Colorful Graphics Card
ATI Series
User's Manual

Colorful Technology Website: http://www.colorful.cn

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WARNING!!

DO NOT touch the cooling system since it may produce a certain heat while processing tasks.

CAUTION!!

DO NOT force the cooler against the fragile GPU to avoid damage to the GPU.

Table of Contents

Chapter 1 Hardware Installation

Before you begin…

Thanks for purchasing Colorful graphics card. Please check the packing contents first before the installation. If there was any broken or parts missing, please contact your franchiser.

1.1 Packing Contents

- 1* Colorful graphics card
- 1* Windows 2000/XP/Vista driver CD
- 1* User's manual
- DVI to VGA adapter, HDMI to DVI adapter, DVI to HDMI adapter, Additional power cable, S-VIDEO cable, TV-OUT cable, SPDIF connecting cable, HDMI cable

*Note: All the cables or adapters are **Optional**, and it depends on the output ports of the graphics card*

1.2 How to install

Follow the steps below to install the graphics card.
1. Turn off the power and remove all the cables which is connecting to the computer case
2. Open the computer case
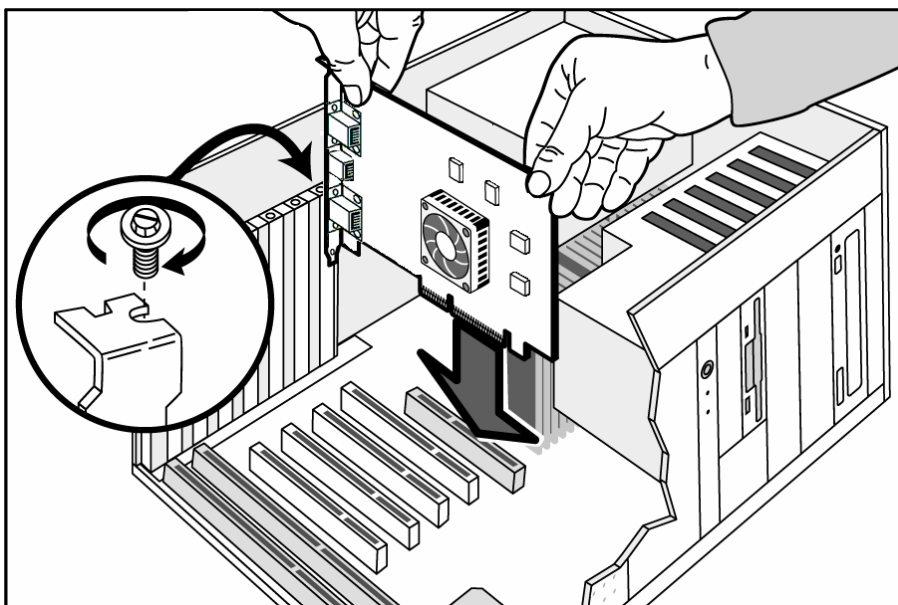3. Locate the PCI Express slot or AGP slot on the motherboard
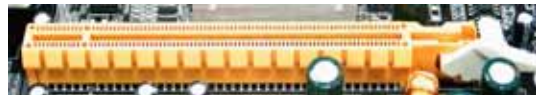
AGP slot   PCI Express slot

Note: Insert the wrong slot may damage the graphics card

4. Full seated the graphic card, and secure the card with a bracket screw.

5. Some high-end graphic cards need an additional power cable

Note: If the additional *power cable is not connected, the computer will not boot, or the system will warn.*
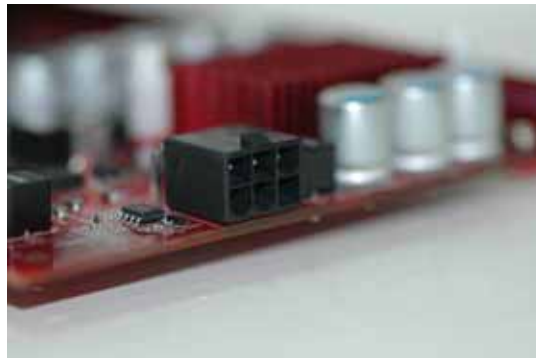
6. Pay attention on other parts of the motherboard when installing the card.

⚠ Don't open the plastic nips of DIMM slots before installing the graphics card	⚠ After the installation, please note whether the nip of the PCIE slot is well connected.

7. Close the computer case, and re-connect all the cables that were removed before. Then connect the monitor

8. HDMI (High-Definition Multimedia Interface) port.

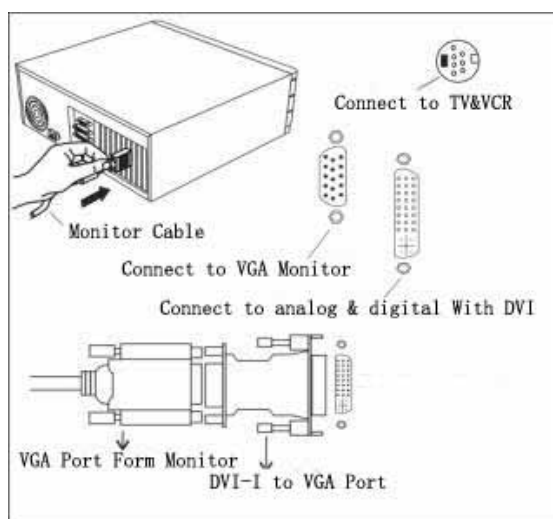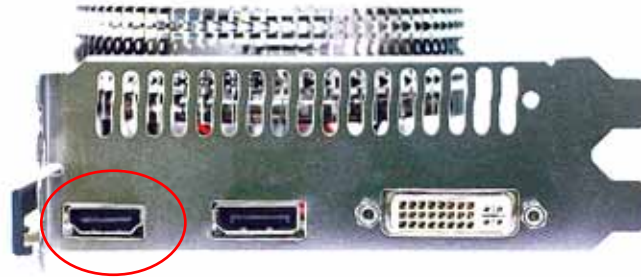The High-Definition Multimedia Interface (HDMI) is a compact audio/video connector interface for transmitting uncompressed digital streams. It represents a digital alternative to consumer analog standards. HDMI connects digital audio/video sources such as set-top boxes, Blu-ray Disc players, personal computers, video game consoles, and AV receivers to compatible digital audio devices, video monitors, and digital televisions (DTV).

9. DisplayPort.
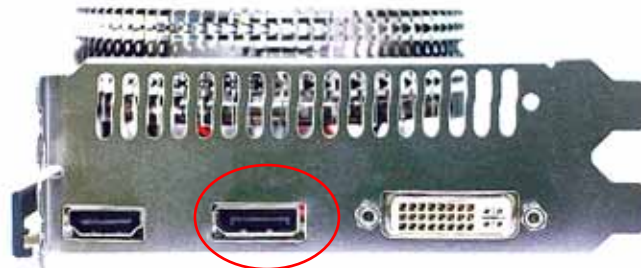
DisplayPort is a digital display interface standard (approved May 2006, current version 1.1 approved on April 2, 2007) put forth by the Video Electronics Standards Association (VESA). It defines a new license-free, royalty-free, digital audio/video interconnect, intended to be used primarily between a computer and its display monitor, or a computer and a home-theater system. It supports a maximum of 10.8 Gbit/s data rate and WQXGA (2560×1600) resolution over a 3 meter cable.

NOTE: All ATI HDMI/DisplayPort-supported graphics cards are integrated audio codec, you just need to set in the Control Panel.

10. VVC and UVC

VVC (VRAM Voltage-Control) and UVC (VPU Voltage-Control) switches are Colorful particular high-light for enhancing overclocking capability; you can find them usually on the high-end graphics card.

VRAM Voltage-Control

VPU Voltage-Control

The VVC and UVC are used for adjusting the memory voltage and core voltage. When slide to the right-side, the voltage will be added, and the overclocking ability will be improved.

Caution: The system might come to unstable when overclocking, so novice users please keep the default clock and voltage.

11. Dual BIOS

The overcloking button is on the bracket of the graphics card. It is very convenient, users needn't use a lot of softwares to test or adjust the clock when they play a game that without good performance, but just need press the button.

