
Fire GL4

User's Guide

Version 1.0 P/N 137-50000-10 Rev. A

FIREGL



© Copyright 2001, by ATI Technologies Inc.

All rights reserved, including those to reproduce this guide or parts thereof, in any form without the express written permission of ATI Technologies Inc.

Features and specification are subject to change without notice. Trademarks and/or registered trademarks are the properties of their respective owners.

Adobe and Acrobat are trademarks of Adobe Systems Incorporated, which may be registered in certain jurisdictions.

ATI is a registered trademark of ATI Technologies Inc. in Canada, the United States and/or other countries.

Fire GL is a trademark of ATI Technologies Inc. in Canada, the United States, and/or other countries. MS-DOS, Windows, Windows NT, Windows 2000, DirectDraw and Direct3D are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Pentium is a registered trademark and AGP (Accelerated Graphics Port) is a trademark of the Intel Corporation.

IBM ® is a registered trademark of International Business Machines Corporation.

OpenGL is a registered trademark of Silicon Graphics, Inc.

AutoCAD, AutoShade, 3D Studio and HEIDI are registered trademarks or trademarks of AutoDesk Inc.

Disclaimer

The manufacturer (MFR) reserves the right to make changes to this document and the products which it describes without notice. The MFR shall not be liable for technical or editorial errors or omissions made herein; not for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

The MFR makes no representation that the interconnection of products in the manner described herein will not infringe on existing or future patent rights, nor do the descriptions contained herein imply the granting of license to make, use or sell equipment constructed in accordance with this description.

Table of Contents

- Introducing the Fire GL41**
- About your Fire GL4..... 1
 - Hardware Design..... 1
 - Operating Systems 2
 - Typical Application Environments 3
 - System Requirements and Tools 3
 - Performance Overview..... 4
- How to Use this User's Guide..... 5
 - Manual Conventions 5
 - Viewing the User's Guide Online..... 6
 - Do you Need a Printout of the Online User's Guide?..... 6
- Quick Installation 7
 - Installation Steps 7
- Installing the Fire GL48**
- Installing the Hardware 8
 - Preparing your Computer 8
 - Installing the Card 12
 - Connecting the Cables and Completing the Installation 15
- Installing the Software 19
 - Before you Start: Information, Tips, and Hints 20
 - Software Installation for Windows NT4.0 21
 - Software Installation for Windows 2000..... 22
- Fire GL4 Software Utilities24**
- Changing the Video Settings..... 25
 - How to Switch to the Display Properties?..... 25
 - Setting Resolution and Refresh Rate 25
 - Setting a DualScreen Configuration..... 27
 - Selecting your Monitor 30
 - Adjusting the Monitor Display..... 33
- Using Application Profiles and Advanced Functions..... 36
 - Configuring Application Profiles 36
 - Setting Advanced Functions..... 39

Reference.....42
Removing the Fire GL4 Drivers.....42
Troubleshooting44
Technical Details.....47
 Features and Performance47
 Pin Assignments.....50
 Video Modes52
 Block Diagram54
Compliance Information55

CHAPTER 1

Introducing the Fire GL4



IN THIS CHAPTER

- [About your Fire GL4](#)
- [How to Use this User's Guide](#)
- [Quick Installation](#)

About your Fire GL4

Hardware Design

The Fire GL4 is an AGP/ATX card based upon the IBM RC 1000/ GT 1000 chipset. With the ability to support two monitors and 128 MB of on-board memory the Fire GL4 is ideal for digital content creation, high-end CAD and other sophisticated 3D applications.

The RC1000 256 bit graphics rasterizer provides the functionality of a VGA controller, a 2D/3D raster engine with geometry pipeline setup processor, and a 300 MHz RAMDAC. It also supports video streaming by providing color space conversion and a bilinear scaling unit.

The GT1000 hardware geometry engine is a complete transformation and lighting engine with hardware implementation of the full open OpenGL pipeline and most of the Direct3D geometry pipeline.

Operating Systems

The Fire GL4 supports the following operating systems:

- Microsoft Windows NT 4.0 with Service Pack 6 (or higher)
- Microsoft Windows 2000
- Linux - 2.2.x kernels, C Library 1.2 (LibC 6.2)
Download Linux drivers and installation instructions from www.ati.com/support

Service Pack Information for Windows NT 4.0

You must be running Windows NT 4.0, updated with Service Pack 6 (or higher) prior to installing the Fire GL4 drivers. The Service Pack is available from Microsoft's web page, www.microsoft.com. For most languages you can perform the Service Pack 6 update from the Fire GL CD when you run the Quick Start utility.

Typical Application Environments

Fire GL4 offers outstanding 2D/3D performance in Windows NT, Windows 2000, and Linux. Fire GL4 is optimized and certified for professional 3D graphics in the following business environments.

- Mechanical Engineering Analysis (MEA)
- Mechanical Computer Aided Design (MCAD)
- Electrical Design Automation (EDA)
- Computer Aided Software Engineering (CASE)
- Digital Content Creation (DCC)
- Business Economic Modeling
- 3D Game Development

System Requirements and Tools

What do you need to install and use your Fire GL4?

- Motherboard with free AGP slot.
Note: The bracket of the Fire GL4 also covers the expansion slot next to the AGP slot.
- Pentium II CPU or better
- System interrupt (IRQ) which is free. This may have to be reserved in the computer's BIOS. For help with this subject, refer to the manual for your mainboard.
- Supported operating systems:
Microsoft Windows NT 4.0 with Service Pack 6 (or higher)
Microsoft Windows 2000
Linux - 2.2.x kernels, C Library 1.2 (LibC 6.2)
- CD-ROM drive
- A screwdriver to remove and reinstall the PC cover screws and card mounting screws. See your PC manual for specific requirements.
- Fire GL CD-ROM for Fire GL4

Performance Overview

Note: For more detailed information on features and performance please refer to the section [Technical Details](#)

Hardware Performance

- 32-bit RGB α TrueColor 2D and 3D acceleration
Note: The Fire GL4 does not support 8-bit or 16-bit video modes
- Accelerated, double-buffered 32-bit TrueColor up to 1920 x 1200, at 75 Hz refresh rates
- 24-bit Z-buffer, 8-bit double-buffer, 8-bit single-buffer overlay
- Video engine supports YUV conversion, point and bilinear scaling

Software Features

- Multiprocessor system support
- ThreadSafe OpenGL 1.2 ICD support for dual processors.
- Supports Streaming SIMD Extensions (SSE) in Intel Processors
- Supports AMD Athlon™ processor-based systems with 3DNow! technology
- Customized application settings for individual ISV applications
- Dual monitor support - with a single card
- DDC2B monitor support on all operating system platforms

How to Use this User's Guide

For your convenience, this online User's Guide has been formatted as an Adobe® Acrobat® PDF file. This format gives you great flexibility when using this documentation.

Many hyperlinks provide easy access to any information you may want. To make it useful in a printed format, too, a - hyperlinked - table of contents and page numbers are provided.

Because it was designed to be used online and printed, some of the images may not print clearly or appear very clearly on screen.

Manual Conventions

Your Fire GL4 User's Guide is organized in a standard, familiar way. A few icons are used to point out important information:



This icon marks useful tips or important operational notes.



This icon is a warning about possible electrical/software hazards or problems

Viewing the User's Guide Online

You can also read the User's Guide online—important hypertext links, such as Table of Contents entries, World Wide Web, and email addresses are active.

Place your mouse cursor over Table of Contents entries or main headings. If the hand icon changes to a pointing index finger, simply click and you will move to that place in the document. Some email or World Wide Web addresses inside this manual may be active as well. Go directly to a Web, FTP site, or email program simply by clicking on an active link. Displaying the provided bookmark and thumbnail views may help you with the orientation and navigation in the User's Guide.

This manual might be displayed with slightly-reduced magnification in your Reader. If you experience any difficulty reading certain files online, use the Reader's **Zoom To** feature from the **View** menu and increase the magnification to about 150%. To view some screenshot images perfectly clear you may need a larger magnification.

Do you Need a Printout of the Online User's Guide?

You can easily print this User's Guide to access it off-line. The manual then will look like any standard document with a table of contents and page numbers.

For printing the User's Guide, a print resolution of 600 dpi -or higher - is recommended.

Quick Installation

- Brief instructions on how to get to work with the Fire GL4 in the shortest possible time.
- Recommended for experienced users and system administrators only.
- For more detailed information on installation and operation of your graphics accelerator, please refer to the corresponding sections of the *Fire GL4 User's Guide*.

