3Dlabs, Inc.
Wildcat II 5110 Graphics Accelerator Card
User's Guide

3Dlabs_labs_

Caution: Changes or modifications to your 3Dlabs Graphics Accelerator Card not expressly approved by 3Dlabs, Inc. voids the user's warranty.

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

1. Re-orient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
4. Consult 3Dlabs or an experienced radio/TV technician for assistance.

Compliance with FCC Rules requires that a shielded cable be used to connect to other equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.

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

3Dlabs, Inc. makes no representation that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

Specifications Subject to Change Without Notice

P/N DH002000

CONTENTS

Welcome to 3Dlabs!

Thank you for selecting a 3Dlabs® Wildcat® II 5110 Graphics Accelerator Card!

This User Guide is designed to provide information about the Wildcat II 5110 Graphics Accelerator Card. In addition to this guide you are strongly encouraged to use the on line help included in the 3Dlabs driver software Help screens.

System Requirements

You must have Microsoft Windows NT 4.0 with Service Pack 5 (or later) or Windows 2000 installed. To take advantage of the dual-screen option, you must have Windows 2000 installed.

- Pentium II®or greater processor
- Microsoft® Windows® NT 4.0 with Service Pack 5 (or later) or Windows 2000
- AGP Pro 50 expansion slot
- One open PCI slot adjacent to the AGP Pro 50 slot
- Minimum of 32 MB DRAM (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 video display driver software

> Note: If you purchased the Wildcat II 5110 Graphics Accelerator Card as part of a system, it was preconfigured to operate in your system prior to shipment. No other modifications are necessary. Also, your system's video drivers were installed prior to shipment and are operative when you receive the system. No further installation or configuration is necessary unless you purchased a customer kit or need to reinstall your video card. Store the driver delivery media that came with your system in a safe place in case you ever need to reinstall the drivers.

For more detailed information on the operating system, refer to the printed and online documentation delivered with the system.

Features

Card Interface	AGP Pro 50 card designed for systems that have a 50-watt AGP Pro slot. NOTE: THE WILDCAT II 5110 CANNOT PLUG INTO A STANDARD AGP SLOT.
Video Memory	Frame Buffer: 64 MB Texture Buffer: 64 MB DirectBurst: 16 MB
Graphics Controller	High-speed Wildcat chipset technology with dual display support.
RAMDAC	300 MHz
Plug-and-Play Monitor Support	Yes
Accelerated 3D API	OpenGL
Maximum Resolution; Aspect Ratio; Refresh Rate	2048 x 1152; 16:9; 75 Hz NOTE: SUPPORTED REFRESH RATES, MONITOR RESOLUTIONS, ASPECT RATIOS, AND COLOR DEPTHS DEPEND ON YOUR TYPE OF MONITOR, WHETHER OR NOT YOU HAVE MULTISAMPLING SELECTED AND IF YOU ARE USING SINGLE OR DUAL MONITORS. SEE *Appendix A, Specifications*, FOR A LIST OF SUPPORTED RESOLUTIONS AND REFRESH RATES. TO DISPLAY AT A SPECIFIC RESOLUTION WITH THE DESIRED REFRESH RATE, BOTH THE VIDEO CARD AND MONITOR MUST SUPPORT IT. REFER TO THE DOCUMENTATION THAT CAME WITH YOUR MONITOR FOR A LIST OF SUPPORTED VIDEO RESOLUTIONS.
Power Management Support	Display Power Management Signaling (DPMS) Advanced Configuration and Power Interface (ACPI)
Geometry Acceleration	- 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

Features, cont.	
Traditional 2D Operations	• 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
OpenGL (1.2 Compliant) Operations	• Image support for multiple formats, zooming, bilinear scaling, color matrix, and color tables • Harware accumulation operations • Fogging: linear, exponential, exponential^2, and user-defined • Antialiased points, vectors, and polygons • Points (2D, 3D wide) • Vectors (2D and 3D lines, line strips; wide, stippled) • Polygons (triangles, triangle strips, quads, quad strips, polygons, point/line polygon mode) • Texture mapping: point, bilinear, trilinear, and multiple internal formats • 24- and 32-bit depth buffering • Alpha operations • Scissoring • Dithering • Fast window clears • Window clipping • Fast window-mode double buffering • Masking • Frame-sequential and interlaced stereo support • Matrix transformations • Stencil operations • Rich set of blending operations

Features, cont.	
OpenGL (1.2 Compliant) Extension Support	- Imaging Extensions: - Pixel buffer - Color table - Color matrix - Convolution - Blend Extensions: - Color - Minmax - Function separate - Subtract - Fog Extensions: - Fog function - Fog offset - Occulsion culling - Texture Extensions: 3D textures: edge, border, and LOD clamps - Mipmap generation - Video Extensions: - Interlace - Interlace read 422 pixels - Swap Control Extensions: - Swap control - Swap frame lock - Swap usage - Texture color table - Pixel texture and 3D texturing - Pbuffer - Image buffer - Gamma - Stencil operation wrap - Separate specular - Post-texturing specular

Features, cont.	

Additional Features	• SuperScene full-scene multisampled anti-aliasing:
	    • Point sampled with sixteen samples
	    • Sample location jittering
	    • Dynamic sample allocation
	    • Dynamic sample backoff
	• Two video look-up tables
	• Eight stencil planes
	• Eight double-buffered overlay planes
	• 32-bit Z buffer
	• High-performance DACs that directly drive display devices
	• DDC2B Display Data Channel standard
	• Head-mounted displays and shutter glasses (frame sequential and interlaced stereo required)
	• Onboard texture memory with full mipmapped trilinear interpolated texture processing
	• Digital Video Interface (DVI)-I display support
	• Direct Draw support (direct mapped frame buffer)
	• Big and Little Endian support
	• Global and local texture modes
	• Textures per screen

CHAPTER 2 – SETUP

Preparing for Installation

Note: If you purchased your Wildcat II 5110 Graphics Accelerator Card as part of a system, it was installed and configured prior to shipment. The following instructions for hardware installation are necessary only if you purchased a customer kit or need to reinstall your video card.

Before you begin your installation

1. Save any work in progress and exit any open applications. Always back up your system before you install any new hardware or software.
2. Have a Phillips-head screwdriver ready.
3. Turn off power to the computer.

Important: Physically remove the power cord from the system 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 system during installation procedures.

4. Take every possible precaution against static electricity as you prepare to install the card. Static can damage components. If an anti-static wrist strap was included in your box, please use it during hardware installation. You should also try to work in a static free area (such as on a tile floor rather than carpet).
   - Touch the metal chassis of the computer to drain off any static electricity before touching the card.
   - 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.

Note: Be sure to register your new card using one of the options described on page 16.

Installing your Wildcat II 5110 Graphics Accelerator Card

1. Refer to your computer's documentation for instructions on opening and closing the computer, identifying the AGP Pro expansion slot and PCI expansion slots, and adding expansion cards.
2. Check your system documentation to locate the appropriate slots which to install your card. Your Wildcat II 5110 Graphics Accelerator Card includes an adjacent (attached) power supply card. The adjacent PCI slot must be empty for cooling purposes.
3. Turn off power to the computer and to the monitor and disconnect the cables from the computer (follow the instructions under *Before you begin your installation*).

