

# Venturis FX

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## User's Guide

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**Digital Equipment Corporation**

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## **The FCC wants you to know...**

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.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

The user may find the following booklet prepared by the Federal Communications Commission helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402. Stock No. 004-00398-5.

All external cables connecting to this basic unit need to be shielded. For cables connecting to option boards, see the option manual or installation instructions.

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

This equipment is in the 2nd Class category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

This equipment meets or exceeds requirements for safety in the U.S. (UL 1950), Canada (CSA C22.2 No. 950), and Europe (EN 60950/IEC 950) with Nordic requirements.

This equipment meets or exceeds the ergonomic requirements of ZH1/618 and is certified to bear the GS mark by TUV Rheinland of Germany.



**WARNING:** There is a danger of battery explosion if a lithium battery is incorrectly replaced. To prevent damage to your computer, be sure the + side faces up when installing a new battery. Also, be sure you replace the battery with either a Digital (P/N 12-41474-05), Toshiba (P/N CR20302), or equivalent 3 V dc lithium battery.

Depending on your locality, your computer's battery might be considered hazardous waste. Make sure you follow any state or local statute to properly dispose of the old battery.

**ADVARSEL!** Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Uds kifning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

**WARNING:** Explosionsfara vid ifelaktigt batterbyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikatens instruktion.

**VAROITUS:** Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

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# Preface

## Introduction

This guide describes how to operate, upgrade, and configure Venturis FX and FXs computers. This guide, along with the “Getting Started” program will also help to familiarize you with all aspects of the computer and provide a reference tool for questions you might have in the future.

## Related Material

README files come with your factory installed software. The information contained in these files can help you set up, configure, and operate your computer. Digital recommends that you read this information first.

A *Quick Setup Guide* is available as a supplement to this *User's Guide*. This guide describes how to initially setup your computer.

A *Digital PC Systems Solutions* manual is available to help you troubleshoot your computer should it fail to operate after initial setup or after installing optional devices.

A *Using Your Computer* on-line help file is available in the *Education* section of the “Getting Started” program. This on-line help file describes many of your computer's features and helps you to become more familiar with your computer.

## Preface

A *Services* section is available in the “Getting Started” program for Windows 95 users only. This section provides you with information about your computer’s warranty, frequently asked questions, things to do before calling technical support, diagnostics information, and how to restore factory-installed software.

A *Power Management* on-line help file is available in the *Programs* section of “Getting Started.” This on-line help file provides you with information on how to better manage your computer’s power saving features.

A *DMI* on-line help file is available in the *Programs* section of “Getting Started” for Windows for Workgroups users only. This on-line help file provides you with information on how to automatically keep track of your computer’s installed hardware and software.

A *ClientWorks* on-line help file is available in the *Programs* section of “Getting Started” for Windows 95 users only. This on-line help file provides you with information on how to automatically keep track of your computer’s installed hardware and software.

A *Warranty Booklet* is supplied with your computer. This card provides warranty information and a listing of phone numbers for technical support.

Windows 95 documentation is provided as an on-line help file and in the printed form, “Introducing Windows 95.”

You can download the latest computer BIOS, device drivers, and any additional information through Digital’s Bulletin Board Service (BBS) by calling:

**(508) 496-8800**

You can also access additional information for your computer using the Internet at:

- <http://www.pc.digital.com>
- <http://www.pc.digital.com/~ftp>

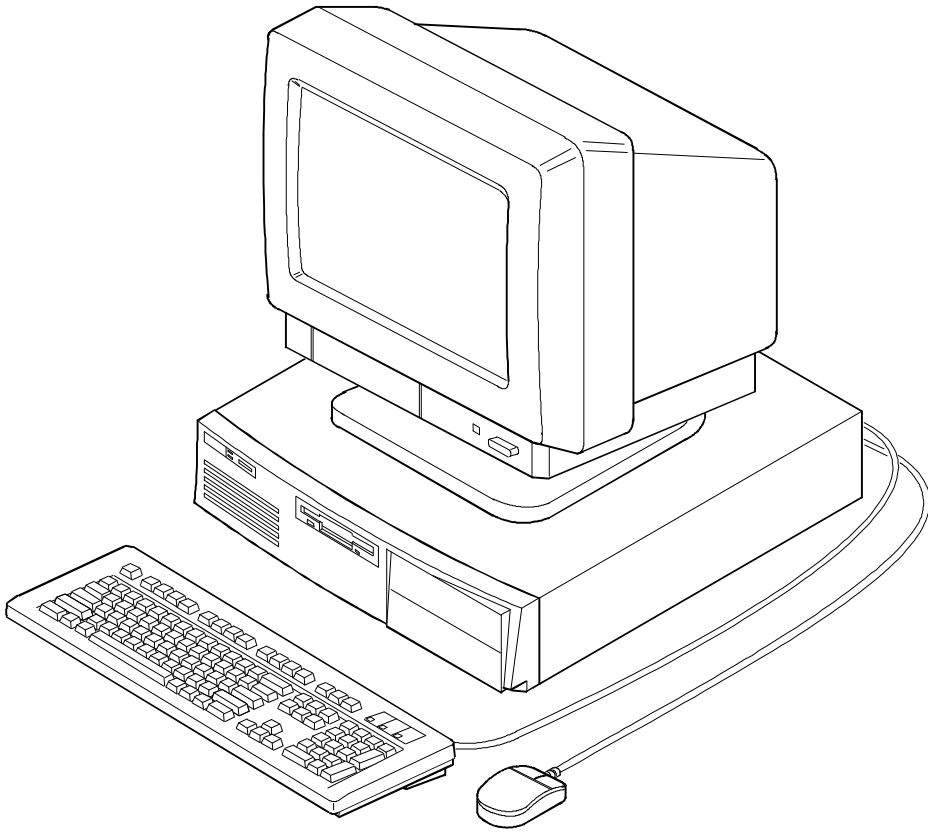
## **Venturis FX and FXs Models**

Five Venturis FX and FXs models, using two chassis variations, are discussed in this guide. The following sections provide brief descriptions of each chassis version and model.

### **Chassis Versions**

Two chassis versions are available: the Venturis FX (Low Profile) and Venturis FXs (Short Tower) as shown in the following two figures. Note that your monitor, keyboard, and mouse might look different.

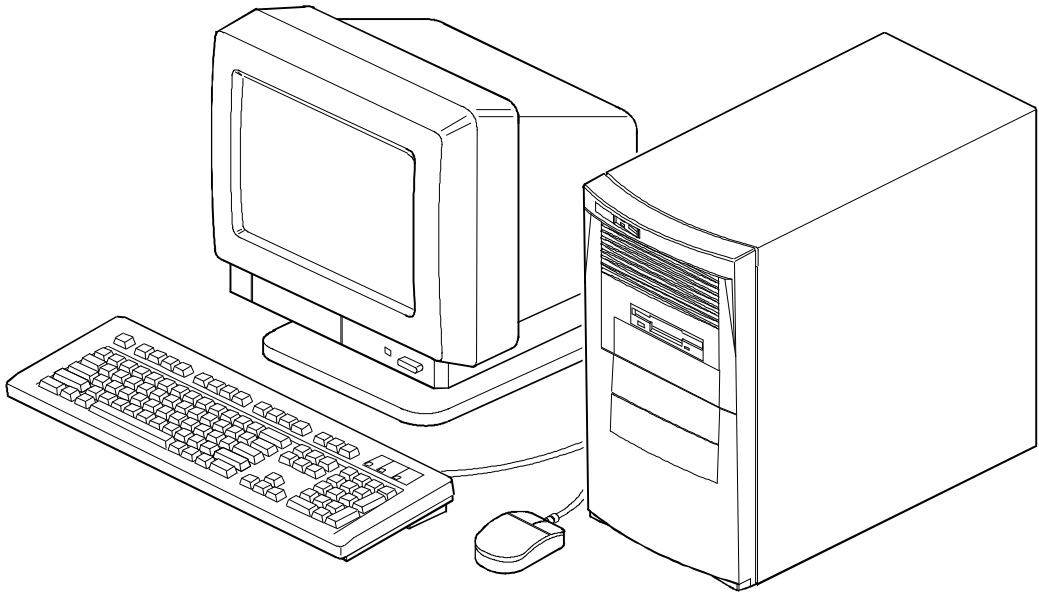
Preface



DEC00745

**Typical Venturis FX Low Profile Computer**





DEC00746

**Typical *Venturis FXs Short Tower Computer***

## Models

The five Venturis FX and FXs models are:

- Venturis FXe — This model is only available in the Low Profile version and offers up to 128 MB of computer memory (via four SIMM sockets) and 1 MB of video memory.
- Venturis FX — This model is only available in Low Profile version and offers up to 192 MB of computer memory (via six SIMM sockets) and 1 MB of video memory.
- Venturis FXs — This model is only available in Short Tower version and offers up to 192 MB of computer memory (via six SIMM sockets) and 1 MB of video memory.
- Venturis FXn — This network-ready model is only available in the Low Profile version and offers up to 192 MB of computer memory (via six SIMM sockets), 1 MB of video memory, and one AUI network port.
- Venturis FXsm — This multimedia-ready model is only available in the Short Tower version and offers up to 192 MB of computer memory (via six SIMM sockets), 1 MB of video memory, Spatializer 3-D Stereo™, and multimedia features (MPEG, and WaveTable capable).



**NOTE:** All models except the Venturis FXe are MPEG and WaveTable capable. Contact your sales representative for information on ordering this option.

## Audience

This guide is written specifically for anyone responsible for operating, configuring, and expanding the Venturis FX or FXs computer.

## Organization

This guide contains the following:

- Chapter 1: *Beyond Quick Setup*—This chapter provides general information about your computer. For example: the “Getting Started” program, turning off your computer, how to connect a printer, providing a comfortable working environment, and where to obtain help.
- Chapter 2: *Configuring Your Computer Using BIOS Setup*—This chapter provides task-based information on how to configure your computer using the BIOS Setup utility.
- Chapter 3: *Computer Software and Device Drivers* —This chapter lists the software and device drivers that are available for your computer including their location and how to access. Information on reinstalling your computer’s software and updating your computer’s BIOS is also described.
- Chapter 4: *Inside Your Computer*—This chapter lists the tools required to expand your computer, explains how to prevent component damage from static electricity, provides preliminary setup procedures for computer expansion, and describes how to remove and install the outside cover. Computer, main logic board, backplane component descriptions and locations as well as how to remove the main logic board and connect speakers are also included.

## Preface

- Chapter 5: *Main Logic Board Expansion*—This chapter explains how to install additional computer memory, video memory, a secondary cache module, an MPEG daughter card, and a WaveTable daughter card.
- Chapter 6: *Adding Expansion Boards*—This chapter explains how to install ISA and PCI expansion boards.
- Chapter 7: *Adding Mass Storage Devices*—This chapter explains how to install and connect optional mass storage devices.
- Chapter 8: *Replacements and Upgrades*—This chapter explains how to replace your computer's battery and upgrade to a higher-performance CPU.
- Appendix A: *Technical Specifications*—This appendix lists vital computer operating and performance specifications.
- Appendix B: *Device Mapping*—This appendix contains tables listing the main logic board's memory map, I/O address map, interrupt map, and DMA map.
- Appendix C: *Video Output Information*—This appendix describes the video modes supported by the main logic board's video circuitry.

## Conventions

<b>Convention Example</b>	<b>Description</b>
<i>kp</i>	Italics are typically used for titles, comments, and references to other sections of this document or other documents.
<code>c:\windows&gt;</code>	Monospaced text indicates information that your server or software displays. For example, a directory path or error message.
<code>SCU.BAT</code>	Monospaced text can also indicate a command that you need to enter to run an application or utility.
[Enter]	Square brackets surrounding text represents a keyboard key.
[Ctrl]+[Alt]+[Del]	A plus sign indicates that the keys shown should be pressed at the same time.
1 234 567	Spaces are used in large numbers instead of commas.

## Special Notices

Three kinds of special notices are used in this guide to emphasize specific information.



**WARNING:** indicates the presence of a hazard that can cause personal injury if the hazard is not avoided.



**CAUTION:** indicates the presence of a hazard that might cause damage to hardware or that might corrupt software.



**NOTES:** are used to provide additional information.

# 1

## Beyond Quick Setup

### Introduction

This chapter describes the “Getting Started” program, how to turn off your computer, connect to a printer, create a DOS emergency or Startup diskette, and lock your computer. The chapter concludes with information on providing a comfortable working environment and where to find help.

### “Getting Started”

Your computer comes with a “Getting Started” program. This program is your window into many of your computer’s features.

The initial “Getting Started” screen enables you to backup all or part of your factory installed software. For Windows 95 users, if you did not completely backup your software from an earlier screen, you can follow the instructions here to complete the backup process. A second screen option enables you to make diskette versions of all or some of the other factory installed software programs.

Subsequent “Getting Started” screens provide a place to launch special programs such as Power Management. “Getting Started” also provides an Education section that includes “Using Your Computer.” “Using Your Computer” is a Windows-based on-line help file that can be used as a supplement to the information contained in this User’s Guide. Several tutorials in the Education section can also help you learn how to use the features of your computer.



**NOTE:** In some countries, this program might not be part of your Factory Installed Software. Or, it might come up in English only. Digital also reserves the right to replace the “Getting Started” program with another user interface.

The following tables describe the “Getting Started” features for both Windows 95 and Windows for Workgroups.

### **Windows 95**

<b>Selection</b>	<b>Description</b>
Welcome	Provides a general introduction about your Venturis FX or FXs computer.
Programs	Launches pre-loaded application or utilities program software. These include applications such as Adobe Reader, Printer Setup, Power Management, and ClientWorks.
Network	Provides you with easy network setup so you can configure your computer (such as the Venturis FXn) as a network client. Network also enables you setup your computer for Internet through the network.
Education	Provides tutorials and on-line help. Also included is a supplement to this User’s Guide, “Using your Computer.” This on-line help file describes many of your computer’s features and helps you to become more familiar with your computer.
Services	<p>Provides you with information about your computer’s warranty, frequently asked questions, things to do before you call, diagnostics, and how to restore factory-installed software.</p> <p>The Diagnostics section includes on-line help on using Diagnostics and the ability to start the Diagnostics program.</p> <p>Restore Factory Installed Software provides a way to restore all of the factory-installed software.</p> <p>Later, if you wish to bypass “Getting Started,” you can still access Services with the Services icon on your desktop.</p>



## Windows for Workgroups

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<b>Selection</b>	<b>Description</b>
Welcome	Provides a general introduction to your FX or FXs computer.
Programs	Launches specific programs supplied with your FX or FXs, such as, Power Management, Plug and Play ISA Configuration Utility, and Desktop Management Interface (DMI).
Program Disk	This selection provides a program to make a (backup) copy of the factory-installed software. Please take advantage of this program and make these diskettes. Then, put them away for safe keeping. Should you, at some time, need to rebuild your computer or reload specific parts of the factory-installed software, these diskettes will be available for this purpose.
Education	Provides tutorials and on-line help. Also included is documentation for DOS and Windows for Workgroups, and a supplement to this User's Guide, "Using your Computer." This on-line help file describes many of your computer's features and helps you to become familiar with your computer. Also, please read the information on how to use the Diagnostic software.
Troubleshooting	Contains tips for troubleshooting problems with your computer.
Preferences	Helps you customize your computer by enabling you to turn Help text ON or OFF and choose whether you want to always start your computer with "Getting Started" or with Windows.

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## Energy Star Compliant

Your Venturis FX computer is ENERGY STAR compliant when used with DOS, Windows, and Windows 95. Digital advises that you do not use the enable Power Management features with operating systems that do not allow for power management, such as SCO UNIX, Microsoft NT, or OS/2.

To ensure that your entire computer system remains ENERGY STAR compliant, you must use an ENERGY STAR compliant monitor, that is, a monitor that supports the DPMS protocol.

## Turning Off Your Computer Using Windows for Workgroups



**CAUTION:** Before you turn off your computer, make sure you save and close all open files. If you turn the computer off without saving and closing all open files, you could lose some or all of your work.

Perform the following steps before you turn off your computer:

1. Close any application data files you have open.

Most application programs prompt you to save the information before closing the application program.

2. Close any applications you have running.

To close a Windows application, double click on the Control Box located in the upper left corner of the application's window.

3. Make sure you exit any DOS session activated from Windows.

4. Make sure all files are closed if you are running Windows.

Double click on the Program Manager window Control Box.

A dialog box displays the message:

```
This will end your Windows Session
```

Click on the OK button to quit. Windows closes any files that are open, prompting you to save any data that has not been saved. When all files are saved and closed, you are dropped out of Windows and the MS-DOS command prompt (C:\>) appears on the screen.

5. Wait until all disk activity has stopped and then press the power On/Off button at the front of the computer to turn it off.

Turn your monitor off.

## Turning Off Your Computer Using Windows 95



**CAUTION:** Before you turn off your computer, make sure you save and close all open files. If you turn the computer off without saving and closing all open files, you could lose some or all of your work.

Perform the following steps before you turn off your computer:

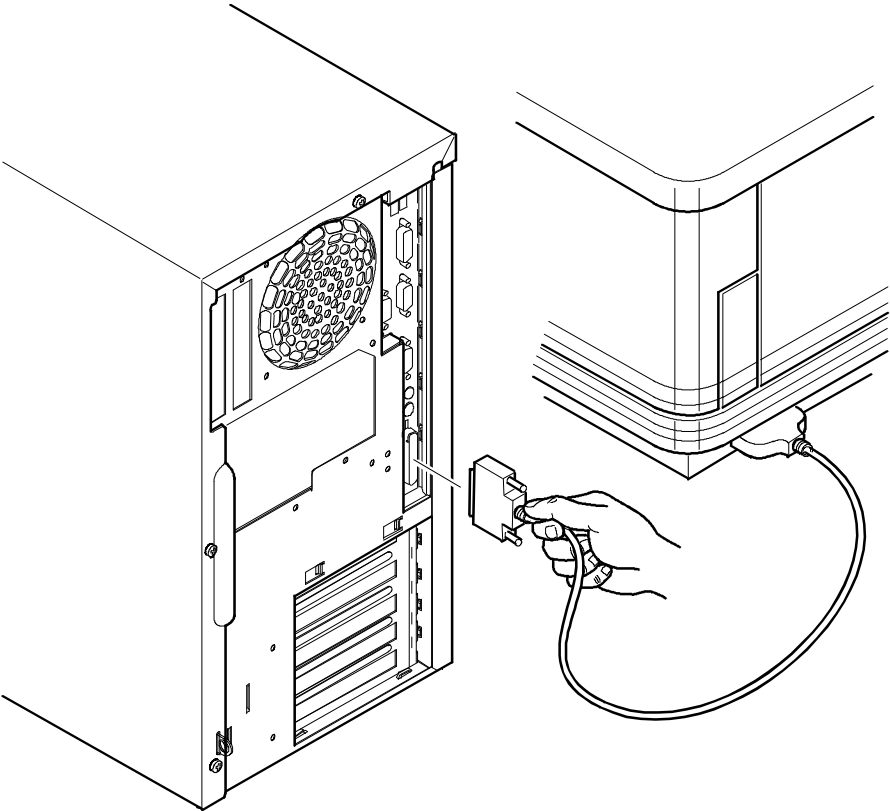
1. Close any application data files you have open.  
Most application programs prompt you to save the information before closing the application program.
2. Close any applications you have running.  
To close a Windows 95 application, double click on the icon located in the upper left corner of the application's window.  
You can also close the application by clicking on the X in the upper right-hand corner.
3. Make sure you exit any DOS session activated from Windows 95.
4. Make sure all files are closed if you are running Windows 95.
5. Click on the Start icon at the lower left of your screen.
6. Click on the Shutdown icon and then on `Yes` to shut down your computer.
7. After the message `Please wait while your computer shuts down` appears on your screen, your computer automatically shuts off.
8. Turn your monitor off.

## Connecting a Printer

Perform the following steps to connect a printer to your computer:

1. Look over your printer documentation and perform any pre-installation instructions before attempting to connect it to your computer.
2. Make sure your printer and computer are turned off.
3. Plug the printer cable into the appropriate printer port (the parallel port for a parallel printer and a serial port for a serial printer).
4. Turn your printer and computer on.
5. Configure your printer for operation with your computer.

*Refer to the following two sections for instructions on installing your printer's device driver using Windows 95 or Windows for Workgroups.*



DEC00805

**Figure 1-1. Connecting a Printer**

## Installing Your Printer's Device Driver Using Windows 95

You need to load the correct printer device driver so your computer can interface with your printer. Perform the following instructions to install your printer's device driver.



**NOTE:** If you have a problem installing printer drivers or setting up your printer to operate properly, Digital strongly advises that you contact the printer manufacturer for assistance. The printer manufacturer is better equipped to solve your printer-related problems than your computer system supplier.

1. If necessary, restart your computer.
2. From the Windows 95 desktop, click on "Start," highlight "Settings," and then click on "Printers."
3. From the "Printers" menu, double click on "Add Printer" and then follow the instructions on your screen to install your printer's device driver.



**NOTE:** If Windows 95 does not list your printer, you will need to install your printer's device driver using the diskette(s) that came with your printer. Refer to your printer's documentation for more information.

## Installing Your Printer's Device Driver Using Windows For Workgroups

You need to load the correct printer device driver so your computer can interface with your printer. Perform the following instructions to install your printer's device driver.



**NOTE:** If you have a problem installing printer drivers or setting up your printer to operate properly, Digital strongly advises that you contact the printer manufacturer for assistance. The printer manufacturer is better equipped to solve your printer-related problems than your computer system supplier.

1. If necessary, restart your computer.
2. From the Program Manager, double click on "Control Panel."
3. From the Control Panel, double click on "Printers."
4. Click on "Add" and then choose your printer for the supplied list.
5. Click on "Install" and then follow the instructions on your screen to install your printer's device driver.



**NOTE:** If Windows for Workgroups does not list your printer, select "Install Unlisted or Updated Printer" and then "Install." You will then need to install your printer's device driver using the diskette(s) that came with your printer. Refer to your printer's documentation for more information.



## DOS Emergency Diskette (Windows for Workgroups)

If you are having trouble starting Windows for Workgroups, you can use the DOS emergency diskette you created to help start Windows for Workgroups, run diagnostics, and fix problems.



**NOTE:** If you did not create a DOS emergency diskette, do so now. Refer to “Using Your Computer” in the “Getting Started” program for detailed information on creating this diskette.

## Creating a Startup Diskette (Windows 95)

If you are having trouble starting Windows 95, you can use the startup diskette you created to help start Windows 95, run diagnostics, and fix problems.

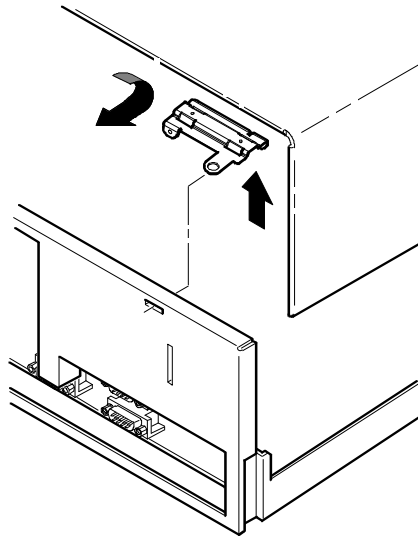


**NOTE:** If you did not create a startup diskette, do so now. Refer to “Using Your Computer” in the “Getting Started” program for detailed information on creating this diskette.

## Chassis Lockdown

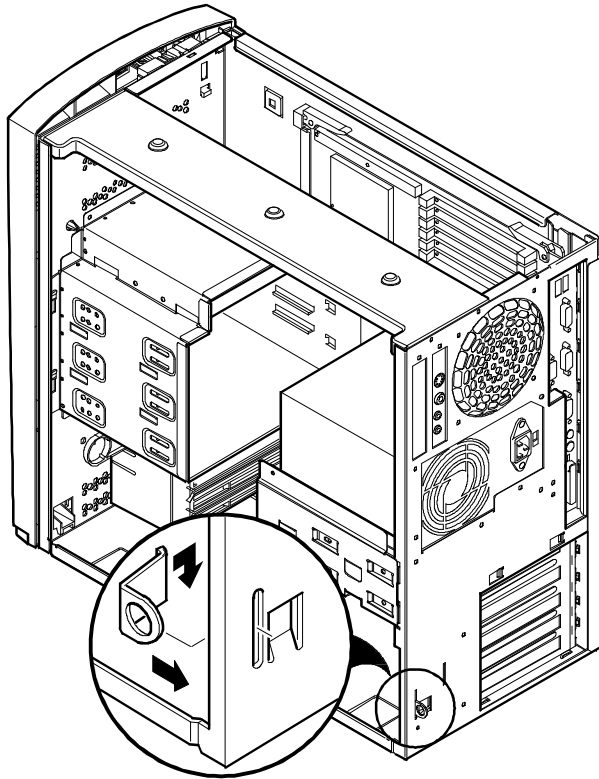
You can physically anchor your Venturis FX or FXs computer to a fixed location using the locking tab at the rear of the chassis. To anchor your computer, remove the outside cover, pull the tab out of its slot, and then attach a cable lock. You can also lock the chassis by inserting a padlock through the hasp.

*If necessary, refer to Chapter 4, "Inside Your Computer," for information on removing the outside cover.*



DEC00825

**Figure 1-2. Chassis Lockdown (Venturis FX)**



DEC00806

**Figure 1-3. Chassis Lockdown (Venturis FXs)**

## Important Information

Under circumstances of poor posture or poor setup, certain recent scientific articles suggest that injuries may occur. Other articles suggest that there is no cause and effect. Because the safety of our users is a great concern, it is important to take these precautions:

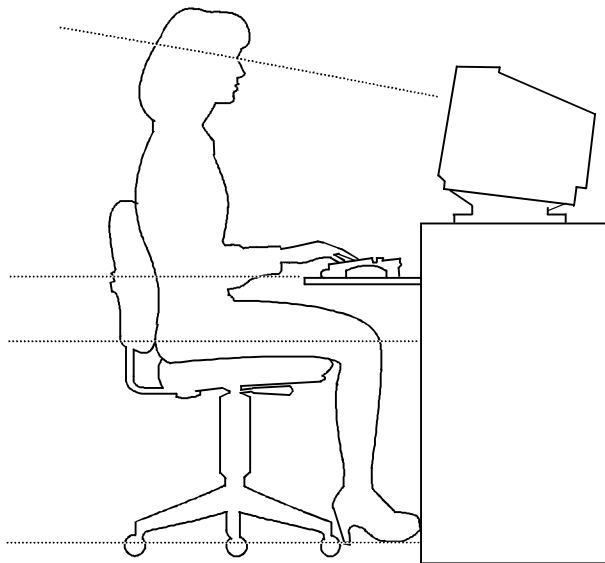
- Be comfortable in your work space.
- Change your posture frequently.
- Proceed according to the recommendations in the following table and figure.