Turbo- The VPU and memory work at high clock.
Normal- The VPU and memory work at low clock

Chapter 2 Driver Installation

Before installing the graphics card driver…….

Please Note:

1. Make sure you have installed the chipset driver of the motherboard
2. Make sure the DirectX(Direct9.0 or later) has been installed. Microsoft DirectX is a collection of application programming interfaces (APIs) for handling tasks related to multimedia, especially game programming and video, on Microsoft platforms.
3. We suggest you downloading the latest DirectX on Microsoft website: http://www.microsoft.com

2.1 Driver installation in Windows Vista

Step 1: Insert the Colorful Smart Install CD into the CD drive, and it has an auto-start feature.

Select <Run Autorun.exe> to run the auto-start feature.

The program will detect the graphics card model automatically. Click "Setup VGA" to install.
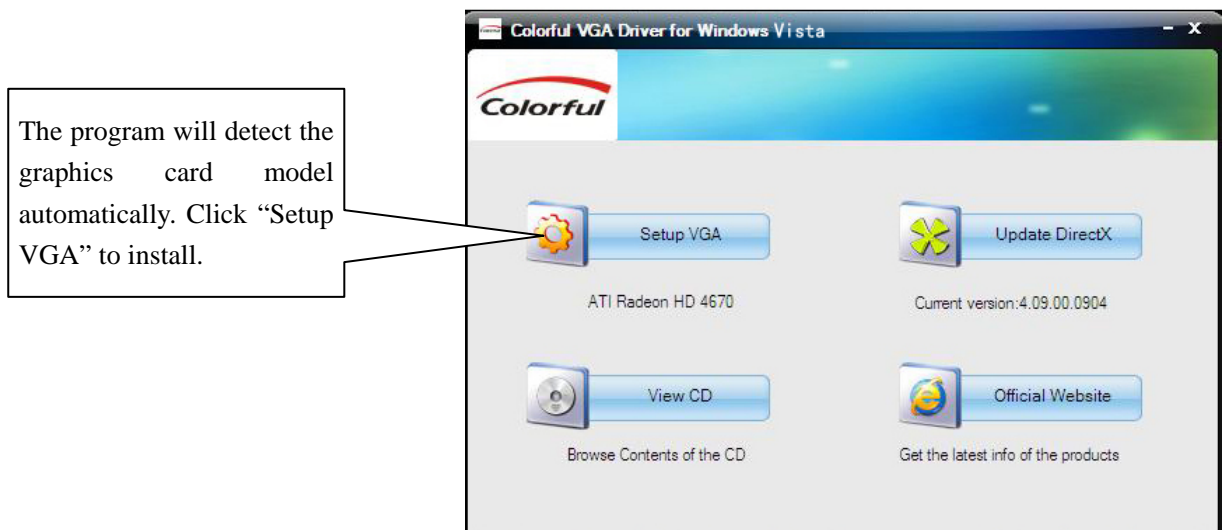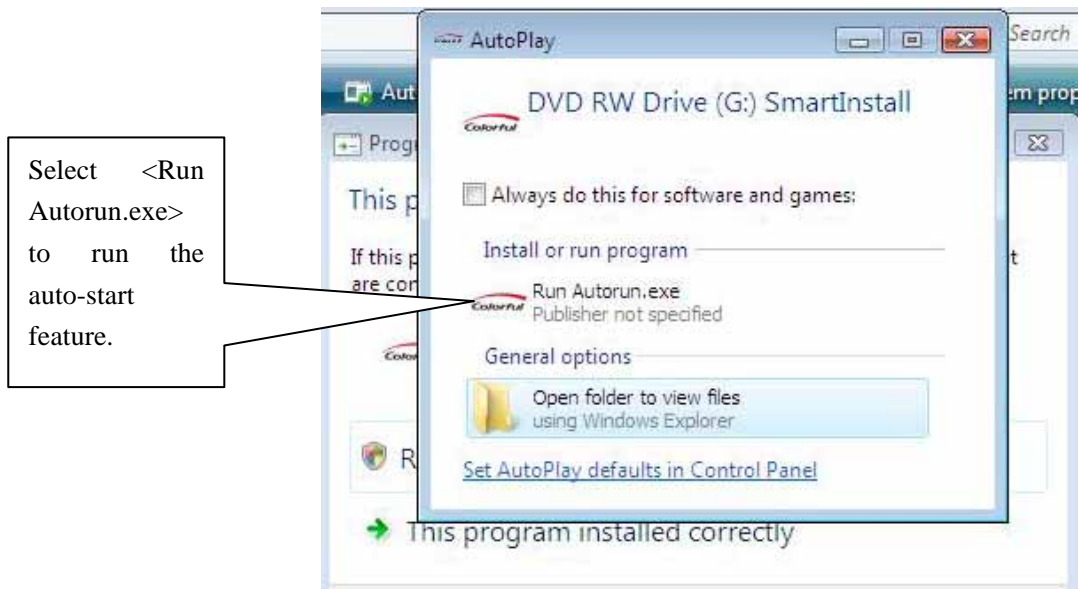
Step 2:
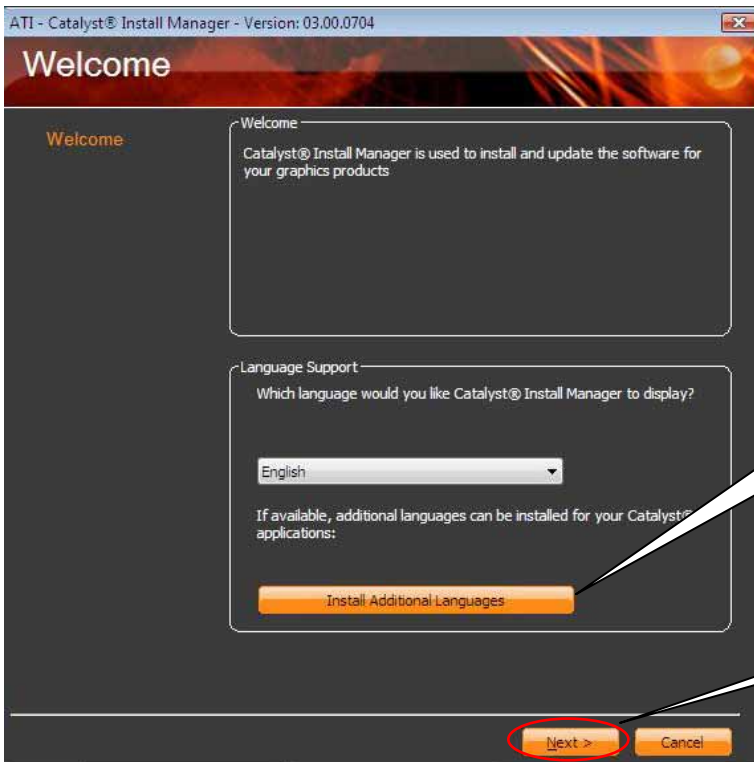
Select "Install Additional Languages" to install mother tongue

Click "Next" to continue

Select "Install" to install the driver.