Installation Steps

- 1 Un-install the drivers and software for your old graphics card.
- 2 Set the display driver to **Standard VGA**.
Disable any on-board graphics solution on the motherboard.
- 3 Shut down and disconnect your computer system.
- 4 Remove the installed (AGP, PCI, or ISA) VGA card.
- 5 Install the new Fire GL4 card.
- 6 Reassemble and connect your computer system.
- 7 Install the Fire GL4 drivers and configuration software from the Fire GL CD:
 - *automatic Quick Start utility or*
 - **Start > Run > X:\START EXE**
where X is the drive letter of your CD-ROM drive

CHAPTER 2

Installing the Fire GL4



IN THIS CHAPTER

- [Installing the Hardware](#)
- [Installing the Software](#)

Installing the Hardware

The hardware installation includes the following steps:

- [Preparing your Computer](#)
- [Installing the Card](#)
- [Connecting the Cables and Completing the Installation](#)

Preparing your Computer



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

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

Damage to system components, the accelerator card, and injury to yourself may result if power is applied during installation. This icon is a warning about possible electrical/software hazards or problems

	Information Before you Start
What do you need to use your Fire GL4?	System Requirements and Tools <ul style="list-style-type: none">• Motherboard with free AGP 1.X slot. Note: The bracket of the Fire GL4 also covers the expansion slot next to the AGP slot.• System interrupt (IRQ) which is free. This may have to be reserved in the computer's BIOS. For help with this subject, refer to the manual for your mainboard• Pentium II CPU or better• Supported operating system<ul style="list-style-type: none">- Windows NT 4.0 with Service Pack 6 (or higher)- Windows 2000• A screwdriver to remove and reinstall the PC cover screws and card mounting screws. See your PC manual for specific requirements.• Fire GL CD-ROM for Fire GL4
What type of monitors do you need?	<p>Your Fire GL4 is optimally configured to be combined with digital flat-panel (DFP) TFT LCD displays and digital CRT displays. You can also connect the Fire GL4 to high-resolution MultiSync or multi-frequency monitors or other VGA monitors. To connect VGA monitors you may use the provided VGA->DVI adapters.</p> <p>Note: You can use the full power of the graphics card only if your monitor supports the horizontal (kHz) and vertical (Hz) refresh rates as required by the graphics card. Refer to your monitor's documentation for recommended refresh rates</p>

Where are the drivers?	<ul style="list-style-type: none">• Windows NT 4.0 and Windows 2000 drivers are provided on the Fire GL CD.• Linux drivers and installation instructions are available for downloading from www.ati.com/support.
Are you planning a multi-monitor system?	<ul style="list-style-type: none">• You may connect two monitors to the Fire GL4.• If DDC support is available, the respective resolution and refresh rate for each monitor is automatically detected.
Are you installing your Fire GL4 in place of a card from another manufacturer?	<p>Before you shut down your computer and remove the installed graphics solution, we recommend that you uninstall the driver for your current graphics card first:</p> <ul style="list-style-type: none">• Use the uninstall program for your existing card, if one is available. Consult the documentation for your old card if necessary.• If no uninstall program is available, install the standard VGA driver via the Display Properties applet. For more information refer to <i>Setting the Display Driver to Standard VGA</i>
Do you have an integrated graphics solution on the motherboard?	<p>Please refer to the manual or contact your motherboard manufacturer to determine how to disable your on-board graphics.</p>

Plug-n-Play?	The card has been designed to take advantage of 'plug-n-play' without requiring additional hardware installation or configuration.
The illustrations do not show your card?	The illustrations provided in this section are for instructional use only; the card shown may look different than the one you purchased.

Setting the Display Driver to Standard VGA

To avoid possible driver conflicts between your old and new graphics card, install the standard VGA driver for your operating system. Install the standard VGA driver before you shut down your computer and remove the installed (AGP, PCI, or ISA) VGA card.

Note: Installing the standard VGA driver is not required for Windows 2000.

The applications for which you want to install drivers also have to be completely installed for **Standard VGA - 640 x 480** on your system prior to using the new software. It is a good idea to do this before removing an existing graphics adapter as not every application may permit the configuration of its video mode from the operating system level.

Installing the Standard VGA Driver for Windows NT 4.0

- 1 From the Start menu, go to **Start > Settings > Control Panel**, then double-click on **Display**. The **Display Properties** sheet appears.
- 2 Click the **Settings** tab; then click the **Display Type** button.
- 3 Under **Adapter Type**, click the **Change** button. The **Change Display** window appears.
- 4 Under **Manufacturers**, select (Standard display types). Under **Display**, choose VGA compatible display adapter.
- 5 Click **OK**. You may need to insert your Windows NT 4.0 CD-ROM.

12 Installing the Fire GL4

- 6 Click **Close** and **OK** as often as necessary to accept the changes.
- 7 Windows asks you if you want to restart your computer. Click **No**.
- 8 Shut down your computer. You are now ready to remove your old graphics card and install your new Fire GL4 card.

Installing the Card

To install your graphics accelerator card, follow these steps:

1 **Switch off your computer and all external options (printer, display, and others)**

Unplug all power cables from the electrical source.

Note: If you are disconnecting a peripheral from the computer or are removing a component from the system board, wait 10 - 20 seconds after disconnecting the computer from the electrical outlet before disconnecting the peripheral or removing the component to avoid possible damage to the system board. To verify that all power has been removed from the system, make sure that the standby power light-emitting diode (LED) on the system board has gone out.

2 **Remove the cover of the computer.**

Refer to the instructions in your computer's manual for more information.

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

3 **Remove any existing graphics card from your computer.**

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

If your computer has any **on-board graphics capability**, you may need to **disable** it on the motherboard. Refer to your computer's manual for more information.

4 Insert the card into the AGP slot.

- Locate the AGP slot

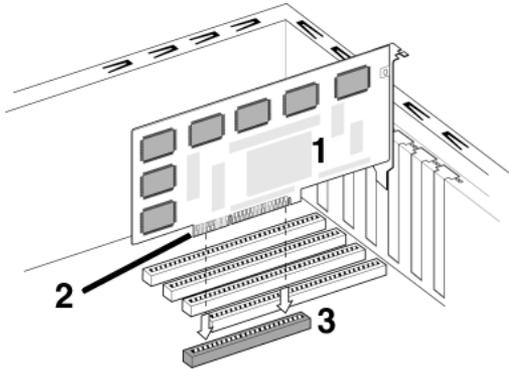


- If necessary, remove the metal slot covers from the AGP slot and the adjacent slot.
- Save the screws to secure the graphics card later

14 Installing the Fire GL4

- Align the Fire GL4 with the AGP slot and press it in firmly until the card is fully seated. Take care to press it evenly and snugly into its slot. Do not force.

AGP cards are designed to fit one way only. Be sure your card is properly aligned. Grasp the card by the top edge and carefully seat it into the AGP slot. Be sure the metal contacts are completely pushed into the seat.



- | | |
|---|---------------------|
| 1 | Fire GL4 card |
| 2 | Card edge connector |
| 3 | AGP expansion slot |

5 Replace the screws to fasten the card in place.

- Align the slots in the mounting bracket of the card with the screw holes in the rear panel of the computer case.
- Use the screws you removed from the expansion slot covers or a previously installed graphics card to secure the card in place.
Note: Always secure the card with two screws to prevent potential EMI problems.

6 Reassemble your computer.

- Secure ribbon cables and gently push them down and out of the way before you replace the system cover.
- Replace the computer cover.
- Reconnect any peripheral equipment cables you may have disconnected.

Connecting the Cables and Completing the Installation

Connecting the Monitor Cables



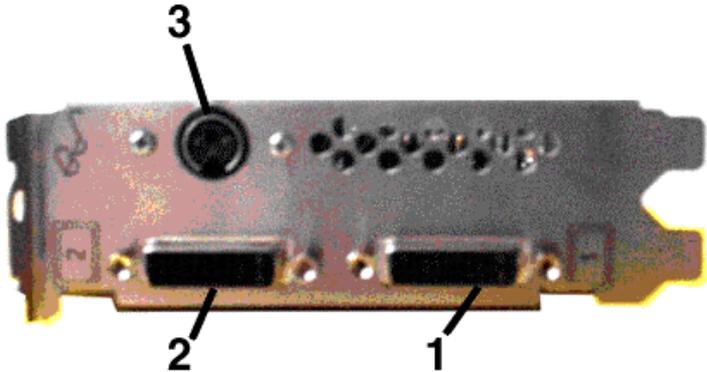
You may connect one or two monitors, either digital CRT / TFT-LCD, or - via an VGA -> DVI-I adapter - analog VGA, to the Fire GL4.

