Fire GL3

User's Guide

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INTRODUCING THE FIRE GL3

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ABOUT YOUR FIRE GL3

Hardware Design

The Fire GL3 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 GL3 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 GL3 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 GL3 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 GL3 offers outstanding 2D/3D performance in Windows NT, Windows 2000, and Linux. Fire GL3 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 GL3?

♦ Motherboard with free AGP slot.
Note: The bracket of the Fire GL3 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 GL3

Performance Overview

Note: For more detailed information on features and performance please refer to the section *Technical Details*.

Hardware Performance

♦ 32-bit RGBα TrueColor 2D and 3D acceleration
Note: The Fire GL3 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 GL3 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 GL3 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 GL3 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 GL3 card.
6. Reassemble and connect your computer system.
7. Install the Fire GL3 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

INSTALLING THE FIRE GL3

♦ **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

Information Before you Start

What do you need to use your Fire GL3?	System Requirements and Tools
	♦ Motherboard with free AGP 1.X slot. **Note:** The bracket of the Fire GL3 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: ⇒ 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 GL3
What type of monitors do you need?	Your Fire GL3 is optimally configured to be combined with digital flat-panel (DFP) TFT LCD displays and digital CRT displays. You can also connect the Fire GL3 to high-resolution MultiSync or multi-frequency monitors or other VGA monitors. To connect VGA monitors you may use the provided VGA->DVI adapters. **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.

Where are the drivers?	♦ 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?	♦ You may connect two monitors to the Fire GL3. ♦ If DDC support is available, the respective resolution and refresh rate for each monitor is automatically detected.
Are you installing your Fire GL3 in place of a card from another manufacturer?	Before you shut down your computer and remove the installed graphics solution , we recommend that you un-install the old card first: ♦ 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 *Setting the Display Driver to Standard VGA.*
Do you have an integrated graphics solution on the motherboard?	Please refer to the manual or contact your motherboard manufacturer to determine how to disable your on-board graphics.
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.
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 GL3 card.

Opening the Computer Cabinet

Warning! Prevent static electric damage. Avoid touching any electronic components. Static discharge can cause severe damage to electronic equipment, but here are some easy ways to see that it doesn't happen:

⇒ Don't touch edge connectors or exposed circuitry.

⇒ If possible, ground your body. A metal power supply in your computer is generally considered the best place to ground yourself.

⇒ Make as few movements as possible to avoid building up static electricity from your clothing, carpets and furniture.

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.

1. Switch off your computer and all external options (printer, display, and others) and unplug all power cables from the electrical source.

2. Remove the cover of the computer. Refer to the instructions in your computer's manual for more information.

Installing the Card

To install your Fire GL3 AGP card, follow these steps:

1. Locate the AGP slot.
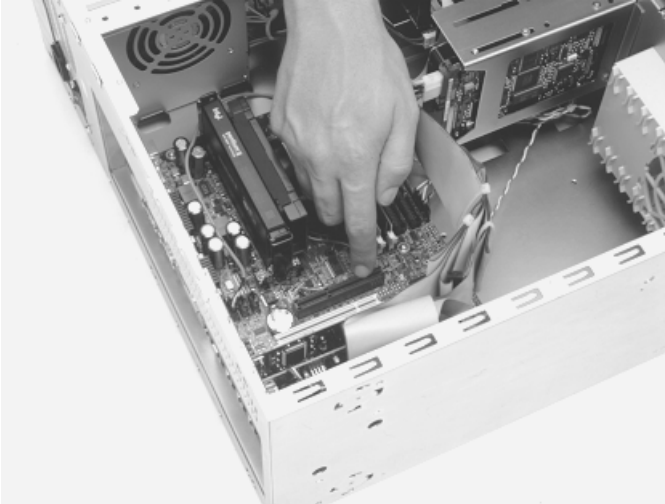
2. Remove the metal slot covers from the AGP slot and the adjacent slot. Save the screws to secure the graphics card later.
3. Hold the card by the edges and position it directly above the AGP slot. AGP cards are designed to fit one way only. Be sure your card is properly aligned.
4. Insert your Fire GL3 card firmly into the AGP slot. Take care to press it evenly and snugly into its slot. Do not force.
5. 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 video adapter to secure the card in place.

