
3D XPRESSION + PC2TV 3D XPRESSION +

User's Guide

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Table of Contents

| | |
|--|-----------|
| Getting Started | 1 |
| What are 3D XPRESSION + PC2TV and 3D XPRESSION +? | 2 |
| What's in the Package? | 3 |
| System Requirements | 3 |
| Using this Guide | 4 |
| Other Sources of Information | 4 |
| Hardware Installation | 5 |
| Preparing Your Computer | 6 |
| Installing the Hardware | 7 |
| Installing ATI's Enhanced Drivers | 11 |
| Installing Enhanced Drivers for Windows 95 | 12 |
| Installing Software MPEG for Windows 95 | 13 |
| Installing Enhanced Drivers for Windows NT | 15 |
| Installing Enhanced Drivers for Windows 3.1x | 17 |
| Using Software MPEG with Windows 3.1x | 19 |
| Installing Enhanced Drivers for OS/2 | 20 |
| Installing Enhanced Drivers for AutoCAD | 22 |
| Installing Enhanced Drivers for MicroStation | 24 |
| Using VESA BIOS Extensions | 26 |
| Special Features | 27 |
| Using ImpacTV | 28 |
| Adding the ATI-TV | 29 |
| Reference | 31 |
| Running Diagnostics | 32 |
| Troubleshooting Tips | 33 |
| ATI Multimedia Channel | 36 |
| Memory Upgrade | 37 |
| Specifications | 39 |
| Video Mode Table | 40 |
| Compliance Information | 42 |



CHAPTER 1

Getting Started

Welcome to the exciting world of 3D! This new technology changes the way you view graphics and video on your PC.

ATI's 3D XPRESSION + PC2TV and 3D XPRESSION + are powerful 3D graphics and video accelerators. Their features will take your PC's graphics and video capabilities to the next level.

This guide provides all the information you need to install your 3D XPRESSION + PC2TV or 3D XPRESSION +.



IN THIS CHAPTER...

- What are 3D XPRESSION + PC2TV and 3D XPRESSION +?
- What's in the Package?
- System Requirements
- Using this Guide
- Other Sources of Information

What are 3D XPRESSION + PC2TV and 3D XPRESSION +?

The 3D XPRESSION + PC2TV and 3D XPRESSION + deliver high-performance 3D and 2D graphics without sacrificing speed. You can play games, watch videos, explore the internet, and work in Windows 95 like never before.

ATI's 3D RAGE II accelerator chip provides advanced 3D support and accelerated 2D graphics. Games and software applications that support the 3D RAGE II run with fluid motion and in brilliant color.

The 3D XPRESSION + PC2TV and 3D XPRESSION +'s advanced features support the next generation of 3D capabilities:

- Gouraud shading
- Perspective correction
- Alpha blending
- Mip mapping
- Bilinear filtering
- Z-buffering

The 3D XPRESSION + PC2TV and 3D XPRESSION + are a part of ATI's legendary *mach64* family of graphics accelerators. Your existing 2D games and applications will snap to life with 64-bit acceleration and faster, more vibrant colors.

For future expansion, you can use the ATI Multimedia Channel to blend the entertainment of your TV with the intelligence of your PC. ATI's TV tuner is an add-in card designed to work with the 3D XPRESSION + PC2TV and 3D XPRESSION +. (For more information, see ***Special Features*** on page 27.)

Special to the 3D XPRESSION + PC2TV only, you can use ImpacTV to connect your computer to a television. This feature is ideal for playing games, giving presentations, watching movies, and browsing the Internet. (For more information, see ***Special Features*** on page 27.)

What's in the Package?

Your package includes the following hardware, software, and documentation:

- 3D XPRESSION + PC2TV or 3D XPRESSION + accelerator card
- ATI Installation CD-ROM
- User's Guide

If any components are missing or damaged, please contact your dealer.

System Requirements

- **Computer System** — Pentium[®]/Pentium Pro[®], or compatible systems with PCI Local Bus
- **Expansion Slot** — 32-bit PCI Local Bus
- **Operating System** — DOS 5.0 or higher, Windows 95[®], Windows 3.1x[®], Windows NT[®] (3.51, 4.0), or OS/2 (2.1, Warp)
Graphics utilities and software MPEG playback supported in Windows 95 and Windows 3.1x only.
- **Monitor** — VGA, supporting minimum 640x480 resolution.
A Plug-and-Play monitor which supports VESA's Display Channel specifications (DDC1 or DDC2b) is required to take advantage of the DDC1/DDC2b features.
- **Display Drivers** — VGA or VESA driver supplied with your operating system
For best performance, install ATI's mach64 enhanced drivers that are supplied in this package.

Using this Guide

The organization of this guide is as follows:



Hardware Installation contains step by step instructions to help you place your card in your computer.



Installing ATI's Enhanced Drivers describes how to install display driver software.



Special Features explains how you can take advantage of the extra add-in features.



Reference contains troubleshooting tips and specifications about your card.

Other Sources of Information

If you need additional help or require information that is not included in this guide, see the following sources of information:

Readme File

This file contains the latest information about your 3D graphics card.

To view the Readme file in DOS

- 1 Insert ATI's Installation CD-ROM into the CD-ROM drive.
- 2 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 3 Type **README**.

Online Help

If you require additional information, you can refer to the online help available under Windows 3.1x and Windows 95 for more information about using ATI's *mach64* enhanced drivers.

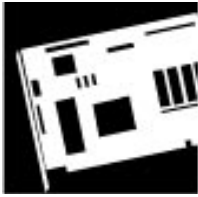
CHAPTER 2

Hardware Installation

Installing your 3D graphics card consists of two easy steps.

- **Placing the card in your computer**
- **Installing ATI's *mach64* enhanced display drivers**

This chapter explains how to place your card in your computer.



IN THIS CHAPTER...

- Preparing Your Computer
- Installing the Hardware



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

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

Damage to system components, the accelerator card, and injury to yourself may result if power is applied during installation.

