

RADEON™ SERIES

User's Manual



G03-ATI9000

Rev: 2.0

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Introduction

The RADEON Series graphic accelerators delivers ground breaking 3D graphics performance.

- Designed and built by ATI Technologies Inc.
- Powered by the RADEON Series Visual Processing Unit (VPU).
- Awesome 3D gaming performance.
- Support for OpenGL® applications.
- Support for Direct 3D® applications.
- High resolution in 3D up to 2048x1536.
- Best performance for today's and tomorrow's applications.
- Supports TV-out to connect your PC to your TV or VCR.

Features At A Glance

The RADEON Series provides high performance acceleration for today's demanding 3D graphic applications. Its main features are:

- VIDEO IMMERSION™ II which provides industry-leading DVD playback and digital TV decode capability
- CHARISMA ENGINE™ II which is the main GPU, providing the necessary power to accelerate today's 3D games and applications
- SMARTSHADER™ technology which can realistically create the visual properties of any material, like glass, metal, wood, and produce 3D depth by rendering the object's shadows
- SMOOTHVISION™ which provides users with various degrees of jagged edge removal from 3D images, allowing users to configure their own high quality or high performance gaming experience
- PIXEL TAPESTRY™ II which provides even greater 3D rendering power
- TV output support

ATI's Catalyst™ Software Suite

Multiple Displays and 3D Gaming Experience

ATI's Catalyst Software Suite provides multiple display functionality, and the advanced graphic features, such as SMARTSHADER, for the ultimate 3D gaming experience. For help on installing the Catalyst Software Suite, refer to the **Getting Started Guide**.

The Catalyst Software Suite installs the ATI display tabs. These tabs are accessed through the Windows® **Display** Control Panel, through the **Advanced...** button located on the **Settings** tab. For a detailed explanation of each ATI tab, refer to **Catalyst™ Software Suite**.

Direct 3D® and OpenGL®

The Catalyst Software Suite also supports the latest versions of Direct 3D® and OpenGL®. Many new 3D game titles, and the latest versions of older titles, will virtually come to life as they utilize their advanced Direct 3D® or OpenGL® features. Gamers can finetune these settings for the ultimate experience in 3D image quality or 3D gaming performance.

ATI's Direct 3D® and OpenGL® tabs are available through the Windows® **Display** Control Panel, through the **Advanced...** button located on the **Settings** tab.

For a detailed explanation of the Direct 3D® and OpenGL® tabs, refer to **Direct 3D® Control Panel on page 17**, and **OpenGL® Control Panel on page 19**.

HydraVision™

In addition to the multiple display functionality available with ATI's Catalyst Software Suite, you can also use HydraVision for advanced multi-monitor management. For more information on HydraVision, please refer to the page 25.

Preparing Your Computer

READ ME FIRST !

Turn off the power to your system and discharge your body's static electric charge by touching a grounded surface—for example, the metal surface of the power supply—before performing any hardware procedure.

The manufacturer assumes no liability for any damage, caused directly or indirectly, by improper installation of any components by unauthorized service personnel. If you do not feel comfortable performing the installation, consult a qualified computer technician.

Damage to system components, the accelerator card, and injury to yourself may result if power is applied during installation.

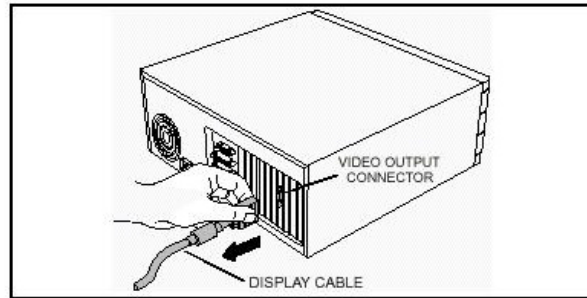
NOTE: Before installing your RADEON™ we recommend that you first uninstall the driver for your current video card and reconfigure your operating system to use the standard display driver (VGA) supplied with your operating system. For more information about changing to the VGA driver, see your operating system documentation.

Installing Your RADEON™

Now that you have prepared your computer, you are ready to install your RADEON™ graphics accelerator card.

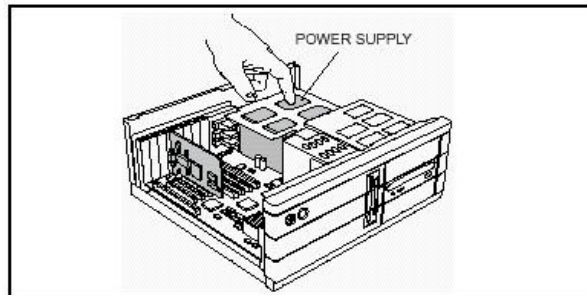
To install your graphics accelerator card

1. **Power off the computer and monitor**, then **disconnect the display cable** from the back of your computer.



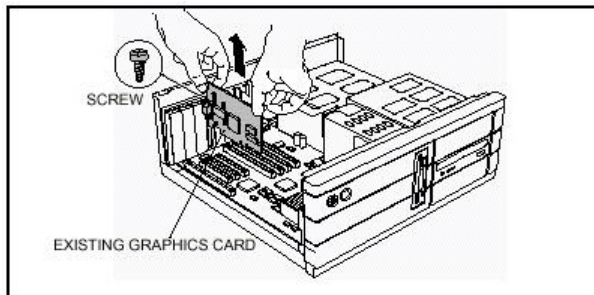
2. **Remove the computer cover**. If necessary, consult your computer's manual for help in removing the cover.

Remember to discharge your body's static electricity by touching the metal surface of the computer chassis.



3. If you intend to run multiple displays with Windows® 98 or Windows® Me (see [page 9](#)), then proceed to step 4. **Otherwise, remove any existing graphics card from your computer.**

If the old graphics card sticks, rock it gently from end to end. Remember to save the screw.

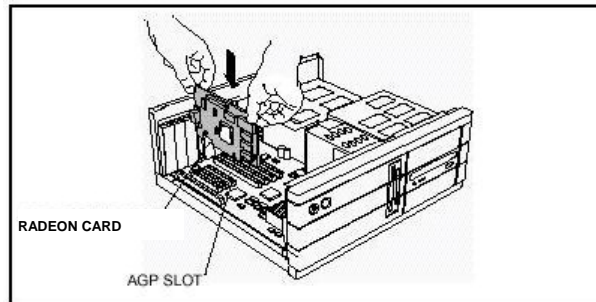


Or, if your computer has any **on-board graphics capability**, you may need to **disable it** on

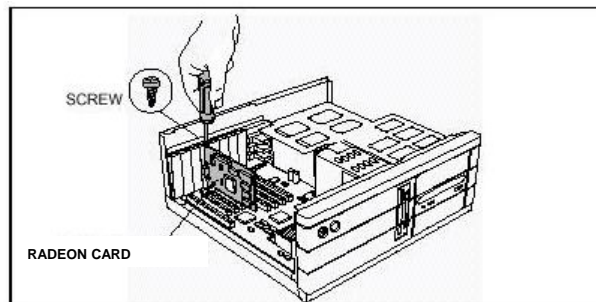
the motherboard. For more information, see your computer documentation.

4. Locate the AGP slot. If necessary, remove the metal cover from this slot; then **align your RADEON™ with the AGP slot, and press it in firmly until the card is fully seated.**

Grasp the RADEON™ by the top edge and carefully seat it into the AGP slot. Ensure that the metal contacts are **Completely** pushed into the slot.

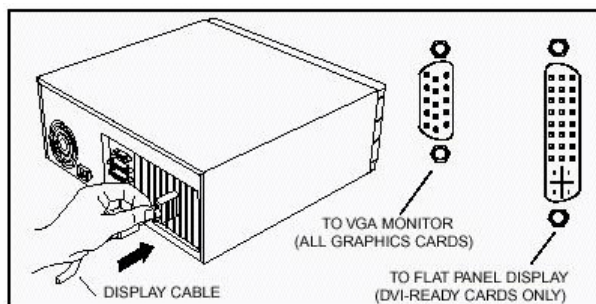


5. **Replace the screw to fasten the card in place,** and replace the computer cover.



