

FCC ID: E5YAGP1280

EUT: 3D VIDEO ACCELERATOR AGP BOARD

DFI INC.

USER'S MANUAL

Table of Contents

FCC NOTE	3
Chapter 1 - Introduction	
Introduction.....	5
Features and Specifications.....	5
Package Checklist.....	7
Chapter 2 - Hardware Installation	
Board Layout.....	9
Memory.....	9
PAL/NTSC TV System.....	10
Connecting a TV to the Graphics Card	10
Installing the Graphics Card.....	12
Chapter 3 - Supported Softwares	
Operating System Requirements.....	16
VGA Drivers.....	17
Appendix A - Connector Pin Assignments	
Appendix B - Glossary of 3D Features	

FEDERAL COMMUNICATIONS COMMISSION

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

NOTE

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. This equipment generates, uses and can radiated radio frequency energy and, if not installed and used in accordance with the 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:

- Reorient o relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into 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.

Shielded interface cables (except V-video data cable) must be used in order to comply with emission limits.

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

CHAPTER

1

Introduction



..... Introduction

Introduction

The high performance 3D video accelerator graphics card uses the Accelerated Graphics Port (AGP) interface. AGP utilizes a dedicated pipeline to access system memory for texturing, z-buffering and alpha blending.

Equipped with the SGS-Thomson RIVA 128™ chip, the graphics card provides 128-bit memory interface that supports up to 1.6GB/sec.

The graphics card supports the optional anti-flicker TV-out function allowing you to view computer output on either an NTSC or PAL television. It supports video acceleration for VCD and DVD playback.

Use the graphics card with softwares that support 3D and enjoy more texture and higher screen resolution at higher frame rates. The graphics card will deliver faster and better graphics to your PC.

Features and Specifications

CHIPSET

- SGS-Thomson RIVA 128™ graphics chip

MEMORY

- 4MB onboard
- Supports 128-bit memory interface
- Uses 256Kx32 100MHz SGRAM

GRAPHICS RESOLUTIONS

- 1024x768, 16M colors

2D GRAPHICS FEATURES

- 100MHz 128-bit graphics engine optimized for single cycle operation into the 128-bit SGRAM interface supporting up to 1.6GBytes/sec

- Accelerated primitives including BLT, transparent BLT, stretch BLT, points, lines, lines, polylines, polygons, fills, patterns, arbitrary rectangular clipping and improved text rendering
- Execution of all 256 Raster Operations (as defined by Microsoft Windows) at 8, 15, 24 and 30-bit color depths
- 15-bit hardware color cursor
- Multi buffering (Double, Triple, Quad buffering) for smooth animation

3D GRAPHICS FEATURES

- Triangle setup engine
 - 4.2Gflop floating point geometry processor
 - Slope and setup calculations
- Rendering engine
 - Perspective correct true-color Gouraud lighting and texture mapping
 - Alpha blending for translucency and transparency
 - Texture magnification filtering with high quality bilinear filtering without performance degradation
 - LOD MIP-mapping: filter shape is dynamically adjusted based on surface orientation
 - Texture sizes from 4 to 2048 texels in either U or V
 - Perspective correct per-pixel fog for atmospheric effects
 - Multi buffering (Double, Triple, Quad buffering) for smooth 3D animation

VIDEO FEATURES

- Hardware color space conversion (YUV 4:2:2 and 4:2:0)
- Multi-tap X and Y filtering for superior image quality
- Optional edge enhancement to retain video sharpness
- Planar YUV12 (4:2:0) to/from packed (4:2:2) conversion for software MPEG acceleration and H.261 video conferencing applications

FLICKER-FREE DIGITAL TV (optional)

- Two TV standards supported: 525 scan line NTSC or 625 scan line PAL TV system
- Overscan and underscan

Introduction

1

COMPATIBILITY

- Microsoft PC '98
- VESA Display Power Management Signaling (DPMS)
- VESA DDC2B for Plug and Play monitors
- VESA VBE 2.0 BIOS
- Intel AGP version 1.0 DME mode
- CCIR601 NTSC/PAL TV (optional)

BENCHMARKS

(Intel Pentium® II processor 300MHz, 1024x768, hi-color, 75Hz, 4MB)

- 3D Winbench 98: over 700 megapixels/sec.

SOFTWARE DRIVERS

- Windows® 95
- Windows NT® 4.0

I/O SLOT

- AGP slot (AGP 2.0)

CONNECTOR

- 15-pin analog VGA connector
- RCA video output connector
- S-video connector

Package Checklist

- The graphics card
- The user's manual
- One set of diskette or CD

If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

CHAPTER

.....**2**.....

