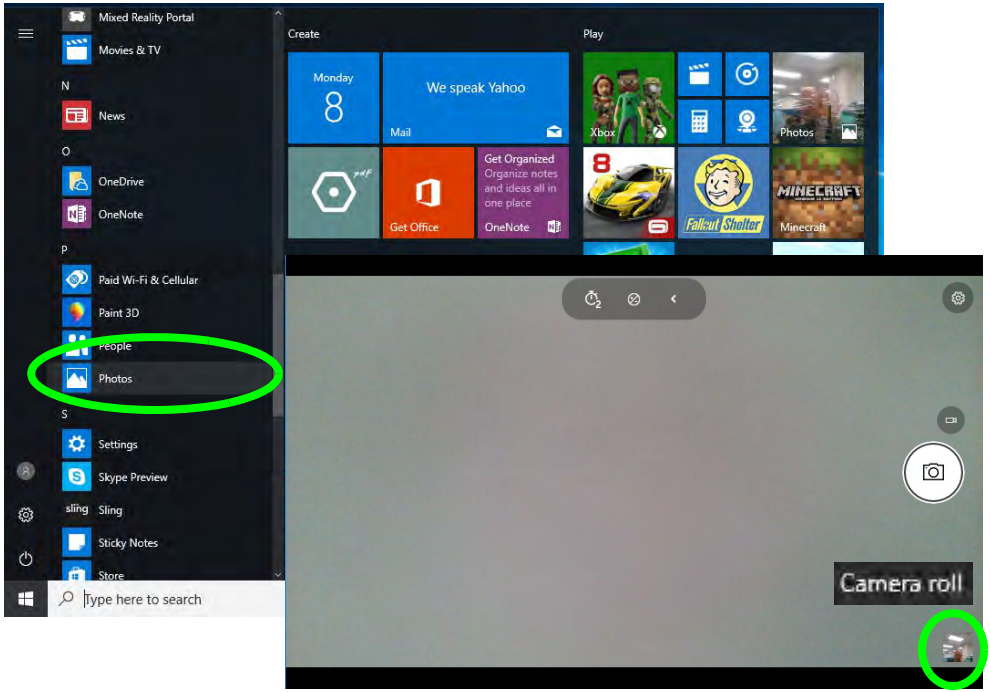


Figure 6 - 58
Photos App (For Captured Photos & Videos) & Camera Roll in the Camera App

Trusted Platform Module

(**Optional**)

The **TPM security chip** allows you to create and manage digital certificates for user and platform authentication. This type of security is usually administered within large enterprises and organizations, and therefore requires implementation by a system administrator before users can access security features.

Individual users can use the TPM as an authentication with the fingerprint reader.

Make sure you have administrator's rights to your computer, and have a ***Windows*** password enabled for full security protection. In addition **Make sure you prepare a removable media (e.g. a USB flash drive) to store passwords etc. before beginning the TPM initialization process**.

Before setting up the TPM functions you must initialize the security platform.

Enabling & Managing TPM

1. Restart the computer.
2. Enter the **Aptio Setup Utility** pressing **F2** during the POST/startup.
3. Use the arrow keys to select the **Security** menu.
4. Select **TPM Configuration** and press Enter to access the sub-menu.
5. Press Enter to access the **Security Device Support** menu and select **Enable**.
6. Press **F4** to save the changes and restart the computer.
7. You can now manage the TPM from ***Windows***.

Figure 6 - 59
TPM State (Enable)

Clearing TPM Information

You can select **Pending operation**, and then select **TPM clear** to clear existing TPM information in order to reset the TPM.

TPM Management in Windows

You can manage your TPM settings from within ***Windows***:

1. Go to the **Control Panel**.
2. Click **BitLocker Drive Encryption** (**System and Security**).
3. Click **TPM Administration**.

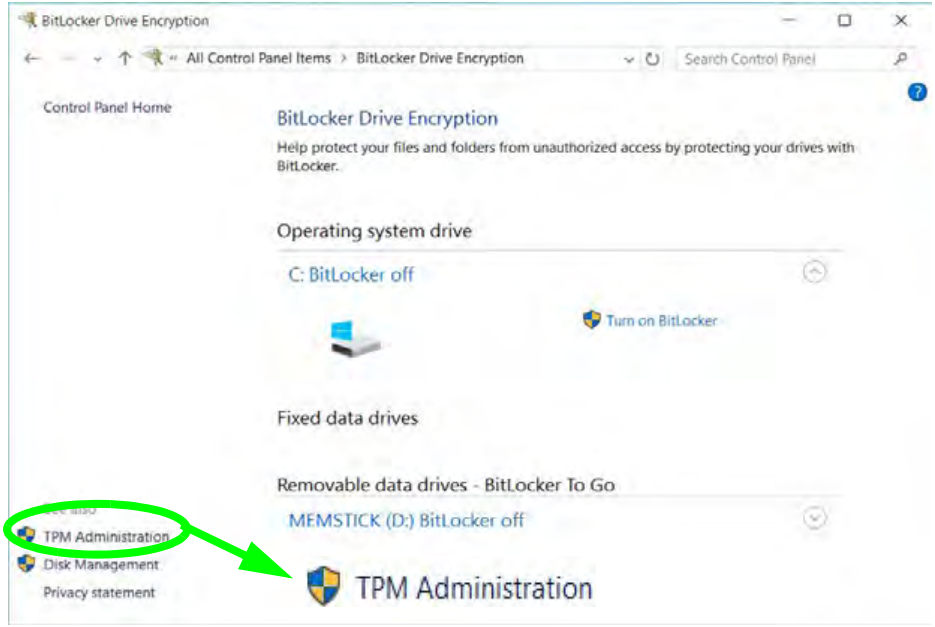


Figure 6 - 60
BitLocker Drive Encryption (TPM Administration)

4. The TPM Management window allows you to configure the TPM within ***Windows***. As TPM is usually administered within large enterprises and organizations, your system administrator will need to assist you in managing the information here.

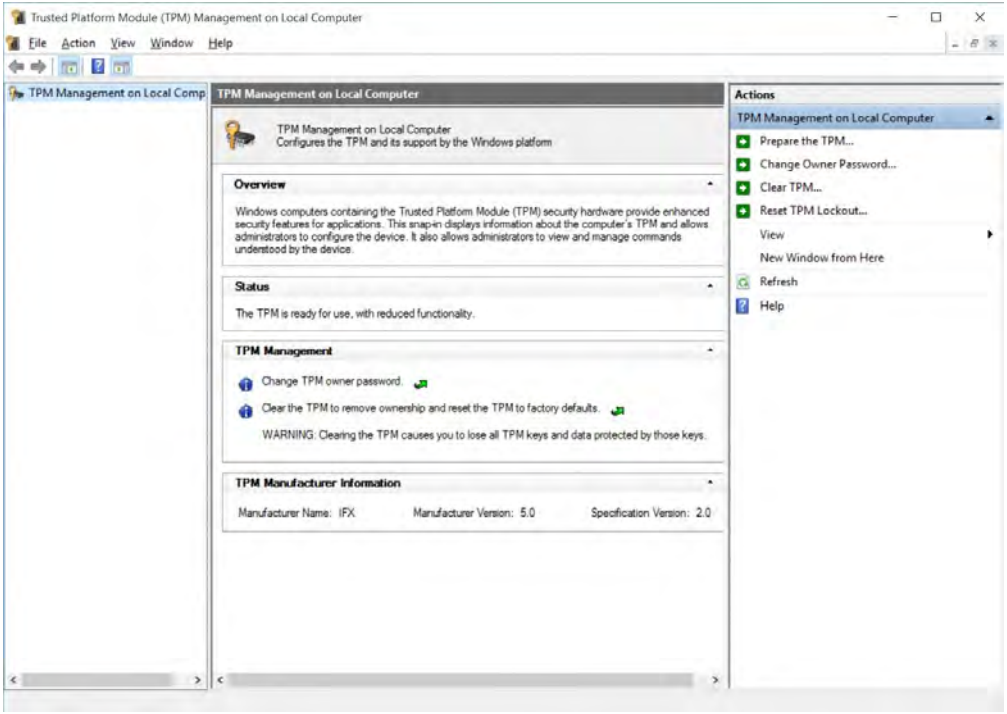


Figure 6 - 61
Trusted Platform Module (TPM) Management on Local Computer Administration

TPM Actions

1. Click **Prepare the TPM** and follow the instructions in the Wizard **to** prepare the TPM (this will probably require a restart of the computer and confirmation of the setting changes after restart by pressing the appropriate F key).
2. After the restart the TPM will be prepared and you can then use the **Actions** menu to **Turn TPM off**, **Change Owner Password**, **Clear TPM** or **Reset TPM Lockout**.
3. A wizard will help take you through any setup steps.

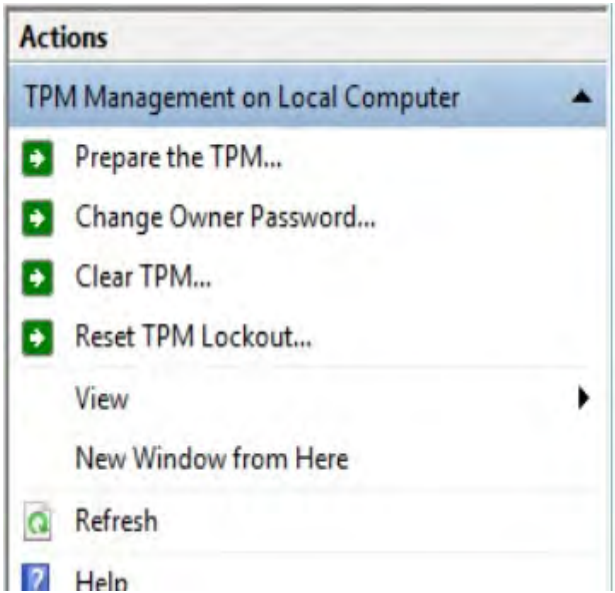


Figure 6 - 62
TPM Actions Menu

BitLocker

BitLocker Drive Encryption can be used in conjunction with the TPM to encrypt data on the disk. Access the Microsoft **BitLocker Drive Encryption** control panel applet from the ***Windows*** control panel (**System and Security**).

1. Click **Turn on Bit Locker**.
2. Follow the on-screen instructions to setup BitLocker, and make sure you have a removable media (e.g. a USB flash drive) to store saved recovery keys etc.

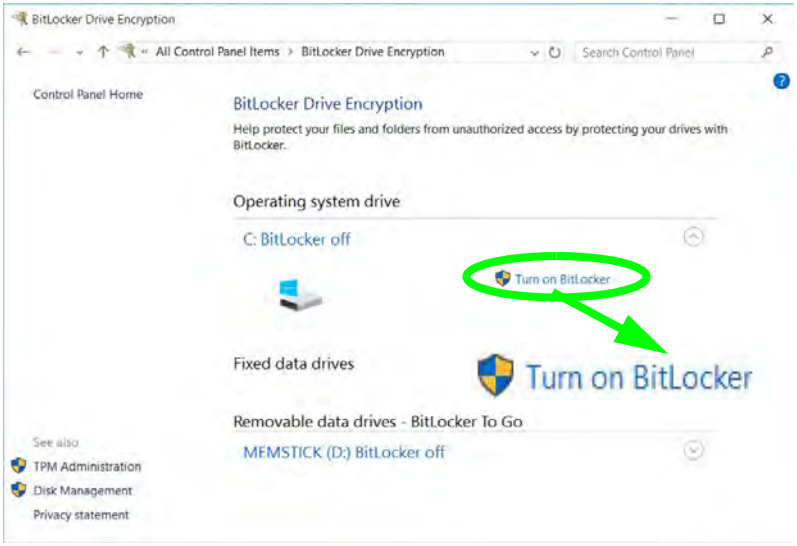


Figure 6 - 63
BitLocker Drive Encryption

Chapter 7: 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 *"LCD Panel Open" on page 1 - 6*) 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 - 9*), the **Fn + F12** 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 - 5, on page 1 - 21*).
- **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.

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 CD 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 - 12*).

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

Bottom Cover Removal Warning

Users should not remove any cover(s) and /or screw(s) for the purposes of device upgrade as this may violate the terms of your warranty. If you need to replace/remove the hard disk/RAM/optical device etc., for any reason, please contact your distributor/supplier for further information.

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 as this may violate the terms of your warranty.

- 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 and Possible Solutions

Problem	Possible Cause - Solution
You turned on the **power** 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 DC 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 - 5***) check its settings. You may also be using a *peripheral device/USB 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 - 16***). *Power Options have been disabled.* Go to the **Control Panel** in *Windows* and re-enable the options. *A peripheral device/USB device 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 Vent/Fan intakes are not blocked (e.g. the computer's AC/DC adapter placed too close to a vent). 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 - 22***). 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 Vent/Fan intakes to be blocked.
The **system will not wake up from a power saving state (Sleep/Hibernate) on network activity** (Wake on LAN) even though **I have plugged in the powered AC/DC adapter**.	*Wake on LAN is supported in AC mode only.* When the system enters a power saving state the plugged in AC/DC adapter should be connected, and should remain connected, in order to allow the system to wake up on network activity. Unplugging the adapter, and then plugging it back in again, will not allow the system to wake up on network activity.
When **playing a video in Media Player**, while using a **4K pane**l, the counting timer area at the **bottom of the screen appears to be cut off slightly**.	*The size of text, apps and other items in* ***Settings > System > Display*** *is set to* ***250%.*** In this case it is recommended that the setting should be **less than 250%**.
When you are **playing a game** and you use the **Windows Key** to switch to the desktop **an error message, or Blue Screen, occurs.**	*This is a DirectX compatibility issue.* In this case disable DirectX from within the game controls.

Problem	Possible Cause - Solution
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 ***Appendix C*** for instructions on installing and configuring the video driver.
Nothing appears on screen.	*The system is in a power saving mode*. Toggle the sleep/resume key combination, **Fn + F12** (see ***"Configuring the Power Buttons" on page 3 - 9***). *The screen controls need to be adjusted.* Toggle the screen control key combinations **Fn + F8/F9**. 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 combination, **Fn + F7**. If an external monitor is connected, turn it on. *The **screen saver** is activated.* Press any key or touch the **TouchPad**.
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.

Problem	Possible Cause - Solution
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* notification area, or use the key combination **Fn + F5** and **F6** (see ***"Function Keys & Visual Indicators" on page 1 - 21***) to adjust.
Unwelcome numbers appear when typing.	*Num Lock is turned **ON***.

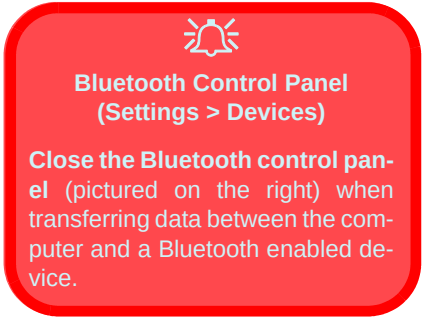
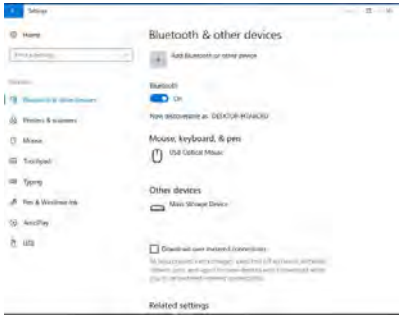
Other Keyboards

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.

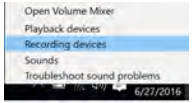
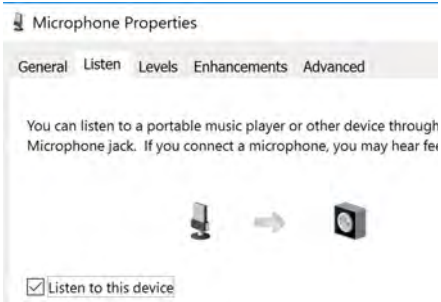
The **system freezes** or the screen goes dark.	*The system's power saving features have timed-out*. Use the AC/DC adapter, press the sleep (**Fn + F12**) key combination, or press the power button if no LEDs are lit.
The system never goes into a **power saving mode**.	Power Options features are not enabled. Go to the ***Windows*** Power Options menu and enable the features you prefer (see ***"Power-Saving States" on page 3 - 7***). Make sure you have enabled **Hibernate** mode from the control panel.

