User's Manual

ASUS®

AGP-V5200

Windows NT Workstation Graphics Accelerator

ASUSTeK COMPUTER INC.

The product name and revision number are both printed on the product itself. Manual revisions are released for each product design represented by the digit before and after the period of the manual revision number. Manual updates are represented by the third digit in the manual revision number.

For previous or updated manuals, BIOS, drivers, or product release information, contact ASUS at http://www.asus.com.tw or through any of the means indicated on the following page.

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Manual Revision:	**1.00 E256**
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Communications Regulation Information

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

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

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

WARNING! The use of shielded cables for connection of the monitor to the graphics card is required to assure 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.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

1 Introduction

The ASUS AGP-V5200 board has been designed for high performance professional 3D graphics acceleration. This device combines workstation class 3D graphics acceleration and state of the art 2D performance. All 3D rendering operations are accelerated by 3Dlabs's Dual GlintMX chipset including Gouraud shading, texture mapping, depth buffering, antialiasing and alpha blending. The addition of Gamma chip enhances performance by off-loading the host computer of both the rendering and setup calculations.

The ASUS AGP-V5200 provides the ultimate 3D system performance for the power user. It provides greatly enhanced hardware support for texture mapping and significant performance improvements.

ASUS AGP-V5200 Item Checklist

Check that your package is complete. If you discover damaged or missing items, contact your retailer.

- ASUS AGP-V5200 graphics accelerator card
- Support drivers and utilities (2 floppy disks)
- User's Manual

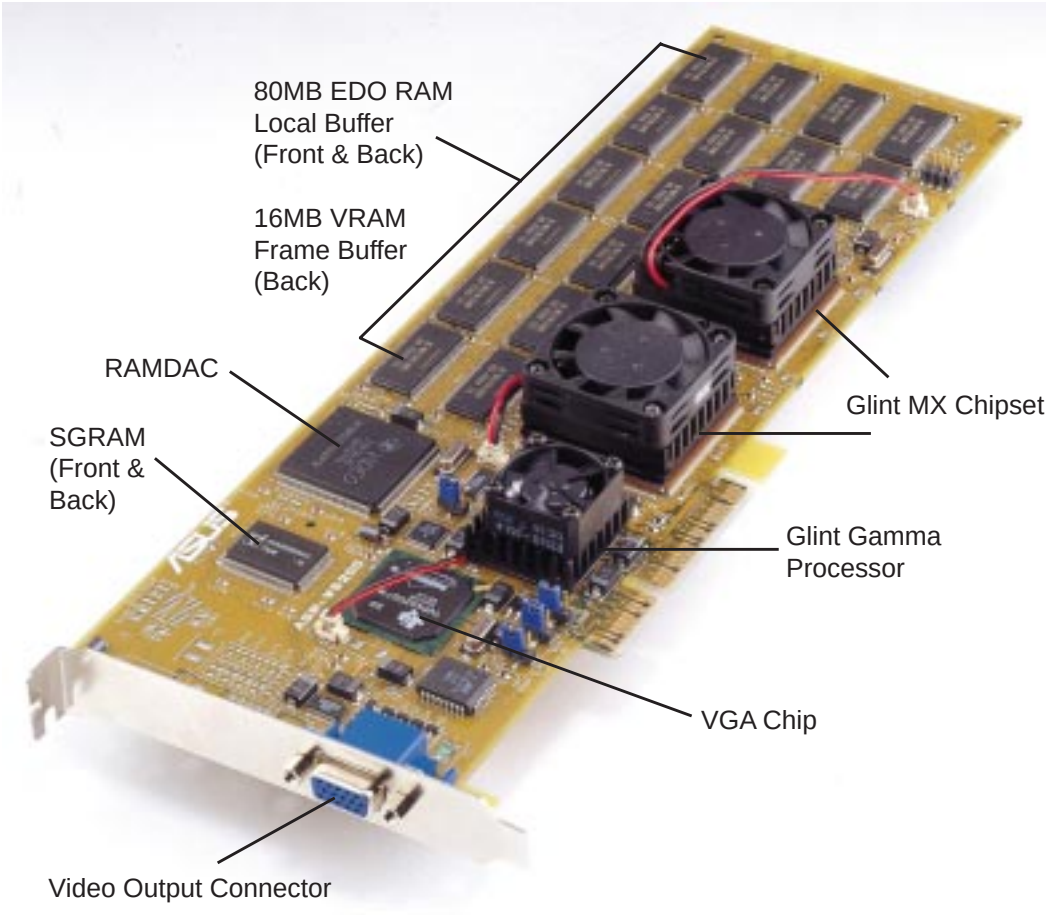
System Capabilities

- Onboard SVGA
- 16MB VRAM as frame buffer and 80MB EDO DRAM as local buffer

System Requirements

- Suitable for use in Pentium II computers supporting the AGP bus
- VGA, XGA, SuperVGA or Extended VGA compatible monitor