Preparing Your Computer

If you are using an operating system other than Windows 95, you may need to do the following before installing your card:

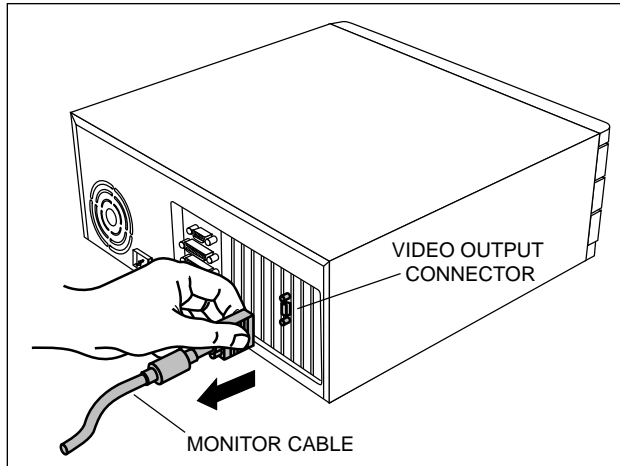
- If your current system configuration uses special drivers that are not 640x480 VGA, you may encounter conflicts with the card. We recommend that you first reconfigure your operating system to use a **VGA** driver supplied with your operating system before installing the card. For more information about changing your operating system configuration, see your operating system documentation.

Installing the Hardware

Now that you have prepared your computer, you are ready to install your 3D graphics card.

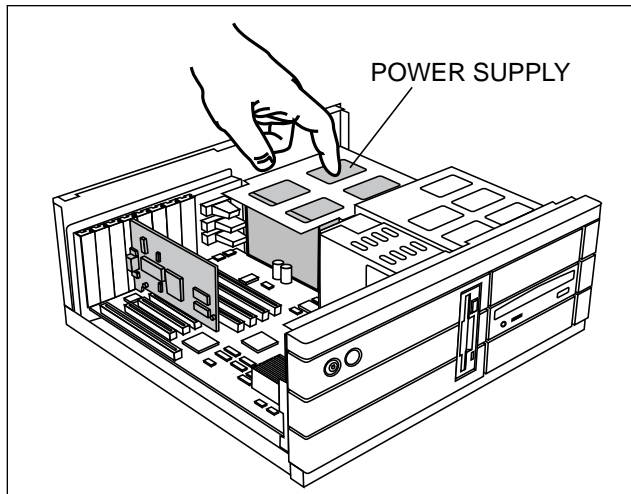
To install your 3D graphics card

- 1 Power off the computer and monitor, then disconnect the monitor cable from the back of your computer.



- 2 Remove the computer cover. If necessary, consult your computer system manual about removing the cover.

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

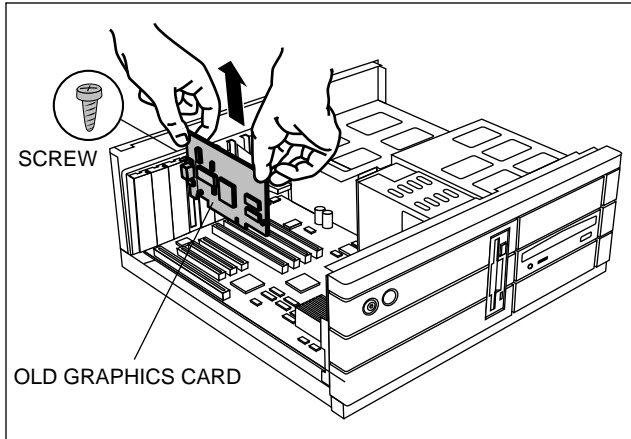


8 Hardware Installation

- 3 If there is an existing graphics card, remove it from your computer.

If the old graphics card sticks, rock it gently from end to end.

Remember to save the screw.

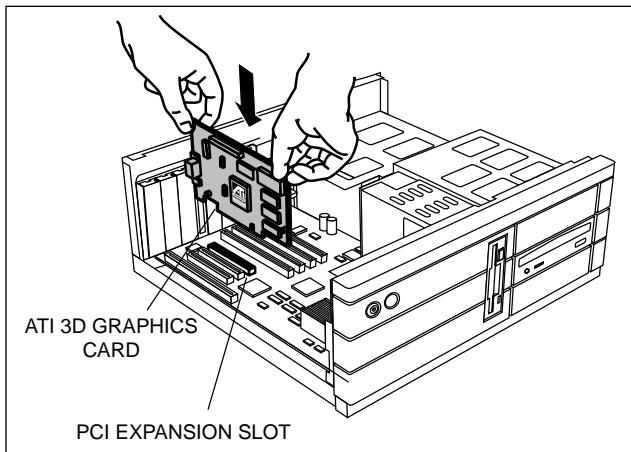


or

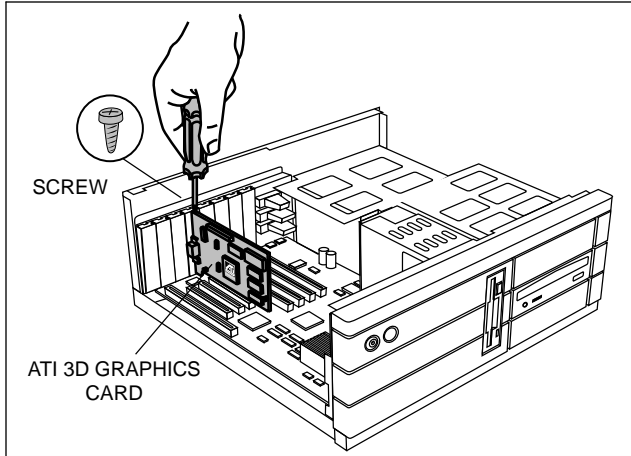
If your computer has any on-board graphics capability, you may need to disable it on the motherboard. For more information, see your computer documentation.