6. **Plug the display cable into your card;** then turn on the computer and monitor. If your RADEON™ came with a DVI connector, you can connect a flat panel display to the appropriate connector, as shown below.

Make sure all cables are securely connected.



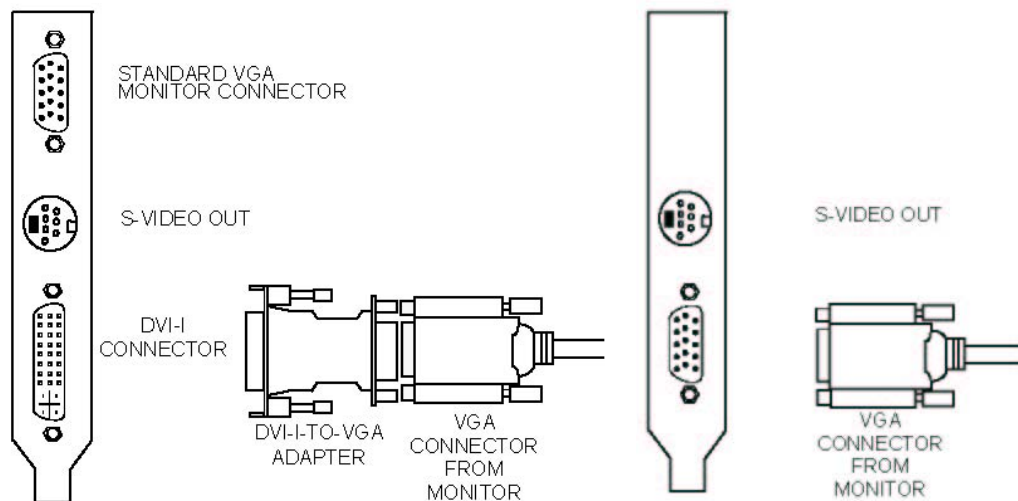
You are now ready to proceed with the installation of the ATI driver. For detailed instructions, select your operating system from the list on page 7 to 9.

Connecting your monitor(s)

The RADEON Series, depending on the graphic card configuration, provides hardware support for one VGA monitor and one flat panel monitor, or two VGA monitors using a DVI-I-to-VGA adapter*, or only one VGA monitor. It also provides TV Output via a S-Video out connector.

Plug the monitor cable into your card (if you are running multiple monitors, connect their cables to the appropriate connectors), **then turn on the PC and monitor(s).**

To connect a flat panel **directly** to your card, use the DVI-I connector. To connect a VGA monitor to the DVI-I connector, plug a DVI-I-to-VGA adapter* into the DVI-I connector, then plug your monitor cable into the adapter*, as shown below.



When you use multiple monitors with your card, one monitor will always be **Primary**. Any additional monitor(s) will be designated as **Secondary**.

Display Configurations

The following table lists the different ways you can connect displays to your RADEON Series with multi-monitor configuration

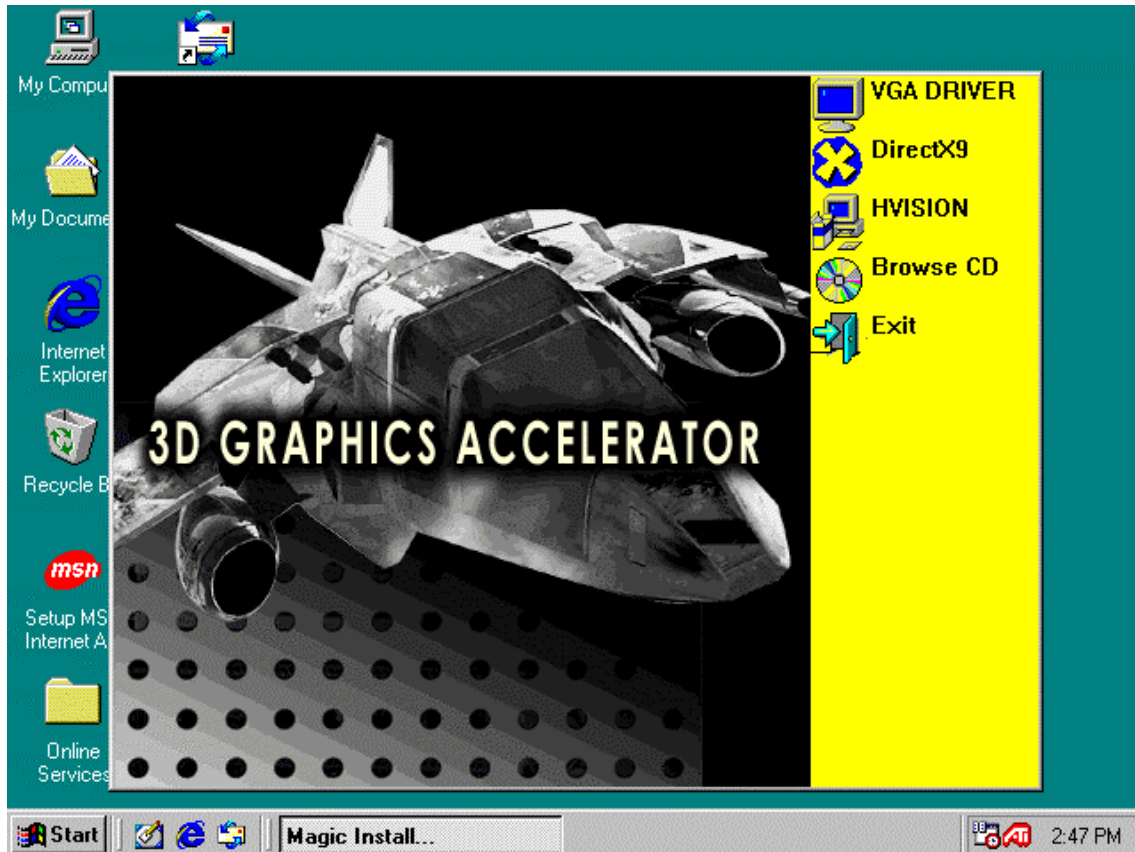
The following table lists the different ways you can connect displays to your RADEON Series with

Display Configuration	Connector(s) Used	Comments
One CRT display	VGA connector OR DVI-I Connector with DIV-I-to-VGA adapter	CRT-cathode ray tube analog Display
One DFP display	DVI-I connector	DFP–digital flat panel display
One TV	TV Output	Cards with S-Video out also support Composite out via a S-Video-to-Composite adapter. Cards with Composite out DO NOT support connection to TVs with S-Video input
CRT display + TV	VGA connector + TV Output	Unsupported configuration if the CRT display is attached to the DVI-I connector via a DVI-I-to-VGA adapter
DFP display + TV	DVI-I connector + TV Output	
CRT display + DFP display	VGA connector + DVI-I connector	
CRT display + CRT display	VGA connector + DVI-I connector with DVI-I-to-VGA adapter	The DVI-I connector can support a CRT display using the DVI-to-VGA adapter
CRT display + DFP display + TV	VGA connector + DVI-I connector + S-Video out	The TV display will “clone” the image of one of the other two displays
CRT display + CRT+ TV	UNSUPPORT CONFIGURATION	

Installing Your RADEON™ Soft Driver

New hardware will be detected after you restart your computer. To finish below steps click **Yes** when prompted to restart.

1. Insert your CD, **3D Graphics Series Driver CD**, into CD-ROM drive.
2. It auto run menu, **3D GRAPHICS ACCELERATOR**, as below picture:



3. Click **VGA DRIVER**, and ATi Driver are shown and it will auto installation.
4. If you can't success install it automatically , please conduct page 8 to 9.

