

AcerAltos 330 Series

User's Guide

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10. If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

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 - a. When the power cord or plug is damaged or frayed
 - b. If liquid has been spilled into the product
 - c. If the product has been exposed to rain or water
 - d. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.
 - e. If the product has been dropped or the cabinet has been damaged
 - f. If the product exhibits a distinct change in performance, indicating a need for service
14. Use only the proper type of power supply cord (provided in your keyboard/manual accessories box) for this unit. It should be a detachable type: UL listed/CSA certified, type SVT/SJT, rated 8A 125V minimum. Maximum length is 15 feet (4.6 meters).

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Note:

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2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/television technician for help.

Notice 1:

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Notice 2:

Shielded interface cables, if any, must be used in order to comply with the emission limits.

About this Manual

Purpose

This user's guide aims to give you the information you need to operate the system properly and tells you how to install internal components.

Manual Structure

This user's guide consists of four chapters and an appendix.

Chapter 1 System Board

Describes the system board and all its major components. It contains the system board layout, jumper settings, cache and memory configurations, and information on other internal devices.

Chapter 2 BIOS Utility

Gives information about the system BIOS and tells how to configure the system by changing the settings of the BIOS parameters.

Chapter 3 System Utilities

Contains information about system utilities that you need when you upgrade your system: the Aflash BIOS Utility and the SCSI*Select* Configuration Utility.

Chapter 4 System Housing

Describes the system housing and tells how to install basic system components into the housing. This chapter gives brief instructions accompanied by illustrations showing how to perform the described procedure.

Conventions

The following conventions are used in this manual:

Text entered by user

, , , etc.



Represents text input by the user.

Represent the actual keys that you have to press on the keyboard.

NOTE

Gives bits and pieces of additional information related to the current topic.

CAUTION

Gives precautionary measures to avoid possible hardware or software problems.

IMPORTANT

Reminds you to take specific actions relevant to the accomplishment of procedures.

Table of Contents

Chapter 1 System Board

1.1	Features	1-1
1.2	Major Components.....	1-2
1.2.1	System Board Layout	1-3
1.3	Jumpers and Connectors.....	1-4
1.3.1	Jumper and Connector Locations.....	1-4
1.3.2	Jumper Settings.....	1-5
1.3.3	Connector Functions.....	1-5
1.4	Front Panel Connectors.....	1-7
1.5	Installing Components on the System Board	1-8
1.5.1	ESD Precautions.....	1-8
1.5.2	Pre-installation Instructions.....	1-8
1.5.3	Post-installation Instructions	1-9
1.6	Installing a Pentium II Processor.....	1-10
1.7	Removing a Pentium II Processor	1-12
1.8	Memory Upgrade	1-14
1.8.1	Memory Configurations.....	1-14
1.8.2	Installing a DIMM	1-15
1.8.3	Removing a DIMM.....	1-16
1.8.4	Reconfiguring the System	1-17
1.9	Server Management Features	1-18
1.9.1	Advanced Server Manager (ASM Pro)	1-18
1.10	Error Messages	1-18
1.10.1	Software Error Messages	1-19
1.10.2	System Error Messages	1-19
1.10.3	Correcting Error Conditions.....	1-22

Chapter 2 BIOS Utility

2.1	Entering Setup	2-1
2.2	System Information.....	2-4
2.2.1	Processor.....	2-5
2.2.2	Processor Speed.....	2-5
2.2.3	Internal Cache Size.....	2-5
2.2.4	External Cache.....	2-5
2.2.5	Floppy Drive A.....	2-5
2.2.6	Floppy Drive B	2-6
2.2.7	IDE Primary Channel Master.....	2-6
2.2.8	IDE Primary Channel Slave.....	2-6
2.2.9	IDE Secondary Channel Master.....	2-6
2.2.10	IDE Secondary Channel Slave.....	2-6
2.2.11	Total Memory.....	2-7
2.2.12	Serial Port 1.....	2-7
2.2.13	Serial Port 2.....	2-7
2.2.14	Parallel Port	2-7
2.2.15	PS/2 Mouse	2-7
2.3	Product Information	2-8
2.3.1	Product Name	2-8
2.3.2	System S/N.....	2-8
2.3.3	Main Board ID.....	2-8
2.3.4	Main Board S/N.....	2-9
2.3.5	System BIOS Version	2-9
2.3.6	DMI BIOS Version.....	2-9
2.4	Disk Drives.....	2-10
2.4.1	Floppy Drives.....	2-10
2.4.2	LS-120 Drive Compatible As.....	2-11
2.4.3	IDE Drives	2-12
2.5	Onboard Peripherals.....	2-16

2.5.1	Serial Ports 1 and 2	2-16
2.5.2	Parallel Port.....	2-17
2.5.3	Onboard Device Settings.....	2-19
2.6	Power Management.....	2-21
2.6.1	Power Management Mode.....	2-21
2.6.2	Power Switch < 4 sec.	2-22
2.6.3	System Wake-up Event	2-22
2.7	Boot Options	2-23
2.7.1	Boot Sequence	2-24
2.7.2	First Hard Disk Drive.....	2-24
2.7.3	Fast Boot	2-24
2.7.4	Silent Boot	2-24
2.7.5	Num Lock After Boot.....	2-25
2.7.6	Memory Test	2-25
2.7.7	Configuration Table.....	2-25
2.8	Date and Time.....	2-26
2.8.1	Date.....	2-26
2.8.2	Time	2-27
2.9	Advanced Options.....	2-28
2.9.1	Memory/Cache Options	2-29
2.9.2	PnP/PCI Options.....	2-31
2.9.3	CPU Frequency	2-34
2.10	System Security.....	2-35
2.10.1	Setup Password	2-35
2.10.2	Power-on Password.....	2-39
2.10.3	Disk Drive Control	2-40
2.11	Load Default Settings.....	2-41
2.12	Abort Settings Change	2-41
2.13	Exit Setup	2-42

Chapter 3 System Utilities

3.1	AFlash BIOS Utility.....	3-1
3.1.1	Executing AFlash	3-2
3.1.2	Quick Way to Execute AFlash.....	3-3
3.2	SCSISelect Configuration Utility	3-4
3.2.1	Overview	3-4
3.2.2	Default Values	3-4
3.2.3	When to Use the SCSISelect Utility	3-5
3.2.4	Running the SCSISelect Utility.....	3-5
3.3	SCSISelect Utility Options.....	3-6
3.3.1	Configure/View Host Adapter Settings Menu	3-7
3.3.2	SCSI Disk Utilities.....	3-19
3.4	Configuring Multiple SCSI Controllers.....	3-21
3.5	Disk Drives Over 1 Gbyte	3-22
3.5.1	Extended Translation.....	3-22
3.5.2	The DOS 1 GByte Limit	3-22
3.5.3	When to Use Extended Translation.....	3-23
3.6	SCSI Troubleshooting Checklist.....	3-24
3.7	BIOS Startup Messages.....	3-25
3.7.1	Device connected, but not ready	3-26
3.7.2	Start unit request failed	3-27
3.7.3	Disk Drive Configuration Problems.....	3-27

Chapter 4 System Housing

4.1	Positioning the System Housing.....	4-2
4.1.1	Standalone System	4-2
4.1.2	Against a Wall	4-3
4.2	Features.....	4-4
4.2.1	Front Panel.....	4-4

4.2.2	Rear Panel.....	4-5
4.2.3	Internal Components.....	4-6
4.3	Opening the Housing Panels	4-7
4.3.1	Front Panel	4-7
4.3.2	Removing the Left Cover	4-8
4.3.3	Removing the Right Cover.....	4-9
4.3.4	Removing the Metal Frame for Additional Hard Disks.....	4-10
4.4	Component Installation.....	4-11
4.4.1	ESD Precautions.....	4-11
4.5	Installing a System Board	4-12
4.6	Installing Expansion Boards	4-13
4.7	Installing Drives.....	4-15
4.8	Cover Installation	4-22
4.8.1	Installing the Left Cover.....	4-22
4.8.2	Installing the Right Cover	4-23
4.8.3	Installing the Front Panel	4-24

INDEX

List of Figures

1-1	System Board Layout.....	1-3
1-2	Jumper and Connector Locations.....	1-4
1-3	Front-Panel Connectors.....	1-7
1-4	Installing a Pentium II Processor.....	1-10
1-5	Securing the Pentium II Processor.....	1-11
1-6	Unlocking the Module Latches.....	1-12
1-7	Removing the Pentium II Processor.....	1-13
1-8	Installing a DIMM.....	1-15
1-9	Removing a DIMM.....	1-16
3-1	Options Menu Screen.....	3-6
3-2	Configure/View Host Adapter Settings Screen.....	3-7
3-3	Host Adapter SCSI ID Selection Screen for AIC-7880.....	3-8
3-4	SCSI Parity Checking Selection.....	3-9
3-5	Host Adapter SCSI Termination Selection for AIC-7880.....	3-10
3-6	Boot Device Options Screen.....	3-11
3-7	SCSI Device Configuration Screen for AIC-7880.....	3-12
3-8	Advanced Configuration Options Screen.....	3-16
3-9	SCSI Disk Utilities Screen for AIC-7880.....	3-19

List of Tables

1-1	Jumper Settings.....	1-5
1-2	Connector Functions.....	1-5
1-3	Memory Configurations.....	1-14
1-4	System Error Messages.....	1-20
2-1	Parallel Port Operation Mode Settings.....	2-18
2-2	Drive Control Settings.....	2-40
3-1	Default Settings for SCSI Controller and All Devices.....	3-4

Chapter 1 System Board

1.1 Features

This high-performance system board supports the Intel Pentium II CPU running at 266 up to 450 MHz. Integrated with the Intel 440BX system controller, which consists of the PCI controller and the PCI/ISA IDE accelerator (PIIX4), the AcerAltos 330 combines the new generation of Pentium II power with unmatched graphics performance.

The System controller host bus interface supports a Pentium II processor with 66 or 100 MHz external front side bus frequency. It also provides support for synchronous DRAM (SDRAM) 168 pin DIMMs.

The PIIX4 is a multifunction PCI device controller implementing system functions including PCI IDE and universal serial bus (USB) host/hub. It also supports Ultra DMA/33 synchronous DMA-compatible devices.

The system board utilizes both the ISA and the PCI local bus architectures. Two ISA, five PCI bus slots (including one PCI/ISA shared slot), and one AGP slot reside on the system board.

Three memory banks composed of 168-pin dual inline memory module (DIMM) sockets support a maximum system memory of 384 MB using 128-MB DIMMs.

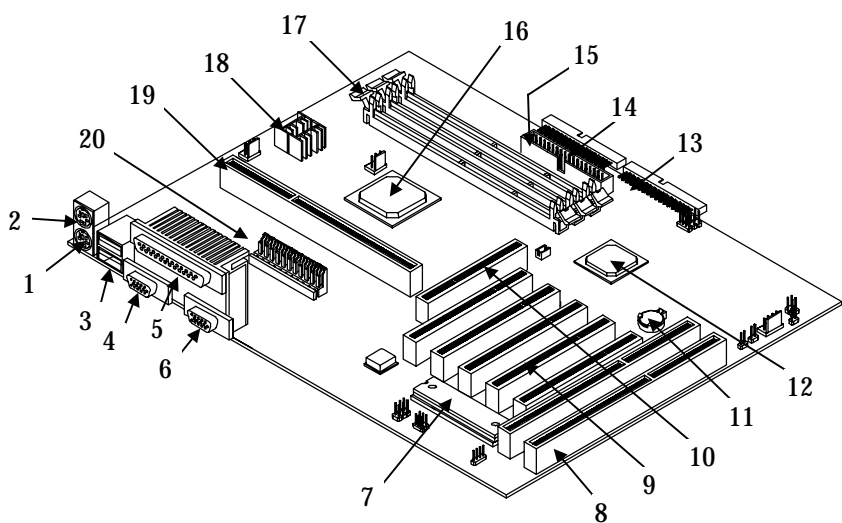
The system board provides additional support for the USB (Universal Serial Bus) interface, and other standard features such as two UART NS16C550 serial ports, one enhanced parallel port with an Enhanced Parallel Port (EPP)/Extended Capabilities Port (ECP) feature, a diskette drive interface, and two embedded hard disk interfaces.

1.2 Major Components

The system board has the following major components:

- A single edge contact (SEC) CPU connector that supports Pentium II processors running from 266 to 450 MHz
- Three DIMM sockets that accept 64- and 128-MB ECC SDRAM DIMMs
- Two ISA, five PCI slots
- 256-KB Flash ROM for system BIOS
- Enhanced IDE hard disk and diskette drive interface
- System controller chipset
- External ports:
 - Two USB connectors
 - One SPP/ECP/EPP high speed parallel port
 - PS/2 keyboard and mouse ports
 - Two high speed serial ports

1.2.1 System Board Layout



- | | | | |
|----|--------------------|----|-------------------------|
| 1 | PS/2 keyboard port | 11 | Battery |
| 2 | PS/2 mouse port | 12 | Intel 82371EB |
| 3 | USB connectors | 13 | Primary IDE connector |
| 4 | Serial port 1 | 14 | Secondary IDE connector |
| 5 | Parallel port | 15 | FDD connector |
| 6 | Serial port 2 | 16 | Intel 440BX |
| 7 | BIOS | 17 | DIMM sockets |
| 8 | ISA slots | 18 | Voltage regulators |
| 9 | PCI slots | 19 | CPU slot |
| 10 | AGP slot | 20 | Power connector |

Figure 1-1 System Board Layout

1.3 Jumpers and Connectors

1.3.1 Jumper and Connector Locations

Figure 1-2 shows the jumper and connector locations on the system board.