   Note: If you are replacing a graphics card, be sure to uninstall your old video driver software before tuning off your system and removing your old graphics card. Refer to *Installing the Driver Software* later in this chapter for details on uninstalling drivers.

4. Remove the cover from your system so you can access the slots into which you will be installing your Wildcat II 5110 Graphics Accelerator Card. If you have not already removed any existing graphics card(s) from your system, then do so now.
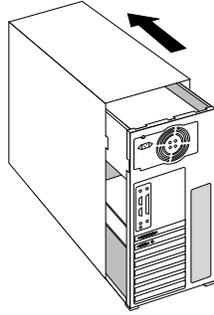
5. If necessary, remove the back panel covers from the slots into which you are installing your Wildcat II 5110 Graphics Accelerator Card, using a Phillips-head screwdriver.
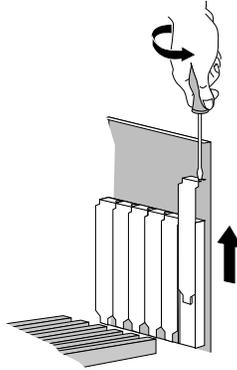
6. If an anti-static wrist strap was included in your box, attach it to your wrist and attach the other end to a bare metal (as opposed to painted or sticker covered) surface on your system's chassis.

7. Remove your Wildcat II 5110 Graphics Accelerator Card from its anti-static packaging. Write down the serial number for product registration and future use. The serial number is located on a board label and looks like this:

136001B123456 Made in XXX Week XXXX

8. Place the card into the correct slots and seat firmly. See your system documentation for instructions on securing the card to the chassis. Loose cards and connections can cause grounding and operating problems.

AGP Pro 50
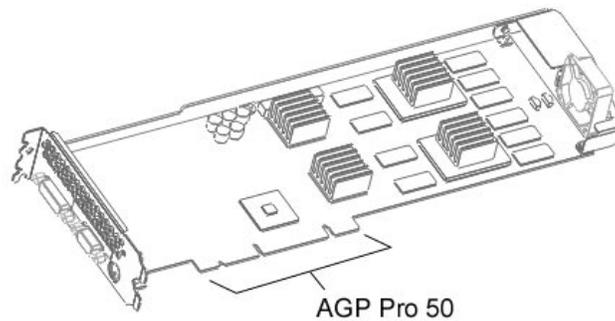
9. Remove the anti-static wrist strap, if used, and replace the cover on your system.
10. Reconnect the power cord.

If you are upgrading the graphics card in your system

> Note: These instructions may be different than how you normally upgrade your graphics card or other devices, but have been found to be the best method of insuring a successful installation of your new hardware and software.

1. Uninstall the drivers for your old graphics card. Refer to your old graphics card's documentation or Help files for instructions on removing or uninstalling the old graphics card's driver software.
2. Remove the existing graphics card from your system. To install your Wildcat II 5110 Graphics Accelerator Card, see the hardware installation instructions.
3. Install the Wildcat II 5110 Graphics Accelerator Card driver software; see *Installing the Driver Software* later in this chapter.

Connecting the Monitor

The Wildcat II 5110 supports connections for one VGA monitor, one flat panel monitor, or two VGA monitors (with one using an adapter for the DVI-I connector). The Wildcat II 5110 has one DVI-I connector and one VGA connector.

VGA connector (analog)   DVI-I connector (digital)
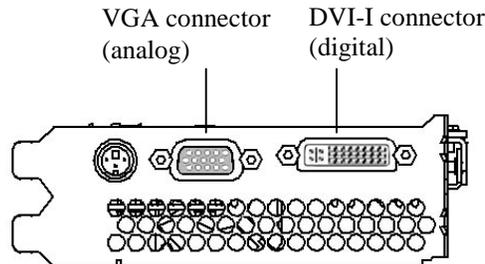
Connecting a VGA monitor

1. Make sure the power to the computer is turned off.
2. Connect the workstation monitor's video cable to the 15-pin D-Sub connector on the Wildcat II 5110 video card.
3. Turn on power to the workstation. If the monitor's Power On LED does not illuminate or the monitor does not display the startup sequence, consult Chapter 4, *Troubleshooting*.

Connecting two VGA monitors

Note: If you are connecting more than one VGA monitor to the Wildcat II 5110, you must use a DVI-Analog adapter to connect to the DVI-I connector.

The secondary monitor may be an analog flat panel monitor.

1. Make sure the power to the computer is turned off.
2. Follow the instructions under *Connecting a VGA monitor* for connecting the first VGA monitor.
3. Connect the second monitor's 15-pin VGA connector to the VGA end (see below) of the DVI-Analog adapter.
4. Connect the DVI-I end of the adapter to the DVI-I port on the Wildcat II 5110 video card.
5. Turn on power to the workstation. If the monitor's Power On LED does not illuminate or the monitor does not display the startup sequence, consult Chapter 4, *Troubleshooting*.

Connecting a Digital Flat-panel monitor

> Note: The Wildcat II 5110 features support for one digital flat-panel monitor via a DVI-I connector (with DVI-D functionality).

1. Make sure the power to the computer is turned off.
2. Connect the workstation monitor's video cable to the DVI-I connector on the Wildcat II 5110 video card.
3. Turn on power to the workstation. If the monitor's Power On LED does not illuminate or the monitor does not display the startup sequence, consult Chapter 4, *Troubleshooting*.

Attaching a Stereo Device

Power off your system and connect the stereo hardware to the round, stereo connector on the card. See the documentation that came with your stereo hardware for information on how to use stereoscopic display. Plug in and start up your system, including peripherals, and log on to your operating system.

> Note: To configure the display settings for stereo display, see Chapter 3, *Using the Video Card* for step-by-step instructions.

Stereo connector

3-Pin
Minidin
Stereo
Connector
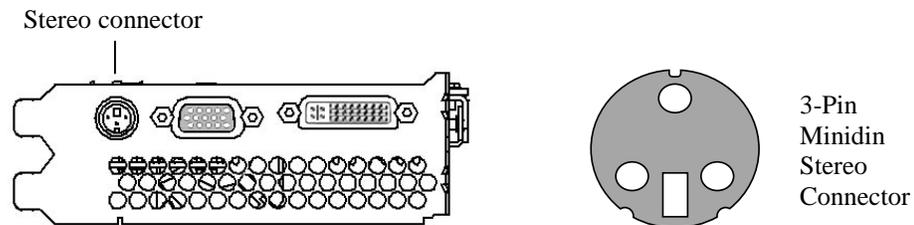
Installing the Driver Software

If you received your Wildcat II 5110 Graphics Accelerator with a system, the graphics drivers were installed prior to shipment. This section only applies if you purchased your Wildcat II 5110 as an upgrade, are reinstalling the driver, or are updating the operating system to Microsoft Windows 2000.

This section describes the two software installation processes for supported Windows operating systems.