<b>Adjust</b>	<b>So . . .</b>
Chair	<p>Feet are flat on the floor.</p> <p>Legs are vertical forming a right angle to the floor.</p> <p>Your weight is off your thighs and they are horizontal. Keep the back of your knees away from the seat so you do not compress the area behind them, which could restrict the blood flow.</p> <p>Your upper body is erect and your lower back is supported with a backrest.</p>
Keyboard or mouse	<p>Your wrists are straight and do not bend more than 15 degrees. They may be supported when resting but not on sharp edges. Type comfortably, with no more key pressure than needed to feel the contact point.</p> <p>Upper arms are straight down at your sides, elbows are close to your sides and support your arm weight. Forearms are at a 70 degree to 90 degree angle.</p> <p>If you use a mouse, rest your hand on the mouse so your wrist is not on the work surface. Operate the mouse close to your body's centerline.</p>

*continued*

<b>Adjust</b>	<b>So . . .</b>
Head	Avoid neck strain. Your head should incline downward, but no more than 15 to 20 degrees.
Monitor	No higher than the level of your eyes and at the correct distance for your vision.  Avoid eye fatigue, which can be caused by glare, image quality, uncomfortable furniture, eye height, and uncorrected vision. If you cannot focus to read at different distances, you may need special glasses. Relax your eyes periodically by looking at distant objects.
Work breaks	Take periodic work breaks. Morning, lunch, and afternoon breaks during the 8-hour workday meet most recommendations. Take advantage of work breaks to move around and do other activities.
Lighting	Avoid direct lighting or sunlight on the screen, which causes glare and reflections. Place lighting behind or to the side of your work area, and distribute the lighting evenly on your work area.  Your computer monitor's screen has an antiglare treatment to reduce glare. Adjust the brightness and contrast controls as needed.
Noise	Keep background noise at a minimum. Background noise above 65 dBA is tiring. Sound-absorbing materials (curtains, carpeting, and acoustic tile) can help reduce background noise.
Temperature	20 to 23 degrees C (68 to 74 degrees F).
Humidity	30% to 70%.
Ventilation	Provide adequate air ventilation to avoid fatigue and to operate the equipment.
Space between set ups	> 70 cm (28 in.) center to center, preferably > 152 cm (60 in.).

**IMPORTANT:** If you experience pain or discomfort during use of the PC, take a rest break and review the instructions for proper ergonomic setup and use. If the pain or discomfort continues after resuming use of the PC, discontinue use and report the condition to your job supervisor or physician.



DEC00454

**Figure 1-4. Providing a Comfortable Working Environment**

## Getting Help

If you need help regarding...	Refer to the
Installing your computer	<i>Quick Setup Guide</i>
Support and ordering information	Customer Warranty information under Education in "Getting Started." Also use the Services section in "Getting Started" or the desktop icon in Windows 95.
MS-DOS	On-line MS-DOS and Windows documentation (if your computer came with a hard disk drive).
Microsoft Windows	On-line tutorial. From "Getting Started," select the Windows Tutorial icon.  On-line MS-DOS and Windows documentation (if your computer came with a hard disk drive).  Services in "Getting Started" with Windows 95.
Plug and Play	Windows for Workgroups can access the ICU through the "Getting Started" program. Windows 95 will find this piece integrated into Windows 95. Refer to the on-line ICU documentation accompanying the ICU software or the Windows 95 documentation, whichever is relevant to your operating system.
Using the CD-ROM (such as the Venturis FXsm)	On-line tutorial. From "Getting Started", select Education.

*continued*

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<b>If you need help regarding...</b>	<b>Refer to the</b>
Troubleshooting	For Windows for Workgroups, there is on-line troubleshooting in "Getting Started." Windows 95 users should review the Services selection in "Getting Started" or the Services icon in the Digital Program Group. Both sets of users should also read the supplied <i>Digital PC Systems Solutions Guide</i> .
Security	Security information can be found in Chapter 2 of this user's guide as well as in the "Using your Computer" on-line help located in the "Education" section of "Getting Started."
Specific software application problems or questions	Application documentation or contact the software manufacturer.
BIOS and the latest release of device drivers	Available on the BBS and Internet. For access to the Digital BBS in the USA, dial (508) 496-8800. For access to the Internet,
Product features, advanced power management, and security	On-line documentation and this User's Guide. Double-click on the appropriate "Getting Started" icon.  Refer to an appropriate hard copy document.

---



# 2

## Configuring Your Computer Using BIOS Setup

### What is the BIOS Setup Utility?

The BIOS Setup utility enables you to select and store permanently information about your computer's hardware and software in the battery-backed memory of the CMOS RAM. This information takes effect each time the computer boots and can be changed any time you run setup.

You should use the BIOS Setup utility if you experience problems with your hard disk or if you need to reconfigure or expand your computer.

This chapter provides information on how to configure your computer using the BIOS Setup utility.



**CAUTION:** Your computer was setup for normal operation at the factory and will operate properly without additional configuring.

It is important for you to read carefully and understand this chapter before attempting to modify your computer's factory settings. Changing some settings might cause your computer to operate improperly.

Here are some instances when you might wish to change your computer's initial setup. You might need to:

- Change time and date
- Alter your computer's security level

## Configuring Your Computer Using BIOS Setup

- Change the boot options
- Reconfigure power management
- Setup your keyboard for your comfort and use

Additionally, you will need to change your computer's initial setup after:

- Upgrading hardware (such as adding a new hard drive)
- Reconfiguring your mouse, COM, or LPT ports

The remainder of this chapter explains how to run the BIOS Setup utility, maneuver through the options, and perform specific tasks.

### Accessing the BIOS Setup Utility

To access the BIOS Setup utility, perform the following steps:

1. Turn on your computer and allow the Power-On Self Test (POST) to complete.
2. Make a note of any configuration errors listed, and then press [F2] to display the main menu.
3. Follow the instructions on your monitor screen and any on-line help pop-up screens to configure you computer.

### Helpful Hints

When using the BIOS Setup utility consider:

- Several keyboard keys are assigned to help you select menus and sub-menus, options, change option values, and display help information. These keys are displayed at the bottom of all menus, and are listed below.

Key	Function
F1	Help (provides a general help screen)
Esc	Exit (Exits the Setup utility)
↑↓ arrow keys	Select Item
← → arrow keys	Select Menu
-/+ or spacebar	Change Values
Enter	Select > Sub-Menu
F9	Setup Defaults (Sets all Setup options to factory default values)
F10	Previous Values (Restores all BIOS values from the last session)

- Item-specific help is available anytime during the setup process and appears at the right of the setup screen when an option is highlighted.
- Choosing the “Exit” menu reveals several helpful options:
  - Select “Save Changes & Exit” to save all Setup values and exit Setup.
  - Select “Exit Without Saving Changes” to exit Setup without recording any changes.



**NOTE:** Answer the Warning message carefully.

- Select “Get Default Values” to set all setup options to their factory default values.
- Select “Load Previous Values” to restore all setup values from the last session.
- Select “Save Changes” to save all setup selections without exiting Setup.

## Changing Your Computer's Configuration

The following sections provide detailed information on changing your computer's factory configuration. Before changing any setting, make sure you fully read and understand the information provided and view any on-line help for a selected setting.

### Changing Time and Date

There may be instances when it will be necessary, such as daylight savings or if you move to a different time zone, to change the date and/or time that is resident in your computer's BIOS. The following directions show you how this is done.

1. Reboot the computer and enter Setup.
2. In the Main Menu, using the cursor keys and [Tab], select (highlight) the System Time or System Date field you want to change.
3. Use [+] or [-] to change the field to the desired value.

You can also enter the desired date and time.

4. Save Changes and Exit Setup and allow your computer to reboot.

### Setting Up Security

Computer security is important to prevent theft or accidental loss of your computer software and hardware. The following sections describe the security features available and how to use them.

### Setting Supervisor and User Passwords

Your computer has two password levels that can be set to prevent unauthorized access to computer files or to the BIOS Setup utility. If a supervisor password is set, the computer asks you to enter a password before accessing the BIOS Setup utility.

If "Password On Boot" is enabled, the supervisor password must be entered before the operating system boots.

Once a supervisor password is set, the computer is prevented from booting if the user password is entered at boot instead of the supervisor password.

Additionally, if after selecting [F2] during the boot sequence, the user password is entered instead of the supervisor password, the Main, Advanced and Power menus in the BIOS Setup utility are rendered inaccessible.



**NOTE:** A supervisor password must be set before you can set a user password. If the supervisor password is later deleted, the user password is automatically removed.

Perform the following steps to set a supervisor password:

1. Reboot the computer and enter Setup.
2. Highlight the “Security” menu.
3. Highlight “Set Supervisor Password” and press [Enter].
4. Type in a seven (7) digit alpha-numeric supervisor password and then press [Enter].
5. Retype your password as instructed and press [Enter]. (Notice that “Supervisor Password Is” field now indicates `Enabled`.)

If desired, set a user password as follows:

1. Highlight “Set User Password” and press [Enter].
2. Type in a seven (7) digit alpha-numeric user password and then press [Enter].
3. To confirm, retype your user password as instructed and press [Enter]. (Notice that “User Password Is” field now indicates `Enabled`.)
4. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

The computer runs the POST and then asks for the password, which has just been set.

## Enabling Password On Boot

When “Password On Boot” is enabled, a screen appears after POST. The screen asks you to enter your supervisor password to allow your computer to finish the boot sequence.

Perform the following steps to set “Password On Boot”:

1. Reboot the computer and enter Setup.
2. Highlight the “Security” menu.
3. Highlight “Password On Boot”.
4. Press the [+] key. (Pressing the [+] key again reverses your action.)
5. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Eliminating User and Supervisor Passwords

To eliminate your computer's password(s), follow the directions given below:

1. Reboot the computer and enter Setup.
2. Enter the supervisor password and press [Enter].
3. Do you wish to eliminate the User Password or the Supervisor Password?

If **User Password**, select "Set User Password".

If **Supervisor Password**, select "Set Password".

4. Press Enter three times.

You have cleared the old password and are returned to the "Security" menu. Verify that the appropriate password is disabled by checking "User Password" or the "Supervisor Password" field, whichever is relevant.

5. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Protecting Against Boot Sector Viruses

Your computer incorporates, in the BIOS Setup utility, a selection to write protect the fixed disk boot sector. By write-protecting the boot sector, you can protect your computer against viruses that corrupt the boot sector.

The “Fixed Disk Boot Sector” line in the Security menu allows you to enable a very important anti-virus attribute. Selecting “Write-Protect” can help you to protect your hard disk from being corrupted by viruses, which could disable your hard disk.

To write-protect your fixed disk boot sector:

1. Reboot the computer and enter Setup.
2. Highlight the “Security” menu.
3. Highlight “Fixed Disk Boot Sector”.
4. Press the [+] key to enable write-protect (pressing the [+] key again, returns your computer to normal).
5. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.



## Other Security Options

These options can provide further security for your computer under certain conditions.

- System Lock Suspend – Found in the “Power” menu, this feature is enabled if you either execute “Quick Suspend” from your keyboard, or your Power Management selections put your computer into the “System Standby” or “System Suspend” modes. This feature disables your keyboard and mouse; you can reactivate them after entering a password.



**NOTE:** The System Lock Suspend key combination enabled in Setup will be the combination required to place your computer automatically into suspend.

- SETUP Prompt – Found in the “Main” menu under “Boot Options”, this feature allows disabling the [F2] Setup prompt during the boot sequence. Although this feature does not prevent entering setup if you know the setup key, it will help prevent infrequent users from accessing Setup. This feature could prove useful in a school or retail setting.

Toggle the Setup prompt field (press the [+] key) back to Enabled in the “Boot Options” to redisplay the [F2] Setup prompt during the boot sequence.

- SoftBanner – When enabled, allows a custom banner to be displayed every time you turn your computer on.

## Configuring Your Computer Using BIOS Setup

- **Diskette Access** – While enabled, this option prevents information on the computer's hard disk drive from being copied to a diskette drive. In this state, the computer reads information from diskettes inserted into diskette drive(s), but no information can be copied from the computer's memory or hard disk drive onto diskettes.
- **Network Server** – Secures the computer at boot to prevent tampering during network operation.
- If "Password On Boot" is enabled and "Diskette Access" is set to "Supervisor", entering the supervisor password at boot allows copying to a diskette. Entering the user password at boot, however, prevents the computer from copying to a diskette.



**NOTE:** Consider your security needs carefully before using this option. While this option is enabled, the contents of the hard disk drive cannot be backed up to diskettes, the "Driver Disks" utility in "Getting Started" cannot be used, and the computer cannot be booted from a diskette drive.

## Setting Power Management Options

This section describes how to select and set your computer's Power Management parameters using the BIOS Setup utility. You can also run the Power Management program in "Getting Started" to implement your computer's power management features. The Power Management program is located in the "Program" section of "Getting Started".

## Setting up Power Management



**NOTE:** None of the power management features of the BIOS apply unless the “Power Management” field is set to *Enabled*.

To initialize the power management features:

1. Reboot the computer and enter Setup.
2. Highlight the “Power” menu.
3. Highlight “Power Management”.
4. Press the [+] *key to select *Enable* (pressing the [+] *key again, returns your computer to *Disable**).*



**NOTE:** “System Standby Timer” and “System Suspend Timer” have been preset to 20 min. and 2 hours respectively. You can change these times by selecting them and pressing the + key to sequence through the available options.

5. Choose other Power Management options as desired. For example: see “Putting Your Computer Quickly into Full Power Management” later in this chapter.
6. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Putting Your Computer Quickly into Full Power Management

Enabling “Quick Suspend” allows the selection of a three-key command (such as [Ctrl]+[Alt]+[Esc]) that, when activated from your keyboard (at any time after boot), puts the computer immediately into the “System Suspend” power management mode. (Touching any key restores your computer to normal operation.)



**NOTE:** As with any other power management feature, the “Power Management” field must read `Enabled` before this feature can be used.

To initialize the “Quick Suspend” feature:

1. Reboot the computer and enter Setup.
2. Highlight the “Power” menu.
3. Highlight “Quick Suspend”.
4. Press the [+] key to sequence through the available options.
5. Select an option.
6. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Configuring for New Disk Drives

These sections describe how to configure new disk drives in the BIOS Setup Utility.

### Diskette Drive Configuration

Diskette drives need to be configured from within the BIOS Setup Utility once the new diskette drive is installed.

To configure a newly installed diskette drive, proceed as follows:

1. Reboot the computer and enter Setup.
2. Highlight the "Main" menu.
3. Highlight "Diskette A" or "Diskette B" (depending upon how you connected the diskette drive to your computer).
4. Press the [+] key to sequence through the available options.
5. Press [Esc] then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Hard Disk Drive Configuration

Installing new ANSI-supported IDE hard disks is made easier by the “Autotype” mode available in the BIOS Setup utility.

### Autotyping a Hard Disk

To Autotype a newly installed hard disk:

1. Reboot the computer and enter Setup.
2. Highlight the “Main” menu.
3. Select an “IDE Adapter” field to assign the new hard disk and press [Enter].
4. Select “Autotype Fixed Disk” and press [Enter].

The BIOS Setup utility searches the hard disk and fills-in the disk parameters. If a parameter does not read correctly, follow the “Manually Defining a Hard Disk” procedure given later in this chapter.

5. Press [Esc] once and verify that the selected IDE Adapter field reads correctly for your hard disk.

For example: IDE Adapter 0 Master (C: 539 MB). If the selected IDE Adapter field does not read correctly, follow the “Manually Defining a Hard Disk” procedure given later in this chapter.

6. Press [Esc] once then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Manually Defining a Hard Disk

If your hard disk was not recognized correctly by the Autotype mode in the BIOS Setup utility, or you wish to change your hard disk's definition, you can manually define your hard disk drive as follows:

1. Reboot the computer and enter Setup.
2. Highlight the "Main" menu.
3. Select an "IDE Adapter" field to assign the new hard disk and press [Enter].
4. Fill-in the parameters of the hard disk in the appropriate fields.
5. Press [Esc] once and verify that the selected IDE Adapter field reads correctly for your hard disk. For example: IDE Adapter 0 Master (C: 539 MB).
6. Press [Esc], then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.

## Changing the Boot Sequence

It is sometimes necessary to change your computer's boot sequence. For example, when connecting to a network. (Follow your network manual's instructions to determine the correct boot sequence.)

To change the boot sequence, proceed as follows:

1. Reboot the computer and enter Setup.
2. Highlight the "Boot" menu.

Diskette drive, Hard Disk, and CD-ROM Drive are displayed. The number shows the current ordering. For example, if CD-ROM Drive is 1 and Diskette Drive is 2, the computer boots first from the CD-ROM drive. If it is empty, the computer goes to the diskette drive and then finally to the hard disk drive.

3. Use the [↑] and [↓] arrows to locate the field you want to change. Then use the [+] to raise the order and [-] to lower it.
4. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.



## Speeding up the Boot Process

There are three options for speeding up the boot process. They in essence eliminate or replace displays or checks. To make these changes, proceed as follows:

1. Reboot the computer and enter Setup.
2. Highlight the Main menu.
3. Highlight "Boot Option" and then press [Enter].

The following table lists the items displayed and describes them.

Field	Description
Summary screen	Displays the computers configuration
Quiet boot	Replaces POST boot messages with a display of the Digital logo
Floppy check	Verifies the floppy boot drive

4. Select the item(s) you wish to change and use the [+] or [-] as follows:

Field	Speed Up Boot Selection
Summary	Disable
Quiet boot	Enable
Floppy check	Disable

5. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take effect.

## Resetting Keyboard Features

Several parameters effecting keyboard performance can be altered from within the BIOS Setup utility. They are: “NumLock”, “Key Click”, “Keyboard Auto-Repeat Rate” and “Keyboard Auto-Repeat Delay”.

- “NumLock” is factory set to “Auto” at boot which means that the number pad is on each time you boot. This is desirable, for example, if you primarily use spreadsheets or accounting software.

If, however, you primarily use a word processor or desktop publishing program, you might wish to leave NumLock off at boot to avoid having to turn it off manually.

- “Key Click”, when enabled, produces an audible “Click” whenever a key is pressed.

Most keys on the keyboard automatically repeat the character they represent if the keys are held down.

- “Keyboard Auto-Repeat Rate” sets the number of times per second a character repeats.
- “Keyboard Auto-Repeat Delay” sets the time that elapses before the character begins repeating.

## Changing the Keyboard Features

To change the keyboard features:

1. Reboot the computer and enter Setup.
2. Highlight the “Main” menu.
3. Highlight “Keyboard Features” and press [Enter].

If you wish to leave “NumLock” on, skip steps 6 and 7, otherwise:

4. Highlight “NumLock”.
5. Press the [+] key to sequence through your options, select “Off”.

If you wish to leave “Key Click” disabled, skip steps 8 and 9, otherwise:

6. Select “Key Click”.
7. Press the [+] key to select `Enable`.

If you wish to leave the “Keyboard Auto-Repeat Rate” (the number of times per second a character repeats) the same, skip steps 8 and 9, otherwise:

8. Highlight “Keyboard Auto-Repeat Rate”.
9. Press the [+] key to sequence through the available options.

If you wish to leave the “Keyboard Auto-Repeat Delay” (the time that elapses before the character begins repeating) the same, skip steps 10 and 11, otherwise:

10. Highlight “Keyboard Auto-Repeat Delay”.
11. Press the [+] key to sequence through the available options.
12. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take effect.

## Setting Your Computer's Volume Control

If your computer has an onboard ESS sound chip, you must enable the "Integrated Audio" option using the BIOS Setup utility. If your computer does not have an onboard ESS sound chip, leave this option "Disabled".

To enable this option, proceed as follows:

1. Reboot the computer and enter Setup.
2. Highlight the Advanced menu and press [Enter].
3. Highlight Integrated Peripherals and press [Enter].
4. Highlight "Integrated Audio" and press [Enter].
5. Highlight "System Speaker Volume", choose an appropriate volume setting, and then press [Enter].
6. Press [Esc] twice then [Enter] twice to exit the BIOS Setup utility and to reboot the computer so changes immediately take affect.



**NOTE:** You can also adjust your computer's speaker volume using an audio application within Windows. Refer to the Windows on-line help for more information.

# 3

## Computer Software and Device Drivers

### Introduction

This chapter helps identify the software and device drivers that are available for your computer. In most cases, your computer's software and associated device drivers are already loaded for you at the factory. However, there might be a need to reinstall some or all of your computer's software or update your computer with the latest available BIOS and device drivers.

The following table lists the software and device drivers that are available for your computer. Included in the table is information on where to locate and how to access the listed items. Following the table are instructions on how to back up and restore your computer's factory installed software as well as instructions on how to update your computer's BIOS.

## Computer Software and Device Drivers

<b>Software/Device Driver</b>	<b>Location</b>	<b>How to Access</b>
Operating system (DOS/Windows for Workgroups or Windows 95)	Factory installed on your computer's hard disk drive	Automatically loads each time your computer is turned on. Refer to any on-line help or support documentation for more information.
"Getting Started" program	Factory installed on your computer's hard disk drive	Automatically loads the first time your computer is turned on. Refer to the supplied Quick Setup Guide and chapter 1 for more information.
Program Disks (Windows for Workgroups) Services (Windows 95)	"Getting Started" program	Click on the appropriate icon in the "Getting Started" program to make a backup copy of your computer's factory installed software. Refer to the on-line help in "Getting Started" and chapter 1 for more information.
Easy Network (Windows 95)	"Getting Started" program	Click on the Network icon in the "Getting Started" program.
Adobe Acrobat	Adobe Program Group in Windows for Workgroups Programs Menu option in Windows 95	In Windows for Workgroup's Program Manager, click on the appropriate icon. In Windows 95, click on "Start, highlight Programs, and then click on the Adobe Acrobat menu item. Refer to "Using Your Computer" and to the Adobe Acrobat on-line help for information on using this program.
Quick Time	Quick Time Program Group in Windows for Workgroups Programs Menu option in Windows 95	In Windows for Workgroup's Program Manager, click on the appropriate icon. In Windows 95, click on Start, highlight Programs, and then click on the Quick Time menu item.

*continued*

<b>Software/Device Driver</b>	<b>Location</b>	<b>How to Access</b>
Netscape	Netscape Program Group in Windows for Workgroups. Programs Menu option in Windows 95 after proper setup using Network tab in "Getting Started" program	In Windows for Workgroup's Program Manager, click on the Netscape Program Group. In Windows 95, click on Start, highlight Programs, and then click on the Netscape menu item . Refer to "Using Your Computer" and the supplied Netscape documentation. Netscape documentation can be viewed or printed using the Adobe Acrobat reader.
Power Management	"Getting Started" program and BIOS Setup utility	Click on the appropriate icon in the "Getting Started" program. Reboot your computer, press F2, and then select the Power menu. Refer to "Using Your Computer," and the power management on-line help in "Getting Started," and the BIOS Setup utility for more information.
Self Monitoring Analysis Technology (S.M.A.R.T.)	Factory installed on your computer's hard disk drive	Click on the SmartDoctor or ClientWORKS icon in the "Getting Started" program to access drive status information and disk drive diagnostics.
DMI	Digital Program Group in Windows for Workgroups	Click on the appropriate icon in the Digital Program Group. Refer to the DMI on-line help for more information.
ClientWORKS	Programs tab of "Getting Started"  Programs Menu option in Windows 95	Click on Programs in "Getting Started" and then click on ClientWORKS.  In Windows 95, click on Start, highlight Programs, and then click on the ClientWORKS menu item.

*continued*

Computer Software and Device Drivers

<b>Software/Device Driver</b>	<b>Location</b>	<b>How to Access</b>
Bus Mastering IDE	Factory installed on your computer's hard disk drive	Should you need to update the Bus Mastering IDE driver, you can download a disk image of the driver from the Digital BBS or through the Internet.
Network drivers (for computers such as the Venturis FXn)	Factory installed on your computer's hard disk drive	<p>For Windows 95 users, Select Easy Network from the "Getting Started" program or Network from the Control Panel menu.</p> <p>For Windows for Workgroups users, select Network from the Options menu in Windows Setup.</p> <p>The latest network device drivers can be downloaded from the Digital BBS or through the Internet.</p>
AudioRack (for computers such as the Venturis FXsm)	<p>AudioRack Program Group in Windows for Workgroups</p> <p>Program Menu option in Windows 95</p>	<p>In Windows for Workgroup's Program Manager, click on the AudioRack Program Group.</p> <p>In Windows 95, click on Start, highlight Programs, and then click on the AudioRack menu item.</p> <p>Refer to "Using Your Computer" and to the AudioRack on-line help for information on using this program.</p> <p>You can also view and print an AudioRack User's Guide using the Acrobat reader.</p>

*continued*



<b>Software/Device Driver</b>	<b>Location</b>	<b>How to Access</b>
Video device drivers (used when changing your monitor's resolution)	Factory installed on your computer's hard disk drive	<p>In Windows for Workgroups, use Windows Setup.</p> <p>In Windows 95, right-click the mouse button in the Desktop, select Properties, and then the Settings tab in Display Properties. Afterwards, change the Display Type and then select Change.</p> <p>You can also access Display properties by clicking on Start, highlighting Settings, clicking on Control Panel, and then selecting the Display menu item.</p> <p>The latest video device drivers can be downloaded from the Digital BBS or through the Internet.</p>
Diagnostics	Factory installed on your computer's hard disk drive	<p>A DOS-based "For Emergency Use" diskette is created along with "Ext. Vendor Tests" diskette. Use the "For Emergency Use" diskette if you are unable to boot from your hard disk drive.</p> <p>Note that the Windows for Workgroups DOS-based Diagnostics package is factory installed software. To access, you will need to exit Windows and change directories as follows:</p> <pre>cd \diag\amidiag</pre> <p>To run the diagnostics, type:</p> <pre>amidiag</pre>

## Computer Software and Device Drivers

<b>Software/Device Driver</b>	<b>Location</b>	<b>How to Access</b>
Diagnostics (continued)		<p>In Windows 95, launch the Diagnostics program using the “Services” tab in the “Getting Started” program.</p> <p>You can access the Windows-based diagnostic package by clicking on Start, Programs, and then selecting PC Care Manager.</p> <p>You can also access the DOS-based package with “Ext. Vendor Tests” by clicking on Start, Programs, and then selecting</p> <p><i>amidiag</i> (DOS only)</p> <p>Refer to any on-line help and support documentation for more information.</p>

## Backing Up Your Computer's Factory Installed Software (Windows 95)

Digital recommends that you back up your factory installed software as a preventative measure in case your hard disk drive fails or your software becomes corrupted. There are two ways to back up your factory installed software using Windows 95: (1) at the initial "Getting Started" screen and (2) using the "Services" tab from the "Getting Started" program.



**NOTE:** You can only create one backup copy of the Windows 95 operating system. When you make your Windows 95 backup diskettes, you must copy the entire Windows 95 operating system.

You can, however, back up individual programs of the rest of the Digital supplied factory installed software.

When backing up your factory installed software, make sure you label each diskette as instructed.

If you plan on backing up your computer's factory installed software at the initial "Getting Started" screen, simply click on the "Create System Disks" icon and then follow the instructions on your screen.

If you plan on backing up your computer's factory installed software using the "Services" tab in "Getting Started," simply click on "Create Master Diskettes" from the "Services" tab. You will then have the option to "Backup Windows 95 Operating System" and "Backup System Utilities and Applications." After selecting the desired option(s), follow the instructions on your screen to complete the backup process.

## Reinstalling Your Computer's Software (Windows 95)



**NOTE:** If your computer can still perform basic functions, we recommend that you write down your computer's current configuration and then make backup diskettes of all important personal files that you have created since purchasing your computer.

Also, review the README.TXT file for information and additional hints on restoring your factory installed software.

If you just need to reinstall Windows 95:

1. Reboot your computer.
2. Insert "Disk 1" of the Windows 95 operating system backup set into the 3½-inch diskette drive.
3. From the Windows 95 Desktop, click on the "My Computer" icon.
4. Double click on "3½-inch Floppy (A:)" and then click on either "Setup" or "Install."

