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# GRAPHICS PRO TURBO 1600 GRAPHICS PRO TURBO GRAPHICS XPRESSION WINTURBO WINBOOST

## User's Guide

Version 3.1 CD

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## CHAPTER 1

# Getting Started

CONGRATULATIONS! You have purchased the most advanced 64-bit graphics and multimedia acceleration technology available on the market today.

This easy to use guide provides all the information you need to take full advantage of the extensive features offered with your *mach64* accelerator card.



### IN THIS CHAPTER...

- Getting Started
- What's in the Package
- What You'll Need
- Using this Guide
- Other Sources of Information

## Getting Started

ATI's *mach64* graphics accelerators provide high performance 64-bit graphics and accelerate up to 16.7 million colors (at 1280x1024) and 1600x1200 resolution (at 65,000 colors). This User's Guide describes the use of:

- *GRAPHICS PRO TURBO 1600*
- *GRAPHICS PRO TURBO*
- *WINTURBO*
- *GRAPHICS XPRESSION*
- *WINBOOST*

Even when displaying 16.7 million colors, these cards outperform previous generations of accelerators displaying only 256 colors. Availability of colors and resolutions is determined by the type and amount of memory installed, and the product which you purchased.

**Video Memory** — The *GRAPHICS PRO TURBO 1600*, *GRAPHICS PRO TURBO*, and *WINTURBO* feature high-bandwidth VRAM memory, delivering instant response and superior image definition without compromising performance.

With 4MB, the *GRAPHICS PRO TURBO 1600* and *GRAPHICS PRO TURBO* give you workstation-class resolutions, higher color depths in more display modes, and larger virtual desktops.

The award-winning *GRAPHICS XPRESSION* and *WINBOOST*, available with DRAM memory, provide unprecedented value for fast 64-bit graphics acceleration in multiple environments, including DOS, Windows, Windows NT, and OS/2.

**Refresh Rates** — *mach64* accelerator cards provide flicker-free graphics at refresh rates up to 100Hz.

**Colors** — *mach64* accelerator cards support up to 16.7 million colors.

These *mach64* products are more than just hardware accelerator cards. They come complete with extensive drivers and comprehensive award-winning software utilities designed to enhance your productivity.

## What's in the Package

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

- *mach64* accelerator card.
- ATI's Installation CD-ROM
- User's Guide.

## What You'll Need

- **Computer System** — Intel 386, 486, Pentium, or compatible. A Plug-and-Play compatible system is necessary to take advantage of Plug-and-Play features found in the *GRAPHICS PRO TURBO 1600*, *GRAPHICS PRO TURBO PCI*, *GRAPHICS XPRESSION PCI*, *WINTURBO PCI* and *WINBOOST PCI*.
- **Expansion Slot** — 16-bit ISA (or EISA), VESA Local Bus (up to 33MHz), or 32-bit PCI Local Bus.
- **Operating System** — DOS 5.0 or higher, Windows 3.1, Windows NT, OS/2 2.1 or OS/2 Warp.
- **Monitor** — VGA, supporting minimum 640x480 resolution. A Plug-and-Play compatible monitor which supports VESA's Display Data Channel 1 specifications (DDC1) is required to take advantage of the DDC1 features provided by the *GRAPHICS PRO TURBO 1600*.
- **Display Drivers** — Any standard VGA or VESA drivers normally supplied with your software. For best performance, install *mach64* drivers that are supplied with this card.

## 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.



**Reference** contains troubleshooting tips and specifications about your card.

## Other Sources of Information

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

### Readme File

- This file contains the latest information about your MPEG, video and graphics accelerator 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.



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## CHAPTER 2

# Hardware Installation

Installing your *mach64* graphics accelerator 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



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 **standard VGA** driver 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 *mach64* graphics accelerator.

### To install your *mach64* graphics accelerator

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 area of the computer chassis.*

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

*If the old video card sticks, rock it gently from end to end. Remember to save the screw.*

4 Align your card with an empty PCI expansion slot and slide it into place.

*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 graphics accelerator 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.



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## 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 more features than standard VGA drivers, such as enhanced speed, resolution, color depth, and graphic utilities.

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 12
- Windows 3.1x, see page 13
- OS/2, see page 16
- AutoCAD, see page 18
- MicroStation, see page 20

## Installing Enhanced Drivers for Windows 95

After placing your card in the computer, Windows 95 will automatically detect a change to your hardware configuration and install a standard VGA display driver.

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 not available using the standard VGA display driver.

### To install the *mach64* enhanced driver 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 on Display Drivers.
- 6 Follow the online screen instructions to complete the installation.

## 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 3.5, and 3.51.

### 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 3.5, type the following:

**D:**\NT35 (If **D** is not your CD-ROM drive, substitute **D** with the correct drive letter), then click OK.

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.

- 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 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 Windows 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 27.

*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 27.

*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 27.

*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.

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## CHAPTER 4

# Reference

This chapter contains troubleshooting tips and specifications about your MPEG, video and graphics accelerator card.