Step 3:

Click "Express" for full installation, we're highly recommended you select express

Click "Browse" if you want to change the installation location
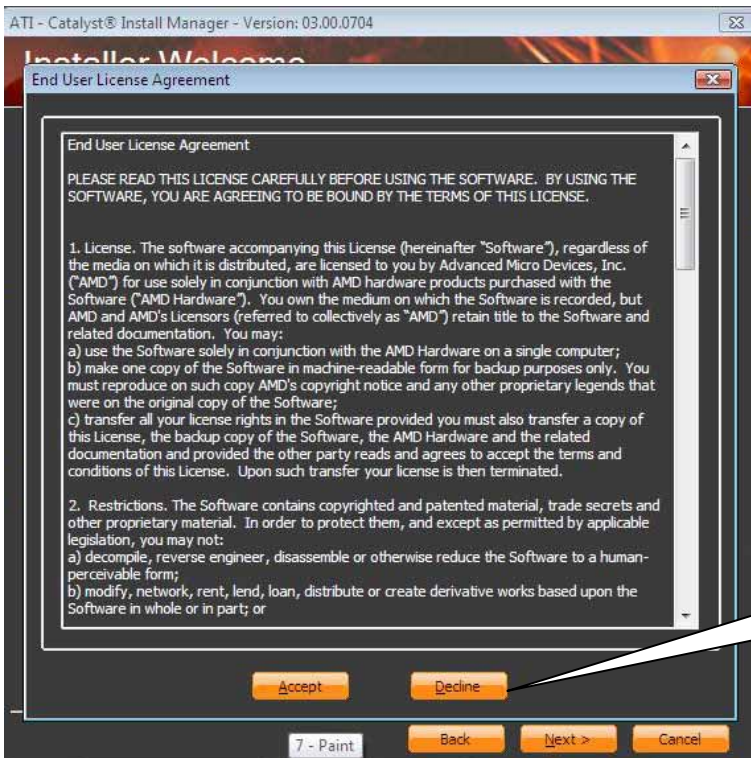
Click "Accept" and click "Next"

Step4:

Click "Finish" and restart the computer.
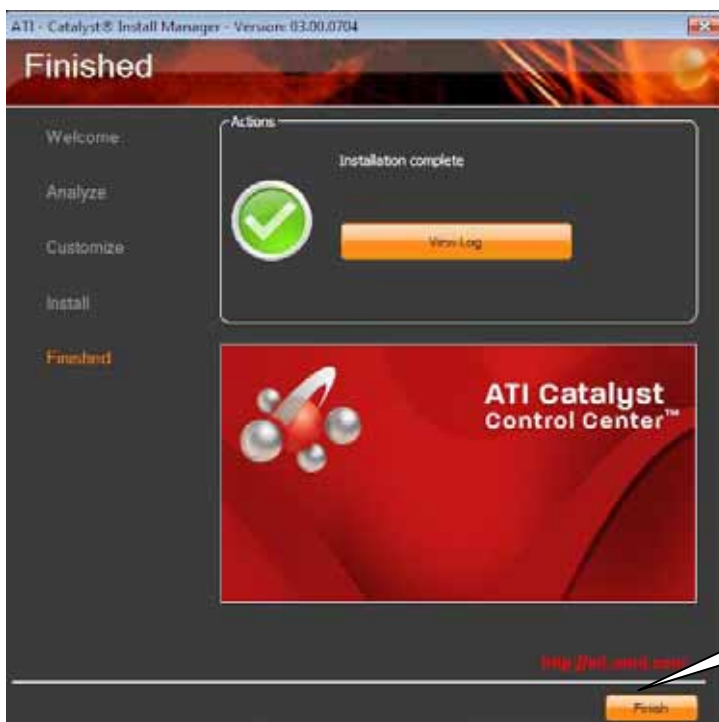
Attention:

1. The driver is updated frequently in order to improve the graphics card compatibility, we try our best to keep the latest drivers in the drivers CD, but if you want update the driver, please visit COLORFUL website (http://www.colorful.cn/) or ATI website (http://ati.amd.com).

2. The driver CD content is limited, if it is not fit for your Operating System (such as Linux, Solaris, FreeBSD etc.), please visit ATI website (http://ati.amd.com) to download the correct driver.

Chapter 3 ATI Catalyst Control Center in Vista

ATI Catalyst Control Center is designed for Microsoft® Windows XP and Windows Vista. You can use ATI Catalyst Control Center to control your ATI hardware and access other ATI software installed on your system. The operation in Windows XP and Windows Vista is almost the same; we use Windows Vista for the reference.

3.1 ATI Catalyst Control Center Introduction

ATI Catalyst Control Center is a 3D acceleration control application that enables you to control the functionality of your graphics card. It offers exceptional graphics performance and visual quality for the ultimate in performance, stability, and innovation. Safe GPU overclocking, custom profiles, and assignable hotkeys are just a few of the many features.

Use ATI Catalyst Control Center to fine-tune your graphic and display device settings for optimal performance and quality. Many features present you with a preview of your changes before they are applied.

3.1.1 How to open the ATI Catalyst Control Center

You get three different ways to open the ATI Catalyst Control Center

✧ The first way:

   After the driver installation, right click the desktop, select the "**Catalyst(TM) Control Center**" from the context menu.
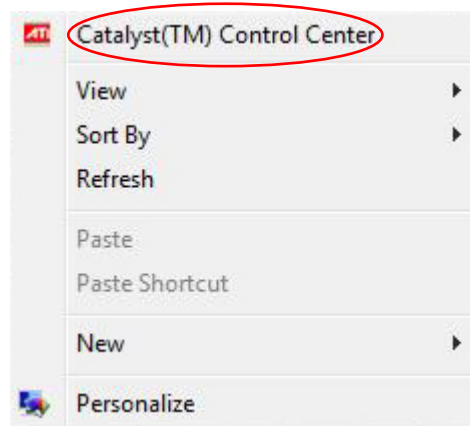
✧ The second way:

   Right Click the ATI in the taskbar , and select the "**Catalyst Control Center**".

✧ The third way:

   Left click the Start Menu, you can find the "**Catalyst Control Center**" in the programs.

3.2 ATI Catalyst Control Center Interface

3.2.1 Catalyst types

There are two types of View Mode of Catalyst Control Center when you start the program for the first time, Basic View and Advanced View.

The Basic View is for easy setup wizards and quick settings.

The Advanced View allows you to configure all the many available settings of the graphics card.
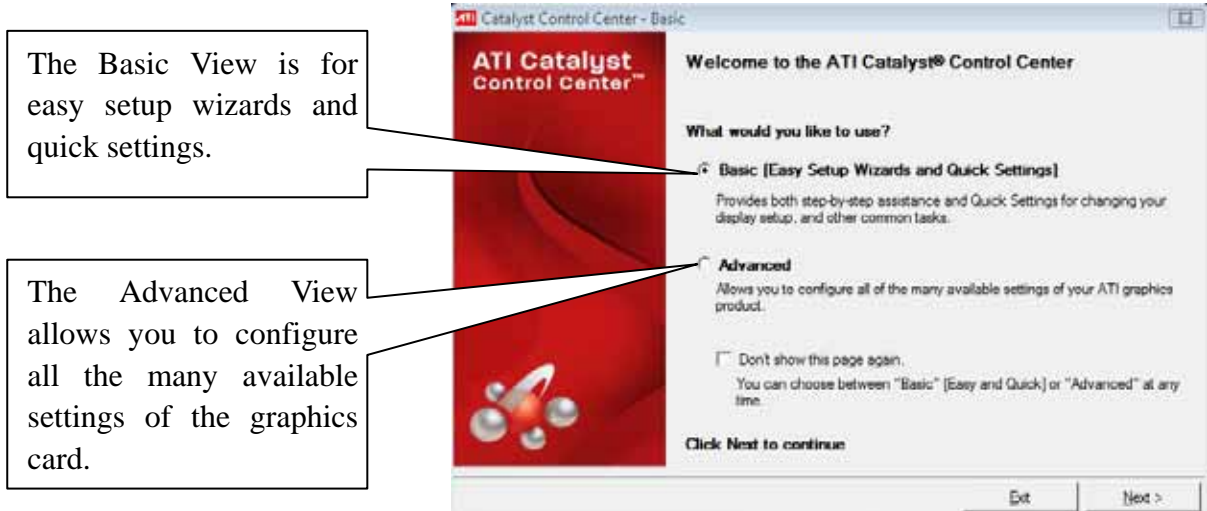
We recommend that novice users choose the Basic View to setup the monitor, 3D quality and display; experienced users choose the Advanced View to setup the details of the graphics card.

Note: We use the Advanced View settings in this manual.

3.2.2 User Interface

The ATI Catalyst Control Center provides an easy-to-use interface for managing your system, and it consists of these main areas.