Installation in an AGP expansion slot
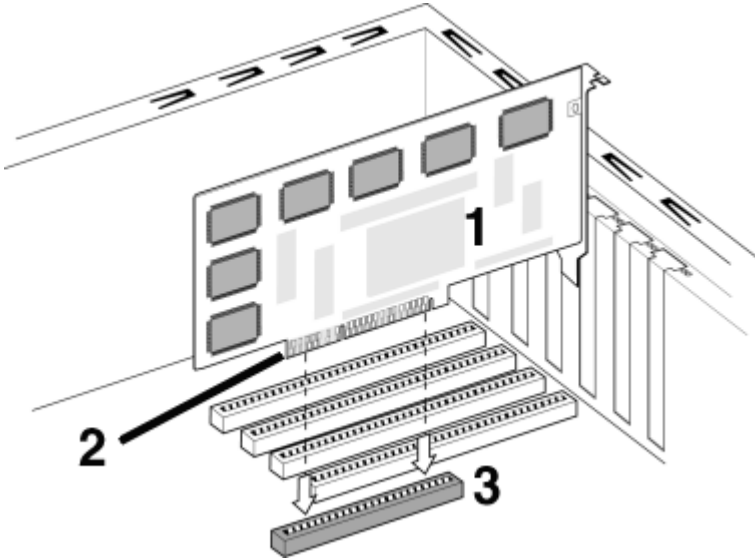
1   Fire GL3 card
2   Card edge connector
3   Expansion slot

Reassembling Your Computer

1. Secure ribbon cables and gently push them down and out of the
    way before you replace the system cover.

2. Replace the computer cover.

3. Reconnect any peripheral equipment cables you may have
    disconnected.

Connecting the Cables and Completing the Installation

Connecting the Monitor Cables

Note - You may connect one or two monitors, either digital CRT / TFT-LCD, or - via an VGA -> DVI-I adapter - analog VGA, to the Fire GL3. 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.
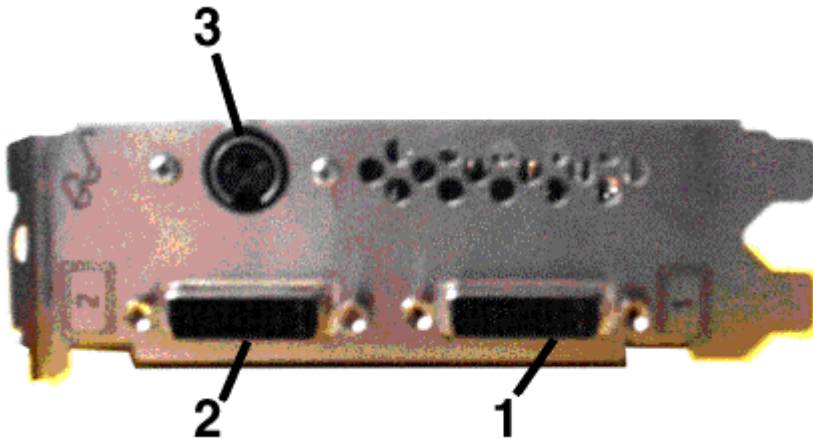
How to connect analog VGA Monitors?

If the data cable connector on your VGA monitor does not fit into the DVI-I connector on the card, please use the VGA -> DVI-I adapter provided with your Fire GL3.

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 GL3 package.

Connect your stereoviewing eyewear to the 3 pin Mini-DIN stereo sync connector (3) on the card.
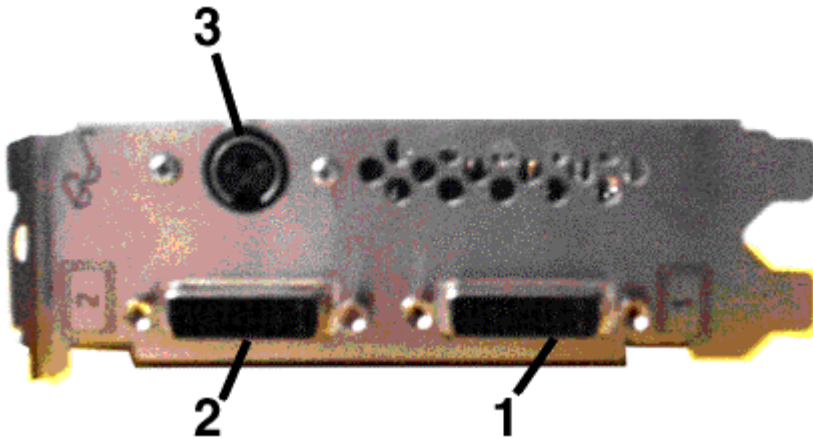
Note: If the connector on your stereoviewing eyewear does not fit into the Mini-DIN connector on the card, please contact your supplier or the manufacturer of the stereo glasses for information on how to obtain an adapter cable.

