

**ASUS<sup>®</sup> PCI-V264GT1**

ASUS Video Adapter for MediaBus 2.0

# USER'S MANUAL

Hardware & Video Setup

# User's Notice

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The product name and revision number are both printed on the card itself. Manual revisions are released for each card design represented by the digit before the period and for additions or corrections represented by the digit after the period. The BIOS version noted below represents the current release during this manual release.

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# FCC & DOC Compliance

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## ***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

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The ASUS PCI-V264GT1 adapter takes advantage of 32-bit PCI bus to provide high performance graphics.

## ***Video***

The PCI-V264GT1 features the 3D RAGE™ and is the first graphics controller to integrate 3D, 2D, and video accelerators, palette DAC, and dual clock synthesizer into a single chip. The PCI-V264GT1 is a multi-function chip that delivers superior texture mapping performance for 3D games, 3D Web browsing, TV quality video scaling for MPEG playback, industry-leading mach64 2D performance, video expansion capability for video conferencing, and other applications.

Active power management techniques are used to monitor activity levels within these graphics controllers and to perform real-time power reductions such as dynamic clock control and graphics engine shutdown. Because full-speed operation can be restored without delay, these techniques do not impact performance.

For multimedia video and game function acceleration, the ASUS PCI-V264GT1 has color interpolation for full screen, full motion video, and provides fast 30 frame/second animation engine, double buffering, fast host to screen bitblts, virtual sprite, smooth page scrolling and object caching for game functions. PC users with this adapter could enjoy smooth motion video and SEGA/SNES-class games.

For Video playback features, ASUS PCI-V264GT1 supports software MPEG decoder. The driver not only provides smooth video playback, but also provides user friendly utilities that allows customizing appearances.

## 2. Features

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### **3D Accelerator**

- Complete 3D primitives - Points, Lines, Triangles, Trapezoids, and Rectangles
- Full screen or windows double buffering for smoother animation
- Flat and Gouraud shading
- Dithering down to 6 or 16 bits per pixels (bpp) from 24bpp 3D engine for smaller memory foot print
- Texture Mapping
  - Hardware perspective correction
  - Sub-pixel accuracy
  - Mip-Mapping
  - Bi-linear and tri-linear filtering
  - Texture maps up to 1024x1024
  - Non square texture maps
  - Alpha in texture map
  - Video textures using YUV format
- 3D Effects
  - Alpha blending and alpha interpolation
  - Fogging and fog interpolation
  - Texture lighting modes

### **2D Accelerator**

- Hardware acceleration-Rectangle Fill, Line Draw, BitBlit, Polygon Fill, Panning/Scrolling, Bit Masking, Monochrome Expansion, Scissoring, and full ROP support
- Hardware cursor up to 64x64x2
- Acceleration provided in 4/8/16/24/32bpp modes. Packed pixel support (24bpp) enables true color in 1MB configurations
- Game acceleration for Microsoft's Direct Draw - Double Buffering, Virtual Sprites, Transparent Blit, Masked Blit, and Context Chaining

### **Video Accelerator**

- Filtered horizontal and vertical scalers for TV-quality, full-screen video playback
- Integrated video line buffers support filtered video scaling
- Color interpolation during scaling for improved high resolution video quality
- Supports AMC for additional video expansion capabilities as follows:



## 2. Features

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- Optional TV Tuner card available for video capture, video phone, TV overlay, or TV tuner applications.
- Optional MPEG-1 decoder for hardware video
- Support for 26-pin VESA compatible VGA Feature Connector (VFC) that supports up to 1024x768 resolution

### **Memory**

- 2MB EDO DRAM onboard

### **General Features**

- Graphics controller integrates 3D, 2D, and Video accelerators with palette DAC and dual clock synthesizer
- 24-bit, true color palette DAC
  - Supports pixel clock rates to 135MHz for 1280x1024 resolution at 75Hz refresh
  - Gamma correction for true WYSIWYG color
  - Full 24-bit palette
- PCI revision 2.1 support for Windows® 95 compliance
- Bi-endian support for compliance on a variety of processor platforms
- Command FIFO for fast command transfers for maximum CPU/host bus/controller efficiency and concurrent operation
- DDC1 and DDC2B Plug-and-Play monitor support
- Power management for full VESA Display Power Management Signaling (DPMS) and EPA Energy Star compliance. Also, register support for controller power reduction and DAC power down

## 2. Features

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### **Software**

- 2D driver support
  - Register compatible with IBM VGA standards
  - BIOS compatible with VESA Super VGA
  - Full support of Microsoft DCI and DirectDraw
- 3D driver support
  - Microsoft Direct 3D including support for Reality Lab and OpenGL
  - ATI 3D RAGE DOS and Windows API
  - Intel 3DR
- Easy-to-use Windows utilities
  - WinSwitch provides on-the-fly switching of resolution and color depth within Windows
  - DeskTop supports panning and scrolling across a virtual workspace of up to 2048x1536
  - Utility for selecting DPMS power-down time-outs
- Video playback application and codec
  - Video codec support for MPEG, Indeo, and Cinepak
  - ATI MPEG video player application with VCR-like controls
- Extensive software driver support for major applications and operating systems as follows:
  - Windows® 3.1, Windows® 95, Windows NT™, Video for Windows, AutoCAD™, Microstation™, OS/2®, VESA BIOS Extension support

# 3. Installation

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## Unpacking and Handling Precautions

The PCI-V264GT1 comes packed in a sturdy cardboard shipping carton, which includes the following items:

- ④ PCI-V264GT1 Video Card
- ④ This user's manual
- ④ 1 CD containing video installation drivers

### STATIC WARNING

Computer boards and components contain very delicate Integrated Circuit (IC) chips. To protect computer boards and other components against damage from static electricity, you should follow some precautions whenever you work on your computer.

- Always unplug your computer whenever you work on the inside.
- Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
- Use a grounded wrist strap before handling computer components.
- Place components on a grounded antistatic pad or on the bag that came with the components whenever the components are separated from the system.

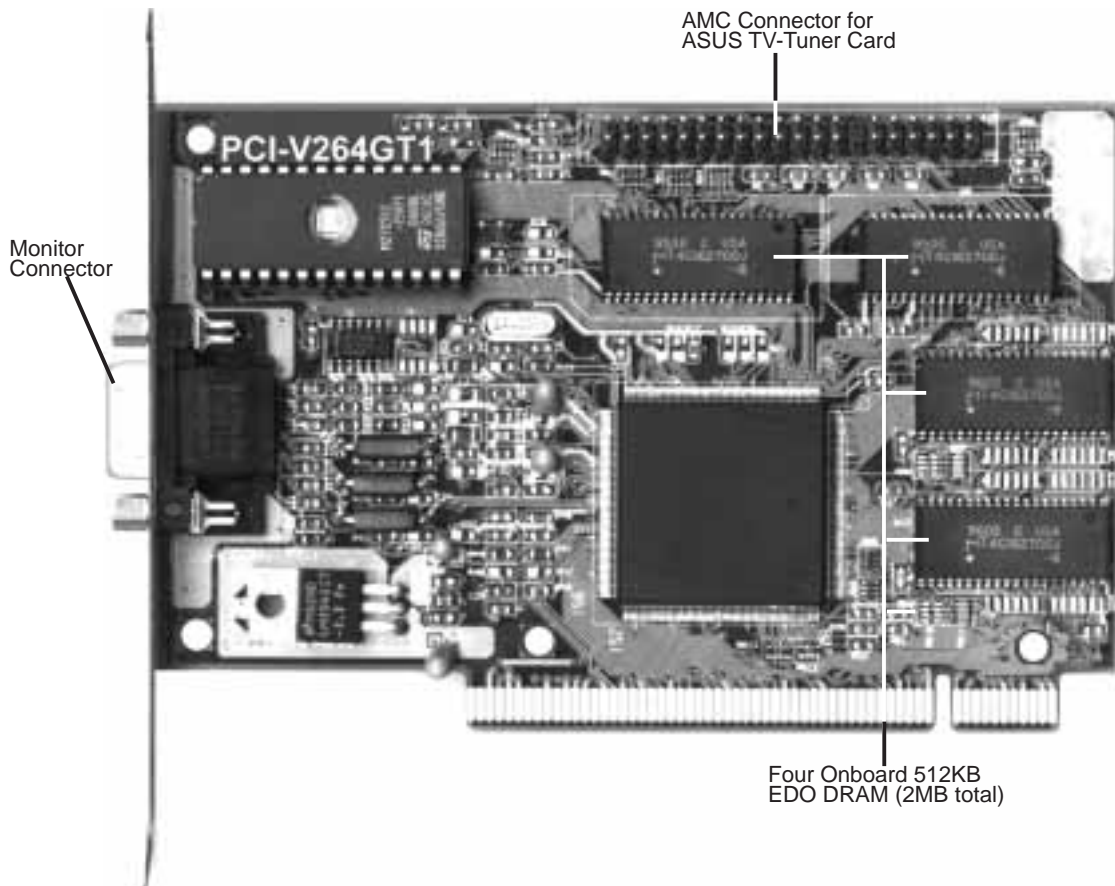
### POWER WARNING

Make sure that you unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards. ATX power supplies may power on if certain motherboard components or connections are touched by metallic objects.