Make sure your computer is ready

Make sure your workstation has the following before installing Wildcat II 5110 driver software:

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

Important: You must have the correct driver for the Windows NT 4.0 or Windows 2000 operating system. If you are unsure, refer to the README.TXT file located on the driver delivery media for this information. Refer to the Microsoft Windows NT 4.0 or Windows 2000 documentation and online Help for more information on installing drivers and software application programs. If you are removing and reinstalling the Wildcat II 5110 driver, see *Chapter 4 Reinstalling the Video Driver*.

Removing an existing driver under Windows NT

1. Start up Windows NT. Log on using an account with administrative privileges.
2. From the operating system Start menu, go to Settings/Control Panel and double-click Add/Remove Programs.
3. On the Add/Remove Programs Properties Install/Uninstall tab, highlight the Display Driver you are removing and click Add/Remove.
4. Click Yes when prompted to confirm the driver removal, and follow the prompts. Reboot the system before installing the new Wildcat II 5110 driver.

Installing your Wildcat II 5110 Windows NT driver

1. Start up Windows NT. Log onto an account with administrative privileges.
2. Place the 3Dlabs driver delivery media in the appropriate drive.
3. From the operating system Start menu, go to Settings/Control Panel/Display and click the Settings tab.
4. Click Display Type, then click Change.
5. In the Change Display dialog box, click Have Disk.
6. In the Install From Disk dialog box, type the path to the drive or directory that contains the delivery media.
7. In the Change Display dialog box, verify that the Wildcat II 5110 driver is highlighted, then click OK.
8. Click Yes when asked if you want to install a third-party driver. The files are copied from the delivery media.
9. After the driver files are copied, a message that the driver successfully installed displays. Click OK.
10. Click Close to exit the Display Type dialog box.
11. Click Close to exit the Display Properties dialog box.
12. When told that the workstation must be restarted for the new settings to take effect, remove the driver media from the disk drive. Click Yes to restart the workstation.
13. After the system restarts and you log on, 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.

Removing an existing driver under Windows 2000

1. Start up Windows 2000. Log on using an account with administrative privileges.
2. From the operating system Start menu, go to Settings/Control Panel and double-click Add/Remove Programs.
3. Under Change or Remove Programs, highlight the current Display Driver and click Change/Remove.
4. Click Yes when prompted to confirm the driver removal, and follow the prompts to complete the driver removal.
5. Click OK when notified that the driver removal is complete and reboot your system.

Installing your Wildcat II 5110 Windows 2000 driver

1. After installing your Wildcat II 5110 Graphics Accelerator Card, start up Windows 2000 and log on using an account with administrative privileges. The Hardware Wizard appears.
2. Click Next on the Found New Hardware Wizard.
3. Under Install Hardware Device Drivers, click "Search for a suitable driver for my device (recommended)," 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 in the appropriate drive; 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, then click OK to continue with the installation.
7. Once the driver successfully installs, click Finish to dismiss the Found New Hardware Wizard.

Important: 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 – 7 above to complete the installation.

8. When told that the workstation 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 workstation.

Heidi Drivers for AutoDesk Applications

The Wildcat II 5110 Heidi® device driver allows full screen multisampling of and compatibility with AutoDesk applications as well as hardware acceleration of the Wildcat II 5110 through the use of OpenGL. To install the Heidi driver and to activate full screen multisampling, consult the README.TXT located on disk 3 of the Wildcat II 5110 delivery media.

Verify the Default Video Display Driver

This section describes how to verify the correct display driver is loaded on your workstation.

Verifying the default video display driver in Windows NT

1. From the operating system Start menu, go to Settings/Control Panel/Display, and click the Settings tab on the Display Properties dialog box.
2. Click Display Type, then verify that Wildcat II 5110 is listed under Display. This indicates that the appropriate driver is installed.
3. Click Cancel to close the Display Properties dialog box.

Verifying the default video display driver in Windows 2000

1. From the operating system Start menu, go to Settings/Control Panel/Display, and click the Settings tab on the Display Properties dialog box.
2. Verify that two Wildcat II 5110 devices are listed under Display. This indicates that the appropriate driver is installed.

   Note: If only one Wildcat II 5110 device is listed, you may not have completed installation. Refer to *Installing the Driver Software* for instructions.

3. Click Cancel to close the Display Properties dialog box.

Verify the System Startup Version

This section describes how to verify the correct system startup version is active on your workstation.

Verifying the system startup version in Windows NT

1. From the operating system Start menu, go to Settings/Control Panel/System.
2. Click the Startup/Shutdown tab.
3. Verify that Windows NT Workstation Version 4.0 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 II 5110 graphics driver is not running.

4. Click OK to close the System dialog box.
5. Reboot your system for the change to take place.

Verifying the system startup version in Windows 2000

1. From the operating system Start menu, go to Settings/Control Panel/System/Advanced.
2. Click Startup and Recovery.
3. On the Startup and Recover dialog box, verify that "Microsoft Windows 2000 Professional" is the listed as the Default operating system, then click OK.
4. Click OK to close the System Properties dialog box.

Checking the Video Image

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

   Note: See *Chapter 3, Using the Video Card,* for instructions on defining the display properties.

Registering Your 3Dlabs Graphics Accelerator Card

When you register your 3Dlabs Graphics Accelerator Card you:

- Activate your warranty
- Receive notification of software updates
- Qualify for technical support

You can complete the registration card and return it to us in the mail, or register on-line once your hardware and software installations are complete. (You must have Internet access to register on-line.)

1. Open your Internet browser.
2. Go to http://www.3dlabs.com/products/register.asp
3. Fill out the registration form that appears on your screen, and click Submit when you are finished.

CHAPTER 3 – SOFTWARE CONFIGURATION

The 3Dlabs Wildcat II 5110 Graphics Accelerator Card Driver

The 3Dlabs Wildcat II 5110 driver software lets you optimize the working relationship between your card, your system and your applications.

This chapter contains instructions for configuring the video display, stereo display, and dual monitors.

Configuring the Video Display

Once the drivers are installed properly in Windows NT 4.0 or Windows 2000, the Display Properties dialog box will have two additional tabs: Wildcat Configuration and Wildcat Monitor.

Using the Wildcat Configuration tab

1. Make sure you are logged into the non-VGA version of Windows NT 4.0 or Windows 2000. Refer to Windows NT 4.0 or Windows 2000 documentation or online Help for instructions, if necessary.
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 Wildcat Configuration tab if it is not already displayed. In Windows 2000 follow the same path. Click the Settings tab and then Advanced.
4. Click the Wildcat Configuration tab if it is not already displayed. On the Wildcat Configuration tab:

   - Click Hardware Info to view the current hardware settings.

   - Click View Config to view your current display configuration.