Note

If you connect only one monitor, make sure to connect it to DVI connector (1) on the card.

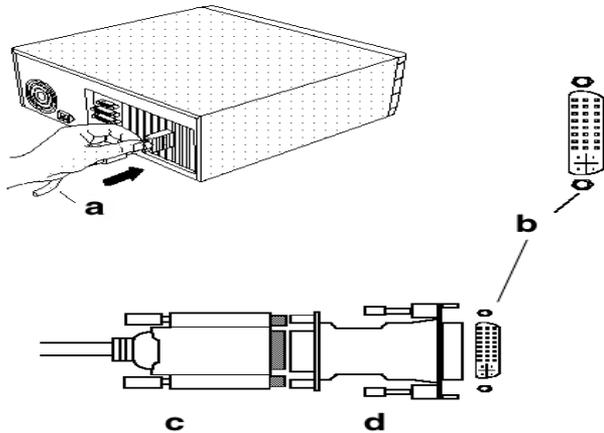
Securely attach the data cable of your first monitor to the DVI output connector (1) on the card. Attach the cable to the monitor according to the monitor's instructions.

Connect the data cable of your second monitor to the DVI output connector (2) on the card.



How to connect analog VGA Monitors?

If the data cable connector on your VGA monitor does not fit into the DVI-I connector on the card, please use the VGA to DVI-I adapter provided with your Fire GL4.



- | | | | |
|---|-------------------------|---|----------------------------|
| a | Display cable | c | VGA connector from monitor |
| b | DVI-I connector on card | d | VGA to DVI- I adapter |

Setting the Monitor Impedance

If you can switch the impedance values on your monitor, use the following recommended settings:

- R, G, B video input: 75 Ohm
- Synch: 2.2 kOhm

Try other 'Synch' settings if you cannot achieve a stable video image.

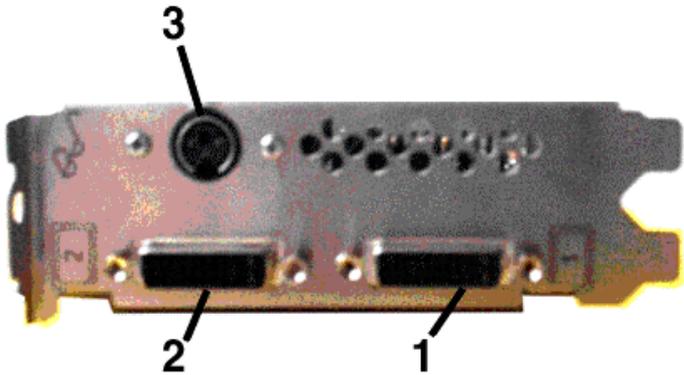
If the impedance setting options are 'High' and 'Low' only, try the setting that provides the most satisfactory monitor display.

Connecting the Stereo Glasses

You need this information only if you want to use StereoGraphics' CrystalEyes or compatible stereoviewing eyewear.

Please note that stereo glasses are optional equipment and not included in the Fire GL4 package.

Connect your stereoviewing eyewear to the 3 pin Mini-DIN stereo sync connector (3) on the card. Connect only stereoviewing eyewear with shielded cable and ferrite cylinder to the Fire GL4.

**Note**

If the connector on your stereoviewing eyewear does not fit into the Mini-DIN connector on the card, please contact your supplier or the manufacturer of the stereo glasses for information on how to obtain an adapter cable.

Start your System

Switch on your monitor before you switch on your computer. Failing to do so could damage your monitor.

If you have correctly installed the card, operating system messages will appear on your monitor when the boot procedure is finished.



Note

Your monitor is running in standard VGA mode. Higher refresh rates etc. are not available at this stage of the installation. After you have successfully installed the Fire GL4 drivers you can use the dialogs in the **Display Properties** menu to adjust the video settings and set up a multi-monitor configuration.

Your System Does Not Start as it Should?

- Check again to verify that the installation instructions were properly followed.
- Check that the system BIOS has assigned a system interrupt to the AGP slot where the card is installed.

Check the system configuration utility of your operating system for the interrupt assignments.

Inspect your system BIOS setup for an option that says "Assign IRQ to VGA" or something similar and ensure that this option is enabled.

- Some older ISA legacy add-in cards (with jumpers, non-Plug-n-Play) may cause a conflict if they are not configured in the ESCD (extended system configuration data) area of the system BIOS. Please refer to your computer's User's Guide for information on using the ISA Configuration Utility (ICU) to add legacy card resource requirements to the system.
- Please refer to the [Troubleshooting](#) section for more information, if it appears that the card is not performing optimally.
- Contact the Technical Support.

Installing the Software

- [Before you Start: Information, Tips and Hints](#)
- [Software Installation for Windows NT 4.0](#)
- [Software Installation for Windows 2000](#)

You will need to install the Fire GL4 drivers and software in the following cases:

- After you have installed the card to your system.
- After you have re-installed or upgraded your operating system.

**Note**

To install or remove the Fire GL4 drivers, you need administrator rights or you must be logged on as a user with administrator rights under Windows NT and Windows 2000

Information for Windows NT 4.0 — You must have the Microsoft Windows NT Service Pack (Service Pack 6 or higher) installed prior to installing the Fire GL4 drivers. The Service Pack is available from Microsoft's web page, www.microsoft.com. For most languages you can also perform the Service Pack 6 update from the Fire GL CD when you run the Quick Start utility.

Before you Start: Information, Tips, and Hints



Before you install the drivers for your Fire GL4 accelerator, make sure your monitor cable is properly attached to the DVI-I connector.

Do you need a special driver installation?

The software installation procedure later in this chapter describes how to install the drivers for your graphics card after you have installed the new card for the first time and have rebooted your computer.

This section offers some additional tips if you want or need to install the graphics card drivers in a special working scenario, for example, if you have re-installed your operating system, or if you want to perform a manual installation.

- You can always install the drivers using the *Quick Start* utility on the Fire GL CD.
The Quick Start utility will start automatically, if you insert the Fire GL CD into your CD-ROM drive after the operating system has started. If your CD-ROM auto-run is not enabled and/or the Quick Start program does not start automatically:
Click the **Start** button in the task bar, click **Run**, and then select **START.EXE** from the root directory of the Fire GL CD.
- Select **Readme** from the **Fire GL CD** start menu to display a readme file. Refer to this file for additional and ‘last minute’ information. Information in this file may not appear in printed documentation or online help.
- Where are the drivers? When prompted for a driver installation CD, insert the **Fire GL CD** and enter or browse to the path corresponding to your operating system.
NT4 - for Windows NT 4.0
NT5 - for Windows 2000
- You must be running Windows 2000 or Windows NT 4.0, updated with Service Pack 6 (or newer) before installing the Fire GL4 drivers. For most languages you can perform the Service Pack update from the Fire GL CD when you run the Quick Start utility.

ReadMe file

Select **Readme** from the **Fire GL CD** start menu to display a readme file. Refer to this file for additional and ‘last minute’ information. Information in this file may not appear in printed documentation or online help.

Driver installation dialog

The installation dialog will display in English if your operating system’s language is not supported.

Software Installation for Windows NT4.0

- 1 Run the Quick Start utility. The Quick Start utility will start automatically, if you insert the Fire GL CD into your CD-ROM drive after the operating system has started. If your CD-ROM auto-run is not enabled and/or the Quick Start program does not start automatically:
Click the **Start** button in the task bar, click **Run**, and then select **START.EXE** from the root directory of the Fire GL CD.
- 2 Click **Start Installation**.



Note

The installation routine now checks if your Windows NT 4.0 is correctly updated with Service Pack 6. If not, you are prompted if you want to install the drivers and Service Pack 6 at this time – if the appropriate language version is available on the Fire GL CD.

If the Fire GL CD cannot install the Service Pack to your system, the driver installation stops. Obtain Windows NT Service Pack 6 from Microsoft, update your Windows NT 4.0, and run the Quick Start utility again

22 Installing the Fire GL4

- 3 Click the button corresponding to the type of installation you want. If you select **Custom**, a list of software components will be displayed. Select the check boxes to specify the components you want to install.
- 4 Click **Next** to continue the installation.
- 5 When the **ATI FIRE GL Install** dialog displays the components to be installed click on **Next**. (Depending on which components you chose different windows might appear. Click on the corresponding buttons to continue the installation.)
- 6 When the **Installation complete** message appears click **Next** again. This will restart your computer.
- 7 Click **Start > Settings > Control Panel > Display > Settings**, or right-click on the Windows desktop, select **Properties** and **Settings**.
- 8 Set the resolution, color depth, and refresh rate that best suit your requirements and your monitor's performance.
Note: Use the *ATI Monitor* and *DualScreen* dialogs to adapt each monitor's settings in a dual-monitor configuration.
- 9 Click **OK**.