Windows® “New Hardware Found”

To identify new hardware in Windows® 98 or Windows® Me

1. Windows® 98 or Windows® Me may launch the “Update Device Driver Wizard” to install the Standard VGA Driver. If it does, follow the step-by-step instructions below to allow Windows® to correctly identify your new hardware.

*If the Wizard does not appear, proceed directly to **Installing the ATI Driver for Windows® 98, Windows® Me.***

2. Click **Next**.
3. Click **Finish**.
4. Insert your Windows® 98 or Windows® Me CD into your CD-ROM drive.
5. Click **OK**.
6. Type the following:
D:\WIN98 or D:\WINME
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
7. Click **OK**.
8. Click **Yes** to restart your computer.

You are now ready to install the ATI driver. Proceed to **Installing the ATI Driver for Windows® 98, Windows® Me**, and follow the step-by-step instructions to complete the installation.

Installing the ATI Driver for Windows® 98, Windows® Me

With Windows® 98 or Windows® Me running on your computer, you need to install the ATI driver to take advantage of the higher performance, resolutions, and special graphic features of the RADEON™.

To ensure you install the latest driver, use the ATI Installation CD that shipped with your RADEON™.

To install the ATI driver for Windows® 98 or Windows® Me

1. Insert the ATI INSTALLATION CD into your CD-ROM drive.
If Windows® runs the CD automatically, proceed to step 6.
2. Click **Start**.
3. Select **Run**.
4. Type the following:
D:\ATISSETUP
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
5. Click **OK**.
6. Click on **ATI Easy Install** to begin the Installation Wizard.
7. Click **Next**.
8. Click **Yes**.
9. Follow the Wizard's on-screen instructions to complete the installation.
*The **Express** installation option is recommended. If your RADEON™ includes a multimedia component, the software for that component will automatically be installed, along with the ATI driver, by selecting this option.*

Installing the ATI Driver for Windows® 2000/XP/NT4.0

With Windows® 2000/XP/NT4.0 running on your computer, you need to install the ATI driver to take advantage of the higher performance, resolutions, and special graphic features of the RADEON™.

To ensure you install the latest driver, use the ATI Installation CD that shipped with your RADEON™.

To install the ATI driver for Windows® 2000/XP/NT4.0

1. Insert the ATI INSTALLATION CD into your CD-ROM drive.
If Windows® runs the CD automatically, proceed to step 6.
2. Click **Start**.
3. Select **Run**.
4. Type the following:
D:\ATISSETUP
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
5. Click **OK**.
6. Click on **ATI Easy Install** to begin the Installation Wizard.
7. Follow the Wizard's on-screen instructions to complete the installation.

*The **Express** installation option is recommended. If your RADEON™ includes a multimedia component, the software for that component will automatically be installed, along with the ATI driver, by selecting this option.*

Multiple Display Support: Windows® 98, Windows® Me

Windows® 98 and Windows® Me support the simultaneous use of more than one display device. You simply install a separate PCI card for each additional display you intend to use. With multiple displays, you can extend your desktop, run different programs on separate displays, even play some newer games with multiple views. Each display can have a different resolution and color depth!

Note that, under Windows® 98 and Windows® Me, one graphics card is automatically designated by the system as the **primary** card. Each additional graphics card is designated by the system as a **secondary** card. Certain 3D and multimedia features are only available on the **primary** graphics card. The **primary** card is the one that displays the POST (Power On Self Test) information during startup. If you are installing a PCI graphics card, you need to consider the following:

- If you install both a PCI and an AGP graphics card in the same system, your motherboard BIOS may assign the RADEON™ AGP card as the **secondary** card. If this happens, some manufacturers offer an upgraded BIOS that allows an AGP card to be reassigned as the **primary** card. Contact your system vendor for further details.

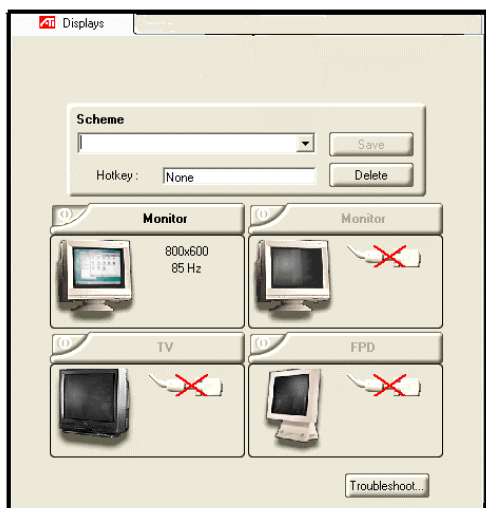
Catalyst™ Software Suite

The following section provides an explanation of each ATI tab available after installing the Catalyst™ Software Suite.

ATI Displays Tab

The ATI Displays tab provides the multi monitor features. Here you can enable/disable display devices and swap the assignment of **Primary** and **Secondary** displays.

Features presented in the following pages may not be supported in all operating systems and/or may appear differently.



Enabling/Disabling Secondary Displays

- 1 Access the Windows® **Control Panel**. Double-click **Display**.
- 2 Click on the **Settings** tab and then the **Advanced...** button.
- 3 Click on the **ATI Displays** tab.
- 4 Click the enable/disable button for the display device you want to enable/disable.
- 5 Click **OK** or **Apply** to save the changes.

Enabling Extended Desktop Mode

- 1 Access the Windows® **Control Panel**. Double-click **Display**.
- 2 Click on the **Settings** tab.
- 3 Click the monitor icon for the display onto which you want to extend your desktop.
- 4 Click **Yes** to enable the selected display.
- 5 Checkmark the **Extend my Windows desktop onto this monitor** check box (Windows® may automatically place it there).
- 6 Click **OK** or **Apply** to save the changes.

Dynamic Display Reassignment

You can change the assignment of your **Primary** and **Secondary** display on the fly, without rebooting. However, before you can change the assignment of the **Primary** display, at least one **Secondary** display must be enabled, and Extended Desktop mode must be enabled.

To enable a Secondary display, refer to the section Enabling/Disabling Secondary Displays.

To enable Extended Desktop Mode, refer to the section Enabling Extended Desktop Mode.

- 1 Access the Windows® **Control Panel**. Double-click **Display**.
- 2 Click on the **Settings** tab and then the **Advanced...** button.

3 Click on the **ATI Displays** tab.

In Windows® XP, Windows® Me The ATI Displays tab shows you the display(s) that are active. The Primary display has the button depressed. To change the display assignment, you can click the Primary display's button or you can click the button of the other display device.

In Windows® 2000 Clicking on the button will reassign the Primary and Secondary monitors. Clicking on the button creates a clone or mirror image of the Primary display onto the Secondary display. Clicking on the button extends your desktop to a Secondary display located to the right of the Primary display. Clicking on the button extends your desktop to a Secondary display located below the Primary display.

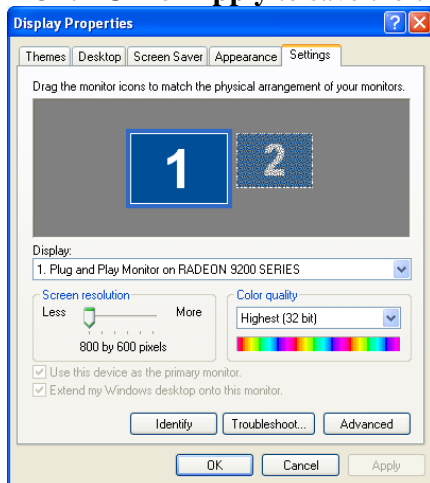
4 Click **OK** or **Apply** to save the changes.

Virtually Repositioning Your Displays

1 On the **Settings** tab, click and drag the appropriate monitor icon to the desired position.

For example, the secondary display can be dragged to the left of the primary display, allowing it to be virtually on the left, as shown below.