- 4 Align your card with an empty PCI expansion slot and gently insert it into place. You may need to remove the cover from the rear of the PCI expansion slot that you selected.

Grasp the card by the top edge and carefully seat it firmly into the PCI slot.

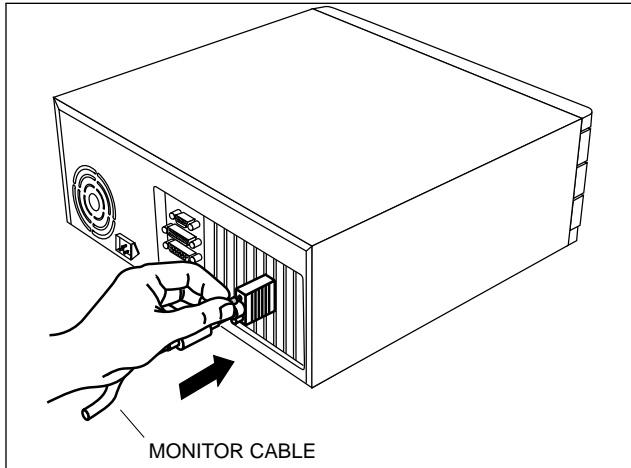


- 5 Replace the screw to fasten the card in place, and replace the computer cover.



- 6 Plug the monitor into your card, then turn on the computer and monitor.

Make sure your monitor cable is securely fastened.



You are now ready to proceed to Chapter 3 and install ATI's *mach64* enhanced drivers.

CHAPTER 3

Installing ATI's Enhanced Drivers

Your computer uses programs called graphics drivers to display information on the screen. ATI's *mach64* enhanced drivers give you enhanced speed, resolution, color depth, graphic utilities, and 3D features.

This chapter explains how you install ATI's *mach64* enhanced drivers.



IN THIS CHAPTER...

- Installing Enhanced Drivers for Windows 95
 - Installing Software MPEG for Windows 95*
- Installing Enhanced Drivers for Windows NT
- Installing Enhanced Drivers for Windows 3.1x
 - Using Software MPEG with Windows 3.1x*
- Installing Enhanced Drivers for OS/2
- Installing Enhanced Drivers for AutoCAD
- Installing Enhanced Drivers for MicroStation
- Using VESA BIOS Extensions



Select an enhanced driver from the following list:

- Windows 95, see below
- Windows NT, see page 15
- Windows 3.1x, see page 17
- OS/2, see page 20
- AutoCAD, see page 22
- MicroStation, see page 24

Installing Enhanced Drivers for Windows 95

You need to install ATI's *mach64* enhanced driver for Windows 95 to take advantage of your card's higher performance, resolutions, and special features.

To install the *mach64* enhanced driver for Windows 95

1 If Windows 95 prompts you to insert a disk from the hardware manufacturer, insert ATI's Installation CD-ROM into your CD-ROM drive.

2 Click OK.

Type **D:\WIN95**

(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)

3 Click OK.

4 Click Yes to restart your computer.

OR

1 If Windows 95 does not prompt you to insert a disk, insert ATI's Installation CD-ROM into your CD-ROM drive.

If Windows 95 runs the ATI INSTALLATION CD-ROM automatically, proceed to step 5.

2 Click Start.

3 Select Run.

- 4 Type the following:

D:\ATISSETUP

(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)

- 5 Click on Display Drivers.
- 6 Follow the online screen instructions to complete the installation.

After you install the drivers, Windows 95 will prompt you to restart your machine.

Installing Software MPEG for Windows 95

Now that you have installed ATI's *mach64* enhanced driver for Windows 95, you can install the ATI VIDEO PLAYER—a software MPEG player.

The ATI VIDEO PLAYER provides full-motion, full-screen MPEG video playback with excellent color quality.

You must install ATI's *mach64* enhanced driver before installing the ATI VIDEO PLAYER. For the best playback quality, the recommended requirement for the ATI VIDEO PLAYER is a Pentium system.

To install the ATI VIDEO PLAYER for Windows 95

- 1 Insert ATI's Installation CD-ROM into your CD-ROM drive.

If Windows 95 runs the ATI INSTALLATION CD-ROM automatically, proceed to step 5.

- 2 Click Start.
- 3 Select Run.
- 4 Type the following:

D:\ATISSETUP

(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)

- 5 Click ATI VIDEO PLAYER.
- 6 Follow the on-screen instructions to complete the installation.

To open the ATI VIDEO PLAYER for Windows 95

- 1 Click Start.
- 2 Select Programs.
- 3 Select ATI Multimedia.
- 4 Click ATI VIDEO PLAYER.

For information about using the controls of the ATI VIDEO PLAYER, see the online help.

Installing Enhanced Drivers for Windows NT

After installing your graphics card, Windows NT will default to standard VGA mode (640 x 480, 16 colors). The procedure below describes how you install ATI's *mach64* enhanced driver for Windows NT 3.51, and 4.0.

To install the *mach64* enhanced driver for Windows NT

- 1 Boot Windows NT.
- 2 Double-click the Main icon.
- 3 Double-click the Control Panel icon.
- 4 Double-click the Display icon.
- 5 Click Change Display Type.
- 6 Click Change.
- 7 Click Other.
- 8 Insert ATI's Installation CD-ROM into your CD-ROM drive.

For Windows NT 3.51, type the following:

D:\NT351 (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter), then click OK.

For Windows NT 4.0, type the following:

D:\NT40 (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter), then click OK.

- 9 Select ATI Graphics Accelerators.
- 10 Click Install.
- 11 Click Yes to change your system configuration.
- 12 Click Continue to confirm the full path name.
- 13 After the files have been copied to your computer, click OK.
- 14 Reboot Windows NT.

After reboot, the Invalid Display Settings window appears.

- 15 Click OK.

The Display Settings dialogue box appears.

16 Installing ATI's Enhanced Drivers

- 16** Select a desired display mode. For more detailed information about changing your display mode, click Help.