   - Click Config Wizard to activate a step-by-step interface that will help you modify your current display configuration or create a new one. On the Wildcat Configuration Wizard, click Next and follow the prompts to create a new configuration, or modify or delete an existing one. See *Enabling application-specific optimizations* and *Creating a custom configuration* later in this chapter for more information.
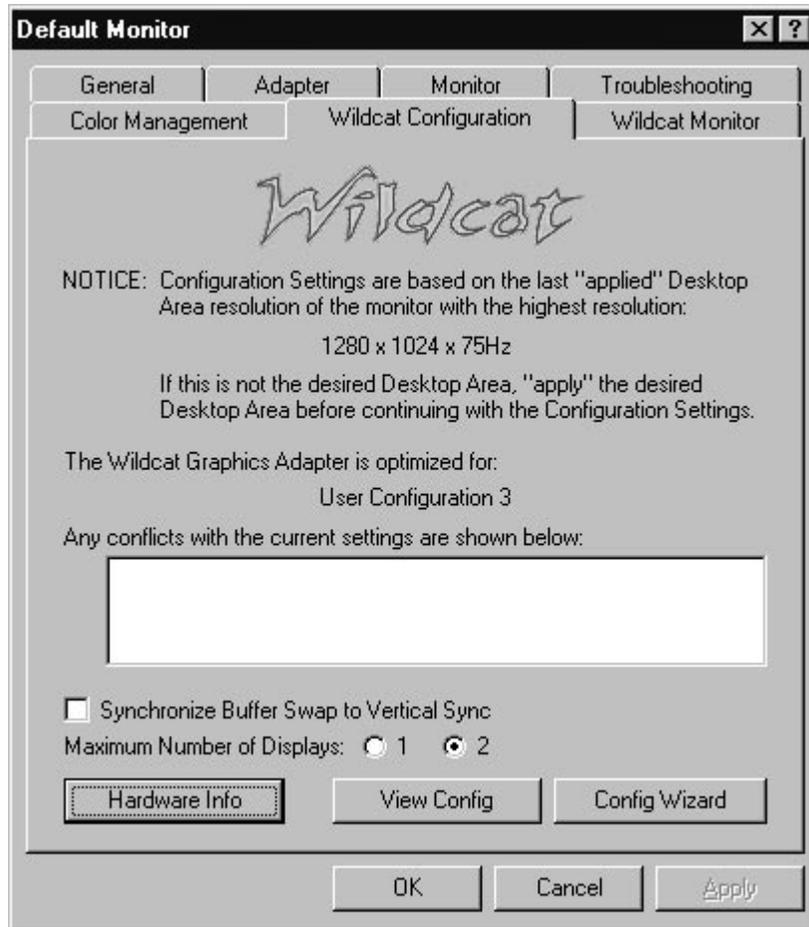
Using the Wildcat Monitor tab

1. On the Display Properties dialog box, click the Wildcat Monitor tab. This tab contains commands for adjusting the resolution, color depth, and refresh rate. See the steps under *Using the Wildcat Configuration tab* if you need instructions on opening the Display Properties dialog box.
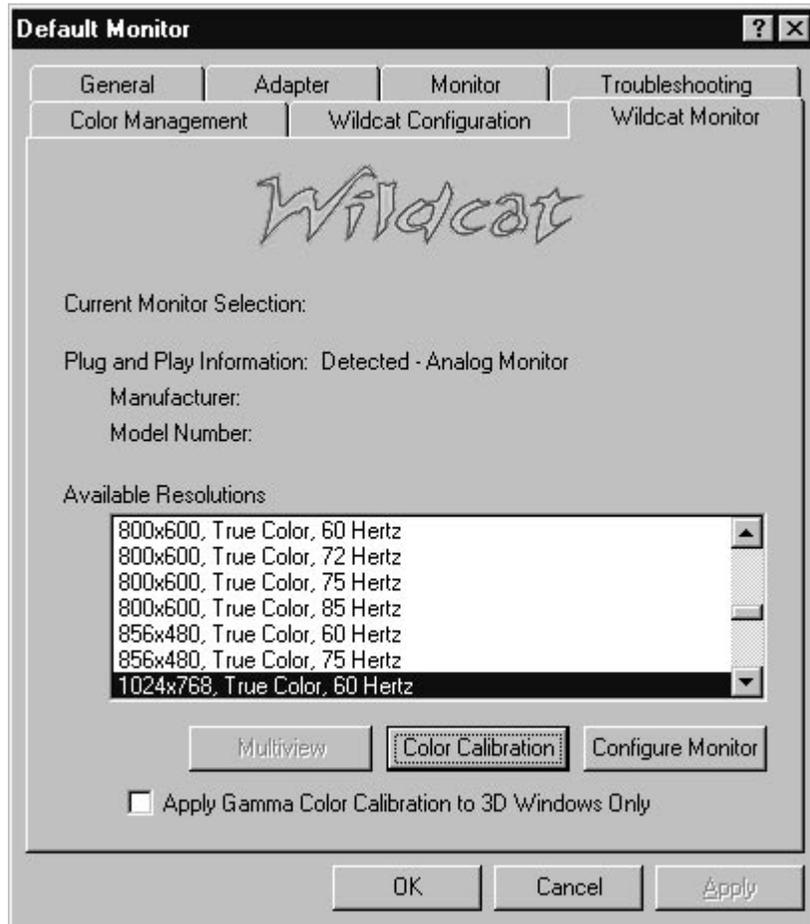
2. Click Color Calibration to modify the color settings. Make your modifications to the Color Calibration dialog box, then click OK to accept the changes and dismiss the Color Calibration dialog box, or click Cancel to close the Color Calibration dialog box without making any changes. You are returned to the Wildcat Monitor Display Properties dialog box.

   Note: The option "Apply Gamma Color Calibration for 3D Windows Only" is available only under Windows 2000. Windows NT allows you to apply Gamma Color Calibration, but applies calibration to all windows (not just 3D windows).
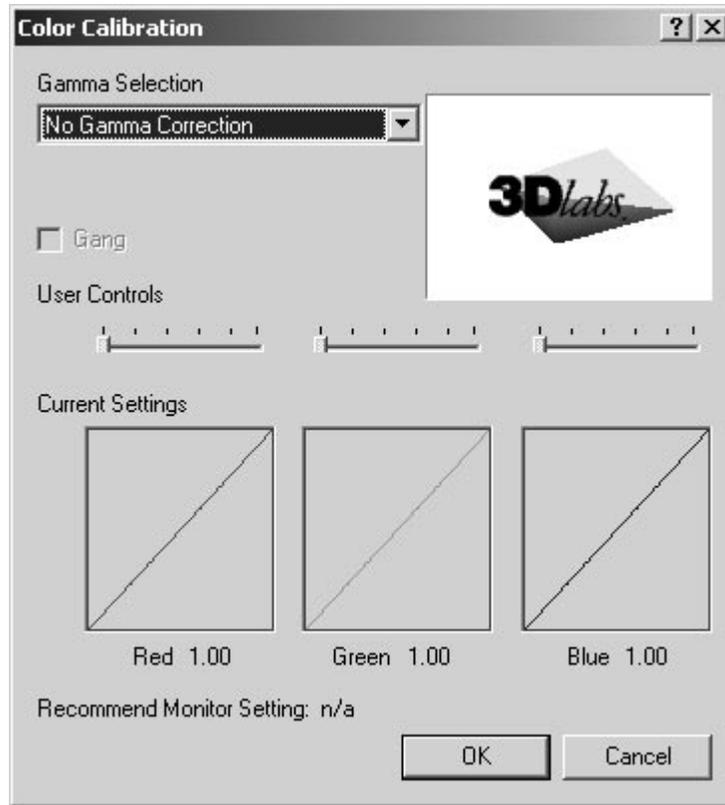
3. On the Wildcat Monitor Display Properties dialog box, click Configure Monitor to change the display mode, select a monitor type, and change the resolution/refresh rate. Once you have made the changes you require, click OK to accept the new configuration and dismiss the Configure Monitor dialog box. You are returned to the Wildcat Monitor Display Properties dialog box.