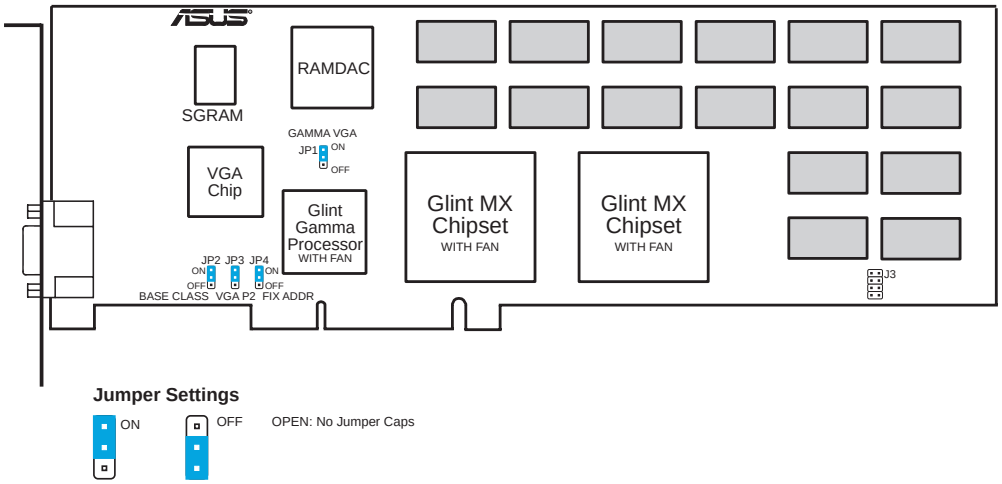
ASUS AGP-V5200 Parts



ASUS AGP-V5200 Layout

Front

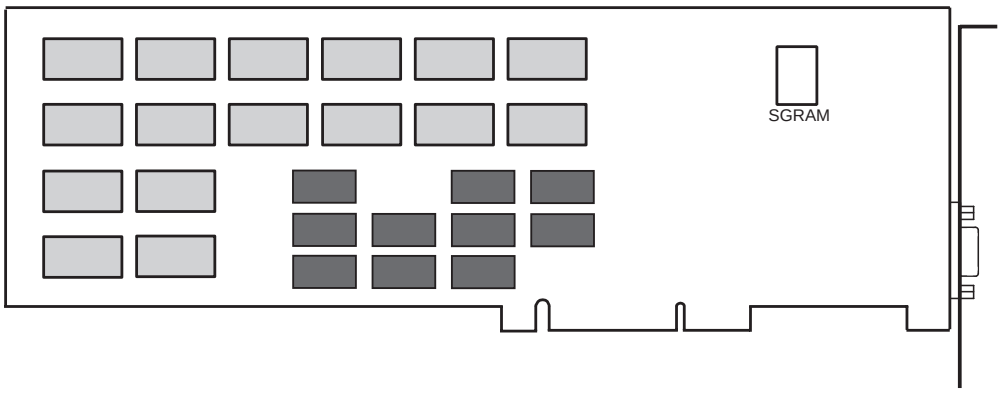
Shaded Items: EDO RAM



Jumpers are factory-set, as shown in this layout. **Leave on these default settings**, i.e., JP1, JP2, JP3, JP4: On; J3: All OPEN.

Back

Light Shaded Items: EDO RAM; **Dark Shaded:** VRAM



2 Hardware Installation

The instructions in this chapter discuss important static electricity precautions and procedures for installing the ASUS AGP-V5200 graphics accelerator to your computer. The board will have been configured for the options installed at the factory. Before installing the board, check that the jumper settings (*see* board layout) are correct and that you have taken note of the static electricity precautions.