Problem	Possible Cause - Solution
The **Wireless LAN/Bluetooth** modules cannot be detected.	*The modules are off as the computer is in **Airplane Mode**.* Check the LED indicator ✈ to see if it is in **Airplane Mode** (see ***Table 1 - 1, on page 1 - 7***). Use the **Fn + F11** key combination to toggle **Airplane Mode** on/off (see ***"Function Keys & Visual Indicators" on page 1 - 21***).
The **PC Camera** module cannot be detected.	*The module is off.* Press the **Fn + F10** key combination in order to enable the module (see ***"Function Keys & Visual Indicators" on page 1 - 21***). Run the camera application to view the camera picture.
The **Wireless LAN/Bluetooth** 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 for the appropriate module in ***"Wireless LAN Module" on page 6 - 29*** and/or ***"Bluetooth & WLAN Combo Module" on page 6 - 34***).
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 has been completed
My **internal microphone seems to be disabled** and/or **I can still hear sound from the speakers** even though I have plugged headphones into the headphone jack.	*You have disabled "Front panel jack detection" in Connector Settings in the **Realtek HD Audio Manager** control panel. Go to the Realtek HD Audio Manager and click the **Connector Settings** icon and make sure that there is no tick alongside "Front panel jack detection" and click OK.*

Problem	Possible Cause - Solution
No sound can be heard through an **HDMI** connected display.	*You have not configured the HDMI audio output*. See ***"HDMI Audio Configuration" on page C - 8***.
Gaming performance is slow.	***It is recommended that you use Maximum fan speed when playing games***. Use the **Fn + 1** key combination to adjust the fan speed.
The **Sound Blaster Cinema 3 SBX Pro Studio** audio effects don't work when the system is connected to an **external display through an HDMI/ Display Port cable**.	*Note that Sound Blaster Cinema 3 SBX Pro Studio audio effects will be disabled when you are connecting to an external display through an HDMI or Display Port connection. See* ***"HDMI Audio Configuration" on page C - 8****.*
When using a **Bluetooth headset the audio appears to be mono** and not stereo.	*This is a common issue with Bluetooth headsets. To resolve this issue do the following (you will need to* ***repeat this procedure after every boot up***, ***restart***, *or when the* ***system resumes from hibernation****):* 1. Go to the **Devices & Printers** control panel in ***Windows***. 2. Double-click the Bluetooth headset. 3. Click **Connect** to complete the stereo connection. **OR** 1. Go to the **Sound** control panel in ***Windows***. 2. Right-click (in the **Playback** tab) the Bluetooth Stereo Audio device (the default device is **Headset**). 3. Click **Connect** to complete the stereo connection.

Problem	Possible Cause - Solution
A file being copied to/from a connected **Bluetooth** device appears to be **transferring very slowly**.	*You may have the **Bluetooth control panel** (Settings > Devices > Bluetooth) **open**.* When transferring data between the computer and a Bluetooth enabled device, **make sure that the Bluetooth control panel is closed**.  

Problem	Possible Cause - Solution
I have used **Update Driver** in **Device Manager (Unknown device > Other Devices)** to try and install the **Airplane Mode** driver. ***Windows*** encountered a problem in attempting to update the driver, and a **yellow exclamation mark** appears in **Device Manager** against the **Unknown device.**	*It is very important that the drivers are installed in the order indicated in Chapter 4 (which is the numbered installation order on the Device Drivers & Utilities + User's Manual disc). This issue can occur when drivers are manually installed, and not in the correct order.* If you have attempted to **Update Driver** from the **Device Manager** control panel and have encountered problems, then use the method below to correct this: **To correct this problem:** 1. Go to the **Programs and Features** (**Programs**) control panel in ***Windows***. 2. Select any installed Airplane Mode driver item (e.g. Insyde Airplane Mode HID Mini-Driver), and click **Uninstall/Change** to uninstall the current driver. 3. Restart the computer. 4. Insert the *Device Drivers & Utilities + User's Manual disc* and click **Install Drivers** (button). 5. Double-click the **Airplane Driver** item in the menu. 6. Follow the instructions to install the correct driver (you will need to restart the computer as part of the installation process).

Problem	Possible Cause - Solution
I **can't hear any sound from the microphone in my connected headset**, when trying to test the audio playback.	*You need to enable listening to the microphone in the audio control panel in order to hear any sound through your connected headset as follows:* 1. Right-click the volume control icon in the taskbar. 2. Select **Recording Devices**.  3. Double-click **Microphone** and select **Listen**. 4. Click to put a check in **Listen to this device** check box.  5. Click **Apply**. 6. You can then listen to the playback though the headset for testing. 7. Remember to disable this feature (remove the check from the **Listen to this device** check box) otherwise you may hear an echo from the internal

Intel® Optane™ Notes

Intel® Optane™ is a combination of a compatible memory device and Intel Rapid Technology software. This combination is designed to speed up your system performance. However note the following;

- The **SATA Mode** should be set **BEFORE installing an operating system**, and after you have backed up all necessary files and data (see sidebar). See ***"Setting Up SATA RAID, Optane™ or AHCI Mode" on page 6 - 2*** for details. Make sure you install the **Intel Rapid Storage Technology application** if you have set the SATA Mode to **Intel RST Premium,** or to **AHCI** (see ***"IRST Driver Installation" on page 6 - 52***).
- It is very important to make sure that when you create a hard disk drive partition when installing Windows for an **Intel® Optane™** system, that you leave at least a minimum of 5MB of unallocated space (note this is 5MB only, not GB).
- **After setting the SATA mode to Intel® Optane™** and installing the Intel® Rapid Storage Technology application, **DO NOT uninstall the Intel® Rapid Storage Technology application**.
- If you are reinstalling a system that has previously been setup in **Intel RST Premium mode, make sure you have cleared the Intel Optane Memory** (**see *"Clearing Intel® Optane™" on page 6 - 26***). If you haven't cleared the Optane setup you may not find a suitable hard disk drive partition on which to reinstall an operating system.
- If you need to reinstall an operating system, uninstall the IRST driver/application or swap the hard disk drive (or Intel® Optane™ SSD) **make sure you have cleared the Intel Optane Memory** (**see *"Clearing Intel® Optane™" on page 6 - 26***).

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 SD / MMC	The card reader allows you to use the following digital storage cards: MMC (MultiMedia Card) / RSMMC SD (Secure Digital) / Mini SD / SDHC / SDXC (up to UHS-II) Push the card into the slot and it will appear as a removable device.
DC-In Jack	Plug the supplied AC/DC adapter into this jack to power your computer.
HDMI-Out Port HDMI HIGH-DEFINITION MULTIMEDIA INTERFACE	The HDMI-Out (**High-Definition Multimedia Interface**) port 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 ***"Attaching Other Displays" on page C - 47***) by means of a HDMI cable. **Note that HDMI carries both audio and video signals.**
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.
Microphone-In Jack	Plug an external microphone in to this jack to record on your computer.

Item	Description
Mini DisplayPort 1.2 Mini DisplayPort 1.3 	The Mini DisplayPorts are a miniaturized version of the DisplayPort, which is a digital display interface standard that allows a digital audio/video interconnect, between the computer and its external display or a home-theater system. **Mini DisplayPort Cables** When using cables connected to the Mini DisplayPort, **try to make sure that the cables are not bent excessively**, as bending the cables may cause signal problems.
RJ-45 LAN Jack 	This port supports LAN (Network) functions. **Note**: Broadband (e.g. ADSL) modems usually connect to the LAN port.
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.

A

Interface (Ports & Jacks)

Item	Description
USB 2.0/1.1 Port USB 3.0 (USB 3.1 Gen 1 Type A) Port USB 3.0 (USB 3.1 Gen 1 Type C) Port USB 3.1 (USB 3.1 Gen 2 Type A & Type C) Port (**Factory Option**)	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). USB 3.0 ports capable of 5Gbps (SuperSpeed) are classified as **USB 3.1 Gen 1** and **USB 3.1 Gen 2** ports are capable of 10Gbps SuperSpeed+. There is **one USB 2.0 port**, **two USB 3.1 Gen 1 (Type A)** ports and **one USB 3.1 Gen 1 (Type C)** port (the Type C port is the smaller sized USB port). One **USB 3.1 Gen 2 port (Type A) and** one **USB 3.1 Gen 2 port (Type C**) are available as a **factory option.** These ports are shared with the existing USB 3.1 Gen 1 Type A and Type C ports, **and are capable of 10Gbps SuperSpeed+ for a single device, or if two devices are plugged in to both USB 3.1 (Gen 2) ports, the bandwidth will be shared between the ports**. **Note:** The maximum amount of current supplied by USB Type-C ports is 500 mA for USB2.0/900 mA for USB 3.1

A

Appendix B: Control Center & Flexikey®

Overview

The following chapter will give a quick description of the functions of the **Control Center & Flexikey®** applications.

Control Center

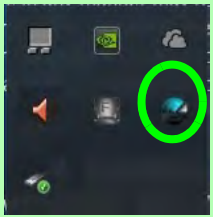
The **Control Center** gives quick access to frequently used controls, power management features and enables you to quickly turn modules on/off. Click the **Control Center** icons to toggle the appropriate function, or hold the mouse button down and move the dial control where applicable. Certain functions will automatically be adjusted when a power mode is selected. The **Control Center** in ***Windows 10*** works under the **Desktop** app and not under the Start screen.

Flexikey®

The **Flexikey®** application is a quick hotkey configuration application, which allows you to **assign a single key** to **launch multiple key combinations**, or to **launch programs and applications**, to **create text macros** and to **disable** certain keys. The application can also be used to **configure the mouse buttons** to create hotkeys for gaming etc. All the configuration settings are retained under (up to12) **profiles** to which the settings are applied. Click **Flexikey®** in the **Gaming** section of the Control Center, or the **click the icon** in the notification area of the taskbar, to launch the application.

Control Center Access

To run the Control Center press the **Fn + Esc** key combination, or double-click the icon in the notification area of the taskbar. Close the Control Center by clicking the close icon in the top right of the panel (move the cursor onto the top right corner of the panel to highlight it).



Flexikey® Access

The **Flexikey®** is accessed from within the Control Center by clicking **Flexikey® in** the **Gaming** section of the Control Center.

Figure B - 1 **- Control Center**

Power Modes

You can set a **Power Mode** by clicking the appropriate icon at the top of the **Control Center**. Each power mode will affect Airplane Mode, Power Plan and PC camera power etc.

You can click a **Control Center** icon to set an overall power mode and then click individual icons in the **Control Center** to power on/off the Touchpad and PC camera.

Modes		Quiet	Power Saving	Performance	Entertainment
Icon					
Power Plan		Balanced	Power Saver	High Performance	Balanced
PC Camera		ON	OFF	ON	ON
TouchPad		ON	ON	ON	ON
Airplane Mode		OFF	ON	OFF	OFF

Table B - 1- **Power Modes**

Control Center Menus

The Control Center contains 3 menu headings (**System Program**, **Device** and **Gaming**) under the Power Modes. Click the menu headings and then click any of the buttons outlined on the following pages.

Figure B - 2 **- Control Center Menus**

Power Status (System Program)

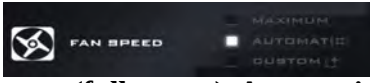
The **Power Status** icon will show whether you are currently powered by the battery, or by the AC/DC adapter plugged in to a working power outlet. The power status bar will show the current battery charge state.

Brightness (System Program)

The **Brightness** icon will show the current screen brightness level. You can use the slider to adjust the screen brightness or the **Fn + F8/F9** key combinations, or use the **Fn+ F2** key combination to turn off the LED backlight (press any key to turn it on again).

Volume (System Program)

The **Volume** icon will show the current volume level. You can use the slider to adjust the Volume or the **Fn + F5/F6** key combinations, or use the **Fn+ F3** key combination to mute the volume.

Fan Speed (System Program) 

You can set the fan speed to **Maximum (full power)**, **Automatic or Custom** from this menu item. The fan speed will adjust itself automatically to control the heat of the CPU. However you can adjust the setting to maximum if you prefer.

Custom Settings

Click **Save** to retain customized settings, or **Reset** to select default settings.

B

Sleep Button (System Program)

Click either the **Hibernate** or **Sleep** buttons to have the computer enter the selected power-saving mode (see *"Power-Saving States" on page 3 - 7*).

Desktop Background (System Program)

Clicking the **Desktop Background** button will allow you to change the desktop background picture.

Display Switch (System Program)

Click the **Display Switch** button to access the menu (or use the + **P** key combination) and select the appropriate attached display mode.

Time Zone (System Program)

Clicking the **Time Zone** button will access the **Date and Time** ***Windows*** control panel.

Backlight Keyboard (optional) - Enter Sleep Timer (Device)

Enable and then select the amount of time the system for which the system is idle before the keyboard LED enters sleep mode (i.e. the LED keyboard illumination will turn off to save power).

TouchPad/Camera (Device)

Click either of these buttons to toggle the TouchPad or camera module's power status. The icon will appear dimmed when it is off. Note that the power status of the camera module is also effected by the **Power Mode** selected (see *Table B - 1, on page B - 3*).

Caps Lock/Scroll Lock/ Number Lock/Airplane Mode

Click the button to toggle the appropriate lock mode and Airplane Mode.

Left Windows Key (Gaming)

Click **Disable** to disable the Windows Key on the left side of the keyboard. This may be useful if you are using the gaming keys (**W, A, S & D**) and wish to avoid accidentally triggering menus with the Windows Key.

Flexikey® (Gaming)

Click the button to access the **Flexikey®** application.

Flexikey® Application

Click the button in the **Control Center**, or the **click the icon** in the notification area of the taskbar, to access the **Flexikey®** application.

Profiles

The menus on the left side of the application relate to Profiles. You can **Add** or **Delete** Profiles (**you can maintain 12 active Profiles**), **Export** and **Import** profiles from the menus. If you double-click on a Profile you can change the **Profile Name**, and change an **Image** file (images created using PNG files).

Windows Key & P Key

Note that you can assign actions to any keyboard key except the **Windows key and P key**.

Note that the Backlight tab will only appear for colored LED keyboards.

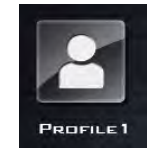


Figure B - 3 **- Flexikey® - Profiles**

Flexikey® Application Features

- **EXPRESS KEY** - This feature allows you to configure a single key to send multiple key combinations or to create more useful shortcut keys. This is useful in gaming or when using applications which have a complex set of keyboard shortcuts.
- **LAUNCH APP** - This simply assigns single keys to launch any program's or application's executable file.
- **EXPRESS TEXT** - With this you can assign single keys to send commonly used strings of text.
- **DISABLE** - Use this function to disable any keyboard keys.
- **STATISTICS** - Use this to quickly record keys in use in any application, and to disable unused keys.

Keyboard and Mouse Settings

Click **Enable** to create settings for the keyboard and/or mouse by clicking the button on the top left of the screen (e.g. you may wish to create a profile with settings only for the mouse or keyboard). Clicking on the keyboard or mouse icons will allow you to access the settings page for the either the keyboard or mouse.

Figure B - 4 **- Enable Keyboard & Mouse / Language Selection**

Language Interface

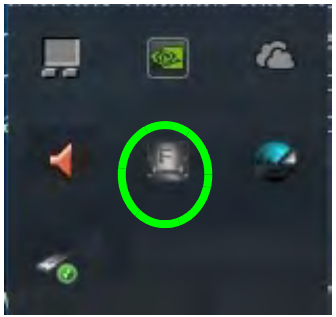
You can change the language interface by right-clicking the **icon** in the notification area of the taskbar and selecting the language from the menu.

Enabling or Disabling Flexikey®

You can enable or disable Flexikey® (and therefore any hotkeys or mouse profile functions currently in use) by using the **Fn + Backspace** key combination. Pressing this key combination will toggle you between the currently selected keyboard or mouse profile to the standard keyboard and/or mouse settings, and back again.