Installing Enhanced Drivers for Windows 3.1x

To install ATI's *mach64* enhanced drivers for Window 3.1x, you use the INSTALL program. This program checks the system for possible conflicts and installs the *mach64* enhanced display driver.

The INSTALL program is a DOS application and cannot be run inside a Windows DOS box.

To install the *mach64* enhanced driver for Windows 3.1x

- 1 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 2 Pull-down the File menu in the Program Manager.
- 3 Select Run.
- 4 Type the following:
D:\ATISETUP
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
- 5 Click on Display Drivers.
- 6 Follow the online screen instructions to complete the installation.

The ATI DeskTop

The INSTALL Program automatically creates the ATI Desktop Program Group when you install the *mach64* enhanced driver for Windows.

For correct resolution and refresh rate operation, you need to select a monitor using Screen Adjustment. **Please refer to the online help for more information about how to use the ATI DeskTop.**

Your ATI DeskTop includes the following features:

- **Flexdesk+** — allows you to change the color depth, screen size, and desktop size attributes of the driver within Windows.
- **DPMS** — allows your DPMS compatible monitor to save up to 80% energy and extend monitor life.
- **DeskScape** — allows you to pan across an off-screen work space and zoom in for more detail when using smaller monitors.
- **WinSwitch** — switches display modes instantly. You can toggle between modes without having to quit Windows.
- **Color Correction** — enables you to adjust the screen color to match a printed copy in 256 color mode.
- **Screen Adjustment** — enables you to adjust the screen size, centering, refresh rate, and monitor configuration within Windows.

Using Software MPEG with Windows 3.1x

Now that you have installed ATI's *mach64* enhanced driver for Windows 3.1x, you can install the ATI VIDEO PLAYER—a software MPEG player.

The ATI VIDEO PLAYER provides full-motion, full-screen MPEG video playback with excellent color quality.

You must install ATI's *mach64* enhanced driver before installing the ATI VIDEO PLAYER. For the best playback quality, the recommended requirement for the ATI VIDEO PLAYER is a Pentium system.

To install the ATI VIDEO PLAYER for Windows 3.1x

- 1 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 2 Pull-down the File menu in the Program Manager.
- 3 Select Run.
- 4 Type the following:
D:\ATISSETUP
(If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter.)
- 5 Click ATI VIDEO PLAYER.
- 6 Follow the on-screen instructions to complete the installation.

To open the ATI VIDEO PLAYER in Windows 3.1x

- 1 Start Windows.
- 2 Double-click on the ATI DeskTop Program Group.
- 3 Double-click on the ATI DeskTop icon.
- 4 Double-click on the ATI VIDEO PLAYER icon.

For information about using the controls of the ATI VIDEO PLAYER, see the online help.

Installing Enhanced Drivers for OS/2

To install ATI's *mach64* enhanced drivers for OS/2 2.1 or OS/2 Warp, you use the INSTALL program. This program checks the system for possible conflicts, sets the monitor type, and installs the *mach64* enhanced display driver.

To run the INSTALL Program

- 1 Start OS/2.
- 2 Check that OS/2 is using a standard VGA driver and no other applications are running. For more information, see your OS/2 documentation.
- 3 Double-click the OS/2 System folder.
- 4 Double-click the Command Prompts folder.
- 5 Double-click the OS/2 Full Screen object.
- 6 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 7 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 8 Type **CD UTILITY**.
- 9 Type **OS2INST**.
- 10 Select Utilities Installation from the Main Menu.

This copies the utilities onto your hard drive.

- 11 Press ENTER to select the default destination directory.
- 12 When prompted, let the INSTALL program make changes to your Autoexec.bat file.
- 13 Select QUICK SETUP

You need to select QUICK SETUP to specify a monitor. Proper monitor selection is necessary for correct resolution and refresh rate operation.

- 14 Select your monitor from the list.

or

If you do not see your monitor listed, see *Custom Monitor Configuration* on page 31.

After you select a monitor, you are ready to copy the enhanced driver files.

To copy the *mach64* enhanced driver files

- 1 Select Drivers Installation from the Main Menu.
- 2 Select IBM OS/2 from the list of applications.
Select Read Installation Notes for help and tips.
- 3 Select Install for the correct version of OS/2.
- 4 Press ENTER to select the default destination directory.
or
Specify a destination directory for the OS/2 driver files.
- 5 After the files have been copied, press any key.
- 6 Press ESC to exit.

You are now ready to install the enhanced driver for OS/2.

To install the *mach64* enhanced driver for OS/2

- 1 In the OS/2 full-screen command prompt, type **DSPINSTL**.
- 2 When the Display Driver Install panel appears, select Primary Display. Click OK to bring up the driver selection list.
- 3 Select the latest ATI *mach64* enhanced driver version from the list, and click OK.
- 4 In the Monitor Configuration Selection Utility, select Install Using Defaults for Monitor Type, then click OK.
- 5 When the source directory panel appears, choose Change and specify the location of the *mach64* driver. (The default location is C:\MACH_OS2.)
- 6 Click SET.
- 7 Click INSTALL.
- 8 Type **EXIT** to close the OS/2 full screen command prompt.
- 9 Shut down OS/2.
- 10 Re-start OS/2. It will default to 640 x 480 in 256 colors. To change screen resolution and/or color depth, see your OS/2 User's Guide.
- 11 Refer to the README.OS2 file in the C:\MACH_OS2 directory for *mach64* configuration details.

Installing Enhanced Drivers for AutoCAD

To install the *mach64* enhanced driver for AutoCAD R10 386, R11, R12, or R13, you use the INSTALL program. Before installing the driver, run AutoCAD to ensure that it is properly installed on your system.

The INSTALL program is a DOS application and cannot be run inside a Windows DOS box.

To run the INSTALL program

- 1 Note the location of the AutoCAD program files before you start the INSTALL program. You will need this information later.
- 2 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 3 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 4 Type **CD UTILITY**.
- 5 Type **INSTALL**.
- 6 Select Utilities Installation from the Main Menu.