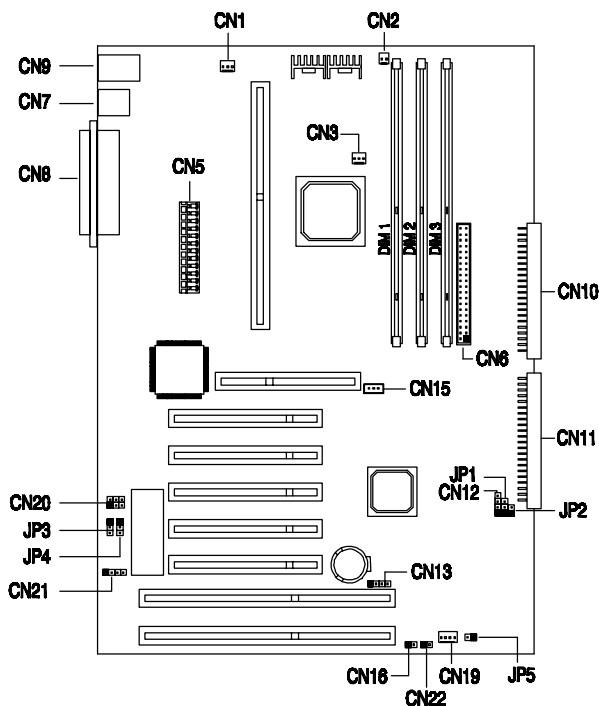


Figure 1-2 Jumper and Connector Locations



In this figure, the blackened pin of a jumper or connector represents pin 1.

1.3.2 Jumper Settings

Table 1-1 Jumper Settings

Jumper	Setting	Function
Password Security JP3	1-2 2-3*	Check password Bypass password
BIOS JP4	1-2* 2-3	Acer Reserved

1.3.3 Connector Functions

Table 1-2 lists the different connectors on the system board and their respective functions.

Table 1-2 Connector Functions

Connector	Function
CN1	Suspend 5V
CN2	CPU thermal sensor connector
CN3	CPU fan connector
CN5	Power connector
CN6	Floppy disk connector
CN7	USB connectors
CN8	COM1 (lower left), COM2 (lower right), and Parallel port (above)

Table 1-2 Connector Functions (continued)

connector	Function
CN9	Upper: PS/2 mouse connector Lower: PS/2 keyboard connector
CN10	Enhanced IDE 2 connector
CN11	Enhanced IDE 1 connector
CN12	Hard disk LED connector
CN13	SCSI disk LED connector (for M11E Combo Card)
CN15	Reserved
CN16	Power switch
CN19	Housing fan connector
CN20	Audio line-in connector
CN21	Reserved
CN22	Turbo LED connector
JP1	Power LED connector
JP2	System reset connector
JP5	Housing intrusion switch connector

1.4 Front Panel Connectors

The following figure shows the pin orientation of the front-panel connectors.

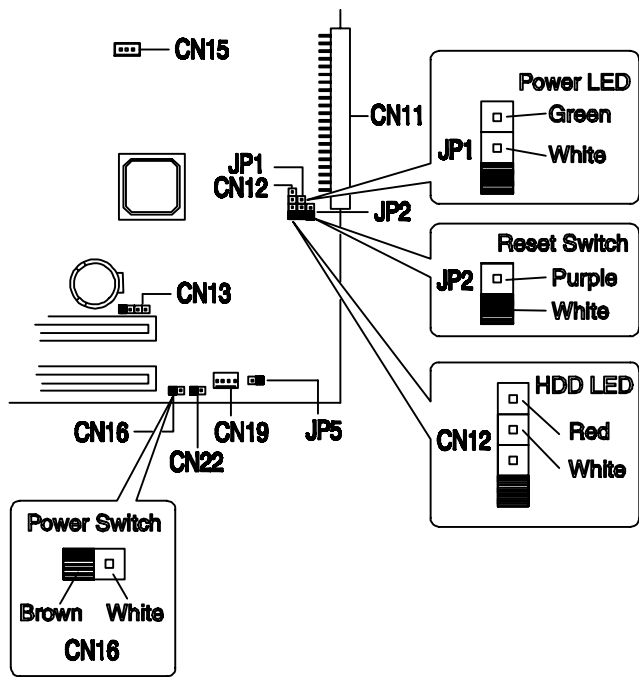


Figure 1-3 Front-Panel Connectors

1.5 Installing Components on the System Board

The following sections describe how to install components into the system board, including how to install a Pentium II processor into the socket on the CPU board, and how to upgrade system memory.

Before beginning the installation, please take a moment to read the sections below. They contain important ESD precautions and pre- and post-installation instructions.

1.5.1 ESD Precautions

Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist grounding strap and attach it to a metal part of the system unit before handling components. If a wrist strap is not available, maintain contact with the system chassis throughout any procedure requiring ESD protection.

1.5.2 Pre-installation Instructions

Always observe the following before you install a system component:

1. Turn off the system power and all the peripherals connected to the unit before opening it.
2. Open the system according to the instructions in Chapter 4, System Housing.

3. Follow the ESD precautions in section 1.5.1 before handling a system component.
4. Remove any expansion boards or peripherals that block access to components you are installing.
5. See the following sections for specific instructions on the component you wish to install.



Do not attempt the procedures described in the following sections unless you are a qualified service technician.

1.5.3 Post-installation Instructions

Observe the following procedures after installing a system component:

1. Check that the components are installed according to the instructions in their respective sections.
2. Make sure you have set all the required jumpers. See section 1.3.2 for the correct jumper settings.
3. Replace any expansion boards or peripherals that you removed earlier.
4. Replace the system cover.
5. Connect the necessary cables and turn on the system.

1.6 Installing a Pentium II Processor

Follow these steps to install a Pentium II processor into the socket on the CPU board.



The edge connector of the Pentium II module is slotted so that it only fits in one direction. Make sure the module groove matches the one on the processor socket.

1. Press the processor module down until the edge connector snugly fits into the socket.

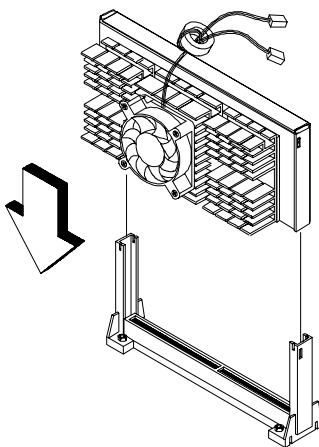


Figure 1-4 Installing a Pentium II Processor



The system settings are configured at the factory for the correct CPU frequency/ Memory DIMM combination. If you upgrade the CPU frequency to 300, 350, 400, or 450 MHz, the memory controller requires PC-100 DRAM DIMMs. Your system will not work properly if you use standard DIMMs with the higher speed CPUs. All of the installed DIMMs must have the same capabilities.

2. Press the latches on the sides to lock the processor module into place.

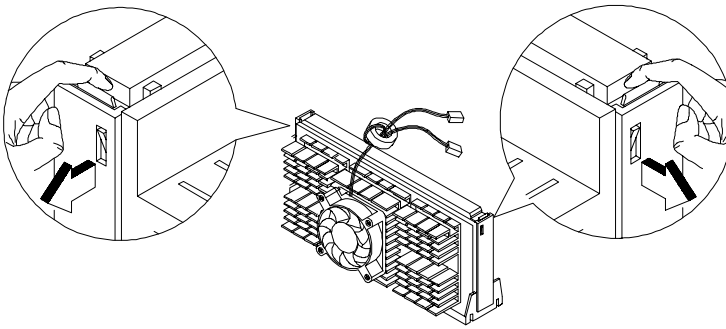


Figure 1-5 Securing the Pentium II Processor

3. Connect the fan connectors. See Table 1-2.

1.7 Removing a Pentium II Processor

Follow these steps to remove the Pentium II CPU module from the slot.

1. Remove the fan connections. See Table 1-2.
2. Unlock the latches that secure the processor module.

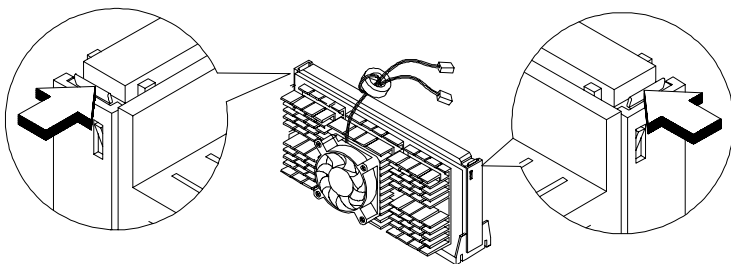


Figure 1-6 Unlocking the Module Latches

2. Firmly hold the processor module and pull it out of the socket.

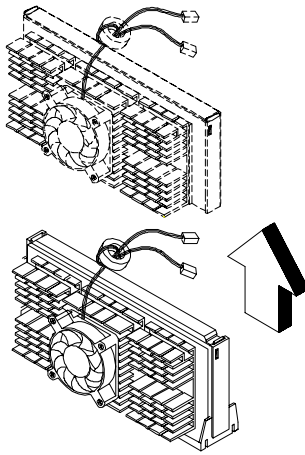


Figure 1-7 Removing the Pentium II Processor

1.8 Memory Upgrade

The three 168-pin sockets onboard support ECC synchronous DRAM DIMMs. You may install 64-MB or 128-MB DIMMs for a maximum of 384-MB system memory. Each of the sockets represents one independent bank. This allows you to install DIMMs with different capacities on each bank.

1.8.1 Memory Configurations

Table 1-3 lists some system memory configurations. You can combine DIMMs with various capacities to form other combinations.

Table 1-3 Memory Configurations

Bank 0	Bank 1	Bank 2	Total Memory
64 MB			64 MB
64 MB	64 MB		128 MB
64 MB	64 MB	64 MB	192 MB
128 MB			128 MB
128 MB	64 MB	64MB	256 MB
128 MB	128 MB	128 MB	384 MB

1.8.2 Installing a DIMM

To install a DIMM, align it with the socket and press it down until the holding clips secure the DIMM in place.



The DIMM socket is slotted to ensure proper installation. If you install a DIMM but it does not completely fit, you may have inserted it the wrong way. Reverse the orientation of the DIMM.

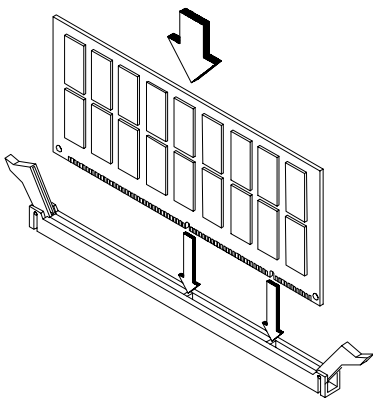


Figure 1-8 Installing a DIMM

1.8.3 Removing a DIMM

To remove a DIMM, press the holding clips on both sides of the socket outward to release the DIMM.



Place your forefingers on the top of the DIMM before you press the holding clips to gently disengage the DIMM from the socket.

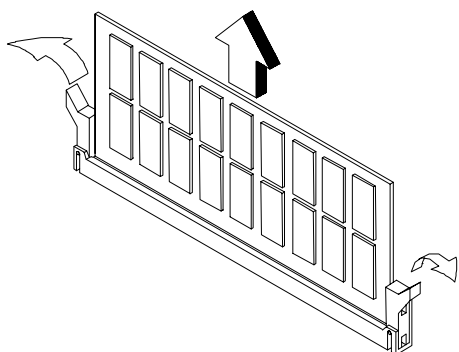


Figure 1-9 Removing a DIMM

1.8.4 Reconfiguring the System

Reconfigure the system after installing or removing DIMMs.

Follow these steps to reconfigure the system:

1. Reboot the system.
2. Press **CTRL** + **ALT** + **ESC** during the power-on self-test (POST) routine to run Setup. During POST, a memory error message appears, indicating that the total memory does not match the value stored in CMOS.
3. Press **ESC** twice to exit Setup and reboot the system. The system boots with the new memory configuration.

1.9 Server Management Features

1.9.1 Advanced Server Manager (ASM Pro)

ASM Pro is a server management tool based on the Simple Network Management Protocol (SNMP). It detects server problems related to a CPU thermal condition, $\pm 12\text{V}/\pm 5\text{V}/3.3\text{V}/1.5\text{V}$ detection, or calculating PCI bus utilization.

This feature is designed primarily for server supervisors and management information system (MIS) personnel to help them detect errors or potential trouble spots in their network servers through a single management station.