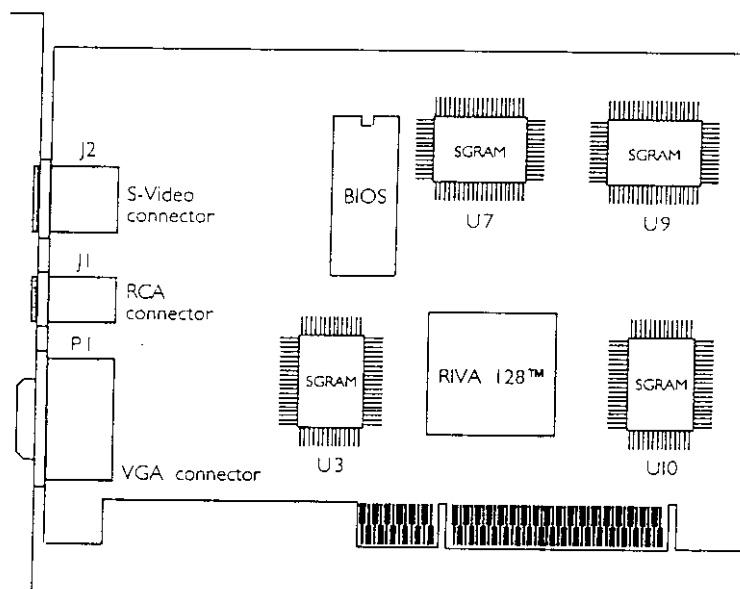
Hardware Installation

Hardware Installation

2

Carefully read this chapter before installing the graphics card into your system. Installing the card incorrectly may damage your computer system, monitor, and the card.

Board Layout



■ square denotes pin 1

The graphics card may come with the following models:

- AGP-1280 - No TV function. J1 and J2 does not exist on this graphics card.
- AGP-1280TVN - With TV function (NTSC)
- AGP-1280TVP - With TV function (PAL)

Memory

The graphics card comes with 4MB of SGRAM (Synchronous Graphics RAM) installed at locations U3, U7, U9 and U10 of the graphics card.

PAL/NTSC TV System (optional)

The graphics card supports NTSC or PAL TV system. NTSC is the video standard used in North America and PAL is the video standard used in Europe and a few other countries. Please refer to the label on the graphics card to determine whether your graphics card supports NTSC or PAL TV system.

Connecting a TV to the Graphics Card

The graphics card supports CVBS (Composite Video Broadcasting System) and S-Video (Separate Video), also called Y/C (Luminance/Chrominance). CVBS is a video stream that combines all of the pieces required for displaying an image into one signal. S-Video (Y/C) is used in a decoder to pull the luminance and chrominance apart in an NTSC or PAL system. Generally your TV is equipped with a Video In connector that receives CVBS signal. Connect one end of the RCA-type video cable to the RCA-type (Video Out) connector (J1) of the graphics card and the other end to the Video In connector of your TV. If your TV is equipped with an S-Video In connector (Y/C signal), we recommend that you use this connector because Y/C signal provides better resolution than CVBS. To transmit Y/C signal, connect one end of a video cable to the S-video (7-pin DIN S-video Out) connector (J2) of the graphics card and the other end to the S-Video In connector of your TV.



Note:

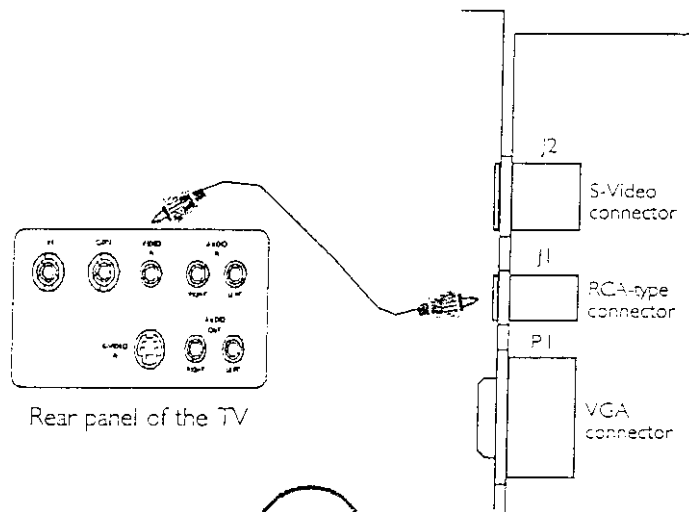
You may connect one output device only - either a monitor or TV. To change the current device, you must power off your system and disconnect the current device before connecting another output device.