Figure B - 5 **- Enable/Disable Flexikey®**

The icon Flexikey® icon in the notification area of the taskbar will appear grayed out when Flexikey® is off, and in color when on (an on screen icon will also pop-up to display the status of the application as it is toggled on/off).



Flexikey® **Enabled**

Flexikey® **Disabled**

Figure B - 6 **- Taskbar Notification Area Icons**

Keyboard Settings

The keyboard settings allow you to configure actions for any single key (or a combination of keys). Click the key and then select the **Action Type** (**Express Key**, **Launch App**, **Express Text** or **Disable**) from the menu at the bottom of the page. You can rename the action by clicking in the **Name** box, and click in **Tool Tips** to type in a note to remind you of the action's function.

Windows Key & P Key

Note that you can assign actions to any keyboard key except the **Windows key and P key**.

Figure B - 7 **- Key Configuration**

Mouse Settings

When an external mouse is attached, the mouse settings allow you to configure actions for the left 1, right 2 and middle 3 buttons of the attached mouse, and also for any backward 4 and forward 5 buttons if applicable (on a gaming type mouse). Click the button number and then select the **Action Type** (**Express Key**, **Launch App**, **Express Text** or **Disable**) from the menu at the bottom of the page. You can rename the action by clicking in the **Name** box, and click in **Tool Tips** to type in a note to remind you of the action's function.

Figure B - 8 **- Mouse Configuration**

Keyboard Settings - Express Key

To configure a single key to send multiple key combinations, or to create more useful shortcut keys, use **Express Key**.

1. **Enable** and select the keyboard under your chosen profile, click on a key to select it, and then click to select **Express Key** in **Action Type**.
2. In the following example we want to change an existing game key configuration which uses the **left shift** key for sprinting, and the **W** key for moving forwards, to use the **left Ctrl** key to combine this movement to sprint forward.
3. Click on the chosen key for the shortcut action.
4. Click in the **Tool Tips** field and type to give the key combination a name e.g. "*Sprint Fwds"*, then click back in the Name field (to avoid adding the recorded keys to the Tool Tips name).
5. Click **Start Record** and then **press** the key or keys (in this case we will **press** Left Shift and W) required (make sure you **press the key(s) required** and do not click on them).
6. Click **Stop Record** to complete the process.

Figure B - 9- **Express Key Record Key Combination**

7. Click **Save** to save the settings within your chosen profile.
8. If you want to remove any individual key click to select it, and then click **Delete**.
9. If you want to clear all the settings click **Restore** to return to the default key setting.
10. Any assigned **Express Keys** will appear in **orange**.

Figure B - 10 **- Key Combination Set**

B

Tool Tips

The Tool Tips field allows you to type a note to remind yourself of the function you have programmed the key for under any Profile.

Enabling Time Record

If you want to create a delay between key presses within the key combination, then you can use **Time Record** function to do so.

1. **Enable** and select the keyboard under your chosen profile, click to select a key for the shortcut action, and then click to select **Express Key** in **Action Type**.
2. Click in the **Tool Tips** field and type to give the key combination a name, then click back in the Name field (to avoid adding the recorded keys to the Tool Tips name).
3. Click **Start Record** and then **press** the key or keys required in the sequence and time delay between key presses required (make sure you **press the key(s) required** and do not click on them).
4. Click **Stop Record**.
5. Click to select a key in the sequence and click **Enable Time Record** ENABLE TIME RECORD , then click a key to view the time delay.

Figure B - 11 **- Enable Time Record**

6. You can edit the delay between key presses by clicking in the **Delay Time (MS)** field and typing a new number for the delay between the key presses.

Figure B - 12 **- Time Record Between Key Presses**

7. Click to close the Time Record window.
8. Click **Save** to save the settings within your chosen profile.
9. If you want to remove any individual key click to select it, and then click **Delete**.
10. If you want to clear all the settings click **Restore** to return to the default key setting.

Keyboard Settings - Launch App

You can configure keys to launch any application or program as follows:

1. **Enable** and select the keyboard under your chosen profile, click to select a key to launch the application, and then click to select **Launch App** in **Action Type**.
2. Click **Browse...** at the bottom right of the application window.

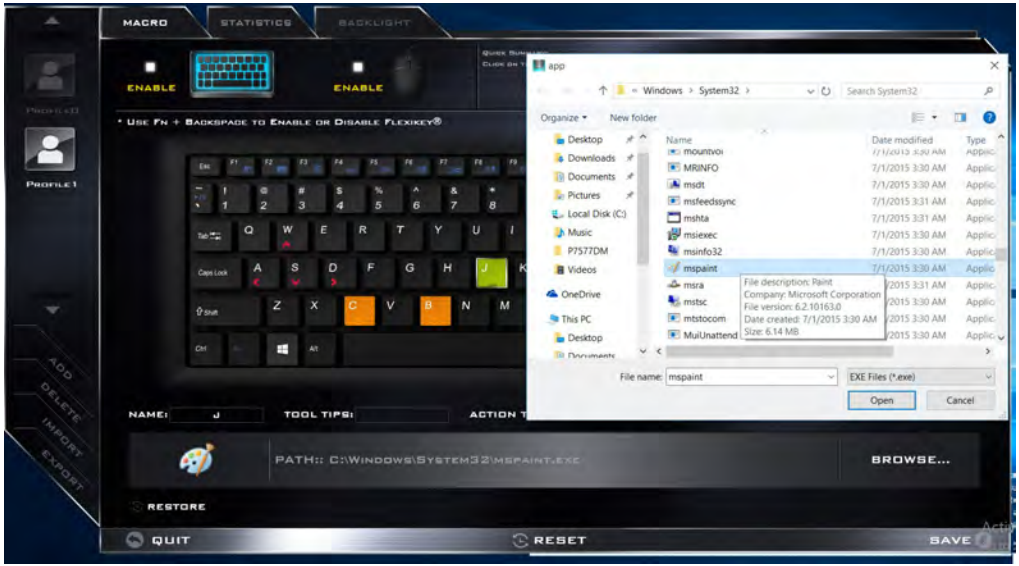


Figure B - 13 **- Keyboard - Launch App (Browse to Executable File)**

3. Navigate to the executable file of the application and click **Open**.
4. The key will now be configured to open the selected application under your chosen Profile, and the key will appear in **green**.

Figure B - 14 **- Key Set to Launch App**

5. If you want to remove any **Launch App Key**, select it and click on **Restore**.
6. Click **Save** to save the settings within your chosen profile.

Keyboard Settings - Express Text

A single key can be set to send a string of text within any application using **Express Text**.

1. **Enable** and select the keyboard under your chosen profile, click to select a key, and then click to select **Express Text** in **Action Type**.
2. Click in **Start** key if required (the **Start** key is the key used to in your target program to open a text message), or you can leave it blank if you prefer.
3. Click in the **Click to type** field and type in your message.

Figure B - 15 **- Keyboard - Express Text**

4. Click in **Send** key if required (the **Send** key is the key used to in your target program to send a text message e.g the Enter key would be the most commonly used), or you can leave it blank if you prefer.
5. The key will now be configured to send the text message in the target program under your chosen Profile, and the key will appear in **blue**.
6. If you want to remove any **Express Text** key, select it and click on **Restore**.
7. Click **Save** to save the settings within your chosen profile.

Copy & Paste Text

Note that some applications and games do not support copy and pasted text. Where this is the case, any text you may have copy and pasted in to the “Type to Text” field may not be displayed within the application. In this case you will need to type the text into the field instead.

Keyboard Settings - Disable

You can use the program to disable any keys not required.

1. **Enable** and select the keyboard under your chosen profile, click to select a key to disable, and then click to select **Disable** in **Action Type**.
2. The key will now be disabled.
3. If you want to enable the key again, select it and click on **Restore**.
4. Click **Save** to save the settings within your chosen profile.
5. The key will be disabled under your chosen Profile, and the key will appear in **Gray**.

Figure B - 16 **- Keyboard - Disable**

Mouse Settings - Express Key

To assign a mouse button click to send multiple key combinations (an external mouse must be attached), or to create more useful shortcut keys, use **Express Key**.

1. **Enable** and select the mouse under your chosen profile, click on a mouse button to select it, and then click to select **Express Key** in **Action Type**.
2. In the following example we will configure the central mouse wheel to combine the actions of **left shift** key for sprinting, and the **W** key for moving forwards in a game program.
3. Click on the central mouse wheel for the shortcut action.

Figure B - 17 **- Mouse - Express Key Record Key Combination (Mouse)**

4. Click in the **Tool Tips** field and type to give the key combination a name e.g. "*Sprint Fwds"*, then click back in the Name field (to avoid adding the recorded keys to the Tool Tips name).
5. Click **Start Record** and then **press** the key or keys (in this case we will **press** Left Shift and W) required (make sure you **press the key(s) required** and do not click on them).
6. Click **Stop Record** to complete the process.
7. Click **Save** to save the settings within your chosen profile.
8. If you want to remove any mouse setting click to select it, and then click **Delete**.
9. If you want to clear all the settings click **Restore** to return to the default mouse setting.
10. The mouse button for any assigned Express Keys will appear in **orange.**

Enabling Time Record for Mouse Settings

If you want to create a delay between key presses within the mouse click combination, then you can use **Time Record** function to do so in the same manner as that used for keyboard settings (see ***"Enabling Time Record" on page B - 15***).

Mouse Settings - Launch App

You can assign a mouse button click to launch any application or program as follows:

1. **Enable** and select the mouse under your chosen profile, click on a mouse button to select it, and then click to select **Express Key** in **Action Type**.
2. Click **Browse...** at the bottom right of the application window.

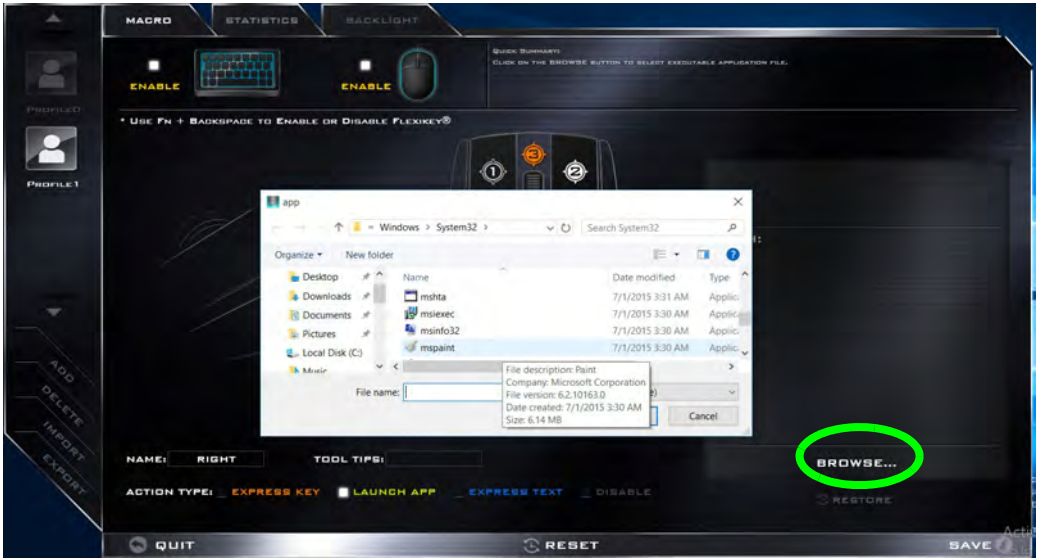


Figure B - 18 **- Mouse - Launch App (Browse to Executable File)**

3. Navigate to the executable file of the application and click **Open**.
4. The mouse click will now be configured to open the selected application under your chosen Profile, and the button will appear in **green**
5. Click **Save** to save the settings within your chosen profile.

Figure B - 19 **- Mouse Button Set to Launch App**

Mouse Settings - Express Text

A mouse button click can be set to send a string of text within any application using **Express Text**.

1. **Enable** and select the mouse under your chosen profile, click on a mouse button to select it, and then click to select **Express Text** in **Action Type**.
2. Click in **Start** key if required (the **Start** key is the key used to in your target program to open a text message), or you can leave it blank if you prefer.
3. Click in the **Text Context** field and type in your message.

Figure B - 20 **- Mouse - Express Text**

4. Click in **Send** key if required (the **Send** key is the key used to in your target program to send a text message e.g the Enter key would be the most commonly used), or you can leave it blank if you prefer.
5. The mouse button click will now be configured to send the text message in the target program under your chosen Profile, and the button will appear in **blue**.
6. If you want to remove any **Express Text** mouse button, select it and click on **Restore**.
7. Click **Save** to save the settings within your chosen profile.

Mouse Settings - Disable

You can use the program to disable any mouse button clicks if not required.

1. **Enable** and select the mouse under your chosen profile, click on a mouse button to select it, and then click to select **Disable** in **Action Type**.
2. The button click will now be disabled.
3. If you want to enable the button again, select it and click on **Restore**.
4. Click **Save** to save the settings within your chosen profile.
5. The button click will be disabled under your chosen Profile, and the key will appear in **Gray**.

Figure B - 21 **- Mouse - Disable**

Statistics

The **Statistics** tab allows you to record keys used in any application, and to **disable** any infrequently, or unused, keys to save any accidental incorrect key presses.

1. Click the **Statistics** Tab, and press **Start Record** to start recording the frequency of key presses for keys used.
2. You can then go to the application you wish to use the profile for, and use the application as normal so that a standard set of keys used may be recorded.
3. Return to the Flexikey® application and press **Stop Record** to stop recording.
4. At the end of the recording process colors will represent the frequency of key presses, with red as the most frequent through to lighter blue the less frequent (the color bar at the bottom of the screen displays the color code against the number of key presses).
5. Under **Quick Disable** click the color which corresponds to the keys you wish to disable.
6. All disabled keys will then change to gray and will be disabled under this profile.

Figure B - 22 **- Statistics**

Appendix C: Video Driver Controls

The basic settings for configuring the LCD are outlined in *"Video Features" on page 1 - 35*. Make sure you install the drivers in the order indicated in *Table 4 - 1, on page 4 - 4*.

Video Driver Installation

Video (VGA)

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

NVIDIA Video (VGA)

1. Click **3.Install NVIDIA VGA Driver** > **Yes**.
2. Click **AGREE AND CONTINUE (**button) to accept the terms of the license agreement.
3. Click **Next.**
4. Click **Close** to complete the installation.
5. After all the drivers have been installed (an internet connection is required) run the **NVIDIA GeForce Experience** by clicking the desktop icon (or App).

Video Card Options

Note that this computer model series may support a range of CPUs and/or video adapters.

To get information on your system's **video adapter** go to the **Start** menu and select **Settings**, and then select **System** and click **Display> Advanced display settings > Display adapter properties.**

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

C

Microsoft Hybrid Graphics

Most notebook computers come with either a **discrete** or **integrated** graphics solution.

Discrete graphics solutions feature a dedicated Graphics Processing Unit (GPU) which are capable of playing games, watching HD video or running GPU-based applications. However computers with discrete graphics solutions tend to be heavy in power consumption, and slightly larger in size in order to incorporate the dedicated discrete GPU.

Integrated graphics solutions usually feature memory sharing technology to help save power consumption and allow for longer battery life. However computers with integrated graphics solutions will not usually run games, HD video or GPU-based applications without severe limitations.

Microsoft Hybrid Graphics is a seamless technology designed to get best performance from the graphics system while allowing longer battery life, without having to manually change settings. Thus when an application is run that requires extra performance or quality, then the system will run the discrete GPU (dGPU); when the system does not require such enhanced performance it will let the integrated (iGPU) handle it.

How the Technology works

When the system is powered up and is displaying just the desktop, the dGPU will be powered off. In this case the system is running in the same way as a system without a discrete graphics solution. However when an application that requires use of the dGPU is run (e.g, a game or HD Video), the dGPu is powered on and takes over the processing duties. If the program is closed, then the dGPU will be powered back down again until required.

Customization Options

Although **Microsoft Hybrid Graphics** is completely seamless to the user, NVIDIA also allow customization options within the control panel (see ***"Customization Options" on page C - 18***).

C

Mini Display Ports / HDMI Port

All external and internal displays (up to 4 active displays) can be configured from **Windows** by using the **Display (**page ***C - 6*****)** control panel or the **+ P** (or **Fn + F7 -** page ***C - 5***) key combination. In addition to the ***Windows*** controls, use any of the following to configure external displays attached to a particular port.