This copies the INSTALL program and utilities onto your hard drive.

- 7 Press ENTER to select the default destination directory.
or
Type a new destination directory.

- 8 When prompted, let the INSTALL program make changes to your Autoexec.bat file.
- 9 Select QUICK SETUP

You need to select QUICK SETUP to specify a monitor. Proper monitor selection is necessary for correct resolution and refresh rate operation.

- 10 Select your monitor from the list.
or

If you do not see your monitor listed, see *Custom Monitor Configuration* on page 31.

After you select a monitor, you are ready to install the mach64 enhanced driver for AutoCAD.

To install the *mach64* enhanced driver for AutoCAD

- 1 Select Drivers Installation from the Main Menu.
- 2 From the list of applications, select AutoCAD.
- 3 Type in the source drive and directory.

When the menu appears, select Read Installation Notes for help and tips on the installation.

- 4 Follow the on-screen instructions to install the enhanced driver.
- 5 When driver installation is completed, press ESC.

Two documents called MANUAL.TXT and README.DLD are copied to your AutoCAD Drivers directory. You can read or print these files using any word processor.

If you are using AutoCAD R10 or R11, run ADIACAD.BAT to set the necessary driver parameters.

ADIACAD.BAT was created by the INSTALL 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, add the contents of ADIACAD to your batch file.

- 6 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.

Installing Enhanced Drivers for MicroStation

To install the *mach64* enhanced drivers for MicroStation 4.0 or 5.0, you use the INSTALL program. Before installing the driver, run MicroStation to ensure that it is properly installed on your system.

The INSTALL program is a DOS application and cannot be run inside a Windows DOS box.

To run the INSTALL program

- 1 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 2 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 3 Type **CD UTILITY**.
- 4 Type **INSTALL**.
- 5 Select Utilities Installation from the Main Menu.

This copies the INSTALL program and utilities onto your hard drive.

- 6 Press ENTER to select the default destination directory.
or
Type a new destination directory.
- 7 When prompted, let the INSTALL program make changes to your Autoexec.bat file.
- 8 Select QUICK SETUP

You need to select QUICK SETUP to specify a monitor. Proper monitor selection is necessary for correct resolution and refresh rate operation.

- 9 Select your monitor from the list.
or

If you do not see your monitor listed, see *Custom Monitor Configuration* on page 31.

After you select a monitor, you are ready to install the mach64 enhanced driver for MicroStation.

**To install the *mach64* enhanced driver for
MicroStation**

- 1 Select Drivers Installation from the Main Menu.
- 2 From the list of applications, select MicroStation.
- 3 Type the source drive and directory information.

When the menu appears, select Read Installation Notes for help and tips.

- 4 Follow instructions on the screen to complete the installation.
- 5 When driver installation is completed, press ESC to exit.
- 6 A MicroStation driver reference document and an information file called README.USD are copied to the MicroStation Drivers directory on your hard disk. You can read or print these files using any word processor.

Using VESA BIOS Extensions

The VESA BIOS Extensions (VBE) feature supports software using modes compatible with VESA standards.

To ensure that VBE works correctly, you can load a DOS TSR (terminate-and-stay-resident) program called M64VBE. If your software and/or games conform to the VBE standard, you should load M64VBE first.

You must have ATI's *mach64* utilities installed on your computer to load M64VBE.

To install ATI's *mach64* utilities

- 1 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 2 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 3 Type **CD UTILITY**.
- 4 Type **INSTALL**.
- 5 Select Utilities Installation from the Main Menu.
- 6 Press ENTER to select the default destination directory.
- 7 When prompted, let the INSTALL program make changes to your Autoexec.bat file.
- 8 Press ESC to exit the INSTALL program.
- 9 Restart your computer.

You are now ready to load M64VBE.

To load M64VBE

- 1 At the command prompt, type **M64VBE**.

To remove M64VBE from your system

- 1 At the command prompt, type **M64VBE U**.
 - For more information, see your DOS documentation for conditions on unloading TSRs.

CHAPTER 4

Special Features

You can take advantage of the special features that your 3D XPRESSION PC2TV + or 3D XPRESSION + have to offer.



IN THIS CHAPTER...

- Using ImpacTV
- Adding the ATI-TV

Using ImpactTV

If you have a 3D XPRESSION + PC2TV card, you can use ATI's ImpactTV™ to connect a television for your computer's display.

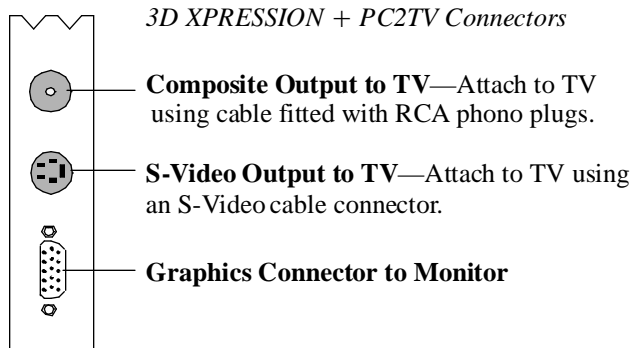
You can use ImpactTV to do the following:

- View computer output directly on your television in either NTSC or PAL formats
- Enhance your system with advanced flicker reduction and artifact suppression circuitry
- Connect using Composite or S-Video output capabilities
- Display images on both the TV and PC monitor simultaneously
- Provide a big-screen experience for entertainment PCs which is ideal for playing games, giving presentations, watching movies, and browsing the Internet

To connect your computer to a television, simply attach a connector cable (S-Video or Composite) from the television to your 3D XPRESSION + PC2TV. S-Video will produce the best results.

To connect your graphics card to a television

- 1 Turn off your computer and your television.
- 2 Determine if your television has an S-Video connection or an RCA video in connection.
- 3 Looking at the back of your computer, locate your graphics card. (See diagram below.)



