

# **Wildcat 4210 Graphics**

## *Hardware User's Guide*

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July 2000

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**INTENSE3D**

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## **FCC/DOC Compliance**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## **Warnings**

Changes or modifications made to the card that are not approved by the party responsible for compliance could void the user's authority to operate the equipment.

To reduce the risk of electrical shock, do not attempt to open the equipment unless instructed. Do not use a tool for purposes other than instructed.

There are no user serviceable parts in the card. Refer all servicing of the card to qualified service personnel.

To comply with FCC Class A limits, you must use shielded cables with this device.

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## Preface

The *Wildcat 4210 Graphics Hardware User's Guide* contains information on the setup and use of the Wildcat 4210 video card, as well as information on troubleshooting, connections, and specifications.

If you purchased a Wildcat 4210 as part of a computer, the card was factory installed and configured in your computer prior to shipment. This document provides instructions for setting your display parameters and installing the video drivers and hardware in case you bought the Wildcat 4210 as an add-on or as part of an upgrade.

## About This Document

This document is organized as follows:

- ◆ Chapter 1, "Introduction," describes the Wildcat 4210, its features, and its connectors.
- ◆ Chapter 2, "Setup," provides step-by-step instructions for installing Wildcat 4210 hardware and driver software, and for connecting monitors and a stereo display device.
- ◆ Chapter 3, "Using the Wildcat 4210," provides instructions for configuring the video display and using Wildcat 4210 features.
- ◆ Chapter 4, "Troubleshooting," describes ways to solve common problems and get help.
- ◆ Chapter 5, "Technical Information," provides general, functional, and performance specifications for the Wildcat 4210, and describes its connectors and ports.

## Document Conventions

<b>Bold</b>	Commands, words, or characters that you key in literally.
<i>Italic</i>	Variable values that you supply, or cross-references.
Monospace	Output displayed on the screen.
SMALL CAPS	Key names on the keyboard, such as D, ALT or F3; names of files and directories. You can type filenames and directory names in the dialog boxes or the command line in lowercase unless directed otherwise.
CTRL+D	Press a key while simultaneously pressing another key; for example, press CTRL and D simultaneously.

## Operating System Information

Your computer must be running Microsoft's Windows 2000 operating system or Microsoft's Windows NT 4.0 operating system with Service Pack 5 (or later) installed. The appropriate operating system was installed on your computer prior to shipment if you bought the Wildcat 4210 as part of a computer.

For more information on the operating system, refer to Microsoft's printed and online documentation delivered with the computer.

## Customer Support

Please contact your system vendor regarding any support issues you may have.

For the latest Intense3D news and product information, visit <http://www.intense3d.com> on the World Wide Web.

# 1 Introduction

The Wildcat 4210 video card equips your personal computer or personal workstation with powerful and professional 3D graphics capability. This video card infuses Intel Pentium II or greater computers running the Microsoft Windows 2000 or Windows NT 4.0 operating system with workstation-class 3D graphics features and performance.

If you purchased a Wildcat 4210 as part of a computer, it was configured to operate in the computer before shipment. No other modifications are necessary. Also, the Wildcat driver software was installed before shipment and is operative when you receive the computer. No further installation or configuration is necessary unless you bought the card as an add-on or as part of an upgrade. Store the driver CD or diskette that came with the computer in a safe place in case you need to reinstall the Wildcat driver software.

## Features

<b>Card Interface</b>	AGP Pro 110, designed for computers with a 110 Watt AGP Pro expansion card slot
	<b>NOTE</b> A Wildcat 4210 cannot plug into a standard AGP expansion card slot.
<b>Video Memory</b>	Frame buffer 128 MB Texture buffer 128 MB DirectBurst 32 MB
<b>Graphics Controller</b>	High-speed Wildcat chipset technology with dual-display support
<b>RAMDAC</b>	250 MHz
<b>Plug and Play Monitor</b>	Supported
<b>Accelerated 3D API</b>	OpenGL
<b>Maximum Resolution</b>	1920 x 1200
<b>Maximum Aspect Ratio</b>	16:10
<b>Maximum Refresh Rate</b>	75 Hz
	<b>NOTE</b> Supported refresh rates, monitor resolutions, aspect ratios, and color depths depend on the monitor type, if you select multisampling, and if you use single or dual monitors. See Appendix A, "Specifications," for a list of supported resolutions and refresh rates.
	<b>NOTE</b> To display at a specific resolution with the desired refresh rate, both the video card and the monitor must support it. Refer to the documentation delivered with the monitor for a list of supported video resolutions.