4. In Windows 2000, click OK on the Display Properties dialog box to accept the changes. In Windows NT, you must return to the Settings page, then click OK to accept the changes.

5. Reboot the workstation if you are prompted to do so. Most changes will take effect without rebooting.

Note: See *Appendix A, Specifications*, for a list of available monitor resolutions.

See *Enabling Stereo Display* in this chapter for instructions on changing the Display Mode.

See *Enabling the Dual Monitor Feature under Windows 2000* in this chapter for instructions on configuring dual displays.

Enabling stereo display

If you connect a device to the stereo port on the Wildcat II 5110, you must change the display mode to view in stereo. See *Chapter 2, Setup,* for an illustration of the stereo output port.

1. Make sure your stereo display device is properly connected to the stereo output port on the Wildcat II 5110. See *Chapter 2, Connecting a Stereo Display Device* for more information.
2. On the Wildcat Monitor tab under Display Properties, click Configure Monitor. The Configure Monitor dialog box displays.
3. Select one of the Stereoscopic Display modes from the Display Mode pulldown, then click OK. You are returned to the Display Properties dialog box.
4. If you are prompted with the following message: "The selected monitor cannot display the current desktop area. Select a new resolution before applying these changes," click OK then select a resolution from the list of available resolutions.
5. Click OK if the display is correct and you wish to keep the new settings. The Display Properties dialog box is dismissed.
6. Click OK to accept the new display mode and dismiss the Display Properties dialog box.

> Note: You must disable stereo mode when you no longer wish to view in stereo. Follow the steps above, and select Monoscopic Display under Display Mode to disable stereo mode.

Enabling Multiview and Genlock

Some Wildcat II 5110s come with optional Multiview support for frame locking and rate locking of multiple workstations. Optional Genlock support allows video timing to be synchronized to an external timing source.

> Note: Your Wildcat II 5110 and your application must support Multiview for Multiview to work. Refer to the Wildcat support area on http://www.3dlabs.com for information on ordering the correct cables.

Enabling Multiview features

1. Insert one end of a shielded RJ12 cable into the Multiview Out port of the first workstation. This workstation becomes the "Master"
2. Insert the other end of the cable into the Multiview In port of the second workstation. This workstation becomes a "Slave."
3. If connecting more than two workstations, continue linking workstations to one another by connecting the Multiview Out port of one workstation to the Multiview In port of the next. The last workstation should terminate the links and only have a cable plugged into the Multiview In port.

Confirming multiview cables are detected

1. From the system Start menu on the Slave workstation(s), go to Settings/Control Panel/Display.
2. On the Display Properties dialog box, click the Settings tab.
3. If running Windows NT 4.0 skip to step 4. Under the Settings tab in Windows 2000, click Advanced. The Advanced Properties dialog box displays.
4. Click the Wildcat Monitor Tab, then click Multiview.
5. The Input Cables will show as Detected under Multiview Information.

Enabling genlock features

1. Connect the external timing source to the Genlock In port on the Master.
2. From the system Start menu, go to Settings/Control Panel/Display.
3. On the Display Properties dialog box, click the Settings tab.
4. Under the Settings tab, click Advanced. The Advanced Properties dialog box displays.
5. Click the Wildcat Monitor Tab, then click Multiview.
6. Under Genlock Configuration, choose Enable.
7. Choose the signal source from the Source pull-down menu.
8. Select the Signal Edge Response, Signal Lock Rate, and Pixel Align Offset appropriate for your application and hardware setup. Click Apply.

> Note: Some monitors require custom timing file entries for Genlock to be properly maintained. Please refer to the documentation delivered with your monitor for further information.

Configuring Dual Monitors under Windows 2000

The Wildcat II 5110 features dual monitor support under Windows 2000. The dual monitor feature allows two VGA monitors to be connected to the card so the display area stretches across both monitors.

> Note: This feature is available only with workstations running Windows 2000. Before enabling the dual monitor feature, connect the second monitor to the secondary display port (see *Connecting the Monitor* for instructions).

Enabling the Dual Monitor Feature under Windows 2000

1. From the operating system Start menu, go to Settings/Control Panel/Display.
2. On the Display Properties dialog box, click the Settings tab.
3. Under the Settings tab, click Advanced. The Advanced Properties dialog box displays.
4. Click the Wildcat Configuration Tab, then next to Maximum Number of Displays, select 2.
5. Click Apply.
6. Click Yes to restart the system.
7. If you have not already done so, connect the second monitor, then turn on power to the workstation. The primary monitor will display the startup sequence. If either monitor's Power On LED does not illuminate, or if the primary monitor does not display the startup sequence, consult *Chapter 4, Troubleshooting*.
8. Start up Windows 2000 and log on using an account with administrative privileges.

9. From the operating system Start menu, go to Settings/Control Panel/Display.
10. On the Display Properties dialog box, click the Settings tab. The monitors display as icons labeled 1 (for primary) and 2 (for secondary).
11. Highlight monitor 2 and click "Extend my Windows desktop onto this monitor."
12. Drag the monitor icons to match the physical arrangement of your monitors.
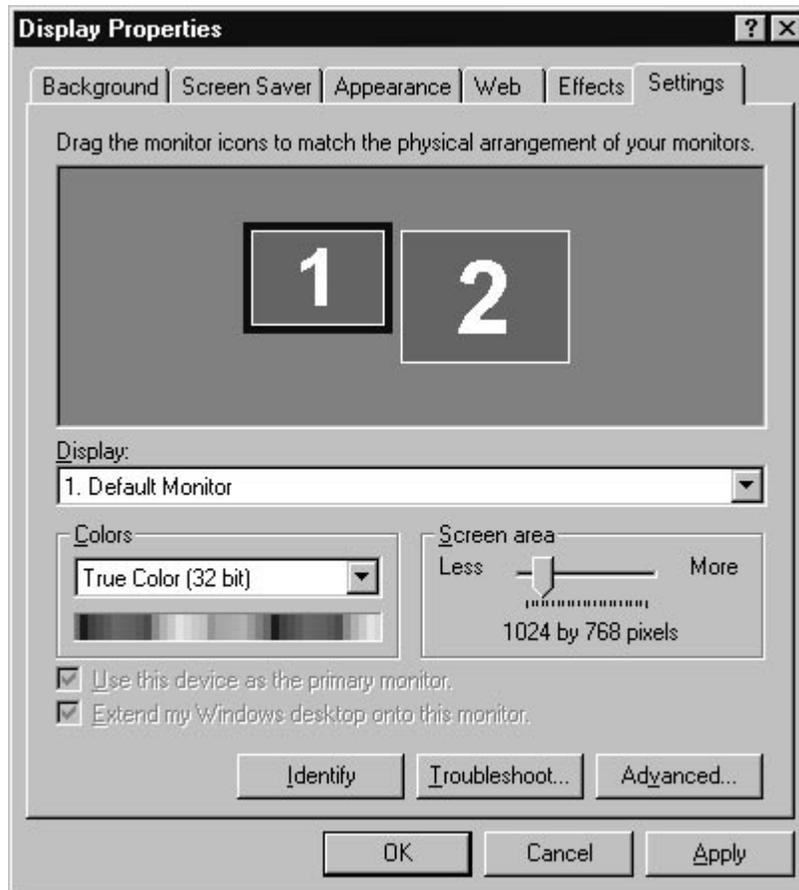
Adjusting colors or resolutions of either monitor

1. Click the icon for that monitor or select the monitor from the pulldown menu under Display.
2. With the monitor to adjust selected, make changes to the Colors or Screen area.
3. Select the other monitor icon or select from the pulldown menu under Display to change the color or resolution of the other monitor.