Software Installation for Windows 2000

- 1 Start your system. When the **Found New Hardware Wizard** comes up, click **Cancel**. When the **System Settings Change** window asks you to restart your computer, click **No**.
- 2 Run the Quick Start utility. The Quick Start utility will start automatically, if you insert the Fire GL CD into your CD-ROM drive after the operating system has started. If your CD-ROM auto-run is not enabled and/or the Quick Start program does not start automatically:
Click the **Start** button in the task bar, click **Run**, and then select **START.EXE** from the root directory of the Fire GL CD.
- 3 Click Start Installation.

- 4 Click the button corresponding to the type of installation you want. If you select **Custom**, a list of software components will be displayed. Select the check boxes to specify the components you want to install.
- 5 Click **Next** to continue the installation.
- 6 When the **ATI FIRE GL Install** dialog displays the components to be installed click on **Next**. (Depending on which components you chose different windows might appear. Click on the corresponding buttons to continue the installation.)
- 7 When the **Installation complete** message appears click **Next** again. This will restart your computer.
- 8 After Windows 2000 reboots, the **Found New Hardware** message displays the **Digital Signature Not Found** dialog and prompts you **Do you want to continue the installation?** Click **Yes** to install and start the drivers.
- 9 Click **Start > Settings > Control Panel > Display > Settings**, or right-click on the Windows desktop, select **Properties** and **Settings**.
- 10 Set the resolution (**Screen area**), and color depth that best suit your requirements and your monitor's performance.
- 11 Click the **Advanced** button and select the **Monitor** tab.
- 12 Set the refresh rate for the monitors connected to the Fire GL4 graphics accelerator in your system.
Note: Use the *ATI Monitor* and *DualScreen* dialogs to adapt each monitor's settings in a dual-monitor configuration.
- 13 Click **OK** until you are on the Windows desktop.

**Note**

Refer to your Windows 2000 online help and documentation for further information on using the **Monitor** and **Settings** dialogs.

CHAPTER 3

Fire GL4 Software Utilities

**IN THIS CHAPTER**

- [Changing the Video Settings](#)
- [Using Application Profiles and Advanced Features](#)

As part of its Windows NT/2000 drivers, Fire GL4 installs additional property pages to your **Display Properties** control panel. They are named as follows.

Information
DualScreen
ATI Monitor
Adjustment
Configuration
Advanced Settings

The **Information** dialog displays some card-specific hardware and driver information. This information may be helpful when contacting Tech Support.

Use the [DualScreen](#) dialog to enable two-monitor display modes and set the dual-monitor configuration.

Use the [ATI Monitor](#) and [Adjustment](#) dialogs, together with the **Settings** and **Windows Monitor** dialogs, to select your monitor(s) and adjust the screen display, resolution, and refresh rate.

Use the [Configuration](#) dialog to customize application profiles for individual application settings.

Use the [Advanced Settings](#) dialog to enable the following advanced functions: offscreen rendering, fullscene antialiasing, synchronization of graphics with streaming video/audio, operation of stereo glasses, operation of a flat autostereoscopic 3D display

Changing the Video Settings

The dialogs in the **Display Properties** menu allow setting and adjusting the video settings to best suit your specific requirements.

How to Switch to the Display Properties?

- 1 Start Windows.
- 2 After Windows has finished booting, click **Start > Settings > Control Panel**.
- 3 Double-click the **Display** icon. The **Display Properties** window appears.



Notes

(1) You can also display the **Display Properties** window by right-clicking the Windows Desktop background and then selecting the **Properties** option from the pop-up menu.

(2) Windows 2000 only: Click the **Advanced** button in the **Settings** dialog to gain access to the **Monitor, ATI Monitor, Adjustment** and **DualScreen** dialogs

Setting Resolution and Refresh Rate

Windows NT 4.0

- 1 Select the **Settings** dialog in the **Display Properties** window.
- 2 Set the resolution and refresh rate that best suit your requirements and your monitors' performance.
Note: The refresh rate setting always applies to both monitors, if you have two monitors connected to the Fire GL4.

Windows 2000

- 1 Select the **Settings** dialog in the **Display Properties** window.
- 2 Set the resolution (**Screen area**) that best suit your requirements and your monitors' performance.
- 3 Select the **Windows Monitor** dialog via **Display Properties > Settings > Advanced > Monitor**.
- 4 In the **Monitor Settings** section set the refresh rate for the monitor(s) connected to the Fire GL4. The refresh rate setting always applies to both monitors, if you have two monitors connected.

Note: Refer to your Windows 2000 online help and documentation for further information on using the **Monitor** dialog.



Notes

(1) Check the documentation of your monitor(s) and make sure that each monitor supports the planned resolution and refresh rate setting

(2) Use the *DualScreen* dialog (in Windows 2000: **Settings\Advanced\DualScreen**) to enable two-monitor display modes.

(3) Use the *ATI Monitor* dialog (in Windows 2000: **Settings\Advanced\ATI Monitor**) to select and set your specific monitor(s).

Use the *Adjustment* dialog (in Windows 2000: **Settings\Advanced\Adjustment**) to adapt the display of the monitors connected to the Fire GL4.

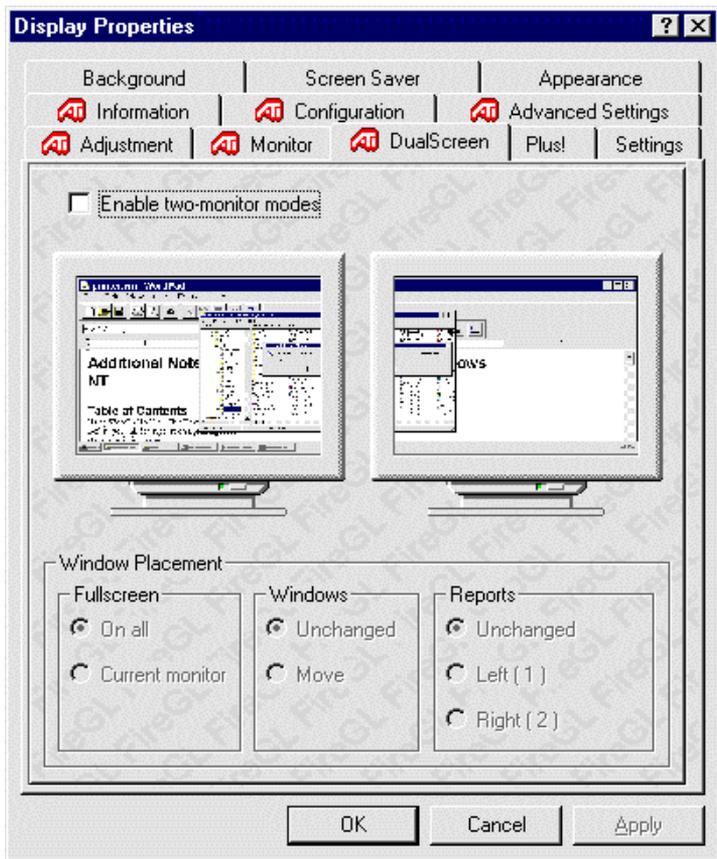
(4) Operating stereo glasses: Always select a refresh rate of 120 Hz. Also, enable **Quad Buffer Stereo** in the *Advanced Settings* dialog.

Setting a DualScreen Configuration

1 **Windows NT 4.0:** Select the DualScreen dialog in the Display Properties window.

Windows 2000: Select the **DualScreen** dialog via **Display Properties > Settings > Advanced > DualScreen**.

Refer to the context sensitive online help for more information on setting up your DualScreen configuration.



- 2 Select **Enable two-monitor modes** to enable screen resolutions for a two-monitor configuration in the **Settings** dialog. Deselecting this option will allow single-monitor resolutions only.

Notes: (1) Click on a monitor icon in the **DualScreen** dialog to identify the corresponding monitor. For example, if you click on the right monitor icon in the **DualScreen** dialog, your second (right) monitor will display a **2**.

(2) Windows 2000 only: **Enable two-monitor modes** automatically deselects the checkbox option 'Hide modes that this monitor cannot display' in the **Display Properties\ Settings\ Advanced\ (Windows) Monitor** dialog. If you manually tick this checkbox again, dual-screen resolutions are no longer available.

- 3 Select the **Window Placement** settings

Fullscreen

Select if you want a full screen window displayed On all monitors, or only on the Current monitor - that is the monitor where your mouse cursor currently is.