# 3. Installation

The PCI-V264GT1 is designed to allow you to get up and running as quickly as possible. This chapter provides you with hardware installation and memory upgrade instruction. The illustration below shows the layout and connectors for the PCI-V264GT1 :

## PCI-V264GT1 Layout and Connectors.

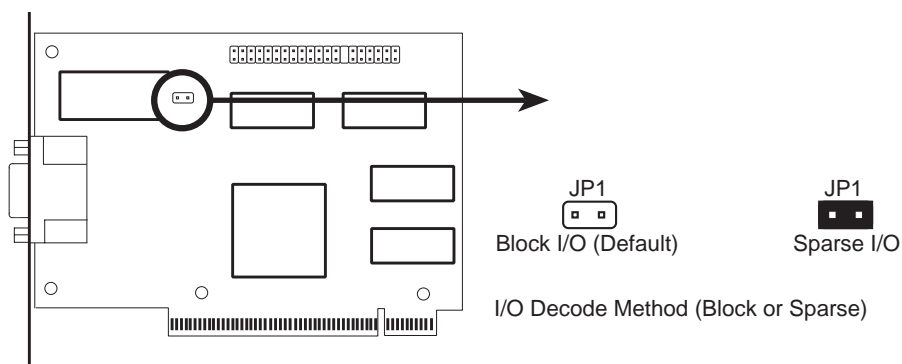


# 3. Installation

## Jumpers

For some older motherboards, using this card may not allow the system to boot without setting the card to SPARSE I/O mode. If your system does not boot-up, try setting the following jumper to Sparse I/O as illustrated, otherwise leave on default.

<u>I/O Decode Method</u>	<u>JP1</u>
Block I/O	[Open] (Default)
Sparse I/O	[Short]



### **Installing the PCI-V264GT1:**

1. Unplug all electrical cords on your computer.
2. Remove the screws for the back of the system unit cover.
3. Remove the system unit cover.
4. Locate an available (unused) expansion slot.
5. Remove the computer case's slot cover. Save the screw to anchor the PCI-V264GT1 mounting bracket later.
6. Ground yourself to an antistatic mat or other grounded source.
7. Pick up the board (still in its sleeve) by grasping the edge bracket with one hand. Avoiding pressing on board components.
8. Remove the plastic sleeve.
9. Insert the board into the PCI expansion slot. Press it firmly to ensure that the board is fully seated. Anchor the board's mounting bracket using the screw you set aside previously.
10. Replace the cover on the system unit.
11. Connect your analog VGA monitor to the PCI-V264GT1 15-pin VGA connector, and fasten the retaining screws (if any).

# 3. Installation

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## Configuring the Hardware

All new cards are configured to basic VGA (640X480) parameters to ensure successful initial operation with most systems. The VGA Driver Installation outlines the required steps for configuring your card so that you will get the full range of resolutions and refresh rates that your monitor can support, and enhanced drivers for your applications.

### NOTES:

- The monitor must be turned on before you apply power to the computer system. This allows the accelerator card to read Monitor Type information (plus Resolutions, Refresh Rates and Timings information if the monitor is VESA DDC1/2B compatible) from the monitor during power-up for proper operation.  
If no monitor information is detected, the accelerator card will default to support color VGA.
- Run the mach64 INSTALL program and select SYSTEM INFORMATION to check for possible conflicts. Ports used by this card are listed in Appendix B.
- For Windows 95, run Setup.Exe in the Windows 95 Diskette.
- For OS/2, see installation for IBM OS/2 2.1, WARP.
- For WindowsNT, see installation for Microsoft WindowsNT 3.x.
- If Windows3.1x is running, do not run the INSTALL program in a full-screen DOS shell. Quit Windows and run from the DOS prompt.
- MPEG Software - Video for Windows must be installed before MPEG software can be installed. Please make sure that you Windows can run .AVI extensions before installing the Drivers for Windows. You can find this software in program directories such as "RUNTIME" or "PLAYER" along with most CD titles that use .AVI extensions.
- Online help for driver installations are provided for all enhanced drivers Windows, OS/2, AutoCAD, MicroStation, and VESA BIOS Extension support.

# 3. Installation

## Installation Drivers

The installation disks have been bundled onto a CD for your convenience. The following are the driver names and location that you may be dealing with during the installation process. Each directory has its own README which provides additional information about the drivers.

<u>DIRECTORIES</u>	<u>PROGRAM</u>
(ROOT)	README.COM (Directory List)
<b>\VIDEO</b>	<b>video drivers for various English operating systems</b>
• <b>DRIVERS</b>	INSTALL.EXE video drivers for DOS, Win31, OS/2, Utility, MPEG
• <b>WIN95</b>	[install from Win95]
•• <b>MPEG95</b>	software MPEG for Win95
•• <b>WIN95</b>	video driver for Win95
• <b>WINNT</b>	[install from WinNT]
•• <b>NT351</b>	video driver for WinNT Ver. 3.51
•• <b>NT35</b>	video driver for WinNT Ver 3.50
• <b>VIDEO</b>	[install from Win3.1 or Win95]
•• <b>VFW1.1E</b>	SETUP.EXE Video for Windows - video player for Win3.1
<b>\JAPANESE</b>	
<b>\VIDEO</b>	<b>video driver for Japanese systems</b>
• <b>DRIVERS</b>	
•• <b>DISK1</b>	INSTALL.EXE OS2INST.EXE Japanese video drivers for DOS, Win3.1, & software MPEG, OS/2, Utility
•• <b>DISK2</b>	Japanese video drivers for DOS, Win3.1, & software MPEG, OS/2, Utility
•• <b>DISK3</b>	Japanese video drivers for DOS, Win3.1, & software MPEG, OS/2, Utility
• <b>WIN95</b>	<b>Japanese Win95 Driver</b>
• <b>PLAYER1</b>	Video player for Win3.1 & Win95
• <b>PLAYER2</b>	Video player for Win3.1 & Win95
<b>\ITALIAN</b>	
<b>\VIDEO</b>	<b>video driver for Italian systems</b>
•• <b>DISK1</b>	INSTALL.EXE OS2INST.EXE Italian video for DOS, Win3.1, software MPEG, OS/2, Utility
•• <b>DISK2</b>	Italian video for DOS, Win3.1, software MPEG, OS/2, Utility
•• <b>DISK3</b>	Italian video for DOS, Win3.1, software MPEG, OS/2, Utility
<b>\DISKS</b>	Individual installation disks for the above drives (You may copy to 1.44MB 3.5" floppy disks if necessary)
<b>\PLAYER1</b>	
<b>\PLAYER2</b>	
<b>\VIDEO</b>	

## 3. Installation

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### ***Viewing Readme First***

A general README file containing installation, configuration, and support details which were not available when this User's Guide was prepared and additional product information is provided on the installation CD. Please view this file before proceeding with the installation. Insert the CD into the CD ROM drive and type: **D: <Enter>** (for example).

***IMPORTANT:*** This manual may make references to *both* CD's and floppy disks because original installation floppy disks have been stored on one installation CD. You may copy each directory back onto 1.44MB 3.5" floppy diskettes if you need to. Please use the appropriate drive letter and path where you will be installing from.

This INSTALL program is used to check the system for possible conflicts, to set monitor type, to install enhanced display drivers and utilities, to run card diagnostics, and to customize hardware parameters for maximum performance.

Card configuration is based on multiple choices from screen menus. Where possible, your selections will be automatically checked by the program for compatibility, thus ensuring conflict-free operation. Checking is started by selecting SYSTEM INFORMATION in the Main Menu.

***NOTE:*** Driver installation and card setup functions are provided in the Main Menu. This menu is the starting point for installing mach64 enhanced drivers and utilities, and for accessing configuration and testing functions which help you complete the installation. The INFOBOX (located next to the Main Menu) provides in-depth information on the currently selected menu item.



# 4. VGA Driver Installation

## 1. Utilities Installation

Select Utilities Installation from the Main Menu to copy mach64 utilities and INSTALL program to your hard drive. We recommend that you accept all default paths suggested during the installation. All references to running INSTALL in later section procedures will be made from C:\MACH64\INSTALL.EXE after the Utilities have been installed for the first time from D:\VIDEO\WIN31\INSTALL.EXE.