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 GL3 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 GL3 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 GL3 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 GL3 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 GL3 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 GL3 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.

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 **DIAMOND 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 **Diamond 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 **DIAMOND 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 GL3 graphics accelerator in your system.
    Note: Use the **Diamond 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.

FIRE GL3 SOFTWARE UTILITIES

♦ **CHANGING THE VIDEO SETTINGS**

♦ **MODIFYING APPLICATION PROFILES**

As part of its Windows NT/2000 drivers, Fire GL3 installs additional property pages to your **Display Properties** control panel. They are named as follows.

> **Diamond Monitor**
> **Adjustment**
> **DualScreen**
> **Configuration**
> **Information**

Use the **Configuration** dialog to customize application profiles for individual application 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 **Diamond Monitor** and **Adjustment** dialogs, together with the **Settings** and **Windows Monitor** dialogs, to select your monitor(s) and adjust the screen display, resolution, color depth, and refresh rate.

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**, **Diamond 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 GL3.

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 GL3. 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 **Diamond Monitor** dialog (in Windows 2000: **Settings\Advanced\Diamond 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 GL3.

(4) Operating stereo glasses: Always select a refresh rate of 120 Hz. Also, select the configuration profile **Quad Buffer Stereo** in the **Configuration** 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.
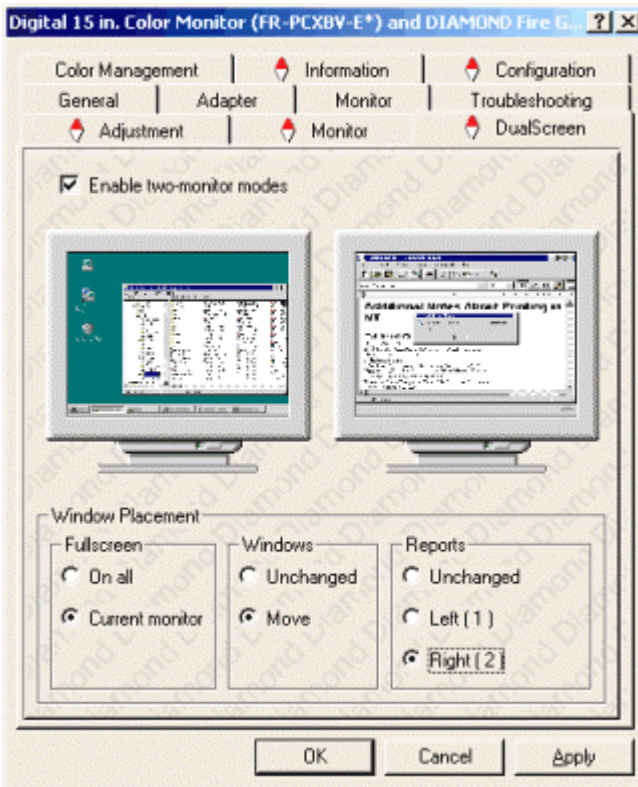
2. Select **Enable two-monitor modes** to enable screen resolutions for a two-monitor configuration in the **Settings** dialog. Deselecting this option will allow single-monitor resolutions only.
Notes: (1) Click on a monitor icon in the **DualScreen** dialog to identify the corresponding monitor. For 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 in single-monitor mode corresponds to 2048x768 in two-monitor mode.

Notes: (1) Refer to your Windows online help and documentation for further information on using the **Settings** dialog.
(2) Use the **Diamond Monitor** dialog (in Windows 2000: **Settings\Advanced\Diamond Monitor**) to select and set your specific monitors.
Use the **Adjustment** dialog (in Windows 2000: **Settings\Advanced\Adjustment**) to adapt the display of the monitors connected to the Fire GL3.