Mini Display Port 1.3 1: If you wish to configure an external display connected to **Mini Display Port 1.3** use the **NVIDIA Control Panel (see *"NVIDIA Control Panel" on page C - 14***) to configure the display configuration.

Mini Display Port 1.2 2: If you wish to configure an external display connected to **Mini Display Port 1.2** use the **Intel HD Graphics control panel (see *"Intel® HD Graphics Control Panel" on page C - 34***) to configure the display configuration.

HDMI Port 3: If you wish to configure an external display connected to **the HDMI Port** use the **NVIDIA Control Panel (see *"NVIDIA Control Panel" on page C - 14***) to configure the display configuration.

Note that this computer supports **virtual reality (VR) headsets**, however VR headsets must be connected to either the **Mini Display Port 1.3** 1 or the **HDMI Port** 3.

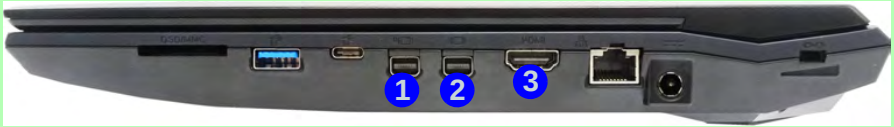


Figure C - 1
Right Side View (Mini Display Ports & HDMI Port Highlighted)

C

Configure Other Displays Using Project

You can configure attached displays from **Project**.

1. Attach your external display(s) to the appropriate port, and turn it(them) on.
2. Press the **+ P** key combination.
3. Click on any one of the options from the menu to select **PC screen only**, **Duplicate**, **Extend** or **Second screen only**.
4. You can also click **Connect to a wireless display** at the bottom of the **Project** screen and follow the steps to connect to any wireless enabled display.

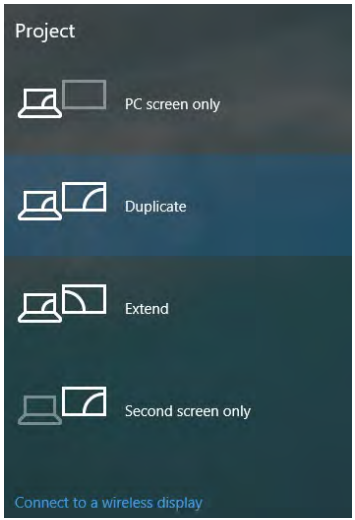


Figure C - 2
Project

C

Configuring an External Display In Windows

The **System** > **Display** Control Panel in **Settings** may also be used to configure displays.

1. Attach your external display to the appropriate port, and turn it on.
2. Click the Start Menu and click **Settings > System** (or right-click the desktop and select **Display Settings**).
3. Click the **Multiple Displays** menu and select **Duplicate these displays**, **Extend these displays** or **Show only on 1/2**.
4. Click **Keep changes** to save any changes made.

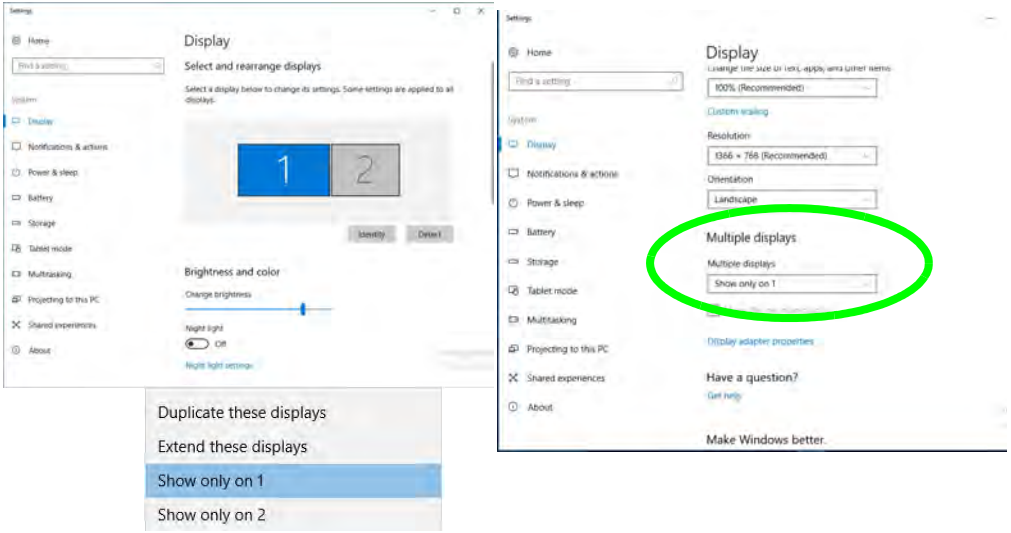


Figure C - 3

System > Display (Multiple Displays)

C

5. You can configure up to 4 displays from the **System > Display** menu.

4 Connected Displays

Note that when 4 displays are connected, only 2 displays may be configured in Duplicate mode.

Figure C - 4

System > Display (4 Connected Displays)

C

Volume Adjustment

The sound volume level can be clicking using the volume control icon in the ***notification area of the taskbar***.

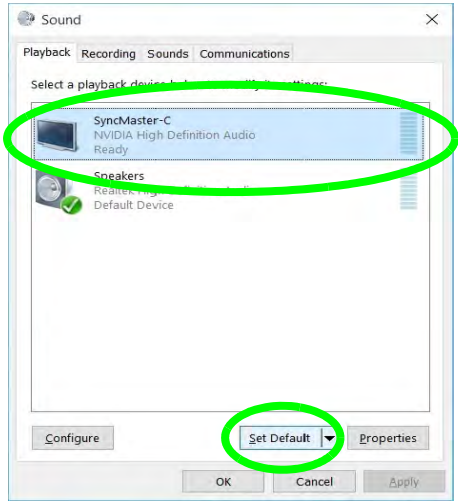
Figure C - 5

Sound - HDMI Device (set Default)

HDMI Audio Configuration

HDMI (High-Definition Multimedia Interface) carries both **audio** and video signals. In some cases it will be necessary to go to the **Sound** control panel and manually configure the HDMI audio output as per the instructions below.

1. Go to the **Sound** control panel.
2. Click **Playback** (tab)
3. The playback device will be selected.
4. You may need to select the audio device and click **Set Default** (button).
5. Double-click the device to access the control panel tabs.



C

6. Adjust the HDMI settings from the control panel tabs.
7. Click **OK** to close the **Sound** control panel.

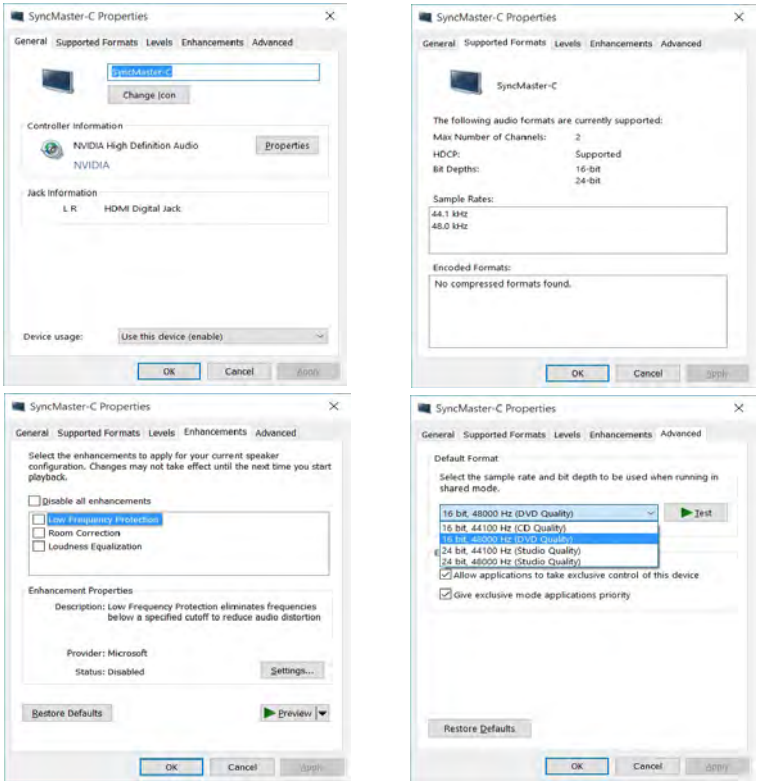


Figure C - 6
HDMI Device Properties

C

Other Applications

If you are using a third party application to play DVDs etc. from any attached DVD device, 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.
- To play audio sources through your external display's (TV or LCD) speakers you will need to go to the audio configuration control panel on the display and configure the audio input accordingly (see your display device manual).
- Note that the Sound Blaster Cinema 3 SBX Pro Studio audio effects do not apply to audio generated through an HDMI connection.

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 ***"Attaching Other Displays" on page C - 47***.
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.

Wireless Display

Wireless Display uses your Wireless LAN module/WLAN Bluetooth Combo module **(you need to make sure that your video adapter/display device is compatible with your particular WLAN/Combo module)** in conjunction with a **compatible video adapter/display device** (purchased separately) to allow you to display the contents of the notebook display on another display (e.g. HDTV), without the need to have cables stretching across a room.

You can use the wireless display to play games, browse the internet, display videos or photo slide shows on your TV/external display without using HDMI or A/V cables.

Before configuring **Wireless Display** you will need to set up your **compatible adapter** with your display/speakers. Connect the adapter using an HDMI or A/V cable and turn on the display (or in the case of speakers connect them to the wireless speaker adapter with the cables provided with the adapter), and then set the display to the appropriate input channel (see the documentation supplied with your **compatible adapter/display** for full details).

Note that no driver or application is required for wireless display in ***Windows 10***.

Compatible Adapters

For a list of compatible adapters check the video adapter/display device documentation, or with your distributor/supplier.

C

Wireless Display Configuration

1. Note that no driver or application is required for wireless display in ***Windows 10***.
2. Press the + **P** key combination.
3. Click **Connect to a wireless display** at the bottom of the **Project** screen and follow the steps to connect to any wireless enabled display.

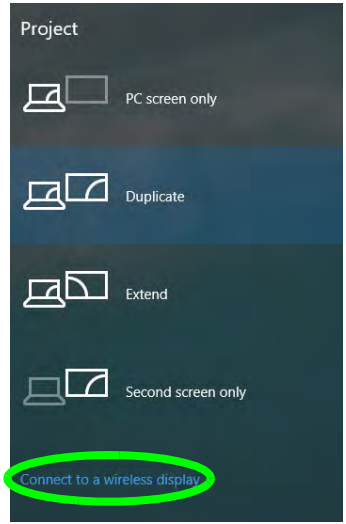


Figure C - 7
Add a Wireless Display

4. The system will then search for compatible display devices (**this may take up to 60 seconds** so allow time for this to complete).
5. Double-click any detected display device in the list.

6. You may then need to input a pin number for the device to which you are connecting and click **Next**.
7. The display will then connect (for specific settings for your display see the documentation supplied with your compatible adapter/display for full details).
8. Go to the **Project** menu and click **Disconnect** to temporarily disconnect from the wireless display.
9. To permanently disconnect from the display (you will need to go back through the connection process again) you can select it in **Devices** and click **Remove Device > Yes**.

NVIDIA Control Panel

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

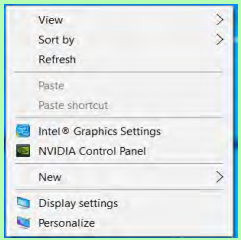


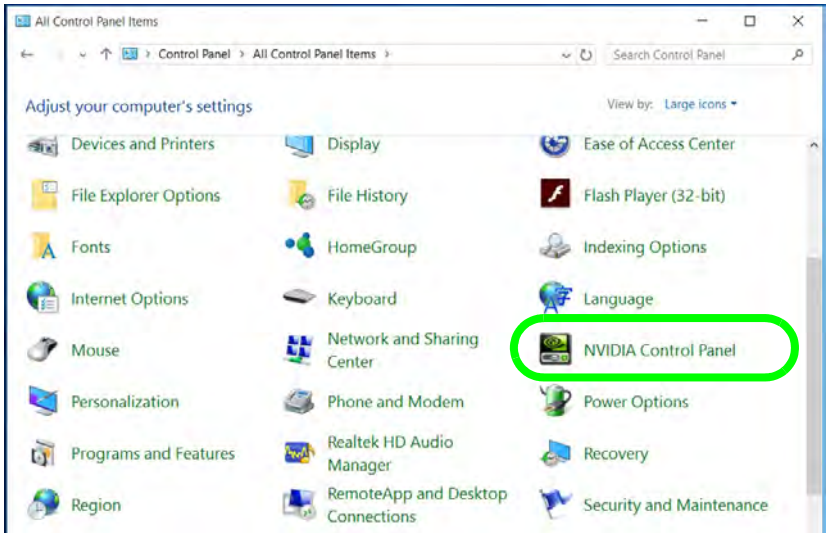
Figure C - 8

NVIDIA Control Panel

NVIDIA Control Panel

More advanced video configuration options are provided in the **NVIDIA Control Panel** tab. Use the NVIDIA control panel to configure external displays attached to the **HDMI port or Mini DisplayPort 1.3**.

1. Go to the **Control Panel**.
2. Double-click **NVIDIA Control Panel** (click to view the control panel in either **Large icons** or **Small icons** if you are in **Category** view).



The **NVIDIA Control Panel** provides additional video configuration controls and tools which allow quick access to features such as image settings, 3D Settings and video configuration. Additional menus will appear when external displays are attached to the **HDMI port or Mini DisplayPort 1.3**.

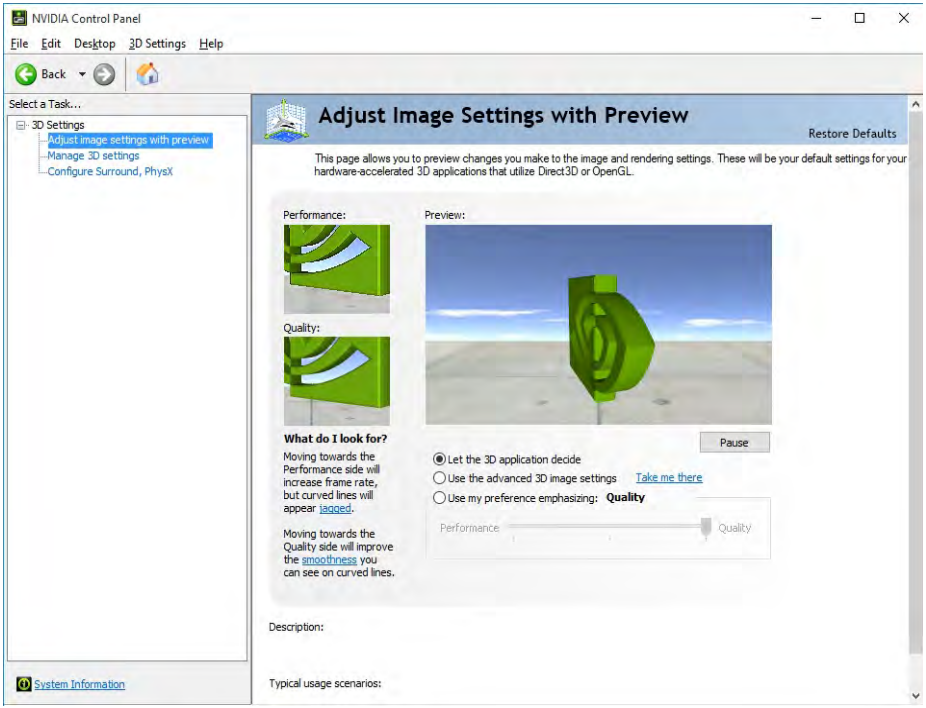


Figure C - 9
NVIDIA Control Panel (Basic)

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.

C

Further menu items will appear in the NVIDIA Control Panel with external displays attached to the **HDMI Port or Mini DisplayPort 1.3**.