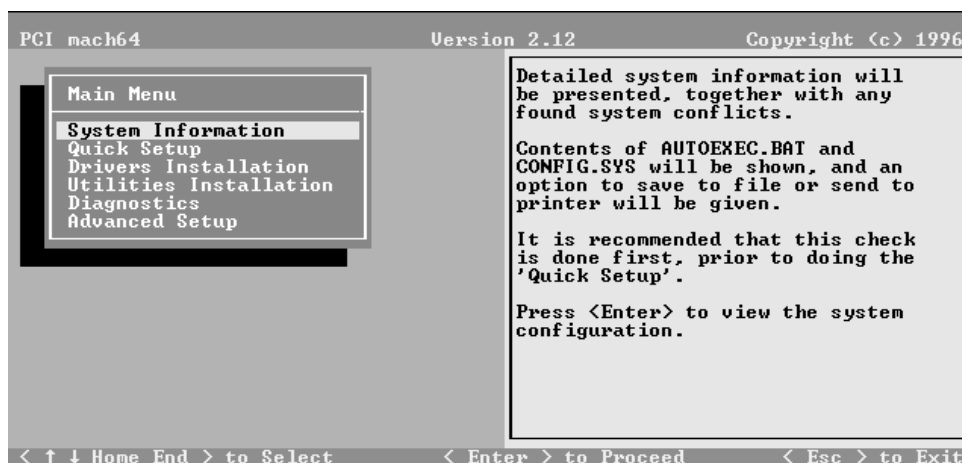
**NOTE: Video for Windows is now provided on this Installation CD. Install the program first from Windows or DOS in order to install the MPEG drivers instructed in this section.**

### Procedures

1. Turn on the monitor, then the computer. If an error appears, recheck the installation of your card, then see Appendix A for diagnostics and troubleshooting information.
2. Insert the CD and type:

```
D:                <ENTER>
CD VIDEO          <ENTER>
CD DRIVERS        <ENTER>
INSTALL          <ENTER>
```

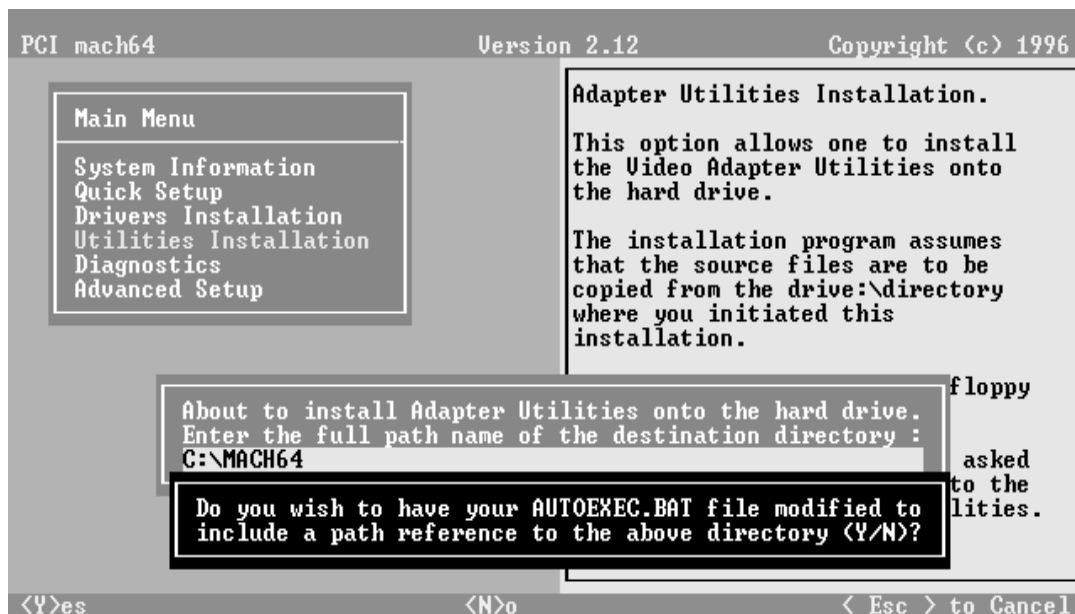
You will see the main menu as follows:



3. Choose **Utilities Installation** and press <Enter>.
4. Press <Enter> for the default path when you are prompted.
5. After the installation is completed, you will be prompted to allow changes to your autoexec.bat file. Enter <Y> to accept changes.

# 4. VGA Driver Installation

## Utility Installation



6. From DOS prompt C:\> type:

**CD MACH64 <Enter>**

**INSTALL**

7. Follow the instructions for Quick Installation as follows:

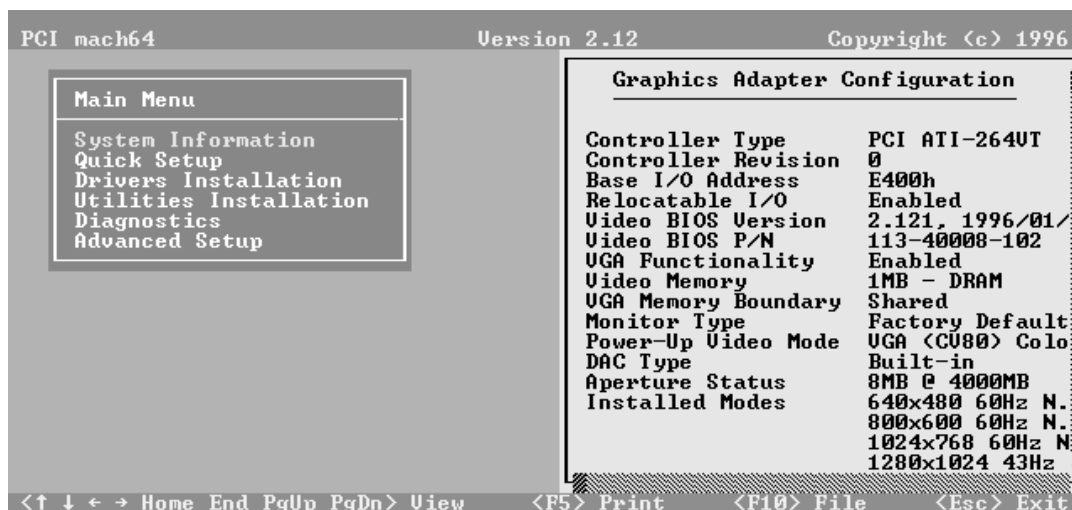
## 2. Select System Information

The program will check the system for possible conflicts with the card, and display both the card and system configurations in the INFO BOX. In case of a conflict, it will issue a warning and suggest possible corrective actions.

Your PCI-V264GT1 is PCI Plug-and-Play compatible: your system will automatically allocate system resources and resolve possible conflicts between your Plug-and-Play compatible mach64 accelerator card and other expansion cards.

# 4. VGA Driver Installation

## System Information



## 3. Select Quick Setup.

Select Quick Setup to configure the accelerator card to work with your monitor. As you highlight each monitor, the display specifications for that monitor type are listed in the INFO BOX. Proper monitor selection is necessary for correct resolution and refresh rate operation. You have four options to choose a correct Monitor Type.

### Selecting Your Monitor Type

- Factory Default
- Apple...
- IBM...
- MIT...
- NEC...
- VESA-Std...
- Generic...
- Read VDIF...
- Custom...

**Select Read VDIF...** If you have a VDIF file for your monitor and wish to use its parameters to automatically configure the mach64. Additional VDIF details are provided later in this chapter, in the section: *VDIF Files*

**Select Custom...** if none of the above applies to you, or you wish to manually configure the settings. Please refer to the information provided later in this chapter in the section: **Custom Configuration**

## 4. VGA Driver Installation

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### Notes On Refresh Rates:

- A higher refresh rate reduces screen flicker, and therefore reduces eye strain. Not all refresh rates are supported at all color depths. Consult Appendix C, Video Mode Table for details.
- The resolution used by your software application is independent of the refresh rate. Resolution depends on the installed software driver and selected display mode. The and the color depth defined by the driver.

### VDIF Files

VDIF files are VESA Display Information Format files. They contain all the necessary configuration parameters for getting optimal resolution and refresh rate operation from the specified monitor. Consult your monitor manufacturer for availability of VDIF files.

If you have a VDIF file for your monitor, select it. The INSTALL program will read the VDIF file and automatically configure the card to properly work with your monitor.

### Procedure:

1. Start the INSTALL program.
2. Select Quick Setup and press <Enter>.
3. Insert into a floppy drive the disk containing the VDIF file.
4. Select READ VDIF... and press <Enter>.
5. Type in the location of the VDIF file (typically A: or B:). INSTALL will read the file and configure the card to support your monitor according to the VDIF specification.

### Custom Configuration

If your monitor is not listed in the Monitor Selection Menu, or you are not using DDC or VDIF, you can set up display modes, i.e., resolutions and refresh rates, on the card using the Custom... option. This option is useful even if you had selected a monitor from the list. For example, you can modify the screen centering or refresh rate on one resolution, and not change the other resolutions.

## 4. VGA Driver Installation

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### Procedure:

1. Start the INSTALL program.
2. Select Quick Setup and press <Enter>.
3. Select Custom... and press <Enter>.
4. Pick a resolution, then a refresh rate. You will see a box outline.

### WARNING:

- An incorrect Monitor Type setting may damage your monitor. Review your monitor specifications before making a selection from the Monitor Selection Menu.
- Do not exceed the monitor specifications. Using a refresh rate (i.e., vertical frequency) that is higher than specified may damage your monitor. The manufacturer will not be liable for any damage caused by incorrect settings. Consult your monitor manual to determine the highest refresh rate for each resolution that your monitor supports.
- A scrambled screen indicates your monitor is not capable of the selected display mode. In which case, you should immediately press <Esc> to exit.

**TIP: If the monitor produces a scrambled display, try a lower refresh rate. If it is already at the lowest refresh rate, set that resolution to Not Supported.”**

5. Adjust the size and position of the box outline. Press <Enter> to accept.
6. Repeat steps 2 and 3 until you are satisfied with the box outline for all the resolutions. When finished, remember to exit and save the settings.