<b>Power Management</b>	Display Power Management Signaling (DPMS) Advanced Configuration and Power Interface (ACPI)
<b>Geometry Acceleration</b>	Model view matrix transformation of vertex and normal coordinates Perspective and viewport transformations Texture matrix transformation of texture coordinates Local display list storage and processing Full lighting calculations (up to 24 lights) View volume clipping Up to six user clip planes Image processing
<b>Traditional 2D Operations</b>	16- and 32-bit color depths (565, 8888) Solid and patterned area fills Vectors (diamond rule compliant) Block moves (screen-to-screen) Block gets (screen-to-system) Block puts (system-to-screen) Bilinear scaling
<b>Open GL Operations</b>	Image support for multiple formats, zooming, bilinear scaling, color matrix, and color tables Fogging: linear, exponential, exponential <sup>2</sup> , and user-defined 2D/3D points, vectors, and polygons Texture mapping: point, bilinear, trilinear, and multiple internal formats 24- and 32-bit depth buffering Dithering Fast window clears Window clipping Fast window-mode double buffering Masking Frame-sequential and interlaced stereo support Stencil operations Matrix transformations

<b>OpenGL Extensions</b>	<p>Imaging extensions – pixel buffer, color table, color matrix, convolution</p> <p>Blend extensions – color, minmax, function separate, subtract</p> <p>Fog extensions – fog function, fog offset</p> <p>Texture extensions – 3D textures (edge, border, and LOD clamps), mipmap generation</p> <p>Video extensions – interlace, interlace read</p> <p>422 pixels</p> <p>Swap control extensions – swap control, swap frame lock, swap usage</p> <p>Texture color table</p> <p>Pixel texture and 3D texturing</p> <p>Stencil operation wrap</p> <p>Post-texturing specular</p>
<b>Additional Features</b>	<p>SuperScene full-scene multisampled anti-aliasing – point sampled with sixteen samples, sample location jittering, dynamic sample allocation, dynamic sample backoff</p> <p>Two video look-up tables</p> <p>Eight stencil planes</p> <p>Eight double-buffered overlay planes</p> <p>32-bit Z buffer</p> <p>High-performance DACs that directly drive display devices</p> <p>DDC2B Display Data Channel standard</p> <p>Head-mounted displays and shutter glasses (frame sequential and interlaced stereo required)</p> <p>Onboard texture memory with full mipmapped trilinear interpolated texture processing</p> <p>Digital Video Interface (DVI)-I display support</p>

## External Connectors

The Wildcat 4210 has the following external connectors (see Figure 1):

- ◆ Primary and secondary DVI-I Out ports
- ◆ Genlock In port
- ◆ Stereo Sync Out port
- ◆ Multiview In and Multiview Out ports

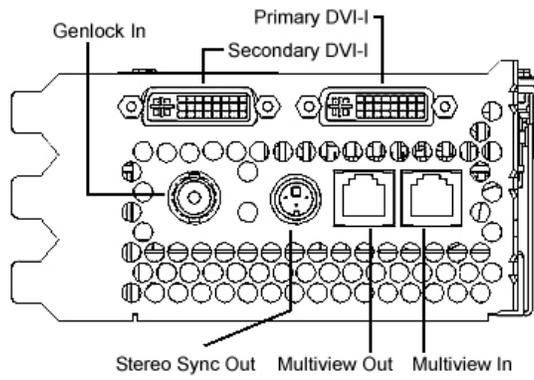


Figure 1. External Connectors

See Appendix B, "Connectors," for detailed information on each of the external connectors.

## 2 Setup

This chapter contains instructions for installing a Wildcat 4210 video card, connecting the computer's monitors and a stereo display device, and installing the driver software.

If you purchased a Wildcat 4210 as part of a computer, it was installed before shipment along with the Wildcat driver software. The installation instructions in this chapter are necessary only if you must install or replace the card or if you must reinstall the Wildcat driver software.

### Preparing for Installation

#### Make Sure the Computer is Ready

General requirements include:

- ◆ Pentium II or greater processor
- ◆ Microsoft Windows 2000 or Microsoft Windows NT 4.0 with Service Pack 5 (or later)
- ◆ Accelerated Graphics Port (AGP) Pro 110 expansion slot
- ◆ Two open Peripheral Component Interconnect (PCI) slots adjacent to the AGP Pro 110 slot
- ◆ 32 MB DRAM minimum (64 MB recommended)
- ◆ Industry-standard, multiple-frequency monitor (VGA) or a Digital Video Interface (DVI)-compliant digital display device
- ◆ 3 MB of free space on the computer's primary system disk for the driver software

#### Collect Materials and Tools

Make sure you have the following items:

- ◆ Wildcat 4210 video card
- ◆ Delivery media containing the Wildcat 4210 video display driver
- ◆ Flat-head or Phillips screwdriver
- ◆ Monitor cables supplied with the computer or with the computer's monitors
- ◆ To connect VGA monitors, 15-pin DVI-VGA adapters for the monitor cables
- ◆ The computer's documentation
- ◆ Grounding wrist strap

## Take Anti-static Precautions

Static electricity can damage the components inside a computer or on a printed circuit card. To reduce the possibility of electrostatic discharge:

- ◆ Turn off power to the computer.

**CAUTION:** Physically remove the power cord from the computer and wait 15 to 30 seconds for standby power to dissipate. Damage can occur to add-in components if power is not physically removed from the computer during installation procedures.

- ◆ Touch the metal chassis of the computer to drain off static electricity before touching the card.
- ◆ Wear a properly connected grounding wrist strap when handling the card or working in the computer.
- ◆ Do not wear wool or polyester clothing.
- ◆ Work in an area with a relative humidity of at least 50 percent.
- ◆ Keep the card in the anti-static bag until you are ready to install it.
- ◆ Handle the card as little as possible and only by the edges.

## Installing the Wildcat 4210 Card

Refer to the computer's documentation for instructions on opening and closing the computer, identifying the AGP Pro 110 and Peripheral Component Interconnect (PCI) expansion slots, and adding expansion cards.