2 Click **OK** or **Apply** to save the changes.

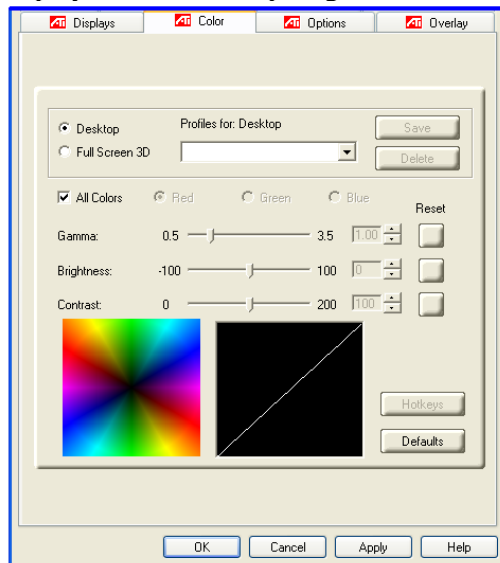


Ratiometric Expansion

Your RADEON Series offers ratiometric expansion (or digital panel scaling as it is commonly known). This expands a low resolution image to fill a higher resolution panel. However, ratiometric expansion is only available on the **Primary** display. Therefore, if a flat panel display (FPD) is set as Secondary, the Extended Desktop mode is disabled and the resolution is less than the FPD's native resolution. This causes the FPD to default to center mode.

ATI Color Tab

The ATI Color tab is used to adjust the color settings. You can change the red, green and blue display colors. Desktop brightness and Game Gamma (brightness) can also be changed.



ATI Color Tab

Desktop Brightness

This increases or decreases the brightness of your desktop. The higher the gamma value, the higher the brightness of your display.

Color Curve

This adjusts the selected color (red, green or blue check button) by moving the color curve with your mouse.

Game Gamma button

This accesses Game Gamma Properties.

Defaults button

This allows you to reset the desktop brightness and color settings to default values.

Clicking the **Game Gamma** button accesses the Game Gamma Properties.

Game Gamma Properties

Red Green Blue sliders

These controls allow you to increase or decrease the color brightness of Direct 3D® and OpenGL® games played in full screen mode.

RGB Lock

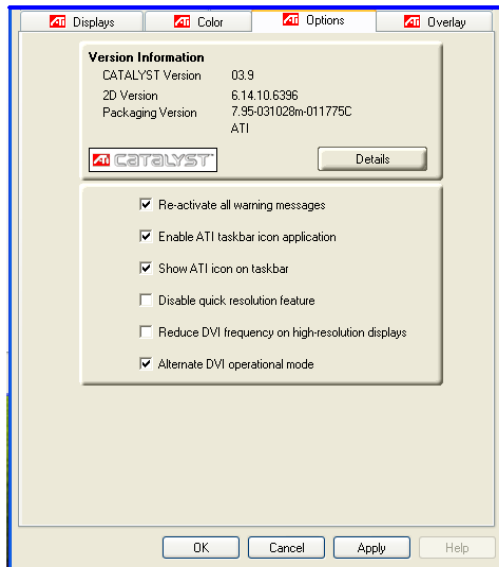
Uncheck this to adjust the RGB sliders individually. Check this to adjust all three sliders at the same time.

Defaults button

This allows you to reset the Game Gamma settings to default values.

ATI Options Tab

The ATI Options tab provides detailed driver information and access to the card's specifications. You can also enable or disable the ATI taskbar icon.



ATI Options Tab

Version Information

Provides the Catalyst version number, 2D version number and the driver build information.

Details button

Provides access to the Details tab which lists the card's hardware details and driver information.

Reactivate all warning messages

This allows you to reactivate any disabled graphics warning messages.

Enable ATI taskbar icon application

Unchecking this allows you to disable the ATI taskbar applications and removes the ATI icon from your system tray.

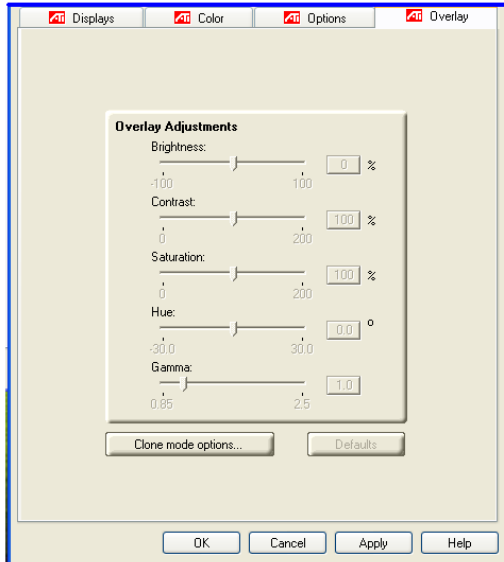
Clicking the **Details** button provides access to the Details tab.

ATI Overlay Tab

The ATI Overlay tab allows you to configure the brightness, contrast, saturation, hue and gamma properties of your video overlay.

Video Overlay

Video overlay allows for the viewing of full-motion video on your PC. However, there is only one video overlay, which is only available on the **Primary** display. The video overlay controls are automatically activated during playback of any video file type that supports overlay adjustments.



Show ATI icon on taskbar

Unchecking this allows you to remove the ATI icon from your system tray without disabling the ATI icon applications.

Disable quick resolution feature

Quick resolution feature is accessible by left clicking the ATI icon in the system tray. Checking this option disables the feature.

Reduce DVI frequency on high resolution

Resolves display corruption or no image at high resolutions (for example 1280x1024 @75Hz) using a digital DVI display. (This setting has no effect when using a DVI-to- VGA adapter)

Alternate DVI operational mode

Use this option if you are experiencing display corruption on your DVI flat panel.

ATI Overlay Tab Brightness

Use this slider to adjust the brightness of the video image.

Contrast

Use this slider to adjust the contrast in the video image.

Saturation

Use this slider to adjust the vividness of the color. Sliding it all the way to the left removes all color and produces a black and white picture.

Hue

Use this slider to adjust the pureness or tint of the red, green and blue components of the color.

Gamma

Use this slider to adjust the overall intensity of the video image.

Clone mode options

Click this button to access **Clone Mode** overlay settings. These settings only apply to video content when viewed in dual-controller Clone mode.

Defaults button

This allows you to reset the Overlay settings to default values.

Clone Mode Settings

Clone Mode Options Standard

Video content is displayed on your Primary display *only*.

Theater Mode

Video content is displayed on your Primary and Secondary displays. Video content is displayed on your Secondary display(s) is always in full screen mode.

Note: your computer must be set for 16-bit color depth or higher to use this mode.

Same on all

Video content is displayed on your Primary and Secondary display is exactly the same manner. For example, all displays will show video output in full screen mode.

Theater Mode Settings

These settings are available when **Theater Mode** is selected.

Same as source video

The aspect ratio of the source video is maintained for full screen display. Note: that this option may result in black bars on either the horizontal or vertical sides of the video display.

Full Screen Video

The source video is scaled so that your display is showing full screen. Note: if the source video contains horizontal black bars, as do some DVD movies, the full screen video will also contain black bars.

4:3 (Standard TV)

Select this option if the aspect ratio of the display device showing full screen video has the standard 4:3 aspect ratio (standard TVs and monitors).