Menu Bar

Select a Task Pane

Control Panel Main Task Area

Tabs Button
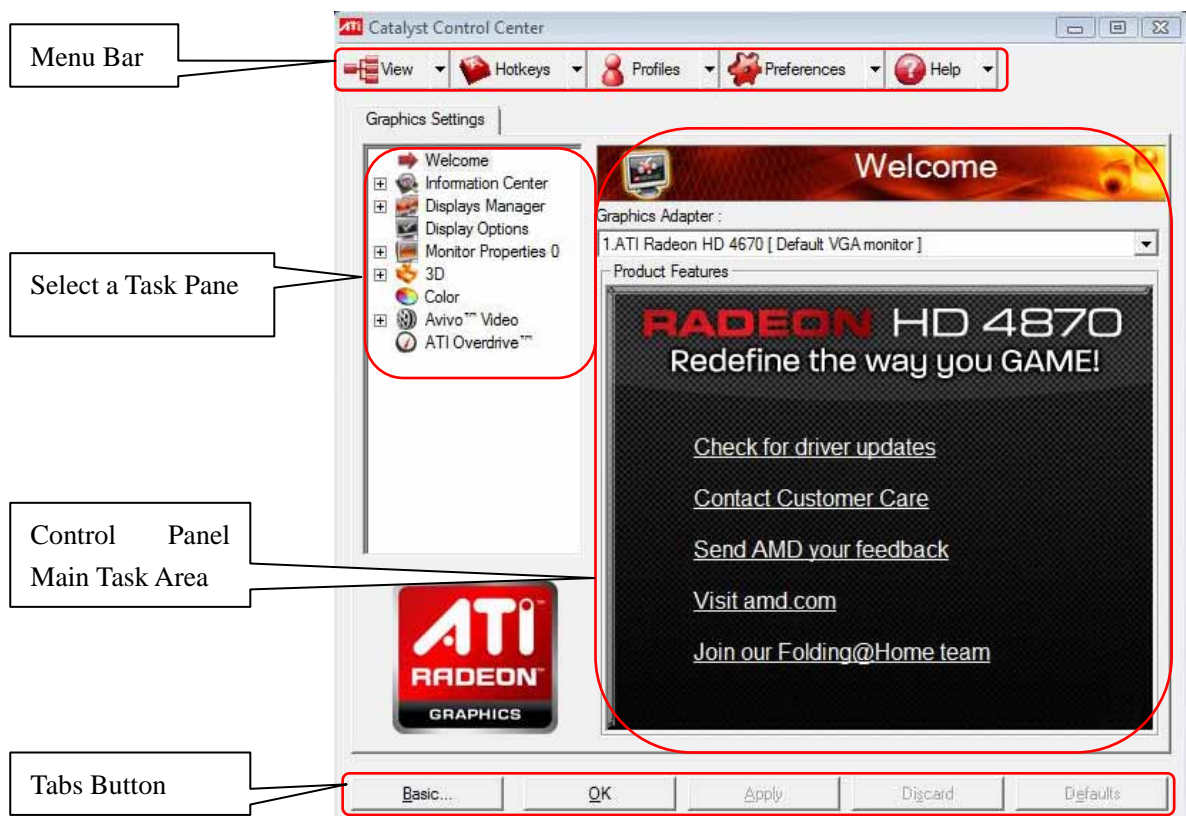
3.2.3 View

ATI Catalyst Control Center contains three views that are suited to varying levels of familiarity with the application.

Basic View

Basic View is the default view when ATI Catalyst Control Center is started for the very first time. It includes a wizard that guides you through the process of configuring your display devices.

Advanced View

Advanced View provides access to all the features offered by the ATI Catalyst Control Center.

Custom View

Custom View allows you to choose the features that appear in the left navigation pane. Custom View is recommended for experienced users who want to access only the features they adjust most often or that their 3D applications support.

3.2.4 Hotkeys

Hotkeys Manager

Use the Hotkeys Manager to create shortcut key combinations to quickly perform tasks such as changing a graphics setting or opening an application. A hot key is a combination of one or more modifier keys, such as Ctrl, Alt, or Shift, and any letter from the alphabet.

Hotkeys Manager is only available in Advanced View.

Note: Some applications disable hotkeys as a normal part of their functionality.

3.2.5 Profiles

Profiles Manager is a management tool for creating customized environments for your desktop, video, and 3D applications.

Use Profiles Manager to define and save video settings into a profile so they can be restored at a later date using hot keys or file associations.

Note: Profiles are created on a per-graphics card basis. If there is more than one card installed in your computer, you need to select the appropriate card before creating, loading, or activating a profile.

3.2.6 Preference

Use the Preferences menu in the Dashboard to customize the overall look and behavior for ATI Catalyst Control Center. You can:

Keeping ATI Catalyst Control Center Always on Top of All Open Applications on the Desktop;

Showing or Hiding Tooltips;

Showing or Hiding Text that Appears on the Toolbar Buttons;

Hiding the Splash Screen;

Showing or Hiding the ATI Catalyst Control Center Icon in the Windows System Tray;

Changing the Language;

Changing the Appearance of the ATI Catalyst Control Center using Skins;

Restoring All Factory Default Settings for ATI Catalyst Control Center.

3.2.7 Help

The ATI Catalyst Control Center Help provides conceptual information on the graphics technologies for the graphics card and detailed instructions for optimizing your graphics environment.

You can also use the Help to access usage information, generate a problem report, and get view current software version information

3.3 Information Center

Information Center
The Information Center aspect provides detailed information about all installed graphics hardware and associated software.

Graphics Software includes information such as installed 2D and 3D driver versions, OpenGL version, and ATI Catalyst Control Center version.

Graphics Hardware includes information about each installed graphics card, such as the installed graphics chipset, device ID, graphics bus capability, maximum bus setting, BIOS version, memory size, and total memory bandwidth.

Note: Clicking System Information opens the Windows System Information dialog.

3.4 Displays Manager

The Displays Manager aspect is the central location for configuring your display devices and arranging your desktop. Use Displays Manager to change your display setup, arrange your desktop in a multi-monitor environment, and enable TV Out.
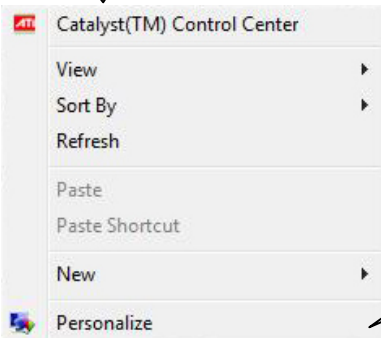Displays Manager is available only in Advanced View and Custom View.

Note: The stretch vertically and horizontally options are not supported on systems running Windows Vista.
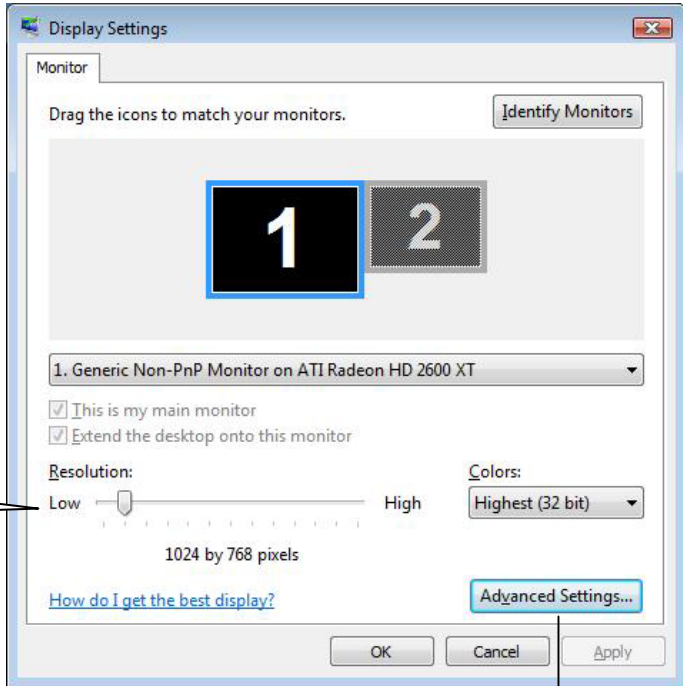
3.4.1 Setup Single Display
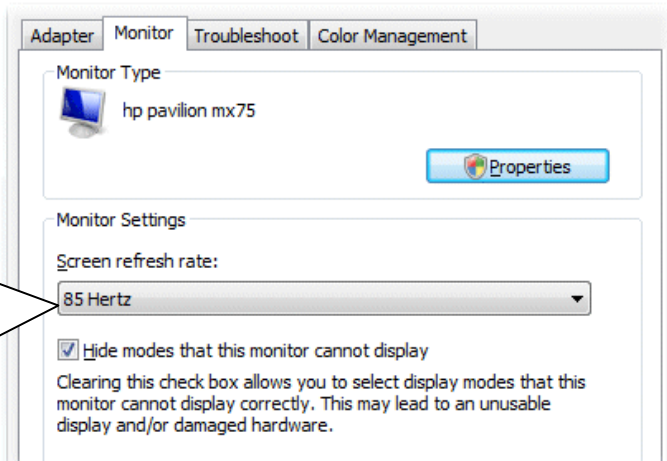
Right click on the desktop