### IN THIS CHAPTER...

- Running Diagnostics
- Troubleshooting Tips
- ATI Multimedia Channel
- Specifications
- Video Mode Tables
- Fixed I/O and Relocatable I/O
- 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.

## 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 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 ATP's Enhanced Drivers** on page 9.*

## ATI Multimedia Channel

The ATI Multimedia Channel (AMC) connects ATI's MPEG decoder, TV tuner, or video capture modules to the VIDEO XPRESSION or ATI-264VT cards.

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.



# Specifications

System Requirements — Intel 386/486/Pentium or compatible computer system (8086/8088/286 not supported) with one of:

- 16-bit ISA (or EISA) Bus.
- 32-bit VESA Local Bus (up to 33MHz).
- 32-bit PCI Local Bus.

Operating Environments — one of:

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

Video Display Buffer

- GRAPHICS PRO TURBO 1600 — 2MB & 4MB VRAM.
- GRAPHICS PRO TURBO — 2MB & 4MB VRAM.
- GRAPHICS XPRESSION — 1MB & 2MB DRAM.
- WINTURBO — 2MB VRAM.
- WINBOOST — 1MB & 2MB DRAM.

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 (Reserved for future use):

- ISA — 2, 3, 5 or 10, jumper selectable.
- VLB — 2, 3 or 5, jumper selectable.
- 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 Tables

You will find the *mach64* video mode specifications in the following two tables, one for accelerators using VRAM, the other for accelerators using DRAM memory. In these tables, each row describes a particular display mode.

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

- 8bpp = 256 colors.
- 16bpp = 65,000 colors.
- 24bpp = 16.7 million colors.
- 32bpp = 16.7 million colors.

The *mach64* 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.

Table 1. VRAM Accelerator Mode Table

GRAPHICS PRO TURBO 1600, GRAPHICS PRO TURBO, AND WINTURBO													
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)									
				2MB VRAM				4MB VRAM					
				-	8	16	24	*32	-	8	16	24	*32
640x480	60	31.4	25.2		√	√	√	√		√	√	√	√
640x480	72	37.7	31.2		√	√	√	√		√	√	√	√
640x480	75	37.5	31.5		√	√	√	√		√	√	√	√
640x480	90	47.9	39.9		√	√	√	√		√	√	√	√
640x480	100	52.9	44.9		√	√	√	√		√	√	√	√
800x600	48 <i>int.</i>	33.8	36.0		√	√	√	√		√	√	√	√
800x600	56	35.1	36.0		√	√	√	√		√	√	√	√
800x600	60	37.8	40.0		√	√	√	√		√	√	√	√
800x600	70	44.5	44.9		√	√	√	√		√	√	√	√
800x600	72	48.0	50.0		√	√	√	√		√	√	√	√
800x600	75	46.8	49.5		√	√	√	√		√	√	√	√
800x600	90	57.0	56.6		√	√	√	√		√	√	√	√
800x600	100	62.5	67.5		√	√	√	√		√	√	√	√
1024x768	43 <i>int.</i>	35.5	44.9		√	√	-	-		√	√	√	√
1024x768	60	48.3	65.0		√	√	-	-		√	√	√	√
1024x768	70	56.4	75.0		√	√	-	-		√	√	√	√
1024x768	72	58.2	75.0		√	√	-	-		√	√	√	√
1024x768	75	60.0	78.8		√	√	-	-		√	√	√	√
1024x768	90	76.2	100		√	√	-	-		√	√	-	-
1024x768	100	79.0	110		√	√	-	-		√	√	-	-
1152x864	43 <i>int.</i>	45.9	65.0		√	√	-	-		√	√	√	√
1152x864	47 <i>int.</i>	44.8	65.0		√	√	-	-		√	√	√	√
1152x864	60	54.9	80.0		√	√	-	-		√	√	√	√
1152x864	70	66.1	100		√	√	-	-		√	√	-	-
1152x864	75	75.1	110		√	√	-	-		√	√	-	-
1152x864	80	76.3	110		√	√	-	-		√	√	-	-
1280x1024	43 <i>int.</i>	50.0	80.0		√	-	-	-		√	√	√	-
1280x1024	47 <i>int.</i>	50.0	80.0		√	-	-	-		√	√	√	-
1280x1024	60	63.9	110		√	-	-	-		√	√	√	-
1280x1024	70	74.6	126		√	-	-	-		√	√	-	-
1280x1024	74	78.8	135		√	-	-	-		√	*1	-	-
1280x1024	75	79.9	135		√	-	-	-		√	*1	-	-
1600x1200	60	76.2	156		*1	-	-	-		*1	*1	-	-
1600x1200	66	82.7	172		*1	-	-	-		*1	*1	-	-
1600x1200	76	95.2	198		*1	-	-	-		*1	*1	-	-

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

\*1 - These modes are supported by GRAPHICS PRO TURBO 1600 version only.