   Note: Any changes made under Advanced Properties will affect both monitors.

Optimizing the Wildcat II 5110 driver

Refer to the documentation that came with your application for information on optimization support. If your application supports optimized configurations, you can choose to enable the application manufactureer's pre-set configurations or create your own.

Enabling application-specific optimizations

1. From the operating system Start menu, go to Settings/Control Panel/Display. In Windows NT 4.0, click the Wildcat Configuration tab if it is not already displayed. In Windows 2000 follow the same path; then click the Settings tab and then Advanced.
2. Under the Wildcat Configuration tab, select Configuration Wizard. Click Next to continue.
3. If your application supports optimized configurations, select the configuration for your application from the Configuration pulldown menu and click Next to view a summary of the application-specific configuration.
4. Click Finish to save your configuration and dismiss the Wizard, or click Cancel to close the Wizard without accepting any changes.

   Note: You cannot alter the application manufacturer's pre-set configuration. If you want some (but not all) features of the application manufacturer's configuration, you must create a customized configuration. See *Creating a custom optimization* for instructions.

EnablingDirect3D Optimizations

1. From the operating system Start menu, go to Settings/Control Panel/Display. In Windows NT 4.0, click the Wildcat Configuration tab if it is not already displayed. In Windows 2000 follow the same path; then click the Settings tab and then Advanced.
2. Under the Wildcat Configuration tab, select Configuration Wizard. Click Next to continue.
3. From the configuration pull down menu, select Default Direct3D Settings, then click Next.

   Note: Configuring the Wildcat II 5110 for Direct3D will use all available offscreen memory.

4. Click Finish to save your configuration and dismiss the Wizard, or click Cancel to close the Wizard without accepting any changes.

Creating a custom optimization

1. From the operating system Start menu, go to Settings/Control Panel/Display. In Windows NT 4.0, click the Wildcat Configuration tab if it is not already displayed. In Windows 2000 follow the same path; then click the Settings tab and then Advanced.
2. Under the Wildcat Configuration tab, select Configuration Wizard. Click Next to continue.
3. Select New Configuration on the pulldown menu, then click Next.
4. Enter a name for the new configuration, then select the configuration you want to use as a model for your customized configuration.
5. The Wizard will step you through driver optimization. When you are finished, click Finish to view the Configuration Summary.
6. Click Finish to save your configuration or Canel to dismiss the Wizard.

CHAPTER 4 – TROUBLESHOOTING

Troubleshooting

If you have trouble using your 3Dlabs Wildcat II 5110 Graphics Accelerator Card or a 3D application, you may find the answer to your problem in the following sections. Always start your problem- solving efforts with the simplest solution and work up to the more complex ones.

Monitors and Display Resolutions

Problem: **My monitor is either blank, or the displayed image is distorted, scrambled or smaller than I expected.**

Solution: If the monitor is blank, be sure that your system and monitor are plugged in and turned on. Is the monitor's power cord attached securely? Check each component's documentation for the location and use of power connectors and switches.

Solution: Make sure that your video cable is connected securely to the monitor *and* to the monitor connector on your Wildcat II 5110 Graphics Accelerator Card. See your monitor documentation and *Chapter 1 - Installation*, in this document.

Solution: Your card might not be seated properly in the AGP Pro slot. Remove and reinstall your card as described in *Chapter 1 - Installation.* Remember to use the anti-static wrist strap when opening your system and handling the card.

Solution: Use the Last Known Good option in Windows NT, or restart Windows 2000 in Safe Mode and select a supported resolution and refresh rate. See *Obtaining a Usable Video Resolution* later in this chapter for instructions.

Solution: Reboot 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 workstation is defective. See *Obtaining a Usable Video Resolution* in this chapter for instructions on determining if you have a defective unit.

Problem: **The performance of and/or the available resolutions for my Wildcat II 5110 Graphics Accelerator Card are not what I expected.**

Solution: The Wildcat II 5110 Graphics Accelerator Card driver may not have installed fully, or a file may have been corrupted. Try installing the driver again.

Solution: You may have selected a display setting that is incompatible with accelerated 3D graphics applications. See the Wildcat Monitor tab in your 3Dlabs display control panel for a list of compatible resolutions.

Solution: You may have not selected the correct monitor for your monitor vendor and type. Go to the Wildcat Monitor tab and select your monitor vendor and type from the list. If your vendor and/or monitor is not listed, consult your monitor documentation for alternatives..

Solution: Use the Last Known Good option in Windows NT, or restart Windows 2000 in Safe Mode and select a supported resolution and refresh rate. See *Obtaining a Usable Video Resolution* later in this chapter for instructions.

Diagnostics

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

Obtaining a Usable Video Resolution

The system 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, try the following proceedures to obtain a usable video resolution.

Using the Last Known Good option in Windows NT

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.

1. Restart the system.
2. Press the SPACE BAR at the following prompt: Press space bar NOW to invoke the **Last Known Good Menu**.

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

Booting into Safe Mode in Windows 2000

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

1. Restart the system.
2. At the boot screen, hit F8 to enter the Windows 2000 advanced options menu.
3. Choose Safe Mode, then hit ENTER to return to the boot screen.

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

Determining a defective unit

1. Save and exit from all files, if possible, then shut down the operating system.
2. Turn off the power to the monitor and to the workstation.

   Important: Always turn off the power to the workstation before connecting or disconnecting the cables.

3. Check and reseat all card and cable connections as needed.
4. Turn on the monitor power. If the Power On LED does not illuminate, see Getting Help in this section.
5. Turn on the power to the system 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 section.

Reinstalling the Video Driver

Note: You must have the correct driver for the Windows NT 4.0 or Windows 2000 operating system. If you are unsure, refer to the README.TXT file located on the driver delivery media for this information.

Refer to the Microsoft Windows NT 4.0 or Windows 2000 documentation and online Help for more information on installing drivers and software application programs.

If you are installing the Wildcat II 5110 driver, you must remove the current driver prior to installing the update.

Removing the existing Wildcat II 5110 driver under Windows NT

1. Log on using an account that has administrative privileges.
2. From the operating system Start menu, go to Settings/Control Panel and double-click Add/Remove Programs.
3. On the Add/Remove Programs Properties Install/Uninstall tab, highlight the Wildcat II 5110 Display Driver and click Add/Remove.
4. Click Yes when prompted to confirm the driver removal, and follow the prompts.