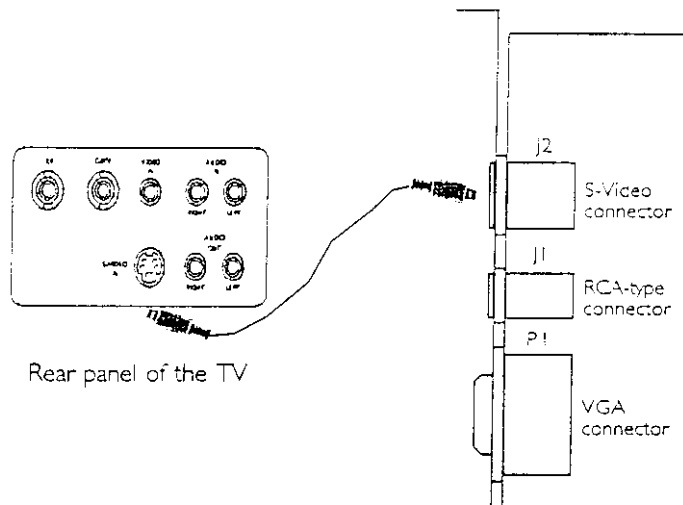
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..... Hardware Installation

Using the RCA-type connector



Using the S-Video connector



2

AGP-I280 Graphics Card User's Manual

Installing the Graphics Card

For most computer systems, you will only need a medium size Phillips screwdriver to remove the cover and a small flat-blade screwdriver to secure the monitor cable.



Warning:

Electrostatic discharge (ESD) can damage your graphics card, system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Handling the Graphics Card

It is quite easy to inadvertently damage your graphics card even before installing it in your system unit. Electrostatic discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling the graphics card to ensure that no static build-up is present.

Tips in Handling the Graphics Card

1. To prevent electrostatic build-up, leave the graphics card in its anti-static bag until you are ready to install it.
2. Do all preparation work on a static-free surface with graphics card components facing up.
3. Hold the graphics card by its edges only. Be careful not to touch any of the components, contacts or connections, especially gold contacts, on the board.



2

..... Hardware Installation

Step 1: Switch Off Your Computer's Power

Make sure that your computer is switched off and unplugged before removing the cover. Also turn off any devices (printer, display, modem, etc.) you may have attached to your computer.



Warning:

Hazardous voltages are present and exposed when operating the computer with the cover removed. To prevent equipment damage and personal injury, never apply power to the computer when the cover is off.

Step 2: Remove Your Computer's Cover

Refer to your computer system manual for specific instructions on removing your computer's system unit cover. In general, you will need to remove several screws on the back or side of the system unit and then slide the cover off.

Step 3: Remove the Slot Cover

Remove the screw and slot cover (that corresponds to the AGP slot) located at the back of the system unit. Save the slot cover for future use. You will be using the screw in step 5.

Step 4: Unpack the Graphics Card

Remove the graphics card from the shipping box and its protective packing. Please do not throw away the packing material or the shipping box. You may use these again to prevent damage should you need to ship the graphics card for repairs.

Step 5: Insert the Graphics Card

Carefully slide the graphics card into the AGP slot. When the card's edge-connector is aligned with the slot on the system board, press firmly on the top of the card to seat it. Make sure the graphics card is straight and level compared to the computer's system board by viewing it from the side. Once you are satisfied with its alignment, replace the slot cover's screw on top of the card's bracket and gently tighten the screw to stabilize the card.

2

AGP-I280 Graphics Card User's Manual

Step 6: Replace the Computer's Cover

When you have finished installing the graphics card, put the cover back on your computer's system unit. Refer to your computer's system manual for instructions if necessary.

Step 7: Connect the Monitor or TV

The graphics card can only be used with an analog video display using a 15-pin D-shell cable connector (standard VGA monitor connection). If your monitor supports analog video but does not have a 15-pin D-shell connector, see your monitor dealer for the adapter or optional cable. After you plug the monitor cable into the VGA connector of the graphics card, gently tighten the cable screws to hold the connector in place.



Note:

Some monitors have a switch that chooses between analog and TTL (or digital) operation. If your monitor has such a switch, set it for analog.

To plug a TV to the graphics card, please refer to the "Connecting a TV to the Graphics Card" section in this chapter of the manual.



Note:

You may connect one output device only - either a monitor or TV. To change the current device, you must power off your system and disconnect the current device before connecting another output device.

CHAPTER

3

Supported Softwares

3

AGP-I280 Graphics Card User's Manual

Operating System Requirements

To use all AGP features, your system must be installed with Windows® 95 OSR 2.1 or later versions, and DirectX5. If your system is installed with Windows® 95 OSR 2.0, you may upgrade it to OSR2.1 by following the steps in the next section.

Upgrading Windows® 95 OSR2.0 to OSR2.1

You must have OSR2.0 already installed before you can upgrade it to OSR2.1. To determine the current version of OSR2.0 installed in your system, please follow the steps below.