Static Electricity Precautions

1. Unplug your computer.
2. Before handling any components or touching anything inside the system unit, discharge your body static electric charge by using a grounded wrist strap. If you do not have one, hold onto a grounded surface. If the system unit is connected to a grounded outlet, you can touch a suitable part of the system metal chassis.
3. Do not remove boards from their antistatic bags until you are ready to install them.
4. When handling boards, hold them by their edges and their metal mounting brackets. Avoid touching components on the board and the edge connectors that plug into the expansion slots.
5. Avoid plastic, vinyl and styrofoam in your work area.

Installing the ASUS AGP-V5200

Installing the ASUS AGP-V5200 in your system is simple. To install the board, follow these steps:

1 Switch off your system and all peripheral devices.

2 Follow the static precautions described on the preceding page.

3 Remove the cover from your system.

4 Remove any existing video boards installed in the system.

To do this, detach the monitor cable from an existing video board, remove the screw that holds the board in place and then pull it out from its expansion slot. Store the old video board in an antistatic bag.

5 Find the AGP expansion slot in your system.

6 Remove the metal cover plate from the slot you have chosen and put the screw to one side.

7 Ensure the onboard jumpers are correctly set on your AGP-V5200, which should be on their default setting (*see* board layout).

8 Align the board AGP slot connector with the expansion slot in your PC and gently lower and push the board into the free slot.

9 Secure the board to the expansion slot with the screw you removed from the metal plate.

10 Replace the cover on your system and plug in the power cord.

11 Reattach the video cable to the video output connector.

12 Turn on the monitor and power up the system.

3 Software Installation

This chapter describes the Windows NT 4.0 Display Driver and OpenGL Installable Client Driver and Heidi for the ASUS AGP-V5200. It also explains how to install these drivers.

This document should be read in conjunction with the README.TXT file on the installation floppy disk, which contains details of the driver version and installation instructions.

Prerequisites

- Windows NT 4.0 (Build No. 1381), Service Pack 3 is recommended.

  Service Pack 3 is necessary for AGP cards to work and for DirectDraw to be hardware accelerated.
- Intel Pentium II processor
- ASUS AGP-V5200 Board

Installing the Software

Before installing the software, turn off your computer and install the ASUS AGP-5200 board according to the hardware installation instructions. Start your computer using the non-VGA mode option [from the OS Loader, highlight and choose the **Windows NT Workstation Version 4.00** option; the other option is **Windows NT Workstation Version 4.00 (VGA Mode)**]. New display drivers cannot be installed when the machine has been started with the **VGA Mode** option.

Once started and you have logged in as an Administrator, follow these steps :

1. On the **Control Panel** window, double-click the **Display** program icon, and then click the **Settings** tab.
2. Click the **Display Type…**. The **Display Type** window will appear.
3. On the **Display Type** window, click **Change...**. The **Change Display** window will appear.
4. On the **Change Display** window, click **Have Disk ...**. The **Install from Disk** window will appear.
5. Type the path **A:**. Insert the release floppy disk for your machine architecture into the drive and press **OK**. The **Change Display** window will appear with a list containing a single entry that says “ASUS AGP-V5200”. Select this item and press **OK**.
6. Follow the onscreen instructions and quit **Control Panel**. When prompted, restart your computer by pressing **Yes**.

NOTE There are no options to select a given resolution during installation. When the machine restarts, Windows NT 4.0 allows the video mode to be dynamically changed without the need to restart.

Your computer will now shut down. On restart, choose the non-VGA mode option (*see* earlier procedure for choosing this option). Your computer will restart using the AGP-V5200 as the display device. You can check this by double-clicking the **Display** program icon again on the **Control Panel** window and then clicking the **Change Display Type...** button. The **Display Type** window should report that it is running the AGP-V5200.

To change the desired resolution, color depth, and refresh rate, double-click the **Display** program icon on the **Control Panel** window and select the desired resolution, color depth and vertical refresh rate. This selected mode can be tested to ensure that it can be handled by the monitor. On some double buffered applications a higher refresh rate allows higher frame rates to be achieved. The display will change dynamically.

Resolutions and Color Depths

A full list of all modes is available through the **Display Properties** dialog box once the ASUS driver has been installed and the system restarted. Click the **List all Modes** option to get this list.

By default, only resolutions capable of supporting double buffered OpenGL applications are selectable using the Display applet, unless a control panel setting is set to override this (*see* procedure later in this chapter). This is to avoid confusion when double buffered OpenGL applications run through software rendering because of insufficient memory available on the graphics board to support accelerated double buffering.