Follow the instructions on your screen to reinstall the Windows 95 operating system.

If you need to reinstall any or all of the Digital supplied applications and device drivers:

1. Make sure Windows 95 is operating properly.
2. Reboot your computer.
3. Insert "Disk 1" of the application or device driver backup set into the 3½-inch diskette drive.
4. From the Windows 95 Desktop, click on the "My Computer" icon.
5. Double click on "3½-inch Floppy (A:)" and then click on either "Setup" or "Install."

Follow the instructions on your screen to reinstall your application(s) and/or device driver(s).

If you need to reinstall Windows 95, the Digital supplied applications, and the Digital supplied device drivers:

1. If necessary, format your hard disk drive. You will need to reformat your hard disk drive if it completely failed or if you replaced it with a new one.  
*Refer to the supplied Windows 95 documentation for more information.*
2. Reinstall Windows 95.  
*Refer to the Windows 95 reinstallation procedures described earlier in this chapter.*
3. Reinstall the Digital supplied applications and device drivers.  
*Refer to the application and device driver reinstallation procedures described earlier in this chapter.*

## Backing Up Your Computer's Factory Installed Software (Windows for Workgroups)

Digital recommends that you back up your factory installed software as a preventative measure in case your hard disk drive fails or your software becomes corrupted. To back up your computer's factory installed software, click on the "Program Disk" selection from within the "Getting Started" program and then follow the instructions on your screen.



**NOTE:** Make sure you label each diskette as instructed.

## Reinstalling Your Computer's Software (Windows for Workgroups)



**NOTE:** If your computer can still perform basic functions, we recommend that you write down your computer's current configuration and then make backup diskettes of all important personal files that you have created since purchasing your computer. Restoring all factory software will re-format the hard disk and erase all personal data.

Also, review the README.TXT file for information and additional hints on restoring your factory installed software.

If you just need to reinstall Windows for Workgroups:

1. Reboot your computer.
2. Insert "DOS Diskette 1" into the 3½-inch diskette drive.
3. From Program Manager, click on the "File Manager" icon.

4. Click on the "A:" icon then click on either "Setup" or "Install."

Follow the instructions on your screen to reinstall Windows for Workgroups.

If you need to reinstall any or all of the Digital supplied applications and device drivers:

1. Make sure Windows for Workgroups is operating properly.
2. Reboot your computer.
3. Insert "Disk 1" of the application or device driver backup set into the 3½-inch diskette drive.
4. From Program Manager, click on the "File Manager" icon.
5. Click on the "A:" icon then click on either "Setup" or "Install."

Follow the instructions on your screen to reinstall your application(s) and/or device driver(s).

If you need to reinstall Windows for Workgroups, the Digital supplied applications, and the Digital supplied device drivers:

1. If necessary, format your hard disk drive. You will need to reformat your hard disk drive if it completely failed or if you replaced it with a new one.

*Refer to the supplied Windows for Workgroups documentation for more information.*

2. Reinstall Windows for Workgroups.

*Refer to the Windows for Workgroups reinstallation procedures described earlier in this chapter.*

3. Reinstall the Digital supplied applications and device drivers.

*Refer to the application and device driver reinstallation procedures described earlier in this chapter.*

## How do I Update My BIOS?

Sometimes a Digital Multivendor Customer Support group or your Service supplier might tell you that to resolve a problem with your computer, you should update your computer's BIOS. BIOS is software that is in read-only, non-volatile memory (ROM) chip, which is on the main logic board of your computer. The BIOS has several functions, including initializing hardware and booting the operating system when the computer is turned on.

Your computer comes equipped with a means of restoring or upgrading your computer's BIOS without having to actually change the BIOS chip. This method, known as flash memory, enables you to use a software utility (PHLASH.EXE) to update or restore your BIOS.

You can download a copy of the latest BIOS diskette (which includes PHLASH.EXE) from the Digital PC BBS or from the Internet.

You can also get BIOS updates from the Internet. Refer to "Related Material" in the Preface of this guide for Internet addresses.



**NOTE:** Only use PHLASH.EXE to upgrade your computer's BIOS if you are instructed to do so by an authorized Digital support representative.

The following sections describe the necessary procedures for upgrading your computer's BIOS:

- Preliminary steps
- Creating a crisis recovery diskette
- Using PHLASH.EXE to upgrade your BIOS



## Preliminary Steps

Before you can upgrade your BIOS using PHLASH.EXE, you need to run the BIOS Setup utility and record your computer's current settings (Refer to Chapter 2). You also need to make a crisis recovery diskette. It is important that you make this diskette. Should you find the BIOS upgrade unsuccessful you can use the crisis recovery diskette to bring up the BIOS.

To make a crisis recovery diskette, you need:

- A blank 3½-inch 1.44 MB formatted diskette
- The new BIOS diskette

## Creating a Crisis Recovery Diskette

Make sure you create a crisis recovery diskette before upgrading your BIOS. If your upgrade is unsuccessful, you might find your computer no longer has a working BIOS. Without a working BIOS you might not be able to operate your computer. With a crisis recovery diskette, you can always bring up the new BIOS should the BIOS Phlash fail. To create this diskette:



**NOTE:** For Windows 95 users, you will need to restart your computer in MS-DOS mode to create a Crisis Recovery Diskette.

1. Turn on your computer and allow the POST to complete.

If POST detects an error refer to the supplied *Digital PC Systems Solutions* guide and take the appropriate steps to correct the problem. After the problem has been resolved, restart the computer.

2. Insert the BIOS diskette into the diskette drive and at the MS-DOS prompt type:

A:

Press [Enter].

3. At the MS-DOS prompt type:

*dir*

Press [Enter].

The entry should show the following files are on the diskette.

```
PHLASH.EXE
CRISDISK.BAT
CRISBOOT.BIN
PLATFORM.BIN
MAKEBOOT.EXE
MINIDOS.SYS
BIOS.ROM
```

Note that there might be some additional files as well. Refer to any appropriate README files for additional information:

4. Create an upgrade directory on your hard disk drive. For example, if your hard disk drive is c:>, enter at the MS-DOS prompt:

*c:*

*md upgrade*

5. Copy the files from the BIOS diskette into the upgrade directory on your hard disk drive. For example, from the MS-DOS prompt enter:

*copy A:.\* c:\upgrade\*

6. Insert a blank formatted diskette into drive A.

7. Return to your hard disk drive and copy the files. From the MS-DOS prompt type:

*cd\upgrade*

Press [Enter].

8. At the MS-DOS prompt type:

*crisdisk*

Press [Enter].

The *crisdisk* command prompts you for a blank diskette to be placed in drive A and then automatically creates the Crisis Recovery Diskette.

9. Remove the crisis recovery diskette from drive A, label it, and then store it in a safe place.

## Using PHLASH.EXE to Upgrade your BIOS

Perform the following steps to update your computer's BIOS in the flash memory to a new updated one.



**NOTE:** Only upgrade your computer's BIOS if you are told to do so by an authorized Digital support representative or have a reason to do so.

1. Create a crisis recovery diskette if you have not already done so.  
*Refer to "Creating a Crisis Recovery Diskette" previously described.*
2. Insert the BIOS diskette into your diskette drive.



**NOTE:** For Windows 95 users, you will need to restart your computer in MS-DOS mode to upgrade your BIOS.

3. Turn on your computer and allow the POST to complete.

Your computer now boots from the BIOS diskette.

If POST detects an error refer to the supplied *Digital PC Systems Solutions* guide and take the appropriate steps to correct the problem. After the problem has been resolved, restart the computer.

4. At the MS-DOS prompt type:  
*A:\phlash [BIOS filename]*  
Press [Enter].  
PHLASH.EXE automatically updates your computer's BIOS.
5. At the MS-DOS prompt type:  
*cd\upgrade*  
Press [Enter].
6. After the flashing process completes, remove the BIOS diskette and then press any key to reboot your computer.

## Using the Crisis Recovery Diskette

Use the crisis recovery diskette only if your BIOS upgrade failed. If your computer's BIOS failed to flash properly or is corrupted in some way, the following sequence of events occur:

1. POST detects an error after a normal boot cycle or a BIOS upgrade.  
This message(s) appears on your monitor screen to inform you that your computer's BIOS did not flash properly or has failed.
2. The BIOS in the bootblock memory automatically executes.  
Your computer attempts to find the correct BIOS files to execute the correct boot cycle.

3. Your computer beeps several times.

This means your computer cannot properly boot using the BIOS files that were just copied during the flash update.

4. Your computer's diskette drive begins searching for the crisis recovery diskette to restore the BIOS to its previous known state.

To recover from a BIOS upgrade failure:

1. Turn off your computer, remove the cover, and set the recovery jumper (J1, pins 3 and 4) to "Recovery Mode" (jumper on).

Jumper J1, pins 3 and 4, controls whether the computer is in recovery or normal operation.

*Refer to the label attached to the inside of your computer for the location of jumper J1.*

2. Replace the cover, insert the crisis recovery diskette into drive A, and then power on your computer.

Your computer automatically boots from drive A and upgrades the BIOS. Upon completion, the computer sounds a beep code and attempts to restart.

3. After the BIOS is restarted, turn off power to your computer and remove the crisis recovery diskette from drive A.

## Computer Software and Device Drivers

4. Remove the cover and set the recovery jumper (J1, pins 3 and 4) to “Normal” (jumper off).
5. Replace the cover and turn the power back on for normal operation.

# 4

## Inside Your Computer

### Introduction

Before you begin to expand your computer, you need to:

- Gather tools needed
- Be aware of static electrical problems
- Disconnect external devices and power
- Remove the outside cover

This information is covered in this chapter along with illustrations detailing the:

- Main logic board
- Backplanes

Each computer contains a main logic board and a backplane. The main logic board provides most of the chips, components, and connectors for optional daughter cards (MPEG and WaveTable). The backplane contains slots for connecting expansion boards.

The chapter concludes with instructions on how to remove the main logic board (required when installing an optional MPEG and WaveTable daughter card), connect speakers, replace the outside cover, and reconnect external devices and power.

### Tools Needed

- A Phillips screwdriver
- An antistatic wrist strap (recommended, but not required)

## Static Electricity

Static electricity collects on non-conductors such as paper, cloth, or plastic. A static discharge can be damaging even though you often cannot see or feel it. To prevent damage to circuit boards and/or components:

- Before touching any circuit board or component, touch the metal frame of your computer to discharge any static electricity.
- Keep circuit boards and components away from non-conductors.
- Keep clothing away from circuit boards and components.
- Keep circuit boards in anti-static bags.



## **Disconnecting External Devices and Power**

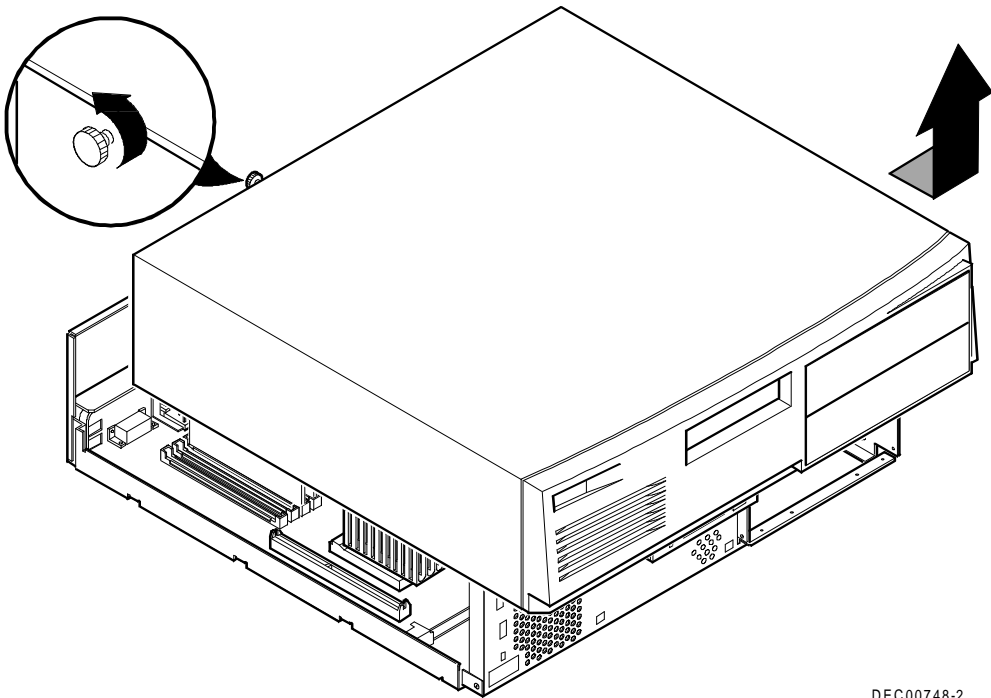
Before removing the outside cover, perform the following:

1. Turn off power to all external devices connected to computer.
2. Turn computer off.
3. Unplug power cord from wall outlet.
4. Disconnect power cord and monitor cord from computer.

## Removing the Venturis FX Outside Cover

The computer's outside cover must be removed prior to installing any hardware option. To remove the outside cover:

1. Loosen screw at rear of computer.
2. Carefully slide outside cover forward until it clears rear panel.
3. Carefully lift outside cover from chassis.



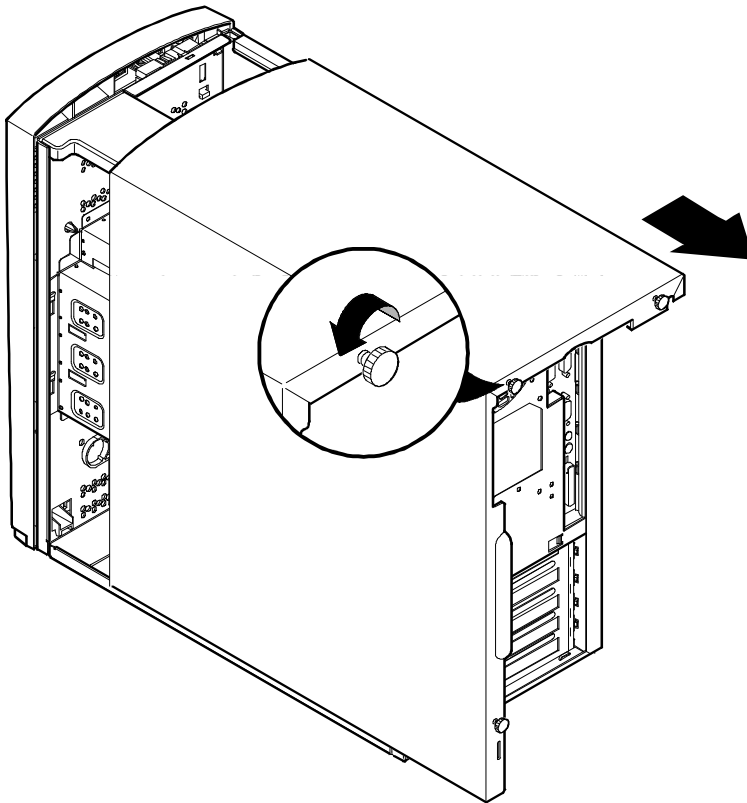
DEC00748-2

**Figure 4-1. Removing the Outside Cover (Venturis FX)**

## Removing the Venturis FXs Outside Cover

The computer's outside cover must be removed prior to installing any hardware option. To remove the outside cover:

1. Loosen three rear panel screws.
2. Carefully slide outside cover forward until it clears rear panel.
3. Carefully lift outside cover from chassis.

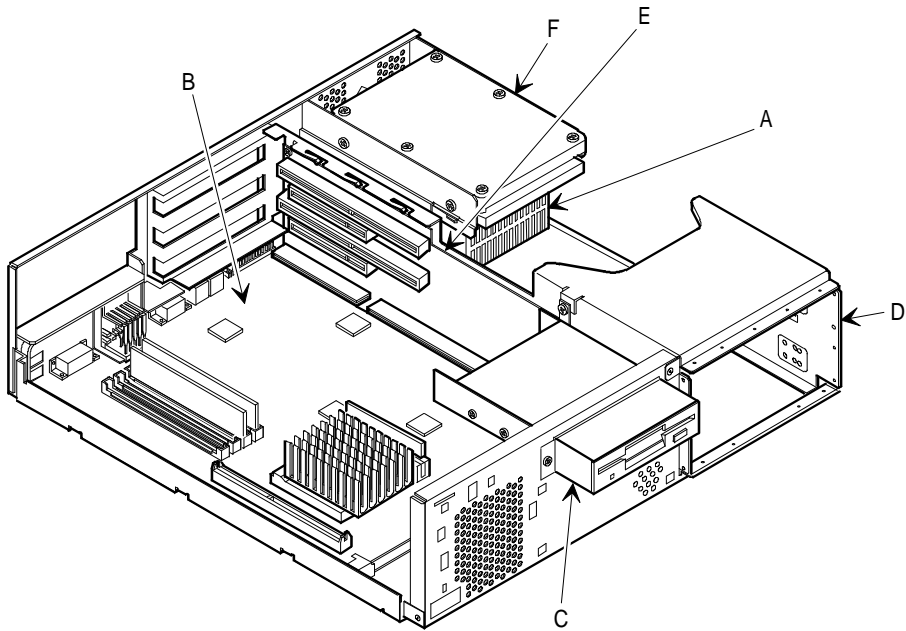


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**Figure 4-2. Removing the Outside Cover (Venturis FXs)**

## Venturis FX Computer Components

<b>Figure Legend</b>	<b>Component</b>
A	Power supply
B	Main logic board
C	3½-inch diskette drive
D	Front access drive bays
E	Backplane (supports up to three expansion boards; two PCI and one ISA or two ISA and one PCI)
F	Internal 3½-inch drive bay (on top of power supply) This drive bay holds a 1-inch high device

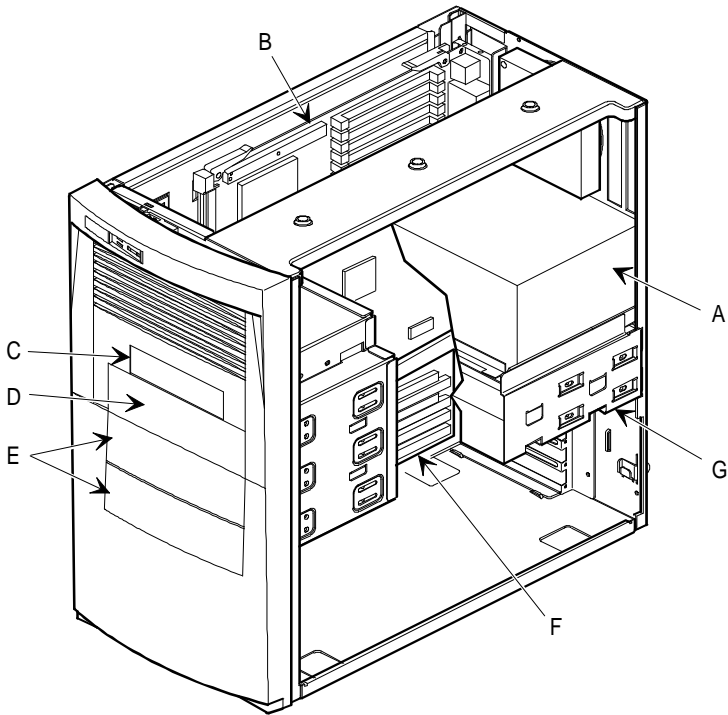


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**Figure 4-3. Venturis FX Computer Components**

## Venturis FXs Computer Components

<b>Figure Legend</b>	<b>Component</b>
A	Power supply
B	Main logic board
C	Front access 3½-inch diskette drive
D	Front access 5¼-inch drive bay with CD-ROM (standard on the Venturis FXsm)
E	Empty front access 5¼-inch drive bays (supports up to three 5¼-inch half-height devices)
F	Backplane (supports up to five expansion boards; three ISA and two PCI or four ISA and one PCI)
G	Rear internal 3½-inch drive bay (supports two 1-inch high drives)



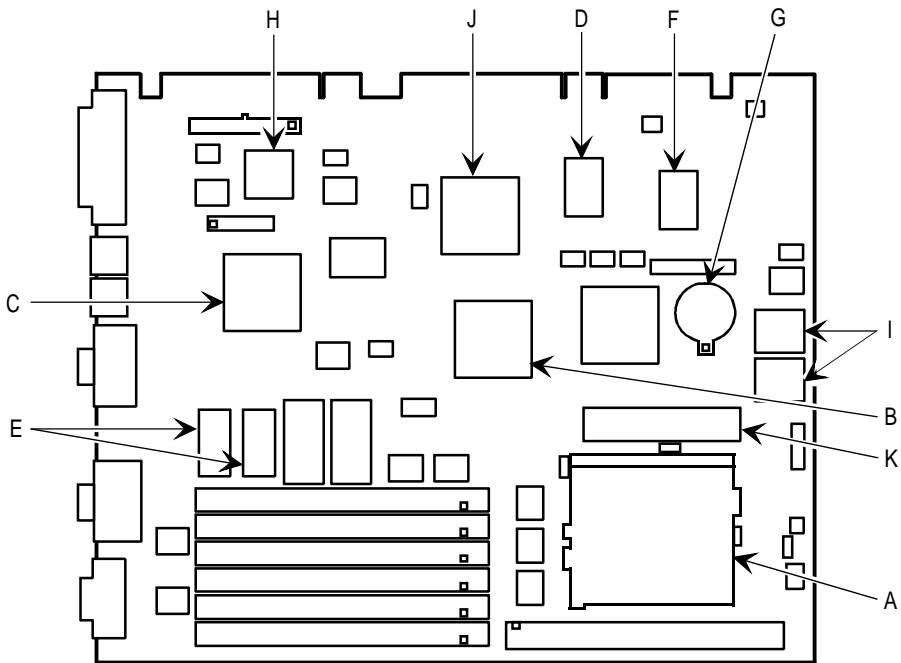
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**Figure 4-4. Venturis FXs Computer Components**

## Main Logic Board Components

<b>Figure Legend</b>	<b>Component</b>
A	Microprocessor (CPU)
B	SiS system controller
C	S3 series video controller
D	Super I/O controller
E	Onboard video memory
F	16-bit stereo sound chip (not available on all models)
G	Computer battery
H	Keyboard controller
I	Computer flash and VGA BIOS
J	PCI-to-ISA bridge
K	Voltage regulator module (VRM)



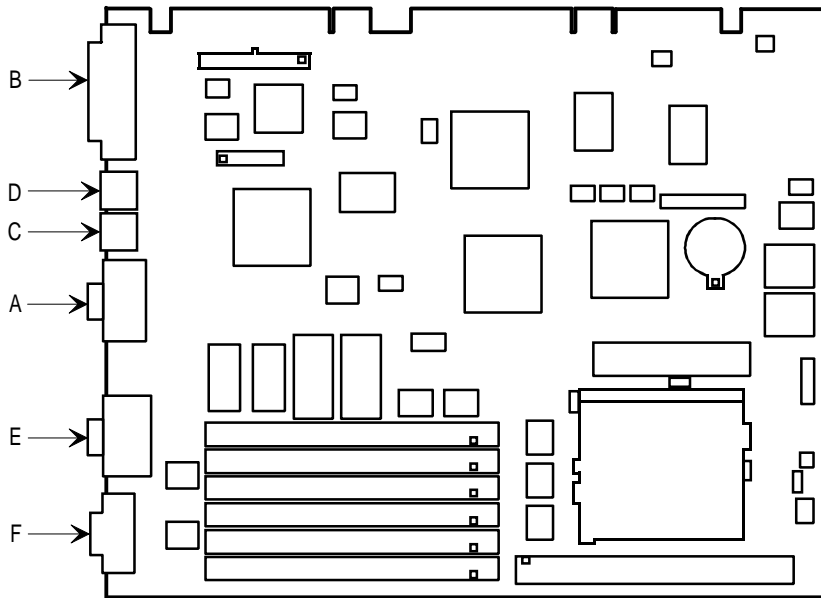


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**Figure 4-5. Main Logic Board Components**

## Main Logic Board Connectors (Rear Panel)

<b>Figure Legend</b>	<b>Connector</b>
A	Video (VGA) port
B	Parallel port
C	Mouse port
D	Keyboard port
E	Two serial ports (stacked)
F	MIDI game port (not available on all models)

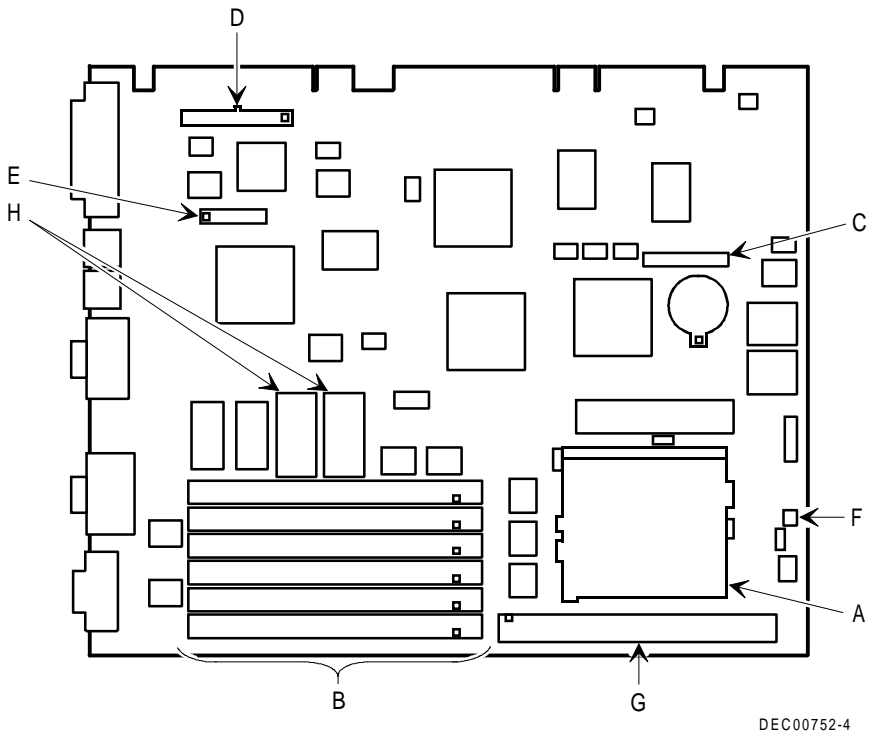


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**Figure 4-6. Main Logic Board Components (Rear Panel)**