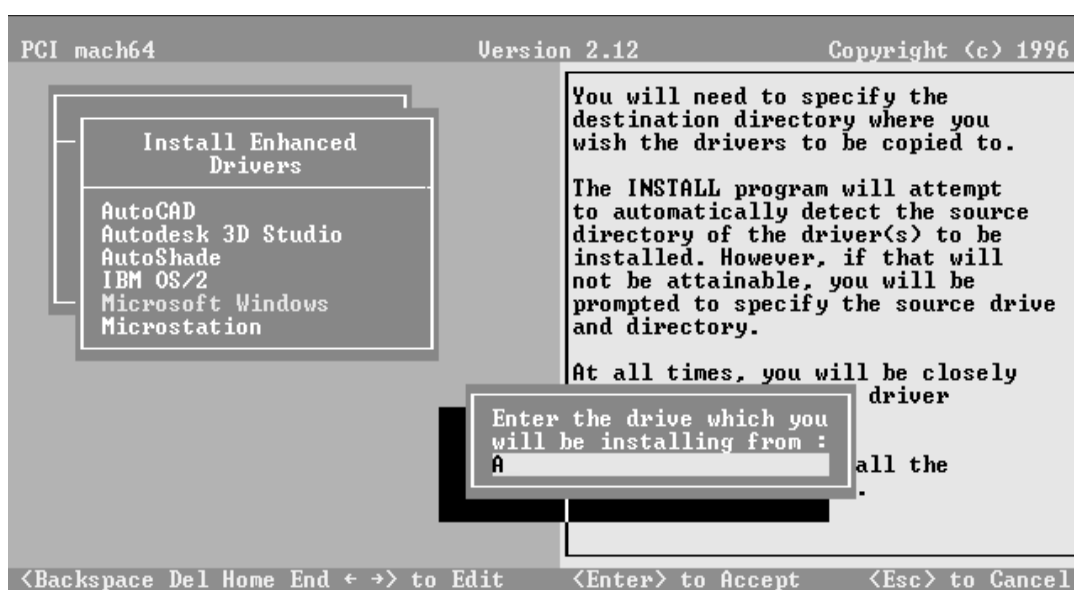
# 4. VGA Driver Installation

## 4. Select Drivers Installation.

The next step is to install the Video drivers for the applications you will be using by the following procedures:

1. Select **Drivers Installation** and press <Enter>
2. Select the Application name such as Microsoft Windows <Enter>
3. Insert the installation CD and enter "D" when it ask what drive you will be installing from and press <Enter>.

### Installing Video Driver for Microsoft Windows



4. VGA Driver  
(Drivers Installation)

4. The Windows Enhanced Driver menu pops up giving the options:  
**Install Windows 3.1 driver**  
**Uninstall Windows 3.1 driver**  
**Read Installation Notes**

Choose Install Windows 3.1 driver and press <Enter>

5. Two installation messages appears which you can press <Enter> to continue after reading. Another menu pops up giving you the option of installing:

**Display driver + Software MPEG**

**Display drivers only**

Choose the first option and press <Enter>

**IMPORTANT:** *Software MPEG requires the installation of Video for Windows. The following message appears if Video for Windows is not detected:*

## 4. VGA Driver Installation

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**Video for Windows not detected. Unable to install the Software MPEG drivers, however, the Windows drivers can be installed. Do you want to continue (Y/N)?**

6. If this message appears, go ahead and press "Y" to continue but you must install Video for Windows and then reinstall this Drivers section if you wish to have the ATI Player features in the ATI Desktop Control Panel.
7. If Video for Windows is detected, a message will appearing that:  
**ATI software Mpeg playback drivers have been Installed**

## 5. Diagnostics

Select Diagnostics from the Main Menu to test the various operations and circuitry of the accelerator card. The diagnostics screen can be displayed at any supported resolution and color depth for testing. These tests support mouse and keyboard operations. Directions are displayed on the screen. Errors found by testing are discussed in Error Codes and Messages in Appendix A.

## 6. Advanced Setup

If you have an ISA mach64 accelerator card and wish to fine tune its settings for your monitor and system type, select Advanced Setup from the Main Menu. On-screen context sensitive help is displayed as you highlight each Advanced Menu item.

### **WARNING:**

- The Advanced Configuration option allows you to use certain features that may add additional performance to your card. However these options may not be compatible with your system.
- If problems appear after an advanced option is changed, returning the card to factory defaults will rectify the situation.

## Factory Defaults

The card can be reset to factory defaults by pressing <Shift>+<F7>.

## Saving Your Configuration

Once you have finished configuring the necessary parameters described above, save them by pressing <F10>.

## 4. VGA Driver Installation

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# 5. Enhanced Drivers

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## Latest Driver Information

A README file is provided for each application driver in the mach64 installation disks. These files summarize the latest product revisions, and contain directions for installation and use of enhanced drivers. To read the latest driver information, select Drivers Installation from the Main Menu, pick the appropriate application from the list, and select Read Installation Notes.

For added convenience, after the mach64 drivers have been installed, you can load and print the README files in the directory of the software application using any word processor.

## Installing Drivers

Applications use device drivers to display data on the screen. The mach64 accelerator supports IBM standard VGA and VESA drivers that normally come with most major software packages. ATI supplies mach64 drivers that give you more screen resolutions and color depths than standard device drivers.

In order to fully utilize the enhanced speed, resolution, color depth, and other features of this card, you should use the supplied *mach64* drivers.

### **NOTE:**

- To conserve hard disk space, install only the drivers you use.
- You may require your application software disks during driver installation.

## Un-Installing Drivers

This installation program allows you to effortlessly un-install mach64 drivers for Windows and OS/2, and return your application or operating system environment to VGA support. This feature is available for Windows 3.1 and OS/2 presentation manager. Details are given in the respective sections.

# 5. Enhanced Drivers

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## **Microsoft Windows 95**

### **Introduction**

The Windows 95 mach64 enhanced display driver is a Windows 95 mini driver. It is installed and configured using the standard Windows 95 configuration utilities. If you install the PCI-V264GT1 after Windows 95 have been installed, Windows 95 Plug and Play manager will detect that the PCI-V264GT1 is different from what was installed previously. Windows will give you the following message during Windows 95 startup: "The disk labeled 'Mach 64 Windows 95' is now required. The disk is provided by your computer manufacturer. Click OK to continue." If you click cancel, then you must manually change the video driver manually as described in the following:

### **Installation**

1. Insert the installation CD into the CD-ROM drive.
2. Click the Start button on the lower left of the screen.
3. Click browse to find `\video\win95\setup.exe`
4. Click the 'Ok' button.
5. Carefully follow the instructions displayed in the help.
6. When the "Install from Disk" window appear, use 'Browse' to find `\video\win95\win95\macxw4.inf`
7. Click 'OK' button twice
8. Change the monitor type if necessary.
9. Click 'Close' button.
10. Click 'Apply' button.
11. A message will appear "You must restart your computer before new settings will take effect. Do you want to restart your computer now?" Click the 'Yes' button to continue.

**IMPORTANT:** The Adapter Type should be "ATI Mach64 PCI (macxw4) (DirectDraw)" as loaded from the installation CD. Using the ATI Graphics Pro Turbo PCI (mach64) as included in the Windows 95 software will not give the advanced features in the Display Properties.

### **Windows 95 mach64 enhanced display driver problems**

The Windows 95 mach64 enhanced display driver is capable of using monitor timing data contained within Windows 95. This data is selected by configuring a monitor type at Windows 95 installation time or via the "Settings" page of the display properties sheet.

## 5. Enhanced Drivers

---

The Windows 95 mach64 enhanced display driver may incorrectly interpret Windows 95 monitor timing data for some older monitors which require interlaced modes. This may cause some options to be disabled. A solution to this problem is to select one of the "(Standard monitor types)" available via the settings page of the display properties sheet.

If you change the selected monitor type via the "Settings" page of the display properties sheet the new timing data may not take effect until after restarting Windows 95. A solution to this problem is to always restart Windows 95 after changing the monitor type.

In Windows 95, display drivers can be installed via the "Add New Hardware" wizard. This is not recommended because when the Windows 95 mach64 enhanced display driver is installed via the "Add New Hardware" wizard the "Settings" page does not get installed into the mach64 display adapter property sheet.

### **Windows 95 property page problems**

While adjusting monitor settings in the Adjustment page of the Display Properties sheet, your monitor could become unreadable. If this occurs, press the ESC key to return to your previous monitor settings.

### ***Microsoft Windows NT 3.5 / 3.51***

The mach64 driver for Windows NT is shipped with Windows NT. Before installing the mach64 driver, you must have installed Windows NT and selected VGA display. After driver installation, you may view the README.NT file for more details.

#### **Installation Procedure:**

1. Run the Windows NT Setup program located in the Program Manager Main window. Select Change System Settings from the Options pulldown menu.
2. Specify the location of the ATI driver.
3. Select Other, and supply the Setup program with the location of the NT files, for example, D:\VIDEO\WINNT\NT35 (or NT351). Insert the installation CD and press <Enter>. The program will install the ATI driver.
4. Restart Windows NT after completion.

## 5. Enhanced Drivers

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### De-Installation Procedure:

You may de-install the mach64 driver for Windows NT using either of the steps shown here:

1. In the WINNT\SYSTEM32\DRIVERS directory, rename the ATI.SYS file, for example, to ATI.ATI. When you restart Windows NT, it will not find ATI.SYS, and boot up in VGA.
2. Run the Windows NT Setup program and select a non-ATI driver, for example, a VGA-Compatible driver. When you restart Windows NT, it will boot up with the non-ATI driver you just selected.