Resolution and Color Depth Table

Resolution	Color depth	Vertical refresh rate (Hz)
640 x 480	32768 colors/True Color	60, 75, 85, 100
800 x 600	32768 colors/True Color	60, 75, 85, 100
1024 x 768	32768 colors/True Color	60, 75, 85, 100
1280 x 1024	32768 colors/True Color	60, 75, 85, 100
1600 x 1200	32768 colors/True Color	60, 75

3D Graphics and Double Buffering

The display driver contains an extension to allow 3D applications and the OpenGL installable client driver (ICD) to drive the AGP-V5200. To provide double buffering capability for these 3D applications, the display driver offers three features.

A screen-sized off-screen buffer is configured if the DoubleBuffer.NumberOfBuffers registry variable is 2 (*see* explanation later). This buffer is used in 256-color, 32768-color and True Color modes to provide BitBlt double buffering. The off-screen buffer is also used to provide full screen hardware double buffering if an application window covers the whole screen. To provide double buffered accelerated capability, there must be enough memory to contain two frame buffers. This may not be the case at high resolutions. On the AGP-V5200, the video memory is separate from the depth buffer/texture memory.

Full Screen Double Buffering

If an application window covers the whole screen, the display driver will automatically switch to use a hardware double buffer mechanism, which can have a significant performance benefit. This mechanism will not be available to an application that has more than a small window border at the top of the screen. It will also be unavailable if, for example, a floating task bar (common on Windows NT 4.0) is at any edge other than the top of the screen, since the display driver will check and find that the application window does not cover the whole screen.

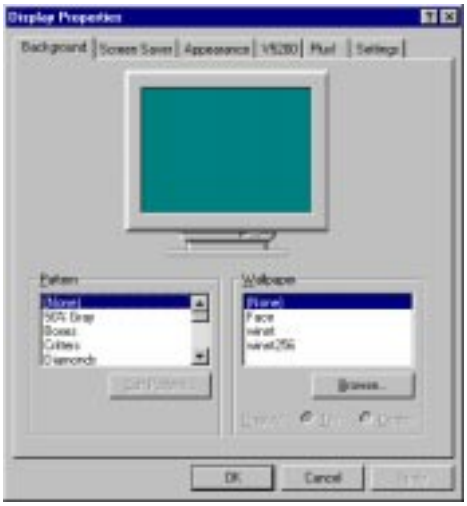
Full Flip Double Buffering

Flip double buffering is available on the AGP-V5200. Flip double buffering is available for applications that run in a single window and is facilitated by all of the desktop rendering being written to both frame buffers. When this is available, only the first double buffered window will use this approach. When there are multiple double buffered windows, the application reverts to blit double buffering.

Blit Buffering

Blit double buffering is the simplest form and involves copying the contents of the back buffer into the displayed buffer. For the given configuration, the OpenGL ICD will always try and use the fastest double buffering method that it can. If the selected screen resolution/color depth is too high, double buffered applications may start to run slowly, because they revert to using the Microsoft Generic OpenGL renderer.

Display Properties

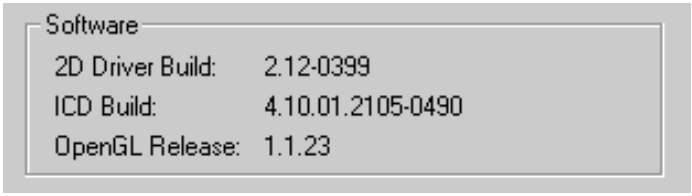


Some of the registry variables, detailed in the next section, can be conveniently changed by means of the **V5200** tab in the **Display Properties** dialog box. The **V5200** tab allows both boot-time and run-time control over the configuration of OpenGL and other applications using the ASUS AGP-V5200 display driver. The control panel is split into a number of pages as listed later. The pages are selected by clicking one of the three configuration buttons at the top right of the **V5200** dialog box.

NOTE You must have administrator privileges to change any settings in the **Display Properties** dialog box. If you do not have administrator privileges the options will be grayed out and cannot be changed.

Information

Software



2D Driver Build

For information only. This reports 2.12-0399 corresponding to the File and Product Version information required for Window Hardware Quality Labs compliance under Windows 95.