### To install the Wildcat 4210 card:

1. Turn off power to the computer and to the monitors, and disconnect the cables from the computer.
2. Open the computer to gain access to the AGP Pro 110 expansion slot.
3. Remove the existing video card. Keep the screws; you will use them to secure the Wildcat 4210 card to the chassis.
4. Align the Wildcat 4210 card with the AGP Pro 110 expansion slot and the adjacent PCI expansion slot. Make sure the gold-fingered connectors on the card's edges (see Figure 2) are aligned properly with the slot connectors.

**NOTE** A Wildcat 4210 cannot plug into a standard AGP expansion card slot.

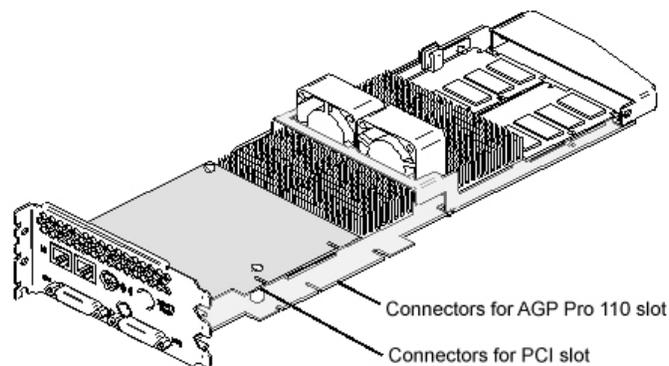


Figure 2. Expansion slots connectors

5. Push the card into the expansion slots firmly and evenly until it is fully seated in the slot connectors.
6. Visually inspect the connections. If they do not appear to be correct, remove and reinstall the card.
7. Use the screws you removed previously to secure the card to the computer's chassis.
8. Close the computer and reconnect the power cord.

## Connecting Monitors

Refer to the documentation delivered with the computer's monitors for information on the type of connection required. The monitor cables will have either a Digital Video Interface (DVI)-I connector or a 15-pin VGA connector.

### To connect DVI monitors:

1. Turn off power to the computer and to the monitors.
2. Connect the cable for a single monitor to the Primary DVI-I port (see Figure 3).
3. If needed, connect the cable for a second monitor to the Secondary DVI-I port.

**NOTE** Multiple monitor support is available only under Windows 2000. If you are connecting two monitors to the Wildcat 4210, see Chapter 3, "Using the Wildcat 4210," for information about configuring dual displays.

4. Turn on power to the computer and to the monitors. If the monitors' Power On LEDs do not illuminate or the monitors do not display, refer to Chapter 4, "Troubleshooting."

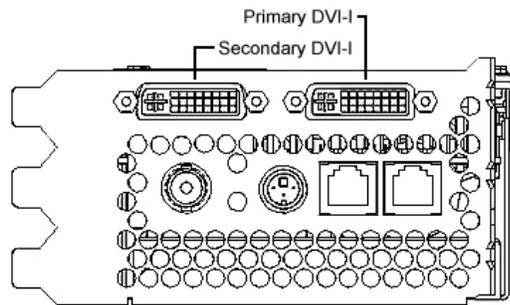


Figure 3. DVI-I Ports

**To connect VGA monitors:**

1. Turn off power to the computer and to the monitors.
2. Connect the 15-pin VGA connector on each monitor cable to the VGA end of a DVI-VGA adapter (see Figure 4).
3. If you are connecting a single monitor, connect the DVI-I end of the DVI-VGA adapter to the Primary DVI-I port (see Figure 3).
4. If needed, connect the DVI-I end of the DVI-VGA adapter for a second monitor to the Secondary DVI-I port.

**NOTE** Multiple monitor support is available only under Windows 2000. If you are connecting two monitors to the Wildcat 4210, see Chapter 3, "Using the Wildcat 4210," for information about configuring dual displays.



Figure 4. DVI-I to VGA Adapter

5. Turn on power to the computer and to the monitors. If the monitors' Power On LEDs do not illuminate or the monitors do not display, refer to Chapter 4, "Troubleshooting."

**NOTE** If the computer's monitors do not have built-in video cables, use shielded video cables. The cables should have DVI-I connectors or 15-pin VGA connectors (with adapters) at one end for the video output port on the card, and the appropriate connectors at the other end for the video input ports on the monitors. See the documentation delivered with the computer's monitors for more information.

**NOTE** If you installed the Wildcat 4210 video card, the computer will boot into VGA mode. Go to "Installing Wildcat Driver Software" for instructions on installing the Wildcat driver software.

## Installing Wildcat Driver Software

If you are installing or replacing a Wildcat 4210 card or reinstalling Wildcat driver software, take the following steps.

Refer to the Microsoft Windows NT or Windows 2000 documentation and online Help for more information on installing driver software.

### Make Sure the Computer is Ready

Make sure the computer has the following before installing the Wildcat driver software:

- ◆ Microsoft Windows 2000 or Microsoft Windows NT Workstation 4.0 with Service Pack 5 (or later)
- ◆ 3 MB of free space on the computer's primary system disk

**CAUTION** You must have the correct driver for Windows 2000 or Windows NT 4.0. If you are unsure, refer to the README file on the driver CD or diskette for this information.