## Main Logic Board Connectors

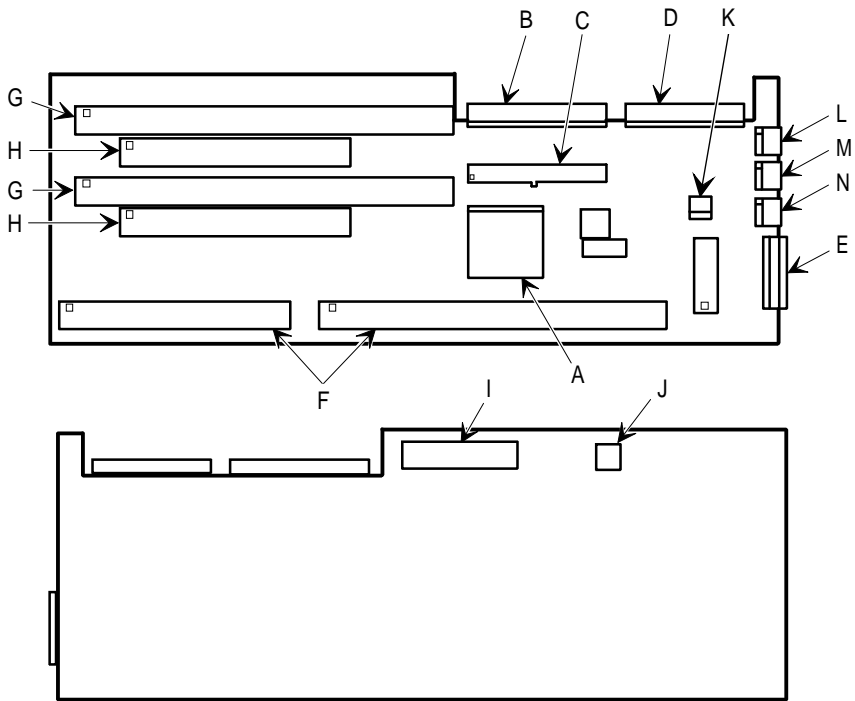
<b>Figure Legend</b>	<b>Connector</b>
A	CPU socket
B	Four or six 72-pin, 32-bit SIMM sockets (depending on your model)
C	Wave table connector (not available on all models)
D	VGA feature connector (output only) or MPEG connector (MPEG connectors not available on all models)
E	MPEG connector (not available on all models)
F	Auxiliary fan power
G	Secondary cache module [COAST (Cache On A Stick) standard module]
H	Video memory upgrade sockets (not available on all models)



**Figure 4-7. Main Logic Board Connectors**

## Venturis FX Backplane Components/Connectors

<b>Figure Legend</b>	<b>Connector</b>
A	Digital PCI Ethernet controller (not available on all models)
B	Primary PCI IDE drive connector
C	Secondary PCI IDE drive connector (recommended for CD-ROM drive connection)
D	Diskette drive connector
E	Front panel connector
F	Main logic board connectors
G	ISA expansion board connectors
H	PCI expansion board connectors
I	Power connector
J	Video IN connector
K	T/P IN connector (Twisted-Pair)
L	F/M IN connector
M	SCSI LED connector
N	Fan connector



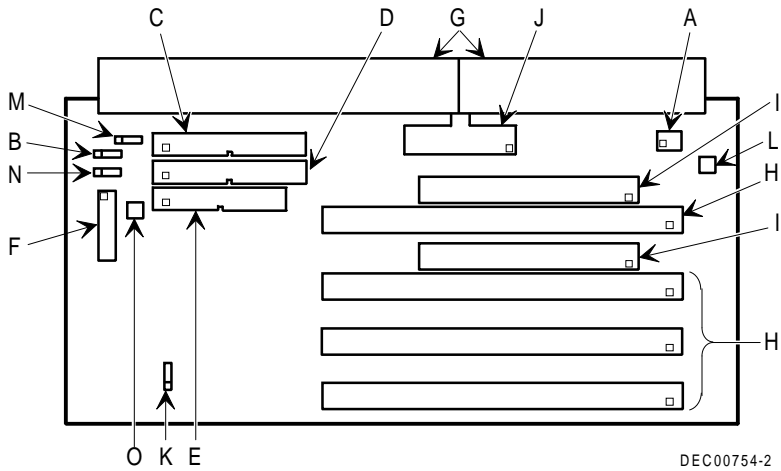
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Figure 4-8. Venturis FX Backplane Components/Connectors

## Venturis FXs Backplane Components/Connectors

<b>Figure Legend</b>	<b>Connector</b>
A	Video IN connector
B	CD-ROM audio input connector (not available on all models)
C	Primary PCI IDE drive connector
D	Secondary PCI IDE drive connector (recommended for CD-ROM drive connection)
E	Diskette drive connector
F	Front panel connector
G	Main logic board connectors
H	ISA expansion board connectors
I	PCI expansion board connectors
J	Power connector
K	Audio IN connector (for computers with sound, such as the Venturis FXsm)
L	Fan 2 connector
M	SCSI LED connector
N	F/M IN connector
O	Fan 3 connector

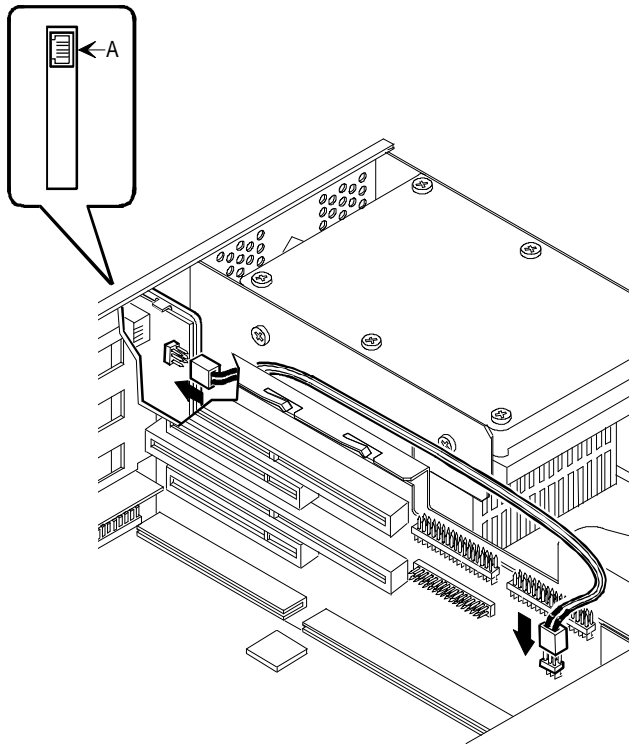




**Figure 4-9. Venturis FXs Backplane Components/Connectors**

## Venturis FXn Adapter Card Connection

Figure Legend	Connector
A	Twisted pair LAN port (not available on all models)

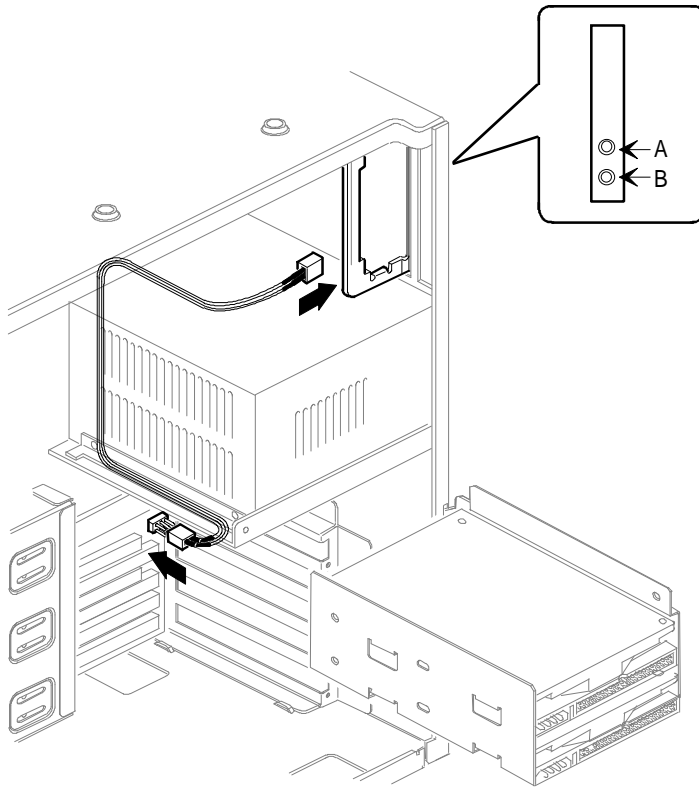


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Figure 4-10. Venturis FXn Adapter Card Connections

## Venturis FXsm Adapter Card Connections

Figure Legend	Connector
A	Speak out (not available on all models)
B	Audio IN (not available on all models)



DEC00823-3

Figure 4-11. Venturis FXsm Adapter Card Connections

## Main Logic Board Jumpers

Refer to the label attached to the inside of your computer for main logic board jumper locations and descriptions.

## Removing the Main Logic Board

If you plan on installing an optional MPEG and WaveTable daughter card, you need to remove the main logic board. To remove the main logic board:

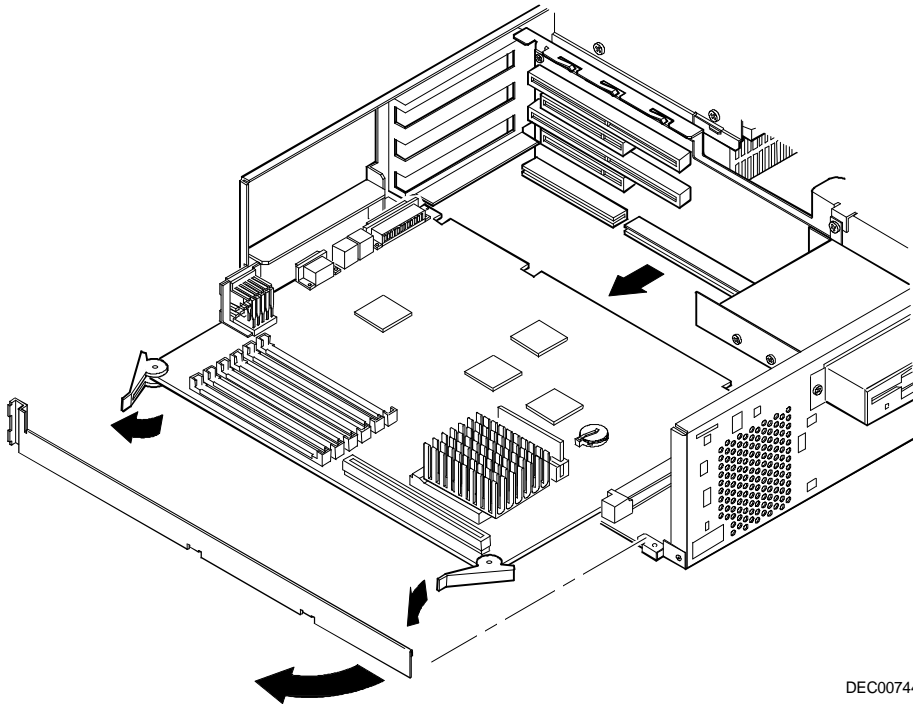
1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Remove brace from chassis (Venturis FX only).
5. Pull up on two latches attached to main logic board.

This separates the main logic board from the backplane.

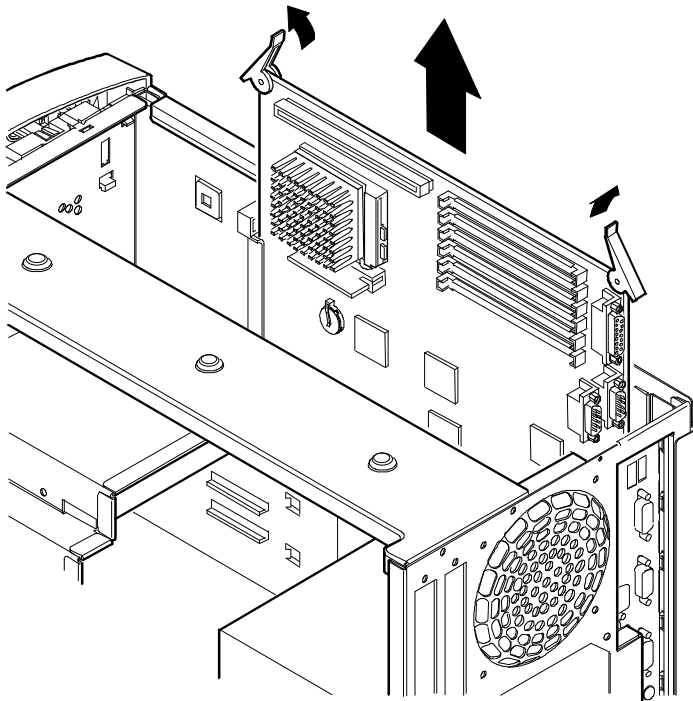
6. Carefully remove main logic board from chassis.

After installing an optional MPEG and WaveTable daughter card, replace the main logic board as follows:

1. Carefully slide main logic board into chassis.  
Make sure main logic board completely engages backplane and two latches fully lock into place.
2. Replace brace (Venturis FX only).
3. Replace outside cover.
4. Connect external devices, ac power, and monitor power.



**Figure 4-12. Removing the Main Logic Board (Venturis FX)**



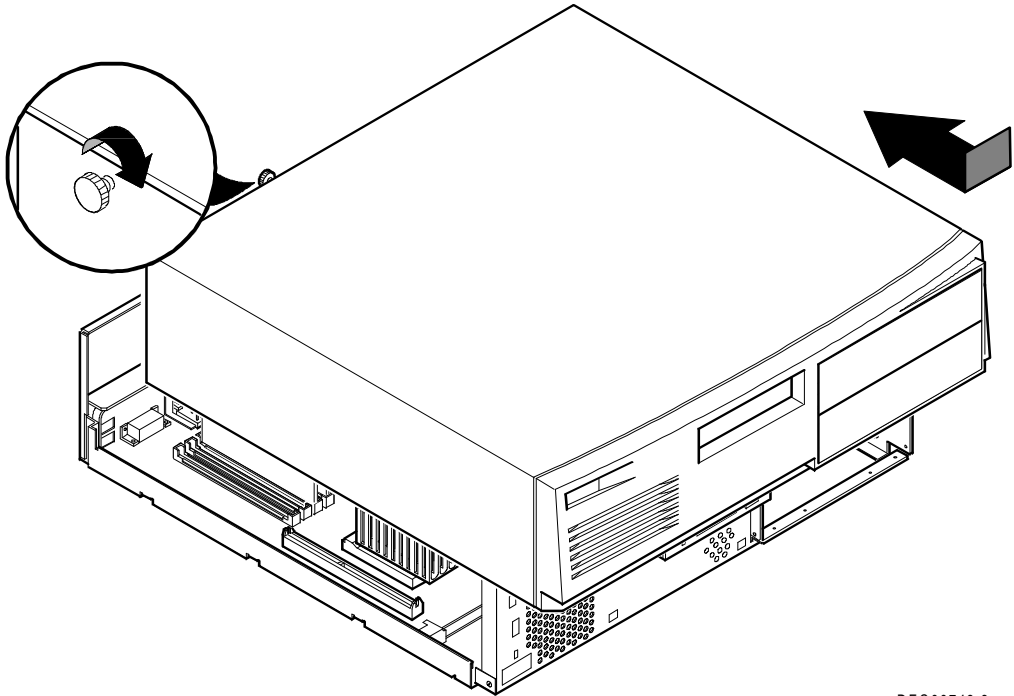
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**Figure 4-13. Removing the Main Logic Board (Venturis FXs)**

## Replacing the Outside Cover (Venturis FX)

To replace your computer's outside cover:

1. Place outside cover on chassis.
2. Secure outside cover to chassis using screw at rear of computer.



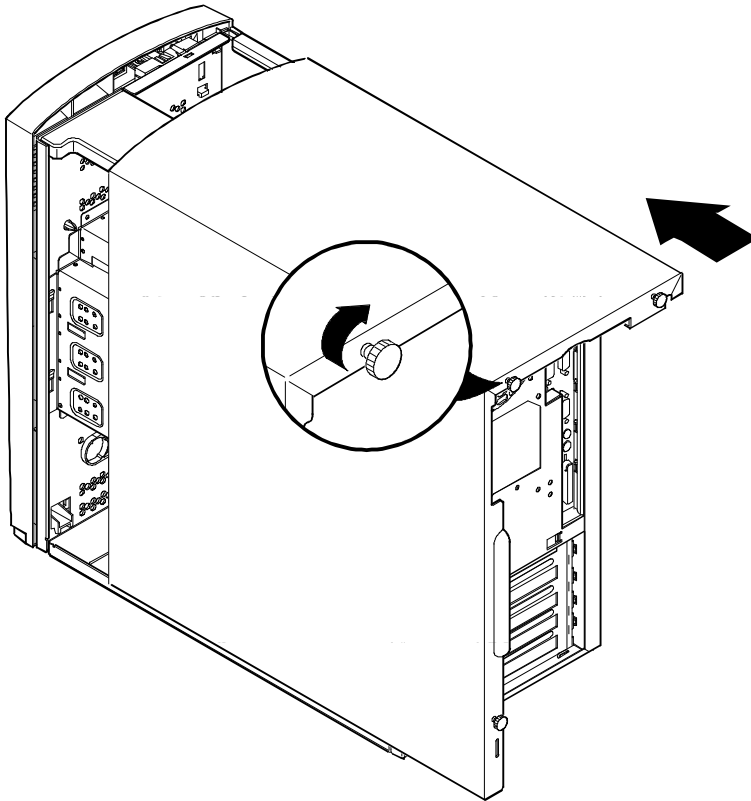
DEC00748-3

**Figure 4-14. Replacing the Outside Cover (Venturis FX)**

## Replacing the Outside Cover (Venturis FXs)

To replace your computer's outside cover:

1. Slide outside cover on chassis.
2. Secure outside cover to chassis using three rear panel screws.



DEC00749-3

**Figure 4-15. Replacing the Outside Cover (Venturis FXs)**



## Connecting External Devices and Power

After expanding your computer, perform the following:

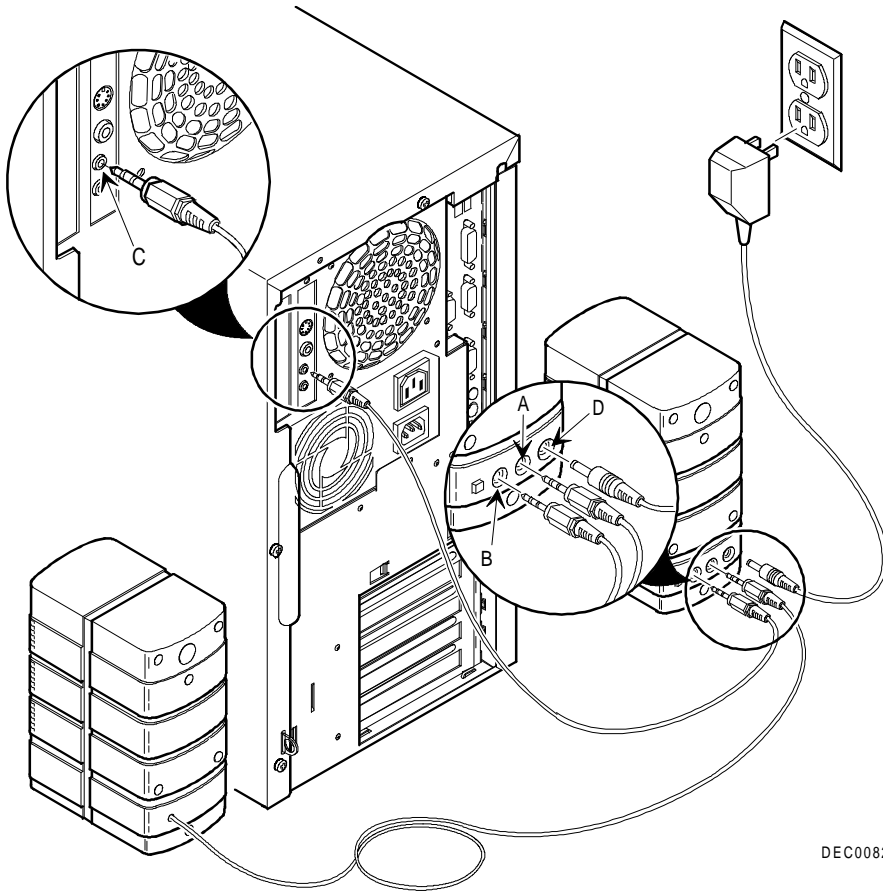
1. Connect power cord and monitor cord to computer.
2. Plug power cord into wall outlet.
3. Turn on all external devices.
4. Turn on computer.
5. Run BIOS Setup utility and configure computer for all installed options.

*Refer to Chapter 2, "Configuring Your Computer Using BIOS Setup," for detailed information on running the BIOS Setup utility.*

## Connecting Speakers

If you purchased speakers for your computer, perform the following instructions to connect them:

1. Plug slave speaker cable into master speaker “Speaker Output” (A, Figure 4-16).
2. Connect loose cable to master speaker “Audio Input” (B, Figure 4-16) to Speak “Out” (C, Figure 4-16) on adapter card.
3. Connect speaker ac adapter cord to master speaker (120 V ac 50/60 Hz) (D, Figure 4-16).”
4. Plug speaker ac adapter into power outlet.



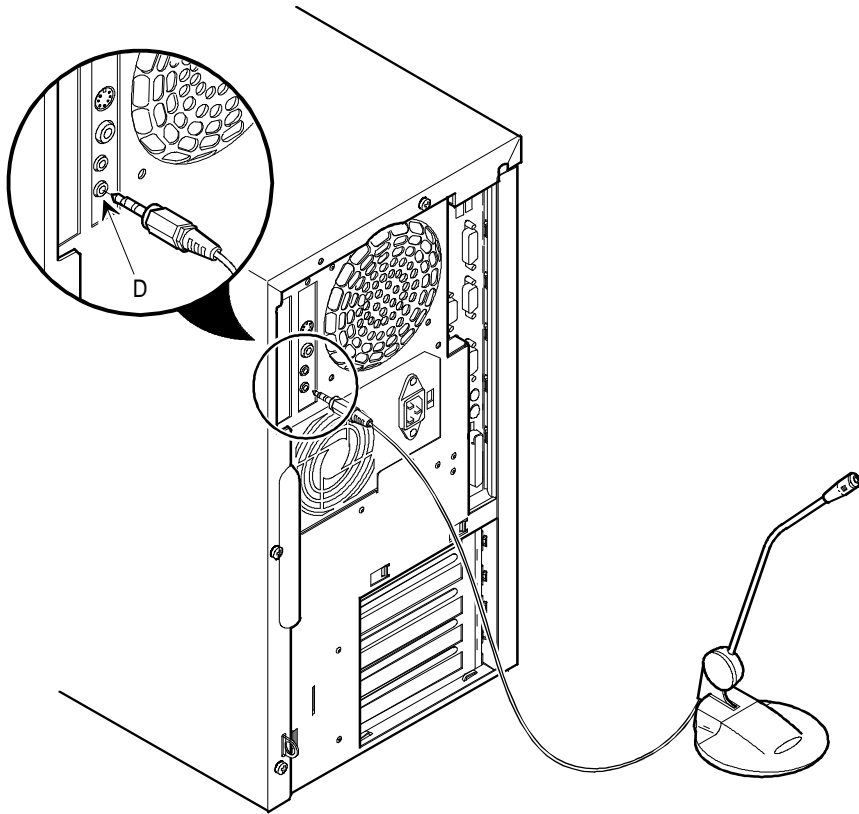
DEC00824

**Figure 4-16. Connecting Speakers**

## Connecting a Microphone

If you purchased a microphone for your computer, perform the following instructions to connect it:

1. Unpack microphone and assemble base.
2. Connect microphone cable into the "Audio IN" connector on adapter card.



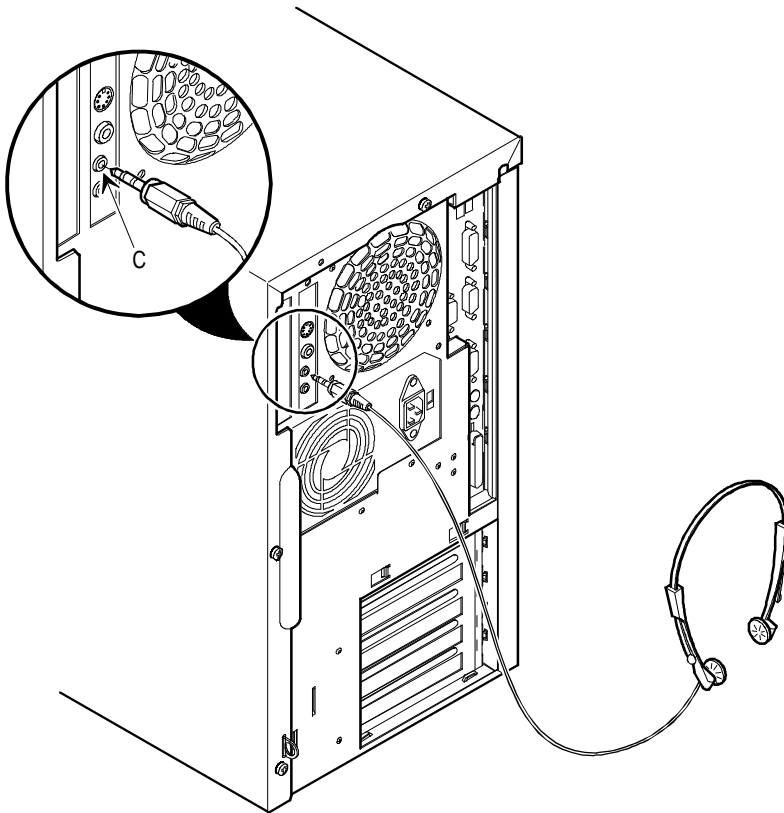
DEC00838-3

**Figure 4-17. Connecting a Microphone**

## Connecting Headphones

If you purchased headphones for your computer, perform the following instructions to connect them:

1. Unpack headphones.
2. Connect headphones cable into the “Speak OUT” connector on adapter card.



DEC00838-2

**Figure 4-18. Connecting Headphones**

# 5

## Main Logic Board Expansion

### Introduction

This chapter provides detailed instructions on installing the following main logic board options:

- Computer memory
- Secondary cache module
- Video memory
- Optional MPEG/video capture daughter card
- Optional WaveTable daughter card

*Refer to Chapter 4, "Inside Your Computer," for information on removing and replacing your computer's outside cover.*

## Installing Additional Computer Memory

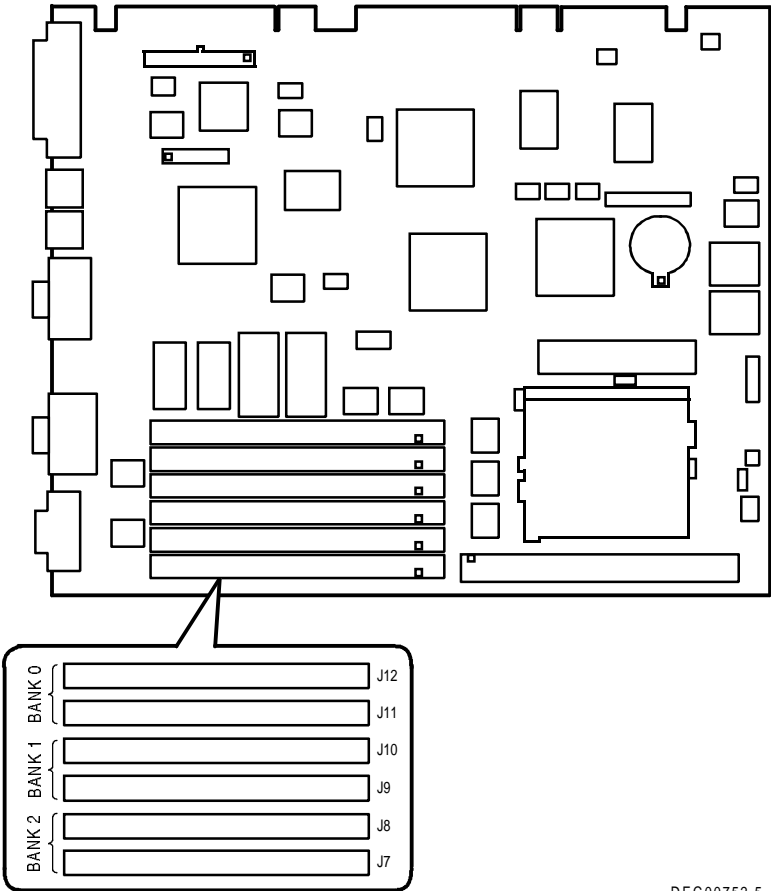
Adding more memory enables your computer to run larger, more complicated software and run it more quickly.