ICD Build

For information only. This reports 4.1x.0x.xxxx-xxxx corresponding to the File and Product Version information required for Window Hardware Quality Labs compliance under Windows95 (the same OpenGL ICD binary runs under both Windows NT/95).

OpenGL Release

For information only. This is the OpenGL version number that can also be queried by an OpenGL application at run-time. Applications will do this to determine what functionality they can expect to be provided by the implementation. Full OpenGL version 1.1 is supported by ASUS's ICD. This release reports 1.1.23, where the last two digits identify the ICD internal release number (increases with every release).

Hardware

Chip Name

For information only. This reports the name of the chipset on the board, such as 3Dlabs GMX2000.

Clock Speed

For information only. This reports the speed, in MHz, at which the graphics chip is running.

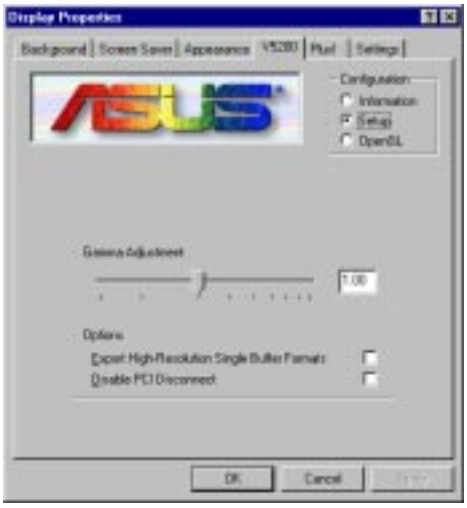
Depth/Stencil

For information only. This reports the total amount of memory used by auxillary buffers for use in hardware hidden surface removal (z-buffering) and masking/clipping (stencil and GID planes).

Texture Memory

For information only. This reports the total amount of graphics card memory available for storing texture maps — after allowing for full screen front, back and depth buffers. Smaller desktop color depths and/or screen resolutions will free up more graphics card memory for texture use increasing the amount available for non-swappable textures (*refer* to the notes later on the texture memory manager).

Setup



Gamma Adjustment

Gamma adjustment affects the entire screen display. The default gamma value is 1.0 and the allowable range of floating point values is from 0.3 to 4.0.

Options

Export High Resolution Single Buffer Formats

When this option is selected, it will enable the driver to support screen resolutions where only single buffered OpenGL applications are hardware accelerated (because at higher resolutions, there is not enough graphics board memory to support double buffered OpenGL applications). By default, this is not enabled. This prevents a screen resolution to be selected, which will result in OpenGL applications that use double buffered modes to be unaccelerated. This option should be selected by users who wish to run 2D applications at the highest available resolutions.

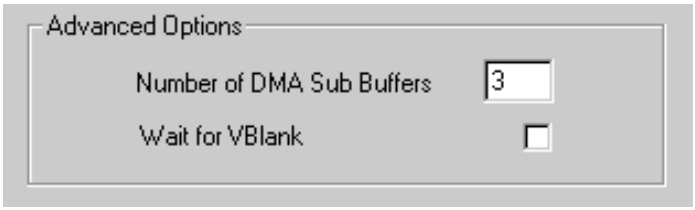
Disable PCI Disconnect

Higher 2D graphics performance can be achieved by using PCI Disconnect. However, this feature can sometimes adversely affect the performance of other devices, such as modems and sound cards.

Select this option if you are experiencing problems with the performance of other devices.

OpenGL Page

Advanced Options



Number of DMA Sub Buffers

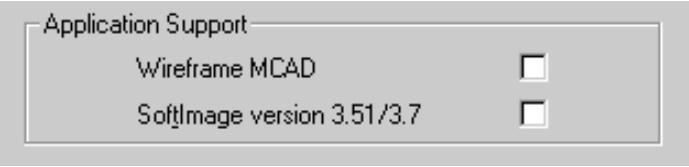
Each DMA buffer is subdivided into sub-buffers, which are used in conjunction with an Interrupt DMA mechanism to reduce latency in the system. The number of sub-buffers can be set here. Setting it to 2 will disable the interrupt mechanism.

Wait For VBlank

Smooth animation of 3D applications can be achieved by rendering to an off-screen window/desktop sized color buffer and copying or swapping the contents to the displayable front buffer at the completion of each frame. Enabling this option prevents tearing of the display by synchronizing the swap of the back and front buffers to the vertical blank retrace interval of the monitor display.