### AutoCAD 386 R10, R11, R12, R13

#### Installation Procedure:

1. Run AutoCAD386 (protected mode) to ensure that it is properly installed on your system. Note the directory location of the AutoCAD program files before you start the mach64 installation program. You will need this information later.
2. Run the mach64 installation program and select Drivers Installation from the Main Menu.
3. From the list of applications, select AutoCAD. When asked for the source drive and directory, type in the information and insert the requested diskettes. When the menu appears, select Read Installation Notes for help and tips on the installation.
4. Follow instructions on the screen to install the DLX press driver.
5. When driver installation is completed, exit the installation program. Refer to the README.DLD file that has been copied into your AutoCAD directory for instructions and driver configuration details.
6. Run ADIACAD.BAT to set the necessary driver parameters in the DOS environment as follows: **ADIACAD <Enter>**

ADIACAD.BAT was created by the mach64 installation program for your convenience. The parameters it sets must be in the DOS environment before you start AutoCAD.

Tip: If you are already using a batch file to start AutoCAD, consider adding the contents of ADIACAD to your batch file.

7. Start AutoCAD and reconfigure AutoCAD to use the new enhanced display list driver. Please refer to your AutoCAD manuals for information on how to select/change a video driver.

## 5. Enhanced Drivers

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**NOTE:** The PCI-V264GT1 accelerator hardware must be correctly configured before attempting driver installation. If necessary, return to Configuring the Hardware for information.

### IBM OS/2 2.1, WARP

#### Installation Procedure:

1. Start OS/2. Ensure that it is using the Video Graphics Array driver and that no other OS/2, DOS, or Windows applications are running.
2. Open an OS/2 full-screen command prompt.
3. Insert the installation CD into the CD-ROM drive.
4. Type the following if D: is your CD-ROM:  
**D: <Enter>**  
**CD VIDEO\WIN31**  
**OS2INST <Enter>**
5. Select Install Device Drivers from the Main Menu.
6. Select IBM OS/2 from the list of applications.
7. Select Read Installation Notes for help and tips. Otherwise, select the Install option to copy the mach64 driver and related files to C:\MACH\_OS2, the default directory.
8. Open an OS/2 Window or OS/2 full-screen command prompt.
9. Type: DSPINSTL <Enter>.
10. When the Display Driver Install panel appears, select Primary Display. Choose OK to bring up the driver selection list.
11. Select ATI mach64 (Enhanced) from the list. Choose OK.
12. When the source directory panel appears, choose CHANGE and specify the location of the mach64 driver (C:\MACH\_OS2).
13. Select SET, then INSTALL.
14. After the driver is installed, do an OS/2 shut down.

**NOTE:** If an existing OS/2 driver resolution (set for another card) is not supported by the mach64 as configured, the OS/2 display will revert to VGA (640x480).

## 5. Enhanced Drivers

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**NOTE:** In the OS/2 driver setup, you can choose only those resolutions that are supported by the mach64, determined by the Monitor Type, and resolutions you had configured using the ATI INSTALL program. For selection and configuration details, please refer to "Selecting Your Monitor Type."

15. Re-start OS/2. It will default to 640x480 in 256 colors. To change screen resolution and/or color depth, perform the following steps:
  - a) Open the OS/2 System folder.
  - b) Open the System Setup folder.
  - c) Open the System object.
  - d) Select Screen tab in the System-Settings notebook.
  - e) Select a desired resolution and color depth from the list.
  - f) Close the System-Settings notebook.
  - g) Do an OS/2 shutdown, then restart OS/2.
16. Refer to the README.OS2 file in the C:\MACH\_OS2 directory for mach64 configuration details.

### De-Installation Procedure: — OS/2 2.1

1. Open an OS/2 window or OS/2 full-screen command prompt.
2. Type: DSPINSTL <Enter>
3. When the Display Driver Install panel appears, select Primary Display and choose OK to bring up the driver selection list.
4. Select Video Graphics Array (VGA) from the list. When prompted, insert the requested IBM OS/2 Display Driver disk into the drive and specify the VGA driver source directory.
5. Select INSTALL.
6. After the driver is installed, do an OS/2 shutdown.  
Continue with the following steps if you wish to remove mach64 files from your hard disk.
7. Restart OS/2.
8. Open an OS/2 full-screen command prompt.
9. Insert the mach64 installation disk in the floppy drive and type:  
**A: <Enter>** (For drive B, substitute B: for A:)  
**OS2INST <Enter>**
10. Select Install Device Drivers from the Main Menu.
11. Select IBM OS/2 from the list of applications.
12. Select UN-INSTALL OS/2 Driver, then follow instructions on the screen.

## 5. Enhanced Drivers

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### De-Installation Procedure: OS/2 WARP

1. Open the OS/2 System folder.
2. Open the System Setup folder and the Selective Install object.
3. Select Primary Display and bring up the Display Driver Install panel.
4. Select the Video Graphics Array (VGA) driver and choose OK. The OS/2 Setup and Installation panel appears.
5. Select INSTALL.
6. Specify the VGA driver source directory and follow the screen instructions.
7. When the VGA driver is installed, do an OS/2 shutdown.  
Continue with the following steps if you wish to remove mach64 files from your hard disk.
8. Restart OS/2.
9. Open an OS/2 full-screen command prompt.
10. Type:       **D: <Enter>**  
                  **CD VIDEO\WIN31**  
                  **OS2INST <Enter>**
11. Select Install Device Drivers from the Main Menu.
12. Select IBM OS/2 from the list of applications.
13. Select UN-INSTALL OS/2 Driver, then follow the instructions on the screen.

# 5. Enhanced Drivers

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## Intergraph MicroStation 4.0, 5.0

### Installation Procedure:

1. Ensure that MicroStation is properly installed on your system before continuing with this procedure.
2. Run the mach64 installation program and select Drivers Installation from the Main Menu.
3. From the list of applications, select MicroStation. Enter the source drive and directory information, then insert the disk as prompted. When the menu appears, select Read Installation Notes for help and tips on the installation.
4. Follow the instructions on screen to complete the driver installation.
5. When driver installation is completed, press <Esc> to exit.
6. Refer to the README.USD file that has been copied into your MicroStation directory for instructions and driver configuration details.

## VESA BIOS Extension

The VESA BIOS Extension (VBE) feature is provided by a DOS TSR program called M64VBE.COM. This program supports software running on VESA modes using the unique mach64 features, beyond those provided by standard VGA hardware. If your software and/or games conform to the VBE standard, you should load M64VBE.COM first.

This VBE utility is located on installation disk #1. It is also copied to the mach64 directory during utilities installation. To load this utility, go to the directory containing M64VBE.COM and type: **M64VBE<Enter>**

To display its supported keywords, type M64VBE <Enter>. To unload it, type M64VBEU <Enter>. (Please refer to your DOS documentation for conditions on unloading TSRs.)



## 6. Windows Driver Features

### Windows 95

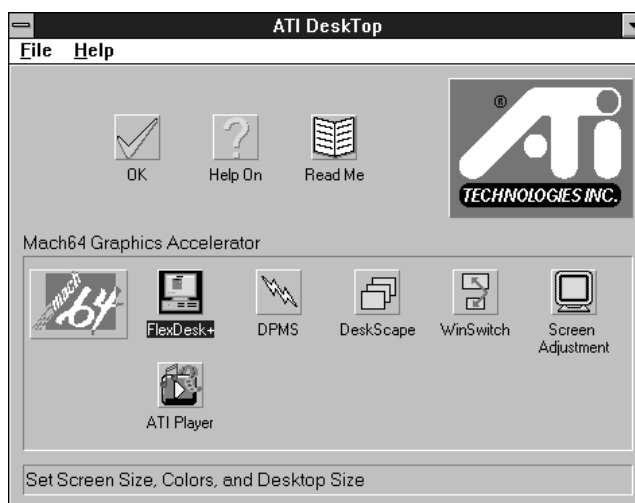
To install the Windows 95 MPEG driver, insert the installation CD and type C:\VIDEO\WIN95\MPEG95\SETUP.EXE from your "START/RUN". This will give you "ATI Multimedia" in your Programs group. Click ATI Player to bring up the ATI Player screen. For Windows 95, skip the following Windows 3.1x sections and go directly to the ATI Player on page 38.

### ATI Desktop Control Panel (Windows 3.1x)

An ATI DeskTop is installed automatically when you install the enhanced driver for Windows.



Double click on the icon to display the ATI Desktop Control Panel.



The **ATI DeskTop** provides a consistent and integrated control. Depending on what has been installed, your DeskTop may not have the same number of features as shown above.

Each feature icon in the *Mach64* product group shown in this DeskTop is described on the following pages.

## 6. Windows Driver Features

### *ATI Desktop Features*

**ATI Logo:** Double click this logo to generate a problem report which includes pertinent data on your system and card configuration to help solve your problem. Have the report ready before contacting your vendor.

**Feature Icons:** Double click a Feature icon to launch the associated control panel.

**Help On:** Click this icon, then click any other icon in the product group to display Help information on the selected item.

**Read Me:** Click this icon then click a product logo or feature icon to display the readme file on the item.

### **FlexDesk+**



### *FlexDesk+ Basic Settings*

**FlexDesk+** is for configuring the operating modes and parameters of the PCI-V264GT1. The availability of options in FlexDesk+ is dependent on the card and its hardware configuration. This control panel allows you to configure Colors (color depth), Screen Size (resolution), Desktop Size (virtual desktop size), Advanced settings and Default parameters (factory settings). A Status Bar at the bottom of the panel displays help information as you make your selection.