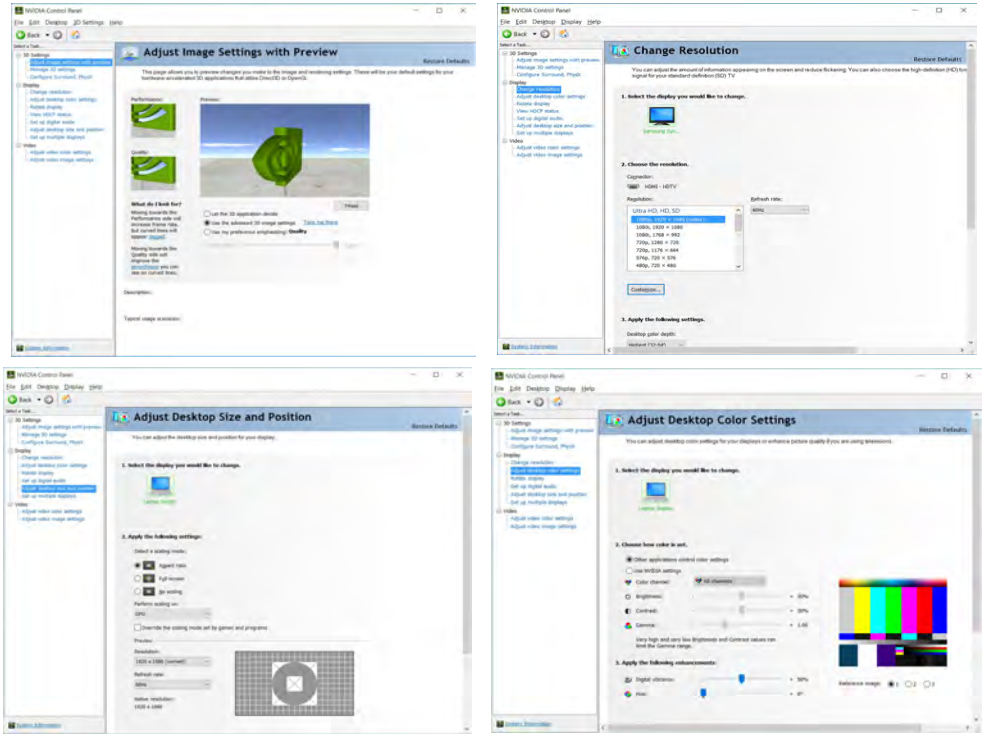


Figure C - 10
NVIDIA Control Panel
(with External Display Attached to HDMI Port or Mini DisplayPort 1.3)

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

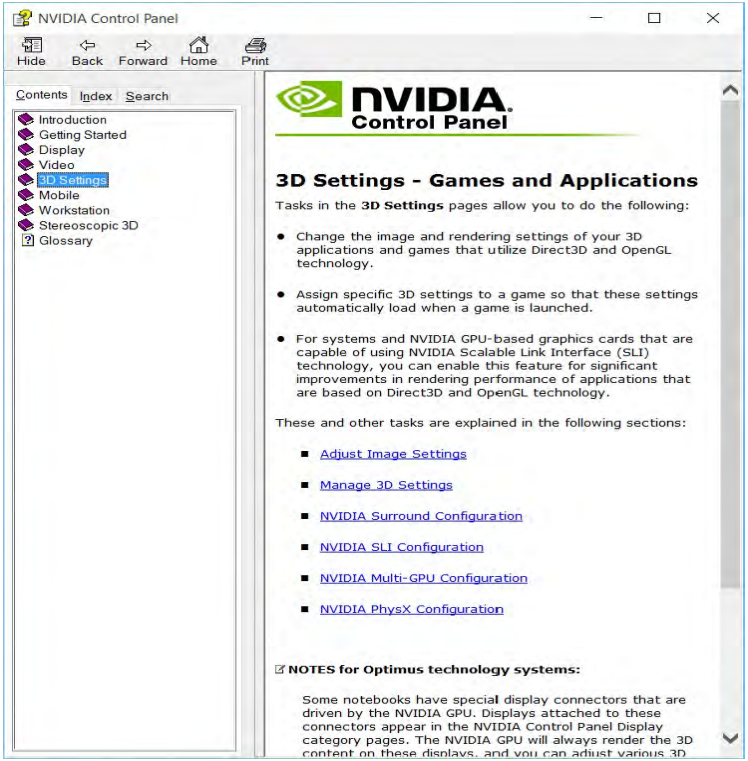


Figure C - 11
Help Menu

Display GPU Activity Icon

Click to enable **Display GPU Activity Icon in the Notification Area** to quickly access the GPU Activity monitor from the taskbar.

Figure C - 12
NVIDIA Control Panel - View

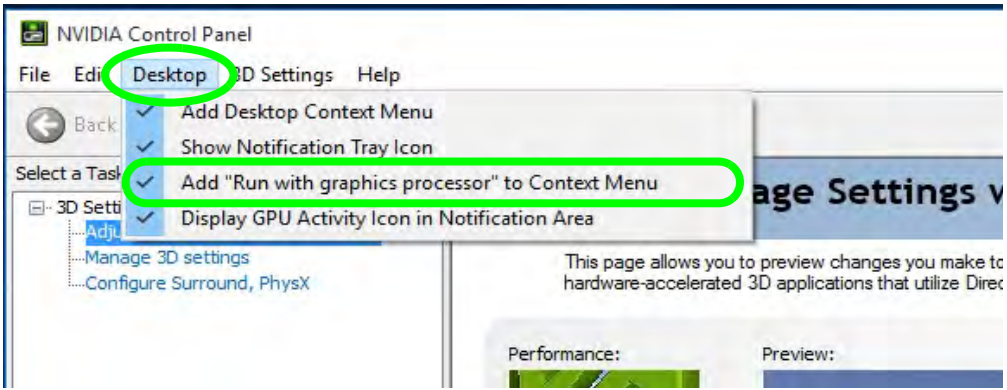
Customization Options

One of the most important aspects of hybrid technology is that it will switch between the integrated GPU and discrete GPU seamlessly and automatically, and does not require any input from the user. However customization options are offered for users who prefer to set their own parameters for GPU usage.

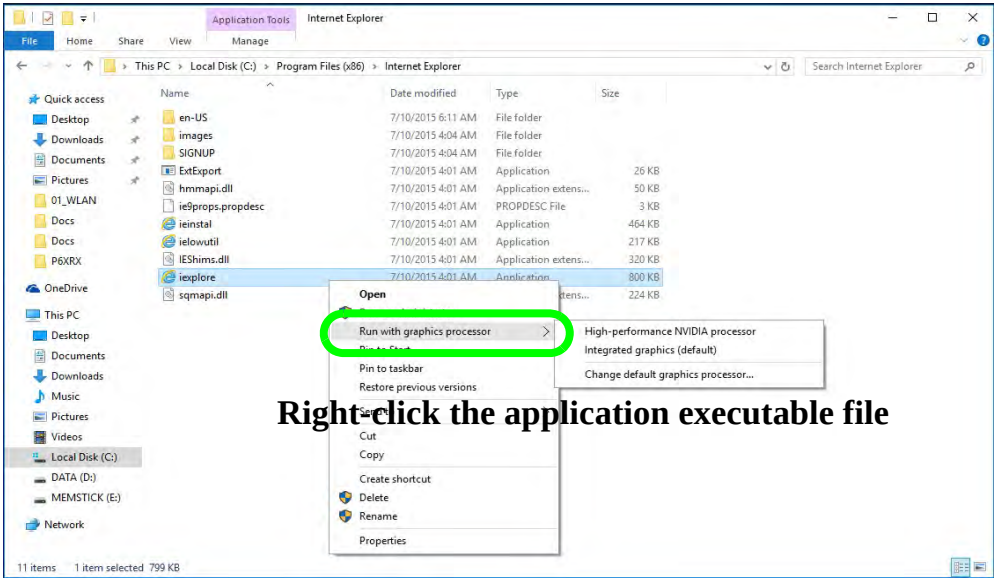
Context Menu

One of the quickest ways to choose which GPU to use for a particular application is by using the "**Run with graphics processor**" in the context menu.

1. Go to the **NVIDIA Control Panel**.
2. Click **Desktop** from the top menu and select **Add "Run with graphics processor" to Context Menu** (it should have a check alongside it).



3. Close the **NVIDIA Control Panel**.
4. Find the executable file icon of the application you want to run.
5. Right-click the icon and select **Run with graphics processor** from the context menu.
6. Select either **High-performance NVIDIA processor** (dGPU) or **Integrated graphics (iGPU)** to run the program with the selected GPU.



Right-click the application executable file

iGPU or dGPU

Note the NVIDIA control panel refers to **High-performance NVIDIA processor** (which is the discrete GPU) and **Integrated graphics** (which is the integrated GPU).

Figure C - 13

Context Menu with Run with graphics processor

C

Customization Options

Although hybrid technology is completely seamless to the user, there are customization options within the control panel (see page *C - 16*).

Global Settings

Global settings allows you to set the preferred graphics processor for overall use. Ideally this would be the iGPU for battery life, but this can be set to the dGPU if preferred.

1. Go to the **NVIDIA Control Panel**.
2. Click **Manage 3D Settings (3D Settings)** and select **Global Settings** (tab).
3. Select either **Integrated graphics** (iGPU) or **High performance NVIDIA Processor** (dGPU) from the drop-down menu.
4. Click the **Setting** menu items to select any options required.
5. Click **Apply** to save the settings.

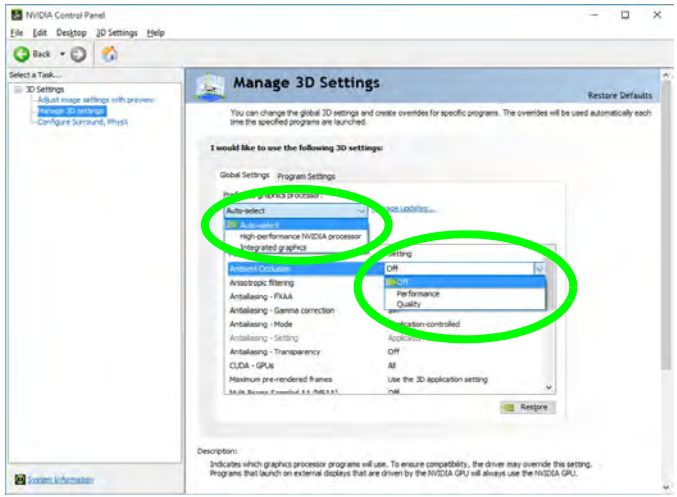


Figure C - 14
Global Settings

Program Settings

Program settings allows you to make specific adjustments for installed applications.

1. Go to the **NVIDIA Control Panel**.
2. Click **Manage 3D Settings (3D Settings)** and select **Program Settings** (tab).
3. **Select a program to customize** from the drop-down menu, or click **Add** to add any program that does not appear in the menu.
4. **Select the preferred graphics processor for the program** from the drop-down menu**.**
5. Click the **Setting** menu items to select any options required.
6. Click **Apply** to save the settings.

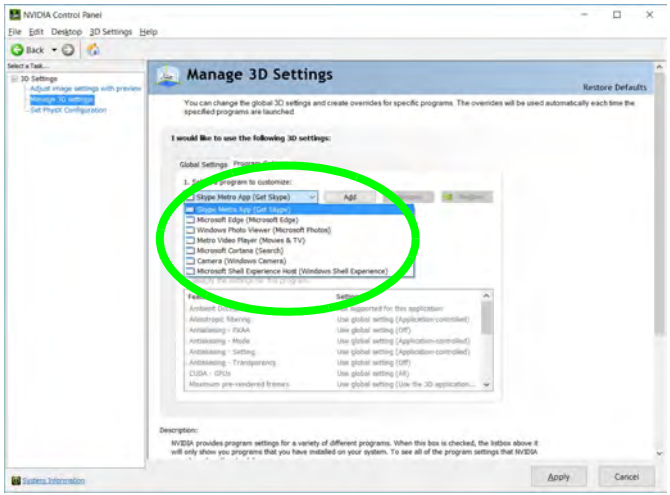


Figure C - 15
Program Settings

C

Change Resolution

You can **Change Resolution** for your attached displays from the NVIDIA control panel.

1. Attach your external display to the appropriate port, and turn it on.
2. Go to the **NVIDIA Control Panel**.
3. Double-click **Display** (if the sub-menus are not visible)**,** and then click **Change resolution**.
4. Click to select the display, and then adjust the settings from "**2.Choose the resolution.**" and "**3.Apply the following settings.**"
5. Click **Apply** to save the settings.

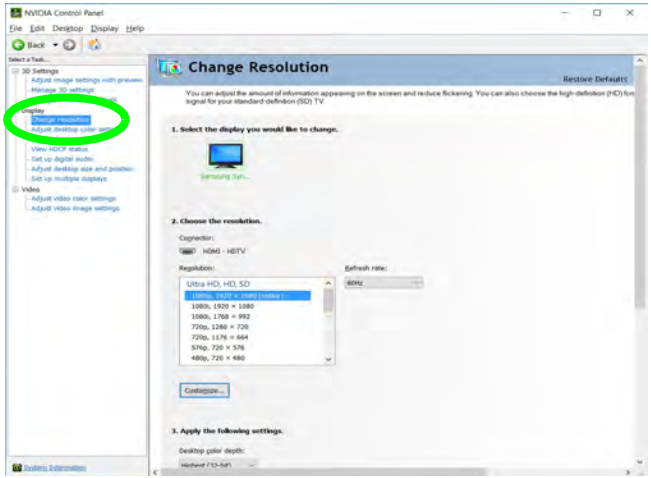


Figure C - 16
Change Resolution

C

Display Devices - NVIDIA CP

Note that when using the NVIDIA control panel you can use an HDMI (High-Definition Multimedia Interface) cable connected to the **HDMI-Out port** and/or Mini DisplayPort compatible cable connected to a **Mini DisplayPort 1.3** to connect an external display. See your external display device's manual to see which formats it supports.

Configuring External Displays

All external and internal displays (up to 4 active displays) can be configured from **Windows** by using the **System** (in **Settings -** page *C - 6*) control panel or the **+ P** (or **Fn + F7 -** page *C - 5*) key combination.

External displays attached to the HDMI port or Mini DisplayPort 1.3 can be configured by using the **NVIDIA (**page *C - 25***)** control panel.

External displays attached to the Mini DisplayPort 1.2 can be configured by using the **Intel(R) HD Graphics control panel (**page *C - 47***)**.

Sound Blaster Audio & HDMI Connection

Note that Sound Blaster audio will be disabled when you are connecting to an external display through an HDMI connection.

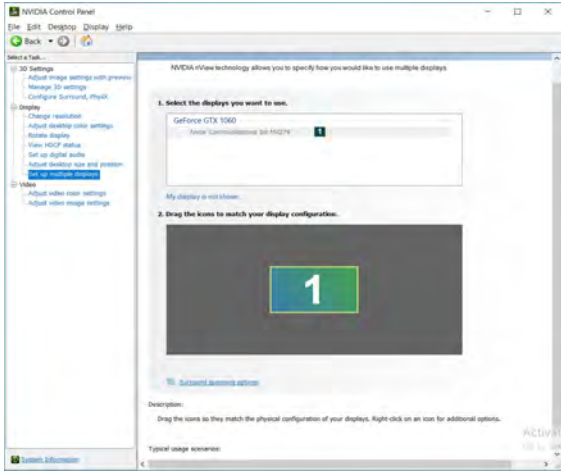
Display Mode	Description
Single	One of the connected displays is used as the display device
Clone	Clone simply shows an exact copy of the Primary display desktop on the other display(s). This mode will drive multiple displays with the same content
Extend	Extend treats connected displays as separate devices, and they act as a virtual desktop resulting in a large workspace. When 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 display, and a different program visible in the other display

Table C - 1
Display Modes
NVIDIA

Configuring an External Display (NVIDIA)

Clone the External Displays

1. Attach your external display(s) to the appropriate port, and turn it(them) on.
2. Go to the **NVIDIA Control Panel**.
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 check box alongside any display you wish to use.
6. Click **Apply > Yes** to save any changes made (the **Apply** button will appear in the bottom right of the control panel when changes have been 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.

HDMI Audio Setup

See ***"HDMI Audio Configuration" on page C - 8*** for instructions on configuring audio for HDMI display devices.