4 Using a cable with either S-Video or RCA connectors, attach one end of the cable to your 3D XPRESSION + PC2TV and the other to your television.

5 Turn on your computer and your television.

If there is no display, you may need to enable ImpactTV.

To enable ImpactTV

1 Click Start.

2 Point to Settings.

3 Click Control Panel.

4 Double-click Display.

5 Click on the Settings tab.

6 Check the Television checkbox to enable ImpactTV.

- For more information about television display, click Help.

Adding the ATI-TV

ATI-TV™ (sold separately) is an intelligent TV tuner add-in board that you connect to your 3D XPRESSION + PC2TV or 3D XPRESSION +.

ATI's TV tuner accepts a full range of video/audio input from just about any video source: TV, antenna/cable, VCR, video camera, LaserDisc, and video games.

You can use ATI's TV tuner to do the following:

- Watch TV on your computer as you work
- Watch a videotape or LaserDisc movie on your computer
- Capture, save, and print TV and video images
- Display and record closed-captioned text

ATI's TV tuner displays cable, broadcast television or full-motion video on the whole screen or in a window.

Please contact your dealer for availability.

CHAPTER 5

Reference

This chapter contains troubleshooting tips and specifications about your 3D XPRESSION + PCTV and 3D XPRESSION + .



IN THIS CHAPTER...

- Running Diagnostics
- Troubleshooting Tips
- ATI Multimedia Channel
- Memory Upgrade
- Specifications
- Video Mode Table
- Compliance Information

Running Diagnostics

You can run diagnostics to test the hardware on your card. All installed graphics modes can be viewed and tested. You cannot run the diagnostics program inside a Windows DOS Box.

To run the diagnostics program in DOS

- 1 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 2 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 3 Type **CD UTILITY**.
- 4 Type **M64DIAG**.
- 5 Select Diagnostics.
- 6 Type the number of times you would like to run the tests.

To run the diagnostics program in OS/2

- 1 Start OS/2.
- 2 Double-click the OS/2 System folder.
- 3 Double-click the Command Prompts folder.
- 4 Double-click the OS/2 Full Screen object.
- 5 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 6 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 7 Type **CD UTILITY**.
- 8 Type **OS2DIAG**.
- 9 Select Diagnostics.
- 10 Type the number of times you would like to run the tests.

Troubleshooting Tips

The following troubleshooting tips may help you if you experience problems. Contact your dealer for more advanced troubleshooting information.

Basic Troubleshooting Tips

- Check that the card is seated properly in its expansion slot. If the problem still exists, try a different PCI expansion slot.
- Ensure the monitor cable is securely fastened to the card.
- Make sure that the monitor and computer are plugged in and receiving power.
- Disable any built-in graphics capabilities on your mainboard. For more information, see your computer documentation.
- Make sure that you selected the appropriate monitor when you installed your enhanced driver.

Windows 95 Troubleshooting Tips

For Windows 95 troubleshooting tips, right-click the ATI icon in the taskbar and select Troubleshooting.

If you have problems during start-up, load Windows 95 in Safe Mode.

To load Windows 95 in Safe Mode

- 1 Turn on your computer.
- 2 Press the F8 key when **Starting Windows 95** appears on the screen.
- 3 Select Safe Mode.
 - Disable any programs that launch automatically when you start Windows 95.
 - Check that you have the correct monitor and display driver selected in the Display Properties. For more information, click on Help in the Start menu.
 - Check for the existence of memory managers and ensure they are configured properly.
 - Refer to additional information in the Windows 95 README file located in the WIN95 folder on ATI's Installation CD-ROM.

To remove the ATI VIDEO PLAYER

- 1 Click Start.
- 2 Select Settings.
- 3 Click Control Panel.
- 4 Double-click Add/Remove Programs.
- 5 Select **ATI VIDEO PLAYER** from the list.
- 6 Click on Add/Remove...
- 7 Click OK.

Windows NT Troubleshooting Tips

- If you are having trouble during start-up, select VGA mode in the Boot Menu.
- Disable any programs that launch automatically when you start Windows NT.
- Check that you have the correct monitor and display driver selected.
- Refer to additional information in the README files on the Windows NT driver disk.

Custom Monitor Configuration

If you are using the INSTALL program to configure your monitor for AutoCAD, MicroStation, OS/2 or VESA programs and your monitor is not in the list, you can do one of the following:

- a) If the specification in the HELP BOX is compatible with your monitor, select the compatible monitor.
- b) If your monitor is DDC1 compatible, select DDC1 MONITOR.
- c) If your monitor is DDC2b compatible, select DDC2b MONITOR.
- d) If you have a VESA Display Information Format file (VDIF) from the monitor manufacturer, select READ VDIF. Follow the on-screen instructions to complete the installation.

If these options are not applicable to your monitor type, then you must follow the procedure below to manually set up your monitor.

To run the INSTALL program

- 1 Check your monitor's maximum resolution, and horizontal and vertical frequencies for each available resolution. These values should be documented in the monitor's manual.
- 2 Insert ATI's Installation CD-ROM into your CD-ROM drive.
- 3 Type **D:** (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter).
- 4 Type **CD UTILITY**.
- 5 Type **INSTALL**.

To manually set up your monitor

- 1 Select Quick Setup from the Main Menu.
- 2 Select Custom.



An incorrect Monitor Type setting may damage your monitor. Review your monitor specifications before making a selection from the Monitor Selection Menu.

A scrambled screen indicates your monitor is not capable of the selected display mode. Immediately press **ESC** to exit.

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.

- 3 Pick a resolution, and then a refresh rate.
- 4 Adjust the size and position of the box outline on the screen, and press ENTER to accept.
- 5 Repeat steps 3 and 4 until you are satisfied with the box outline for all the resolutions.
- 6 When finished, press ESC and save the settings.