1. On the Windows® 95 desktop, select "Start".
2. In "Start", select "Programs".
3. In "Programs", select "MS-DOS Prompt".
4. Change the directory to the drive where Windows® 95 is installed and type "VER". (e.g. C:\>VER)
5. The following will appear: Windows 95 [Version 4.00.1111].
6. Exit MS-DOS Prompt.

To upgrade OSR2.0 to OSR2.1 with the USB upgrade, please follow the steps below.

1. On the Windows® 95 desktop, select "Start".
2. In "Start", select "Run".
3. In "Run", select "Browse". The USB upgrade is in OSR2\USBSUPP\USBSUPPEXE.
4. Follow the prompts to complete installation.
5. Click OK to restart your computer.

..... Supported Softwares

After booting-up Windows® 95, follow the steps below to determine the installed version of the operating system.

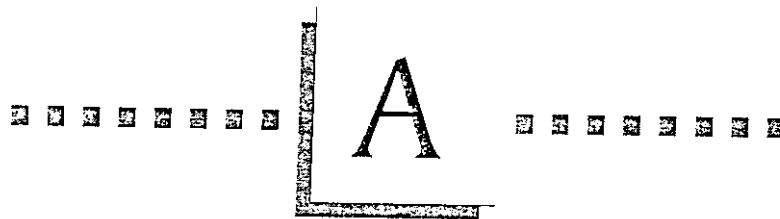
1. On the Windows® 95 desktop, select "Start".
2. In "Start", select "Run".
3. In "Run", type REGEDIT and click OK.
4. The Registry Editor dialog box will appear. In "My Computer", select the following: HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\WINDOWS\CurrentVersion.
5. On the right side of the dialog box, scroll down and look for "Version Number". It should be "4.03.1212" or later version.

VGA Drivers

The graphics card supports VGA drivers for different operating systems. Please refer to the README file contained in the provided CD for installation instructions.

All steps or procedures to install the VGA drivers are subject to change without notice as the softwares are occasionally updated. Please refer to the "Readme" files contained on the provided CD for the latest information.

APPENDIX



Connector Pin Assignments



..... Connector Pin Assignments

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AGP-I280 Graphics Card User's Manual

Connector J2
S-video Connector

Pin	Description
1	Ground
2	Chrominance signal
3	Ground
4	Luminance signal
5	Ground
6	Ground
7	Ground

Connector J1
RCA-type Connector

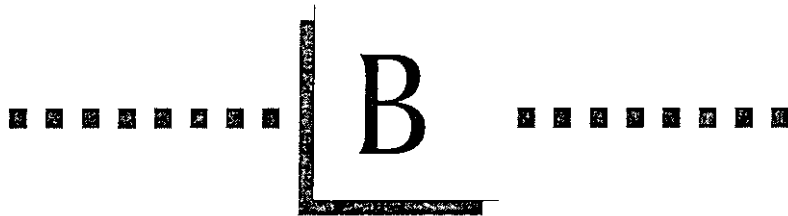
Pin	Description
1	Composite signal
2	Ground

Connector P1
VGA Connector

Pin	Description	Pin	Description
1	Red	9	+5V Vcc
2	Green	10	Sync Return (ground)
3	Blue	11	Not Used
4	Monitor ID bit 2	12	SDA
5	Ground	13	Horizontal Sync
6	Red Return (ground)	14	Vertical Sync
7	Green Return (ground)	15	SCL
8	Blue Return (ground)		



CHAPTER



Glossary of 3D Features





B

AGP-I280 Graphics Card User's Manual.....

Alpha Blending - using the alpha component to proportionally weight the intensity of an object in the summation of all objects within a pixel. When done correctly, alpha blending can simulate transparency.

Antialiasing - an algorithm to remove the distracting effects of point sampling a signal in the digital domain. This is necessary because some of the frequencies present in the signal may be higher than half the sampling rate. These frequency components "alias" as lower frequency signals, and show up as "jaggies".

Bilinear Interpolation - an interpolation between four values when fractional deltas are known in the vertical and horizontal direction. The horizontal delta is used as the weighting factor to average the top left and top right values to determine the top, and the bottom left and bottom right to determine the bottom. The vertical delta is then used as the weighting factor between the top and bottom value to calculate the final result.



Double Buffering - refers to maintaining two separate frame buffers (which may physically occupy the same RAM devices). This implies performing display refreshes from one buffer, while the rendering is accessing the other one.



Mip Mapping - Mip comes from the Latin, multum in parvo, meaning many things in a small place. Mip maps contain the original bitmap, and all successively lower levels of detail. These are usually created by filtering the original map, decreasing its size by powers of two in both directions.

Perspective Correction - correctly adjusting the interpolation of polygon attributes (primarily texture addresses) so that they appear to obey the rules of perspective. Perspectively correct interpolation is not linear in screen space, and requires a divide by depth in order to look right.