ASM Pro consists of two major parts:

- ASM-Station - a Windows-based monitoring station that communicates with the ASM-Agents.
- ASM-Agent(s) - the individual servers managed by the ASM-Station.

Refer to the ASM Pro *User's Guide* for more information.

1.10 Error Messages

Do not continue using the computer if you receive an error message of any type. Note the message and take corrective action. This section explains the different types of error messages and corresponding corrective measures.

There are two general types of error messages:

- Software
- System

1.10.1 Software Error Messages

Software error messages are returned by your operating system or application. These messages typically occur after you boot the operating system or when you run your applications. If you receive this type of message, consult your application or operating system manual for help.

1.10.2 System Error Messages

A system error message indicates a problem with the computer itself. A message of this type normally appears during the power-on self-test, before the operating system prompt appears.

Table 1-4 lists the system error messages.

Table 1-4 System Error Messages

Message	Action
CMOS Battery Error	Replace the CMOS battery.
CMOS Checksum Error	Run Setup (see section 2.1).
CPU BIOS Update Code Mismatch	Contact your dealer.
Diskette Drive Controller Error or Not Installed	Check and connect the control cable to the diskette controller.
Diskette Drive Error	Check the CMOS settings in Setup and the diskette drive cable connections.
Diskette Drive A Type Mismatch	Run Setup (see section 2.1) and select the proper drive type.
Diskette Drive B Type Mismatch	Run Setup (see section 2.1) and select the proper drive type.
Equipment Configuration Error	Modify DRAM configuration to agree with one of the options in Table 1-4.
Hard Disk Controller Error	Run Setup (see section 2.1).
Hard Disk 0 Error	Check all cable connections. Replace hard disk.
Hard Disk 1 Error	Check all cable connections. Replace hard disk.
Hard Disk 0 Extended Type Error	Run Setup (see section 2.1).
Hard Disk 1 Extended Type Error	Run Setup (see section 2.1).
I/O Parity Error	Contact your dealer.
Keyboard Error or No Keyboard Connected	Check and connect the keyboard to the system unit.
Keyboard Interface Error	Replace the keyboard or contact your dealer.

Table 1-4 System Error Messages (continued)

Message	Action
Memory Error at: MMMM:SSSS:OOO (W:XXXX, R:YYYY) where: M: MB, S: Segment, O: Offset, X/Y: write/read pattern	Check DIMMs on the system board. Contact your dealer.
Memory Size Mismatch CPU Clock Mismatch	Check the memory size and CPU clock speed installed in the system. If you are sure that the values are correct, ignore the message. If the message reappears, ask for technical assistance.
Onboard Serial Port 1 Conflict	Run Setup (see section 2.1) and disable the port.
Onboard Serial Port 2 Conflict	Run Setup (see section 2.1) and disable the port.
Onboard Parallel Port Conflict	Run Setup (see section 2.1) and disable the port.
Pointing Device Error	Check and connect pointing device.
Pointing Device Interface Error	Replace the pointing device or contact your dealer.
Press F1 key to continue or Ctrl-Alt-Esc for Setup	Press F1 or CTRL + ALT + ESC to enter Setup.
Real Time Clock Error	Run Setup (see section 2.1) and set the time and date.
Press Esc to turn off NMI, any key to reboot	Press ESC to disregard the NMI error. Press any other key to reboot.
Real-time Clock Error	Run Setup (see section 2.1).

1.10.3 Correcting Error Conditions

As a general rule, if an error message says "Press F1 to continue," it is caused by a configuration problem, which can be easily corrected. An equipment malfunction is more likely to cause a fatal error, i.e., an error that causes complete system failure.

Here are some corrective measures for error conditions:

1. Run Setup (See section 2.1). You must know the correct configuration values for your system before you enter Setup, which is why you should write them down when the system is correctly configured. An incorrect configuration is a major cause of power-on error messages, especially for a new system.
2. Remove the system unit cover (See Chapter 4, System Housing). Check that the jumpers on the system board and any expansion boards are set correctly (see section 1.4 for system board jumper information).
3. Check that all connectors and boards are securely plugged in.

If you go through the corrective steps above and still receive an error message, the cause may be an equipment malfunction.

If you are sure that your configuration values are correct and your battery is in good condition, the problem may lie in a damaged or defective chip.

In either case, contact an authorized service center for assistance.

Chapter 2 BIOS Utility

The BIOS Utility allows you to view and change your system’s configuration settings.

Most systems are already configured by the manufacturer or the dealer. There is no need to run Setup when starting the computer unless you get a Run Setup message.

The Setup program loads configuration values into the battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM.



If you repeatedly receive Run Setup messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Ask a qualified technician for assistance.

Before you run Setup, make sure that you have saved all open files. The system reboots immediately after you exit Setup.

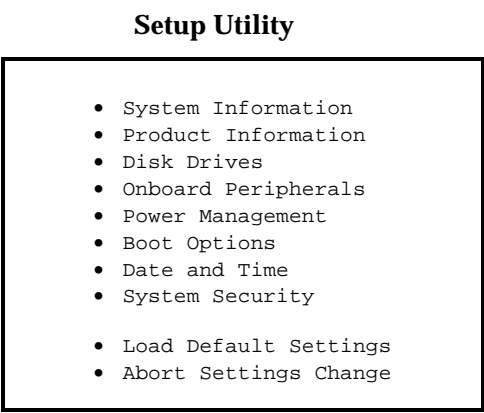
2.1 Entering Setup

To enter Setup, simultaneously press the key combination **CTRL** + **ALT** + **ESC**.



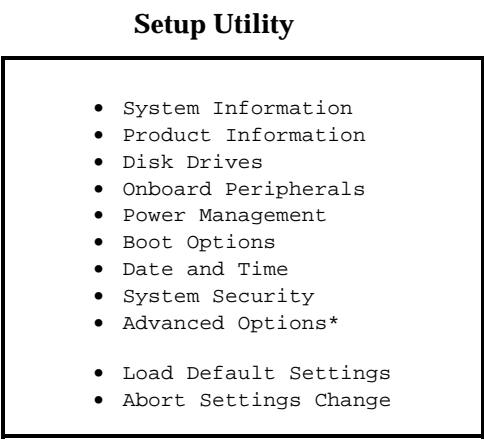
*You must press **CTRL** + **ALT** + **ESC** while the system is booting. This key combination does not work during any other time.*

The Setup Utility Main Menu appears:



The system supports two BIOS Utility levels: Basic and Advanced. The above screen is the BIOS Utility Basic Level screen. This allows you to view and change only the basic configuration of your system.

If you are an advanced user, you may want to check the detailed configuration of your system. Detailed system configurations are contained in the Advanced Level. To view the Advanced Level, press **F8**. The screen shows the BIOS Utility Advanced Level main menu.










The asterisk () mark indicates that the parameter appears only when you are in the Advanced Level.*

The parameters on the screens show default values. These values may not be the same as those in your system.

The grayed items on the screens have fixed settings and are not user-configurable.

Use the arrow keys , , , and  to move around the Setup Utility screen.

Use  to move to the next page or  to return to the previous page if the setup screen has more than one page available.

Press  to return to the Main menu.

2.2 System Information

The following screen appears if you select System Information from the Main menu:

System Information	
Processor	Pentium II
Processor Speed	XXX MHz
Internal Cache Size	32 KB, Enabled
External Cache Size	512 KB, Enabled
Floppy Drive A	1.44 MB, 3.5-inch
Floppy Drive B	None
IDE Primary Channel Master	Hard Disk, xxx MB
IDE Primary Channel Slave	None
IDE Secondary Channel Master	None
IDE Secondary Channel Slave	None
Total Memory	xxx MB
1st Bank	SDRAM, xxx MB
2nd Bank	None
3rd Bank	None

The System Information menu shows the current basic configuration of your system.

The following screen shows page 2 of the System Information menu.

System Information	
Serial Port 1	3F8h, IRQ 4
Serial Port 2	2F8h, IRQ 3
Parallel Port	378h, IRQ 7
PS/2 Mouse	Installed

The following sections explain the parameters.

2.2.1 Processor

The Processor parameter specifies the type of processor currently installed in your system. The system supports Intel Pentium II processors.

2.2.2 Processor Speed

The Processor Speed parameter specifies the speed of the processor currently installed in your system. The system can support Pentium II processors running at 266, 300, 333, 350, 400, and 450 MHz.

2.2.3 Internal Cache Size

This parameter specifies the first-level or the internal memory (i.e., the memory integrated into the CPU) size, and whether it is enabled or disabled.

2.2.4 External Cache

This parameter specifies the second-level cache memory size currently supported by the system. The cache size is 512 KB. For information on how to configure the system memory, see section 2.9.1

2.2.5 Floppy Drive A

This parameter specifies the system's current diskette drive A settings. For information on how to configure the floppy drives, see section 2.4.1.

2.2.6 Floppy Drive B

This parameter specifies the system's current diskette drive B settings. For information on how to configure the floppy drives, see section 2.4.1.

2.2.7 IDE Primary Channel Master

This parameter specifies the current configuration of the IDE device connected to the master port of the primary IDE channel. For information on how to configure the IDE drives, see section 2.4.2.

2.2.8 IDE Primary Channel Slave

This parameter specifies the current configuration of the IDE device connected to the slave port of the primary IDE channel. For information on how to configure the IDE drives, see section 2.4.2.

2.2.9 IDE Secondary Channel Master

This parameter specifies the current configuration of the IDE device connected to the master port of the secondary IDE channel. For information on how to configure the IDE drives, see section 2.4.2.

2.2.10 IDE Secondary Channel Slave

This parameter specifies the current configuration of the IDE device connected to the slave port of the secondary IDE channel. For information on how to configure the IDE drives, see section 2.4.2.

2.2.11 Total Memory

This parameter specifies the total amount of onboard memory. The memory size is automatically detected by BIOS during the POST. If you install additional memory, the system automatically adjusts this parameter to display the new memory size.

1st Bank/2nd Bank/3rd Bank

The 1st Bank, 2nd Bank, and 3rd Bank parameters indicate the type and size of DRAM installed in DIMM sockets 1, 2, and 3 respectively. The **None** setting indicates that there is no DRAM installed. For the location of the DIMM sockets, refer to Figure 1-1.

2.2.12 Serial Port 1

This parameter shows the serial port 1 address and IRQ setting.

2.2.13 Serial Port 2

This parameter shows the serial port 2 address and IRQ setting.

2.2.14 Parallel Port

This parameter shows the parallel port address and IRQ setting.

2.2.15 PS/2 Mouse

The BIOS utility automatically detects if there is a pointing device connected to your system. If there is, this parameter displays the **Installed** setting. Otherwise, this is set to **None**.

2.3 Product Information

The Product Information contains the general data about the system, such as the product name, serial number, BIOS version, etc. This information is necessary for troubleshooting (may be required when asking for technical support).

The following figure shows how the Product Information screen appears:

Product Information	
Product Name	91.AB700.001
System S/N	2800001688
Main Board ID	M11E
Main Board S/N	55.00168.001
System BIOS Version	v3.1
DMI BIOS Version	2.00.1

2.3.1 Product Name

This parameter specifies the official name of the system.

2.3.2 System S/N

This parameter specifies the system’s serial number.

2.3.3 Main Board ID

This parameter specifies the system board’s identification number.

2.3.4 Main Board S/N

This parameter specifies the system board's serial number.

2.3.5 System BIOS Version

This parameter specifies the version of the BIOS utility.

2.3.6 DMI BIOS Version

This parameter specifies the version of the DMI (Desktop Management Interface) BIOS version. DMI enables software to collect information about a computer environment.

2.4 Disk Drives

Select Disk Drives to input configuration values for disk drives.

The following screen shows the Disk Drives menu screen:



Disk Drives

Diskette Drive A [xx-MB, xx-inch]
Diskette Drive B [None]

LS-120 Drive as [Normal]

IDE Primary Channel Master
IDE Primary Channel Slave
IDE Secondary Channel Master
IDE Secondary Channel Slave

2.4.1 Floppy Drives

To enter the configuration value for the first floppy drive (drive A), highlight the Floppy Drive A parameter. Press  or  key to view the options and select the appropriate value.

Possible settings for the Floppy Drive parameters are:

- [None]
- [360 KB, 5.25-inch]
- [1.2 MB, 5.25-inch]
- [720 KB, 3.5-inch]
- [1.44 MB, 3.5-inch]
- [2.88 MB, 3.5-inch]

Follow the same procedure to configure floppy drive B. Choose **None** if you do not have a second floppy drive.

2.4.2 LS-120 Drive Compatible As

This parameter allows you not only to enable the LS-120 device installed in your system, but also to specify the function of the device. The setting affects how BIOS will detect the device.



Although LS-120 options are provided in the system BIOS, LS-120 drives are neither qualified nor supported in this server.