Selecting your Monitor

1. Windows NT **4.0:** Select the **Diamond Monitor** dialog in the
    Display Properties window.
    Windows **2000:** Select the **Diamond Monitor** dialog via **Display
    Properties** > **Settings** > **Advanced** > **Diamond Monitor**.
    Note: In Windows 2000 the **Diamond Monitor** dialog is only
    active if you have two-monitor modes enabled via the **DualScreen**
    dialog. 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.
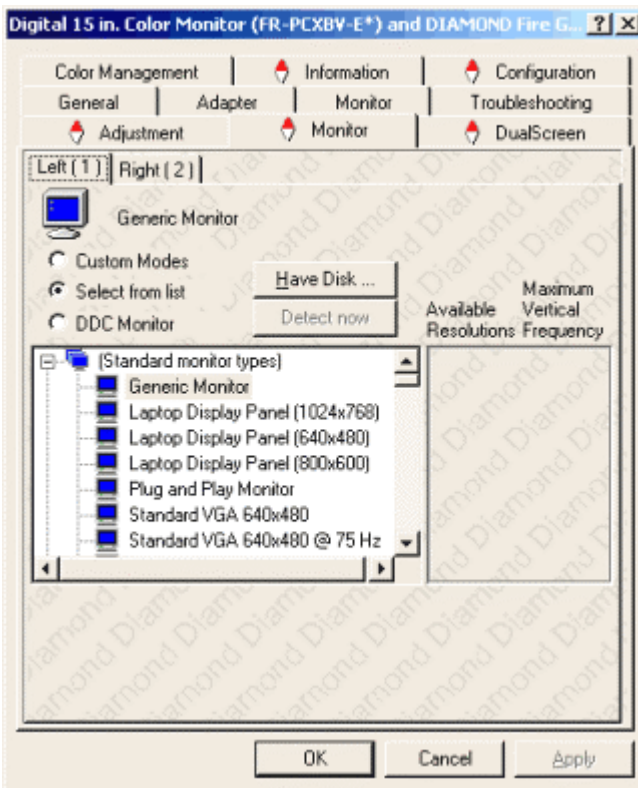
2. Click the tab for the monitor you want to set up.
3. Set the desired operation mode for your monitor.

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 rate.

Select from list

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

A. 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.

B. Click the **Apply** or **OK** button to enable your monitor selection.

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.

A. Click the **Have Disk** button, insert the disk, and select the directory or file containing information about your monitor.

B. Then select your monitor and click the **Apply** or **OK** button.

Click the **Display Diamond 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.

1. 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**.
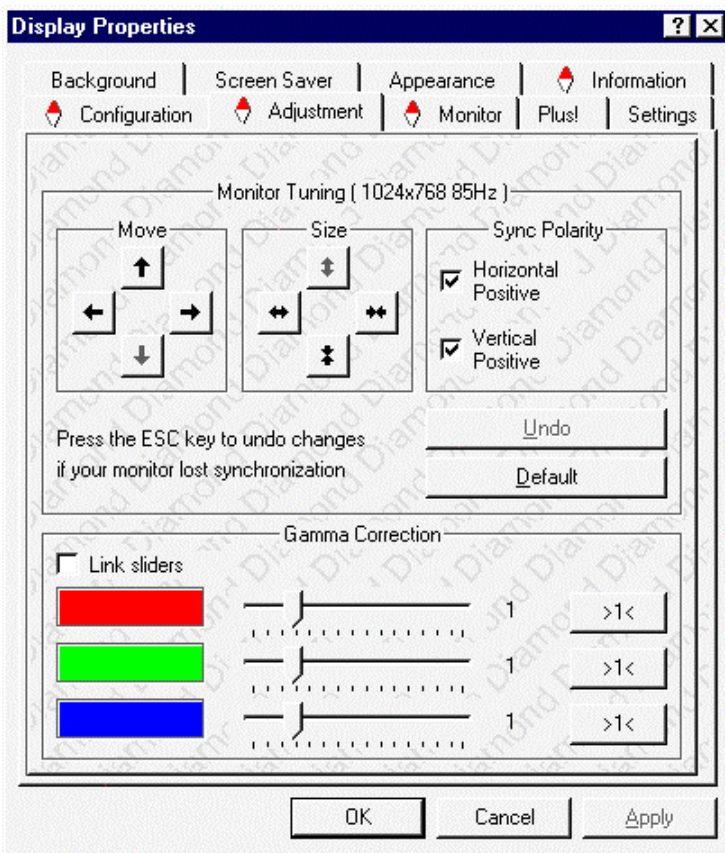
2. **Monitor Tuning**: With the buttons in the **Move** and **Size** sections you can tune the position and size of the monitor's display for the indicated resolution and refresh rate.