### Remove Existing Wildcat Driver Software

If you are reinstalling Wildcat driver software, you must first remove the currently installed Wildcat driver software.

#### To remove Wildcat driver software in Windows 2000:

1. Log on to Windows 2000 using an account that has administrative privileges.
2. From the operating system Start menu, go to Settings » Control Panel » Add/Remove Programs » Change and Remove Programs.
3. Highlight the Intense3D Display Driver and click Change/Remove.
4. Click Yes when prompted to confirm driver software removal and follow the prompts.
5. Click OK when notified that driver software removal is complete.
6. Restart the computer.

**To remove Wildcat driver software in Windows NT 4.0:**

1. Log on to Windows NT using an account that has administrative privileges.
2. From the operating system Start menu, go to Settings » Control Panel » Add/Remove Programs » Install/Uninstall.
3. Highlight the Intense3D Display Driver and click Add/Remove.
4. Click Yes when prompted to confirm driver software removal and follow the prompts.
5. Restart the computer.

**Install Wildcat Driver Software****To install Wildcat driver software in Windows 2000:**

1. Log on to Windows 2000 using an account that has administrative privileges.
2. When the Found New Hardware Wizard displays, click Next.
3. Under Install Hardware Device Drivers, click Search for a suitable driver for my device (recommended), and then click Next.
4. Under Locate Driver Files, make sure the appropriate search location is selected, and that Disk 1 of the driver media is loaded in the appropriate drive (or the Disk 1 folder is selected); then click Next. The Wizard locates the driver installation files.
5. Under Driver Files Search Results, click Next to start the installation.
6. Insert Disk 2 when prompted (or select the Disk 2 folder), and then click OK to continue with the installation.
7. Once the driver successfully installs, click Finish to dismiss the Found New Hardware Wizard.

**NOTE** Windows 2000 recognizes the dual pipelines as two devices. The Found New Hardware Wizard will display a second time to finish the installation. You must repeat Steps 3 through 7 above to complete the installation.

8. When told that the computer must be restarted for the new settings to take effect, remove the delivery media from the disk drive (if applicable) and click Yes to restart the computer.

See Chapter 3, “Using the Video Card,” for instructions on defining the display properties.

**To install Wildcat driver software in Windows NT 4.0:**

1. Log on to Windows NT using an account that has administrative privileges.
2. Insert the delivery media (diskettes or CD) into the appropriate device on the computer.
3. From the operating system Start menu, go to Settings » Control Panel » Display » Settings » Display Type » Change.
4. In the Change Display dialog, click Have Disk.

5. In the Install From Disk dialog, type the path to the directory that contains the delivery media.
6. In the Change Display dialog box, verify that the Wildcat 4210 driver is highlighted and then click OK.
7. Click Yes when asked if you want to install a third-party driver.
8. After the driver files are copied, a message that the driver successfully installed displays. Click OK.
9. Click Close to exit the Display Type dialog, and again to exit the Display Properties dialog.
10. When told that the computer must be restarted for the new settings to take effect, remove the diskette from the computer's floppy disk drive, if applicable. Click Yes to restart the computer.
11. After the computer restarts and you log in, a message displays stating that a new display driver has been installed, and that you should use the Display option in the Control Panel to select the preferred display resolution. Click OK.

See Chapter 3, "Using the Video Card," for instructions on defining the display properties.

## **Installing Heidi<sup>®</sup> Driver Software for AutoDesk Applications**

The Intense3D Heidi driver software allows full-screen multisampling of and compatibility with AutoDesk applications, as well as hardware acceleration of the Wildcat 4210 via OpenGL. To install the Heidi driver software and to activate full screen multisampling, refer to the README file on driver Disk 3 or in the Disk 3 folder of the driver CD.

### **Verify the Default Video Display Driver**

#### **To verify the default video display driver in Windows 2000:**

1. From the operating system Start menu, go to Settings » Control Panel » Display » Settings.
2. Verify that two Intense3D Wildcat 4210 devices are listed under Display.
3. Click Cancel to close the Display Properties dialog.

See Chapter 3, "Using the Video Card," for instructions on defining the display properties.

#### **To verify the default video display driver in Windows NT 4.0:**

1. From the operating system Start menu, go to Settings » Control Panel » Display » Settings » Display Type.
2. Verify that Intense3D Wildcat 4210 is listed under Display.
3. Click Cancel to close the Display Properties dialog.

See Chapter 3, "Using the Video Card," for instructions on defining the display properties.

## Verify the System Startup Version

### To verify the default system startup version in Windows NT 2000:

1. From the operating system Start menu, go to Settings » Control Panel » System » Advanced » Startup and Recovery.
2. Verify that Microsoft Windows 2000 Professional is listed as the default operating system and click OK.
3. Click OK to close the System Properties dialog.

See Chapter 3, “Using the Video Card,” for instructions on defining the display properties.

### To verify the default system startup version in Windows NT 4.0:

1. From the operating system Start menu, go to Settings » Control Panel » System » Startup/Shutdown.
2. Verify that Windows NT Workstation Version 4.x is selected in the Startup list. If it is not, select it from the list and click Apply.

**NOTE** Do not select the VGA version of the operating system. The video display runs in VGA mode when the Wildcat driver software is not running.

3. Click OK to close the System dialog.

See Chapter 3, “Using the Video Card,” for instructions on defining the display properties.