Figure C - 17
Set Up Multiple Displays

Changing the Primary Display on Extended Displays

If you want to switch the primary display if the displays are extended then right-click the secondary display icon and select "**Make Primary**". **Click Apply > Yes** to save the change (see over).

Extending the Display

1. Attach your external display(s) to the appropriate port, and turn it(them) on.
2. Go to the **NVIDIA Control Panel**.
3. Double-click **Display** (if the sub-menus are not visible)**,** and then click **Set up multiple displays**.
4. Click to select a primary display under "***1.Select the displays you want to use.***"
5. Right-click the icons under "2.**Drag the icons to match ....**" and select **Extend**.

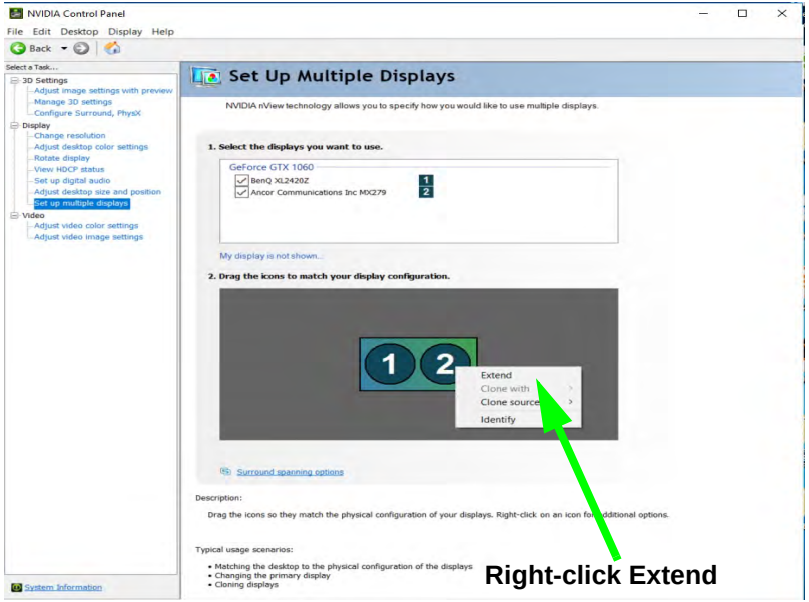
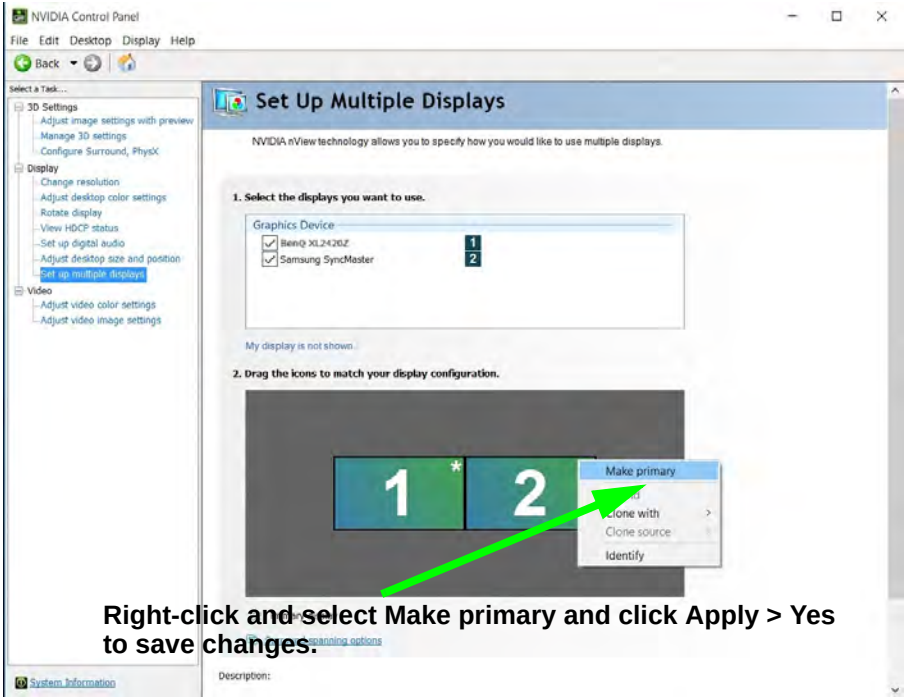


Figure C - 18
Extend the Display

C

6. The Primary display (the main window display) will be denoted by an **asterisk *** in the top right corner of the icon.
7. To change the Primary display **right-click the icon** and select **Make primary**.
8. Click **Apply > Yes** to save any changes.



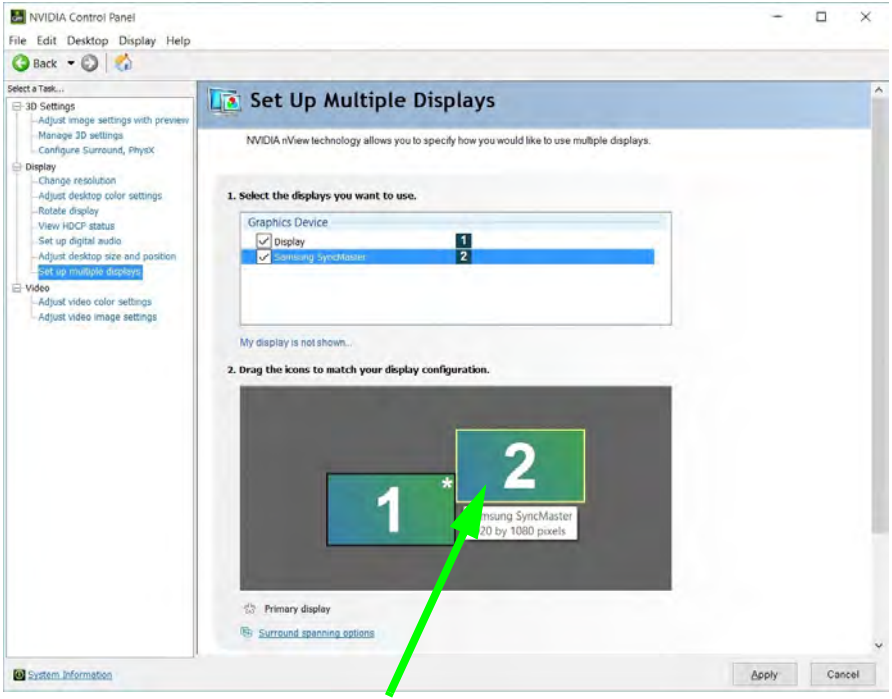
Right-click and select Make primary and click Apply > Yes to save changes.

Figure C - 19
Switch Primary Display

C

9. You can drag the icons to match the desktop layout you want to use (e.g. you may want to extend the display to the right or left of the primary display).
10. Click **Apply > Yes** to save any further changes.

Figure C - 20
Drag Display Icons



Drag the display icons to match the layout you want to use.

HDCP Status

If your external display is HDCP (High Bandwith Digital Content protection) compatible then the NVIDIA control panel will display the HDCP system status.

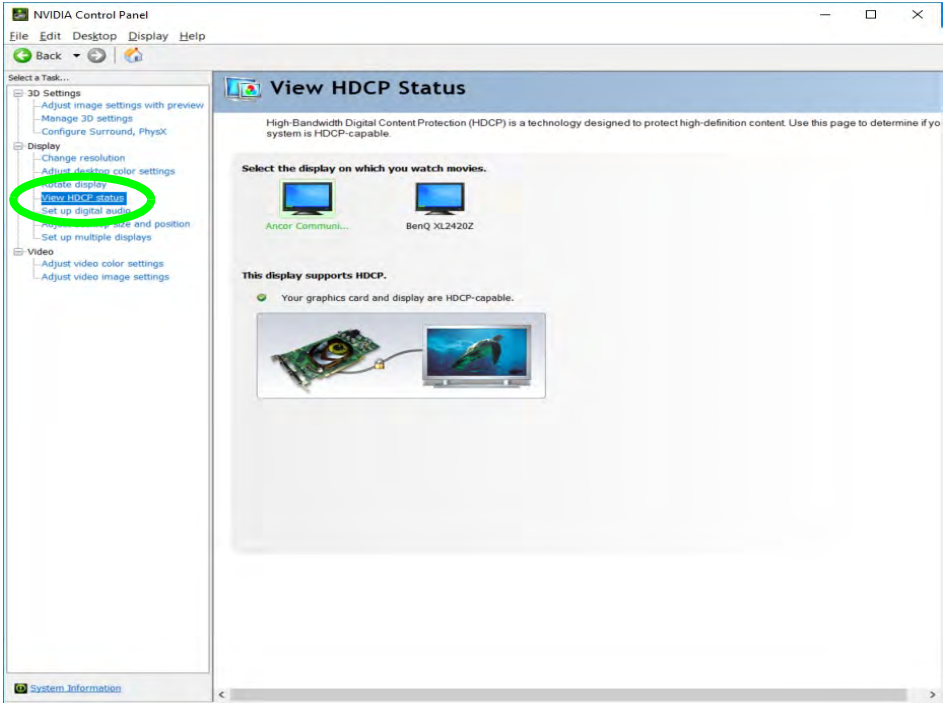


Figure C - 21
HDCP Status

Adjust Video Settings

You can adjust video color and image settings from the **Video** sub-menus.

1. Go to the **NVIDIA Control Panel**.
2. Click "**+**" next to **Video** if its sub-items are not shown and then click either **Adjust video color settings** or **Adjust video image settings**.
3. Make any adjustments required for any display and click **Apply** to save the settings.

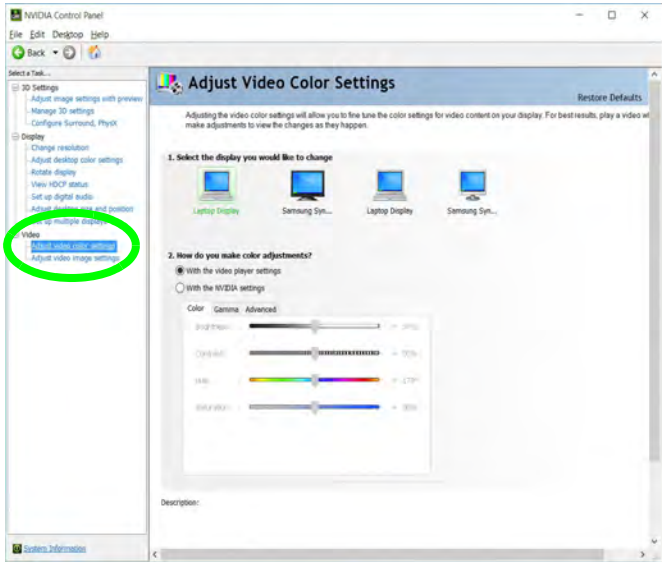


Figure C - 22

Adjust Video Color Settings

C

Configure Surround, PhysX®

NVIDIA® PhysX® is a physics engine that can use the GPU to accelerate game and 3D application performance. You can select the GeForce video card or CPU as a PhysX® processor, or configure the computer to auto-select a PhysX® processor (recommended default setting).

1. Go to the **NVIDIA Control Panel**.
2. Click **Configure Surround, PhysX**.
3. Click to select a processor from the menu (**PhysX Settings**); Auto-select (recommended) is the default setting.
4. Click **Apply** to save the settings.

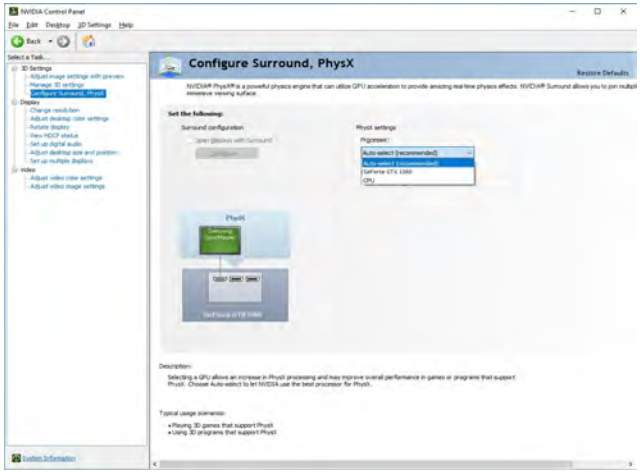


Figure C - 23
Configure Surround, PhysX

C

Set Digital Audio

As HDMI (High-Definition Multimedia Interface) carries both **audio** and video signals you can configure the audio output from the **NVIDIA control panel** and **Sound** control panel. The settings will depend upon the external HDMI display to which you have connected.

Connected displays will appear alongside the appropriate port. Click ***"Open Windows Sound Settings"*** (button) to access the **Sound** control panel.

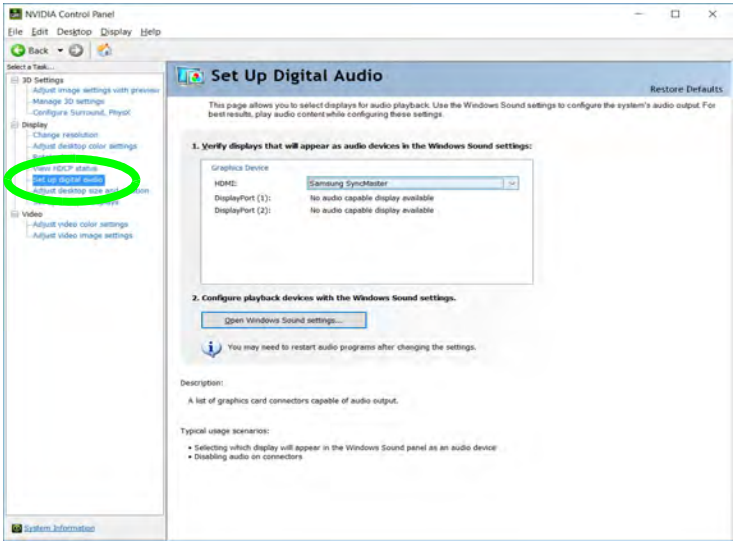


Figure C - 24
Set up Digital Audio

C

NVIDIA GeForce Experience

If you have a working internet connection (and you will need remain connected to the internet to run **NVIDIA GeForce Experience**) you can click the **NVIDIA GeForce Experience** desktop icon (or App) to run the application. This will optimize your gaming settings for your NVIDIA GPU by downloading the latest settings from the NVIDIA cloud data center.

You may need to create an NVIDIA account to log-in to the system (alternatively you may be able to use your Facebook or Google account to log-in).

After logging in to the system you can click through any on-screen instructions to update your settings and check for installed games etc.

By running the **NVIDIA GeForce Experience** you will be able to download the latest drivers to insure compatibility with games, power saving features and various other enhancements for your NVIDIA GPU (these features are subject to change and update so check with the NVIDIA website for the latest information).

Note that to enable **BatteryBoost** you must be connected to the internet.

NVIDIA GeForce Experience Version

Note that the NVIDIA GeForce Experience application is subject to constant, change, update and revision, so make sure you connect and update regularly in order to get the latest settings and information.

Intel® HD Graphics Control Panel

Advanced video configuration options are provided by the **Intel® HD Control Panel**. Use the **Intel® HD Control Panel to configure external displays attached to the Mini DisplayPort 1.2.** To access the control panel see below and overleaf.

1. Right-click the **Desktop** and select **Intel(R) Graphics Settings** from the menu.

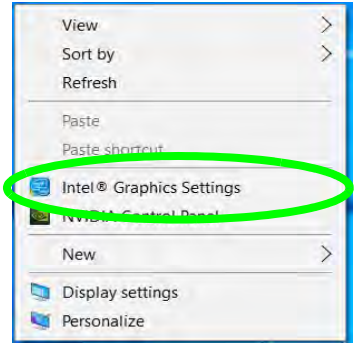


Figure C - 25
Right-Click Desktop (Intel Graphics Settings)

Intel® Dynamic Video Memory Technology

Intel® DVMT automatically and dynamically allocates as much system memory (RAM) as needed to the integrated video system (**the video driver must be installed**).

DVMT returns whatever memory is no longer needed to the operating system.

OR

2. Click the icon in the notification area of the Desktop taskbar and select **Intel(R) Graphics Settings** from the menu.