16:9 (Widescreen)

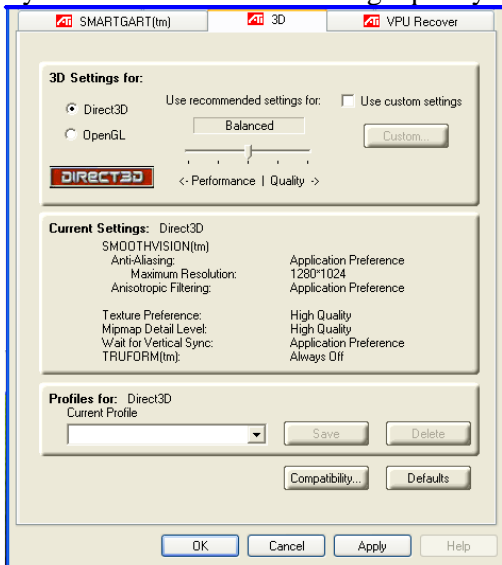
Select this option if the aspect ratio of the display device is showing full screen video has a 16:9 aspect ratio (widescreen HDTVs).

Direct 3D® Control Panel

Using this tab, gamers can fine-tune the settings for Direct 3D® games.

Main and Custom Settings

In the **Main Settings** you can maximize overall performance by moving the slider to the left, or you can enhance overall image quality by moving the slider to the right.



Main Settings slider

This allows you to emphasize what kind of application experience you'd like to have. Moving the slider to the left will maximize application performance, while moving the slider to the right will provide excellent 3D image quality. Moving this slider from one position to the next changes the individual Custom Settings sliders found below.

Custom Settings checkbox

When **Custom Settings** is checked, the Main Settings slider is disabled, allowing you to move each individual slider in the Custom Settings section below. Setting the individual sliders gives you complete control over your application experience. Using Custom Settings is recommended for advanced users only.

SMOOTH VISION Anti-Aliasing

SmoothVision Anti-Aliasing improves image quality by removing jagged edges from 3D images, resulting in smoother, more natural-looking objects. Selecting **Application Preference** will result in high quality images, with negligible reduction in the application's performance.

SMOOTH VISION slider

SmoothVision Anti-Aliasing can be applied using different sample patterns and sample points such as 2X, 4X, or 6X. Moving this slider to the right increases sampling to provide the most realistic 3D image.

SMOOTH VISION Anisotropic Filtering checkbox

Anisotropic filtering uses a texture filtering technique that blends multiple texture samples together. Selecting **Application Preference** will result in high quality textures, with a negligible reduction in the application's performance.

SMOOTH VISION Anisotropic Filtering slider

The number of samples taken when anisotropic filtering is performed can vary. By moving this slider to the right, as the number of samples taken increases, the quality of the final image increases significantly. 16X provides extremely detailed, crisp-looking images as a result of the largest number of texture samples possible.

Texture Preference slider

Selecting this decides whether your application should use high quality or high performance textures. Moving the slider to the right delivers the highest quality experience. Moving the slider to the left emphasizes a high performance solution while still providing good visuals.

Mipmap Detail Level slider

This will allow you to choose the texture quality of the mipmaps the application will use. Mipmaps are a collection of different sized textures of the same image. As the user moves closer to a 3D object the image quality should increase, requiring a higher quality texture of the same image. The base mipmap is the highest quality texture, and all subsequent mipmaps are smaller sized textures of the same image. Moving the slider to the right selects a higher quality base mipmap. Moving the slider to the left selects a lower quality mipmap.

Wait for Vertical Sync

Wait for vertical sync will lower the frame rate of full screen games but reduce the image tearing that can occur with the higher frame rate. Selecting **Application Preference** allows the application to decide whether or not it should display its frames at the refresh rate of the monitor. Selecting **Always Off** allows the application to run at its highest possible frame rate, regardless of the monitor's refresh rate which is typically less than the frame rate at which the application will run.

TRUFORM

Truform uses High Order Surface geometry to generate more detailed and realistic terrain and character models for applications that support this technology. Select **Application Preference** to enable Truform. Select **Always Off** to disable Truform.

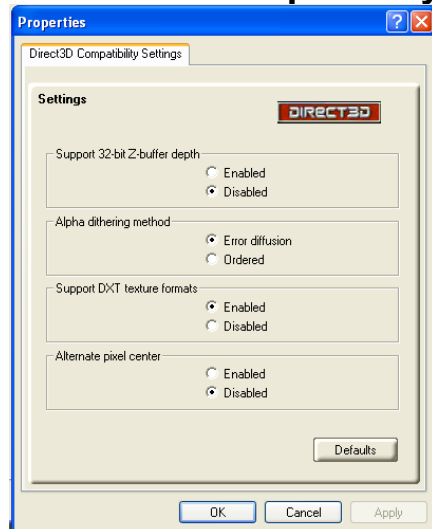
Compatibility Settings button

This button allows you to access advanced settings that can solve compatibility issues for a few specific Direct 3D® applications.

Defaults

This button allows you to reset the Direct 3D® settings to default values.

Direct 3D® Compatibility Settings



Support DXT texture formats

Enabling this allows applications to use this kind of texture format. There are a few applications that can only support a limited number of texture formats. By selecting **Disabled**, the driver will not support DXT texture formats, thus reducing the number of texture formats supported.

Alternate pixel center

This may eliminate problems with some Direct 3D® games which display vertical and horizontal lines around textures, or text that appears incorrect. However, this setting should only be used if you are experiencing the symptoms mentioned, as it may cause problems with other games.

Defaults button

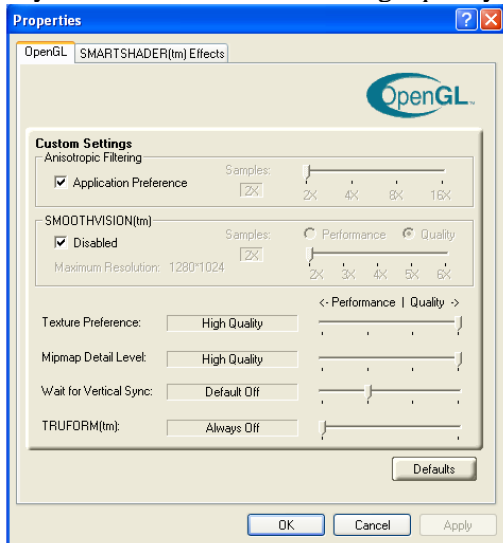
This button allows you to reset the Direct 3D® Compatibility Settings to default values.

OpenGL® Control Panel

Using this tab, gamers can fine-tune the settings for OpenGL® games.

Main and Custom Settings

In the **Main Settings** you can maximize overall performance by moving the slider to the left, or you can enhance overall image quality by moving the slider to the right.



Main Settings slider

This allows you to emphasize what kind of application experience you'd like to have. Moving the slider to the left will maximize application performance, while moving the slider to the right will provide excellent 3D image quality. Moving this slider from one position to the next changes the individual Custom Settings sliders found below.

Custom Settings checkbox

When **Custom Settings** is checked, the Main Settings slider is disabled, allowing you to move each individual slider in the Custom Settings section below. Setting the individual sliders gives you complete control over your application experience. Using Custom Settings is recommended for advanced users only.

SMOOTH VISION Anisotropic Filtering checkbox

Anisotropic filtering uses a texture filtering technique that blends multiple texture samples together. Selecting **Application Preference** will result in high quality textures, with a negligible reduction in the application's performance.

SMOOTH VISION Anisotropic Filtering slider

The number of samples taken when anisotropic filtering is performed can vary. By moving this slider to the right, as the number of samples taken increases, the quality of the final image increases significantly. 16X provides extremely detailed, crisp-looking images as a result of the largest number of texture samples possible.

SMOOTH VISION checkbox

SmoothVision (Anti-Aliasing) improves image quality by removing jagged edges from 3D images, resulting in smoother, more natural looking objects.

SMOOTH VISION slider

SmoothVision (Anti-Aliasing) can be applied using different sample patterns and sample points such as 2X, 4X, or 6X. Moving this slider to the right increases sampling to provide the most realistic 3D image.

Texture Preference slider

Selecting this decides whether your application should use high quality or high performance textures. Moving the slider to the right delivers the highest quality experience. Moving the slider to the left emphasizes a high performance solution while still providing good visuals.