Reinstalling the video driver under Windows NT

1. Log on using an account that has administrative privileges.
2. Insert the delivery media into the appropriate device (for diskettes or CD).
3. From the operating system Start menu, go to Settings/Control Panel/Display and click the Settings tab.
4. Click Display Type, then click Change.
5. In the Change Display dialog box, click Have Disk.
6. In the Install From Disk dialog box, type the path to the directory that contains the delivery media.
7. In the Change Display dialog box, verify that the Wildcat II 5110 driver is highlighted, then click OK.
8. Click Yes when asked if you want to install a third-party driver. The files are copied from the delivery media.
9. After the driver files are copied, a message that the driver successfully installed displays. Click OK.
10. Click Close to exit the Display Type dialog box.
11. Click Close to exit the Display Properties dialog box.
12. When told that the workstation must be restarted for the new settings to take effect, remove the diskette from the workstation's floppy disk drive, if applicable. Click Yes to restart the workstation.
13. After the system 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.

Removing an existing driver under Windows 2000

1. Log on using an account that has administrative privileges.
2. From the operating system Start menu, go to Settings/Control Panel and double-click Add/Remove Programs.
3. Under Change or Remove Programs, highlight the Wildcat II 5110 Display Driver and click Change/Remove.
4. Click Yes when prompted to confirm the driver removal, and follow the prompts to complete the driver removal.
5. Click OK when notified that the driver removal is complete, and reboot your system if you are prompted to do so.

Reinstalling the video driver under Windows 2000

1. Log on using an account that has administrative privileges.
2. From the operating system Start menu, go to Settings, Control Panel, System. Under System, click the Hardware tab.
3. Click Device Manager, click Display Adapters, then select Wildcat II 5110
4. Right click on Wildcat II 5110, select Properties, then click Update Driver.
5. The Upgrade Device Drivers Wizard displays. Click Next.
6. Under Install Hardware Device Drivers, click "Search for a suitable driver for my device (recommended)," then click Next.
7. 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; then, click Next. The Wizard locates the driver installation files
8. Under Driver Files Search Results, click Next to start the installation.
9. Insert Disk 2 when prompted then click OK to continue with the installation.
10. Once the driver successfully installs, click Finish to dismiss the Install Hardware Device Drivers Wizard.

Important: Windows 2000 recognizes the dual pipelines as two devices. You must repeat Steps 4 – 10 above to complete the installation.

11. If prompted to restart the workstation, remove the delivery media from the disk drive and click Yes.

Online Information

If you cannot find the problem you are experiencing, or the solution to a problem, listed in this chapter, check the Troubleshooting FAQ list at http://www.3dlabs.com/support, or contact your vendor for additional help.

APPENDIX A – SPECIFICATIONS

A Specifications

General	
Manufacturer	3Dlabs
Model number	Wildcat II 5110
Functional	
System	**NOTE: IF YOU ORDERED THIS VIDEO CARD WITH A SYSTEM, IT WAS PREINSTALLED AND CONFIGURED FOR USE IN YOUR SYSTEM PRIOR TO SHIPMENT.**
Interface	AGP Pro 50
Graphic controller	High-speed Wildcat II chipset technology
DAC speed	300 MHz
Data width (dual pipeline)	• Frame buffer: 128 bits per pipeline • Texture buffer: 64 bits per pipeline • DirectBurst: 64 bits
Connectors	• 3-Pin, MiniDIN stereo sync output • 15-pin D connector • DVI-I compatable (DVI-D functional) Digital Video Output Port • BNC Connector (optional) • Two 6-pin modular jacks (optional)
Interrupts	• PCI-assigned • Interrupt A for Wildcat II 5110
DMA channels	• AGP 4X or 2X
Video memory	• Frame Buffer: 64 MB • Texture Buffer: 64 MB • DirectBurst: 16 MB
3D Performance	**NOTE: PERFORMANCE NUMBERS REFLECT MAXIMUM HARDWARE RATE. NUMBERS MAY VARY DEPENDING ON APPLICATION.** • 3D Gourad-shaded triangles, Z-buffered: 15.2 M Tri/Sec • 3D Gouraud-shaded triangles, Z-buffered, 25-pixel: 9.7 Million Tri/Sec • 3D Vectors, solid-color, 10-pixel: 24.2 M Vec/Sec
Dimensions	Height	1.52"
	Length	13.34"
	Width	4.28"
	Slots Required	• One AGP Pro 50 slot • One PCI slot (for cooling purposes)
Power Requirements	• 50 W maximum • 12.0V 100 mA maximum • 5.0V 1.1A maximum • 3.3V 13.1A maximum

Maximum Supported Resolutions	NOTE: THESE ARE **MAXIMUM SUPPORTED** MONITOR RESOLUTIONS AND REFRESH RATES. RESOLUTIONS AND REFRESH RATES MAY VARY DEPENDING ON YOUR MONITOR. NOTE: SUPERSCENE ANTIALIASING IS AVAILABLE AT RESOLUTIONS UNDER 1152 x 864 on a single display		
	Single display without SuperScene	1920 x 1440 @ 75 Hz	
		1600 x 1280 @ 76 Hz	
		2048 x 1152 @ 75 Hz	
		1920 x 1200 @ 75 Hz	
		1280 x 1024 @ 60 Hz	Stereo Available
		1280 x 960 @ 60 Hz	Stereo Available
	Single display with SuperScene	1152 x 870 @ 75 Hz	
		1376 x 768 @ 60 Hz	
		1280 x 800 @ 90 Hz	
		1024 x 768 @ 60 Hz	Stereo Available
	Dual display without SuperScene	1856 x 1392 @ 80 Hz	
		1600 x 1280 @ 76 Hz	
		2048 x 1152 @ 75 Hz	
		1920 x 1200 @76 Hz	
		1280 x 1024 @ 60 Hz	Stereo Available
		1280 x 960 @ 60 Hz	Stereo Available
	Dual display with SuperScene	800 x 600 @153 Hz	
		864 x 480 @ 60 Hz	
		640 x 480 @ 60 Hz	Stereo Available

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APPENDIX B – SOFTWARE LICENSE

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APPENDIX C – REGULATORY STATEMENTS

Declaration of Conformity

We, 3Dlabs, Incorporated,
480 Potrero Avenue
Sunnyvale, CA 94086
Phone 408-530-4700
Fax 408-530-4701
United States of America

declare under our sole responsibility that the

3Dlabs Graphics Accelerator product(s)

to which this declaration relates are in conformance with the following standards:

EN 55024:1998, clause 4.2.1
EN 55024:1998, clause 4.2.2
EN 55024:1998, clause 4.2.3
EN 55024:1998, clause 4.2.3.2
EN 55024:1998, clause 4.2.6
EN 55022:1994, clause 5
EN 55022:1994, clause 6
IEC950:1991, 2nd Edition
EN60950:1992

following the provisions of the 89/336/EEC Directive.
San Jose, California, December 1999

3Dlabs, Inc.

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We, 3Dlabs, Incorporated,
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Sunnyvale, CA 94086
Phone 408-530-4700
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United States of America

declare under our sole responsibility that the products

3Dlabs Graphics Accelerator Card

comply with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interferences that may cause undesired operation.