Table 2. DRAM Accelerator Mode Table

GRAPHICS XPRESSION AND WINBOOST													
Display Screen Resolution	Refresh Rate (Hz)	Hor. Scan (kHz)	Pixel Clock (MHz)	Colors (Bits Per Pixel)									
				1MB DRAM					2MB DRAM				
				4	8	16	24	*32	4	8	16	24	*32
640x480	60	31.4	25.2	√	√	√	√	-	√	√	√	√	√
640x480	72	37.7	31.2	√	√	√	√	-	√	√	√	√	√
640x480	75	37.5	31.5	√	√	√	√	-	√	√	√	√	√
640x480	90	47.9	39.9	√	√	√	-	-	√	√	√	√	-
640x480	100	52.9	44.9	√	√	√	-	-	√	√	√	*1	-
800x600	48 <i>int.</i>	33.8	36.0	√	√	√	-	-	√	√	√	√	*1
800x600	56	35.1	36.0	-	√	√	-	-	-	√	√	√	*1
800x600	60	37.8	40.0	√	√	√	-	-	√	√	√	√	*1
800x600	70	44.5	44.9	√	√	√	-	-	√	√	√	*1	-
800x600	72	48.0	50.0	√	√	√	-	-	√	√	√	*1	-
800x600	75	46.8	49.5	√	√	√	-	-	√	√	√	*1	-
800x600	90	57.0	56.6	√	√	-	-	-	√	√	-	-	-
800x600	100	62.5	67.5	√	√	-	-	-	√	√	-	-	-
1024x768	43 <i>int.</i>	35.5	44.9	√	√	-	-	-	√	√	√	-	-
1024x768	60	48.3	65.0	√	√	-	-	-	√	√	√	-	-
1024x768	70	56.4	75.0	√	√	-	-	-	√	√	√	-	-
1024x768	72	58.2	75.0	√	√	-	-	-	√	√	√	-	-
1024x768	75	60.0	78.8	√	√	-	-	-	√	√	√	-	-
1024x768	90	76.2	100		-	-	-	-	√	√	-	-	-
1024x768	100	79.0	110		-	-	-	-	√	√	-	-	-
1152x864	43 <i>int.</i>	45.9	65.0	√	√	-	-	-	√	√	*1	-	-
1152x864	47 <i>int.</i>	44.8	65.0	√	√	-	-	-	√	√	*1	-	-
1152x864	60	54.9	80.0	√	√	-	-	-	√	√	*1	-	-
1152x864	70	66.1	100	-	-	-	-	-	√	√	-	-	-
1152x864	75	75.1	110	-	-	-	-	-	√	√	-	-	-
1152x864	80	75.1	110	-	-	-	-	-	√	√	-	-	-
1280x1024	43 <i>int.</i>	50.0	80.0	√	-	-	-	-	√	√	-	-	-
1280x1024	47 <i>int.</i>	50.0	80.0	√	-	-	-	-	√	√	-	-	-
1280x1024	60	63.9	110	-	-	-	-	-	√	√	-	-	-
1280x1024	70	74.6	126	-	-	-	-	-	√	√	-	-	-
1280x1024	74	78.8	135	-	-	-	-	-	√	√	-	-	-
1280x1024	75	79.9	135	-	-	-	-	-	√	√	-	-	-

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

\*1 - These modes are supported by products using the ATI 88800GX or ATI 88800CX graphics controller. These modes are not supported by products using the ATI 264CT graphics controller.

To determine which product you have, run the ATI INSTALL program (see the User's Guide) and select System Information to see the Controller Type in the INFO BOX for details.

## Fixed I/O and Relocatable I/O

*The following information is for experienced users who want to change the video port addressing mode.*

Certain PCI *mach64* accelerator cards have two video port addressing modes: Fixed I/O and Relocatable I/O. You select these modes using a jumper on your *mach64* accelerator card.

In Fixed I/O mode, the video port addresses correspond to the addresses listed in the Specifications Appendix of the *mach64* User's Guide. The video port addresses used by Fixed I/O include 2E8-2EF, which are normally used by COM4.

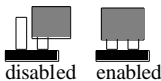
In Relocatable I/O mode, the system BIOS allocates the I/O space of the graphics device. If you enable Relocatable I/O, any potential conflicts using COM4 will be eliminated.

Relocatable I/O supports the Plug & Play initiative to eliminate hardware conflicts. However, ATI has observed that some PCI-based systems do not completely support Plug & Play at this time. If the system does not boot or you experience a blank screen, you may need to disable the Relocatable I/O.

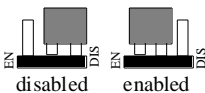
### To disable/enable Relocatable I/O:

Locate the Relocatable I/O jumper labelled JU07 or JU12 on your *mach64* accelerator card.

If there are two pins:



If there are three pins:



# Compliance Information

## FCC Compliance Information

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.
- 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 brouiller du Canada.

## CE Compliance Information

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

EN 50081-1, 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)