Depending on the model you purchased, your computer comes with either 8 MB or 16 MB of Extended Data Out (EDO) memory. For those with 8 MB computers, memory is installed as two 4 MB SIMMs in bank 0 (socket J11 and J12). For those with 16 MB computers, memory is installed as two 8 MB SIMMs in bank 0 (socket J11 and J12). When adding memory, you need to use 72-pin SIMMs (Figure 5-1).

For the Venturis FXe, you can increase this amount up to a maximum of 128 MB using the four SIMM sockets on the main logic board. All other models can be increased up to 192 MB using the six SIMM sockets on the main logic board.

All Venturis FX computers support EDO memory. EDO memory, in pairs of 4 MB, 8 MB, 16 MB, and 32 MB SIMMs, is faster than standard non-parity or Fast Page memory. Contact your local Digital sales representative for ordering information.





DEC00752-5

Figure 5-1. SIMM Socket Locations for Most Models (FXe has 4 SIMM Sockets)

## Main Logic Board Expansion

When adding SIMMs make sure you:

- Install 32-bit SIMMs having an access time of 70 ns or less. Supported SIMM sizes: 8 MB, 16 MB or 32 MB (60 ns for EDO DRAM).



**NOTE:** For maximum performance, you should populate both SIMM sockets in a given bank.

- If you populate both SIMM sockets in a given bank, you must use the same type and size memory. For example, if you add 8 MB of EDO memory in socket 3 (J10), and decide to add another 8 MB, you must use 8 MB of EDO memory in socket 4 (J9).
- You can mix EDO and fast paged memory. However, if you populate both SIMM sockets in a given bank, you must use the same type of memory. You cannot mix EDO and fast paged memory in the same bank.

*Refer to "Memory Configurations" for a list of SIMM combinations supported by your Venturis FX and FXs computer and to "Installing a SIMM" for detailed instructions on installing SIMMs.*

## Memory Configurations

Socket J12	Socket J11	Socket J10	Socket J9	Socket <sup>(1)</sup> J8	Socket <sup>(1)</sup> J7	Total
4 MB	4 MB					8 MB
4 MB	4 MB	4 MB	4 MB			16 MB
8 MB						8 MB
8 MB	8 MB					16 MB
4 MB	4 MB	4 MB	4 MB	4 MB	4 MB	24 MB
4 MB	4 MB	4 MB	4 MB	8 MB	8 MB	32 MB
8 MB	8 MB	8 MB	8 MB			32 MB
16 MB						16 MB
16 MB	16 MB					32 MB
4 MB	4 MB	8 MB	8 MB	8 MB	8 MB	40 MB
8 MB	8 MB	8 MB	8 MB	8 MB	8 MB	48 MB
4 MB	4 MB	4 MB	4 MB	16 MB	16 MB	48 MB
4 MB	4 MB	8 MB	8 MB	16 MB	16 MB	56 MB
8 MB	8 MB	8 MB	8 MB	16 MB	16 MB	64 MB
16 MB	16 MB	16 MB	16 MB			64 MB
32 MB						32 MB
32 MB	32 MB					64 MB
4 MB	4 MB	16 MB	16 MB	16 MB	16 MB	72 MB
4 MB	4 MB	4 MB	4 MB	32 MB	32 MB	80 MB
8 MB	8 MB	16 MB	16 MB	16 MB	16 MB	80 MB
4 MB	4 MB	8 MB	8 MB	32 MB	32 MB	88 MB
8 MB	8 MB	8 MB	8 MB	32 MB	32 MB	96 MB
16 MB	16 MB	16 MB	16 MB	16 MB	16 MB	96 MB
4 MB	4 MB	16 MB	16 MB	32 MB	32 MB	104 MB
4 MB	4 MB	32 MB	32 MB	32 MB	32 MB	136 MB
8 MB	8 MB	16 MB	16 MB	32 MB	32 MB	112 MB
16 MB	16 MB	16 MB	16 MB	32 MB	32 MB	128 MB
32 MB	32 MB	32 MB	32 MB			128 MB
8 MB	8 MB	32 MB	32 MB	32 MB	32 MB	140 MB
16 MB	16 MB	32 MB	32 MB	32 MB	32 MB	160 MB
32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	192 MB

(1) Sockets not installed on the Venturis Fxe

Table does not list all possible configurations.

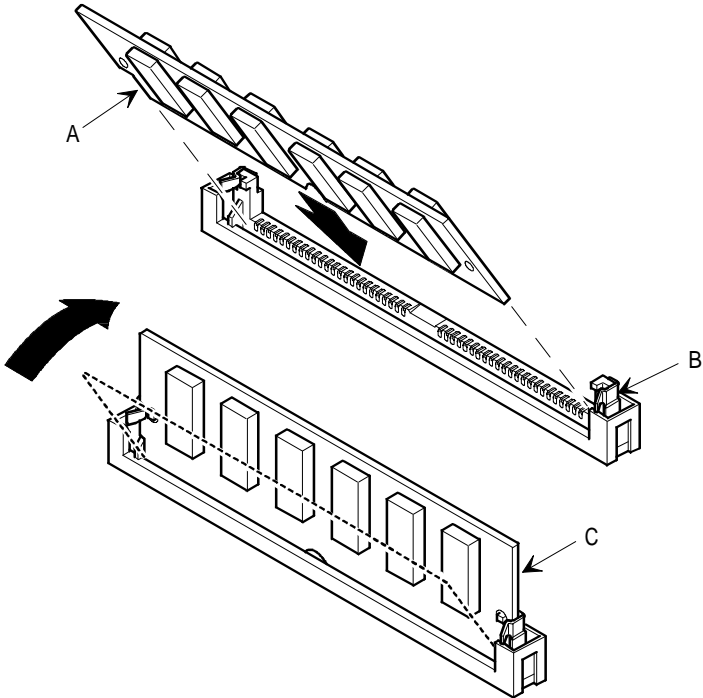
## Installing a SIMM

To install a SIMM, perform the following:

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Install SIMM into socket at a 45 degree angle.

Make sure notch is oriented as shown (A, Figure 5-2). Rock SIMM gently until it completely engages bottom of socket. Tip SIMM upright until both retaining clips engage (B, C, Figure 5-2).

5. Replace outside cover.
6. Connect external devices and restore power.



DEC00304-2

Figure 5-2. Installing a SIMM

## Installing a Secondary Cache Module

Most Venturis FX models come with a 256 KB pipeline burst secondary cache module. The module is installed in an upgradeable socket on the main logic board. Cache enhances the overall performance of your computer by increasing data throughput.

You can upgrade to a 512 KB secondary cache module by replacing the existing 256 KB cache module. If your computer did not come with a 256 KB cache, you can upgrade to either a 256 KB or 512 KB secondary cache module. When purchasing a secondary cache module upgrade, make sure it is COAST standard.



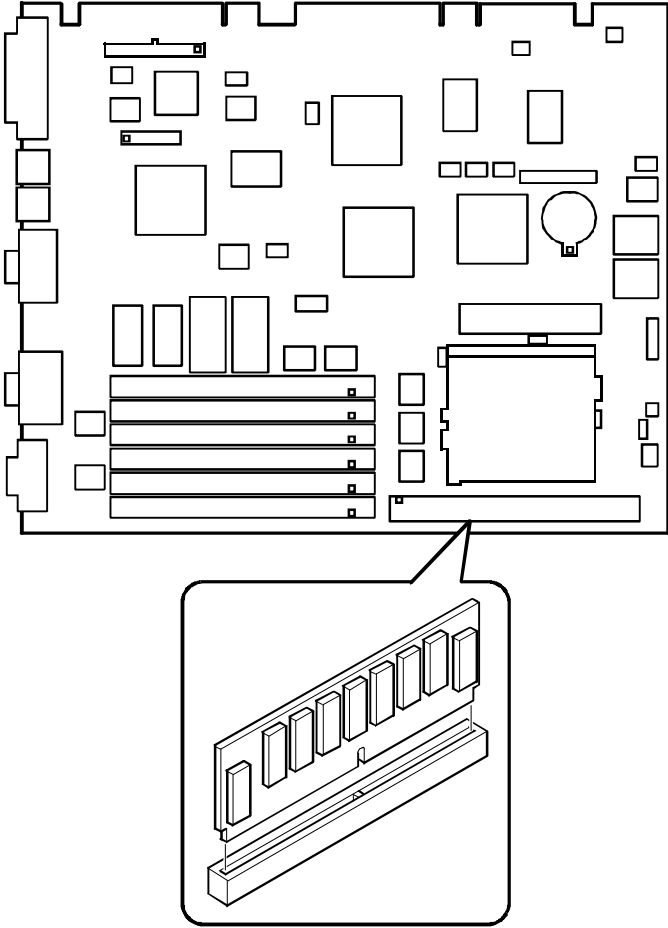
**NOTE:** If you have 64 MB or more of memory installed in your computer, it is recommended that you install a 512 KB secondary cache to maximize your computer's performance.

To install a secondary cache module, perform the following:

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Is the cache socket on your Venturis FX computer populated?
  - a. If yes, hold 256 KB cache module by top edge and carefully lift it out. Make sure you lift away from main logic board.  
Put cache module in an antistatic package for safekeeping.
  - b. If no, proceed to step 5.
5. Holding upgrade secondary cache module only by top edge, carefully insert it into socket on main logic board.

Make sure it fully seats into socket.

- 6. Replace outside cover.
- 7. Connect external devices and restore power.



DEC00752-7

**Figure 5-3. Installing a Secondary Cache Module**

## Installing Video Memory

You can upgrade to 2 MB of video memory on most models by installing two industry standard EDO 40-pin 256 KB x 16 50 ns video memory DRAM chips (The standard 1 MB of video memory for the Venturis Fxe is the maximum for that model). To install the video memory upgrade chips:

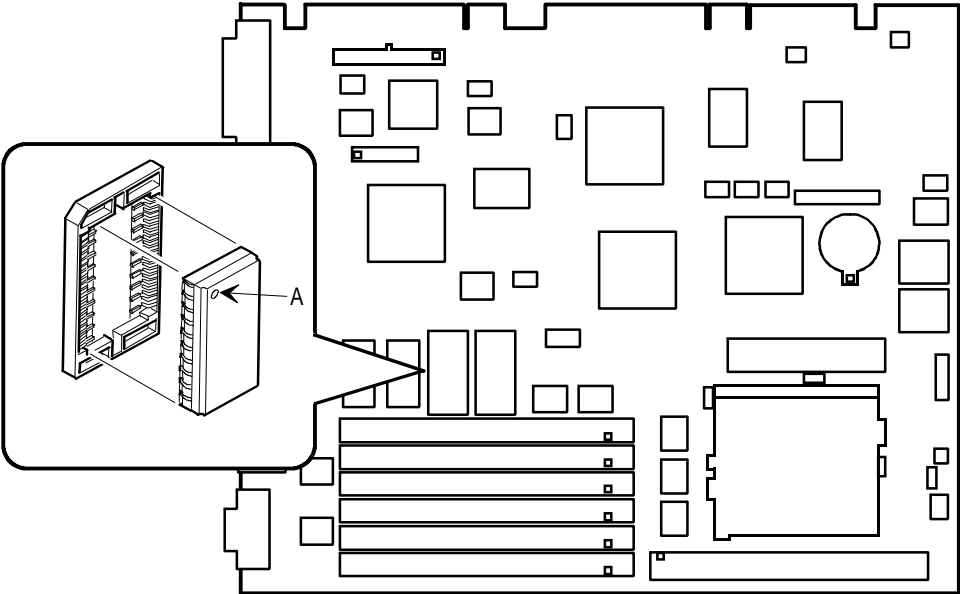
1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Install each video memory DRAM chip.



**CAUTION:** Make sure pin 1 on each video DRAM chip is correctly aligned with location on socket (A, Figure 5-4). Incorrect installation can cause faulty computer operation.

5. Replace outside cover.
6. Connect external devices and restore power.





DEC00752-6

**Figure 5-4. Video Memory Installation**

## Installing an Optional MPEG Daughter Card

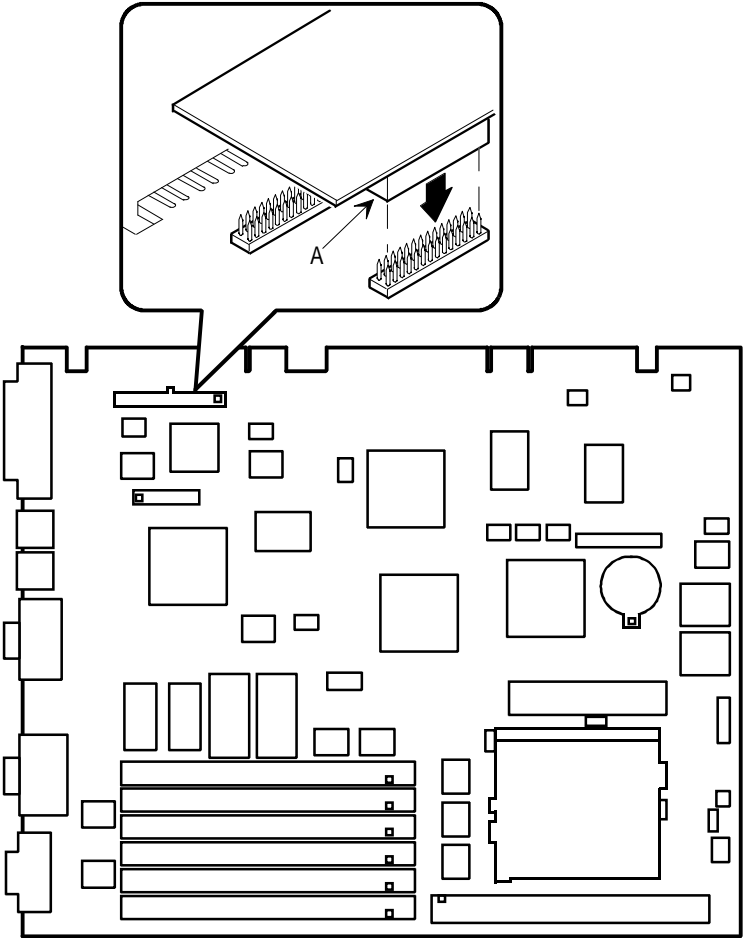
Installing an optional MPEG daughter card greatly enhances your computer's video and video capture capabilities. This daughter card is specifically designed and manufactured by Digital for use in Venturis FX computers. To order this option, contact your computer sales representative.

To install an optional MPEG daughter card:

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Remove the main logic board (refer to Chapter 4).
5. Install MPEG daughter card as shown in figure 5-5.



**CAUTION:** Make sure pin 1 on MPEG daughter card is correctly aligned with location on socket (A, Figure 5-5). Incorrect installation can cause faulty computer operation.



DEC00752-10

Figure 5-5. MPEG Daughter Card Installation

## Main Logic Board Expansion

6. Connect the cable at the back of the adapter card to the video in/out connector on the backplane.

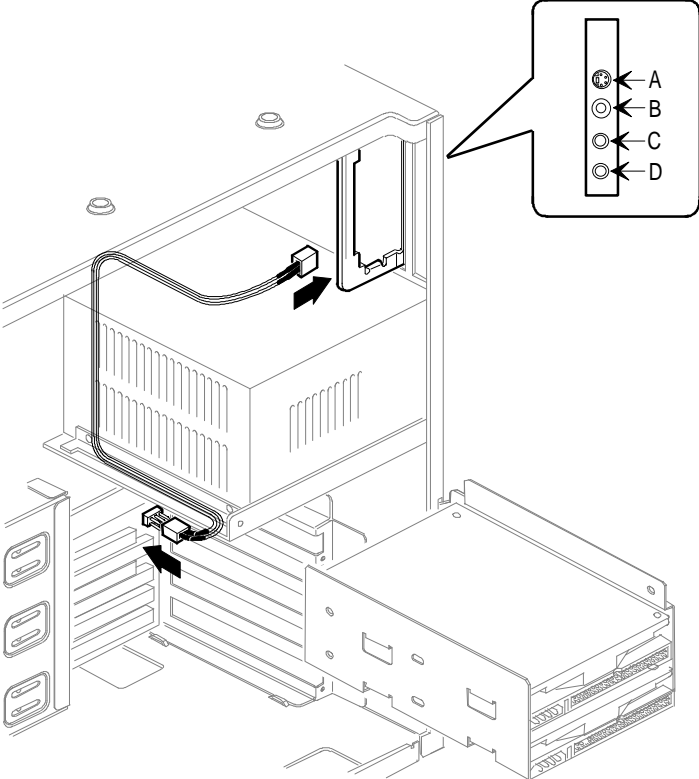


**NOTE:** If your computer does not have audio capabilities, connectors Speak out and Audio IN (C and D, Figure 5-6) are not functional.

<b>Figure Legend</b>	<b>Connector</b>
A	SVGA Video IN connector (not available on all models)
B	Composite video IN (not available on all models)
C	Speak out (not available on all models)
D	Audio IN (not available on all models)

7. Replace the main logic board (refer to Chapter 4).
8. Replace outside cover.
9. Connect external devices and restore power.
10. Install the supplied software that came with the MPEG daughter card option.

Main Logic Board Expansion



DEC00823-2

**Figure 5-6. Connecting the Optional MPEG Adapter Card**

## Installing an Optional WaveTable Daughter Card

If your computer comes with onboard audio, you can install an optional WaveTable daughter card to enhance your computer's audio capabilities by providing life-like sound based on actual recordings of real instruments. This daughter card is specifically designed and manufactured by Digital for use in Venturis FX multimedia computers. To order this option, contact your computer sales representative.

To install an optional WaveTable daughter card:

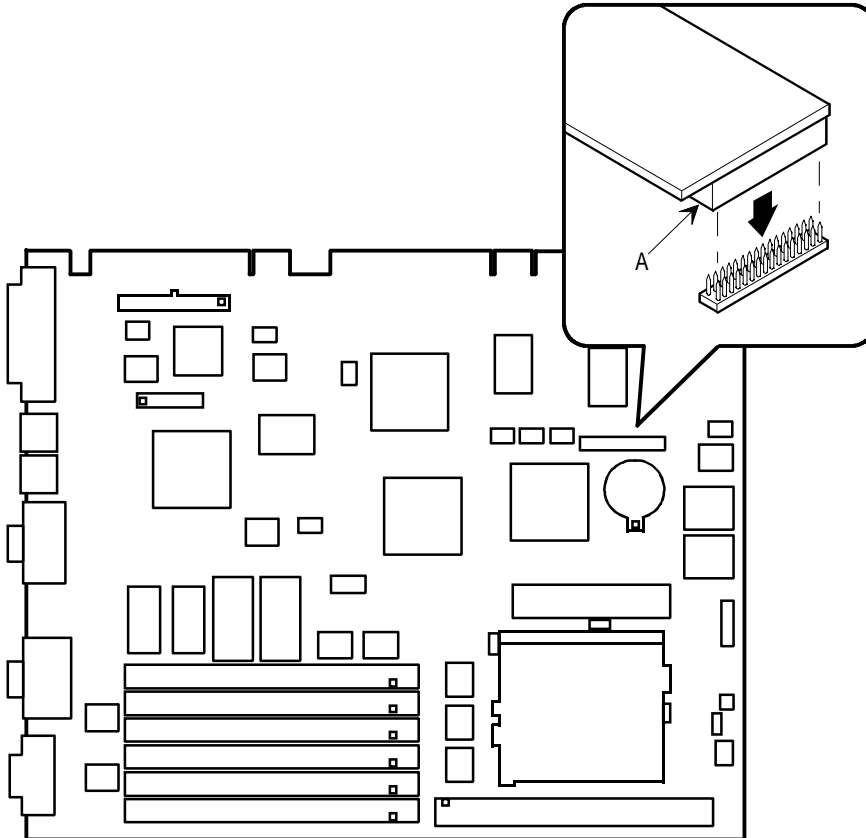
1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Remove the main logic board (refer to Chapter 4)
5. Install WaveTable daughter card.



**CAUTION:** Make sure pin 1 on WaveTable daughter card is correctly aligned with location on socket (A, Figure 5-7). Incorrect installation can cause faulty computer operation.

6. Replace the main logic board (refer the Chapter 4).
7. Replace outside cover.

8. Connect external devices and restore power.
9. Install the supplied software that came with the MPEG daughter card option.



DEC00752-11

**Figure 5-7. Wave Table Expansion Board Installation**

# 6

## Adding Expansion Boards

### Introduction

For the entire Venturis FX series, expansion slots are located on a backplane. This chapter describes the location of these slots and provides detailed instructions on installing ISA and PCI expansion boards.

### Expansion Slots (Venturis FX)

Your Venturis FX backplane contains four slots for installing:

- Two ISA expansion boards and one PCI expansion board or
- One ISA expansion board and two PCI expansion boards (refer to the table).

Your computer automatically assigns the necessary resources to any installed Plug and Play-compatible expansion board so it operates at maximum performance. If you plan on installing non-Plug and Play expansion boards or legacy boards, you might need to set jumpers manually on them based on the computer resources already allocated. Your computer does not automatically assign the necessary resources for any non-Plug and Play or legacy expansion board.

*Refer to the on-line help information on how to run the ISA Configuration Utility (ICU). You can access the ICU through the "Getting Started" program if running Windows for Workgroups. If running Windows 95, the ICU and ICU on-line help information is integrated into Windows 95. Also, refer to the on-line ICU documents if running Windows for Workgroups and the Windows 95 information set if running Windows 95.*

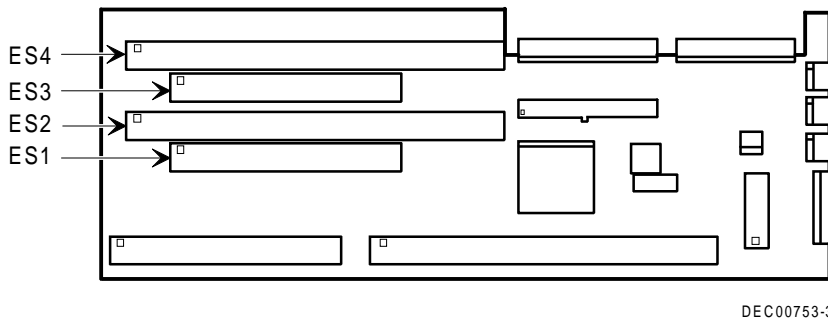


## Adding Expansion Boards

<b>Expansion Slot Number<sup>(1)</sup></b>	<b>Slot Type</b>	<b>Description</b>
ES4	ISA	Supports half-length industry-standard 16-bit ISA expansion boards Uses the top expansion slot at the rear panel
ES3	PCI	Supports full-length 32-bit PCI local bus expansion boards Uses the middle expansion slot at the rear panel Designated as a shared slot with ISA slot ES2 <sup>(2)</sup>
ES2	ISA	Supports full-length industry-standard 16-bit ISA expansion boards Uses the middle expansion slot at the rear panel Designated as a shared slot with PCI slot ES3 <sup>(2)</sup>
ES1	PCI	Supports half-length 32-bit PCI local bus expansion boards Uses the bottom expansion slot at the rear panel

<sup>(1)</sup> Expansion slot numbers are designated J(n) as silk-screened on the riser card; not to be confused as jumper numbers.

<sup>(2)</sup> Only one expansion board can reside in slot ES2 and ES3 at any one time. These slots have to share the middle expansion slot opening at the rear panel, thus, a maximum of three expansion boards can be supported at any one time.



**Figure 6-1. Expansion Board Slots (Venturis FX)**

## Expansion Slots (Venturis FXs)

Your Venturis FXs backplane contains six slots for installing:

- Four ISA expansion boards and one PCI expansion board or
- Three ISA expansion boards and two PCI expansion boards (refer to the table).

Your computer automatically assigns the necessary resources to any installed Plug and Play-compatible expansion board so it operates at maximum performance. If you plan on installing non-Plug and Play expansion boards or legacy boards, you might need to set jumpers manually on them based on the computer resources already allocated. Your computer does not automatically assign the necessary resources for any non-Plug and Play or legacy expansion board.

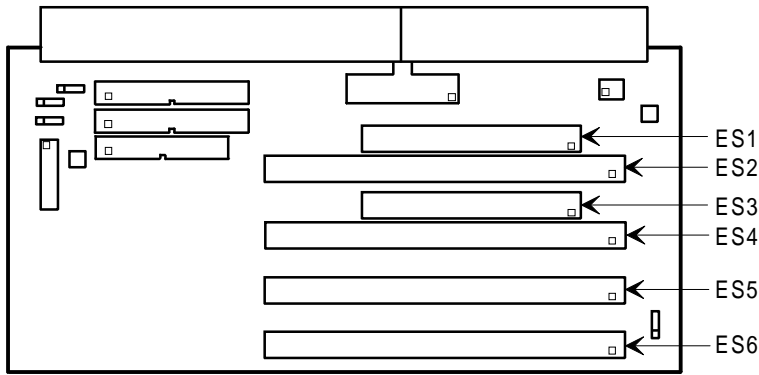
*Refer to the on-line help information on how to run the ISA Configuration Utility (ICU). You can access the ICU through the "Getting Started" program if running Windows for Workgroups. If running Windows 95, the ICU and ICU on-line help information is integrated into Windows 95. Also, refer to the on-line ICU documents if running Windows for Workgroups and the Windows 95 information set if running Windows 95.*

## Adding Expansion Boards

<b>Expansion Slot Number<sup>(1)</sup></b>	<b>Slot Type</b>	<b>Description</b>
ES4-ES6	ISA	Supports full-length industry-standard 16-bit ISA expansion boards  Uses the first, second, and third (bottom three) expansion slots at the rear panel
ES3	PCI	Supports full-length 32-bit PCI local bus expansion boards  Uses the fourth expansion slot at the rear panel  Designated as a shared slot with ISA slot ES2 <sup>(2)</sup>
ES2	ISA	Supports full-length industry-standard 16-bit ISA expansion boards  Uses the fourth expansion slot at the rear panel  Designated as a shared slot with PCI slot ES3 <sup>(2)</sup>
ES1	PCI	Supports half-length 32-bit PCI local bus expansion boards  Uses the fifth (top) expansion slot at the rear panel

<sup>(1)</sup> Expansion slot numbers are designated J(n) as silk-screened on the riser card; not to be confused as jumper numbers.