ATI Catalyst(TM) Control Center

View ▸
Sort By ▸
Refresh

Paste
Paste Shortcut

New ▸

Personalize

Select the Personalize to open the profiles

Use the slide bar to change the resolution of the monitor

Display Settings

Monitor

Drag the icons to match your monitors.   Identify Monitors

1   2

1. Generic Non-PnP Monitor on ATI Radeon HD 2600 XT

☑ This is my main monitor
☑ Extend the desktop onto this monitor

Resolution: Colors:
Low ━━━◯━━━━━━━ High   Highest (32 bit) ▾

1024 by 768 pixels

How do I get the best display?   Advanced Settings...
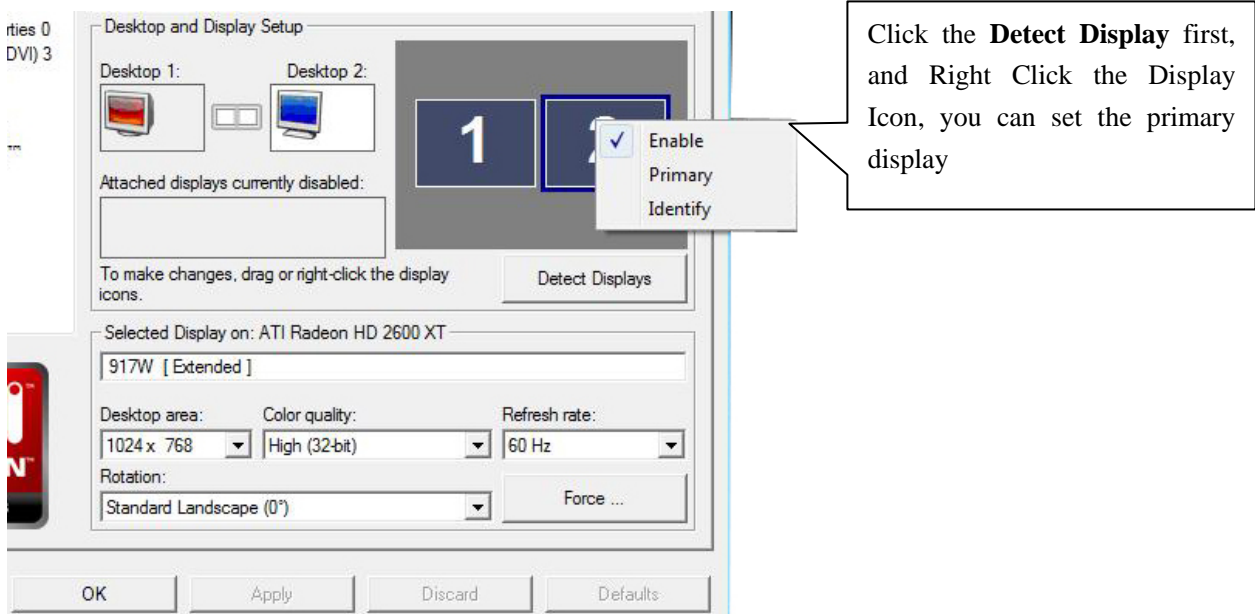
OK   Cancel   Apply

This setting determines how many times the monitor displays an entire screen in one second. Higher refresh rates may be more pleasing to the eye, but cause the video hardware to work harder and use more resources. Select a lower rate that is compatible with the adapter. If you can detect minute flickering or the change bothers your eyes, try adjusting the rate to the next available higher rate. Never exceed the rate available to the monitor.
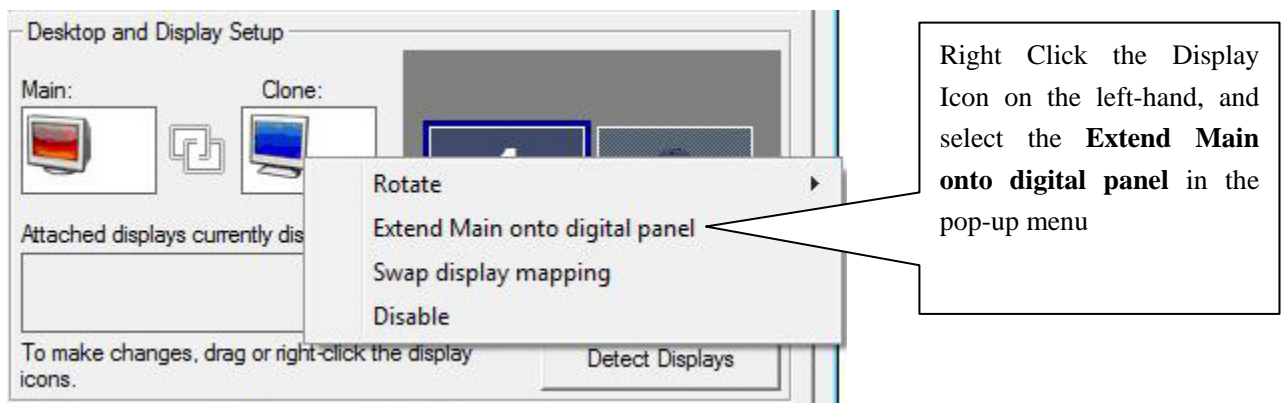
Click the "Advanced Settings"

Adapter Monitor Troubleshoot Color Management

Monitor Type

    hp pavilion mx75

                                    🛡 Properties

Monitor Settings

Screen refresh rate:

85 Hertz   ▾

☑ Hide modes that this monitor cannot display

Clearing this check box allows you to select display modes that this monitor cannot display correctly. This may lead to an unusable display and/or damaged hardware.

CAUTION: Do not remove the selection next to Hide modes that this monitor cannot display. Changing the refresh rate to a rate that the monitor cannot accept may permanently damage some monitors.

3.4.2 Setup Dual-Display

From the Graphics Settings tree, click Displays Manager > Displays Properties.

Click the **Detect Display** first, and Right Click the Display Icon, you can set the primary display

Extend Mode

Right Click the Display Icon on the left-hand, and select the **Extend Main onto digital panel** in the pop-up menu

Clone Mode

Right Click the Display Icon on the left-hand, and select the **Clone Desktop1 with digital panel** in the pop-up menu.
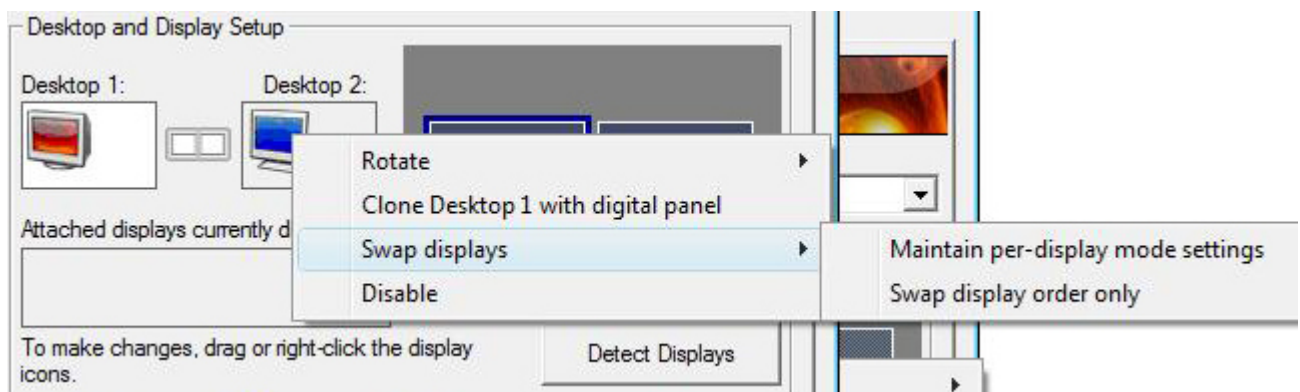
3.5 Display Options

> The Display Options aspect gives you additional control to optimize performance of OpenGL and Direct 3D applications. Use the aspect to change the current 3D refresh rate, the display device detection method, and display management options.