Windows

Select how you want to display sizeable windows that normally appear in the middle of the screen:

- **Unchanged**, or
- **Moved** fully to that monitor where the top left corner of the window is.

Reports

Select a monitor where you want to display Windows messages that normally display in the middle of the screen. This keeps the screen area of the other monitor free for your work. You may alternatively opt for displaying the reports **Unchanged**.

- 4 Click the **Apply** or **OK** button to enable your **DualScreen** settings.

- 5 Select the **Settings** dialog in the **Display Properties** window.
- 6 Select a two-monitor resolution - that is twice a horizontal single-monitor resolution. For example, 1024x768 is a single-screen resolution (using only one monitor) and 2048x768 provides the same resolution but uses both monitors.

**Notes**

- (1) Both monitors will operate with the same resolution. Check the documentation of your monitors and make sure that each monitor supports your resolution and refresh rate setting.
- (2) Refer to your Windows online help and documentation for further information on using the **Settings** dialog.
- (3) Use the *ATI Monitor* dialog (in Windows 2000: **Settings\Advanced\ATI Monitor**) to select and set your specific monitor(s).
Use the *Adjustment* dialog (in Windows 2000: **Settings\Advanced\Adjustment**) to adapt the display of the monitors connected to the Fire GL4.

Selecting your Monitor

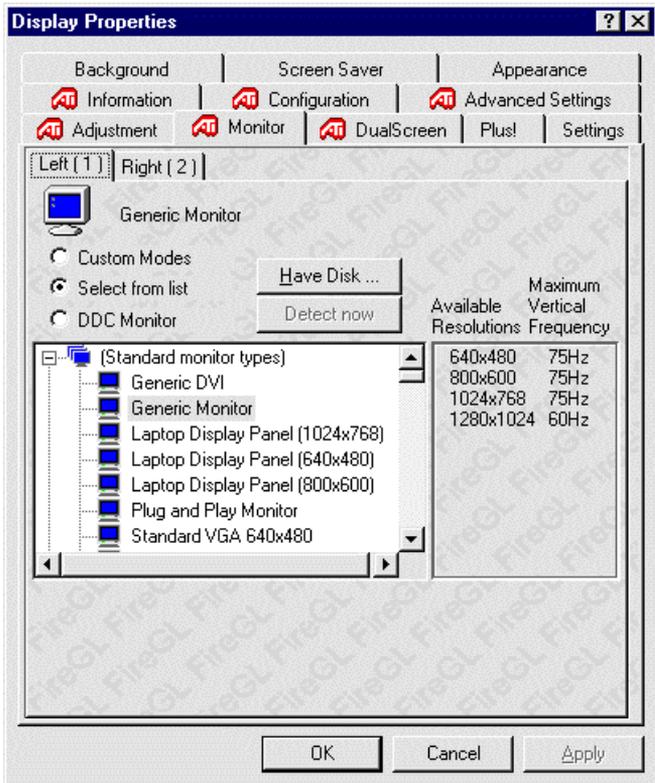
- 1 **Windows NT 4.0:** Select the **ATI Monitor** dialog in the **Display Properties** window.
- Windows 2000:** Select the **ATI Monitor** dialog via **Display Properties > Settings > Advanced > ATI Monitor**.



In Windows 2000 the **ATI Monitor** dialog is only active if you have two-monitor modes enabled via the [DualScreen](#) dialog.

Note

If you do not have two-monitor modes enabled, use the **Windows Monitor** dialog (**Display Properties > Settings > Advanced > (Windows) Monitor**) to select your specific monitor.



You can customize the settings of the connected monitors. For more information on setting up the monitors refer to the context sensitive online help.

- 2 Click the tab for the monitor you want to set up.
- 3 Set the desired operation mode for your monitor.

Custom Modes

Use resolution and refresh rates for this monitor as specified in the **Settings** dialog and menus in **Display Properties**. This option allows you to take full advantage of the resolution/refresh rate capabilities of the video chip.



Warning! Selecting a resolution or refresh rate that your monitor does not support can permanently damage the monitor.

Check the monitor's documentation and verify that it supports the selected resolution and refresh.

Select from list

Use resolution/refresh rate settings optimized for your specific monitor.

- Select your monitor from the displayed monitor list. To select your monitor, scroll to the manufacturer of your monitor and highlight the manufacturer in the list. Click on the + sign and select your monitor.
A list on the right menu pane displays resolutions and - for each resolution - the maximum refresh rate, as supported by the selected monitor.
If the current video mode (specified in the **Settings** dialog) is not supported by the selected monitor, the resolution/refresh rate setting will be automatically reduced.
- Click the **Apply** or **OK** button to enable your monitor selection.

Select from list (continued)

If the list does not display your monitor type and you have a disk from the monitor manufacturer, use the **Have Disk** button to import the monitor information to the internal monitor list.

- Click the **Have Disk** button, insert the disk, and select the directory or file containing information about your monitor.
- Then select your monitor and click the **Apply** or **OK** button.
- Click the **Display FireGL Monitor List** button to switch the displayed monitor list back from the manufacturer's disk to the internal monitor list..

DDC Monitor

Select this option and click the **Apply** or **OK** button if you want the driver to automatically decode the monitor's DDC (Display Data Channel) information on each reboot or Windows start.

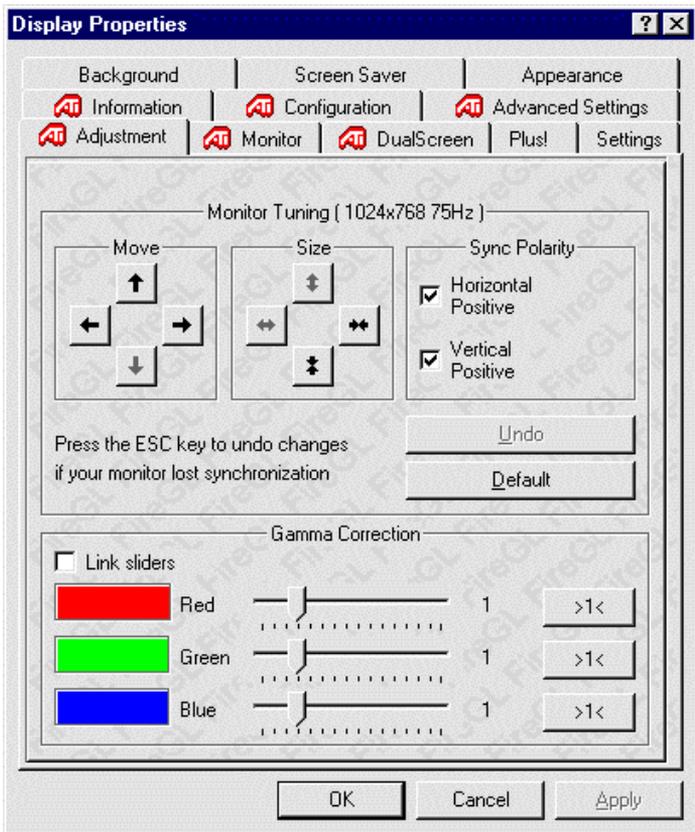
To detect a new DDC monitor immediately, click the **Detect now** button. An error message will be displayed if the connected monitor does not support DDC

- 4 Click the **Apply** or **OK** button to enable your monitor settings.

Adjusting the Monitor Display

Using this dialog you can adjust the display of the connected monitor. For more information on adjusting the monitor's display refer to the context sensitive online help.

- Windows NT 4.0:** Select the **Adjustment** dialog in the **Display Properties** window.
Windows 2000: Select the **Adjustment** dialog via **Display Properties > Settings > Advanced > Adjustment**.



- 2 **Monitor Tuning:** With the buttons in the **Move** and **Size** sections you can tune the position and size of the monitor's display for the indicated resolution and refresh rate



Note

(1) Use the hardware setting controls on your monitor, if available, to adjust your display size or position - instead of the software controls in '**Adjustment - Monitor Tuning.**' Check the documentation of your monitor for information on your monitor's hardware controls

(2) Resizing the display slightly changes the actual refresh rate. If you operate a fixed-frequency monitor check the documentation of your monitor for information on refresh rate tolerances.

- **Sync Polarity:** If you do not get a satisfactory display with the default sync polarity setting for the current resolution, you may try and change the settings.
- **Undo:** Click this button to undo the last change you made (when you clicked **Apply**). If you have made a modification that causes your screen to go blank or to be unreadable, the keyboard shortcut for 'Undo' is **Alt-U**.
- **Default:** Click this button to set the **Monitor Tuning** to the manufacturer's default settings.