Mipmap Detail Level slider

This will allow you to choose the texture quality of the mipmaps the application will use. Mipmaps are a collection of different sized textures of the same image. As the user moves closer to a 3D object the image quality should increase, requiring a higher quality texture of the same image. The base mipmap is the highest quality texture, and all subsequent mipmaps are smaller sized textures of the same image. Moving the slider to the right selects a higher quality base mipmap. Moving the slider to the left selects a lower quality mipmap.

Wait for Vertical Sync

Wait for vertical sync will lower the frame rate of full screen games but reduce the image tearing that can occur with the higher frame rate. Selecting **Application Preference** allows the application to decide whether or not it should display its frames at the refresh rate of the monitor. Selecting **Always Off** allows the application to run at its highest possible frame rate, regardless of the monitor's refresh rate which is typically less than the frame rate at which the application will run.

TRUFORM

Truform uses High Order Surface geometry to generate more detailed and realistic terrain and character models for applications that support this technology. Select **Application Preference** to enable Truform. Select **Always Off** to disable Truform.

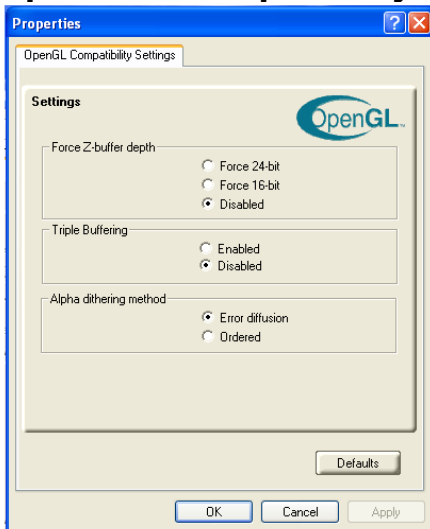
Compatibility Settings button

This button allows you to access advanced settings that can solve compatibility issues for a few specific OpenGL® applications.

Defaults

This button allows you to reset the OpenGL® settings to default values.

OpenGL® Compatibility Settings



Force Z-buffer depth

This allows you to explicitly set the Z-Buffer depth. Most applications will work best when **Disabled** is selected

Alpha dithering method

When applications use both dithering and alpha blending, visual artifacts can occur. This option allows you to select how the application should handle both features at the same time. In most cases **Error Diffusion** will handle this situation quite well, but there are a few cases where selecting **Ordered** may be necessary

Support KTX buffer region extension

Enabling this feature allows rapid updates of those portions of your screen that have changed. Note that most applications will not be affected by activating this feature

Defaults button

This button allows you to reset the OpenGL® Compatibility Settings to default values.

SMARTGART™

SMARTGART is a suite of testing and diagnostics tools that perform a variety of bus tests to determine the optimal settings for your ATI graphics accelerator installed in your computer. SMARTGART automatically configures your graphics device to the optimal settings. SMARTGART *does not* actually disable any AGP functionality in your computer's hardware. It simply instructs the ATI CATALYST driver not to use a specific AGP function if that specific AGP function hasn't passed the SMARTGART diagnostics test.

Set AGP Settings

Experienced users can manually change the AGP speed. You will need to reboot your computer for this change to take effect. The possible AGP speed is dependent on the motherboard chipset and design. Your computer's available AGP speeds are shown in the SMARTGART dialog.

Fast Write

Fast Write allows the CPU to transfer data directly to the graphics accelerator. By default, this feature is set to ON providing your motherboard's chipset supports Fast Writes. Some motherboard specifications may claim chipset support for Fast Writes but may not be compatible with many different graphics accelerators. Changing the AGP settings could result in system instability.

This setting is disabled for many computers because the motherboard is not capable of supporting this feature.

Retest All

Click this button to retest all graphic bus capabilities. All tests and diagnostics are initiated immediately following a system restart.

*Any settings that have previously been set to **Off** will be turned on, providing the test passes.*

Problems can arise if the user enables a secondary graphics accelerator (in a multiple monitor environment) after the operating system has loaded. The problem exists because the secondary graphics card is enabled after the SMARTGART diagnostic test have been run. To ensure system stability you should restart the computer *after* the secondary graphics accelerator is enabled so that both graphics accelerators can be tested with SMARTGART.

Using TV Out

View your PC's display on a TV

Your RADEON Series has TV Out capability. You can attach your card to a TV and monitor at the same time. Or you can connect it to your VCR and record your monitor's display. TV display is ideal for playing games, giving presentations, watching movies, and browsing the Internet. The following tips will help you get the most out of your TV Out feature.

IMPORTANT INFORMATION for European Customers

Some PC monitors in Europe **cannot** be used simultaneously with TV display. When you enable TV display in Europe, the refresh rate for the monitor and TV is set to 50Hz. Some monitors may not support this refresh rate and could be damaged. • Please check the documentation supplied with your monitor to see if your monitor supports a refresh rate of 50Hz.

If your monitor does not support 50 Hz (or if you are not sure), then turn off your monitor before turning on your PC when using your TV as a display.

For information on disabling TV display, see [How To Enable/Disable The TV Display on page 23](#).

Some TVs in Europe may use a SCART connection. If you use SCART, please read [Using SCART Connectors for European TVs on page 22](#) before attempting to connect your PC to your European TV.

Connecting to a TV or a VCR

To connect your RADEON Series to a TV or a VCR, use the available TV Output connector. Your card will support either a S-video connector or a Composite connector. If your TV has cable input only, you can connect your card to your TV through your VCR or an RF modulator (available in most electronics stores). The RADEON Series with the Composite out connector DOES NOT support connection to TVs with S-Video In. **Connecting Your TV Output to a TV or VCR**

- 1 Turn off your PC and your TV (or VCR).
- 2 Determine if your TV (or VCR) has a S-Video In or Composite In connection.
- 3 The TV Output on your RADEON Series will be either a S-Video connector **or** Composite connector. Attach an appropriate cable to the TV Output on your card (S-Video or Composite*). Attach the other end of the cable to your TV (or VCR). Refer to the illustration for further help.
- 4 Turn on your PC and your TV (or VCR).

Starting Windows® with TV Display Enabled

The TV screen may become scrambled during the initial Windows® logo display. This is only a temporary effect and your screen will be restored within a few seconds. During start up, your RADEON Series will go through a sequence of mode settings, during which your TV display will remain blank. This process takes only a few seconds and helps program the TV display.

Using SCART Connectors for European TVs

The above illustration shows how to connect your PC to a European TV using the SCART. The SCART connector supports only the Composite video format, which means you will have to use a S-Video-to-Composite video adapter cable if your RADEON Series supports the S-Video connector. If your European TV has S-Video In, you can use a S-Video cable* (also available in most consumer electronic stores) rather than the SCART connector if your RADEON Series supports the S-Video connector.

How To Enable/Disable The TV Display

-
- 1 Access the Windows® **Control Panel**. Double-click **Display**.
 - 2 Click on the **Settings** tab and then the **Advanced...** button.
 - 3 Click on the **ATI Displays** tab. Click on the **TV** button.
 - 4 Click the enable/disable button.
 - 5 Click **OK** or **Apply** to save the changes.

Using and Adjusting TV Out

For information about how to use TV display, right click the **ATI taskbar icon**, point to **Help**, then point to **ATI Television Display**.

How TV Display Cannot Be Used

A TV cannot be left connected to the RADEON Series if two analog monitors are connected, even if the TV is off and not enabled in the software. An analog monitor connected to the DVI-I connector cannot be left connected to your RADEON Series when TV out is enabled. In both cases, your graphics card will become overloaded, resulting in a dim image on all devices.