3.6 Monitor Properties

> **Monitor Attributes**
>
> The Monitor Attributes page provides information about the attached monitor. Using the page, you can also enable Extended Display Identification Data (EDID). EDID uses the information provided by the attached monitor to determine the limits for the resolution and refresh rate.
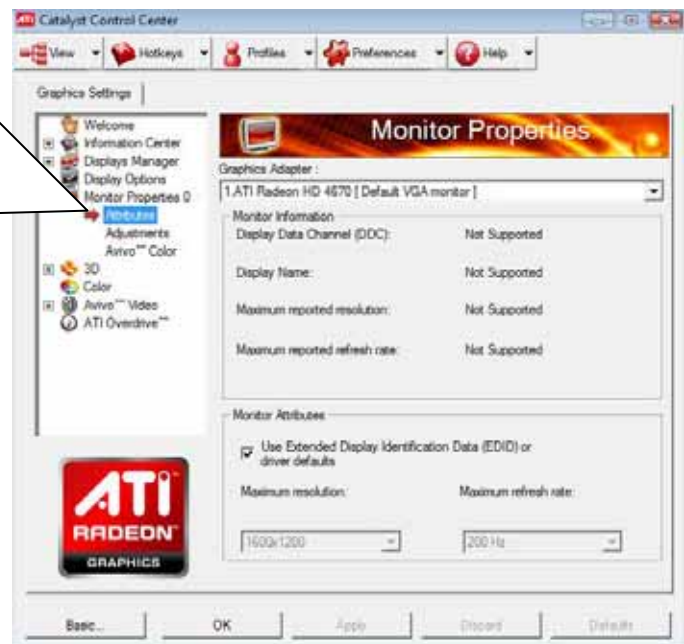
3.6.1 Monitor Adjustments

Use the Monitor Adjustments page to control how the desktop appears on your monitor. Using the page, you can resize and reposition the computer desktop on your monitor's display screen. You can also adjust the horizontal and vertical sync or enable composite sync.

ATI Avivo Color for Monitors

The Avivo Color page is available for ATI Radeon graphics cards that support per-display color settings. Use the page to independently set the hue and saturation for each attached and enabled display.
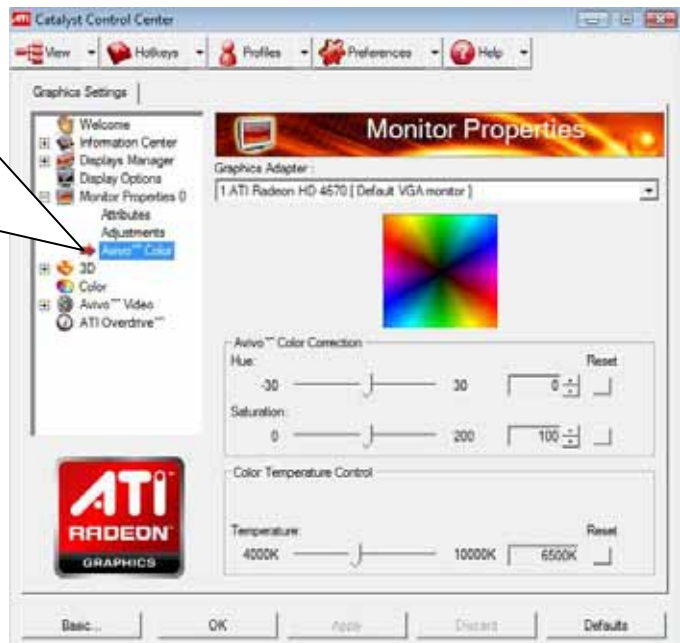
3.7 3D

The 3D setting contains:

Standard 3D Settings

The Standard Settings aspect provides access to a universal slider control where you can simultaneously adjust all of the standard 3D settings for any type of 3D application. This page is useful when you are not aware of which type of 3D settings your application uses, or when you want to use an overall adjustment control that rapidly configures your application.

Anti-Aliasing

Anti-aliasing (AA) is a rendering technique designed to remove jagged edges, shimmering, and pixelation problems that are common in rendered 3D images. Rather than determining the color to display for each pixel by sampling a single location at the pixel center, anti-aliasing samples multiple locations within each pixel and blends the results together to produce the final color.

Adaptive Anti-Aliasing

Adaptive anti-aliasing is a technique that improves edge smoothness and fine detail for 3D objects. This feature renders 3D objects containing transparencies more realistically, providing exceptional levels of image quality while maintaining performance.

Anisotropic Filtering

Anisotropic filtering is a technique that preserves detail on surfaces that have three-dimensional perspective and fade away into the background. It works best when used in conjunction with Mipmapping.

ATI Catalyst A.I.

ATI Catalyst A.I. makes use of AMD's texture analyzer technology to optimize performance in 3D applications, while maintaining or even improving image quality. It analyzes individual textures as they are loaded to determine the best and fastest way to display them.

Mipmap Detail Level

Mipmapping is a texturing technique that preserves the detail on a 3D object surface as it moves into the background. A series of high- and low-resolution texture maps are stored in memory and selectively used to create the object surface, depending on what level of detail is needed.

All 3D Settings

The All Settings page combines all of the principal 3D features onto a single page, without any preview window, allowing for quick access and adjustment. You can change the settings for the following 3D features as you normally would on each feature's own page: anti-aliasing, anisotropic filtering, ATI Catalyst A.I., mipmap detail level, display refresh rate, and adaptive anti-aliasing.

3.8 Color

Use the Color aspect to adjust the color properties of your Desktop. Use the Color Correction Images option to preview the changes before applying them.
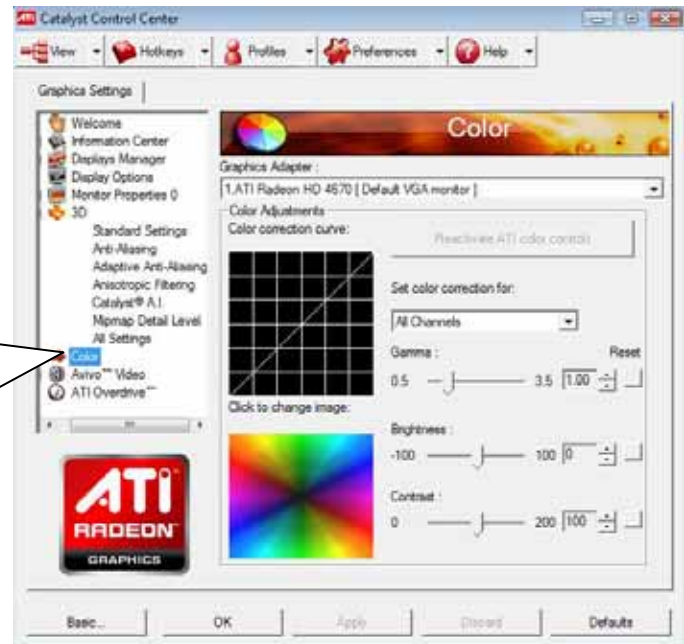
Note: ATI Catalyst Control Center does not support the changing of color properties for full-screen 3D applications and games for systems running Windows Vista. As a result, the Set color correction for list in the Color aspect is not available since all changes in the aspect apply only to the Desktop.

3.9 Avivo Video

Video Presets for ATI Radeon X1000 Series and Later

ATI Catalyst Control Center comes with several video presets containing pre-defined video brightness, contrast, saturation, tint, and gamma settings. To optimize video playback using these settings, choose the desired video preset.

Note: These settings only affects applications with video overlay support.

Basic Video Color Settings for ATI Radeon X1000 Series and Later

Use the Basic Color page to manually set gamma, brightness, contrast, saturation, and tint for video playback.

Note: Certain video formats do not support these adjustments.

Note: These settings will only affect applications with video overlay support.