Notes

(1) Press the **ESC** key on your keyboard to undo the changes if your monitor has lost synchronization. You may also use the keyboard shortcut for 'Undo' - **Alt-U**.

(2) If you change the resolution (in **Settings**) and/or the refresh rate (in **Monitor**), you may need to re-adjust the monitor's display.

- 3 Gamma Correction Adjustment:** Adjust the monitor's gamma correction for optimal brightness with the red, green and blue slider bars.

When these sliders are changed the gamma correction table modifies each pixel's color value.

The brightness produced at the face of the display is proportional to the input voltage raised to the power gamma. This nonlinearity must be compensated to achieve correct reproduction of the image's brightness. The effect of display gamma is to darken the midtones relative to the dark and light regions. The gamma correction adjustment affects the entire screen display. The possible setting range is 0.3 - 4.0. The default setting is 1.0.

With **Link sliders** selected, the three sliders move together as you drag any individual slider. With the check box unchecked, you can adjust colors individually by dragging the applicable slider.

Click the **>1<** button - for each color - to set the gamma correction to the default value of 1.0.

- 4** Click the **Apply** or **OK** button to enable your **Adjustment** settings.

Using Application Profiles and Advanced Functions

Use the *Configuration* dialog to customize application profiles for individual application settings.

Use the *Advanced Settings* dialog to enable the following functions.

- Synchronization of graphics with streaming video or audio
- Offscreen rendering
- Stereo glasses
- Fullscene antialiasing

Configuring Application Profiles

Using the **Configuration** dialog you can individually configure each application's settings.

How to switch to the Configuration dialog?

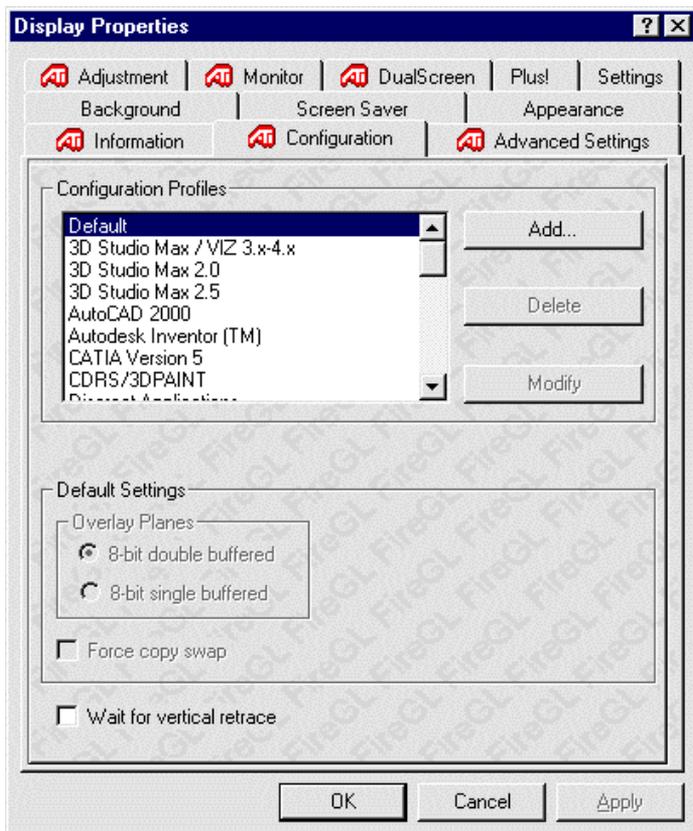
Windows NT 4.0: Select **Display Properties > Configuration**.

Windows 2000: Select **Display Properties > Settings > Advanced > Configuration**.

Activating a configuration profile:

For some of the most popular applications the optimal configuration profile is factory-set by default. Select the application from the list in the **Configuration Profiles** section. This will add necessary Windows registry settings. Click **Apply** and, if prompted, restart Windows.

If you experience problems with your application, or if you want to try to optimize the performance of your system on specific applications, you may modify the configuration settings.



Notes

(1) The configuration default settings typically require modification only for the following:

- diagnostic purposes
- fine-tuning a specific application/system configuration
- specific settings recommended by your hardware or software documentation
- tuning your application/system environment for best performance and memory usage

(2) Only experienced users should modify the configuration settings

Adding a new application profile:

Click the **Add** button in the **Configuration Profiles** section and enter the new application for which you want to set the configuration parameters.

Modifying the configuration parameters:

To change the configuration settings of a specific application, for example, CATIA, select the application from the list in the **Configuration Profiles** section and click the **Modify** button. To remove the selected configuration profile completely, click **Delete**.

Note: You cannot delete the factory-set configuration profiles.

If you add or modify a configuration profile, select or clear the checkboxes the **Settings** section according to your requirements.

Overlay Planes

8-Bit double-buffered

Use 8 bits of each 32-bit frame buffer pixel as double-buffered overlay planes.

8-Bit single-buffered

Use 8 bits of each 32-bit frame buffer pixel as single-buffered overlay planes.

Force copy swap

Force blit copy from back to front buffer.

Wait for vertical retrace

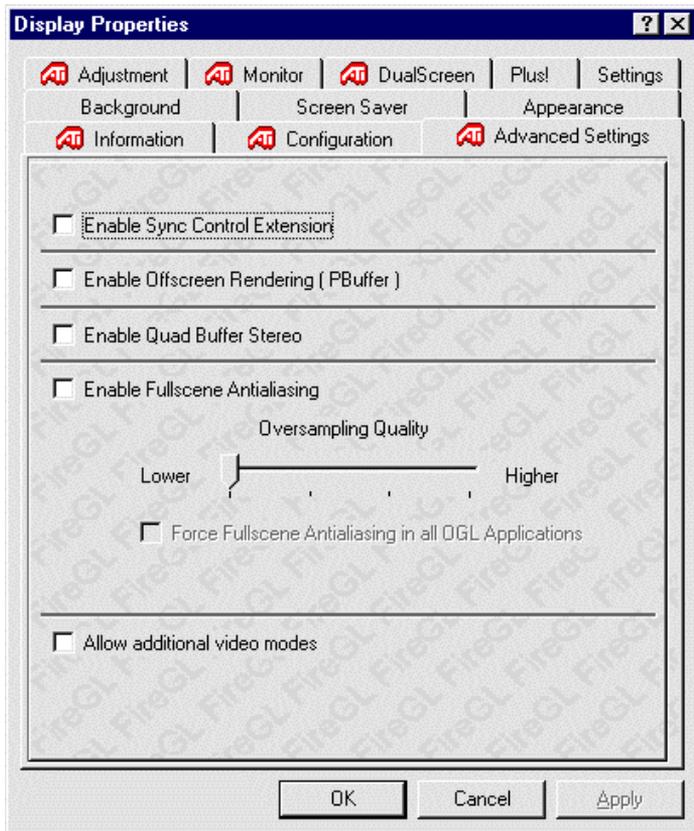
Buffer swap 'synched' to vertical retrace. Enable this function for best picture quality. If you disable 'Wait for vertical retrace' you may experience visual artifacts such as tearing. However, this function may be disabled for performance benchmarking.

Click the **Apply** or **OK** button to enable your **Configuration** settings.

Setting Advanced Functions

Using the **Advanced Settings** dialog you can enable the following advanced functions:

- Synchronization of graphics with streaming video/audio
- Offscreen Rendering
- Quad Buffer Stereo for operation of stereo glasses,
- Fullscene Antialiasing



1 How to switch to the Advanced Settings dialog?

Windows NT 4.0: Select **Display Properties > Advanced Settings**.

Windows 2000: Select **Display Properties > Settings > Advanced > Advanced Settings**.

2 Select your Advanced Settings options

Enable Sync Control Extension

Check this option for precise synchronization control of graphics with streaming video or audio. Applications with real-time rendering requirements need synchronization of events on the graphics card (such as vertical retrace) with other parts of the system.

Enable Offscreen Rendering (PBuffer)

Check this option to use rendering into off-screen pbuffer instead of on-screen rendering.

Enable Quad Buffer Stereo

Check this option to operate stereo glasses. Also, set the refresh rate to 120 Hz via the [Settings](#) dialog.

Notes: (1) Using this option requires stereo shutter glasses connected to the stereoo connector of your card.

(2) You cannot use this option together with **Fullscene Antialiasing**.

Enable Fullscene Antialiasing

Check this option for improved image quality if your application supports this feature.

Oversampling Quality: Move the slider to optimize the oversampling quality.