APPENDIX D – TERMS AND DEFINITIONS

Terms and Definitions

AGP

Advanced Graphics Port. A dedicated graphics bus that transfers data at significantly higher speeds than the PCI bus.

Alpha Blending

This means to create transparent objects by allowing for the blending of pixels to simulate the transparency characteristics of an object. With alpha information, an object can be designed from being totally transparent to opaque.

Alpha Buffer

A portion of the frame buffer used to define the transparency value of a pixel in the frame buffer. This data can be used to blend the frame buffer pixel with the pixel to be drawn to create a composite pixel.

Antialiasing

A technique employed to remove any jagged edges from an object to appear smooth. This is accomplished by gradually modifying the hue and saturation of pixels. (See also: SuperScene Antialiasing)

API

Application Programming Interface. The API translates the instructions from the application program into device commands that are specific to the screen's display controller, the graphics board.

Atmospheric Effects

The effect derived from adding one or more layers around an object.

Bilinear Sampling

The process whereby texture mapping is done through filtering.

Bit Depth

Bit depth is another way of expressing the numbers of colors available. A color bit depth of 8 is equivalent to 256 colors, a bit depth of 16 (15 bit of color plus a 1 bit overlay) yields 32768 colors, and a bit depth of 32 (24 bit RGB plus 8 bit of overlays) equals 16.7 million colors. The latter is often referred to as true color.

Clipping

Removal of elements or sections not contained within the active viewing area.

CPU (Central Processing Unit)

The part within a PC that executes programs in main memory.

DAC

Digital to Analog Converter.

Depth Cueing

A technique used to give the illusion of depth. With depth cueing, the part of an object that is farther away is displayed with a lower intensity to give the effect of depth.

Digital Flat Panel Display

A digital, flat-panel display uses a digital (instead of analog) cable connection to transfer data to the display screen. This can eliminate some display artifacts. Flat panel displays occupy less desk space than conventional monitors.

DirectX
Microsoft's APIs developed to access various system hardware.

Direct 3D
Microsoft's API dedicated to 3D graphics, and a component of DirectX.

Dithering
The process of converting an image with a certain bit depth to one with a lower bit depth. Dithering enables the application to convert an image's colors that it cannot display into two or more colors that closely resemble the original. Dithering works because the mind is tricked by the pattern of colors into thinking it's a different color.

Double Buffering
With double-buffering, images are rendered in the back buffer and then displayed on the screen once the drawing is completed. This results in the smooth, flicker-free rotation and animation of 3D models and scenes.

Driver
A driver is a special interface program that is developed to perform the communication between the application program, the device (i.e., graphics peripheral) and the operating system.

EVGA
Extended Video Graphics Array. EVGA runs at 1024 x 768.

Flat Shading
The simplest method of shading. Each triangle is assigned one single color, resulting in a faceted appearance of the surface.

Frame Buffer
A 24-bit, true-color frame buffer provides 8 bits for each red, green and blue primary display color. This results in 16.8 million color combinations. A second, or double, buffer enables system to calculate pixels one step ahead of the screen display for smooth, distortion free images.

Gamma
A curve representing both the contrast and brightness of an image. Changing the shape of the curve changes the RGB color output. (Not to be confused with GLINT Gamma, the 3Dlabs geometry processing device.)

Geometry
The intermediate stage of the 3D pipeline, geometry determines the location of the object and the frame of reference of the viewer in relation to the object.

Gouraud Shading
This method of shading, more complex than flat shading, shows subtle color changes across an object. Gouraud Shading is accomplished by adding pixels in a graduated scale of colors.

Graphics Accelerator Card
A graphics accelerator performs 3D functions in the hardware, thereby relieving the CPU of repetitive, complex and intensive calls. This results in enhanced performance and speed.

Heidi
The API developed by Autodesk to work with its products, such as 3D Studio MAX and AutoCAD.

MIP-Mapping (for texture processing)

A feature that delivers photo-realistic images by wrapping 2D bitmaps around 3D objects closely matching the texture to the object. MIP-Mapping allows different versions of a texture to be used for objects of different sizes. It also enables faster performance as textures do not need to be scaled in real time.

Multiple Resolution Support

The ability to support multiple resolutions on the screen.

OpenGL

The industry standard library of advanced 3D graphics functions developed by Silicon Graphics, Inc.

Perspective Correction

A function that allows an object to maintain its 3D textural features as it moves away from the viewer, into the background.

Pipelining

A basic hardware tool for accelerating processes.

Pixel

The smallest addressable element of a cathode ray tube display. More simply put, the individual dots that make up the screen image.

Point Sampling

The basic method of adding texture to an object. Point sampling does not include any filtering of textures.

RAMDAC

The final component in the graphics subsystem that translates a digital image into an analog representation.

Rasterization

A method to fill in colors for all pixels bound by vertices.

Rendering

The final and most rigorous stage in the 3D pipeline where an object undergoes shading, texturing, etc.

RISC

Reduced Instruction Set Computing.

SDRAM

Synchronous Dynamic Random Access Memory (SDRAM) is a cost-effective solution to improve bandwidth to and from memory, resulting in increased graphics performance.

SGRAM

Synchronous Graphics Random Access Memory allows data to be written in a single operation, rather than a (slower) sequence of operations. It also handles background and foreground image fills effectively.

SDTP

Super Desktop Publishing. SDTP runs at 1600 x 1200.

Stencil Buffer
Similar to stipple masking, the stencil buffer assists with the creation of transparent effects.

Stipple masking
A technique that spatially creates transparent effects by rendering an object through various patterns.

Streaming SIMD
An instruction set developed by Intel for Pentium III-processor based systems. Streaming SIMD can improve 3D vertex transformation and lighting, among other operations.

SuperScene Antialiasing
SuperScene antialiasing (*see Antialiasing*) is an enhanced version of multisampling and offers true, multisampled scene-based antialiasing of *all OpenGL* primitives in a scene. SuperScene Antialiasing is a feature found only on Wildcat II 5110 graphics accelerators.

SVGA
Super Video Graphics Array. SVGA runs at 800 x 600.

Tessellation
The initial part of the 3D pipeline where the object is described by a set of triangles.

Texture Mapping
A technique that enables 2D graphic images to be "wrapped" around or "pasted" on to a 3D primitive. Perspective correction and lighting calculations allow for added realism.

Transformation
The change in rotation, size, position, and perspective of an object in 3D space.

Transparency
A function that refers to the rendering of transparent (non-opaque) objects. Transparency is generally accomplished on a polygon rendering system using either screen-door transparency or alpha blending.

Vectors/second
Lines drawn per second.

VGA
Video Graphics Array. VGA runs at 640 x 480.

VHR
Very High Resolution. VHR runs at 1280 x 1024.

VRAM
Video Random Access Memory is an expensive, fast type of RAM that is used as display memory on high-end graphics boards.

VRML
Virtual Reality Modeling Language.

Z-Buffer
Also known as the Depth Buffer, the Z-Buffer is a region of memory containing the depth component of a pixel. Used, for example, to eliminate hidden surfaces from the image.

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