## Check the Video Image

### To check the video image:

1. If the Display Properties dialog box is not already displayed, from the operating system Start menu go to Settings » Control Panel » Display » Settings.
2. Click Test to test the display resolution.
3. Click OK to dismiss the Display Properties dialog.

See Chapter 3, “Using the Video Card,” for instructions on defining the display properties.

## Connecting a Stereo Display Device

See the documentation delivered with the stereoscopic display device for detailed information on connections and cabling.

### To connect a stereo display device:

1. Connect one end of the stereo emitter cable to the input port on the stereoscopic display device.
2. Connect the other end of the stereo emitter cable to the Stereo Sync Out port on the Wildcat 4210 video card (see Figure 5).
3. Configure the display settings to enable stereo display. See Chapter 3, “Using the Video Card,” for more information.

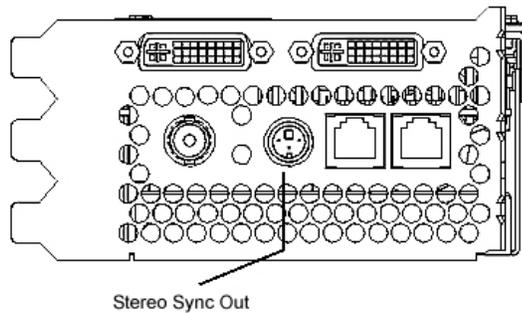


Figure 5. Stereo Sync Out Port



### 3 Using the Wildcat 4210

This chapter contains instructions for configuring the video display and enabling the stereo display. If you purchased the Wildcat 4210 with a computer, it was configured for use before shipment.

#### Configuring the Video Display

On a computer running Windows NT 4.0, the Display Properties dialog will have two additional tabs: Intense3D Configuration and Intense3D Monitor. On a computer running Windows 2000, go to Display Properties » Settings » Advanced to see these tabs.

##### To use the Intense3D Configuration tab:

1. Make sure you are logged into a non-VGA version of Windows NT or Windows 2000.
2. Close any open applications.
3. From the operating system Start menu, go to Settings » Control Panel » Display. In Windows NT 4.0, click the Intense3D Configuration tab if it is not already displayed (see Figure 6). In Windows 2000, continue to Settings » Advanced and click the Intense3D Configuration tab.
4. On the Intense3D Configuration tab, click Hardware Information to view hardware settings; click View Configuration to view the display configuration; or click Configuration Wizard to modify or delete the display configuration or create a new one.



Figure 6. Intense3D Configuration Tab

##### To use the Intense3D Monitor tab:

1. Make sure you are logged into a non-VGA version of Windows NT or Windows 2000.

2. Close any open applications.
3. From the operating system Start menu, go to Settings » Control Panel » Display. In Windows NT 4.0, click the Intense3D Monitor tab if it is not already displayed (see Figure 7). In Windows 2000, continue to Settings » Advanced and click the Intense3D Monitor tab.



Figure 7. Intense3D Monitor Tab

4. In the Intense 3D Monitor tab, click Color Calibration to change the color settings (see Figure 8). Make changes, and then click OK to accept the changes and dismiss the Color Calibration dialog, or click Cancel to close the Color Calibration dialog without making any changes. You are returned to the Intense3D Monitor tab.

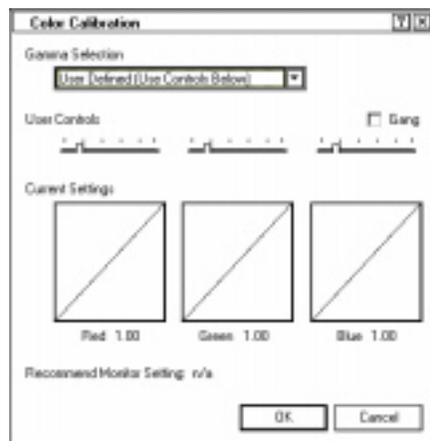


Figure 8. Color Calibration Dialog

5. In the Intense3D Monitor tab, click Configure Monitor to change the display mode, select a monitor type, and change the resolution/refresh rate (see Figure 9). Once you have made the changes you require, click OK to accept the new configuration and dismiss the Configure Monitor dialog. You are returned to the Intense3D Monitor tab.

**NOTE** See "Enabling Stereo Display," for instructions on changing the Display Mode. See Appendix A, "Specifications," for a list of available monitor resolutions.

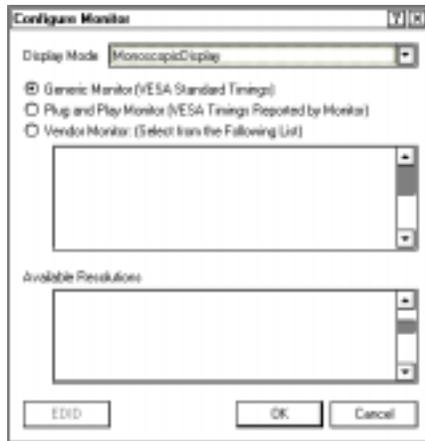


Figure 9. Configure Monitor Dialog

6. Click OK on the Display Properties dialog to accept the changes, or click Cancel to close the dialog without accepting any modifications.
7. Restart the computer if you are prompted to do so. Most changes will take effect without restarting.