Possible settings are:

- **Normal** In this setting, BIOS does not support the LS-120 drive. The drive needs the LS-120 device driver to operate.
- **Drive A** BIOS recognizes the LS-120 drive as drive A. If a standard diskette drive A exists, BIOS automatically identifies it as drive B. If a standard diskette drive B exists, it automatically becomes inaccessible. If two LS-120 drives exist, BIOS recognizes them as drive A and drive B, respectively.
- **Drive B diskette** BIOS recognizes the LS-120 drive as drive B. If a standard drive B exists, it becomes inaccessible.
- **Hard Disk** BIOS recognizes the LS-120 drive as a hard disk. In this setting, format the LS-120 drive as any other hard disk and assign it a drive letter C, D, E, and so on. See the documentation that came with the LS-120 drive for more information.

2.4.3 IDE Drives



Although IDE options are provided in the system BIOS, IDE hard disk drives are neither qualified nor supported in this server.

The IDE options are:

IDE Primary Channel Master

This parameter lets you configure the hard disk drive connected to the master port of IDE channel 1.

IDE Primary Channel Slave

This parameter lets you configure the hard disk drive connected to the slave port of IDE channel 1.

IDE Secondary Channel Master

This parameter lets you configure the hard disk drive connected to the master port of IDE channel 2.

IDE Secondary Channel Slave

This parameter lets you configure the hard disk drive connected to the slave port of IDE channel 2.

The following screen appears if you select any of the IDE Drive parameters:

IDE Primary/Secondary Channel Master/Slave		Page 1/1
Type	[Auto]	
Cylinder	[XXXX]	
Head	[XXXX]	
Sector	[XXXX]	
Size	[XXXX]	MB
Hard Disk Size > 504MB	[Auto]	
*Hard Disk Block Mode	[Auto]	
*Advanced PIO Mode	[Auto]	
*Hard Disk 32-Bit Access	[Enabled]	
*DMA Transfer Mode	[Auto]	
*CD-ROM Drive DMA Mode	[Disabled]	
↑↓ = Move Highlight Bar, → ← = Change Setting, F1 = Help		



The above parameters marked with () will only appear if you access the advanced configuration level in the Main Menu. Please refer to section 2.1 for more information.*

Type

This parameter lets you specify the type of hard disk installed in your system. If you want BIOS to automatically configure your hard disk, select **Auto**. If you know your hard disk type, you can enter the setting manually.

Setting this parameter also sets the Cylinder, Head, Sector, and Size parameters.

Cylinder

This parameter specifies the number of cylinders of your hard disk, and is automatically set depending on your Type parameter setting.

Head

This parameter specifies the number of heads of your hard disk, and is automatically set depending on your Type parameter setting.

Sector

This parameter specifies the number of sectors of your hard disk, and is automatically set depending on your Type parameter setting.

Size

This parameter specifies the size of your hard disk, in MB. This is automatically set depending on your Type parameter setting.

Enhanced IDE Features

Hard Disk Size > 504 MB

When set to **Auto**, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows you to use a hard disk with a capacity of more than 504 MB. This is made possible through the Logical Block Address (LBA) mode translation. However, this enhanced IDE feature works only under DOS and Windows 3.x, 95 environments. Other operating systems require this parameter to be set to **Disabled**.

Hard Disk Block Mode

This function enhances disk performance depending on the hard disk in use. If you set this parameter to **Auto**, the BIOS utility automatically detects if the installed hard disk drive supports the Block Mode function. If supported, it allows data transfer in block (multiple sectors) at a rate of 256 bytes per cycle. To disregard the feature, change the setting to **Disabled**.

Advanced PIO Mode

When set to **Auto**, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows for faster data recovery and read/write timing that reduces hard disk activity time. This results in better hard disk performance. To disregard the feature, change the setting to **Disabled**.

Hard Disk 32-Bit Access

Enabling this parameter improves system performance by allowing the use of 32-bit hard disk access. This enhanced IDE feature works only under DOS, Windows 3.x, Windows 95, and Novell NetWare. If your software or hard disk does not support this function, set this parameter to **Disabled**.

DMA Transfer Mode

The Ultra DMA and Multi-DMA modes enhance hard disk performance by increasing the transfer rate. However, in addition to enabling these features in the BIOS Setup, both the Ultra DMA and Multi-DMA modes require the DMA driver to be loaded. By setting this parameter to **Auto**, BIOS automatically sets the appropriate DMA mode for your hard disk.

This parameter appears only when you are in the Advanced Level.

CD-ROM Drive DMA Mode

Set this parameter to **Enabled** to enable the DMA mode for the CD-ROM drive. This improves system performance since it allows direct memory access to the CD-ROM. To deactivate the function, set the parameter to **Disabled**.

2.5 Onboard Peripherals

The Onboard Peripheral Configuration allows you to configure the onboard communication ports and the onboard devices. Selecting this option displays the following screen:

Onboard Peripherals	
Serial Port 1	[Enabled]
Base Address	[3F8h]
IRQ	[4]
Serial Port 2	[Enabled]
Base Address	[2F8h]
IRQ	[3]
Parallel Port	[Enabled]
Base Address	[378h]
IRQ	[7]
Operation Mode	[Bi-directional]
ECP DMA Channel	[-]
•Onboard Device Settings	

2.5.1 Serial Ports 1 and 2

These parameters allow you to enable or disable serial ports 1 and 2.

Base Address

This function lets you set a logical base address for serial ports 1 and 2. The options are:

- 3F8h
- 2F8h
- 3E8h
- 2E8h

IRQ

This function lets you assign an interrupt for serial ports 1 and 2. The options for serial ports 1 are IRQ 4 and 11. The options for serial port 2 are IRQ 3 and 10.



The Base Address and IRQ parameters for each port are configurable only if the port is enabled.

2.5.2 Parallel Port

This parameter allows you to enable or disable the parallel port.

Base Address

This function lets you set a logical base address for the parallel port. The options are:

- 3BCh
- 378h
- 278h

IRQ

This function lets you assign an interrupt for the parallel port. The options are IRQ 5 and 7.



The Base Address and IRQ parameters are configurable only if Parallel Port is enabled.

If you install an add-on card that has a parallel port whose address conflicts with the onboard parallel port, a warning appears on the screen.

Check the parallel port address of the add-on card and change the address to one that does not conflict.

Operation Mode

This item allows you to set the operation mode of the parallel port. Table 2-1 lists the different operation modes.

Table 2-1 Parallel Port Operation Mode Settings

Setting	Function
Standard Parallel Port (SPP)	Allows normal speed one-way operation
Standard and Bi-directional	Allows normal speed operation in a two-way mode
Enhanced Parallel Port (EPP)	Allows bi-directional parallel port operation at maximum speed
Extended Capabilities Port (ECP)	Allows parallel port to operate in bi-directional mode and at a speed higher than the maximum data transfer rate

ECP DMA Channel

This item becomes active only if you select **Extended Capabilities Port (ECP)** as the operation mode. It allows you to assign DMA channel 1 or DMA channel 3 for the ECP parallel port function (as required in Windows 95).

2.5.3 Onboard Device Settings

The Onboard Device Settings menu allows you to configure the onboard communication ports and the onboard devices. Selecting this option from the Onboard Peripherals menu displays the following screen:

Onboard Device Settings	
Floppy Disk Controller	[Enabled]
IDE Controller	[Both]
PS/2 Mouse Controller	[Enabled]
USB Host Controller	[Disabled]
USB Legacy Mode	[-----]
SMBus Interrupt(IRQ9)	[Enabled]

Floppy Disk Controller

This parameter lets you enable or disable the onboard floppy disk controller.

IDE Controller

Set this parameter to **Primary** to enable only the primary IDE controller; **Both** to enable both primary and secondary IDE controllers; or **Disabled** to disable all IDE controllers.

PS/2 Mouse Controller

This parameter enables or disables the onboard PS/2 mouse controller.

USB Host Controller

This parameter lets you enable or disable the USB controller on board. When enabled, it activates the USB function of the system. When disabled, it deactivates the function.

USB Legacy Mode

This function, when enabled, lets you use a USB keyboard in DOS. Set this to **Disabled** to deactivate the USB keyboard function in DOS.

SMBus Interrupt (IRQ9)

The System Management Bus (SMBus) is used to control and get information from devices on a motherboard. The system management software uses SMBus hardware and software interfaces to access the information about the devices attached to the SMBus.

2.6 Power Management

The Power Management menu allows you to configure the system power-management feature.

The following screen shows the Power Management parameters and their default settings:

Power Management	
Power Management Mode	[Disabled]
IDE Hard Disk Standby Timer	[--]
System Sleep Timer	[--]
Sleep Mode	[----]
Power Switch < 4 sec.	[Power Off]
System Wake-up Event	
Modem Ring Indicator	[Disabled]

2.6.1 Power Management Mode

This parameter allows you to reduce power consumption. When this parameter is set to **Enabled**, you can configure the IDE hard disk and system timers. Setting it to **Disabled** deactivates the power-management feature and its timers.



Make sure that Power Management Mode is Disabled at all times.

IDE Hard Disk Standby Timer

This parameter allows the hard disk to enter standby mode after inactivity of 1 to 15 minutes, depending on your setting. When you access the hard disk again, allow 3 to 5 seconds (depending on the hard disk) for the disk to return to normal speed. Set this parameter to **OFF** if your hard disk does not support this function.

System Sleep Timer

This parameter sets the system to the lowest power-saving mode after a specified period of inactivity. Any keyboard or mouse action or any activity detected from the IRQ channels resumes system operation.

Sleep Mode

This parameter lets you specify the power-saving mode that the system will enter after a specified period of inactivity. The options are **Standby** and **Suspend** modes.

This parameter becomes configurable only if the System Sleep Timer is enabled. Any keyboard or mouse action, or any enabled monitored activities occurring through the IRQ channels resume system operation.

2.6.2 Power Switch < 4 sec.

When set to **Power Off**, the system automatically turns off when the power switch is pressed for less than 4 seconds. When set to **Suspend**, the system enters the suspend mode when pressed for less than 4 seconds.

2.6.3 System Wake-up Event

The system wake-up event allows the system to resume operation when the modem ring indicator is enabled.

Modem Ring Indicator

When **Enabled** any fax/modem activity wakes up the system from suspend mode. The default setting is **Disabled**.

2.7 Boot Options

This option allows you to specify your preferred setting for bootup.

The following screen appears if you select Boot Options from the Basic Configuration menu:

Boot Options

Boot Sequence

1st [Floppy Disk]

2nd [Hard Disk]

3rd [IDE CD-ROM]

First Hard Disk Drive[SCSI]

Fast Boot[Disabled]

Silent Boot[Disabled]

Num Lock After Boot[Enabled]

Memory Test[Enabled]

*Configuration Table[Enabled]



The above parameter marked with “” will only appear if you access the advanced configuration level in the Main Menu. Please refer to section 2.1 for more information.*

2.7.1 Boot Sequence

This parameter allows you to specify the boot search sequence during POST.

- **1st**. The system checks this drive first.
- **2nd**. The system then checks this drive if it can not boot from the **1st** specified drive.
- **3rd**. If the **1st** and **2nd** searches fail then it boots from this drive.

BIOS will display an error message if the drive(s) specified is not bootable.

2.7.2 First Hard Disk Drive


This parameter specifies whether the BIOS utility will boot from an EIDE hard disk drive or a SCSI hard disk drive. The system will automatically boot from an EIDE hard disk if your system does not have a SCSI hard disk drive. The default setting is **IDE**.

2.7.3 Fast Boot

This parameter allows the system to boot faster by skipping some POST routines. The default setting is **Auto**.

2.7.4 Silent Boot

This parameter enables or disables the Silent Boot function. When set to **Enabled**, BIOS is in graphical mode and displays only an identification logo during POST and while booting. After booting the screen displays the operating system prompt (such as DOS) or logo (such as Windows 95). If any error occurs while booting, the system automatically switches to the text mode.

Even if your setting is **Enabled**, you may also switch to the text mode while booting by pressing  when you see the “Ctrl-Alt-Esc key to enter setup” message on the screen.

When set to **Disabled**, BIOS is in the conventional text mode where you see the system initialization details on the screen.

2.7.5 Num Lock After Boot

This parameter allows you to activate the Num Lock function upon booting. The default setting is **Enabled**.

2.7.6 Memory Test

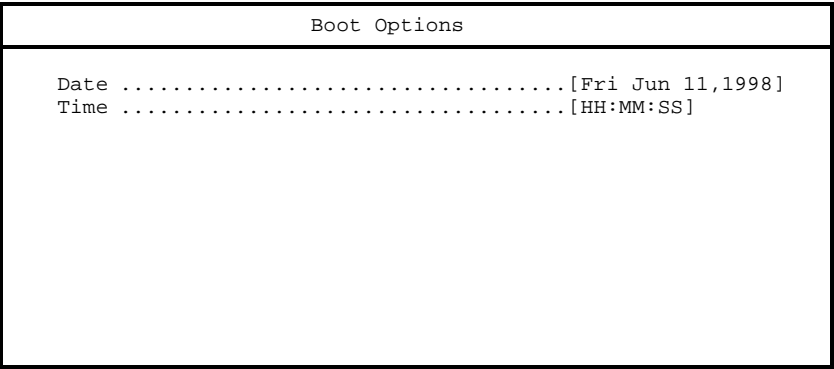
When set to **Enabled**, this parameter allows the system to perform a RAM test during the POST routine. When set to **Disabled**, the system detects only the memory size and bypasses the test routine. The default setting is **Enabled**.