<sup>(2)</sup> Only one expansion board can reside in slot ES2 and ES3 at any one time. These slots have to share the third expansion slot opening at the rear panel, thus, a maximum of five expansion boards can be supported at any one time



DEC00754-3

**Figure 6-2. Expansion Board Slots (Venturis FXs)**

To install an ISA or PCI local bus expansion board:



**NOTE:** Read and fully understand your optional expansion board's documentation before installing it.

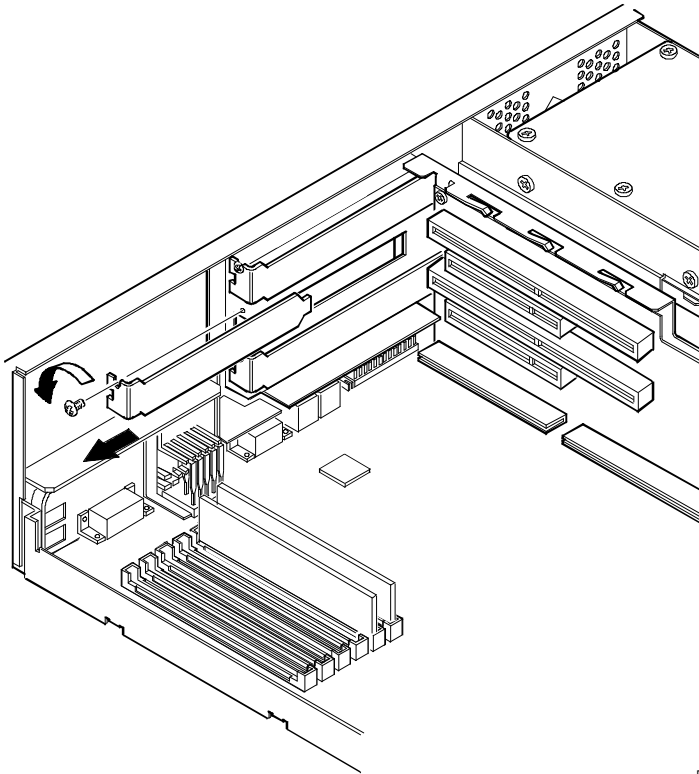
Do not install non-Plug and Play expansion boards until you have run the ICU to determine what configuration the ICU recommends. Configure any jumpers on the expansion board or include device statements in your CONFIG.SYS file as required and then install the expansion board.

Refer to the on-line help information on how to run the ISA Configuration Utility (ICU). You can access the ICU through the "Getting Started" program if running Windows for Workgroups. If running Windows 95, the ICU and ICU on-line help information is integrated into Windows 95.

Also, refer to the on-line ICU documents if running Windows for Workgroups and the Windows 95 information set if running Windows 95.

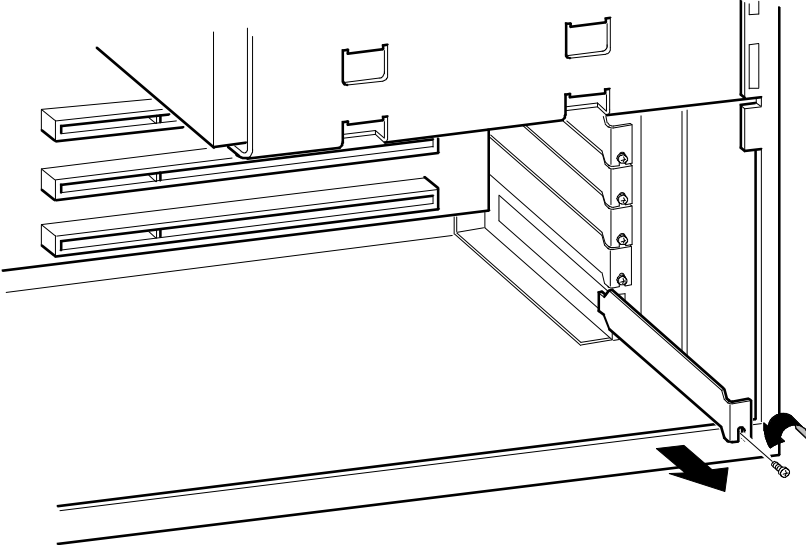
## Adding Expansion Boards

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. For short tower models, you can rotate the disk drives to make the area more accessible.
5. Unscrew metal filler plate(s) from selected expansion slot.



DEC00755-2

**Figure 6-3. Removing a Metal Filler Plate (Venturis FX)**

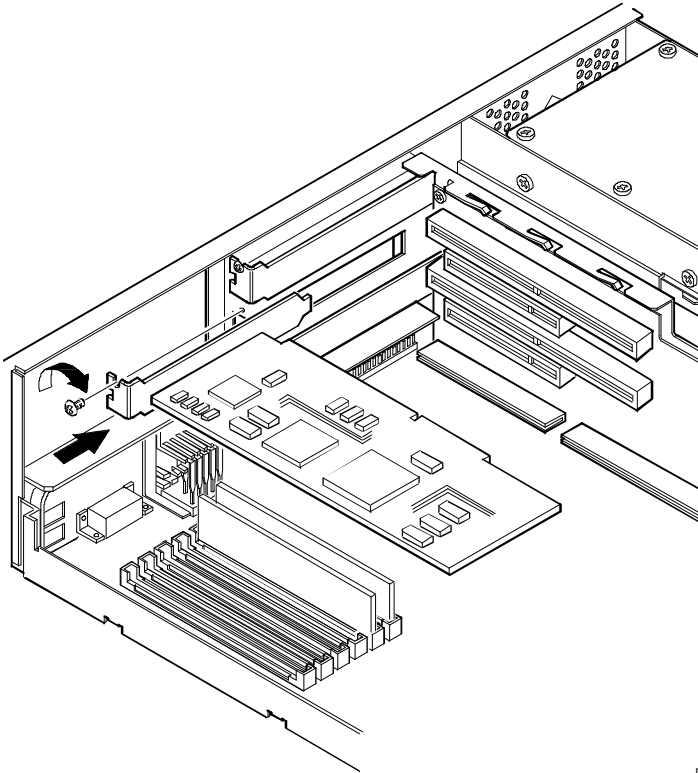


DEC00756-2

**Figure 6-4. Removing a Metal Filler Plate (Venturis FXs)**

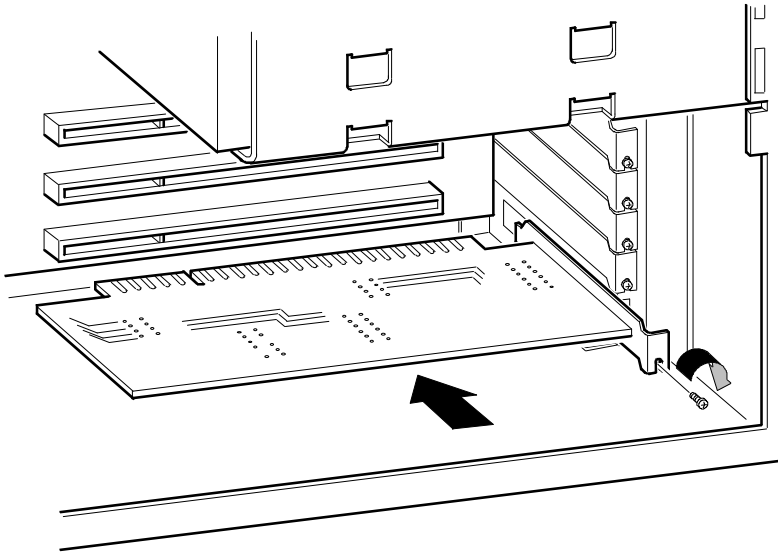
## Adding Expansion Boards

6. Insert new expansion board into socket.  
Push expansion board firmly into place.



DEC00755-3

**Figure 6-5. Installing an Expansion Board (Venturis FX)**



DEC00756-3

**Figure 6-6. Installing an Expansion Board (Venturis FXs)**

7. Secure expansion board to slot with screw removed in step 4.
8. Replace outside cover.
9. Connect external devices and restore power.



# 7

## Adding Mass Storage Devices

### Introduction

This chapter provides detailed information on installing mass storage devices, such as another hard disk drive, a tape drive, a CD-ROM drive, or another diskette drive. Note that these installation instructions are referenced as looking from the front of the computer to the rear.

### Installing Mass Storage Devices (Venturis FX)

Your Venturis FX computer contains four mass storage device bays:

- The right device bays are accessible from the front of the computer and can hold a 3½-inch and 5¼-inch half-height device, two 3½-inch devices, or two 5¼-inch half-height devices. For example, a diskette drive, tape backup drive, CD-ROM, or hard disk drive.
- The middle-front device bay contains a factory installed 3½-inch diskette drive.
- The rear device bay (on top of the power supply) is not accessible from the front of the computer. This bay contains a factory installed 3½-inch hard disk drive.

## Installing Mass Storage Devices (Venturis FXs)

Your Venturis FXs computer contains six mass storage device bays:

- The top device bay contains a factory installed 3½-inch diskette drive.
- The second device bay contains a factory installed CD-ROM (only on the Venturis FXsm).
- The third and fourth device bay can hold a 5¼-inch half-height device. For example, a diskette drive or hard disk drive.
- The internal device bay is not accessible from the front of the computer and contains a factory installed, low-profile (1-inch high), 3½-inch hard disk drive. This device bay also has room to install a second low-profile, 3½-inch hard disk drive.

The following procedures and illustrations show a base computer configuration. Your specific drive bay configurations and storage devices might vary.

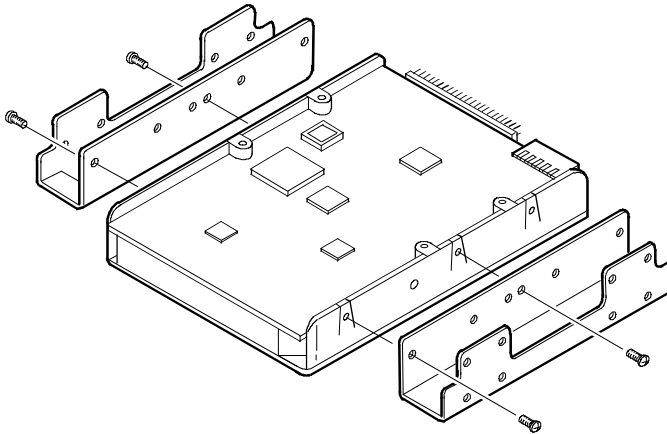
## Installing a 3½-Inch Device into a Right-Front Device Bay (Venturis FX)

The following procedures describe how to install a 3½-inch device into a right-front device bay.



**NOTE:** Refer to the manufacturer's instructions for your device to determine if switches or jumper settings need to be set or installed on the device. Set all switch and jumper settings accordingly.

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Install brackets onto 3½-inch device.

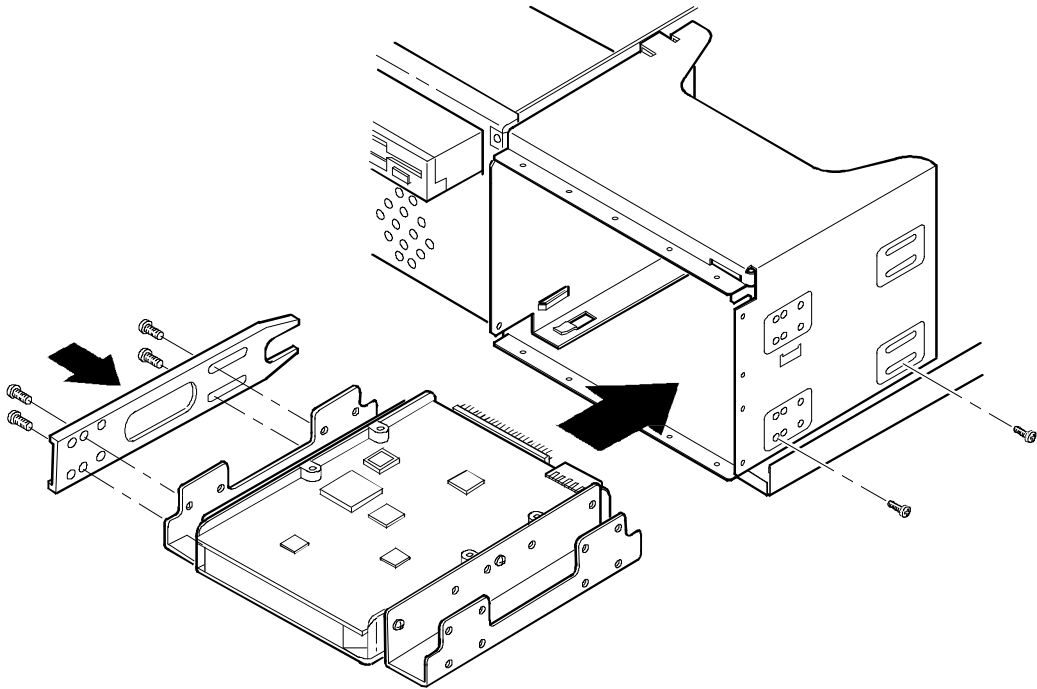


DEC00723

**Figure 7-1. Installing 3½-Inch Device Brackets**

## Adding Mass Storage Devices

5. Carefully slide 3½-inch device into device bay.  
Secure device using supplied mounting screws.



DEC00757-3

**Figure 7-2. Installing a 3½-Inch Device (Venturis FX)**

6. Connect power and data cables to 3½-inch device.  
*Refer to "Connecting Diskette and IDE Devices" later in this chapter.*

## Installing a 5¼-Inch Device into a Right-Front Device Bay (Venturis FX)

The following procedures describe how to install a 5¼-inch device into a right-front device bay.



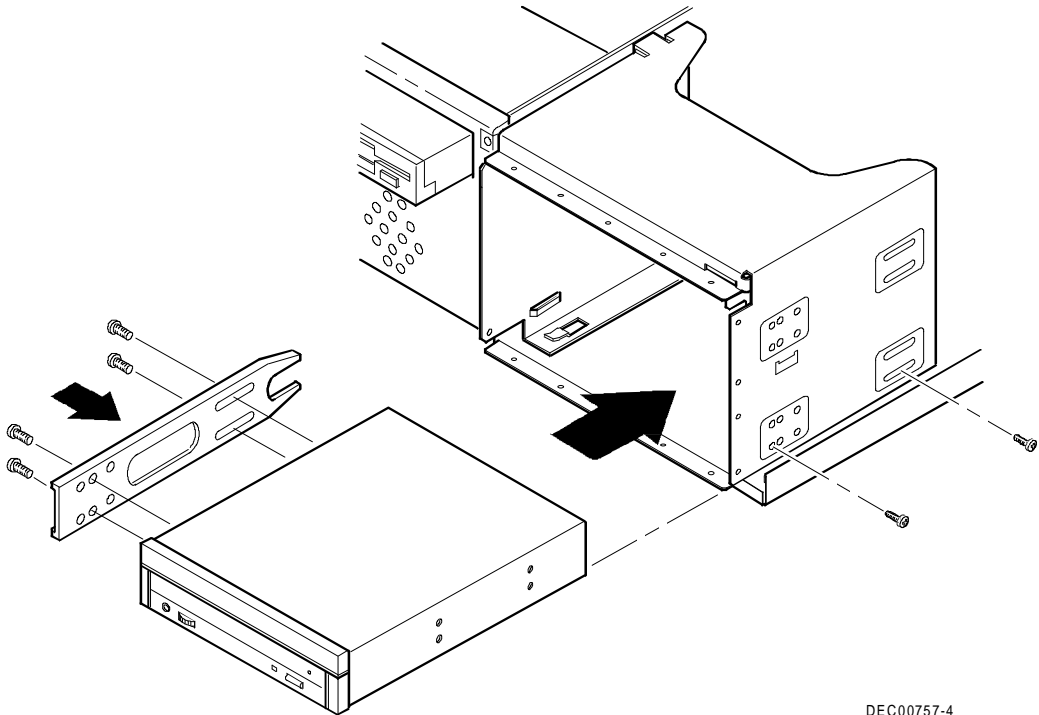
**NOTE:** Refer to the manufacturer's instructions for your device to determine if switches or jumper settings need to be set or installed on the device. Set all switch and jumper settings accordingly.

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Remove filler panels from front bezel.
5. Remove drive rail from inside chassis.

## Adding Mass Storage Devices

6. Using supplied drive rail and mounting screws, install 5¼-inch device into appropriate device bay.
7. Connect power and data cables to 5¼-inch device.

*Refer to "Connecting Diskette and IDE Devices" later in this chapter.*



DEC00757-4

**Figure 7-3. Installing a 5¼-Inch Device (Venturis FX)**

## Installing a 3½-Inch Device into a Front Device Bay (Venturis FXs)

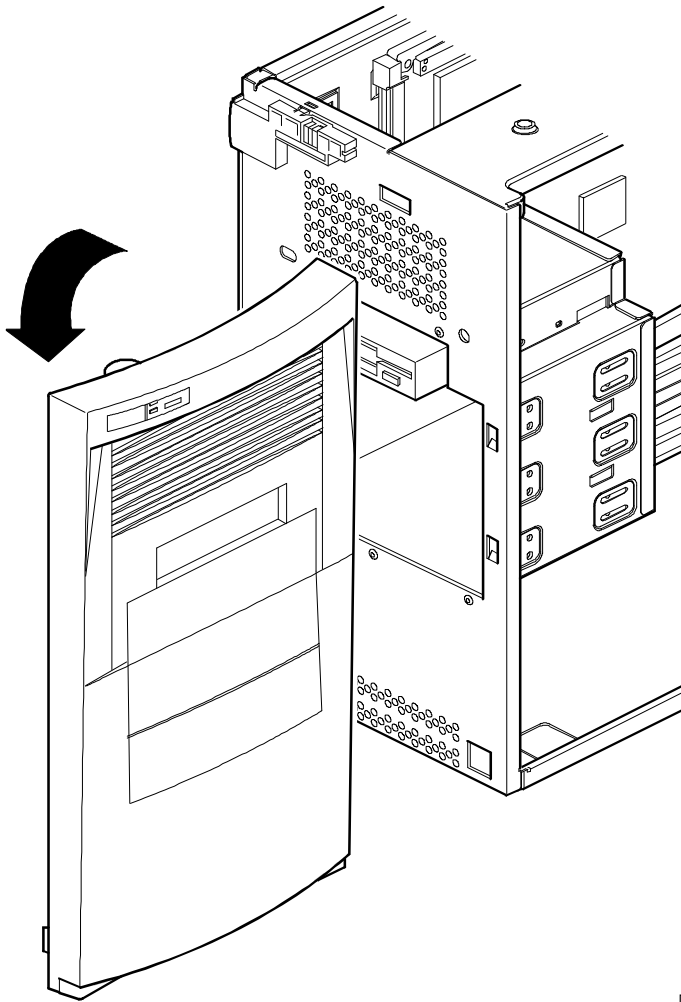
The following procedures describe how to install 3½-inch device into a front-access device bay.



**NOTE:** Refer to the manufacturer's instructions for your device to determine if switches or jumper settings need to be set or installed on the device. Set all switch and jumper settings accordingly.

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Remove front bezel.

## Adding Mass Storage Devices

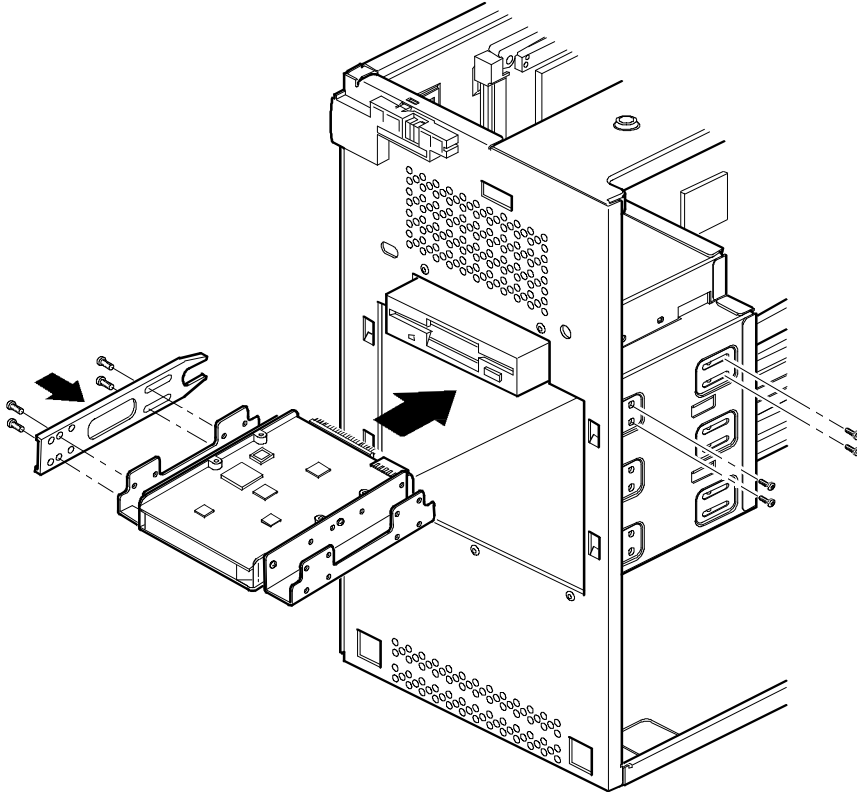


DEC00758-2

**Figure 7-4. Removing the Front Bezel (Venturis FXs)**



5. Install brackets onto 3½-inch device (see Figure 7-1).
6. Carefully slide 3½-inch device into device bay.  
Secure device using supplied mounting screws.



DEC00758-5

**Figure 7-5. Installing a 3½-Inch Device (Venturis FXs)**

7. Connect power and data cables to 3½-inch device.  
*Refer to "Connecting Diskette and IDE Devices" later in this chapter.*

## Installing a 5¼-Inch Device Into a Front Device Bay (Venturis FXs)

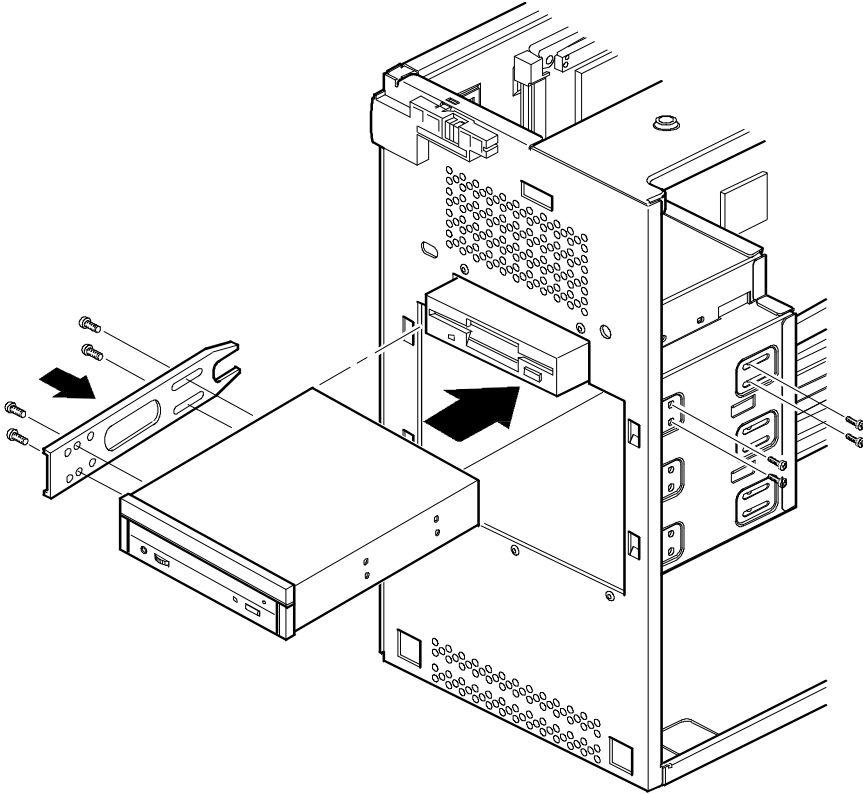
The following procedures describe how to install 5¼-inch device into a front-access device bay.



**NOTE:** Refer to the manufacturer's instructions for your device to determine if switches or jumper settings need to be set or installed on the device. Set all switch and jumper settings accordingly.

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover
4. Remove front bezel (see Figure 7-4).
5. Remove filler panels from front bezel.

6. Remove drive rail from inside chassis.
7. Using supplied drive rail and mounting screws, install 5¼-inch device into appropriate device bay.



DEC00758-4

**Figure 7-6. Installing 5¼-Inch Device (Venturis FXs)**

8. Connect power and data cables to 5¼-inch device.  
*Refer to "Connecting Diskette and IDE Devices" later in this chapter.*

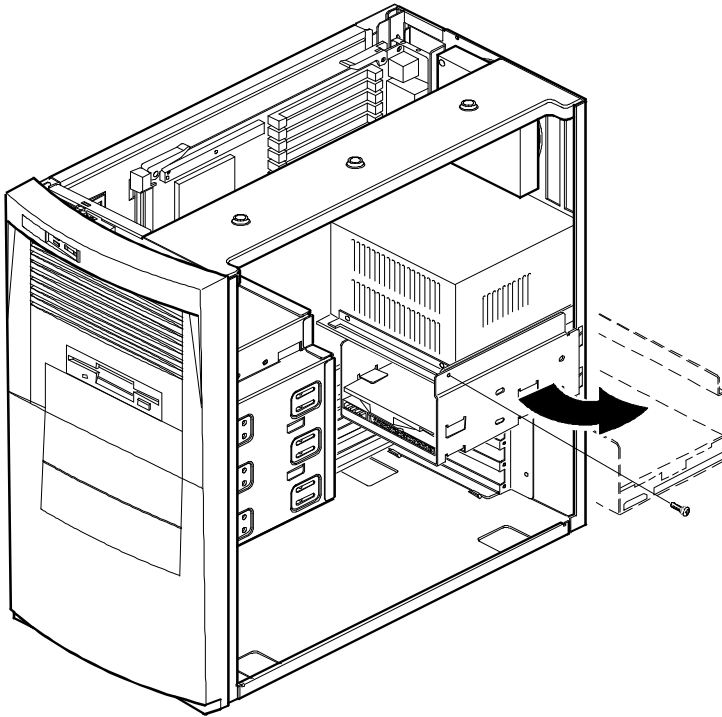
## Installing a 3½-Inch Device into the Internal Device Bay (Venturis FXs)

The following procedures describe how to install a low profile, 1-inch high, 3½-inch mass storage device into the Venturis FXs internal device bay.



**NOTE:** Refer to the manufacturer's instructions for your mass storage device to determine if switches or jumper settings need to be set or installed on the device. Set all switch or jumper settings accordingly.

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Disconnect data and power cables from installed hard disk drive.  
*Refer to "Connecting Diskette and IDE Devices" later in this chapter.*
5. Remove screw securing device bay to chassis.
6. Swing device bay away from chassis to gain access to upper bay.