*If you have not installed an enhanced driver on your system, see **Installing ATI's Enhanced Drivers** on page 11.*

ATI Multimedia Channel

The ATI Multimedia Channel (AMC) connects ATI's TV tuner and video capture modules to the 3D XPRESSION + PC2TV and the 3D XPRESSION + .

While the AMC provides VGA Feature Connector (VFC) compatibility, it also provides enhanced features for new multimedia devices including serial control and provision for audio.



The AMC connector shares the same footprint with the VFC but it adds pins for supporting additional multimedia modes. Great caution should be taken when connecting a ribbon cable to the AMC/VFC connector. Some of the pins carry power and any improper use can result in damage both to the graphics card and the upgrade board.

Memory Upgrade

If you only have 2MB of video memory on your card, you may be able to upgrade it by adding memory chips in the empty memory sockets. You may be able to add 2MB of video memory to a maximum capacity of 4MB.

To determine how much memory you have on your card, run the diagnostics program and select Configuration. For more information, see *Running Diagnostics* on page 32.

The additional memory will give you smoother video playback, more colors, and higher screen resolutions. Please consult your monitor's specification to determine which resolutions are available with your display.

You will need the following information when upgrading your video memory:

Memory Type (256 Kbits x 16) — You need to use the same memory chip type to ensure compatibility with your card. Record the name of the manufacturer, the serial number, and the part number of the memory chips on your card. (See the diagram on the following page to determine your memory chip location.)

Package — SOJ

Speed — 16 nanosecond cycle time or faster

Quantity — 4 chips (to add 2MB)

To order additional memory chips, please contact your dealer.

To install additional memory



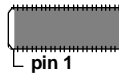
Discharge your body's static electric charge by touching a grounded surface — e.g., the metal area of the computer chassis — before performing any hardware procedure.

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

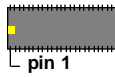
Damage to system components, the accelerator card, and injury to yourself may result if power is applied during installation.

- 1 Power off the computer and monitor, then disconnect the monitor cable from the back of the computer.
- 2 Remove the computer cover. If necessary, consult your computer system manual about removing the cover.

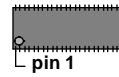
- 3 If your card has been previously installed, remove it from the computer.
- 4 Place your card on a flat surface.
- 5 Find pin 1 on the memory chip using the following three diagrams as a guide:



The chip may have a beveled edge.

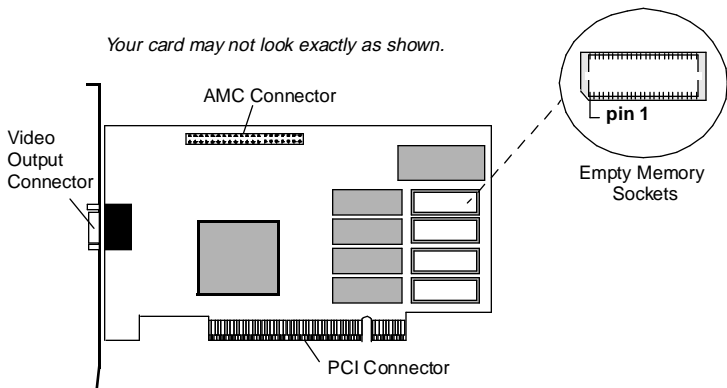


The chip may have a notch.



The chip may have a dot.

- 6 Find pin 1 in the empty memory socket on your card. Use the following diagram as a guide



When installing memory chips, use care to ensure that every pin is properly seated in the socket and that pin 1 is correctly oriented. If you are unsure of this procedure, please contact a professional technician to aid in the installation.

- 7 Align pin 1 of the memory chip with pin 1 in the empty memory socket. Insert the chip into the socket and seat it firmly to ensure good contact.
- 8 Repeat steps 5 to 7 to install the other memory chips.
- 9 Re-install the card and the computer cover. For more information, see *Installing the Hardware* on page 7.
- 10 Plug the monitor into your card, then turn on the computer and monitor.
- 11 To test that your video memory is working properly, run the diagnostics program and select Configuration. For more information, see *Running Diagnostics* on page 32.

Specifications

System Requirements — Pentium/Pentium Pro, or compatible systems with PCI Local Bus.

Operating Environments — one of:

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

Video Display Buffer

- 2 MB, 2 MB upgradable to 4 MB, or 4 MB

Sync Signals

- Separate horizontal and vertical sync at TTL levels

Video BIOS

- PCI 2.1 compliant

Video Output Connector

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

AMC Connector

- 2x20 pin header. Shares the same footprint with the 2x13 pin VGA Feature Connector, VGA Out only, VESA standard.

Video interrupt (*Reserved for future use*):

- PCI — system auto-configurable.

Power

- +5V $\pm 5\%$, @ 1.3A typical.

Ambient Temperature

- Operating — 50° to 122° F (10° to 50° C).
- Storage — 32° to 162° F (0° to 70° C).

Relative Humidity

- Operating — 5% to 90% non-condensing.
- Storage — 0% to 95%.

MTBF

- 120,000 hours.