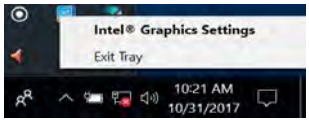


Figure C - 26
Taskbar Notification Area Icon Menu

C

OR

3. Double-click the **Intel(R) HD Graphics** control panel in the ***Windows Control Panel***.

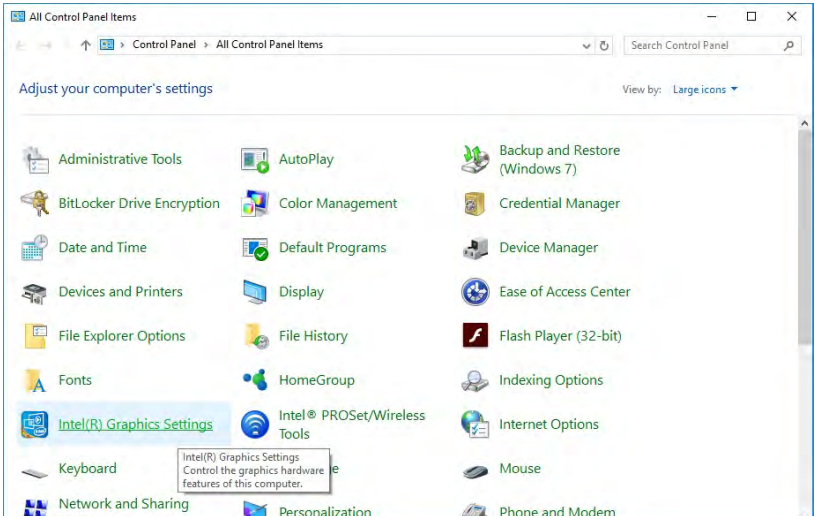


Figure C - 27
Control Panel
Intel® Graphics Settings

C

Home

Click the Home button to return to the main menu screen in any of the sub-menu screens.

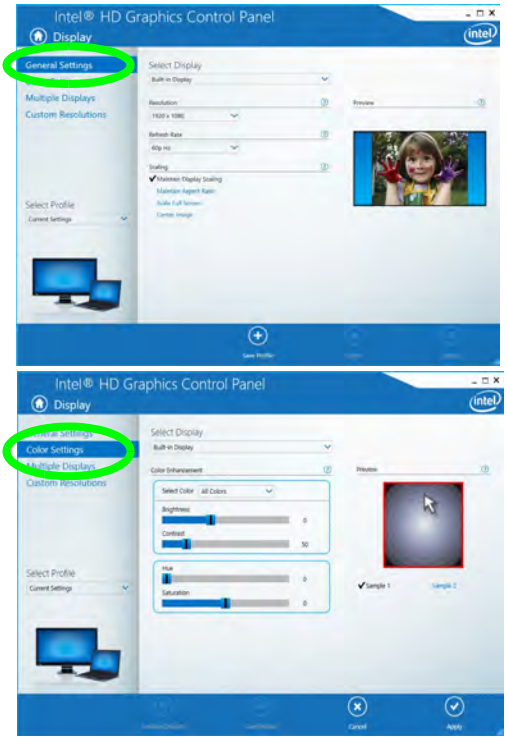
You may make changes to any of the graphics properties by clicking the appropriate menu panel and adjusting the settings from the menus.

Figure C - 28
Intel® HD Graphics Control Panel

C

Display

Click either **Display Settings** or **Color Settings** to make display adjustments, including configuration for any attached external displays.



Multiple Display

At least one other display must be attached in order to view multiple display selection options.

Figure C - 29
Intel® HD Graphics Control Panel Display

C

Multiple Display

At least one other display must be attached in order to view multiple display selection options.

Audio Settings

Any attached active displays must have audio capacity to allow audio configuration.

Click the **Display** menu at the top of the screen to display the sub-menus. The **Multiple Displays** menu allows you to configure the display mode of any attached displays (see *"Attaching Other Displays" on page C - 47*). Click **Apply** to save any changes made.

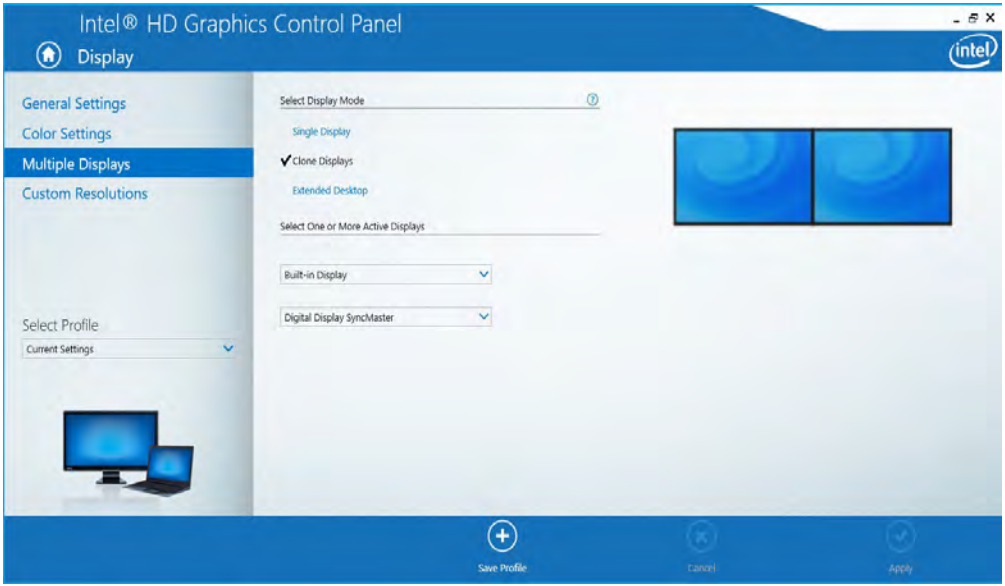


Figure C - 30
Intel® HD Graphics Control Panel Display - Multiple Displays

C

The **Custom Resolutions** sub-menu allows you to adjust the display (or any attached display) to any width, height, refresh rate, color depth and underscan percentage of your choice. Note that incorrect settings can cause system instability and even possible component damage, so this is adjusted at your own risk.

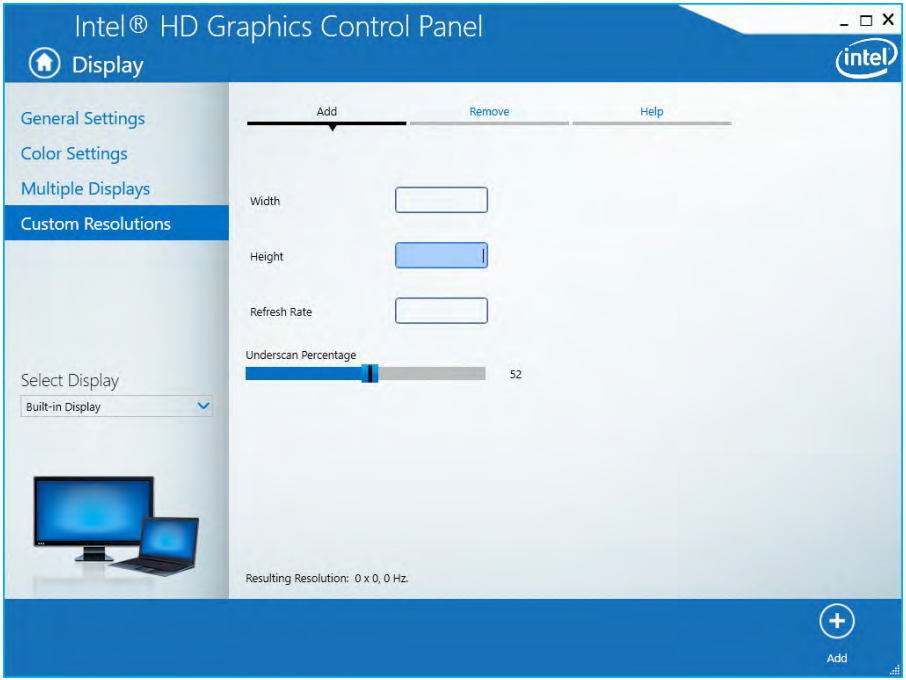


Figure C - 31
Intel® HD Graphics Control Panel Display Settings - Custom Resolutions

C

3D

This menu allows you to choose how 3D images are displayed. **Performance** gives the smoothest motion of images**, Quality** displays the most detail, **Balanced Mode** provides better computer performance with good quality and **Custom** allows you to configure the **Anisotropic Filtering** and **Vertical Sync** and features to your preferences. Click **Apply** to save changes.

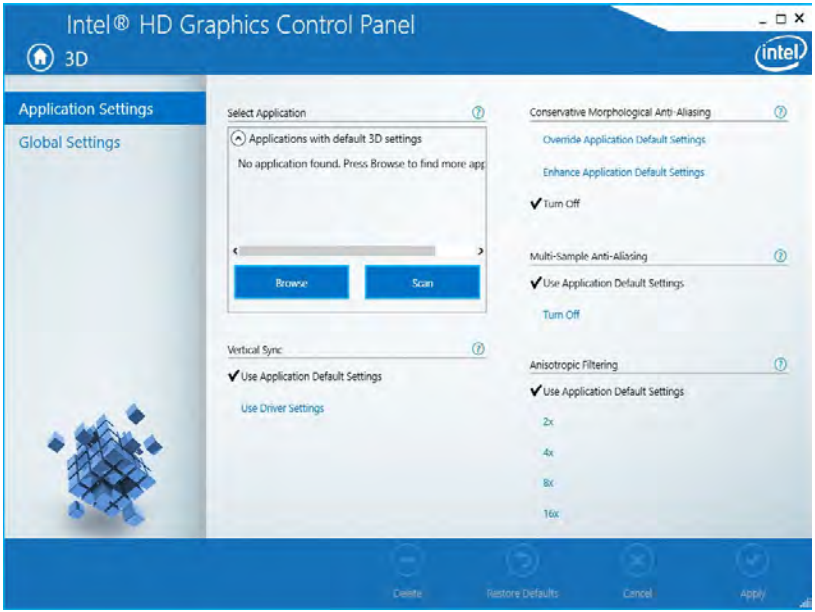


Figure C - 32
Intel® HD Graphics Control Panel 3D

C

Options and Support

Hot Key Manager in **Options and Support** allows you to create hot keys for opening the application and scaling etc. Click **Apply** to save changes.

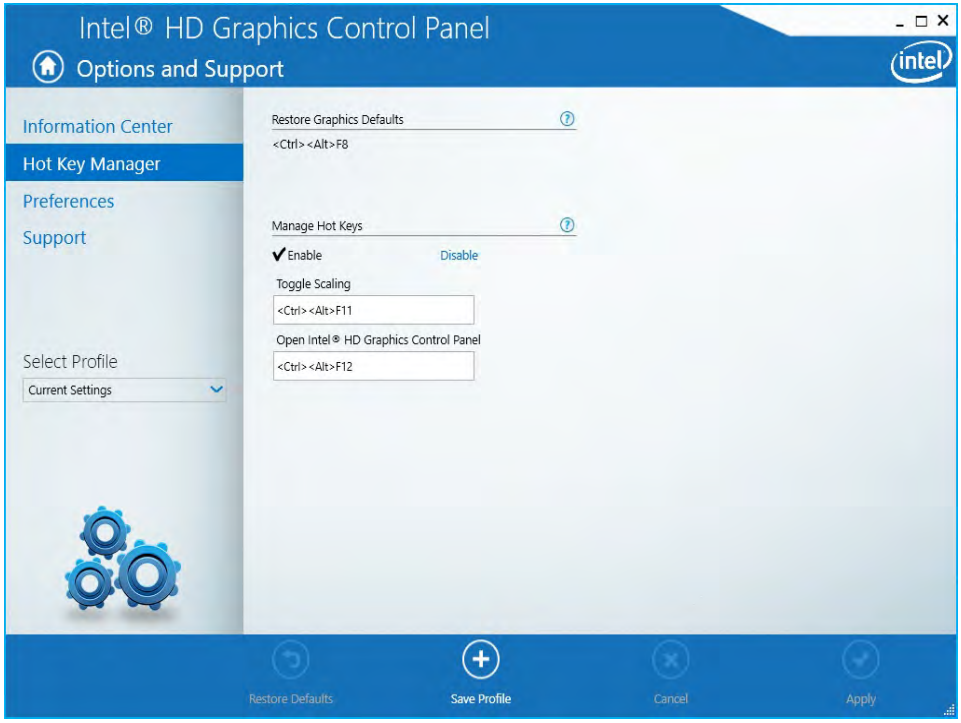


Figure C - 33
Intel® HD Graphics Control Panel Options and Support

C

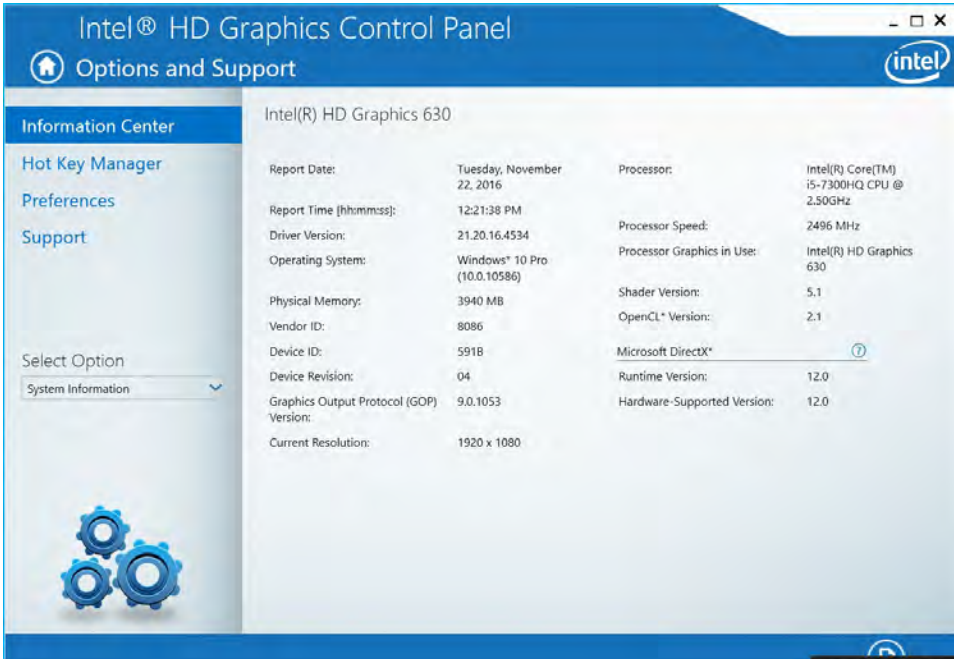
Preferences

Go to the **Preferences** sub-menu in Options to configure the preferences for the Intel® HD Graphics Control Panel.

Make sure you click **Enable** under **Tray Icon** to display the Intel® HD Graphics Control Panel icon in the notification area of the taskbar (as below).

Figure C - 34
Intel® HD Graphics Control Panel Options - Information Center

Click the **Options** menu at the top of the screen to display the sub-menus. The **Information Center** provides details on **System Information**, the **Built-In Display** and any **attached displays**.



Video

The **Video** menu allows you to brighten or darken movies, or to switch to vivid colors. The **Preview** image will display a sample image using the current settings. You can **Save Profile** and name the Profile to recall the settings at any time. Click **Apply** to save changes (select **Color Enhancement** or **Image Enhancement** from the menu).