Using a Monitor vs. Using the TV Display

Using your TV for your PC's display is ideal for playing games, giving presentations, watching movies, and browsing the Internet. However, the display on your monitor may change or look squashed. This occurs because the display adjusts to fit the dimensions of your TV. To correct the monitor's display, use the monitor's control buttons to adjust its display size and position. Some single frequency monitors may not work with TV display enabled. If you experience problems when TV display is enabled, disable TV display to restore your monitor's display.

Adjusting Monitor Display

The size of the display on your monitor may be smaller and not perfectly centered when you have TV display enabled. These effects are caused by the changes required to provide a proper display on the TV. Use the controls available on the **Adjustments** tab on the **Monitor Properties** page (accessible by clicking on the **Monitor** button on the **ATI Displays** tab) to adjust the display on your monitor only. Click on the **TV** button to adjust the TV display only.

Viewing Text on a TV

A TV is designed primarily to show moving, rather than static, images. The large dot pitch of a TV (which is fine for moving video) will yield poor quality static images such as text. The small text sizes commonly used for PC desktops can appear blurred or unclear on a TV. You can compensate for this by using larger fonts.

To Use Larger Display Fonts

- 1 Access the Windows® **Control Panel**. Doubleclick **Display**.
- 2 For Windows® XP, click the **Appearance** tab. For Windows® Me and Windows® 2000, click the **Settings** tab, the **Advanced...** button, then the **General** tab.
- 3 In the **Font Size** box, select the size you want your displayed fonts to be.
- 4 Click **Apply**. If prompted, click **Yes** to restart your PC.

Reducing Edge Distortion

When using a TV for your PC's display, you may see some edge distortion on the left and right side of your TV screen. This effect depends on your TV and the PC application you are running. To reduce edge distortion, you can increase the TV display's horizontal size.

To Increase the Horizontal Size

- 1** Access the Windows® **Control Panel**. Double-click **Display**.
- 2** Click on the **Settings** tab and then the **Advanced...** button.
- 3** Click on the **ATI Displays** tab.
- 4** Click on the **TV** button.
- 5** Click the **Adjustments** tab.
- 6** In the **Screen Size** section, click on the plus (+) button beside the horizontal arrowheads to increase the horizontal size of the TV display.
- 7** Click **OK** or **Apply** to save the changes you have made. You can also reduce edge distortion by increasing the TV's contrast.

To Increase the TV Contrast

- 1** Access the Windows® **Control Panel**. Double-click **Display**.
- 2** Click on the **Settings** tab and then the **Advanced...** button.
- 3** Click on the **ATI Displays** tab.
- 4** Click on the **TV** button.
- 5** Drag the **Contrast** slider to the right to increase the contrast.
- 6** Click **OK** or **Apply** to save the changes you have made.

Changing Display Configurations

If you move your PC to a place where you are using TV display only, make sure that you have the TV display feature enabled. You can set your display resolution as high as 1024x768. However, higher resolutions will result in a virtual desktop. If a TV is your only display device and a higher mode is selected, the display on your TV will disappear.

Using Older Games and Applications

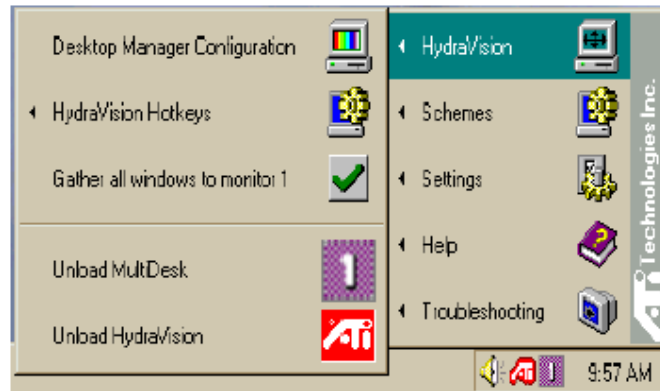
Some older games and applications may program your RADEON Series directly, to run under a specific display mode. This may cause your TV display to turn off automatically or become scrambled (the PC monitor will not be affected). Your TV display will be restored once you exit the game or if you restart your PC.

Using HydraVision™ for Windows® 98SE / ME/2000/XP/NT4.0

HydraVision™ software is specifically designed for use with Windows ® 98SE/ME/2000/XP/NT4.0 and installation enables the Desktop Manager and creates a Windows ® program group for HydraVision™ display management software.

HydraVision™ and the Desktop Manager are activated whenever Windows ® starts. Installing HydraVision™ adds menu options to the ATI Icon.

Click on the ATI icon to access the application's features and help, or to unload the HydraVision™ Desktop Manager.



Accessing HydraVision™ Desktop Manager

The HydraVision™ Desktop Manager allows you to modify your display options. You can access the **Desktop Management** and **Hot Keys** dialog boxes by clicking on the appropriate tab in the Desktop Manager.

Along the bottom of each HydraVision™ dialog are four buttons: **OK**, **Cancel**, **Apply** and **Help**.

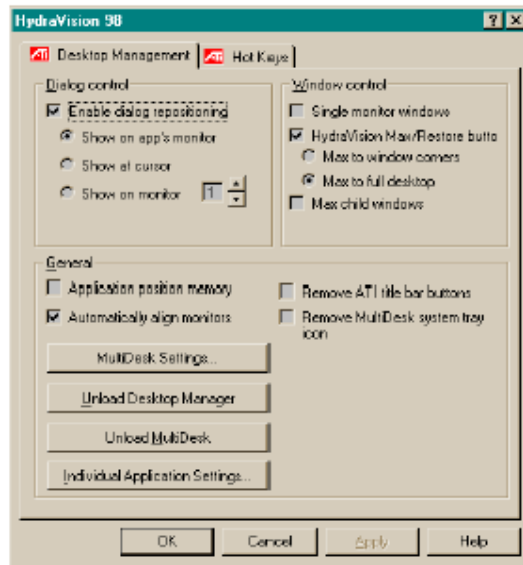
OK implements the changes you've made in the HydraVision™ dialog and exits the Desktop Manager. Changes take effect immediately unless you see a message prompting you to restart your computer.

Cancel discards *all* changes made to any section of the HydraVision™ dialog and closes the Desktop Manager.

Apply implements your changes without closing the Desktop Manager.

Help connects to local or online HTML-based help. You can also get context-sensitive on-screen help by moving your mouse over the relevant text for each control.

Desktop Management Controls



The Desktop Management Dialog

The **Desktop Management** dialog lets you determine the behavior of pop-up windows and dialog boxes in a multiple monitor environment.

Dialog control:

Enable dialog repositioning—Toggles dialog control on and off. When it is checked, you can choose to have dialog boxes appear on the parent application's monitor. (The parent application is the application that generated the dialog box.) If the parent application or associated monitor cannot be located, the dialog box defaults to monitor 1. You can also choose to have dialog boxes appear on the monitor in which the cursor is located or to always appear on a specific monitor in the array.

Window control:

Single monitor windows—When this box is checked, windows are sized no larger than a single monitor. Windows that are placed on monitor splits are automatically relocated to the monitor on which most of the window appears.

HydraVision™ Max/Restore button management—Allows you to control the behavior of the Windows® **Maximize** button. When HydraVision™ is running, a HydraVision™ Max/Restore button appears in the upper right corner of your application title bars. Clicking this icon makes the active window maximize in one of two ways:

Max to window corners causes windows to maximize to the monitor(s) that contain the window's upper left and lower right corners.

Max to full desktop causes windows to maximize to the entire monitor array.

Max child windows—Keeps windows generated by parent applications from splitting across monitors. (A child window is a window residing within a parent application window.) The ability to keep child windows on a single monitor when maximized is extremely useful for editing multiple documents side by side in a parent application.

Note : The HydraVision™ application title bar icon changes from a single square to two smaller squares when a window is in a HydraVision™ maximized state. Clicking the icon again restores the active window to its default state as a single square.