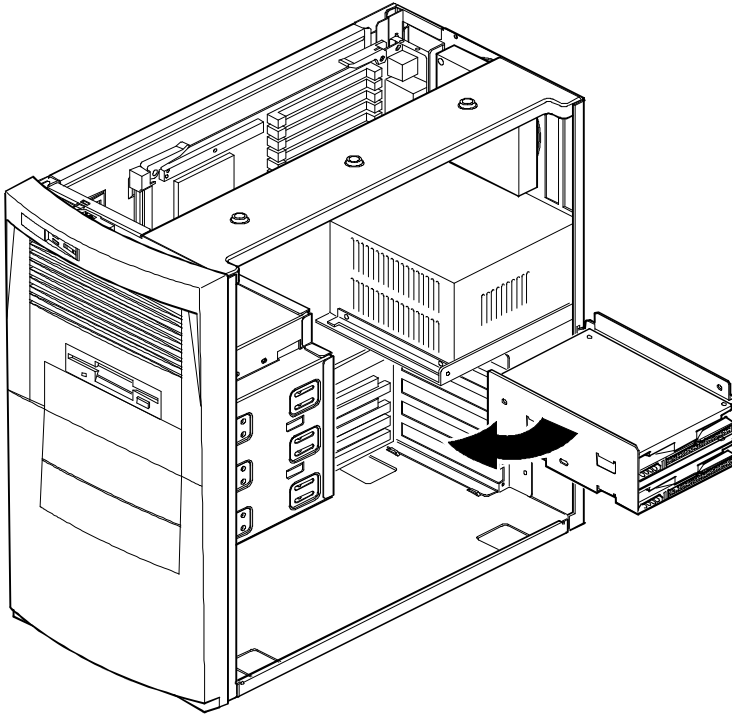


DEC00759-2

**Figure 7-7. Accessing the Internal 3½-Inch Device Bay (Venturis FXs)**

## Adding Mass Storage Devices

7. Attach 3½-inch device to internal 3½-inch device bay.  
Secure device using supplied mounting screws.



DEC00759-3

**Figure 7-8. Attaching a 3½-Inch Device to the Internal 3½-inch Device Bay (Venturis FXs)**

8. Secure internal 3½-inch device bay to chassis using screw removed in step 5.
9. Connect power and data cables.

*Refer to "Connecting Diskette and IDE Devices" later in this chapter.*

## Connecting Diskette and IDE Devices (Venturis FX)

To connect diskette and IDE devices, perform the following:

1. Connect supplied ribbon cable to appropriate device as shown in figures 7-9 and 7-10.



**NOTE:** If only one IDE device is installed, make sure you use the ribbon cable connector furthest from the main logic board connector.

Make sure cable is connected with correct orientation. Most cables and sockets are keyed so you cannot connect them backwards. If your cable or device is not keyed, you must connect pin 1 of cable to pin 1 of device's socket.

Pin 1 of cable is on edge with colored stripe. Pin 1 of device's socket should be marked with a number or symbol at one end of socket or with a number or symbol printed on circuit board near one end of socket. If necessary, refer to the device's documentation for pin 1 orientation.

2. Connect appropriate power cable to device.
3. Replace outside cover.
4. Connect external devices and restore power.
5. Run BIOS Setup utility to configure computer.

*Refer to Chapter 2, "Configuring Your Computer Using BIOS Setup."*

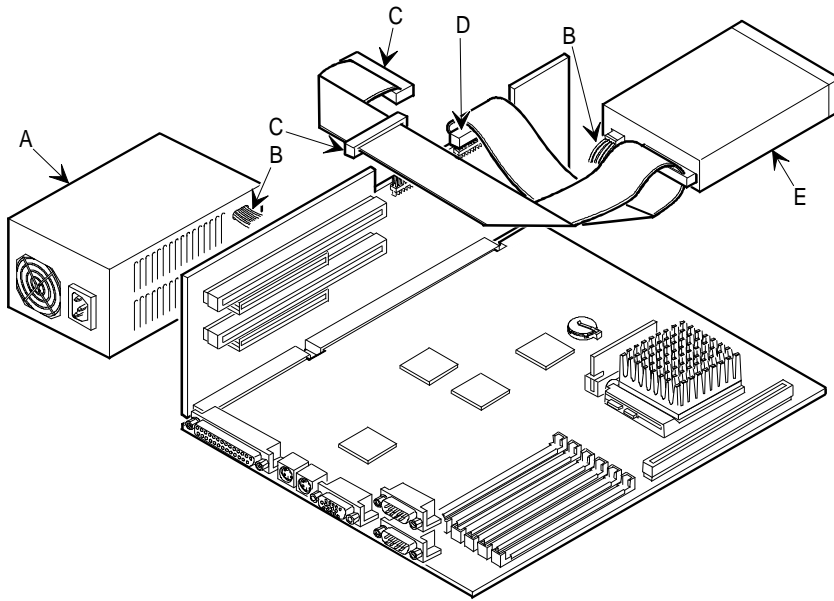
Adding Mass Storage Devices

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<b>Figure Legend</b>	<b>Diskette Drive Component</b>
A	Power supply
B	Power connection
C	Diskette drive connections
D	Backplane diskette drive connection
E	Diskette drive

---



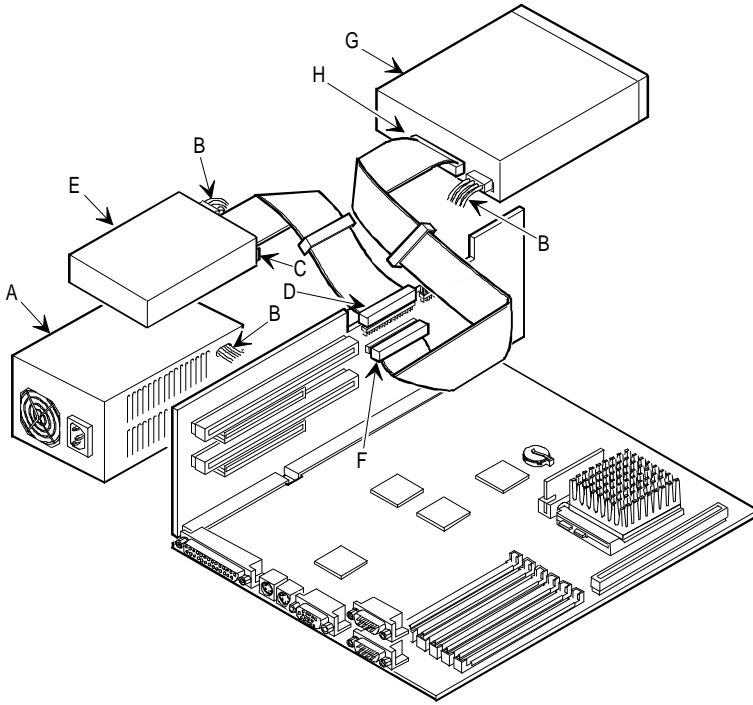


DEC00761-2

**Figure 7-9. Diskette Drive Data Cable Connections (Venturis FX)**

## Adding Mass Storage Devices

<b>Figure Legend</b>	<b>IDE Drive Component</b>
A	Power supply
B	Power connections
C	Primary IDE hard disk drive connection
D	Backplane IDE drive connection (primary)
E	Primary IDE hard disk drive
F	Backplane IDE drive connection (secondary)
G	Optional CD-ROM drive
H	Secondary IDE hard disk drive connection



DEC00762-2

**Figure 7-10. IDE Drive Data Cable Connections (Venturis FX)**

## Connecting Diskette and IDE Devices (Venturis FXs)

To connect a diskette or IDE device, perform the following:

1. Connect supplied ribbon cable to device as shown in Figure 7-11.

Make sure cable is connected with correct orientation. Most cables and sockets are keyed so you cannot connect them backwards. If your cable or device is not keyed, you must connect pin 1 of cable to pin 1 of device's socket.

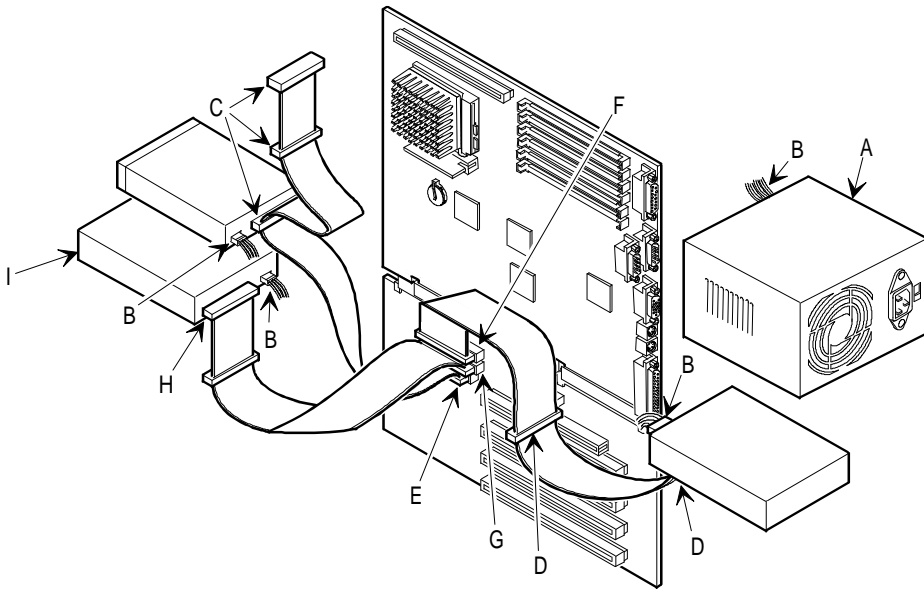
Pin 1 of cable is on edge with colored stripe. Pin 1 of device's socket should be marked with a number or symbol at one end of socket or with a number or symbol printed on circuit board near one end of socket. If necessary, refer to the device's documentation for pin 1 orientation.

2. Connect a power cable to device.
3. Replace outside cover.
4. Connect external devices and restore power.
5. Run BIOS Setup utility to configure computer.

*Refer to Chapter 2, "Configuring Your Computer Using BIOS Setup."*

<b>Figure Legend</b>	<b>Component</b>
A	Power supply
B	Power connections
C	Diskette drive connections
D	IDE drive connections
E	Backplane diskette drive connection
F	Backplane IDE drive connection (primary)
G	Backplane IDE drive connection (secondary)
H	Optional CD ROM drive connection (standard on the Venturis FXsm)
I	Optional CD-ROM (standard on the Venturis FXsm)

## Adding Mass Storage Devices



DEC00763-2

**Figure 7-11. Diskette and IDE Devices Data Cable Connections (Venturis FXs)**

# 8

## Replacements and Upgrades

### Introduction

This chapter provides detailed information on replacing your computer's battery and upgrading to a higher-performance CPU.

### Replacing the Lithium Battery

Your computer comes with a Lithium 3 V dc wafer-style battery. If your computer ever fails to retain the correct date, time, or configuration settings when it is turned on, you need to replace the installed device.

To replace the Lithium battery, perform the following:

1. Record computer configuration settings using the BIOS Setup utility.
2. Turn off your computer and monitor.
3. Disconnect external devices, ac power, and monitor power.
4. Remove outside cover.

5. Carefully lift up on retaining clip and remove old battery.



**WARNING:** There is a danger of battery explosion if a lithium battery is incorrectly replaced. To prevent damage to your computer, be sure the + side faces up when installing a new battery. Also, be sure you replace the battery with either a Digital (P/N 12-41474-05), Toshiba (P/N CR20302), or equivalent 3 V dc lithium battery.

Depending on your locality, your computer's battery might be considered hazardous waste. Make sure you follow any state or local statute to properly dispose of the old battery.

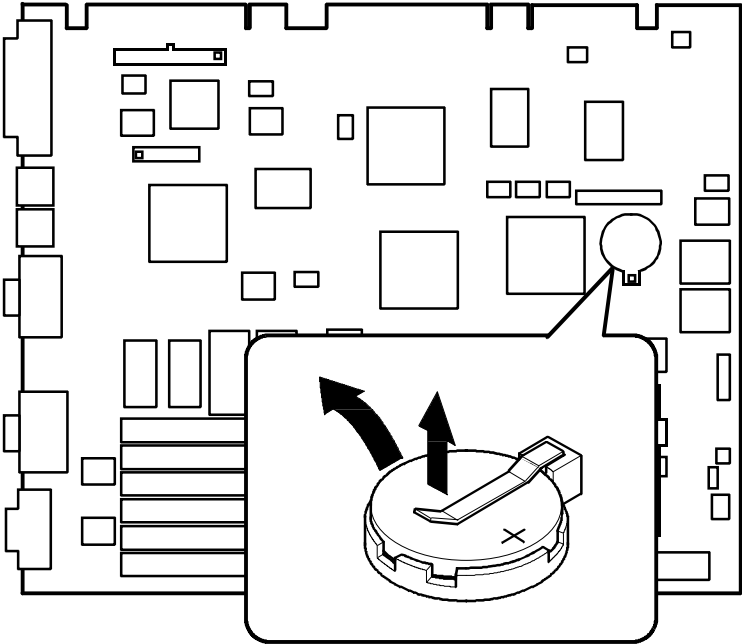
6. Install new battery.

When installing new battery, make sure "+" side faces up.

7. Replace outside cover.
8. Connect external devices and restore power.
9. Run BIOS Setup utility to reconfigure computer using recorded configuration settings from step 1.

*Refer to Chapter 2, "Configuring Your Computer Using BIOS Setup".*





DEC00752-8

**Figure 8-1. Replacing the Battery**

## Installing a Higher Performance CPU

Your computer comes with an Intel 54C series Pentium processor installed in a 321-pin PGA ZIF socket. Contact your Digital sales representative or reseller for future processor upgrade availability and ordering information for your computer.

To install a higher performance CPU:

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Lift up on lever to release old CPU.  
Remove old CPU.
5. Install new CPU.

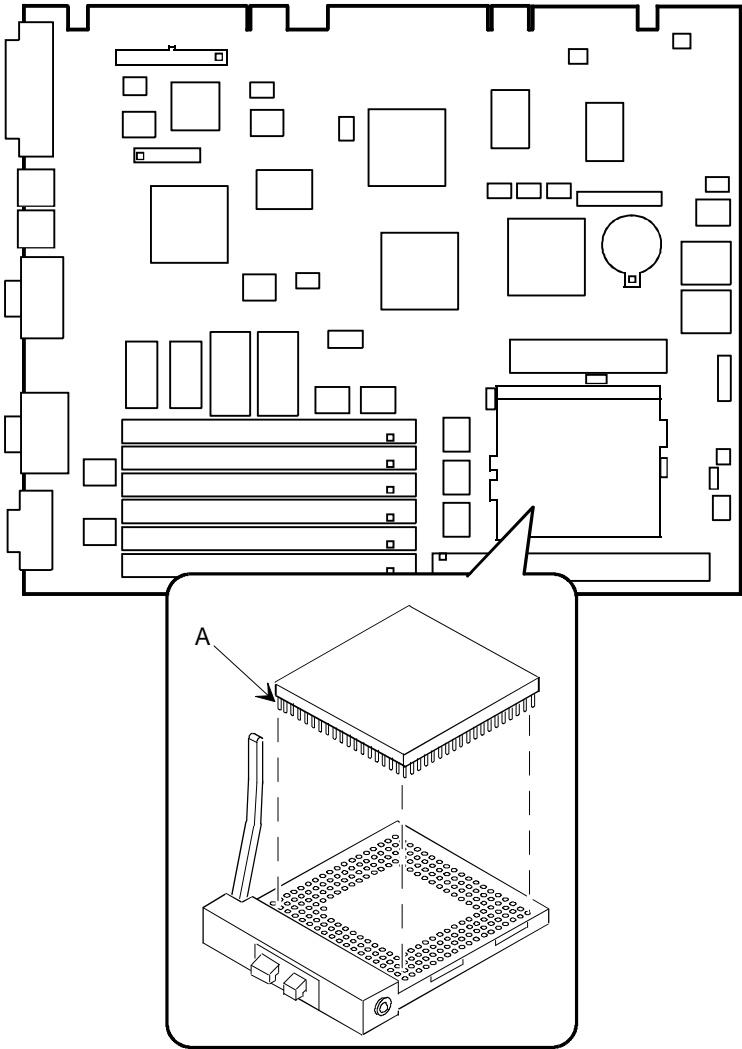


**NOTE:** Some CPUs require a VRE module to operate correctly. Contact your computer sales representative for more information.

Make sure pin 1 on CPU is aligned with pin 1 on ZIF socket (A, Figure 8-2).

6. Return release lever to its original position and then set all appropriate CPU jumpers.

*Refer to the label attached to the inside of your computer.*

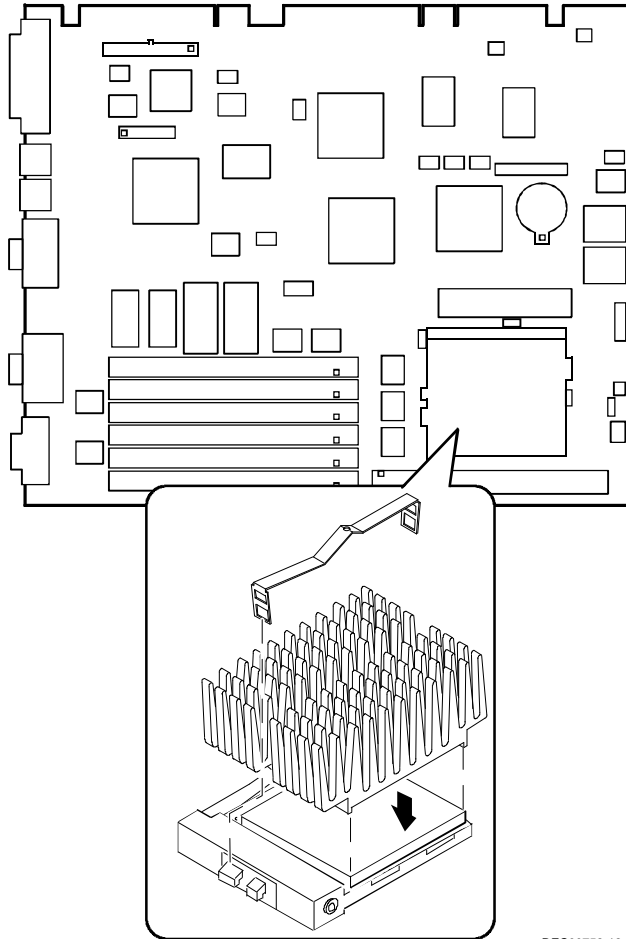


DEC00752-9

**Figure 8-2. Installing a Higher Performance CPU**

## Replacements and Upgrades

7. Install heat sink onto the CPU as shown in figure 8-3.
8. Replace outside cover.
9. Connect external devices and restore power.



DEC00752-12

**Figure 8-3. Installing a CPU Heat Sink**

## Installing a CPU Voltage Regulator Module (VRM)

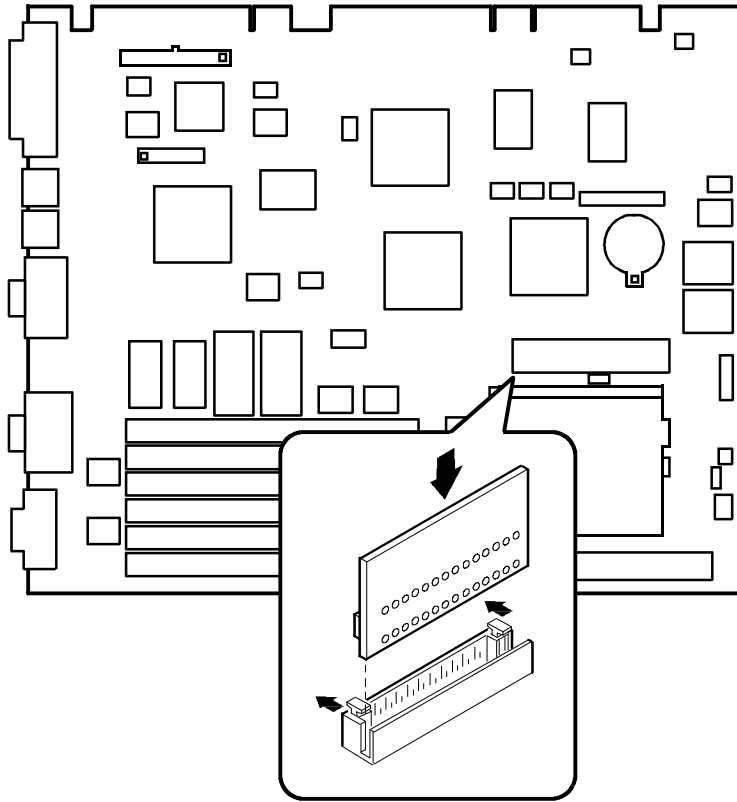
If your Venturis FX or FXs computer came with a 90 MHz or 100 MHz CPU, it also came with a shunt installed. If you want to upgrade your CPU to 120 MHz or 133 MHz, you must remove the shunt and replace it with an industry-standard VRM.

To install an industry-standard VRM:

1. Turn off your computer and monitor.
2. Disconnect external devices, ac power, and monitor power.
3. Remove outside cover.
4. Carefully remove shunt.
5. Install VRM voltage regulator.

Make sure socket on voltage regulator is aligned with pins on main logic board connector.

6. Replace outside cover.
7. Connect external devices and restore power.



DEC00752-13

**Figure 8-4. Installing a VRM**

# A

## Technical Specifications

### Introduction

This appendix provides information about the technical characteristics of the Venturis FX and FXs computers.

- Computer specifications
- ISA expansion slots
- Power supply and input power
- Nominal current requirements
- Power cord requirements
- Main logic board jumpers

## Computer Specifications

The following sections list the Venturis FX and FXs computer performance, dimensions, and environmental specifications by model number.

### Venturis FXe Features

Feature	Specification
Secondary cache	No cache installed 256 KB or 512 KB pipelined-burst module optional
Internal cache	16 KB
Video memory	1 MB standard

### Venturis FXe Performance Specifications

Attributes	Specification
ISA clock	7.5/8.33 MHz
Data I/O	
ISA	8-bit and 16-bit
PCI	32-bit
Main logic board	72-pin, EDO memory
DRAM	8 MB standard (expandable up to 128 MB, using 32 MB SIMMs)
System BIOS	128 KB FLASH ROM
Video BIOS	32 KB included in the second 128 KB Flash ROM



## Venturis FX and FXs Features

<b>Feature</b>	<b>Specification</b>
Secondary cache	256 KB pipelined-burst module standard on most Venturis FX and FXs computers 512 KB pipelined-burst module optional
Internal cache	16 KB
Video memory	1 MB standard, upgradable to 2 MB

## Venturis FX and FXs Performance Specifications

<b>Attributes</b>	<b>Specification</b>
ISA clock	7.5/8.33 MHz
Data I/O	
ISA	8-bit and 16-bit
PCI	32-bit
Main logic board	72-pin, EDO memory
DRAM	8 MB or 16 MB standard (expandable up to 192 MB, using 32 MB SIMMs)
System BIOS	128 KB FLASH ROM
Video BIOS	32 KB included in the second 128 KB Flash ROM

## Venturis FXn Features

<b>Feature</b>	<b>Specification</b>
Secondary cache	256 KB pipelined-burst module standard 512 KB pipelined-burst module optional
Internal cache	16 KB
Video memory	1 MB standard, upgradable to 2 MB
Network	Single-chip controller for PCI bus Supports 10Base-T connections

## Venturis FXn Performance Specifications

<b>Attributes</b>	<b>Specification</b>
ISA clock	7.5/8.33 MHz
Data I/O	
ISA	8-bit and 16-bit
PCI	32-bit
Main logic board	72-pin, EDO memory
DRAM	8 MB or 16 MB standard (expandable up to 192 MB, using 32 MB SIMMs)
System BIOS	128 KB FLASH ROM
Video BIOS	32 KB included in the second 128 KB Flash ROM

## Venturis FXsm Features

<b>Feature</b>	<b>Specification</b>
Secondary cache	256 KB pipelined-burst module standard 512 KB pipelined-burst module optional
Internal cache	16 KB
Video memory	2 MB standard
Audio	ESS single-chip controller with 16-bit stereo audio and 20-voice FM music synthesizer
Spatializer	3-D stereo sound

## Venturis FXsm Performance Specifications

<b>Attributes</b>	<b>Specification</b>
ISA clock	7.5/8.33 MHz
Data I/O	
ISA	8-bit and 16-bit
PCI	32-bit
Main logic board	72-pin, EDO memory
DRAM	8 MB or 16 MB standard (expandable up to 192 MB, using 32 MB SIMMs)
System BIOS	128 KB FLASH ROM
Video BIOS	32 KB included in the second 128 KB Flash ROM

## Computer Dimensions (Venturis FX)

<b>Dimension</b>	<b>Specification</b>
Width	419.1 mm (16.5 in.)
Length	444.5 mm (17.5 in.)
Height	105.7 mm (4.2 in.)
Weight	14.1 kg (31.2 lb)

## Computer Dimensions (Venturis FXs)

<b>Dimension</b>	<b>Specification</b>
Width	215.9 mm (8.5 in.)
Depth	444.5 mm (17.5 in.)
Height	406.4 mm (16.0 in.)
Weight	15.2 kg (33.6 lb)

## Venturis FX and FXs Environmental Specifications

Attributes	Specification
Operating temperature	10°C to 40°C (50°F to 104°F)
Storage temperature	-20°C to 65°C (-4°F to 149°F)
Operating humidity (noncondensing)	20% to 80% relative humidity, maximum wet bulb 40°C (104°F)
Storage humidity (noncondensing)	10% to 90% relative humidity, maximum wet bulb 65°C (149°F)
Altitude	
Operating	4,176 m (12,000 ft) maximum
Nonoperating	4,876 m (16,000 ft) maximum
Shipping vibration	IAW Federal Standard 101, method 5019
Nonoperating shock	30 G, 25 ms halfsine

## ISA Expansion Slots

The maximum available +5 V dc current allowable to any ISA expansion slot depends upon the following parameters:

- Power supply capacity
- The +5 V dc requirements of the main logic board
- The +5 V dc requirements of the peripherals
- The power demands of all other slots in use

## PCI Local Bus Expansion Slots

Your computer's backplane contains two PCI local bus expansion slots. These slots support:

- 5 V dc only PCI expansion boards
- Standard power PCI expansion slots (up to 25 watts)
- Bus mastering

## Venturis FX System Input Power Requirements

Rated Voltage Range	Maximum Range	Rated Input Current @ 100 W	Operating Frequency Range
100 V ac - 120 V ac	88 V ac - 135 V ac	2.0 A	47 Hz - 63 Hz
220 V ac - 240 V ac	176 V ac - 265 V ac	1.1 A	47 Hz - 63 Hz

## Venturis FXs System Input Power Requirements

Rated Voltage Range	Maximum Range	Rated Input Current @ 200 W	Operating Frequency Range
100 V ac - 120 V ac	88 V ac - 135 V ac	2.5 A	47 Hz - 63 Hz
220 V ac - 240 V ac	176 V ac - 265 V ac	1.3 A	47 Hz - 63 Hz

## Power Supply Requirements

The power supply provides six dc voltages: +12 V dc, -12 V dc, +5 V dc, -5 V dc, 5 VSB, and +3.3 V dc. These voltages are used by the various components within the computer.

## Current Requirements

Venturis FX and FXs computers' power supplies provide the following maximum current requirements:

### Venturis FX (100 W)

- Total power 100 W maximum
  - +3.3 V 0 A min, 7.0 A max.
  - +5 V 2.0 A min, 11 A max.
- +12 V 0 A min, 3.5 A max.
- -5 V 0 A min, 0.3 A max.
- -12 V 0 A min, 0.3 A max.
- 5 VSB 0 A min, 0.02 A max.

### Venturis FXs (200 W)

- Total power 200 W maximum
  - +3.3 V 0 A min, 13.0 A max.
  - +5 V 2.0 A min, 22.0 A max.
- +12 V 0.5 A min, 6.0 A max.
- -5 V 0 A min, 0.5 A max.
- -12 V 0 A min, 0.5 A max.
- 5 VSB 0 A min, 20.0 A max.

## Power Cord Requirements



**WARNING:** Do not attempt to modify or use an external 100 V ac (Japan only) or 115 V ac power cord for 220-240 V ac input power. Modifying either power cord can cause personal injury and severe equipment damage.