2.7.7 Configuration Table



This parameter allows you to enable or disable the appearance of the configuration table after POST but before booting. The configuration table gives a summary of the hardware devices and settings that BIOS detected during POST.

2.8 Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you do not need to enter them every time you turn on the system. As long as the internal battery remains good (approximately seven years) and connected, the clock continues to keep the date and time accurately even when the power is off.



2.8.1 Date



Highlight the items on the Date parameter and press  or  to set the date following the weekday-month-day-year format.

Valid values for weekday, month, day, and year are:

- Weekday **Sun, Mon, Tue, Wed, Thu, Fri, Sat**
- Month **1 to 12**
- Day **1 to 31**

- Year **1980 to 2099**

2.8.2 Time

Highlight the items on the Time parameter and press  or  to set the time following the hour-minute-second format.

Valid values for hour, minute, and second are:

- Hour **00 to 23**
- Minute **00 to 59**
- Second **00 to 59**

2.9 Advanced Options



Advanced Option configuration is available only in the Advanced Level.

The Advanced Options configuration menu allows you to configure the system memory, PCI device settings, and CPU frequency. Press F8 to access the Advanced Options parameters.



To avoid damaging the system, do not change any settings in the Advanced Configuration unless you are a qualified technician.

The following screen shows the Advanced Options parameters.

Advanced Options
<ul style="list-style-type: none">• Memory/Cache Options• PnP/PCI Options• CPU Frequency

2.9.1 Memory/Cache Options

The Memory/Cache Options allows you to configure the advanced system memory functions.

Memory/Cache Options	
Internal Cache(CPU Cache)	[Enabled]
External Cache	[Enabled]
Cache Scheme	[Write Back]
Memory at 15MB-16MB Reserved for ...	[System]
Memory Parity Mode	[ECC]

Internal Cache (CPU Cache)

This parameter enables or disables the first-level or internal memory, that is, the memory integrated into the CPU. The default setting is **Enabled**.

External Cache

This parameter enables or disables the external cache memory. The external cache is incorporated in the CPU module.

Cache Scheme

This parameter shows the cache scheme status only as **Write-back** mode. **Write-back** updates the cache but not the memory when there is a write instruction. It updates the memory only when there is an inconsistency between the cache and the memory.

Memory at 15MB-16MB Reserved for

To prevent memory address conflicts between the system and expansion boards, reserve this memory range for the use of either the system or an expansion board.

Memory Parity Mode

This parameter allows you to enable or disable the ECC (Error Checking and Correction) feature. The ECC feature enables BIOS to detect and correct data errors. Disable this parameter if you want to disregard the function.

2.9.2 PnP/PCI Options

The PnP/PCI Options allows you to specify the settings for your PCI devices. Selecting this option displays the following screen:

PnP/PCI Options

PCI IRQ Setting[Auto]

	INTA	INTB	INTC	INTD
PCI Slot 1	[--]	[--]	[--]	[--]
PCI Slot 2	[--]	[--]	[--]	[--]
PCI Slot 3	[--]	[--]	[--]	[--]
PCI Slot 4	[--]	[--]	[--]	[--]
PCI Slot 5	[--]	[--]	[--]	[--]
AGP	[--]			

PCI IRQ Sharing [No]

VGA Palette Snoop [Disabled]

Graphics Aperture Size [64] MB

Plug and Play OS [No]

Reset Resource Assignments .. [No]

PCI IRQ Setting

Select **Auto** to let BIOS automatically configure the plug-and-play (PnP) devices installed on your system. Otherwise, select **Manual**.



Refer to your PCI user's manual for any special requirements.

PCI Slots

When you set the PCI IRQ Setting parameter to **Auto**, these parameters specify the auto-assigned interrupt for each of the PCI devices. If you set the PCI IRQ Setting parameter to **Manual**, you need to specify the interrupt that you want to assign for each PCI device installed in your system.

AGP

This item shows the assigned interrupt for the onboard accelerated graphics port (AGP) controller.

PCI IRQ Sharing

Setting this parameter to **Yes** allows you to assign the same IRQ to two different devices. To disable the feature, select **No**.



If there are no IRQs available to assign for the remaining device function, we recommend that you enable this parameter.

VGA Palette Snoop

This parameter permits you to use the palette snooping feature if you installed more than one VGA card in the system.

The VGA palette snoop function allows the control palette register (CPR) to manage and update the VGA RAM DAC (Digital Analog Converter, a color data storage) of each VGA card installed in the system. The snooping process lets the CPR send a signal to all the VGA cards so that they can update their individual RAM DACs. The signal goes through the cards continuously until all RAM DAC data has been updated. This allows the display of multiple images on the screen.



Some VGA cards have required settings for this feature. Check your VGA card manual before setting this parameter.

Graphics Aperture Size

This parameter determines the effective size of the graphics aperture. Graphics aperture is the address range that the AGP video and the CPU use to manage graphical objects. The lowest setting is 8 MB and the highest is 256 MB.

Plug and Play OS

When this parameter is set to **Yes**, BIOS initializes only PnP boot devices such as SCSI cards. When set to **No**, BIOS initializes all PnP boot and non-boot devices such as sound cards.



*The default setting for most operating systems is **No**.*

Reset Resource Assignments

Set this parameter to **Yes** to avoid IRQ conflict when installing non-PnP or PnP ISA cards. This clears all resource assignments and allows BIOS to reassign resources to all installed PnP devices the next time the system boots. After clearing the resource data, the parameter resets to **No**.

2.9.3 CPU Frequency

This parameter displays your CPU's speed and bus frequency. It also allows you to specify the CPU frequency multiplier. Selecting this option displays the following screen:

CPU Frequency	
Bus Frequency	66/100 MHz
CPU Multiple	[x]
Processor Speed	xxx MHz

Bus Frequency

The bus frequency refers to the speed by which data is transferred between internal computer components and the CPU or the main memory of the CPU. A fast bus allows data to be transferred faster, which makes applications run faster.

CPU Multiple

This parameter sets the Core/bus ratio of your system. The clock speed of the bus does not necessarily equal the CPU's (core). The bus clock speed is often slower than the CPU clock speed.

Processor Speed

The processor speed is the speed at which a microprocessor executes instructions. Clock speeds are expressed in megahertz (MHz), with 1 MHz being equal to 1 million cycles per second. The faster the clock, the more instructions the CPU can execute per second.

2.10 System Security

The Setup program has a number of security features to prevent unauthorized access to the system and its data.

The following screen appears if you select System Security from the Main menu:

System Security	
Setup Password	[None]
Power-on Password	[None]
Operation Mode	[Normal]
Disk Drive Control	
Floppy Drive	[Normal]
Hard Disk Drive	[Normal]

2.10.1 Setup Password

The Setup Password prevents unauthorized access to the BIOS utility.

To set or change a Password:

1. Make sure that JP3 is set to 2-3 (bypass password). See Figure 1-2 for the location of JP3.



You cannot enter the BIOS utility if a Setup password does not exist and JP3 is set to 1-2 (password check enabled).

By default, JP3 is set to 2-3 (Bypass password).





2. **Enabled** the Setup Password parameter in the System Security menu by pressing the  or  arrow key. The Setup Password window appears:

Setup Password
Enter your new Setup Password twice. Setup Password may be up to 7 characters long.
Enter Password [xxxxxxx]
Enter Password again [xxxxxxx]
Set or Change Password

3. Type a password in the Enter Password field. The password may consist of up to seven characters.



Be very careful when typing your password because the characters do not appear on the screen.

4. Press . Retype your password in the Enter Password again field to verify your first entry.
5. Highlight Set or Change Password and press .
6. Press  to return to the System Security menu and then press  again to exit Setup. The Exit Setup screen appears:

Exit Setup
Settings have been changed. Do you want to save to CMOS settings? [Yes] [No]





7. Press **Yes** to save your settings and exit Setup Utility. Your password will be saved to CMOS.

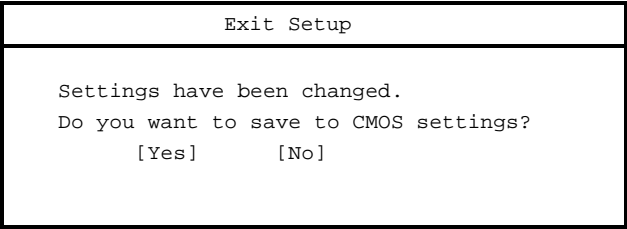
For the password to take effect you must set jumper JP3 to 1-2 (Check password):

1. Turn off and unplug the computer.
2. Open the computer housing and set JP3 to 2-3 (Bypass password) to bypass the password function. See figure 1-2 for the location of JP3.
3. Close your computer's housing and reboot your system.

The next time you want to enter the BIOS utility, you must key in your Setup password.

To remove your Setup Password:

1. **Disabled** the Setup Password parameter in the System Security menu by pressing the  or  arrow key to select **None**.
2. Press  to return to the System Security menu and then press  again to exit Setup. The Exit Setup screen appears:



3. Press **Yes** to save your settings and exit Setup Utility. Your previous password will be removed from CMOS.



Remember to set JP3 to 2-3 (Bypass password) because you won't be able to access Setup Utility if a password does not exist and JP3 is set to 1-2 (Check password).

To set JP3 to 2-3 (Bypass password):

1. Turn off and unplug the computer.
2. Open the computer housing and set JP3 to 2-3 (Bypass password) to bypass the password function. See figure 1-2 for the location of JP3.
3. Close your computer's housing and reboot your system.

To bypass Setup Password:

If you forget your setup password, you can bypass the password security feature by hardware. Follow these steps to bypass the password:

1. Turn off and unplug the computer.
2. Open the computer housing and set JP3 to 2-3 (Bypass password) to bypass the password function. See figure 1-2 for the location of JP3.
3. Turn on the system and enter the BIOS utility. This time, the system does not require you to type in a password.



*You can either change the existing Setup password or remove it by selecting **None**. Refer to the previous section for the procedure.*

2.10.2 Power-on Password

The Power-on Password secures your system against unauthorized use. Once you set this password, you have to type it whenever you boot the system. To set this password, enter Setup Utility, select System Security, then highlight the Power-on Password parameter. Follow the same procedure as in setting the Setup password.



Make sure to set JP3 to 1-2 to enable the Power-on password.

Power-on Password
Enter your new Power-on Password twice. Power-on Password may be up to 7 characters long.
Enter Password []
Enter Password again []
Set or Change Password

Operation Mode

This function lets you enable or disable the password prompt display. When set to **Normal**, the password prompt appears before system boot. When set to **Keyboard Lock**, the password prompt does not appear; however, your system will not respond to any keyboard or mouse input until you enter the correct password.

2.10.3 Disk Drive Control

The disk drive control features allow you to control the floppy drive or the hard disk drive boot function to prevent loading operating systems or other programs from a certain drive while the other drives are operational (under DOS mode only).

Table 2-2 lists the drive control settings and their corresponding functions.

Table 2-2 Drive Control Settings

Floppy Drive	
Setting	Description
Normal	Floppy drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on the boot sector
Hard Disk Drive	
Setting	Description
Normal	Hard disk drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on the boot sector

2.11 Load Default Settings

Use this option to load the default settings for the optimized system configuration. When you load the default settings, some of the parameters are grayed-out with their fixed settings. These grayed parameters are not user-configurable.

The following dialog box appears when you select Load Default Settings from the main menu:

Load Default Settings	
Do you want to load default settings?	
[Yes]	[No]

Select **Yes** to load the default settings.

Select **No** to ignore the message and return to the BIOS utility.



Some of the settings may be different after loading defaults. Your system as it left the factory used the defaults as specified in this User's Guide.

2.12 Abort Settings Change

The following dialog box appears when you select Abort Settings Change from the main menu:

Abort Settings Change	
Do you want to abort settings change?	
[Yes]	[No]

Select **Yes** to abort the settings change.

Select **No** to ignore the message and return to the BIOS utility.

2.13 Exit Setup

Examine the system configuration values. When you are satisfied that all the values are correct, write them down. Store the recorded values in a safe place. In the future, if the battery loses power or the CMOS chip is damaged, you will know what values to enter when you rerun Setup.

Press **ESC** to leave Setup Utility. The following dialog box appears:

Exit Setup	
Do you really want to exit Setup?	
[Yes]	[No]

Use the arrow keys to select your response. Press **ENTER**.

If you made any changes to the Setup Utility, the dialog box below is displayed.

Exit Setup	
Settings have been changed. Do you want to save CMOS settings?	
[Yes]	[No]

Use the arrow keys to select your response. Select **Yes** to save the changes in CMOS. Select **No** to retain the old configuration values. Press **ENTER** to exit.

Chapter 3 System Utilities

This chapter contains information about system utilities that you need when you upgrade your system. These utilities are the AFlash BIOS Utility and SCSISelect Configuration Utility.



The AFlash BIOS Utility diskette does not come with the system package. Ask your dealer for assistance if you need the utility.

3.1 AFlash BIOS Utility



Do not install memory-related drivers (XMS, EMS, DPMI) when you use AFlash.