Advanced Video Color Settings for ATI Radeon X1000 Series and Later

Use the Advanced Color page to fine tune the color of standard definition video (720 80) to make the color more or less vibrant and to remove excess red from skin tones. You can preview your changes before applying them.

Note: Advanced Color settings are supported only on ATI Radeon 2000 series and later graphics cards running on Windows Vista

Basic Video Quality for ATI Radeon X1000 Series and Later

Using video quality options, you can enhance video quality by selecting an optimal deinterlacing mode and enabling pulldown detection.

Deinterlacing creates a sharp image from the two video fields of interlaced video. Pulldown detection enables automatic compensation for film converted to video.

Note: These settings affect only applications with video overlay support.

Theater Video Mode for ATI Radeon X1000 Series and Later

Use the Theater Mode page to change the way you view streaming video. You can adjust the aspect ratio, overlay display mode, and preferred viewing mode, such as Widescreen or Fullscreen.

Note: These settings will only affect applications with video overlay support.

Note: ATI Radeon 1800 series and later graphics cards provide support for video in both Blu-ray and HD-DTV optical formats.

All ATI Avivo Video Settings

The All Settings page combines all of the principal ATI Avivo Video features onto a single page, without any preview window, allowing quick access and adjustment.

This page is useful when it is not necessary to preview the adjusted settings because the effect is already known or understood.

Note: These settings will only affect applications with video overlay support.

3.10 ATI Overdrive

ATI Overdrive

To help assess the performance of the graphics card, ATI Overdrive displays the current GPU and memory clock speeds, the percentage of graphics computing power currently used, the current temperature of the cards, and, if applicable, the fan speed.

Use the Auto-Tune feature to set optimal speeds for the graphics processor and video memory clocks. Alternatively, manually set these speeds to meet your specific requirements. To ensure optimal performance, manually set speeds should be tested before they are used.

You can manually overclock any GPU, including those in ATI CrossFireX configurations.

CAUTION:

If a GPU is being used at or close to its maximum capabilities, or if the card is running close to 110, do not increase the GPU or memory clock speeds.

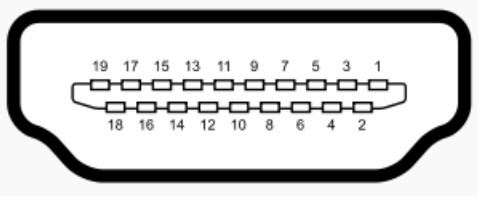# Chapter 4 How to Build an HDMI Home Theater

Note:
1. Chapter 4 is optional for the graphics card which support for HDMI
2. DisplayPort system has the same installation steps with HDMI system, so we don't introduce it specially.

4.1 About the HDMI

The High-Definition Multimedia Interface (HDMI) is a compact audio/video connector interface for transmitting uncompressed digital streams. HDMI devices are manufactured to adhere to various versions of the specification, where each version is given a number such as 1.0, 1.2, or 1.3a. Each subsequent version of the specification uses the same kind of cable but increases the bandwidth and/or capabilities of what can be transmitted over the cable. For example the previous maximum pixel clock rate of HDMI interface was 165 MHz which was sufficient for supporting 1080p at 60 Hz and WUXGA (1920x1200) at 60 Hz. HDMI 1.3 increased that to 340 MHz which allows for higher resolution, such as WQXGA (2560x1600), across a single digital link.

Pin Definitions

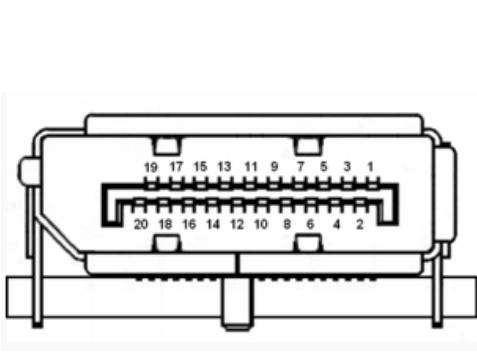|	Pin 1 TMDS Data2+	Pin 11 TMDS Clock Shield
	Pin 2 TMDS Data2 Shield	Pin 12 TMDS Clock–
	Pin 3 TMDS Data2–	Pin 13 CEC
	Pin 4 TMDS Data1+	Pin 14 Reserved (N.C. on device)
	Pin 5 TMDS Data1 Shield	Pin 15 SCL
	Pin 6 TMDS Data1–	Pin 16 SDA
	Pin 7 TMDS Data0+	Pin 17 DDC/CEC Ground
	Pin 8 TMDS Data0 Shield	Pin 18 +5 V Power (max 50 mA)
	Pin 9 TMDS Data0–	Pin 19 Hot Plug Detect
	Pin 10 TMDS Clock+	

4.2 About the DisplayPort

DisplayPort is a digital display interface standard (approved May 2006, current version 1.1 approved on April 2, 2007) put forth by the Video Electronics Standards Association (VESA). It defines a new license-free, royalty-free, digital audio/video interconnect, intended to be used primarily between a computer and its display monitor, or a computer and a home-theater system. It supports a maximum of 10.8 Gbit/s data rate and WQXGA (2560×1600) resolution over a 3 meter cable.

The DisplayPort connector supports 1 to 4 data pairs in a Main Link that also carries audio and clock signals, each with a transfer rate of 1.62 or 2.7 Gbit/s. The video signal path supports 6 to 16 bits per color channel. A bi-directional auxiliary channel (at a constant 1 Mbit/s) carries management and device control data for the Main Link using VESA EDID and VESA MCCS standards. The video signal is not compatible with DVI or HDMI, but a DisplayPort connector can

pass these signals through. While DVI and HDMI require separate clock signals, DisplayPort embeds the clock in the data signal. The data transmission protocol in DisplayPort is based on micro packets and is extensible for future feature additions, whereas DVI/HDMI transmission protocol is a Serial Data Stream at 10x pixel clock rate. Finally, unlike the separate DVI/HDMI and LVDS standards, DisplayPort supports both external (box-to-box) and internal (laptop LCD panel) display connections.

Pin Definitions

	Pin 1 ML_Lane 0(p)	Pin 11 GND Ground
	Pin 2 GND Ground	Pin 12 ML_Lane 3(n)
	Pin 3 ML_Lane 0(n)	Pin 13 GND Ground
	Pin 4 ML_Lane 1(p)	Pin 14 GND Ground
	Pin 5 GND Ground	Pin 15 AUX_CH(p)
	Pin 6 ML_Lane 1(n)	Pin 16 GND Ground
	Pin 7 ML_Lane 2(p)	Pin 17 AUX_CH(n)
	Pin 8 GND Ground	Pin 18 Hot Plug
	Pin 9 ML_Lane 2(n)	Pin 19 DP_PWR
	Pin 10 ML_Lane 3(p)	Pin 20 DP_PWR