The power cord used with this computer must meet the following criteria:

- UL and CSA Certified cordage rated for use at 250 V ac with a current rating that is at least 125% of the current rating of the product. In Europe, the cordage must have the <HAR> mark.
- The ac plug is terminated in a grounding-type male plug designed for use in the region. It must also have marks showing certification by an agency acceptable in the region.
- The connector at the computer end is an IEC type CEE-22 female connector.
- The maximum length is 4.5 meters (14.5 feet).



## Acoustics - Preliminary Declared Values per ISO 9296 and ISO 7779

Product	Sound Power Level $L_{WA}$ , B		Sound Pressure Level $L_{pAm}$ , dBA	
	Idle	Operate	Idle	Operate
<b>(Operator Position)</b>				
Venturis FX 575, 5100, 5120 (slimline) with:				
0 x IDE	4.9	4.9	35	35
1 x 850 MB IDE	4.9	5.1	36	38
1 x 1.7 GB IDE	4.9	5.3	36	37
1 x 2.5 GB IDE	4.9	5.2	36	38
Venturis FX 5133, 5150, 5166 (slimline) with:				
0 x IDE	5.1	5.1	40	40
1 x 850 MB IDE	5.2	5.3	40	41
1 x 1.7 GB IDE	5.2	5.4	40	40
1 x 2.5 GB IDE	5.2	5.3	40	41
Venturis FX 5xxS (tower) with:				
0 x IDE	3.8	3.8	28	28
1 x 850 MB IDE	4.1	4.7	31	38
1 x 1.7 GB IDE	4.0	4.8	29	35
1 x 2.5 GB IDE	4.2	5.0	31	38

[Current values for specific configurations are available from Digital representatives. 1 B = 10 dBA.]

## Schallemissionswerte - Vorläufige Wertangaben nach ISO 9296 und ISO 7779/DIN EN27779

Gerät	Schalleistungspegel $L_{WAd}$ , B		Schalldruckpegel $L_{pAm}$ , dBA	
	Leerlauf	Betrieb	Leerlauf	Betrieb
(Bediener position)				
Venturis FX 575, 5100, 5120 (slimline) mit:				
0 x IDE	4.9	4.9	35	35
1 x 850 MB IDE	4.9	5.1	36	38
1 x 1.7 GB IDE	4.9	5.3	36	37
1 x 2.5 GB IDE	4.9	5.2	36	38
Venturis FX 5133, 5150, 5166 (slimline) mit:				
0 x IDE	5.1	5.1	40	40
1 x 850 MB IDE	5.2	5.3	40	41
1 x 1.7 GB IDE	5.2	5.4	40	40
1 x 2.5 GB IDE	5.2	5.3	40	41
Venturis FX 5xxS (tower) mit:				
0 x IDE	3.8	3.8	28	28
1 x 850 MB IDE	4.1	4.7	31	38
1 x 1.7 GB IDE	4.0	4.8	29	35
1 x 2.5 GB IDE	4.2	5.0	31	38

[Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment Vertretungen erhältlich.  
1 B = 10 dBA.]

# B

## Device Mapping

### Introduction

This appendix provides a series of tables listing mapping and address information related to computer memory and various main logic board devices (keyboard controller, interrupt controller, DMA controller, etc.).

Your computer's memory and address locations are allocated at the factory to operate within a standard PC environment. However, due to the number of optional devices and/or expansion boards that are available, sometimes memory and address locations need to be changed. For example, some network expansion boards require a specific memory location. If that location is already allocated, a memory conflict results and the expansion board will not operate as expected. Note that some memory, I/O and interrupt locations can be changed using the BIOS Setup utility.

*Refer to Chapter 2, "Configuring Your Computer Using BIOS Setup," for additional information.*



**CAUTION:** Before changing any memory or address location, refer to the documentation supplied with the optional device, expansion board, or software application and make sure adequate information is available. If not, contact the option or software manufacturer for further information.

## CPU Memory Address Map (Full Range)

<b>Range</b>	<b>Function</b>	<b>Size</b>
0 to 9FFFFh	Base memory	640 KB
A0000h to BFFFFh	Video RAM	128 KB
C0000h to C7FFFh	VGA BIOS	32 KB
C8000h to DFFFFh	BIOS extension ROM (AT bus used)	96 KB
E0000h to FFFFFh	PnP BIOS/APM BIOS	128 KB
100000h to BFFFFFFh	Extended memory	191 MB

## I/O Address Map

Range (hexadecimal)	Function
000 - 00F	DMA controller one
020 - 021	Interrupt controller one
022	Index register (Sis5513)
023	Data register (Sis5513)
040 - 043	Interval timer
060 - 06F	Keyboard controller
070 - 07F	Real-Time Clock (RTC), NMI
080 - 08F	DMA page register
0A0 - 0A1	Interrupt controller two
0C0 - 0CF	DMA controller two
0F0	Clear math co-processor busy
0F1	Reset math co-processor
0F8 - 0FF	Math co-processor
170 - 177	Secondary IDE controller
1F0 - 1F7	Primary IDE controller
201	Joystick (Venturis FXsm only)
220 - 22F	Audio
278 - 27A	LPT2
2E8 - 2EF	COM4

*continued*

## Device Mapping

<b>Range (hexadecimal)</b>	<b>Function</b>
2F8 - 2FF	COM2
330 - 331	MIDI MPU
378 - 37A	LPT1
388 - 38B	Audio, FM music synthesizer
3BC - 3BE	LPT3
3E8 - 3EF	COM3
3F0 - 3F7	Diskette (floppy disk) controller
3F6 - 3F7	Primary/secondary IDE controller (alt status, device address)
3F8 - 3FF	COM1
4D0	Edge/level control register - INTCNTRL1
4D1	Edge/level control register - INTCNTRL2
CF8 - CFF	PCI configure space control register
CC00	Programming chip select

## Computer Interrupt Levels

<b>Interrupt Number</b>	<b>Interrupt Source</b>
IRQ0	Timer tick
IRQ1	Keyboard controller
IRQ2	Cascade interrupt
IRQ3	COM2, COM4, if enabled
IRQ4	COM1, COM3, if enabled
IRQ5	Audio
IRQ6	Diskette (floppy disk) drive, if enabled
IRQ7	LPT1, LPT3, if enabled
IRQ8	Real Time Clock (RTC)
IRQ9	Video
IRQ10	Reserved
IRQ11	Network
IRQ12	Mouse interrupt, if enabled
IRQ13	Math co-processor
IRQ14	IDE primary, if enabled
IRQ15	IDE secondary, if enabled

## DMA Channel Assignment

Channel	Controller	Function
0	1	Refresh
1	1	Audio
2	1	Diskette (floppy disk) controller, if enabled
3	1	ECP
4	2	Cascade DMA
5	2	ECP or not used
6	2	Not used
7	2	Not used



# C

## Video Output Information

<b>Resolution Mode</b>	<b>Horizontal Freq (kHz)</b>	<b>Vertical Freq (Hz)</b>	<b>Dot Clock (MHz)</b>	<b>Video Memory Size</b>
640 x 480 x 8	31.5	60 (NI)	25.175	1 MB/2 MB
640 x 480 x 8	37.9	72 (NI)	31.500	1 MB/2 MB
640 x 480 x 8	37.5	75 (NI)	31.500	1 MB/2 MB
640 x 480 x 8	45.2	85 (NI)	36.000	1 MB/2 MB
640 x 480 x 15	31.5	60 (NI)	25.175	1 MB/2 MB
640 x 480 x 15	37.9	72 (NI)	31.500	1 MB/2 MB
640 x 480 x 15	37.5	75 (NI)	31.500	1 MB/2 MB
640 x 480 x 15	45	85 (NI)	36.000	1 MB/2 MB
640 x 480 x 16	31.5	60 (NI)	25.175	1 MB/2 MB
640 x 480 x 16	37.9	72 (NI)	31.500	1 MB/2 MB
640 x 480 x 16	37.5	75 (NI)	31.500	1 MB/2 MB
640 x 480 x 16	45	85 (NI)	36.000	1 MB/2 MB
640 x 480 x 24	31.5	60 (NI)	75.000	1 MB/2 MB
640 x 480 x 32	31.5	60 (NI)	25.175	2 MB
640 x 480 x 32	37.9	72 (NI)	31.500	2 MB
640 x 480 x 32	37.5	75 (NI)	31.500	2 MB
640 x 480 x 32	45.2	85 (NI)	36.000	2 MB

NI = Noninterlaced

## Video Output Information

<b>Resolution Mode</b>	<b>Horizontal Freq (kHz)</b>	<b>Vertical Freq (Hz)</b>	<b>Dot Clock (MHz)</b>	<b>Video Memory Size</b>
800 x 600	37.8	60 (NI)	40.000	2 MB
800 x 600	48.2	72 (NI)	50.000	2 MB
800 x 600	46.8	75 (NI)	49.500	2 MB
800 x 600	53.5	85 (NI)	56.600	2 MB
800 x 600 x 4	37.8	60 (NI)	40.000	1 MB/2 MB
800 x 600 x 4	48.2	70 (NI)	50.000	1 MB/2 MB
800 x 600 x 4	47.9	75 (NI)	49.800	1 MB/2 MB
800 x 600 x 4	53.5	85 (NI)	56.600	1 MB/2 MB
800 x 600 x 8	37.9	60 (NI)	40.000	1 MB/2 MB
800 x 600 x 8	48.1	72 (NI)	50.000	1 MB/2 MB
800 x 600 x 8	46.9	75 (NI)	49.500	1 MB/2 MB
800 x 600 x 8	53.5	85 (NI)	56.600	1 MB/2 MB
800 x 600 x 15	37.9	60 (NI)	40.000	1 MB/2 MB
800 x 600 x 15	48.1	72 (NI)	50.000	1 MB/2 MB
800 x 600 x 15	46.8	75 (NI)	49.500	1 MB/2 MB
800 x 600 x 15	53.5	85 (NI)	56.500	1 MB/2 MB
800 x 600 x 16	37.9	60 (NI)	40.000	1 MB/2 MB
800 x 600 x 16	48.1	72 (NI)	50.000	1 MB/2 MB
800 x 600 x 16	46.8	75 (NI)	69.500	1 MB/2 MB
800 x 600 x 16	53.5	85 (NI)	56.500	1 MB/2 MB

NI = Noninterlaced

## Video Output Information

<b>Resolution Mode</b>	<b>Horizontal Freq (kHz)</b>	<b>Vertical Freq (Hz)</b>	<b>Dot Clock (MHz)</b>	<b>Video Memory Size</b>
1024 x 768 x 4	35.5	43 (I)	44.900	1 MB/2 MB
1024 x 768 x 4	48.4	60 (NI)	65.000	1 MB/2 MB
1024 x 768 x 4	56.5	70 (NI)	75.000	1 MB/2 MB
1024 x 768 x 4	60.9	75 (NI)	78.750	1 MB/2 MB
1024 x 768 x 4	68.7	85 (NI)	94.500	1 MB/2 MB
1024 x 768 x 8	35.5	43 (I)	44.900	1 MB/2 MB
1024 x 768 x 8	48.4	60 (NI)	65.000	1 MB/2 MB
1024 x 768 x 8	56.5	70 (NI)	75.000	1 MB/2 MB
1024 x 768 x 8	60.9	75 (NI)	78.750	1 MB/2 MB
1024 x 768 x 8	68.8	85 (NI)	94.500	1 MB/2 MB
1024 x 768 x 15	35.5	43 (I)	44.900	2 MB
1024 x 768 x 15	48.9	60 (NI)	65.000	2 MB
1024 x 768 x 15	56.5	70 (NI)	75.000	2 MB
1024 x 768 x 15	60.2	75 (NI)	78.750	2 MB
1024 x 768 x 15	68.7	85 (NI)	94.500	2 MB
1024 x 768 x 16	35.5	43 (I)	44.900	2 MB
1024 x 768 x 16	48.9	60 (NI)	65.000	2 MB
1024 x 768 x 16	56.5	70 (NI)	75.000	2 MB
1024 x 768 x 16	60.2	75 (NI)	78.750	2 MB
1024 x 768 x 16	68.9	85 (NI)	94.500	2 MB

NI = Noninterlaced

I = Interlaced

## Video Output Information

<b>Resolution Mode</b>	<b>Horizontal Freq (kHz)</b>	<b>Vertical Freq (Hz)</b>	<b>Dot Clock (MHz)</b>	<b>Video Memory Size</b>
1152 x 864 x 8	55.0	60 (NI)	80.000	1 MB/2 MB
1280 x1024 x 4	46.44	43 (I)	78.750	2 MB
1280 x1024 x 4	64	60 (NI)	108.000	2 MB
1280 x1024 x 8	46.4	43 (I)	78.750	2 MB
1280 x1024 x 8	64	60 (NI)	108.000	2 MB
1280 x1024 x 8	77.6	72 (NI)	130.000	2 MB
1600 x 1200 x 8	62.3	48 (I)	135.000	2 MB

NI = Noninterlaced

I = Interlaced

# Glossary

## **address**

A specific location or range of locations in your computer's memory or in a port (such as a parallel or serial port). Memory addresses specify the location of information, while I/O addresses specify the location of a port used by a particular component of your computer.

## **application**

A program or set of programs that operate in conjunction with an operating system, also called "application software". Categories of application software include word processors, databases, spreadsheets, and telecommunications software. Specific examples of application software include WordPerfect, Lotus 1-2-3, and Procomm Plus.

## **AUTOEXEC.BAT**

A special-purpose batch file. Each time you turn on or reboot your computer, MS-DOS searches for the AUTOEXEC.BAT file and executes the commands in that file. (If MS-DOS cannot find an AUTOEXEC.BAT file, the computer might not boot properly or operate correctly.)

## **base memory**

Memory accessible to MS-DOS, up to a maximum of 640 KB; also called “conventional memory”. See also expanded memory (EMS) and extended memory (XMS).

## **Basic Input/Output System**

Abbreviated as BIOS and pronounced “by-oss”. The BIOS enables your computer to control major input/output devices such as the keyboard and disk drives.

## **batch file**

A defined series of commands saved in a file, which can then be executed as a unit in order to save time and/or keystrokes. (MS-DOS batch files have the extension .BAT. Batch files created for other operating systems, such as Windows, might have other extensions.)

## **baud**

A unit of speed in data transmission, as one bit per second for binary signals. See also bits-per-second (bps).

## **bit**

The smallest unit of electronically stored information, represented by the binary digits 0 or 1. (See also byte.)

## **bits per second**

Abbreviated as bps. The number of binary digits transmitted by an electronic device (such as a modem) in one second. Also see baud and bit.

**board**

A device containing electronic circuitry and microprocessors. Usually used in connection with a modifying word, as follows:

- main logic board - The primary electronic component of your computer.
- expansion board - A board which enhances your computer's abilities in some way
- video board - A board which enables your computer to display information on a monitor

**booting**

The process of self-testing and computer configuration that completes each time your computer is turned on (a "hard boot") or restarted (a "soft boot" or "reboot") by pressing the reset button or the [Ctrl]-[Alt]-[Del] key combination. This might include a memory test, loading of device drivers via CONFIG.SYS, and execution of the AUTOEXEC.BAT file.

**byte**

The amount of storage space used to represent one character (such as a letter or number). One byte contains eight bits. The following table describes other commonly-used units of electronic storage space. These units are typically used to describe amounts of available memory.

Kilobit (Kb)	1,024 bits
Kilobyte (KB)	1,024 bytes
Megabit (Mb)	1,048,576 bits
Megabyte (MB)	1,048,576 bytes
Gigabyte (GB)	1,073,741,824 bytes

### **cache memory**

A block of reserved memory that improves computer performance by minimizing the number of CPU memory accesses. The computer achieves this by storing recently used data or instructions in reserved memory, where it can be retrieved more quickly.

### **CD-ROM**

Compact Disk-Read Only Memory. The CD-ROM drive and CD-ROM disk comprise an integral part of a multimedia computer system. The disk stores a very large amount of audio, video, graphic and/or encyclopedic information that is read by the drive for use in a computer application. Because the disk is read only, you cannot write to the disk from your computer's hard drive, floppy drive, or from your computer's memory.

### **central processing unit**

Abbreviated as CPU. A computer chip; specifically, the microprocessor that forms the heart of your computer. Examples include Intel's i486 and Pentium CPUs.

### **ClientWORKS**

ClientWORKS is the family of client management and networking tools that Digital supports on its entire line of desktop personal computers. The Client Management feature provides computer users with an easy method to keep track of their components. See Desktop Management Interface and LiveLINK.

### **CMOS**

A type of memory that uses very little power. CMOS memory is often used to store information such as the time and date for your computer's internal clock.



**COAST**

Cache on a stick (module).

**command line**

The basic prompt presented by an operating system such as MS-DOS (for example, C:\>), from which you can execute operating system commands or run application software. An alternative to a graphical user interface.

**CONFIG.SYS**

MS-DOS uses the CONFIG.SYS file to help configure your computer to correctly operate the specific hardware and software installed in your computer. Each time you turn on or reboot your computer, MS-DOS uses the CONFIG.SYS file to identify and load device drivers needed to operate specific hardware and software.

**cursor**

A line, block, or other indicator on your monitor screen. The cursor identifies the point at which typed characters or other information will appear on the screen. (Note that while a mouse or other pointing device can often be used to move the cursor, the mouse-pointer and a normal cursor might appear in different places on your screen.)

**DDC**

Display Data Channel - a feature that queries the monitor to identify itself to the computer which then chooses the optimal refresh rate for the monitor.

**Desktop Management Interface**

The Desktop Management Interface (DMI) is a component of ClientWORKS and provides an enhanced and powerful set of utilities and software to help network administrators keep track of the installed hardware and software, either locally or on a network. See ClientWORKS and LiveLINK.

## **device driver**

A file that gives your computer specific information on operating a particular physical device (such as a CD-ROM drive or a mouse) or application software (such as a memory manager). Device drivers are usually loaded into memory each time your computer boots if they are listed in your CONFIG.SYS file.)

## **Direct Memory Access**

Abbreviated as DMA. The ability to display or deliver information from your computer's memory without making use of the microprocessor. Devices with DMA capability (for example, many sound cards) must be properly configured in order for your computer to recognize and make use of this ability.

## **DPMS**

1. Display Power Management Signaling. Technology that allows video controller circuitry to control the operating condition of a monitor, thereby decreasing the monitor's energy consumption.
2. DOS Protected Mode Services. A way for a software application to access extended memory, often by use of a specialized device driver. Examples of software that uses DPMS include certain versions of Stacker and PKZip.

## **EDO**

See Extended Data Out

### **Enhanced Parallel Port (EPP)**

An option available in your computer's BIOS which affects the way a printer attached to your parallel port communicates with your computer. If your printer supports this standard, enabling the EPP option will allow faster printing. This specification also provides a parallel port with the expansion bus ability to support up to 64 external devices, such as: disk drives, tape drives, CD-ROM drives, and other mass-storage devices.

### **expanded memory (EMS)**

Memory beyond 640 KB that can only be accessed by use of expanded memory manager software. Expanded memory can be provided by installing an expanded memory expansion board, or by using software that enables extended memory to simulate expanded memory. Some application software requires expanded memory in order to operate correctly.

### **Extended Capabilities Port (ECP)**

An option available in your computer's BIOS which affects the way a printer attached to your parallel port communicates with your computer. If your printer supports this standard, enabling the ECP option will allow faster printing.

### **Extended Data Out (EDO)**

A DRAM feature that allows for fast, main memory access timing. EDO memory is faster than Fast Page memory (which was the former industry standard) and is available in 8-MB and 16-MB SIMMs. Generally, however, EDO memory should not be mixed with standard memory.

### **extended memory (XMS)**

Memory beyond 1 MB that can only be accessed by use of extended memory manager software (such as HIMEM.SYS, included with MS-DOS and Windows). Some application software, including Windows and Windows-based software, requires extended memory in order to operate correctly. Extended memory can be added to your computer, within specified limits, by installing SIMMs.

### **firmware**

Information that is permanently stored in your computer's ROM and cannot be changed. This might consist of application software and/or configuration information about certain aspects of the computer. Your computer's BIOS (see Basic Input/Output System) is an example of firmware.

### **graphical user interface**

Abbreviated as GUI. The visual "desktop" image generated by software such as Windows, that allows you to operate your computer by using a mouse or other pointing device to manipulate icons that might represent application software, files containing data, and/or operating system commands. An alternative to a command line.

### **hardware**

Computers, printers, modems and other physical devices for managing electronically stored information.

**icon**

A symbol or picture on your monitor screen that represents a file, a software application, an operating system command, or some other form of stored information. Groups of icons might sometimes be referred to as button bars or toolbars.

**interrupt**

An event, condition, or instruction which causes your computer to temporarily stop performing a task, but does so in a way that permits the task to be resumed and completed later. For example, not using your keyboard or mouse for several minutes might cause a screen saver program to interrupt another software application. (Interrupts also occur within your computer's memory that cannot be easily detected by users.)

**IRQ**

A hardware setting which instructs your computer how to allocate memory resources between various components of the system. For example, serial ports COM1 and COM3 are often assigned to the same IRQ setting. If IRQ settings are not properly allocated to the various components of your computer (such as expansion boards), your computer might not be able to operate all of the affected components.

An IRQ setting on a given component establishes an interrupt condition for that component.

## **JPEG**

Joint Photographic Experts Group, pronounced “jay-peg” - An image-compression algorithm that can reduce a bitmapped image by a factor of 10 or more. Because of the nature of the compression, there is little or no discernible image degradation. Also see MPEG and LPB.

## **Jumper**

Jumper pins allow you to set specific computer parameters. They are set by changing the pin location of jumper blocks. A jumper block is a small, plastic-encased conductor (shorting plug) that slips over the pins. To change a jumper setting (make sure that your computer is turned **OFF**), remove the jumper from its current location with your fingers. Position the jumper over the two pins designated for the desired setting. Press the jumper evenly onto the pins; being careful not to bend the pins.

## **Kbyte**

A Kilobyte (Kbyte, KB) is a unit, usually of computer storage space, equal to 1,024 bytes. Also see byte and bit.

## **legacy**

A legacy expansion board is any ISA board that does not comply with the new Plug and Play ISA Board Specification. Legacy ISA boards must be configured using the ISA Configuration Utility (ICU).

## **LPB**

Live Play Back. This is a feature of some multimedia video playback, video adapters that allows fast-frame digital video. Also see JPEG and MPEG.

## **mapping**

The process of identifying specific addresses and locations within your computer's memory, and describing what kinds of information might be found at those locations. Sometimes referred to as device mapping or memory mapping.

## **media**

Physical objects or devices used for storing information. These might include floppy disks, hard disk drives, CD-ROM disks, and PCMCIA cards.

## **memory**

The electronic space in which information can be stored and/or processed. Types of memory include Random Access Memory (RAM), Read-Only Memory (ROM), expanded memory (EMS) and extended memory (XMS).

## **memory-resident**

A condition in which software remains loaded in your computer's memory but does not operate until and unless it is activated by the user or by another software application. For example, a virus-detection program might be memory-resident.

## **MPEG**

Motion Picture Experts Group, pronounced "em-peg" - This group of motion picture professionals established the standards for the display of animated or motion pictures on your computer. This multimedia video playback standard allows digital video compression using JPEG image compression and other encoding for video sequences. Also see JPEG and LPB.

**microprocessor**

A computer chip that processes electronic information and instructions, such as Intel's i486 or Pentium computer chips. (Note, however, that not all microprocessors are central processing units.)

**modem**

A device for transmitting electronic information from one computer to another at high speeds over telephone lines.

**multimedia**

A form of electronic information that combines pictures, sounds, and text in an integrated manner. CD-ROM hardware and software is usually required to make use of information stored in the form of multimedia.

**onboard video**

Video controller circuitry that is incorporated into a computer's main logic board, so that you do not need a separate video adapter to display information on a monitor.

**operating system**

The software that tells your computer how to manage and process electronically stored information, enables it to run application software, and controls the flow of information between various parts of your computer system. MS-DOS, OS/2, and UNIX are operating systems.



## **PCI**

Peripheral Component Interconnect - provides fast, 32-bit, I/O data transfer.

## **PeI - Picture Element, also known as Pixel**

The smallest graphic unit that can be displayed on the screen of your monitor. This unit is usually a single-colored dot; the size of the dot is determined by the dot pitch of your monitor (typically .25 mm to .42 mm)

## **port**

The physical connection between your computer and a peripheral device, such as a printer, mouse, or SCSI device.

Parallel ports, also called LPT ports, are typically used to connect your computer to a printer. Serial ports, also called COM ports, can be used to connect your computer to a variety of devices, including a mouse, a modem, and some printers. Other types of ports can include keyboard ports, mouse ports, and SCSI ports. See EPP

## **Power-On Self Test**

Abbreviated as POST. A series of diagnostic tests performed by your computer every time it is turned on (but not necessarily every time it is booted).

### **Quiet Boot**

Enables or inhibits the display of POST messages. Quiet Boot, when enabled, displays the Digital logo, instead of POST messages.

### **Random Access Memory (RAM)**

Abbreviated as RAM; also called read/write memory. The memory your computer uses to manage information and software while that information and software is in use. Information stored only in RAM is lost when your computer is turned off.

### **Read-Only Memory (ROM)**

Abbreviated as ROM. Information or software stored in ROM is permanent, cannot be altered, and remains intact when your computer is turned off. (Note that you cannot move or copy information into ROM from other areas of your computer's memory. In some cases, however, you can copy information from ROM into other areas of your computer's memory.)

### **ROM BIOS**

See Basic Input/Output System and Read-Only Memory. ROM BIOS software enables your computer to control major input/output devices such as the keyboard and disk drives.

## **SCSI device**

Hardware that communicates with your computer via a specific data-transmission technology (Small Computer System Interface). Devices that use the SCSI interface include CD-ROM drives and some hard disk drives.

## **SIMM**

A Single In-line Memory Module. SIMMs are small memory cards (sometimes called “sticks”) that can be used to increase the amount of random access memory (RAM) in your computer.

## **software**

A program or set of programs that operate in conjunction with an operating system, also called “application software”. Categories of application software include word processors, databases, spreadsheets, and telecommunications software. Specific examples of application software include Word for Windows, MS Excel, and Procomm Plus.

## **Spatializer 3-D Stereo**

This technology provides a highly effective 3-D stereo sound for your multimedia computer.

## **system utilities**

Software designed to increase your computer’s efficiency, determine whether it is operating properly, and/or correct problems that might arise as you use your computer. Some system utility software might be provided with your computer (such as a Setup program). Other utility software is available from various commercial and non-commercial sources. Examples of utility software include Stacker, PKZip, and Norton Utilities.

### **upper memory**

The area of memory between base memory (640 KB) and 1 MB. When properly configured, MS-DOS can load itself, device drivers, and memory-resident software into upper memory. While the upper memory area can be configured as expanded memory, expanded memory is not limited to the upper memory area.

### **video adapter**

Also called a video controller or video board. A board that enables your computer to display information on a monitor screen.

### **video controller**

The electronic circuitry which enables your computer to display information on a monitor screen. This might be provided on a video adapter or on the main logic board. In the latter case, it is referred to as onboard video.

### **WaveTable**

An audio (sound) synthesis device that provides life-like sound because it is based on actual recordings of real instruments. The WaveTable is usually a small adapter (daughter card) that attaches to the sound card or built-in sound circuitry on the main logic board.

### **Windows**

Software that provides a graphical user interface for use in operating your computer.

### **ZIF socket**

Zero Insertion Force socket - These sockets are provided for easy upgrade of CPUs. They require no tools for removing and replacing the CPU chip.

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