## 6. Windows Driver Features

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**FlexDesk+** Provides **dynamic screen information feedback** as you adjust the sliders for "Colors", "Screen Size" and "Desktop Size." Any setting not supported by the card is shown in gray. A slider will always snap to the nearest supported setting for the current slider combination.

The **Sample Color Bar** next to the Sample Monitor dynamically shows a color palette that approximates the Colors setting as you adjust the Colors slider.

**NOTE:** If your desired resolution is not available, check your monitor configuration setting in the INSTALL program.

### Sliders

**Colors:** Selects color depths of 256, 32,000, 65000 and 16.7 million colors.

**Screen Size:** Selects standard screen resolutions of 640x480, 800x600, 1024x768, 1152x864 and 1280x1024.

**Desktop Size:** Selects virtual desktop sizes of 640x480, 800x600, 1024x768, 1152x864, 1280x1024 and 1536x1280. Desktop size is greater than or equal to Screen size. The virtual desktop provides expanded work space on your screen even if your monitor cannot display that resolution. See DeskScan for details.

### Buttons

**Test:** Automatically switches our monitor to display the selected mode without exiting this control panel, for 10 seconds or until the user clicks the End Test, OK, or Cancel button. All other buttons and sliders are inactive at this time. To show dynamic color depth changes in this test, the WinSwitch feature must be enabled before starting the current session of Windows.

**Defaults:** Returns Screen Size, Colors and Desktop Size sliders to the default positions. When OK is clicked, these changes will be effective.

**Advanced...:** Opens the Advanced panel. See FlexDesk+ Advanced Settings.

**Help:** Displays Help information on FlexDesk+.

**OK:** Exits the FlexDesk+ control panel and effects all new changes.

**Cancel:** Discards all changes and exits the FlexDesk+ control panel.

## 6. Windows Driver Features

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### FILE Menu

**Open:** Opens an existing Setting file.

**Save:** Saves the current settings to the active Setting file.

**Save As:** Saves the current settings to an alternate Setting file which you can name.

**Exit:** Exits the FlexDesk+ control panel.

### FEATURES Menu

**Defaults:** Provides same functionality as the push button.

**Advanced...:** Provides same functionality as the push button.

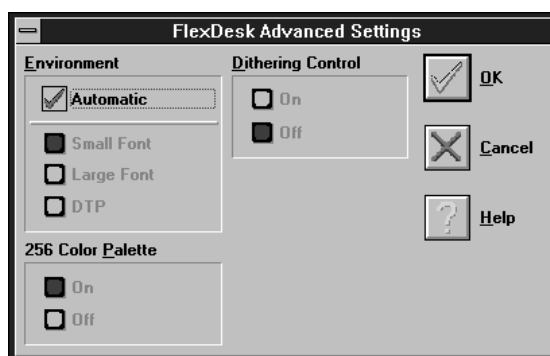
### HELP Menu

**Help:** Provides same functionality as the push button.

**Contents:** Displays the Help index.

**About...:** Displays the product version number and information

## *FlexDesk+ Advanced Settings*



## 6. Windows Driver Features

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### Environment

This parameter specifies logical dots per inch (LDPI). Being logical, i.e., not physical dots, the effect will differ depending on screen size. Automatic Mode chooses the optimal environment setting for the selected screen size. The Small, Large and DTP settings are 96, 120, and 128 LDPI respectively.

### 256 Color Palette

This selection is only available in 256 color mode. **Windows runs faster when this option is turned off.**

**On:** Allows the application to define color selection in the palette.

**Off:** Choose colors from a fixed palette.

### Dithering Control

Dithering is meshing two colors to produce the illusion of a third. This selection is only available in 256 color mode with 256 Color Palette on.

**On:** Provides standard VGA dithering of colors and color selection boxes.

**Off:** Provides smooth dithering which results in faster performance than VGA dithering.

### Buttons

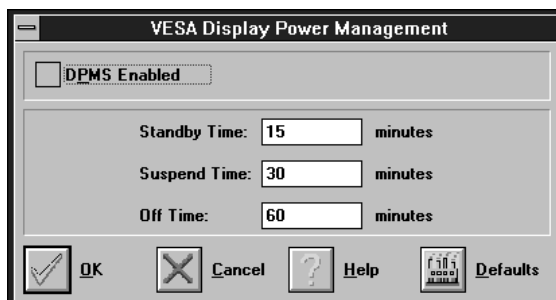
**Help:** Displays Help information on FlexDesk+.

**OK:** Accepts the advanced settings as shown and returns to the FlexDesk+ main panel.

**Cancel:** Discards all changes and returns to the FlexDesk+ main panel.

## 6. Windows Driver Features

### DPMS (for Windows)



VESA DPMS-compliant monitors conserve electrical energy by powering down after a period of inactivity. You can use the DPMS panel (in Windows) to configure the auto-shutdown timing sequence for your DPMS-compliant monitor. (The DOS version of DPMS is described in another section.)

#### **WARNING:**

- Monitors that do not support VESA DPMS can be damaged by activation of the DPMS feature.
- Do not use screen saver when DPMS is enabled. The screen saver will conflict with the DPMS operation.

#### **Procedure:**

1. Click the DPMS icon.
2. Highlight the timer boxes one at a time and specify the values.
3. Turn on DPMS Enabled.
4. Click OK.

### ***Timer Settings***

**Standby Time:** Time value is in minutes, after which Standby mode is activated if no user activity is detected. Standby is the first level of power conservation.

**Suspend Time:** Time value is in minutes, after which Suspend mode is activated if no user activity is detected. The monitor conserves more energy at this level than at Standby.

## 6. Windows Driver Features

### Off Time

Time value is in minutes, after which Off mode is activated if no service activity is detected. At this level, energy conservation is the highest.

### Buttons

**DPMS Enable:** DPMS feature is enabled if box is checked.

**Defaults:** Sets DPMS timers to default values.

**Help:** Displays Help information on DPMS.

**OK:** Accepts settings as shown and exits.

**Cancel:** Discards all changes and exits.

## DeskScape



**NOTE:** Press Default to fill in the fields with default keys first.

**DeskScape** allows more control over your Virtual Desktop using keyboard keys. For a description of Screen and Desktop, Refer to the *Using FlexDesk+* section.

The displayed image on the screen is a "window" showing only a portion of the entire virtual desktop. The non-displayed portion can be brought into view by panning. Four keys are assigned to this function, one for each direction of up, down, left and right. If you are using a mouse, the window may be panned by moving the mouse cursor to any edge of the window as well.

## 6. Windows Driver Features

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Zoom In will display a larger image but less of the desktop; Zoom Out has the opposite effect. What you can zoom is dependent on the relative settings of Screen Size and Desktop Size.

Use this panel to assign the six hot keys to Panning and Zooming functions. Alphanumeric keys may be assigned in any combination with <ALT>, <Ctrl> and <Shift>. We recommend that you assign all the keys in one session.

### ***DeskScape Functions***

**Pan Up:** Moves the "window" upward, with a user defined key sequence, e.g., <Alt>+<Up Arrow>

**Pan Left:** Moves the "window" to the left, with a user defined key sequence, e.g., <Alt>+<Left Arrow>.

**Pan Right:** Moves the "window" to the right, with a user defined key sequence, e.g., <Alt>+<Right Arrow>.

**Pan Down:** Moves the "window" downward, with a user defined key sequence, e.g., <Alt>+<Down Arrow>

**Zoom In:** Makes the screen image larger, with a user defined key sequence, e.g., <Alt>+<Home>. **NOTE:** The entire desktop can be panned.

**Zoom Out:** Displays more of the virtual desktop, with a user defined key sequence, e.g., <Alt>+<End>

### ***Buttons***

**Defaults:** Assigns default keys to DeskScan.

**Help:** Displays Help information on DeskScan.

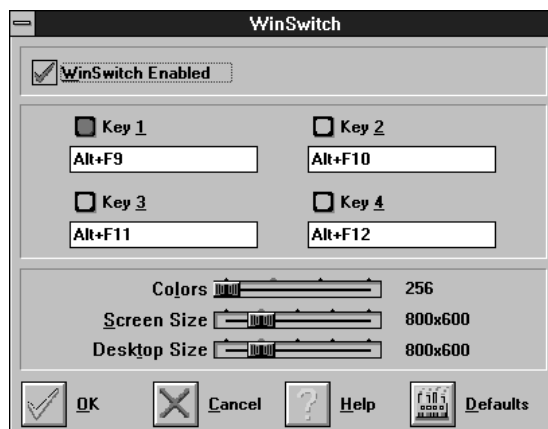
**OK:** Accepts key assignments as shown and exits.

**Cancel:** Discards all changes and exits.



# 6. Windows Driver Features

## WinSwitch



**NOTE:** Press Default to fill in the fields with default keys first.

By pressing a user-defined set of keyboard keys **WinSwitch** can dynamically change screen attributes (i.e., Colors, Screen Size and Desktop Size) without exiting Windows.

When enabled, WinSwitch is actually operating in 24bpp mode-i.e., all other color depths and resolutions are emulations. As such, graphics performance across various color depths will be practically identical to that of 24bpp (16.7 million colors). Therefore, WinSwitch should be used only when color depth changes are desired. For maximum performance in 256 or 65,000 color modes, you should disable WinSwitch. **FlexDesk+** or **DeskScan** can provide the same dynamic screen size or desktop size switching functions.