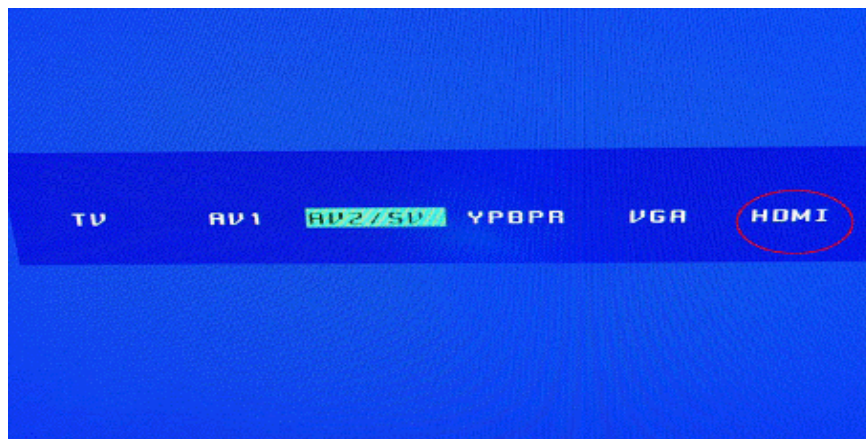## 4.3 How to Install HDMI

1. Connect the HDMI cable to the HDMI connector of the television.

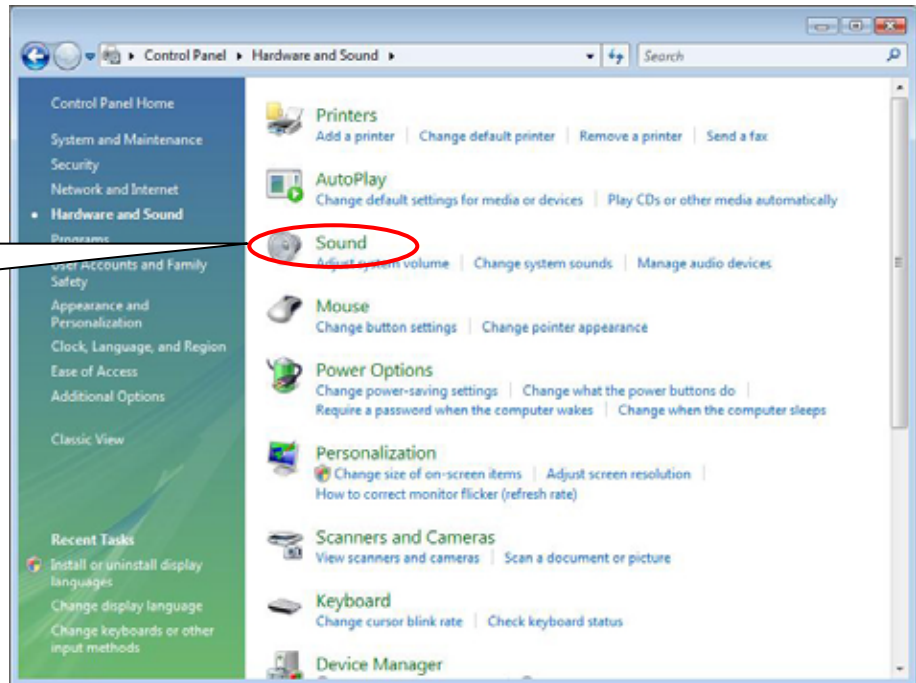2. Connect the other end of HDMI cable to the ATI graphics card.
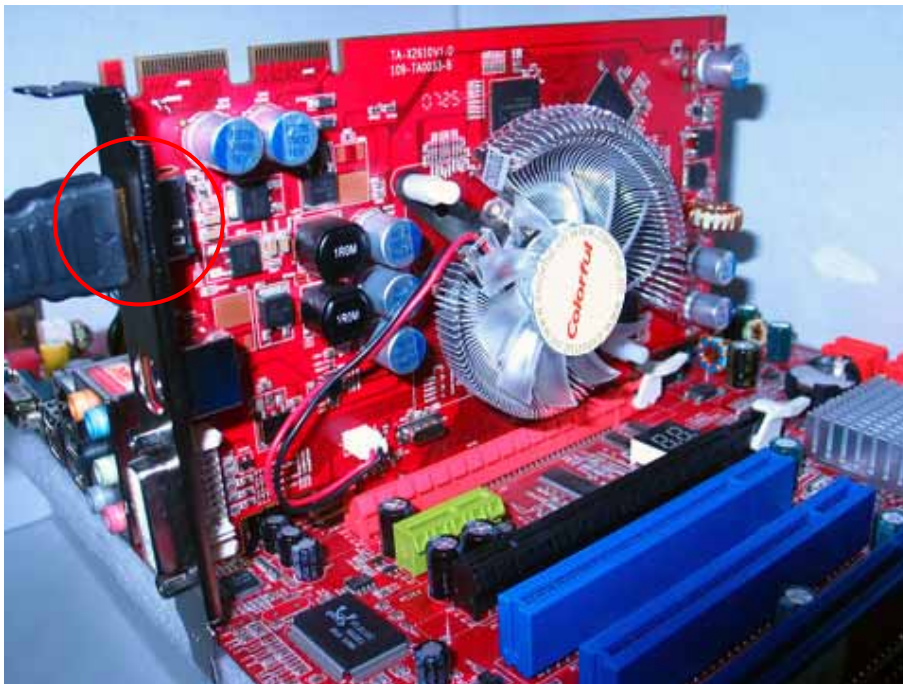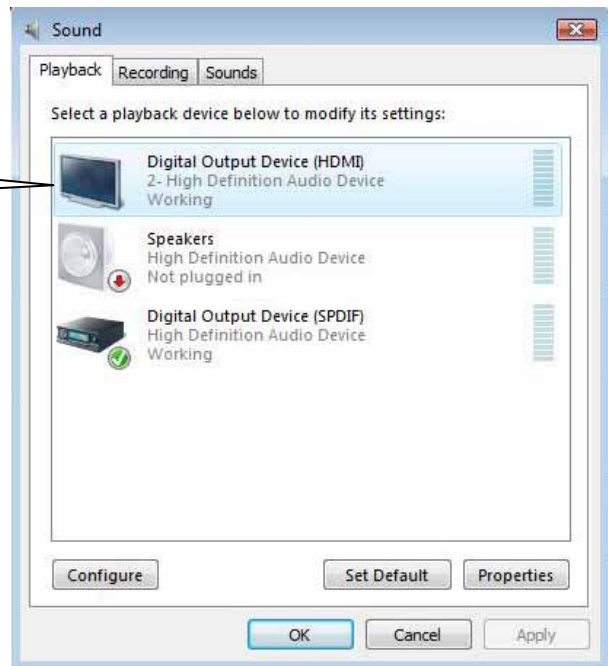

3. Choose HDMI when start up

4. At last, setup the audio output in the Control Panel, and select the displays that you use in the ATI Catalyst Center.

Select the Sound in the Control Panel

Set the Digital Output Device(HDMI) as Default

FAQs

This part contains a list of symptom that may indicate a problem with your software or hardware and some troubleshooting way you can take to solve the problem. If you still have problems after trying our suggestions or if you're having a problem that is not described below, please contact us.

Q: The graphics card has no VGA port, how could I use a CRT monitor?
A: Some of the graphics card only has DVI port output; you can use the DVI to VGA adapter to connect the CRT monitor.

Q: What shall I do if I lose my driver CD?
A: You can visit our website (http://www.colorful.cn) to download the driver.

Q: Is it necessary to update the graphics BIOS when the card runs OK?
A: If there is no special use, Colorful doesn't provide graphics card BIOS. We don't advice users use the abnormal BIOS operation, because the wrong BIOS may damage your hardware, moreover, the card may out of warranty.

Q: What are the names of different parts in a graphic card?
A: A graphics cards made up by GPU chip, PCB, memory modules, Electronic component, bus interface and display output.

Q: Why the fan on the graphics card runs so loudly? How to solve it?
A: When the card runs under the high heat and lots of dust environment for a long time, the fan may make noise. You can clean the dust on the fan. If it is still the same, please contact the franchisers.

Q: Why I can't use the Windows Media Player to play the movies?
A: Please download the latest version of Windows Media Player.

Q: How to upkeep the graphics card?
A: 1. Keep the ambient dry and avoid the dust.
   2. Clean the dust on the fan usually, and keep the PCB and electronic component clean.

Q: Why my monitor appears wrong color when power on.
A: 1. Graphics card and monitor is not well connected
   2. Monitor broken
   3. Graphics card broken
   4. Monitor has been magnetized

Q: The computer is hanging up, is my graphics broken?
A: There are many reasons make the computer hang up, if you exclude others, please try to examine whether the motherboard and the graphics card were well connected, whether the connect fingers had been oxidated or whether installed the right driver.

Q: Why the monitor appears some abnormal dots?

A: This is usually because the graphics card and motherboard are not well connected. Please clean the connect fingers or return.

Q: What is function of the external power supply?

A: Some high power cards, such as ATI RADEON 1900 series, RADEON 2600 series, RADEON 3800 series, RADEON 4800 series etc., have extra power supply, to make up for the lack of power that motherboard supply.

Technical Support

If you can't settle the questions, please contact with our engineer, and send the following information to us. (Note: please give a description about your computer system and your display equipments.)

1. Product Name _____   **2. Serial Number** _____

3. Purchase Date _____   **4. Customer Name** _____

5. Purchase Place _____   **6. Operation System** _____

7. Driver Version _____   **8. Contact Address** _____

Abnormal Occurrence ……………………………………………………….
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