## Enabling Stereo Display

If you connect a device to the stereo port on the Wildcat 4210, you must change the display mode to view in stereo.

### To enable stereo display:

1. Make sure your stereo display device is properly connected to the stereo output port on the Wildcat 4210. See Chapter 2, "Setup," for more information.
2. From the operating system Start menu, go to Settings » Control Panel » Display. In Windows NT 4.0, click the Intense3D Monitor tab if it is not already displayed. In Windows 2000, continue to Settings » Advanced and click the Intense3D Monitor tab.
3. On the Intense3D Monitor tab, click Configure Monitor.
4. Select a Stereoscopic Display mode from the Display Mode list box and then click OK.

5. You may see the following message: “The selected monitor cannot display the current desktop area. Select a new resolution before applying these changes.” If you do, click OK and then select a resolution from the list of available resolutions.
6. Click OK if the display is correct and you wish to keep the new settings.
7. Click OK to accept the new display mode.

**NOTE** You must disable stereo mode when you no longer wish to view in stereo. Follow the previous steps, and select Monoscopic Display from the Display Mode list box.

## Enabling Multiview and Genlock

The Wildcat 4210 features Multiview support for frame locking and rate locking of multiple computers. Genlock support allows video timing to be synchronized to an external timing source.

**NOTE** Your application must support Multiview for Multiview to work.

**NOTE** Refer to the Support pages on the Intense3D Web site for information on ordering the correct Multiview and Genlock cables.

### To prepare computers to use Multiview:

1. Insert one end of a shielded RJ12 cable into the Multiview Out port (see Figure 10) of the first computer. This computer becomes the “master”
2. Insert the other end of the cable into the Multiview In port (see Figure 10) of the second computer. This computer becomes a “slave.”

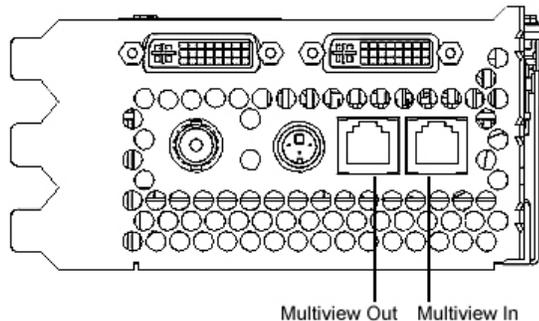


Figure 10. Multiview Ports

3. If connecting more than two computers, continue linking computers to one another by connecting the Multiview Out port of one computer to the Multiview In port of the next. The last computer should terminate the links and only have a cable plugged into the Multiview In port.

**To confirm Multiview cables are detected:**

1. On each "slave" computer, from the operating system Start menu, go to Settings » Control Panel » Display » Settings.
2. If the computer is running Windows NT 4.0, the input cables will display as Detected under Multiview Information.
3. If the computer is running Windows 2000, go to Advanced » Intense 3D Monitor » Multiview. The input cables will display as Detected under Multiview Information.

**To enable Genlock:**

1. Connect the external timing source to the Genlock In port on the "master" computer (see Figure 11).

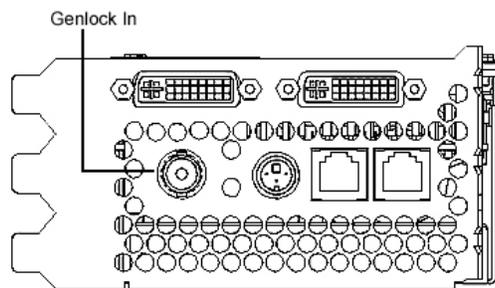


Figure 11. Genlock In port

2. From the operating system Start menu, go to Settings » Control Panel » Display » Settings » Advanced » Intense3D Monitor » Multiview (see Figure 12).



Figure 12. Multiview configuration dialog box.

3. Under Genlock Configuration, choose Enable
4. Choose the signal source from the Source list box.

5. Select the Signal Edge Response, Signal Lock Rate, and Pixel Align Offset appropriate for your application and hardware setup, and then click Apply.

**NOTE** Some monitors require custom timing file entries for Genlock to be properly maintained. Refer to the documentation delivered with your monitor for further information.

## Enabling Dual Monitors in Windows 2000

Wildcat 4210 supports dual monitors on a computer running Windows 2000. Two monitors can be connected to the Wildcat 4210 so the display area stretches across both monitors.

**NOTE** Before enabling dual monitors, connect the second monitor to the Secondary DVI-I port. See Chapter 1, "Setup," for instructions.

### To enable dual monitors:

1. From the operating system Start menu, go to Settings » Control Panel » Display » Settings » Advanced » Intense3D Configuration.
2. Next to Maximum Number of Displays, select 2, and then click Apply (see Figure 13).



Figure 13. Choosing Maximum Number of Displays

3. When prompted, click Yes to shut down the computer. When the computer has shut down, turn off power to the computer.
4. Turn on power to the computer and to the monitors. The primary monitor displays the startup sequence. If the monitors' Power On LEDs do not illuminate or the monitors do not display, refer to Chapter 4, "Troubleshooting."

**To change monitor settings with a dual monitor configuration:**

1. From the operating system Start menu, go to Settings » Control Panel » Display » Settings.
2. Drag the monitor icons to match the physical arrangement of your monitors (see Figure 14).
3. Click OK.