### Configuring the WinSwitch Panel

At the top of the panel is a checkbox labelled WinSwitch Enabled. This switch must be turned on (checked) to enable WinSwitch, which is primarily a dynamic color switching function. Clicking one of the four radio buttons (e.g., key 1) will display the slider positions currently associated with that key.

## 6. Windows Driver Features

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### Procedure:

1. Select a radio button. Define the key combination in the field below it. You must include <Ctrl> or <Alt>.
2. Adjust any or all of the sliders. Slider functions are identical to those in FlexDesk+.
3. Either enable WinSwitch by checking the WinSwitch Enabled box, or disable WinSwitch by removing the check mark.
4. Click OK.

### Buttons

**Key 1:** First of four radio buttons labeled key1, key 2, key 3, and key 4. The slider settings shown are associated with the selected radio button.

**Defaults:** Restores key combination and slider settings to defaults.

**Help:** Displays Help information on WinSwitch.

**OK:** Accepts current settings and exits.

**Cancel:** Discards all changes and exits.

**WinSwitch:** Switching function is enabled when the box is

**Enabled:** Checked; disabled when the box is empty.

### Key Combination Fields

**Key 1 Field:** Keyboard key combinations to be used to activate WinSwitch are specified in the four key combination fields, associated with Keys 1-4.

### Sliders

These sliders provide the same functions as the FlexDesk+ sliders.

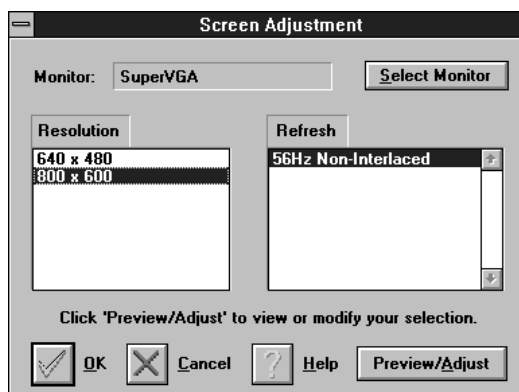
**Colors:** Selects a color depth from one of the supported Colors.

**Screen Size:** Sets the screen resolution to one of the supported sizes.

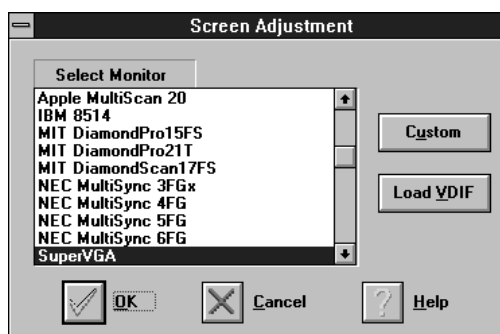
**Desktop Size:** Sets the virtual desktop to one of the supported sizes.

# 6. Windows Driver Features

## Screen Adjustment



This allows the selection of different resolutions supported by your monitor. Select the proper monitor by pressing the "Select Monitor" button and then choosing from the list of monitors.



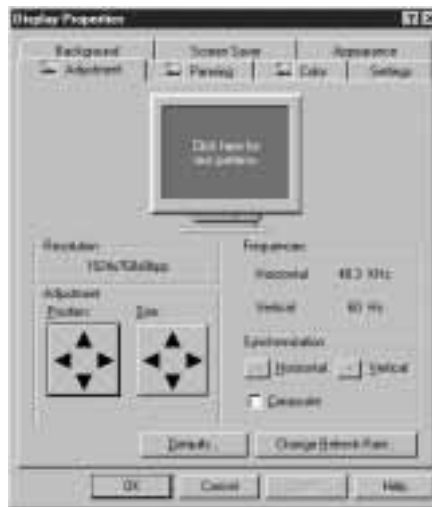
If your monitor came with a VDIF file then you may insert it into your floppy drive and press the "Load VDIF" button. The "Custom" button allows you to select the resolution and refresh rates. You may try out different settings that will optimize your display preferences but too high of a refresh rate will push your monitor past its specifications. Use the Preview/Adjust to see the results and allow digital adjustments to the screen. If the image is distorted you may press <Esc> or wait a few seconds to return to the original menu without the change.

# 6. Windows Driver Features

## Windows 3.1 Adjustment:

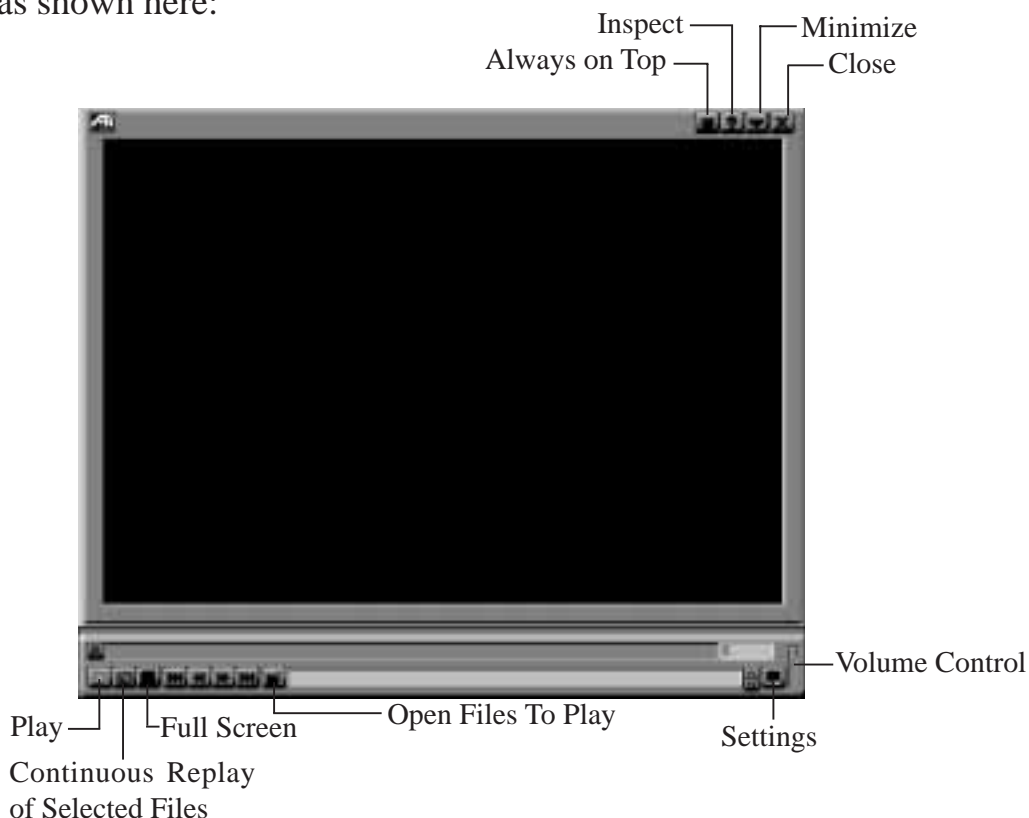


## Windows 95 Adjustment:



## ATI Player (Windows 3.1x, Windows 95)

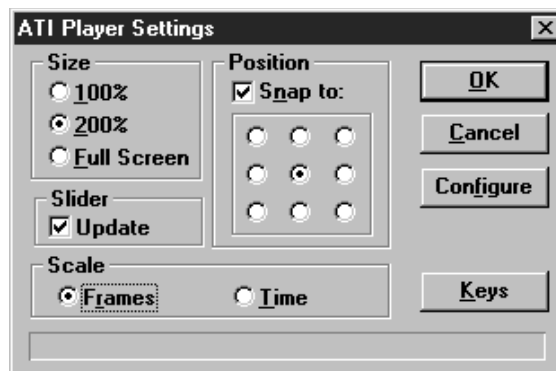
If MPEG drivers are installed, for playing video clips, the ATI Player icon will appear in the DeskTop. Double click on this icon to bring up the Video Screen as shown here:



## 6. Windows Driver Features

The question mark on top right of the Video Screen allows inspection into each button on the control panel. Click on the "?" then on a button that you would like to know about.

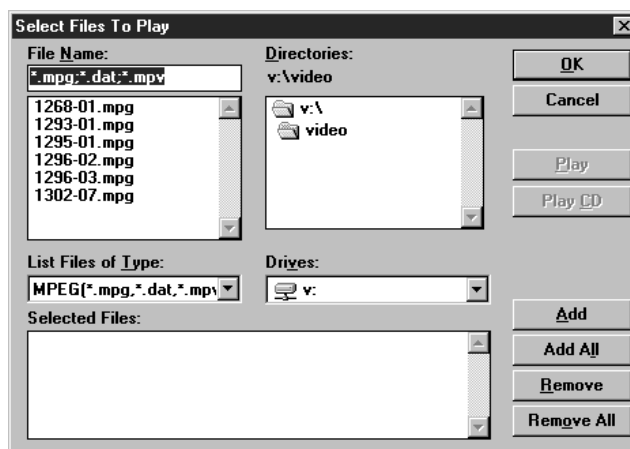
### ATI Player Settings



The ATI Player settings allow changes in sizing and position of the Video Screen.