Leave this option unselected if the highest rendering frame rates of a double buffered application are desired (i.e., not locked to sub-multiples of the current display refresh rate).

Application Support



Wireframe MCAD

Selecting this option will give the best performance for wireframe MCAD applications on the ASUS AGP-V5200. For most other OpenGL applications, clearing this option will give increased performance.

SoftImage Version 3.51/3.7

Version 3.51/3.7 of SoftImage requires this to be set to ensure the correct operation on the ASUS AGP-V5200. Changing this option requires a restart of the system.

OpenGL Texturing and Extensions

Efficient Use of Multiple Textures

OpenGL applications that render primitives with multiple texture maps will achieve much higher performance by not invoking the different textures in immediate mode. There are two alternative options for efficient switching between multiple textures.

The first and much preferred option is to use the OpenGL texture object functionality. Texture objects are fully editable and may have their images and parameters altered at any time (unlike the use of textures in display lists). Details on texture object functionality is available in the OpenGL 1.1 specification. The performance gain using this approach will benefit performance for the ASUS AGP-V5200 board.

The second option is to define each texture (or array of mip map resolutions) within a display list — *with the limitation that only one texture is allowed per display list*. Switching between different textures is then achieved by referencing the appropriate display list. Since display lists are not editable in OpenGL, the OpenGL implementation is able to cache texture data defined within a display list. In effect the display list identifier acts as a texture handle. This caching cannot be performed when a texture is invoked in immediate mode because the application in this case is expected to have changed the texture data since the time it was previously referred.

Texture Memory Cache Management

Texture data is stored in the local buffer memory on the graphics card. The memory available for textures is therefore constrained by the local buffer memory available. It is also constrained by the amount of local buffer memory already consumed, such as for the depth buffer and stencil buffer. This amount varies according to the current display resolution in use, i.e., there is more memory available for textures when the display resolution (and therefore the size of the depth buffer, stencil buffer) is lowered.

On 3Dlabs OpenGL releases prior to version 1.1.14, if the condition is reached where there is insufficient local buffer memory to load a new texture, then the OpenGL texture download will not succeed and will set the error code GL_OUT_OF_MEMORY. Textured primitives that expect to use this texture will not be rendered correctly. To improve on this behavior a scheme for swapping

textures to/from system host memory is required. By setting aside a portion of texture memory on the graphics card for use as a texture cache and tracking when a texture switch takes place, textures can be reloaded to the cache as needed from a copy kept in host memory when the texture was first downloaded. If the requested texture is already present in the cache, then no reload is performed.

Ideally, for the greatest flexibility and most efficient use of available texture memory, all textures should be cacheable. However, for a software texture cache manager, there is a small performance overhead to be paid for this tracking and any delay in reloading a swapped out texture (as a texture could be swapped out at any time by another OpenGL process). By allowing the user to specify the size of the texture cache through the use of the registry variable OpenGL.MaxTextureSize, an approximate balance between non-swappable and swappable textures can be made (and hence performance). Thus an application should load any of the real-time critical textures first because the texture manager will only place textures in cache and/or host memory if a space of sufficient size is not available in the non-swappable area of texture memory.

To guarantee all texture requests no matter how large, any texture whose size in texels is greater than the cache size will be silently filtered down to fit in the cache (while preserving aspect ratio). On the ASUS AGP-V5200 board the size of the texture cache allows extra room for all lower mipmap level textures including border texels.

Texture Filter Modes

The default texture minification filtering for OpenGL involves mip-map filtering. This gives good textured rendering quality but at the cost of low performance. Much higher performance can be obtained by changing the default texture filtering such that the minification and magnification filtering modes are the SAME. Setting them to GL_LINEAR gives good quality bilinear filtering and improved performance.

Setting both modes to GL_NEAREST will give nearest neighbor filtering and the fastest possible performance.

BGRA Extension

The BGRA extension provides an additional pixel color format for compatibility with the blue, green, red component ordering of Microsoft Windows DIBs (device independent bitmaps).

Palette Texture Extension

The AGP-V5200 provides direct support for palette textures, where each texel represents an index into an on-chip RGBA (8-bits per component) lookup-table. An OpenGL palette texture extension has been defined by Microsoft, which is supported by 3Dlabs OpenGL ICD from release 1.0.11. The supported texel depths are 1, 2, 4, and 8 bit texel depths.