The AFlash functions support all the operations required for system Flash ROM. The functions are divided into the following steps:

1. **Load BIOS file to buffer** reads a specified file from a diskette to memory for future program use or for check only. It supports the 64-KB, 128-KB, 192-KB, or 256-KB files.
2. **Save BIOS to disk file** reads BIOS from the current BIOS area and writes to the file specified by the user.






AFlash features password security to prevent unauthorized access.

3.1.1 Executing AFlash

Follow these steps to execute AFlash:

1. Copy the MSG.DAT and AFLASH.EXE files from the system utilities diskette into the subdirectory of your choice.
2. From that subdirectory, type:

```
aflash 
```

3. A help message appears. Press any key to continue.
4. The main menu appears. Use the  or  key to highlight the options. Press  to select.
5. If you want to save a copy of the current BIOS into a file, select **Save BIOS to Disk File**.
6. Select **Load BIOS File** to load the BIOS file into memory.
7. Select **Program Flash Memory** to erase the current BIOS, and program Flash ROM.




Never turn off the system power while Flash BIOS is programming. This will destroy the BIOS.

8. Reboot the system.

3.1.2 Quick Way to Execute AFlash

When you have already copied the AFlash files into your hard disk, you can simply type the following on the DOS prompt (subdirectory where the files are located) to quickly execute the program.

```
aflash (filename) 
```

The program automatically performs the loading and programming functions, then reboots the system.

If the program cannot find the BIOS file, it returns to the main menu and flashes the following message:

Can't Read This File !!! Press any key to continue...

In this case, follow the procedures for loading and programming the BIOS file using the main menu.

3.2 SCSISelect Configuration Utility

3.2.1 Overview

The SCSISelect configuration utility allows you to change SCSI controller settings without opening the computer or changing jumpers.

3.2.2 Default Values

Table 3-1 lists the settings you can change with the SCSISelect utility and the default value for each setting. Some settings apply globally to the SCSI controller and all SCSI devices on the bus; other settings apply individually to each device on the bus.

Table 3-1 Default Settings for SCSI Controller and All Devices

Global Settings for SCSI Controller and All Devices	Default Value
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	Enabled
Boot Device Option	0 (zero)
Reset SCSI Bus at IC Initialization	Enabled
Host Adapter BIOS ¹	Enabled
Support Removable Disks Under BIOS as Fixed Disks	Boot only
Extended BIOS Translation for DOS Drives > 1 Gbyte	Enabled ²
Display <Ctrl-A> Message During BIOS Initialization	Enabled
Multiple Lun Support	Disabled
BIOS Support for Bootable CD-ROM	Enabled
BIOS Support for Int13 Extensions	Enabled
Support for Ultra SCSI Speed	Enabled
Individual Settings for Each SCSI Device	Default Value
Initiate Sync Negotiation	Yes
Maximum Sync Transfer Rate	40 MBytes/sec.
Enable Disconnection	Yes
Initiate Wide Negotiation	Yes
Send Start Unit Command ¹	No
Include in BIOS Scan	Yes

¹ Settings are valid only if host adapter BIOS is enabled.

² Do not change this setting from the default.

3.2.3 When to Use the SCSISelect Utility

Use the SCSISelect utility if you need to

- Change any of the default values listed in Table 3-1
- Check and/or change SCSI device settings that may conflict with those of other devices (e.g., SCSI ID)
- Perform low-level formatting on new SCSI disk devices

3.2.4 Running the SCSISelect Utility

To start SCSISelect, press **Ctrl+A** when the following is displayed during power-up or reset:

Press <Ctrl> <A> for SCSISelect™ Utility!

This message appears after BIOS and POST information displays, and after the banner listing the Adaptec AIC-7880 version number.



The SCSI devices displayed in the SCSISelect Utility and their default values will vary depending on the type of hardware system it is running on..

3.3 SCSISelect Utility Options

When the SCSISelect utility detects the AIC-7880 SCSI controller in your computer, it displays the Options menu shown in Figure 3-1.

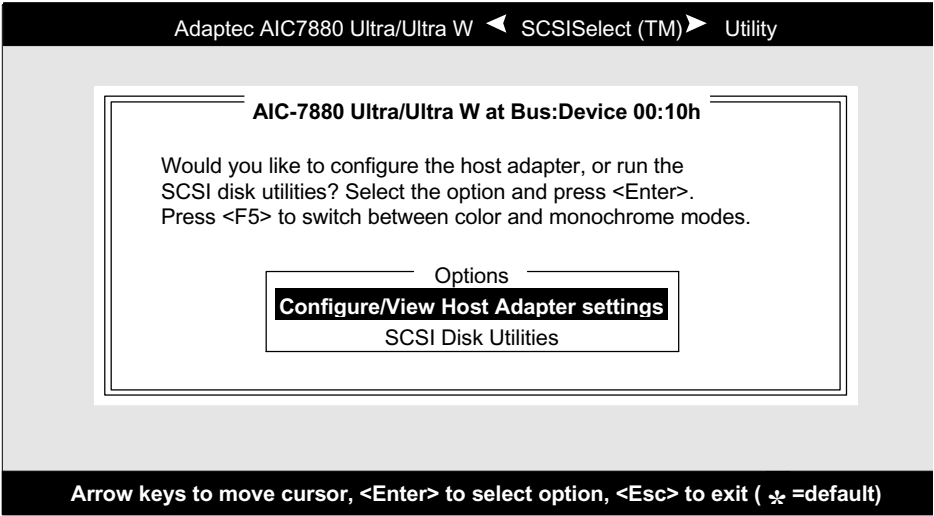


Figure 3-1 Options Menu Screen

Use the **↑** and **↓** keys and the **Enter** key to make selections in the SCSISelect utility. Press **Esc** at any time to return to the previous menu.



*You can press **F5** to toggle the display between color and monochrome modes. (This feature may not work on some kinds of monitors.)*

3.3.1 Configure/View Host Adapter Settings Menu

The Configure/View Host Adapter Settings menu lists three settings under SCSI Bus Interface Definitions and three additional options, as shown in Figure 3-2:

- **Host Adapter SCSI ID:** changes the host controller SCSI ID from its default value of 7
- **SCSI Parity Checking:** enables or disables host controller SCSI parity checking
- **Host Adapter SCSI Termination:** configures host controller SCSI termination

Advanced users can access Boot Device Options, SCSI Device Configuration, and Advanced Configuration Options through the following menu:

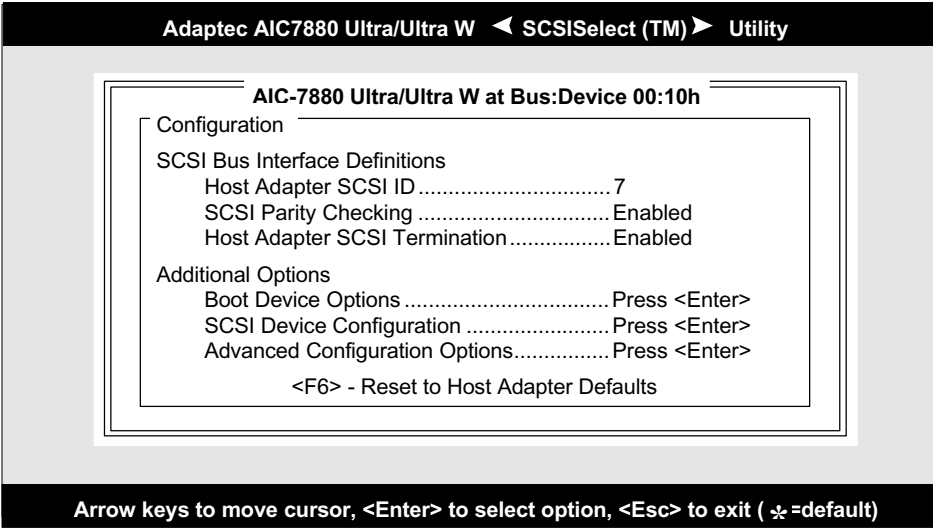


Figure 3-2 Configure/View Host Adapter Settings Screen

Use the cursor (↑ ↓) to move to your selection. Press **Enter** to display a pop-up menu of choices or to make selections. Press **Esc** at any time to return to the previous menu.



Press **F6** to reset all settings to the SCSI controller defaults. SCSI controller default settings are marked with an asterisk (*) throughout the selection submenus.

Host Adapter SCSI ID

This option allows you to change the host controller SCSI ID. Figure 3-3 shows the available IDs for use with the AIC-7880. The default setting is SCSI ID 7. (We recommend that you not change this setting.) Some operating system software will not run unless the SCSI controller ID is set at ID 7.

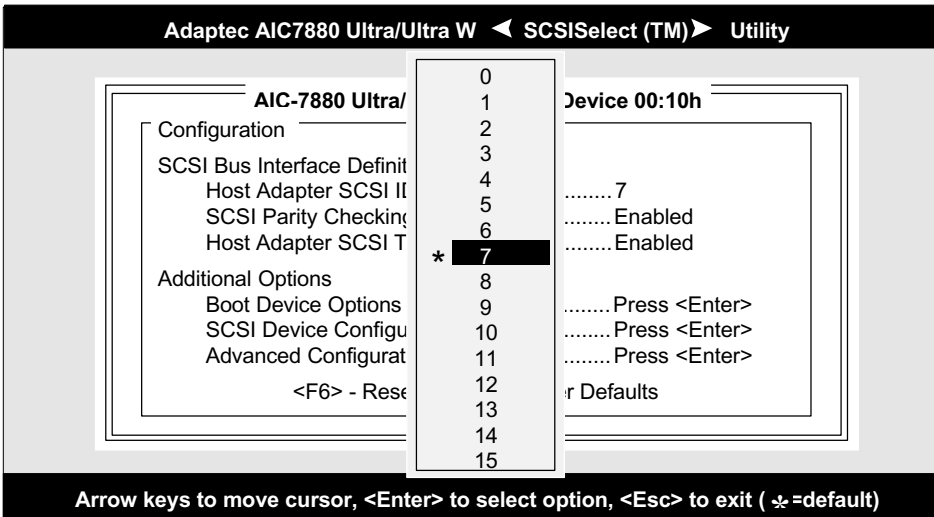


Figure 3-3 Host Adapter SCSI ID Selection Screen for AIC-7880

Each SCSI device on the SCSI bus, including the SCSI controller, must be set to a unique SCSI ID. The SCSI ID serves two purposes: it uniquely identifies each SCSI device on the bus, and it determines the device's priority on the bus during the Arbitration phase. The Arbitration phase determines which device controls the bus when two or more devices request use of it.

Use the cursor (↑ ↓) and **Enter** keys to select the SCSI ID, if you need to change it. Press **Esc** at any time to return to the previous menu.

SCSI Parity Checking

Select this option to enable or disable SCSI Parity Checking on the SCSI controller. Figure 3-4 displays your choices. The default setting is **Enabled**.

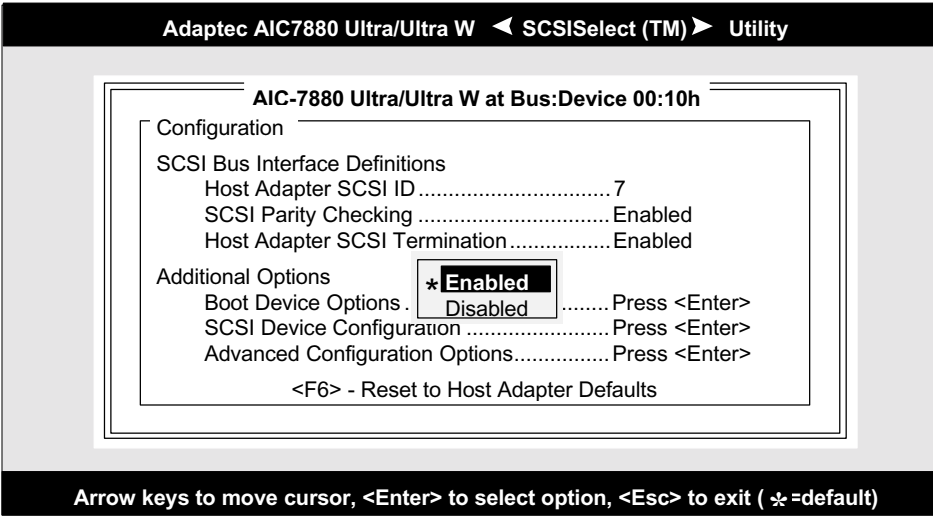


Figure 3-4 SCSI Parity Checking Selection

The SCSI controller always checks parity when reading from the SCSI bus to verify the correct transmission of data from your SCSI devices. You should disable SCSI Parity Checking if any attached SCSI devices do not support SCSI parity. (Most currently available SCSI devices do support SCSI parity.)

Use the cursor (↑ ↓) and **Enter** keys to make selections. Press **Esc** at any time to return to the previous menu.

Host Adapter SCSI Termination

This option allows you to configure host controller SCSI termination. Figure 3-5 shows the choices available if you have an AIC-7880. The default setting is **Enabled**.