General:

Application position memory—Check this box to “remember” the size and location of application windows when they are closed and reapply those settings when the application is reopened.

Automatically align monitors—Under Windows ® 98SE and Windows ® Me, you can manually define monitor placement from the **Settings** dialog in the **Display Properties** dialog box. When this box is checked, HydraVision™ will override user-defined monitor placement if the monitors are not evenly aligned.

Note : This control will work only if all monitors are running at the same resolution and your desktop is configured as a rectangle (monitors side-by-side).

Remove HydraVision™ titlebar buttons—This box removes or restores the buttons placed on the title bar in installed applications.

Remove MultiDesk system tray icon—This box removes or restores the MultiDesk system tray icon.

MultiDesk Settings—This button gives access to all the MultiDesk Properties. Here you can enable, disable and name active desktops.

Load/Unload Desktop Manager—This button restores or removes the HydraVision™ Desktop Manager tracking program. You should only select this option if you do not want to use any multiple monitor dialog box controls and window controls or hot keys.

Note : MultiDesk will not reload automatically when Windows ® restarts. You will need to reload MultiDesk from the Desktop Manager.

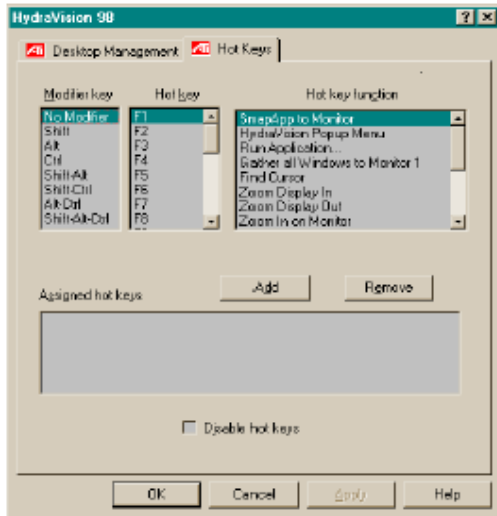
Load/Unload MultiDesk—This button restores or removes multiple desktop functionality.

Note : MultiDesk will not reload automatically when Windows ® restarts. You will need to reload MultiDesk from the Desktop Manager dialog box.

Individual Application Settings—This button allows you to specify, enable and disable desktop management settings for individual applications. You can access these settings by clicking on the down arrow of the HydraVision™ icon in the application title bar or by clicking the **Individual Application Settings** button in the **Desktop Management** dialog.

Note : These settings override the global settings defined in the **Desktop Management** dialog.

Hot Keys Controls



The Hot Keys Dialog

HydraVision™ allows you to specify hot key shortcuts for common operations such as starting applications, snapping applications to designated monitors, and changing display resolution.

NOTE: Hot Keys only work if HydraVision™ is installed and loaded.

Create/Remove Hot Keys

To create custom hot key sequences, select a **Modifier key** (Shift, Alt, etc.), a **Hot key**, and the **Hot key function** you want this key combination to perform. Click **Add** to enter your new combination in the **Assigned hot keys** list box. Click **Apply** to activate assigned hot keys.

Note : ATI recommends that a modifier key be used with any function key (F1, F2, etc.) assigned as a hot key. This will prevent interference with the function of these keys in individual applications.

To delete a hot key from the **Assigned hot keys** list box, highlight it, click **Remove**, and then click **Apply**.

You can also disable all hot keys listed in the **Assigned hot keys** list box by checking the **Disable hot keys** box near the bottom of the **Hot Keys** dialog.

Using Hot Keys

You can use any assigned hot key at any time, from within any application, to change your display. Provided hot key functions include:

Snap App to Monitor	Allows you to move or “snap” active windows or dialogs from monitor to monitor for quick placement and viewing of desktop contents.
HydraVision™ Pop-up Menu	Allows on-the-fly access to HydraVision™ controls.
Run Application	Lets you start any application with a hot key.
Gather All Windows to Monitor 1	Allows you to find applications that are hidden or are open and lost on disabled monitors.
Find Cursor	Locates the cursor on a busy or crowded desktop
Next Desktop	Accesses other active desktops
Zoom Display In/Out	Causes the desktop resolution to increase or decrease.
Zoom In/Out on Monitor	Causes the resolution of the active monitor to increase or decrease.

MultiDesk

HydraVision™ software supports multiple desktops. With MultiDesk, one active desktop will always be visible, while up to eight active desktops can reside in the background. When MultiDesk is running, the MultiDesk icon in the system tray displays the number assigned to the current desktop.

Note : MultiDesk is installed with HydraVision™. However, multiple desktop support and HydraVision™ can be loaded/unloaded and operated independently of each other.

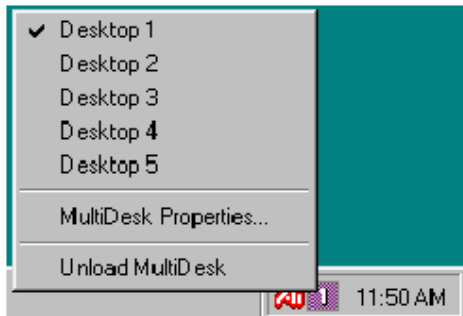
HydraVision™ MultiDesk
Icon



MultiDesk System Tray Icon

Right-click on this icon to access MultiDesk controls. In addition to accessing active desktops from the system tray, you can also access active desktops with a **Hot key** shortcut.

NOTE: Hot Keys only work if HydraVision™ is installed and loaded.



MultiDesk Pop-Up Menu

To switch to another defined desktop, select the appropriate desktop number from the pop-up menu. To enable, disable and name active desktops, select **MultiDesk Properties** from the pop-up menu. To arrange applications within active desktops, or to enable specific applications on all desktops, select **Arrange MultiDesk** from the pop-up menu.

MultiDesk Properties allows you to control the desktops. Right-click a Desktop tab to set it Active, Inactive, or Disabled. Inactive desktops MAY contain applications; however, they are temporarily disabled. Disabled desktops cannot contain any applications. If an Active or Inactive desktop that contain applications is disabled, the application will be automatically moved to an Active desktop.

You can also give a desktop a unique name. Double-click the desired desktop tab. The tab will turn gray and a blinking cursor will appear. Simply type in the new name. When you have renamed the desktop click on the tab to save the change.

Keep on all desks allows you to have a selected application visible on all desktops.

The MultiDesk functionality can be removed by selecting **Unload HydraVision™ MultiDesk** from the pop-up menu of the ATI Icon or the Desktop Manager.

Note : MultiDesk will not reload automatically when Windows © restarts. You will need to reload MultiDesk from the Desktop Manager.

The following troubleshooting tips may help if you experience problems. Contact your dealer or **ATI** for more advanced troubleshooting information.

- Check that the card is seated properly in the AGP slot.
- Ensure the display cable is securely fastened to the card's display connector.
- Make sure that the monitor and computer are plugged in and receiving power.
- If necessary, disable any built-in graphics capabilities on your motherboard. For more information, consult your computer's manual or manufacturer. (NOTE: Some manufacturers do not allow the built-in graphics to be disabled or to become the secondary display.)
- Make sure you selected the appropriate display device and graphics card when you installed the ATI driver.
- For more troubleshooting tips, right-click the ATI icon in the taskbar and select **Troubleshooting**.
- If you have problems during bootup, start your computer in **Safe Mode**. In Windows® 98 or Windows® Me, press and hold the CTRL key until the Microsoft® Windows® Startup Menu appears on the screen. Then select the number for **Safe Mode**, and press **Enter**. (You can also use F8 to bring up the Microsoft Windows® Startup Menu.) In **Safe Mode**, bring up the **Device Manager** and check for duplicate display adapter and monitor entries if you are only using one graphics card.
- For more assistance, use the **Troubleshooting Guide** located in the Windows® Help or contact your computer manufacturer.

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