Besides improving texture performance and reducing the memory requirements for storing textures in the local buffer by repeatedly updating the texture LUT, animation effects, such as real-time color cycling, are also possible.

If many textures share the same look-up table (LUT), performance gains can be obtained with paletted texture objects by forcing the textures to share the same palette (particularly for 8-bit palette textures on the GLINT MX). The default behavior when texture switching through calls to glBindTexture is to send down the LUT on every switch. This can be disabled by the EXT_shared_texture_palette extension.

Driver Extension

In addition to the extensions mentioned earlier, the 3Dlabs_DriverState extension has been added. This extension is simply a mechanism for adding extra state to the Client Driver and adds extra control to the currently selected context.

Swap Hint Extension

The AGP-V5200 supports the Microsoft-defined extension GL_WIN_swap_hint. This extension allows the area of a window swapped by the SwapBuffers call to be restricted. This can give performance benefits when only a small area of the display is being updated at a time. For more information, contact Microsoft directly or search in the latest Win32 help files for glAddSwapHintRectWIN.

Kinetix Buffer Region Extension

This extension was specified and implemented as an optimization for 3D Studio MAX® 2. It can be freely used within other applications that could benefit from it. The extension allows areas of frame, depth and stencil buffer to be stored away and later repaired. 3D Studio MAX® 2 uses the extension to optimize display when a single object is being edited within a complex scene.

3D Studio MAX®

This release supports hardware acceleration of both 3D Studio MAX® 1 and 3D Studio MAX® 2. For 3D Studio MAX® 1, it is accelerated through the Autodesk propriety API, Heidi, while for 3D Studio MAX® 2, it is accelerated through OpenGL.

3D Studio MAX® 1.x

Hardware acceleration is provided on MAX 1 through a Heidi driver. This driver, wglint.hdi, comes as a standard with the display driver. Once the display drivers have been installed, the Heidi driver must be manually copied to your /3dsmax/ drivers directory (or wherever you installed the application). Start MAX and go to the **File/Preferences** dialog box. Click the **Viewports** tab and then click **Choose Driver**. Ensure that the **GLINT Hardware** option is selected. Restart MAX.

On the ASUS AGP-V5200, best performance will be provided when running in TrueColor display modes.

The ASUS AGP-V5200 should be used with OpenGL acceleration under 3D Studio MAX® 2. Although the application will run, you will not obtain full acceleration when running under 3D Studio MAX® 1.x with a Heidi driver.

When running MAX to ensure you are getting hardware acceleration go to the **About 3D Studio MAX** dialog box under the **Help** menu. When running on the ASUS AGP-V5200, the driver section should read **GLINT Hardware (MP)**.

3D Studio MAX® 2

After installing these drivers, start MAX and go to the **File/Preferences** dialog box. Click the **Viewports** tab and then select **Choose Driver**. Ensure that the **OpenGL** option is selected. Shut down MAX. Before restarting MAX, delete the MAX OpenGL configuration file that stores information about your OpenGL driver. Doing this will cause MAX to reset some of its options to get the best performance from these drivers. The file is called oglgfx.ini and is located in your /3dsmax2/ directory (or wherever you installed MAX). If the file does not exist, restart MAX.

When running with OpenGL you can confirm that you are getting hardware acceleration by viewing the **About** dialog box under the **Help** menu. The driver box in the top right hand corner of the resulting dialog should read **OpenGL (3Dlabs v1.1.23)**. If it reads **OpenGL (Microsoft Corporation v.1.1.0)**, then you are running through Microsoft's software OpenGL and should consult the OpenGL section of this document for more information on enabling OpenGL acceleration.

When running through OpenGL, 3D Studio MAX® 2 defaults to not backface culling wireframe objects. This means that wireframe objects typically use twice as many lines as they do through a Heidi driver. This can result in poor performance, in comparision to a Heidi driver. This behavior can be changed from within the application. Go to the **File/Preferences** dialog box. Click the **Viewports** tab and then click **Configure Driver**. Select the option **Display Wireframe Objects Using Triangle Strips**. This causes wireframe objects to be backfaced culled and can drastically improve performance. The setting also causes shared edges within polygons to be drawn which may not appear as desired.