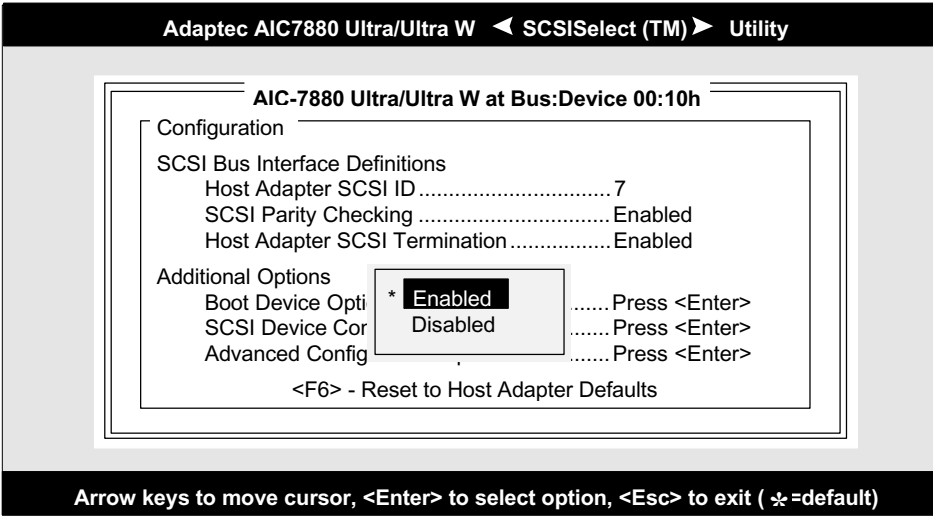


Figure 3-5 Host Adapter SCSI Termination Selection for AIC-7880

Use the cursor (↑ ↓) and **Enter** keys to make your selection.

Boot Device Options

This option shows the target ID of the device you are booting from. The default setting is **0** (zero). We recommend that you not change this setting. Some operating systems will not run unless the boot device is set at zero.

Figure 3-6 shows the Boot Device Options screen.

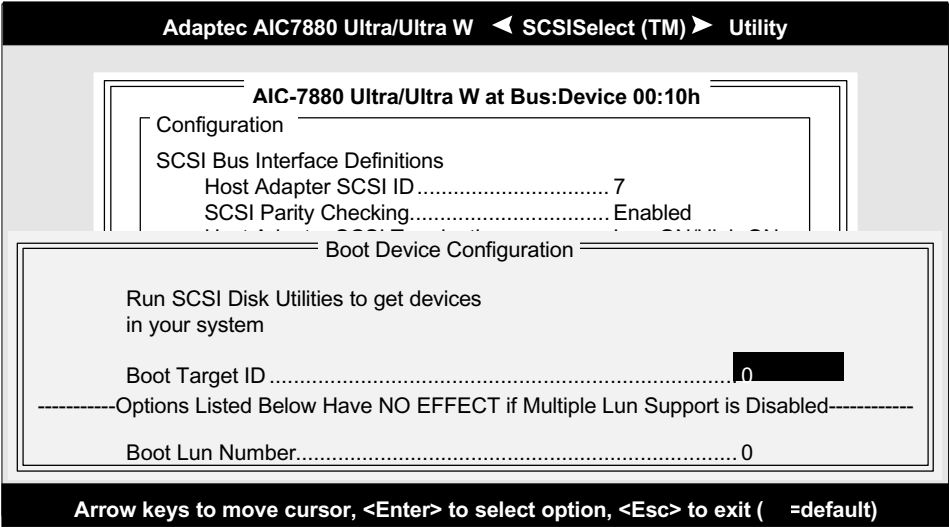


Figure 3-6 Boot Device Options Screen

SCSI Device Configuration

This option allows you to configure certain parameters of each SCSI device on the SCSI bus. A screen similar to Figure 3-7 appears. The screen shows a column of information for each SCSI ID, even if some SCSI IDs are not assigned to a device. To configure a specific SCSI device, you need to know which SCSI ID it uses. See *SCSI Disk Utilities* later in this section to learn how to determine which SCSI ID is used by which device.

Adaptec AIC7880 Ultra/Ultra W ◀ SCSISelect (TM) ▶ Utility								
SCSI Device Configuration								
SCSI Device ID	#0	#1	#2	#3	#4	#5	#6	#7
Initiate Sync Negotiation	yes	yes	yes	yes	yes	yes	yes	yes
Maximum Sync Transfer Rate.....	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Enable Disconnection	yes	yes	yes	yes	yes	yes	yes	yes
Initiate Wide Negotiation	yes	yes	yes	yes	yes	yes	yes	yes
-----Options Listed Below Have NO EFFECT if the BIOS is Disabled-----								
Send Start Unit Command	no	no	no	no	no	no	no	no
Include in BIOS Scan.....	yes	yes	yes	yes	yes	yes	yes	yes
SCSI Device ID	#8	#9	#10	#11	#12	#13	#14	#15
Initiate Sync Negotiation	yes	yes	yes	yes	yes	yes	yes	yes
Maximum Sync Transfer Rate.....	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Enable Disconnection	yes	yes	yes	yes	yes	yes	yes	yes
Initiate Wide Negotiation	yes	yes	yes	yes	yes	yes	yes	yes
-----Options Listed Below Have NO EFFECT if the BIOS is Disabled-----								
Send Start Unit Command	no	no	no	no	no	no	no	no
Include in BIOS Scan	yes	yes	yes	yes	yes	yes	yes	yes
Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (* =default)								

Figure 3-7 SCSI Device Configuration Screen for AIC-7880

Use the cursor keys (↑ ↓) to move between options. Press **Enter** to display a pop-up menu with a selection of values. Use the cursor keys (↑ ↓) to select a value, and press **Enter** to make your selection.

Initiate Sync Negotiation

This option determines whether the SCSI controller initiates synchronous negotiation with the SCSI device.

When set to **Yes**, the SCSI controller initiates synchronous negotiation with the SCSI device. When set to **No**, the SCSI controller does not initiate synchronous negotiation. The SCSI controller, however, always *responds* to synchronous negotiation if the SCSI device initiates it. The default setting is **Yes**.

Data is transferred in asynchronous mode if neither the SCSI controller nor the SCSI peripheral negotiates for synchronous data transfers.



*Some older SCSI devices do not support synchronous negotiation. This may cause your computer to operate erratically or hang if Initiate Sync Negotiation is enabled. Set Initiate Sync Negotiation to **No** for these devices.*

Maximum Sync Transfer Rate

This option determines the maximum synchronous data transfer rate that the SCSI controller can support. The SCSI controller supports rates up to the UltraWide SCSI maximum of 40.0 MBytes/sec. The default value is **40.0**.

In most cases, you can use the maximum value of 40.0. If the SCSI controller is set *not* to negotiate for synchronous data transfer (i.e., Initiate Sync Negotiation is set to **No**), then the value selected here is the maximum rate that the SCSI controller accepts from the device during negotiation. (This is standard SCSI protocol.)



*Some older SCSI devices do not support Fast SCSI data transfer rates. This may cause your computer to operate erratically or hang if the transfer rate is set too high. Set Initiate Sync Negotiation to **No** for these devices.*

Enable Disconnection

This option determines whether the SCSI controller allows a SCSI device to disconnect from the SCSI bus (sometimes called Disconnect/Reconnect). Disconnect/Reconnect allows the SCSI controller to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected.

When set to **Yes**, the SCSI device may disconnect from the SCSI bus. The SCSI device, however, may choose not to disconnect, even if permitted by the SCSI controller (this can usually be configured on the SCSI device). When set to **No**, the SCSI device is not allowed to disconnect from the SCSI bus. The default setting is **Yes**.

You should leave Enable Disconnection set to **Yes** if two or more SCSI devices are connected to the SCSI controller. This optimizes SCSI bus performance. If only one SCSI device is connected to the SCSI controller, set Enable Disconnection to **No** to achieve slightly better performance.

Initiate Wide Negotiation

This option allows communication between all devices (lower 8-bit or upper 8-bit) on the wide (16-bit) SCSI bus. When set to **Yes**, each device can connect on the bus. When set to **No** (disabled), communication can only occur on the lower 8-bits of the 16-bit SCSI bus. The default setting is **Yes**.

Send Start Unit Command

This option, which is supported by some SCSI devices, determines whether the Start Unit Command (SCSI command 1B) is sent to the SCSI device (most devices do not require this). Enabling this option reduces the load on your computer's power supply by allowing the SCSI controller to power-up SCSI devices one-at-a-time when you boot your computer. Otherwise, the devices all power-up at the same time. Most devices require you to set a jumper before they can respond to this command.

When set to **Yes**, the Start Unit Command is sent to the SCSI device during bootup. When set to **No**, each SCSI device powers-up in its normal fashion. The default setting is **No**.



The Send Start Unit Command setting is valid only if the host adapter BIOS is enabled.

If this option is enabled for more than one SCSI device, the Start Unit Command is sent first to the device with the lowest SCSI ID. When this device responds to the SCSI controller, the Start Unit Command is sent to the next highest SCSI ID with a setting of **Yes**. The process continues until all supported devices respond to the SCSI controller.



*If many drives are set to **Yes** for Send Start Unit Command, the boot time varies depending on how long it takes each drive to spin up.*

Advanced Configuration Options

When you select Advanced Configuration Options, a screen similar to Figure 3-8 appears. Do not change these options unless absolutely necessary.

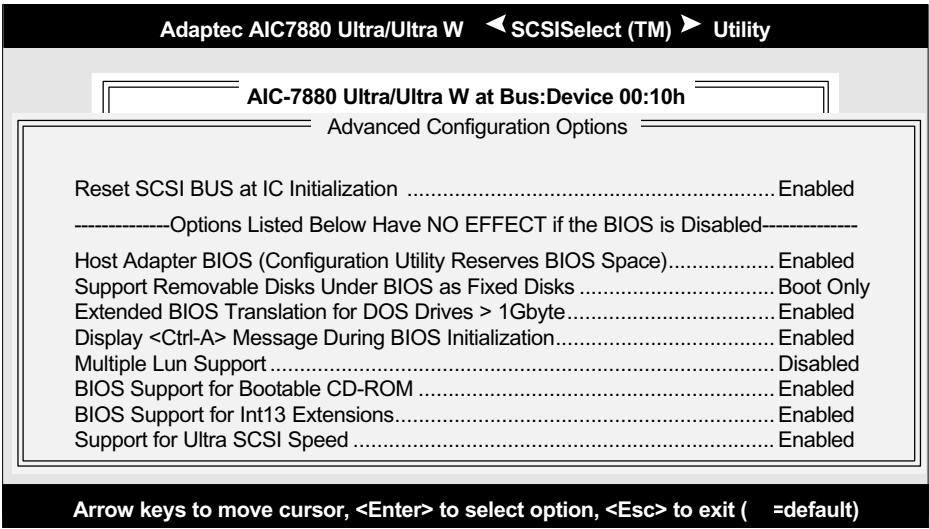


Figure 3-8 Advanced Configuration Options Screen

Use the cursor keys (↑ ↓) to move between options. Press **Enter** to display a pop-up menu with a selection of options. Use the cursor keys (↑ ↓) to select an option, and press **Enter** to make your selection.

Host Adapter BIOS

This option enables or disables the SCSI controller BIOS. Default is **Enabled**.

The SCSI controller BIOS must be enabled if you want the computer to boot from a SCSI hard disk drive connected to the SCSI controller. Several *SCSISelect* options cannot be used unless the SCSI controller BIOS is enabled.

Support Removable Disks Under BIOS as Fixed Disks

This option allows you to control which removable-media drives are supported by the SCSI controller BIOS. It is only valid if the SCSI controller BIOS is enabled. The default setting is **Boot Only**. The following choices are available:

- **Boot Only** – Only the removable-media drive designated as the boot device are treated as a hard disk drive.
- **All Disks** – All removable-media drives supported by the BIOS are treated as hard disk drives.
- **Disabled** – No removable-media drives are treated as hard disk drives. In this situation, software drivers are needed because the drives are not controlled by the BIOS.



*Support for removable-media drives means only that the SCSI controller BIOS **allows** you to use a removable-media drive as if it were a hard disk drive; it does **not** mean you can remove the disk media during operation. If a removable-media SCSI device is controlled by the SCSI controller BIOS, **do not** remove the media while the drive is powered-on or you may lose data! If you want to be able to remove media while the power is on, install the removable-media device driver and set this option to **Disabled**.*

Extended BIOS Translation for DOS Drives > 1 GByte

This option allows you to enable or disable extended translation for SCSI hard disks with a capacity greater than 1 GByte. It is only valid if the SCSI controller BIOS is enabled. The default setting is **Enabled**. Do not change this setting from the default.

If this option is enabled, the following translation schemes are used:

- SCSI hard disks < 1 GByte use a translation scheme of 64 heads, 32 sectors per track
- SCSI hard disks > 1 GByte use a translation scheme of 255 heads, 63 sectors per track

Display <Ctrl-A> Message During BIOS Initialization

This option allows entering the SCSI *Select* utility during BIOS initialization. The default setting is **Enabled**.