**To adjust the colors or resolution of a monitor:**

1. From the operating system Start menu, go to Settings » Control Panel » Display » Settings.
2. Click the icon for a monitor or select that monitor from the Display list box (see Figure 14).
3. Make changes to the items under Colors or Screen Area.
4. Click OK.

**NOTE** Any changes made in the Advanced Properties dialog affects both monitors.



Figure 14. Dual Monitor Settings Tab



## 4 Troubleshooting

This chapter describes common problems and solutions, how to get a usable video resolution, how to reinstall the video driver software, and how to get help.

### Common Problems and Solutions

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Display is black, not synchronized, or distorted	Display properties are not set correctly.	In Windows 2000, restart in Safe Mode and select a supported resolution and refresh rate. In Windows NT, use the Last Known Good option. See "Getting a Usable Video Resolution" later in this chapter.
	Single monitor is not plugged into primary DVI-I port.	Turn off power to the computer. Disconnect the monitor from the secondary DVI-I port and connect it to the primary DVI-I port. See Chapter 2, "Setup," for more information.
Monitor does not support a selected resolution or refresh rate	The selected settings are not compatible with your monitor and video card.	In Windows 2000, restart in Safe Mode and select a supported resolution and refresh rate. In Windows NT, use the Last Known Good option. See "Getting a Usable Video Resolution" later in this chapter.
		Reinstall the video driver. See Chapter 2, "Setup," for more information.
There is no VGA boot screen	The connections may not be set up properly.	Make sure the monitor cables are securely fastened to the video card.
		Make sure the monitors and computer are plugged into electrical outlets and are receiving power.
		Check any other external display connectors, if applicable.
		Make sure the video card is seated properly in its expansion slot.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Screen image is off-center	Monitor settings may be configured improperly.	Refer to your monitor's documentation for instructions on making horizontal and vertical adjustments.
Color balance is wrong	Monitor settings may be configured improperly.	Refer to your monitor's documentation for instructions on adjusting the color display.
There is no picture	Improper software setup or hardware problem.	Restart into VGA/Safe Mode to verify the display properties are configured correctly for the monitor type. If the software setup is correct, use a similar type monitor (if available and functioning properly) to determine if the computer is defective. See "Getting a Usable Video Resolution" later in this chapter.
	Computer was not shut down and powered off after selecting the dual monitor feature in Windows 2000.	Shut down the computer and turn off power to it. Then turn on power to the computer and let it restart.
Screen image defects appear	Possible indication of a hardware problem.	Run diagnostics to check the graphics hardware.

## Diagnostics

Diagnostics utilities for checking the video card and instructions for using these utilities may be available from your computer vendor.

## Getting a Usable Video Resolution

The computer operates in VGA mode when the video display driver is not running to accommodate all monitor types. VGA mode is used during initial installation of the video display driver and when experiencing video problems. If you select a resolution that causes the monitor to display incorrectly, take the following actions, as appropriate.

## In Windows 2000

Press CTRL+ALT+DEL but do not log on to the Windows 2000 operating system. Instead, shut down the computer, and then restart into Safe Mode to choose another resolution or to reinstall the video driver software.

### To restart in Safe Mode:

1. Restart the computer.
2. At the boot screen, press F8 to enter the Windows 2000 Advanced Options Menu.
3. Select Safe Mode, and then press ENTER to return to the boot screen.

## In Windows NT 4.0

Press CTRL+ALT+DEL but do not log on to the Windows NT operating system. Instead, shut down then use the Last Known Good option to return to the last known good configuration recorded by Windows NT.

### To use the Last Known Good option:

1. Restart the computer.
2. Press the space bar when prompted to invoke the Last Known Good menu.

If this option fails to correct the video display problem, restart the computer in VGA mode and reconfigure your display to 640 x 480 resolution, 60 Hz refresh rate. Then restart the computer in non-VGA mode.

### To restart in VGA mode:

1. Restart the computer.
2. At the boot screen, select the VGA version of the operating system.

## Determining a Defective Unit

### To determine a defective unit:

1. Save and exit from all files.
2. Shut down the operating system.
3. Turn off the power to the monitor and to the computer.

**CAUTION** Always turn off the power to the computer before connecting or disconnecting the cables.

4. Check and reseat all card and cable connections as needed.

5. Turn on the monitor power. If the Power On LED does not illuminate, see "Getting Help" in this chapter.
6. Turn on the power to the computer base unit. If the Power On LED on the base unit does not illuminate, or if the BIOS beep codes indicate a failure, see "Getting Help" in this chapter.

## Getting Help

If the troubleshooting procedures in this chapter do not resolve the problem, please contact your computer vendor for technical assistance. For information about your warranty, see your computer's documentation.