## 6. Windows Driver Features

### Select Files To Play



For MPEG CD's, select the proper drive of the CD ROM and click on the 'Play CD' button. For MPEG files, select the files and click the "Add" button to add to the play list then click on the "Play" button.

**NOTE:** The above data is only an example and is not included in the software bundle.

### **Video Acceleration Performance**

Video is very data-intensive. For this reason, there are a number of factors which will negatively impact playback performance, including the type of compression used. *RLE* and *Video 1* are manageable with most 386 or higher systems; *Indeo* supports additional color depth, and is best run on faster 486 (or Pentium) systems.

MVA becomes evident when the video window is stretched, more so at 3x or 4x zoom, with "Skip video frames if behind" disabled.

### **Playing Video Clips**

Use the Microsoft Windows Media Player to play or insert video clips (i.e., files with the .AVI filename extension) into various documents. For details please refer to the Media Player on-line Help and the *Microsoft Windows 3.1 User's Guide*.

### **Sizing Windows**

The video clip window can be sized using <Ctrl> and number keys 1 & 2, providing 1x and 2x zoom respectively.

# 7. Monitor Power Management

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The PCI-V264GT1 supports a VESA power management control specification called **DPMS**-Display Power Management Signaling. Monitors that comply with DPMS can provide energy savings up to 80% compared to non DPMS compliant monitors. This also translates into extended monitor life.

DPMS control functions are provided for DOS and Windows operations. This chapter describes the DOS version, a Terminate-and-Stay-Resident program. TSR means it runs in the background once activated. The Windows version provides control via a Windows type control panel in the ATI DeskTop.

## NOTES:

- Monitors that do not support VESA DPMS can be damaged by activation of the DPMS feature. Check your monitor specifications.
- Do not use screen saver when DPMS is enabled. The screen saver will conflict with DPMS operation.

## DPMS (for DOS)

When you run DPMS for the first time, without parameters, DPMS will set the Standby, Suspend, and Off timers to default values. If DPMS has been loaded, running it again without parameters will display the current timer values, as follows:

<b>Standby timer:</b>	<b>15 minutes</b>
<b>Suspend timer:</b>	<b>30 minutes</b>
<b>off timer:</b>	<b>60 minutes</b>

If you run DPMS with at least one timer parameter, DPMS will set that value and disable the unspecified timers.

DPMS parameters are to be included in the command separated by spaces, as follows:

**DPMS** parameter <Enter>

### Example:

To set the Standby timer to 5 minutes, and disable the Suspend and Off timers:

**DPMS STBY 5** <Enter>

# 7. Monitor Power Management

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## DPMS Parameters

### **stby x**

Places the monitor into Standby mode after x minutes and seconds. For example, x for two minutes and ten seconds is specified as 2:10. Standby is the first level of power conservation. The monitor is instantly ready if activity is detected.

### **susp x**

Places the monitor into Suspend mode after x minutes and seconds. The monitor conserves more energy at this level than at Standby.

### **off x**

Places the monitor into Off mode after x minutes and seconds. The monitor is at the highest level of energy conservation.

### **nomouse**

Does not detect mouse activity.

### **quiet**

Suppresses DPMS messages.

### **unload**

Un-installs DPMS from system memory.

### **help**

Displays help messages.



# A. Troubleshooting

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## Diagnostics

All installed graphics modes in the mach64 accelerator can be viewed and tested, by running the INSTALL program from the DOS prompt, or by running a diagnostics program called M64DIAG.EXE. Do not run it in a windowed or full-screen DOS box.

In the INSTALL program, select Test Graphics Adapter from the Diagnostics... option of the Main Menu. The Test Graphics Adapter menu has the following options:

- VGA Tests ...
- Accelerator Tests ...

Any time you suspect there is a problem, especially during installation, run the above tests. The information provided in this appendix will enable you to solve most problems.

## Troubleshooting

Because a typical computer system consists of many different parts, difficulties may arise from a combination of items, from software or hardware installation, to monitor compatibility. Listed below are several checks you can make to help determine what the problem is.

## System Lockup

- If you are using a memory manager such as QEMM or 386MAX you need to modify the command line in the CONFIG.SYS file so that the address of the graphics card video BIOS, C000 - C7FF, is excluded. For example, add "EXCLUDE = C000 - C7FF" to the command line.
- Remove all unnecessary boards.
- Disable shadow RAM.
- Ensure that the board is seated correctly and that the card has been installed using the proper utilities.
- Try the card in a different system and reset to factory defaults using the INSTALL program. If the card works in another system, the problem is likely due to incorrect configuration.

# A. Troubleshooting

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## Test Patterns OK; Applications Do Not Sync

- The wrong monitor type has been selected. Change the settings in the INSTALL program.

## Windows Driver Not Installing Properly

- Windows must be running in 386 Enhanced Mode. Incompatible memory managers may prevent Windows from starting in enhanced mode. If this occurs, remove the offending driver or memory manager.

## AutoCAD Driver Not Installing Properly

- If using a 386, ensure that AutoCAD has been configured for the appropriate ADI driver. The protected mode driver requires extended memory.

## Error Codes and Messages

Problems and solutions for some common errors found by the test program are provided for your reference as follows:

### Memory aperture test failure or Diagnostics program locks or Reboots during aperture test

If you receive an error message indicating that the memory aperture location is conflicting with your system memory, restart the INSTALL program as follows: INSTALL APMAP <Enter>. Now when you enable Memory Aperture, you must select a location above but not overlapping System Memory (S), BIOS (B) or Reserved (R) locations. Not applicable for ISA cards.

### Desired resolution is disabled and displayed in gray

A mode displayed in gray means that the BIOS is told this mode is not available, based on the card configuration. Re-install using custom monitor selection.

# A. Troubleshooting

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## **Menu item is disabled and displayed in gray**

The test program has determined that the mode or test is not available under the current configuration. Aperture tests are not available if the aperture is disabled, and CRT mode and pixel depth are determined by current installation, DAC type, memory size, and memory type.

## **Adapter not detected**

This message should only occur when a mach64 ASIC is not detected. If this message occurs and a mach64 board is present, it may indicate an I/O conflict, conflicts between the Extended Memory Manager (EMM) and the video ROM. Try removing all other boards from the system and booting from a plain DOS disk. Try excluding the video BIOS address (C0000-C7FFF) from the memory manager. Refer to the documentation furnished with the memory manager software for information.

## **Any FIFO test error**

The effects of a bad command FIFO should be visible. (e.g., the screen does not come up, or it displays garbage.)

## **Quick memory test error**

Run Detailed RAM Test to confirm the error and identify the address of the error.

## **Detailed memory test error.**

Run Detailed RAM Test several times to confirm the error and take notes of any messages and error codes.

## **DAC LUT test failure.**

An error has occurred while testing the DAC LookUp Table. The problem should be visible on the top color bar of any 8bpp mode.

## **ROM checksum error.**

An error has been detected in the ROM.

## **Draw sequence failure.**

An error has occurred in the draw engine. If the error is intermittent, it might indicate a marginal RAM failure. The effects of this failure may not be immediately apparent.

# B. Specifications

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## System Requirements

PCI motherboard computer system is required

## Operating Environments — one of:

- DOS 5.0 or higher or Windows 3.1
- Windows 95
- Windows NT
- OS/2 2.1 or OS/2 Warp

## Sync Signals

Separate horizontal and vertical sync at TTL levels.

## Video Memory Address

A000 - BFFF plus the memory aperture address enabled through the INSTALL program.

## Video BIOS Address

C000 - C7FF.

## Video Port Address

102, 1CE, 1CF, 2E8, 2EC, 2ED, 2EE, 2EF, 3?4, 3?5, 3?8, 3?9, 3?A, 3?B, 3C0, 3C1, 3C2, 3C3, 3C4, 3C5, 3C6, 3C7, 3C8, 3C9, 3CA, 3CC, 3CE, 3CF, 3DC, and all aliases; 46E8.  
(?=B for monochrome, ?=D for color operation)

## Video Output Connector

15-pin D shell (Female), IBM standard.

## VGA Feature Connector

26-pin header, VGA Out only, VESA standard.

## Video interrupt

PCI system auto-configurable.

## Power

+5V +/-5%, @ 1.3A typical.

## C. Video Mode Tables

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When discussing color depth, 8 bits per pixel (8bpp) is the same as 256 colors. Therefore, the relation between bpp and colors is as follows:

- 8bpp = 256 colors.
- 16bpp = 65,000 colors.
- 24bpp = 16.7 million colors.

The PCI-V264GT1 also supports 15bpp (32,000 colors). Any resolution and refresh settings that support 16bpp will support 15bpp. Please refer to the mode tables for details.

<b>Resolution</b>	<b>Referesh Rates</b>	
	<b>1MB</b>	<b>2MB</b>
640 x 480 x 8	100Hz	120Hz
640 x 480 x 16	100Hz	120Hz
640 x 480 x 24	85Hz	90Hz
640 x 480 x 32	N/A	85Hz
800 x 600 x 8	100Hz	100Hz
800 x 600 x 16	75Hz	100Hz
800 x 600 x 24	N/A	60Hz
1024 x 768 x 8	75Hz	100Hz
1024 x 768 x 16	N/A	75Hz
1152 x 864 x 8	80Hz	80Hz
1280 x 1024 x 8	N/A	75Hz