***Note:** Increasing the oversampling quality may reduce the performance*

Force Fullscene Antialiasing: Check this option to use Fullscene Antialiasing also for OGL applications that do not support this feature

***Notes: (1)** Forcing Fullscene Antialiasing may reduce the performance.*

***(2)** You cannot use this option together with Quad Buffer Stereo.*

Allow additional video modes

Check this option to enable special display modes; e.g. 48 Hz modes.

- 3 Click the **Apply** or **OK** button to enable your **Advanced Settings**.

CHAPTER 4

Reference

**IN THIS CHAPTER**

- [Removing the Fire GL4 Drivers](#)
- [Troubleshooting](#)
- [Technical Details](#)
- [Compliance Information](#)

Removing the Fire GL4 Drivers

This section describes how to properly remove your graphics card software from your system should you need to do so.

**Notes**

(1) Before removing the Fire GL4 video driver, please close all open application programs and disable any anti-virus software that is running on your computer until the driver is removed.

(2) To install or uninstall the Fire GL4 drivers, you need administrator rights or you must be logged on as a user with administrator rights under Windows NT and Windows 2000.

- 1 From the Start menu, click **Start > Programs > ATI Fire GL**, then click **ATI FIRE GL Install/Uninstall**. The **ATI Fire GL Install** dialog box appears.
- 2 Click **Remove the product**.
Note: Make sure that only those components are selected that you want to remove now. (Click **Back** and **Add/Remove components** to select specific software components for removal.)
Then click **Next**.

- 3 Click **Next** to remove the software and shut down your computer.

After you have removed the software according to the instructions, you may remove the hardware.

- 1 Shut down your computer.
- 2 Remove the computer case as outlined in the hardware installation instructions.
- 3 Ground yourself by touching the power supply box.
- 4 To remove the hardware, simply reverse the hardware installation procedures.

Troubleshooting

Your board is a complex electronic device and can only be repaired by authorized technical personnel with special equipment. Do not attempt to change or repair any parts of this product. Doing so will render your warranty invalid.

If you experience a problem using the Fire GL4, check the following sections for advice on how to solve your problem.

Technical Support and FAQs

You may find information on Technical Support, as well as **Frequently Asked Questions** and their answers at the web sites of ATI Inc. Go to www.ati.com and select *Tech. Support*.

No image appears on monitor when computer system is turned on

- Make sure that the Fire GL4 is firmly seated and lined up properly in its AGP slot, and that the monitor cable is firmly and correctly connected to the card. For more information, please refer to [Installing the Hardware](#).
- Make sure that your computer and monitor are plugged into electrical outlets and receiving power.
- Is the monitor turned on and receiving power?

Screen image defects appear

Check if your monitor supports the resolution, horizontal (kHz) and vertical (Hz) refresh rates as required by the graphics card.

Check for your current resolution, refresh rate, and color depth settings in the **Settings** and **Monitor** dialogs of the **Display Properties**.



Warning! Be sure that both video card and monitor support resolution and refresh rates you select. Incompatible resolution/refresh rate selection may result in monitor damage. Refer to your monitor's documentation for recommended resolutions and refresh rates.

Screen image is off-center, color balance is wrong, or there is no picture

- Try adjusting the brightness, sharpness, contrast, and color balance controls of your monitor.
- Try adjusting the centering and positioning controls of your monitor to position the picture on the screen.
Note: The **Monitor Tuning** settings in **Display Properties > Adjustment** tune the position of the picture on the screen via the video signal.
- Set the monitor's RGB inputs (and sync switches, if this option is available) to 75 Ohms, with the sync set to external.

Operating system warns that the video card is not configured properly

- Check the driver installation and make sure that all software is correctly loaded corresponding to your operating system and applications. For more information, please see [Installing the Software](#).
- Set Windows back to 'Standard VGA' and re-install the Fire GL4 drivers.

How to enable a two-monitor mode video mode?

- 1 Select **Enable two-monitor modes** on the **DualScreen** page of the **Display Properties**.
- 2 Select a two-monitor resolution - that is twice a horizontal single-monitor resolution - on the **Settings** page of the **Display Properties**. For example: 1280x1024 is a single monitor resolution - one monitor will be used. 2560x1024 provides the same resolution, but both monitors will be used.

Checking for address and interrupt conflicts

- It is necessary to ensure that the I/O and memory addresses reserved for the graphics board are not used by other hardware devices.
- The integrated on-board VGA controller of your Fire GL4 uses the following addresses (hex):

I/O Address:

Standard VGA I/O: 3B0-3DF

Memory Addresses:

Video RAM: A000-BFFF

Video ROM: C000-C7FF



Note: You cannot change the addresses of your Fire GL4. In case of an address conflict, try to modify the I/O address of the add-on card that causes the conflict.

Resolving Interrupt Conflicts

To support the special graphics processor on the Fire GL4 the system BIOS should automatically assign a system interrupt to the AGP slot where the card is installed. However, there may be problems if your graphics card does not receive an interrupt or a system interrupt is used for more than one device. In case of problems try the following:

- Check the system configuration utility of your operating system for the interrupt assignments.
- Inspect your system BIOS setup for an option that says "Assign IRQ to VGA" or something similar and ensure that this option is enabled. If you do not have this option and your graphics card does not receive an interrupt, contact your motherboard manufacturer for an updated BIOS that has this option.

Some older ISA legacy add-in cards (with jumpers, non-PnP) may cause a conflict if they are not configured in the ESCD (extended system configuration data) area of the system BIOS. Please refer to your computer's User's Guide for information on using the ISA Configuration Utility (ICU) to add the required legacy card resources to the system.

Technical Details

- [Features and Performance](#)
- [Pin Assignments](#)
- [Video Modes](#)
- [Block Diagram](#)

Features and Performance

Hardware

Design

- Single full AGP/Pro50 length
- AGP 2X/4X v2.0 compliant, including side band signalling support

Controller

IBM Chipset: IBM RC 1000 256-bit graphics rasterizer and IBM GT 1000 hardware geometry engine with integrated features.

- VGA controller
- 2D/3D Raster Engine including dual texture unit
- Video Overlay Unit
- 2 DMA / BLIT Units
- Polygon Setup Processor
- 300 MHz / 30-bit PaletteDAC, including 4 color lookup tables and gamma correction table
- 256-bit DDR memory interface

Memory and BIOS

- 128 MByte Double Data Rate (DDR) SDRAM for unified framebuffer, Z-buffer and texture storage
- 128 KByte BIOS FlashROM, 3.3V only, reprogrammable by software

Connectors

- Two 25-pin DVI-I output connectors for digital flat-panel (DFP) displays and analog or digital CRT displays
- Stereographic 3-pin Mini-DIN output connector for stereoviewing eyewear (supports StereoGraphics CrystalEyes shutter glasses).

Hardware Performance

- 32-bit RGB α True color 2D and 3D acceleration
- TrueColor screen resolutions up to 1920 x 1200, double-buffered with Z-buffer
- 24-bit Z, 8-bit stored alpha, 8-bit overlay & 8-bit WID, 8-bit clip/stencil planes
- Performance test on Intel P4 1.5 GHz, single processor, 512 MB Rambus, 1280x1024, TrueColor, 60 Hz.

12.6 Million antialiased 3D 10-pixel vectors per second

20 Million 3D 10-pixel vectors per second, non-antialiased

31 Million 1-pixel triangles per second

12 Million 25-pixel triangles per second, Gouraud shaded, Z-buffered, non-textured

6.2 Million 25-pixel triangles per second, trilinear texture fill rate, Mip-mapped

630 Million pixels per second, Gouraud shaded, Z-buffered, non-textured

220 Million pixels per second trilinear texture fill rate, Mip-mapped

Professional 3D Rendering

- Full OpenGL 1.1 ICD with 1.2 functional extensions
- Single-pass bump mapping and hardware 3D textures
- Gouraud shading
- Bilinear and trilinear MIP-mapping
- Alpha blending
- Fogging and depth cueing
- Anti-aliased lines and sorted polygons
- Scissoring and stippling
- Overlay and stencil buffers
- Z-buffering

Hardware Geometry Acceleration

- 100% OpenGL geometry pipeline
- Full geometry transform processing
- Full lighting calculations for 16 sources, including directional, positional, and spot

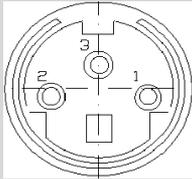
Broadcast Video

- Bilinear scaling (up/down)
- YUV-RGB converter for video and textures

Software

- OpenGL 1.1 ICD with 1.2 functional extensions
- OpenGL support for quad-buffer stereoviewing eyewear
- Supports Windows NT 4.0 and Windows 2000
- 2D and 3D Linux support
- Pentium III Streaming SIMD Extension (SSE) support for Windows NT4.0, Windows 2000, and Linux
- Athlon 3Dnow! support for NT4.0 and Windows 2000
- Dual-monitor support
- DDC2B monitor support on all operating systems
- ACPI Power Management support
- Customized application settings for individual ISV applications