    Notes: (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 **>I<** 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.

MODIFYING APPLICATION PROFILES

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

♦ Windows NT 4.0: Select **Display Properties > Configuration**.
Windows 2000: Select **Display Properties > Settings > Advanced > Configuration**.
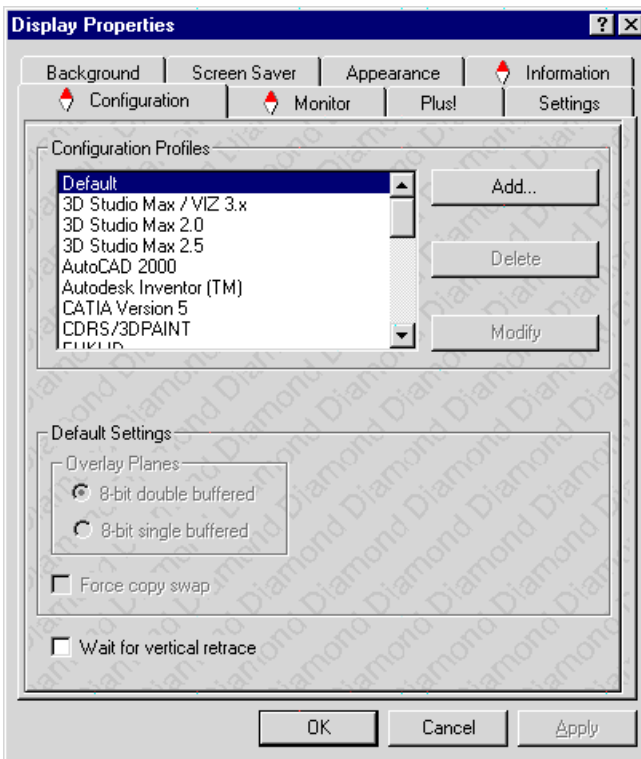
♦ Activating a configuration profile:
For some of the most popular applications the optimal configuration profile is factory-set by default. Select the application from the list in the **Configuration Profiles** section. This will add necessary Windows registry settings. Click **Apply** and, if prompted, restart Windows.
To operate stereo glasses select the configuration profile **Quad Buffer Stereo**. Also, set the refresh rate to 120 Hz via the **Settings** dialog.

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.

REMOVING THE FIRE GL3 DRIVERS

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

Notes: Before removing the Fire GL3 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!

To install or uninstall the Fire GL3 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 > Diamond**, then click **DIAMOND Install/Uninstall**. The **Diamond Install** dialog 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.

COMMON PROBLEMS AND SOLUTIONS

If you experience a problem using the Fire GL3, check the following sections for advice on how to solve your problem.

FAQs

Frequently Asked Questions and their answers may be found at the web sites of ATI Inc. Go to www.ati.com and select *Support.*

No image appears on monitor when computer system is turned on

♦ Make sure that the Fire GL3 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 GL3 drivers.

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 GL3 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 GL3. 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 GL3 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 2/3 length AGP/ATX card
- 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 RGBα True color 2D and 3D acceleration

♦ TrueColor screen resolutions up to 1920 x 1200, double-buffered

♦ 24-bit Z, 8-bit stored alpha, 8-bit overlay & 8-bit WID, 8-bit clip/stencil planes

♦ Performance test on a 733 MHz single Pentium III, 512 MB RAMBus, 1280x1024, TrueColor, 60 Hz.

   ⇒ 40 Million antialiased vertices per second sustained

   ⇒ 34 Million polygons per second fill rate, Gouraud shaded, Z-buffered, non-Textured

   ⇒ 480 Million pixels per second, Gouraud shaded, Z-buffered, non-textured

   ⇒ 200 Million texels per second trilinear mapped texture

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
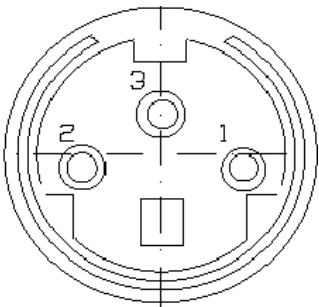
Broadcast Video