Video Mode Table

| 3D XPRESSION + PCTV and 3D XPRESSION + | | | | | | | | | | | | |
|--|-------------------------|-----------------------|-------------------------|-------------------------|----|----|-----|-----|----|----|-----|---|
| Display Screen Resolution | Refresh Rate (Hz) | Hor. Scan (kHz) | Pixel Clock (MHz) | Colors (Bits Per Pixel) | | | | | | | | |
| | | | | 2 MB | | | | 4MB | | | | |
| | | | | 8 | 16 | 24 | *32 | 8 | 16 | 24 | *32 | |
| 640x480 | 60 | 31.5 | 25.1 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 72 | 37.4 | 32.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 75 | 37.5 | 31.5 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 85 | 43.3 | 36.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 90 | 48.0 | 39.9 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 100 | 52.9 | 44.9 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 120 | 63.7 | 55.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 160 | 84.1 | 70.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 640x480 | 200 | 100.2 | 81.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 48 | 33.8 | 36.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 56 | 35.2 | 36.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 60 | 37.8 | 39.9 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 70 | 44.5 | 44.9 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 72 | 48.0 | 50.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 75 | 46.9 | 49.5 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 85 | 53.7 | 56.2 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 90 | 57.1 | 56.6 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 100 | 62.5 | 67.5 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 120 | 76.0 | 81.0 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| 800x600 | 160 | 99.6 | 106.0 | √ | √ | √ | - | √ | √ | √ | √ | - |
| 800x600 | 200 | 125.9 | 135.0 | √ | - | - | - | √ | - | - | - | - |
| 1024x768 | 43 | 35.5 | 44.9 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 60 | 48.4 | 65.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 70 | 56.5 | 75.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 72 | 58.2 | 75.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 75 | 60.0 | 78.8 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 85 | 68.7 | 94.5 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 90 | 76.2 | 100.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 100 | 79.0 | 110.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1024x768 | 120 | 96.7 | 130.0 | √ | √ | - | - | √ | √ | √ | - | - |
| 1024x768 | 140 | 113.3 | 157.5 | √ | √ | - | - | √ | √ | - | - | - |
| 1024x768 | 150 | 120.6 | 160.0 | √ | - | - | - | √ | - | - | - | - |
| 1152x864 | 43 | 45.9 | 65.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1152x864 | 47 | 44.9 | 65.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1152x864 | 60 | 54.9 | 80.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1152x864 | 70 | 66.1 | 100.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1152x864 | 75 | 75.1 | 110.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1152x864 | 80 | 76.4 | 110.0 | √ | √ | - | - | √ | √ | √ | √ | √ |
| 1152x864 | 85 | 77.1 | 121.5 | √ | √ | - | - | √ | √ | √ | - | - |
| 1152x864 | 100 | 90.2 | 135.0 | √ | √ | - | - | √ | √ | - | - | - |
| 1280x1024 | 43 | 50.0 | 80.0 | √ | - | - | - | √ | √ | √ | - | - |
| 1280x1024 | 47 | 50.0 | 80.0 | √ | - | - | - | √ | √ | √ | - | - |
| 1280x1024 | 60 | 64.0 | 110.0 | √ | - | - | - | √ | √ | √ | - | - |
| 1280x1024 | 70 | 74.6 | 126.0 | √ | - | - | - | √ | √ | √ | - | - |

| 3D XPRESSION + PCTV and 3D XPRESSION + | | | | | | | | | | | |
|--|-------------------------|-----------------------|-------------------------|-------------------------|----|----|-----|-----|----|----|-----|
| Display Screen Resolution | Refresh Rate (Hz) | Hor. Scan (kHz) | Pixel Clock (MHz) | Colors (Bits Per Pixel) | | | | | | | |
| | | | | 2 MB | | | | 4MB | | | |
| | | | | 8 | 16 | 24 | *32 | 8 | 16 | 24 | *32 |
| 1280x1024 | 74 | 77.9 | 135.0 | √ | - | - | - | √ | √ | √ | - |
| 1280x1024 | 75 | 80.0 | 135.0 | √ | - | - | - | √ | √ | √ | - |
| 1280x1024 | 85 | 91.2 | 157.5 | √ | - | - | - | √ | √ | - | - |
| 1600x1200 | 52 | 68.0 | 135.0 | √ | - | - | - | √ | √ | - | - |
| 1600X1200 | 58 | 75.0 | 135.0 | √ | - | - | - | √ | √ | - | - |
| 1600x1200 | 60 | 76.2 | 156.0 | √ | - | - | - | √ | √ | - | - |

*32 - 24bpp color data is processed using a 32bpp data format.

Compliance Information

FCC Compliance Information

3D XPRESSION + PC2TV and 3D XPRESSION comply 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.
- The use of shielded cables for connection of the monitor to the graphics card is required to ensure compliance with FCC regulations.
- Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Compliance Statement

ICES-003 This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

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

CE Compliance Information

EMC Directive 89/336/EEC and Amendment 92/31/EEC, Class B Digital Device

EN 5008-1, Generic Emissions Standard for Residential, Commercial and Light Industrial Products

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

Warning: This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

EN 50082-1, Generic Immunity Standard for Residential, Commercial and Light Industrial Products

(IEC 801-2, IEC 801-3, IEC 801-4)

Directive EMC 89/336/CEE et amendement 92/31/CEE, dispositif numérique de Classe B

EN 50081-1, Norme sur les émissions génériques pour les produits domestiques, commerciaux et industriels légers

(EN 55022/CISPR 22, Limites et méthodes de mesure des caractéristiques d'interférences radiophoniques, Matériel des technologies de l'information) *Mise en garde: ceci est un produit de Classe B. Il risque produire des interférences radiophoniques dans un environnement domestique auquel cas l'utilisateur peut se voir demandé de prendre des mesures adéquates.*

EN 50082-1, Norme sur l'immunité générique pour produits domestiques, commerciaux et industriels légers.

(CEI 801-2, CEI 801-3, CEI 801-4)

EMC Richtlinie 89/336/EEC und Änderung 92/31/EEC, Digitale Gerat der Klasse B

EN 50081-1, Allgemeiner Emissions-Standard fur Haushalt- und kommerzielle Produkte sowie Erzeugnisse der Leichtindustrie

(EN 55022/CISPR 22, Beschrankungen und Verfahren der Messung von informationstechnischen Ausrustungen mit Funkstormerkmale)

Warnung: Dies ist ein Erzeugnis der Klasse B. Dieses Erzeugnis kann Funkstorungen im Wohnbereich verursachen; in diesem Fall konnen entsprechende Manahmen seitens des Benutzers erforderlich sein.

EN 50082-1. Allgemeiner Unempfindlichkeits-Standard fur Haushalt- und kommerzielle Produkte sowie Erzeugnisse der Leichtindustrie

(IEC 801-2, IEC 801-3, IEC 801-4)