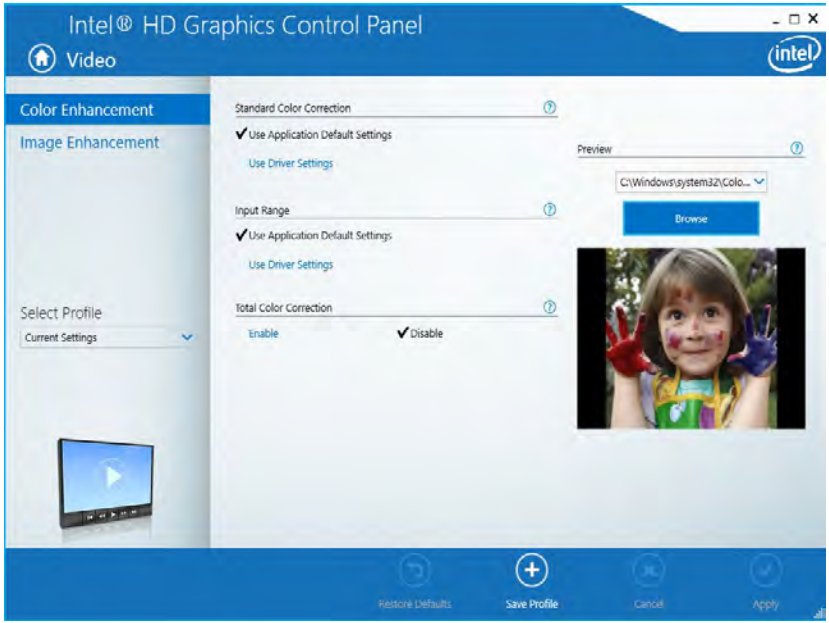
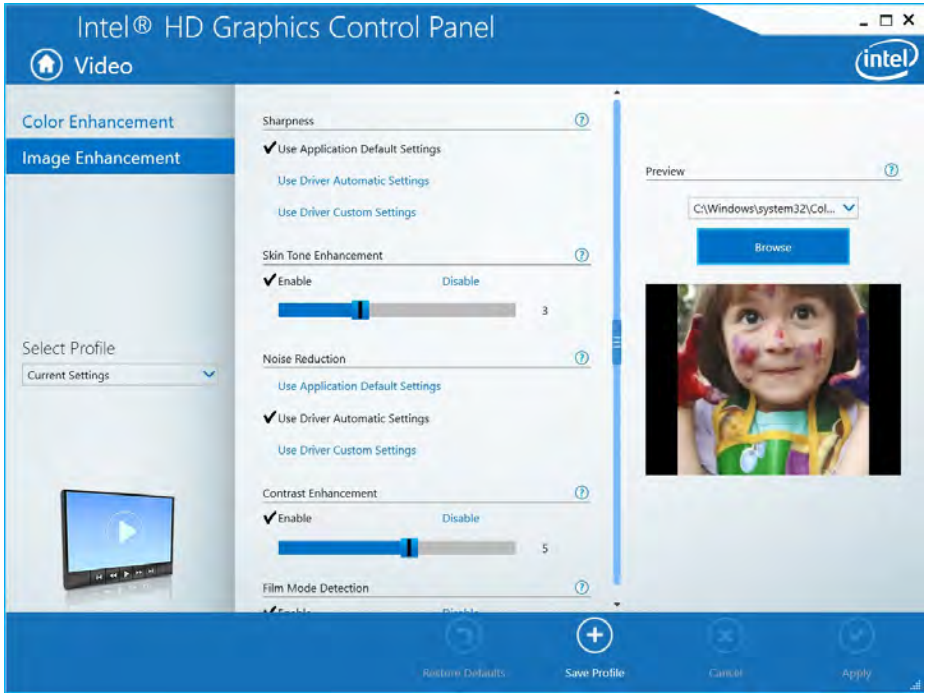


Figure C - 35
Intel® HD Graphics Control Panel - Video (Color Enhancement)

C

Click the **Video** menu at the top of the screen to display the sub-menus.The **Image Enhancement** menu allows you to adjust the **Sharpness**, **Skin Tone Enhancement, Noise Reduction, Contrast Enhancement** and **Film Mode Detection**. Click **Apply** to save changes.

Figure C - 36
Intel® HD Graphics Control Panel - Video (Image Enhancement Basic)



Profiles

You can select one of the preset profiles (**Brighten Video**, **Darken Video** and **Enhance Video Colors**) from the menu on the left. Alternatively you can go through the menus to make adjustments to your preferences for **Display**, **Color**, **Video**, **Options and Support** and **Power** (tick any boxes for the settings required), and then **Save** the settings to a profile (which may be imported or exported).

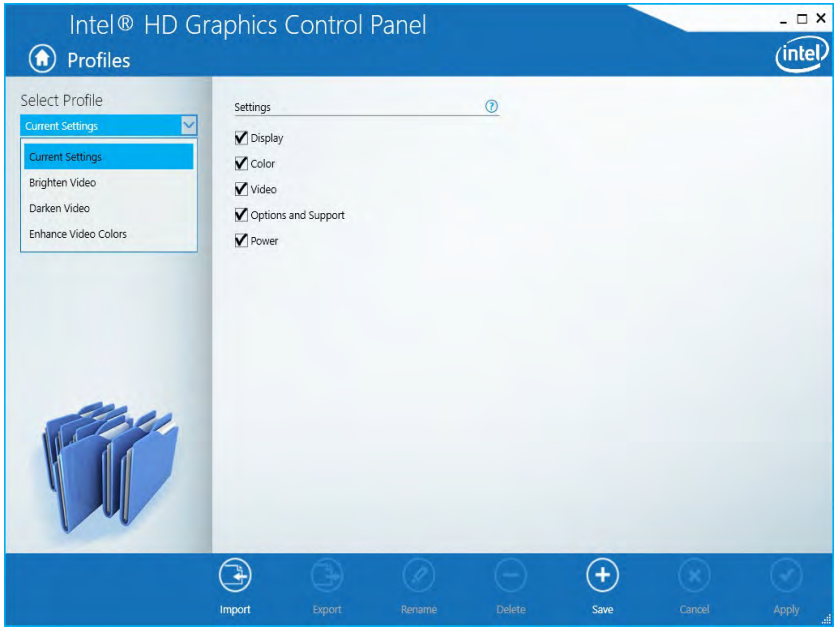


Figure C - 37
Intel® HD Graphics Control Panel - Profiles

4K2K Videos on 4K2K External Displays

Note you may experience some video lag when playing 4K2K videos on an attached 4K2K external display.

Display Devices & Options

Note that you can use the **Intel(R) HD Graphics Control Panel** to configure external displays connected to the **MiniDisplay 1.2 port**. See your display device manual to see which formats are supported.

Table C - 2
Display Modes

Display Mode	Description
Single Display	One of the connected displays is used as the display device (**PC screen only** or **Second screen only**).
Clone/Duplicate	Both connected displays output the same view and may be configured independently
Extended / Extend	Both connected displays are treated as separate devices, and act as a virtual desktop

Attaching Displays

When you first attach an external display you may find that the desktop does not occupy the full screen area. Use either the display's auto adjust/ configure controls, or the Intel(R) HD Graphics Control Panel to configure the full screen display.

Attaching Other Displays

To Clone Displays:

1. Attach your external display to the MiniDisplay Port 1.2 and turn it on.
2. Go to the **Intel(R) HD Graphics Control Panel** control panel and click **Display > Multiple Displays** (sub-menu).
3. Click **Clone** from the **Select Display Mode** menu.
4. Click **Apply**, and **OK** to confirm the settings change.
5. Select the displays from the **Select One or More Active Displays** menu.

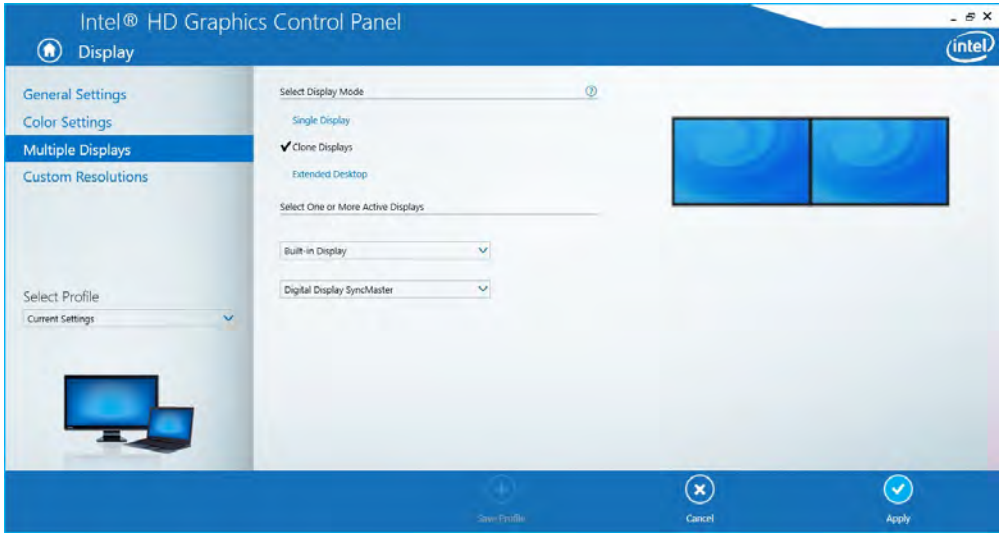


Figure C - 38
Display > Multiple Displays (Clone)

Multiple Display

At least one other display must be attached in order to view **Multiple Display** selection options.

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Display Settings Extended Desktop

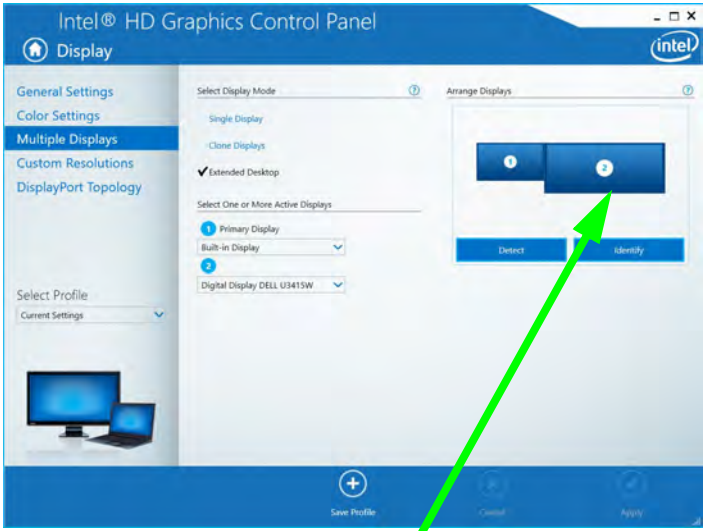
You can have different Colors, Screen Area and Monitor Refresh Rates for each display device **provided your monitor can support them**.

You can drag the monitor icons to match the physical layout of your displays. Icons and programs may also be dragged between the displays.

Figure C - 39
Display > Multiple Displays (Extended)

To Enable Extended Mode:

1. Attach your external display to the MiniDisplay Port 1.2 and turn it on.
2. Go to the **Intel(R) HD Graphics Control Panel** control panel and click **Display > Multiple Displays** (sub-menu).
3. Click **Extended** from the **Select Display Mode** menu.
4. Click **Apply**, and **OK** to confirm the settings change.



Click the appropriate monitor icon and drag it to match the physical arrangement you wish to use (e.g. the secondary display may be extended left/right/above/below the primary display).

Appendix D: 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 distributor/supplier for details.

Note that this computer model series may support a range of CPUs and/or video adapters.

To find out which **CPU** is installed on your system go to the **Start** menu and select **Settings**, and then select **System** and click **About**. This will also provide information on the amount of **Installed RAM** etc.

To get information on your system's **video adapter** go to the **Start** menu and select **Settings**, and then select **System** and click **Display> Advanced display settings > Display adapter properties.**

Core Logic

Intel® H270 Express Chipset

Display

15.6" (39.62cm), 3.2 mm, FHD (1920 * 1080),16:9 Backlit Panel

Memory

Dual Channel **DDR4**

Two 260 Pin SO-DIMM Sockets Supporting **DDR4 2400** MHz Memory Modules (*real operational frequency depends on the processor*)

Memory Expandable up to **32GB** (maximum), Compatible with 4GB/8GB/16GB Modules

SO-DIMM Memory Types

All SO-DIMM memory modules installed in the system should be identical (the same size and brand) in order to prevent unexpected system behavior.

Don't mix SO-DIMM memory module sizes and brands in order to prevent system problems.

Storage

One Changeable 2.5" 9.5mm / 7mm (h) Hard Disk Drives (HDD) / Solid State Drives (SSD) with SATA Interface

One M.2 2280 SSD with SATA Interface
OR
2 * PCIe Gen 3 x4 Interface (RAID 0/1)

BIOS

One 64Mb SPI Flash ROM
AMI BIOS

Audio

High Definition Audio
Built-In Array Microphone
2 Built-In 2W Speakers
Sound Blaster™ Cinema 3

Keyboard & Pointing Device

Full Size White LED Illuminated Keyboard with Numeric Pad (**Factory Option**)

Full Size Colored LED Illuminated Keyboard with Numeric Pad (**Factory Option**)

W/A/S/D Gaming keys on Colored Illuminated Keyboard

Built-In TouchPad with Microsoft PTP Multi Gesture & Scrolling Functionality

Indicators

LED Indicators - Power/Suspend, Battery, Airplane Mode, HDD, Camera

Interface

One USB 2.0 Port
Two USB 3.0 (USB 3.1 Gen 1) Ports (Type-A)
One USB 3.0 (USB 3.1 Gen 1) Port (Type-C)

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One USB 3.1 (Gen 2 - Type A) Port &
One USB 3.1 (Gen 2 - Type C) Port (**Factory Option** shared with USB 3.0 ports) - *2 * USB 3.1 Gen 2 Ports with 10Gb Shared Bandwidth*

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***Note:** The maximum amount of current supplied by USB Type-C ports is 500 mA for USB2.0/900 mA for USB 3.1

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1 * Mini DisplayPort 1.2 (iGPU)
1 * Mini DisplayPort 1.3 (dGPU)

See over

One HDMI™ (High-Definition Multimedia Interface) Out Port (with HDCP)
One Headphone/Speaker-Out Jack
One Microphone-In Jack
One RJ-45 LAN Jack
One DC-In Jack

Card Reader

Embedded Multi-In-1 Push-Push Card Reader
- MMC / RSMMC
- SD / Mini SD / SDHC / SDXC

Card Reader Note: Some of the cards require PC adapters that are usually supplied with the cards.

Slots

Three M.2 Slots:

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Slot 1: for M.2 2230 WLAN Combo Module Card with PCIe & USB Interfaces (A Key)

Slot 2: for M.2 2280 **SSD** Card with SATA/ PCIe Gen 3 x4 Interface (M Key)

Slot 3: for M.2 2280 **SSD** Card with PCIe Gen 3 x4 Interface (M Key)

Communication

1.0M HD PC Video Camera Module
2.0M FHD PC Video Camera Module (**Factory Option**)

Built-In 10/100/1000Mb Base-TX Ethernet LAN

Intel® Dual Band Wireless-AC 8265 (2*2 802.11 a/c) M.2 WLAN + Bluetooth Combo M.2 2230 Module (**Factory Option**)

Intel® Dual Band Wireless-AC 3168 (1*1 802.11 ac) WLAN + Bluetooth Combo M.2 2230 Module (**Factory Option**)

Qualcomm® Atheros Killer™ Wireless-AC 1535 Dual Band (2*2 802.11 ac) WLAN + Bluetooth 4.1 Combo M.2 2230 Module (**Factory Option**)

Operating System

Windows® 10 (64-bit)

Features (Depends on Model Type)

Metal Style
Shipping Mode
Flexicharger

Virtual Reality Ready via HDMI or MiniDP from dGPU
Microsoft Cortana with Voice Technology
Intel® Optane™
USB Drive (**Factory Option**)

Security

Security (Kensington® Type) Lock Slot
BIOS Password
Intel® PTT for Systems without TPM

Power Management

Supports Wake on LAN (AC Mode Only)
Supports Wake on USB
Supports Wake on RTC Alarm (AC Mode Only)

Power

Removable 6 Cell Smart Lithium-Ion Battery Pack 62WH (**Factory Option**)

Full Range AC/DC Adapter – AC in 100 - 240V, 50 - 60Hz DC Output 19.5V, 11.8A (**230 Watts**)

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

Physical Dimensions & Weight
378mm (w) * 267mm (d) * 30mm(h) 2.5kg *Barebone System with VGA Card & Battery **A barebone system does not include the HDD, RAM, adapter, power cord and factory option modules (weight tolerance within +/- 5%).*