## 5 Technical Information

### Functional Specifications

- ◆ Interface – AGP Pro 110
- ◆ Graphic controller – High-speed Wildcat chipset technology
- ◆ DAC speed – 250 MHz
- ◆ Data width – Frame buffer 256 bits; texture buffer 128 bits; DirectBurst 64 bits
- ◆ Video memory – Frame buffer 128 MB; texture buffer 128 MB; DirectBurst 32 MB
- ◆ Interrupts – PCI-assigned; Interrupt A for Wildcat 4210
- ◆ DMA channels – PCI, AGP 2x
- ◆ Connectors – Two DVI-I outputs; BNC connector; two 6-pin modular jacks; 3-pin miniDIN stereo sync output
- ◆ Dimensions – 2.20 in (5.6 cm) high x 13.34 in (33.9 cm) long by 4.25 in (10.8 cm) wide

### Requirements

- ◆ Expansion slots – One AGP Pro 110 slot and two adjacent PCI slots (one for the on-board power supply and one for cooling)
- ◆ Power – 85 W maximum; 12.0 V 250 mA maximum; 5.0 V 9.8 A maximum; 3.3 V 10 A maximum

### 3D Performance

Performance numbers reflect maximum hardware rate. Numbers may vary depending on the application.

- ◆ 3D Gourad-shaded triangles, Z-buffered, 15-pixel – 12.0 M triangles/sec
- ◆ 3D Gourad-shaded triangles, Z-buffered, 25-pixel – 8.5 M triangles/sec
- ◆ 3D Vectors, solid color, 10-pixel – 17.6 M vectors/sec

## Resolutions and Refresh Rates

Supported monitor resolutions and refresh rates may vary depending on the monitor.

<b>Monitor Resolutions (bits per pixel)</b>	<b>Max. Refresh Rates (Hz)</b>	<b>SuperScene AA</b>	<b>Frame Sequential Stereo</b>
1280 x 1024	85	Yes	Yes
1920 x 1440	75	-	-
1856 x 1392	85	-	-
1824 x 1368	90	-	-
1792 x 1344	75	-	-
1600 x 1200	90	Yes	-
1280 x 960	85	Yes	Yes
1152 x 864	85	Yes	Yes
1024 x 768	85	Yes	Yes
800 x 600	85	Yes	Yes
640 x 480	85	Yes	Yes
1920 x 1200	76	-	-
1824 x 1128	75	Yes	-
1792 x 1120	75	Yes	-
1600 x 1024	76	Yes	-
1440 x 900	90	Yes	Yes
1280 x 800	90	Yes	Yes
2048 x 1152	75	-	-
1920 x 1080	85	Yes	-
1600 x 900	85	Yes	-
1520 x 856	90	Yes	Yes
1360 x 766	90	Yes	Yes
1280 x 720	85	Yes	Yes
856 x 480	85	Yes	Yes

## Connectors

The Wildcat 4210 is an AGP Pro 110 card designed for computers that have an AGP Pro 110 slot. The card plugs into the AGP Pro 110 slot and an adjacent PCI slot.

**NOTE** A Wildcat 4210 cannot plug into a standard AGP slot.

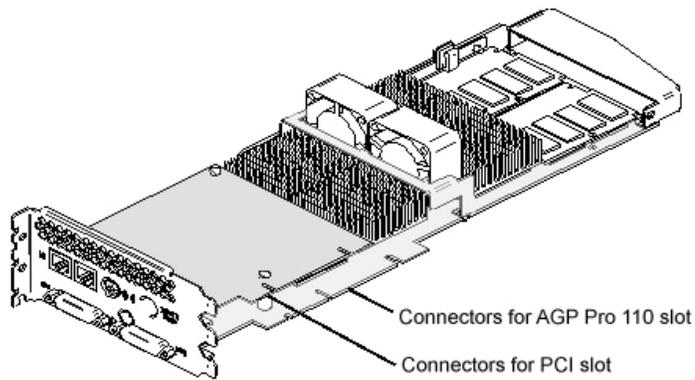


Figure 15. Expansion slot connectors

The card has several external ports for external devices and computer connections. The following sections describe the ports in detail.

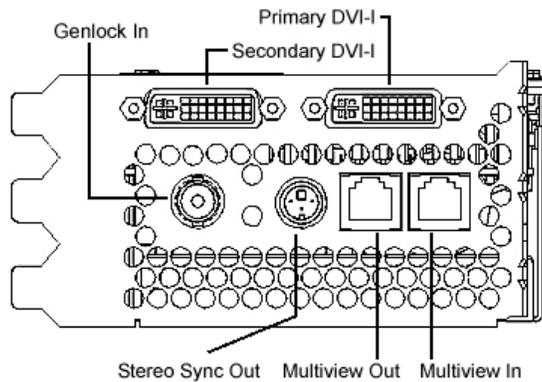


Figure 16. External connectors

## **DVI-I Out Ports**

The primary and secondary digital video output ports are DVI-I receptacles with 29 signal contacts as specified by the Digital Visual Interface specification (Revision 1.0). These ports support pixel rates up to 112 MHz using the SII150 A PanelLink device from Silicon Image. The ports are fully compliant with the DVI specification, and support digital and analog displays.

## **Genlock In Port**

This port is a 75-ohm male BNC connector that is used to connect to a 75-ohm coaxial cable terminated with a female BNC connector. The port allows video timing to be synchronized to an external timing source. The port provides a periodic signal to the display system to lock vertical refresh rate.

## **Stereo Sync Out Port**

This port is a female, 3-pin, mini-DIN connector. The port provides connection to the emitter module for LCD shutter glasses or to other stereo shutter devices.

## **Multiview In and Out Ports**

These ports are two 6-pin modular jack connectors. They allow Multiview support for frame locking and rate locking of multiple computers.