♦ 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 Output Connectors

Pin	Function
1	T.M.D.S. Data2-
2	T.M.D.S. Data2+
3	T.M.D.S. Data2/4 Shield
4	T.M.D.S. Data4-
5	T.M.D.S. Data4+
6	DDC Clock
7	DDC Data
8	Analog Vertical Sync
9	T.M.D.S. Data1-
10	T.M.D.S. Data1+
11	T.M.D.S. Data1/3 Shield
12	T.M.D.S. Data3-
13	T.M.D.S. Data3+
14	+ 5V Power
15	ground (for + 5V)
16	Hot Plug Detect
17	T.M.D.S. Data0-
18	T.M.D.S. Data0+
19	T.M.D.S. Data0/5 Shield
20	T.M.D.S. Data5-
21	T.M.D.S. Data5+
22	T.M.D.S. Clock Shield
23	T.M.D.S. Clock+
24	T.M.D.S. Clock-
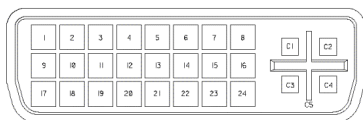
DVI: Digital Visual Interface

DDC: Display Data Channel

T.M.D.S: Transition Minimized Differential Signal

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)

VIDEO MODES

All video modes comply with VESA DMT (Discrete Monitor Timing) or VESA GTF (General Timing Format) standards. The Fire GL3 supports only TrueColor, 32-bit (24 color, 8 α) modes. There is no support for 8-bit or 16-bit modes.

VGA Monitors

Resolution	Color Bits	α Bits	Line Frequency (kHz)	Refresh Rate (Hz)
640 x 480	24	8	31.5, 37.5, 43.3, 56.9, 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, 80.9, 98.8*	60, 75, 85, 100, 120*
1152 x 864	24	8	53,7, 67.7, 77.1, 93.1	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	52.7, 63.8, 79.8, 91.1, 107.0, 131.6*	50, 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	74.5, 94.0, 95.0	60, 75, 76
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	63.8, 79.8	60, 75
3200 x 1200	24	8	61.75	50

*: Supported only in Stereo mode

DFP Monitors

Resolution	Color Bits	α Bits	Refresh Rate (Hz)
640 x 480	24	8	60, 75
800 x 600	24	8	60, 75
1024 x 768	24	8	60, 75
1280 x 1024	24	8	60, 75
1600 x 1200	24	8	50, 60

BLOCK DIAGRAM
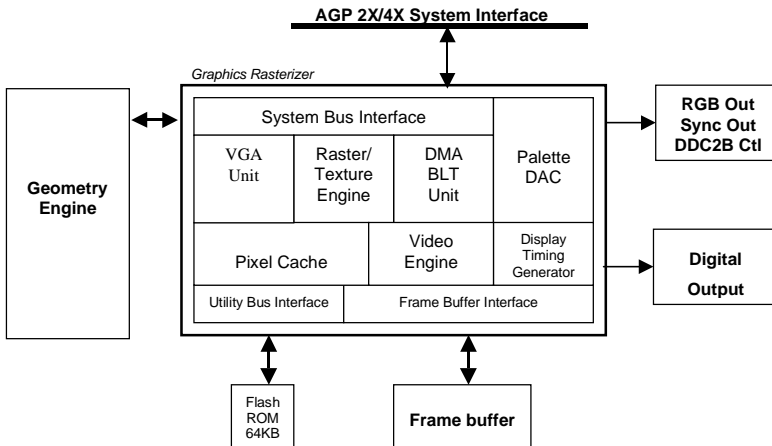
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EMI COMPLIANCE INFORMATION

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 GL3 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 92/31/EEC and 93/68/EEC, Class B Digital Device

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

EN 50082-1, Generic Immunity Standard for Residential, Commercial and Light Industrial Products
(EN 61000-4-2:96, EN 61000-4-3:97, EN 61000-4-4:96,
EN 61000-4-6:97)

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

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

EN 50082-1, Norme sur l'immunité générique pour produits domestiques, commerciaux et industriels légers.
(EN 61000-4-2:96, EN 61000-4-3:97, EN 61000-4-4:96,
EN 61000-4-6:97)

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

EN 55022/CISPR 22, Beschränkungen und Verfahren der Messung von informationstechnischen Ausrüstungen mit Funkstörmerkmalen)

EN 50082-1. Allgemeiner Unempfindlichkeits-Standard für Haushalt- und kommerzielle Produkte sowie Erzeugnisse der Leichtindustrie
(EN 61000-4-2:96, EN 61000-4-3:97, EN 61000-4-4:96,
EN 61000-4-6:97)