GLINT Event Logging

The ASUS Display Driver registers a number of event log errors and warnings when problems are encountered. The events that can be logged include:

- No DMA support has been configured
- No interrupt driven DMA has been configured
- A non-cache coherent PCI bus has been detected which results in uncached DMA buffers.
- Fewer than the required number of DMA buffers have been allocated.

After booting the driver, it is advisable to check the system event log to determine the characteristics of your machine. For example, if an event log indicates that interrupt driven DMA has not been configured, this may be because the BIOS has not been configured for PCI interrupts.

To view the system event log, run the Event Viewer from the Administrative Tools program group. From the Log menu ensure that the System Log has been selected. Look for events with the Source type glint. Double click on these events to read the event message.

If no GLINT events are logged, then everything is working perfectly. In this case, interrupts are working, all DMA buffers have been allocated and the PCI bus is cache coherent.

Known Anomalies and Restrictions

OpenGL

- On some machines, the use of AGP DMA with the ASUS AGP-V5200 may cause a crash when trying to run OpenGL applications. This problem is under investigation. AGP DMA can be disabled by setting the registry variable HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\glint\Device0\GlintDMA.UseAGP to 0.
- A mode change after running MultiGen Creator Version 2.0 for the first time can hang the system and/or corrupt title bar text. This problem is still under investigation.
- The slow redraws of the texture palette in MultiGen Creator Version 2.0 on accelerated hardware is an application issue for which MultiGen will release a fix.
- When a constantly updating OpenGL application is running (such as the X29 or rollercoaster demos) screensavers run very slowly. This appears to be a problem with the task priority allocated to the screensaver process.
- When using the glaux library supplied by Microsoft, specifying that you require alpha planes in the visual is not satisfied by requesting a visual type of AUX_RGBA as opposed to AUX_RGB when calling auxInitDisplayMode(type). In these instances, the hardware accelerated visual that will be returned in some modes may not have alpha planes. This is because the display driver exports visuals without alpha planes before those that do. This problem can be resolved in two ways: First, if you have the source code, then when specifying the visual type, you can OR in AUX_ALPHA, along with AUX_RGB (for Example auxInitDisplayMode(AUX_RGB | AUX_ALPHA)). Secondly, if source is not available, the following registry variable can be set to 1, which enables the visuals with alpha planes to be selected first.

  3DExtensions.ExportAlpha

  in:

  HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\glint\Device0

  Setting this variable will result in a decrease in the performance of some applications as the driver must perform additional setup calculations for the graphics chip to cater for the Alpha value as well as R, G, and B.

- In some cases, there is confusion over the meaning of the PFD_SUPPORT_GDI bit in the dwFlags field of the PIXELFORMAT descriptor. For instance, 3Dlabs has seen applications, such as *Open Inventor*, that incorrectly assume that if this flag is set, rendering to bitmaps is supported by the visual. The Installable Client Driver does not support bitmap rendering so these applications fail. To enable these applications to work the exporting of PFD_SUPPORT_GDI can be disabled by setting the following registry variables in HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\glint\Device0 to FALSE. The applications will then choose a Generic pixel format, thereby using unaccelerated software rendering to draw to bitmaps.

  3DExtensions.SupportSingle

  3DExtensions.SupportDouble

  By default, PFD_SUPPORT_GDI is set to TRUE for single buffer formats and FALSE for double buffered formats.

NOTE Under Windows NT, Generic pixel formats that support double buffering and rendering by means of GDI are mutually exclusive. This is because GDI does not have the ability to render to the backbuffer. 3Dlabs has, therefore, chosen to set the default for double buffering, to be in line with the Microsoft implementation. However, with care, GDI rendering and double buffering may be mixed, so the second registry variable will cause PFD_SUPPORT_GDI to be exported by double buffer formats, should an application benefit from this added functionality.

- When running multi-threaded applications, it may be necessary to disable the use of the fast clear planes by setting the environment variable GLINT_DONT_USE_FCP to TRUE, or by checking the corresponding box in the control panel applet. This issue arises when more than one context is being used to render to the same window (e.g., OpenGL pipes screensaver with multiple option selected). If this variable is set, then this disables the use of 3Dlabs proprietary fast clear mechanism that allows the depth(Z) buffer to be cleared up to 16 times more quickly than normal. Typically, this becomes significant for animation rates of 10Hz or higher in large windows.

Appendix A: Declaration of Conformity