Pin Assignments

Stereo Sync Output Connector	Pin	Function
	1	+ 5 V DC (fused 750 mA)
	2	ground
	3	StereoSync

DVI-I Output Connectors	Pin Function
	<p>1 T.M.D.S. Data2-</p> <p>2 T.M.D.S. Data2+</p> <p>3 T.M.D.S. Data2/4 Shield</p> <p>4 T.M.D.S. Data4-</p> <p>5 T.M.D.S. Data4+</p> <p>6 DDC Clock</p> <p>7 DDC Data</p> <p>8 Analog Vertical Sync</p> <p>9 T.M.D.S. Data1-</p> <p>10 T.M.D.S. Data1+</p> <p>11 T.M.D.S. Data1/3 Shield</p> <p>12 T.M.D.S. Data3-</p> <p>13 T.M.D.S. Data3+</p> <p>14 +5V Power</p> <p>15 ground (for +5V)</p> <p>16 Hot Plug Detect</p> <p>17 T.M.D.S. Data0-</p> <p>18 T.M.D.S. Data0+</p> <p>19 T.M.D.S. Data0/5 Shield</p> <p>20 T.M.D.S. Data5-</p> <p>21 T.M.D.S. Data5+</p> <p>22 T.M.D.S. Clock Shield</p> <p>23 T.M.D.S. Clock+</p> <p>24 T.M.D.S. Clock-</p>
<p>DVI: Digital Visual Interface DDC: Display Data Channel T.M.D.S: Transition Minimized Differential Signal</p> <p>MicroCross Pins: C1 Analog Red Video Out C2 Analog Green Video Out C3 Analog Blue Video Out C4 Analog Horizontal Sync C5 Analog Common Ground Return (Red, Green, Blue Video Out)</p>	

Video Modes

All video modes comply with VESA DMT (Discrete Monitor Timing) or VESA GTF (General Timing Format) standards. The Fire GL4 supports only TrueColor, 32-bit (24 color, 8 α) modes. There is no support for 8-bit or 16-bit modes.

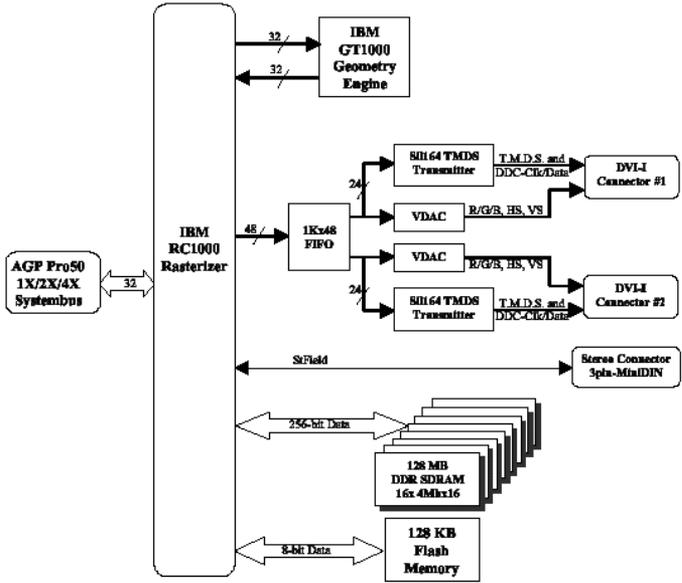
Analog and Digital Monitors with 15-pin VGA connector				
- need VGA-to-DVI adapter -				
Resolution	Color Bits	α Bits	Line Frequency (kHz)	Refresh Rate (Hz)
640 x 480	24	8	31.5, 37.5, 43.3, 50.9, 61.8*	60, 75, 85, 100, 120*
800 x 600	24	8	37.7, 46.9, 54.1 63.9, 77.2*	60, 75, 85 100, 120*
1024 x 768	24	8	48.4, 60.0, 68.7 80.8, 98.8*	60, 75, 85 100, 120*
1152 x 864	24	8	53.7, 67.7, 77.1 91.5	60, 75, 85, 100
1280 x 960	24	8	60.0, 75.2, 85.9 101.7	60, 75, 85 100
1280 x 1024	24	8	64.0, 80.0, 91.1 107.0, 131.6*	60, 75, 85 100, 120*
1600 x 1000	24	8	62.1, 79.4, 89.3	60, 76, 85
1600 x 1024	24	8	63.6, 81.3, 91.4	60, 76, 85
1600 x 1200	24	8	75.0, 93.8, 106.3	60, 75, 85
1792 x 1344	24	8	83.6	60
1920 x 1200	24	8	75.0, 95.0, 95.0	60, 75, 76
2048 x 1536	24	8	95.0	60
DualScreen				
2048 x 768	24	8	48.4, 60.0, 68.7	60, 75, 85
2304 x 864	24	8	53.7, 67.7, 77.1	60, 75, 85
2560 x 960	24	8	60.0, 75.2	60, 75
2560 x 1024	24	8	64.0, 80.0	60, 75
3200 x 1024	24	8	63.6	60

*: Supported only in Stereo mode

Digital Monitors with DVI-I connector				
Resolution	Color Bits	α Bits	Line Frequency (kHz)	Refresh Rate (Hz)
640 x 480	24	8	31.5, 37.5, 43.3, 50.9, 61.8*	60, 75, 85, 100, 120*
800 x 600	24	8	37.7, 46.9, 54.1, 63.9, 77.2*	60, 75, 85, 100, 120*
1024 x 768	24	8	48.4, 60.0, 68.7, 80.8	60, 75, 85, 100
1152 x 864	24	8	53.7, 67.7, 77.1	60, 75, 85
1280 x 960	24	8	60.0, 75.2	60, 75
1280 x 1024	24	8	64.0, 80.0	60, 75
1600 x 1024	24	8	63.6	60
DualScreen				
2048 x 768	24	8	48.4, 60.0, 68.7,	60, 75, 85
2304 x 864	24	8	53.7, 67.7, 77.1	60, 75, 85
2560 x 960	24	8	60.0, 75.2	60, 75
2560 x 1024	24	8	64.0, 80.0	60, 75
3200 x 1200	24	8	61.8	50

*: Supported only in Stereo mode

Block Diagram



Compliance Information

FCC Compliance Information

FCC - DECLARATION OF CONFORMITY FOR A CLASS B DIGITAL DEVICE

We, the Responsible Party

ATI Research Inc.- Fire GL Graphics
4 Mount Royal Avenue, Marlborough, MA
01752-1978 USA; Phone: (508) 303-3900

declare that the product **Fire GL4 AGP**

complies with Part 15 of the FCC Rules. The compliance with those standards is confirmed in an accreditation certificate.

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.
- The use of shielded cables for connection of the monitor to the graphics card is required to ensure compliance with FCC regulations.
 - Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment

Industry Canada Compliance Statement

ICES-003

This class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Compliance Information

EMC Directive 89/336/EEC and amendments 91/263/EEC, 92/31/EEC and 93/68/EEC, Class B Digital Device

EN 55022:1998/CISPR 22 Class B, Limits and Methods of Measurement of Radio Interference Characteristics Information Technology Equipment.

EN 55024:1998, Immunity of Information Technology Equipment (ITE), including

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11

EN 60950:92 + A1:93 + A2:93 + A3:95 + A4:97

Directive EMC 89/336/CEE et amendements 91/263/CEE, 92/31/CEE et 93/68/CEE, dispositif numérique de Classe B

EN 55022 :1998/CISPR 22 Classe B, Limites et méthodes de mesure des caractéristiques d'interférences radiophoniques, Matériel des technologies de l'information.

EN 55024:1998, Norme sur l'immunité de matériel des technologies de l'information, et comprenant

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11

EN 60950:92 + A1:93 + A2:93 + A3:95 + A4:97

EMC Richtlinie 89/336/EEC und Änderungen 91/263/EEC, 92/31/EEC und 93/68/EEC, Digitales Gerät der Klasse B

EN 55022:1998/CISPR 22 Klasse B, Beschränkungen und Verfahren der Messung von informationstechnischen Ausrüstungen mit Funkstörmerkmalen

EN 55024:1998, Unempfindlichkeits-Standard für informationstechnische Ausrüstungen, einschliesslich

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11

EN 60950:92 + A1:93 + A2:93 + A3:95 + A4:97