Multiple Lun Support

This option allows access to multiple logical unit numbers per SCSI ID. The default setting is **Disabled**.

BIOS Support for Bootable CD-ROM

When this option is enabled, a bootable CD-ROM device may be used to directly load an operating system. The default setting is **Enabled**.

BIOS Support for Int13 Extensions

This option allows access to attached SCSI devices through BIOS Int13 functions. The default setting is **Enabled**.

Support for Ultra SCSI Speed

This option enables UltraWide SCSI data transfers at 40 MB/sec. If enabled, be sure the device is capable of running at this rate. The default setting is **Enabled**.

3.3.2 SCSI Disk Utilities

When you select SCSI Disk Utilities from the Options menu the *SCSISelect* utility scans the SCSI bus and lists all SCSI devices installed on the SCSI bus. You will see a screen similar to Figure 3-9. You can easily determine from this screen which SCSI ID is assigned to each device on the SCSI bus.

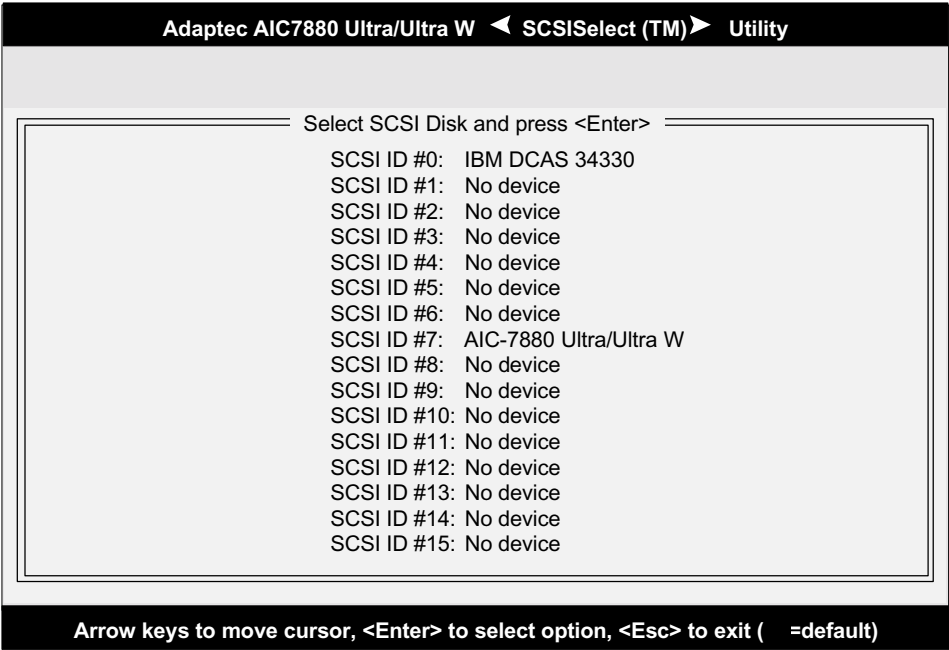


Figure 3-9 SCSI Disk Utilities Screen for AIC-7880

When you highlight a disk device by moving to it with the cursor keys and press **Enter**, a small menu window appears. You then select **Format Disk** or **Verify Media** from this menu.

Use the cursor keys (↑ ↓) to move between options. Press **Enter** to display a pop-up menu with a selection of values. Use the cursor keys (↑ ↓) to select a value, and press **Enter** to make your -selection.

Format Disk

The **Format Disk** utility performs a low-level format on disk devices.

Most SCSI disk devices are preformatted and do not need to be formatted again. The Adaptec **Format Disk** utility is compatible with the vast majority of SCSI disk drives. Run it on hard disk drives or removable-media drives that were previously used with a non-Adaptec SCSI controller.



*A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You **cannot** abort a low-level format once it is started.*

Verify Disk Media

The **Verify Disk Media** utility scans the selected device's media for defects. If the utility finds bad blocks, it prompts you to reassign them; if you select **yes**, those blocks will no longer be used.



*You can press **Esc** at any time to abort the **Verify Disk Media** utility.*

3.4 Configuring Multiple SCSI Controllers



The AHA-2940/W/UW SCSI controller is used as an example in the following discussion.

To use multiple PCI SCSI controllers, do the following:

- Install the boot SCSI controller in the lowest PCI **Device** number. The **Device** number is determined by the slot number on the PCI bus.

To find out the **Device** number of the AHA-2940 SCSI controller(s), run the *SCSISelect* utility (by pressing the key combination **Ctrl + A** when it is displayed onscreen at bootup). Look on the first screen of *SCSISelect* in the upper right hand corner for **Bus:Device xx:xxh** (given in hex).

If the **Device** number is high, move the AHA-2940 to a PCI slot at the other end of the motherboard and rerun *SCSISelect* to see if the number is lower.



This step is a recommended solution for most PCI motherboards. You can also simply switch the AHA-2940 SCSI controller into another PCI slot if the boot order is not what is desired.

- If you are booting from the AHA-2940 and using ISA/EISA-based host adapters as secondary devices, you must disable the BIOS on all ISA/EISA-based SCSI controllers.
- If you are booting from ISA/EISA-based SCSI controllers and using the AHA-2940 as a secondary device, see your ISA/EISA-based SCSI controller documentation to ensure the SCSI controller is at the lowest BIOS base address. ISA/EISA-based SCSI controllers which have their BIOS enabled boot before the AHA-2940.

3.5 Disk Drives Over 1 Gbyte

3.5.1 Extended Translation

Adaptec SCSI controllers have always supported the full range of disk drive capacities under all major operating systems. As disk drives have recently grown beyond 1 GByte in formatted capacity, they have run up against the DOS 1024-cylinder limit.

To continue its support for all SCSI disk drive capacities under DOS, Adaptec has included an extended translation scheme for the AIC-7880 SCSI controllers. This feature supports disk drives of up to 8 GBytes capacity under DOS. *Extended BIOS Translation for DOS Drives > 1 GByte* earlier in this chapter explains how to change the setting of this option in the SCSISelect utility.

3.5.2 The DOS 1 GByte Limit

All current versions of DOS are limited to 1024 cylinders per drive. The standard translation scheme for SCSI host controllers, using 64 heads and 32 sectors, provides a maximum accessible capacity of 1 GByte.

To eliminate the 1 GByte limit, Adaptec's extended translation feature uses 255 heads and 63 sectors, extending the disk drive capacity limit under DOS to 8 GBytes.



*If you have already partitioned a large disk drive with one translation method, conversion to another method will make your data unusable. Be sure to **back up** your disk drive prior to any change in the translation method used.*

3.5.3 When to Use Extended Translation

Using Fdisk

To install a new disk, or to re-partition an existing disk, use the *fdisk* DOS utility as you normally would. The cylinder size increases to 8 MBytes when you enable extended translation. The size of the partition you request must therefore be a multiple of 8 MBytes. If you request a partition size that is not a multiple of 8 MBytes, *fdisk* rounds up to the nearest whole multiple of 8 MBytes.

Questions and Answers About Extended Translation

What happens if I enable extended translation with SCSI drives that are less than 1 GByte in capacity?

Drives handled by the BIOS use extended translation if their formatted capacity is greater than 1 GByte. Drives with less than 1 GByte of formatted capacity use standard translation regardless of whether extended translation is enabled.

3.6 SCSI Troubleshooting Checklist

The AIC-7880 SCSI controller has been tested for compatibility with a wide range of SCSI devices. Most problems that occur during installation result from errors in preparing and connecting devices on the SCSI bus.

Answer these questions first if a problem occurs during installation:

- Are the power cables and SCSI interface cables properly connected?

Connect internal SCSI devices to your computer's power supply. Connect the power cables of external SCSI devices to a grounded line power outlet. Follow the instructions in the computer and SCSI device documentation.

- Is pin-1 orientation maintained throughout the SCSI bus?
- Are the PCI bus and slot parameters set correctly in your computer's **Setup** program?

The PCI bus is designed to assign IRQ, port address, and BIOS address settings automatically to the SCSI controller. But you may need to assign some of these values manually in the **Setup** program.

- Is each SCSI device, including the SCSI controller, set to a unique SCSI ID?
- Is SCSI termination set correctly?

If your problem is still not resolved, continue with the next section.

3.7 BIOS Startup Messages

After you have configured your SCSI controller, the SCSI controller BIOS displays a message when you boot your computer. Normally, this message lists the SCSI ID, manufacturer, model number and other information for each SCSI device that the BIOS detects.

If an initialization failure occurs, however, the SCSI controller BIOS displays a specific error message followed by a *BIOS Installation Failure* message. Here are some of these error messages and their meaning:

WARNING!!!

A drive larger than 1 gigabyte has been detected with 64 head / 32 sector partitioning. This drive is not compatible with the 255 head / 63 sector translation which has been enabled on this adapter. Data could be corrupted! Please check your system setup!

Press any key to continue.

This message occurs only if Extended BIOS Translation is enabled in the *SCSISelect* utility. It means that the BIOS detected a large capacity drive with invalid partition information in the master boot record.

If you are using a drive larger than 1 GByte under MS-DOS 5.0 or above and this message appears, do the following:

1. Run the *SCSISelect* utility and set Extended BIOS Translation to **Disabled**. (See Extended BIOS Translation for DOS Drives > 1 GByte in the Advanced Configuration Options section)
2. Exit from the *SCSISelect* utility and back up the data on the disk drive, if you want to save it.

3. Perform a SCSI low-level format with the **Format Disk** utility under SCSI Disk Utilities in the *SCSISelect* utility.



*All data on the target drive will be lost when you run the **Format Disk** utility. Back up your data before you run it!*

4. In the *SCSISelect* Advanced Configuration Options menu, set Extended BIOS - Translation to **Enabled**.
5. Partition the drive again.
6. Restore data to the drive, if necessary.

3.7.1 Device connected, but not ready

This message appears if the SCSI controller receives no answer when it requests data from an installed SCSI device. The SCSI controller skips this device and moves on to the next device on the bus.

Do the following if you see this message when you request data from a SCSI drive:

1. Run the *SCSISelect* utility and access SCSI Device Configuration. Locate the host controller's SCSI ID and set Send Start Unit Command to **yes**.
2. Exit the *SCSISelect* utility and request data from the drive again.
3. If the message still appears, follow the drive manufacturer's instructions to make sure the drive is set to spin-up when the power is switched ON.

3.7.2 Start unit request failed

The BIOS was unable to send a Start Unit Command to the device. Run the *SCSISelect* utility and disable Send Start Unit Command for the device.

Time-out failure during SCSI Inquiry command!

or

Time-out failure during SCSI Test Unit Ready command!

or

Time-out failure during Start Unit command!

An unexpected time-out occurred. Check SCSI bus termination. Try disconnecting the SCSI peripheral cables from the SCSI controller and then starting the computer. If the computer successfully restarts, check SCSI bus termination and cable connections. One of the devices on the SCSI bus may be defective.

3.7.3 Disk Drive Configuration Problems

This section describes situations that may occur if your computer has multiple disk drives, including combinations of standard disk drives and SCSI disk drives.



“Standard disk drive” means a disk drive attached to the computer through a standard ISA/EISA, non-SCSI disk controller—for example, an IDE drive.

Standard hard disk drives can be set to the *installed* or *not installed* state by the **Setup** program supplied with the host computer. The **Setup** program allows you to select the number of standard hard disks that are recognized by the computer, regardless of whether they are physically installed. SCSI drives are not controlled through the **Setup** program.

If both SCSI and non-SCSI disk drives are installed, then the non-SCSI disk drive is *always* the boot device.

Booting the Computer from a SCSI Drive



The following items may apply for multiple SCSI controller configurations. See the section “Configuring Multiple SCSI Controllers” for more detailed information.

- Be sure that both standard hard disks are mapped out of the computer using the **Setup** program by setting the **Setup** program to **Onboard IDE-Disabled**.
- Be sure that the SCSI boot drive is set to SCSI ID 0 and that there are no SCSI ID conflicts. Check the drive installation manual for information about setting the SCSI ID for that device. You can use the **SCSISelect** utility to determine the SCSI IDs of devices on the SCSI bus.
- Be sure that parity checking is consistently enabled or disabled on all devices on the SCSI bus. See the section “SCSI Parity Checking”.
- Try enabling Include in BIOS Scan in the SCSI Device Configuration option of the **SCSISelect** utility. See the section “SCSI Device Configuration”.
- Be sure to cycle the power OFF and ON after changing any values on a SCSI controller, in a **Setup** program, or on a SCSI device. Doing this ensures that the new initial values are loaded.
- Be sure that the SCSI bus is properly terminated. See the section “Setting SCSI Bus Termination”.
- Be sure that the intended boot disk has an active partition and has been formatted.
- Check cable connections and pin-1 orientation.

Using a Standard Drive as C and a SCSI Drive as D

- Use the **Setup** program to map the second standard hard disk (if one exists) out of the configuration.
- Disable Onboard SCSI Boot in Setup.
- Be sure that the SCSI drive to be used as drive D is set to SCSI ID 0. Check the drive manual for information on setting the SCSI ID for that device. You can also use the *SCSISelect* utility to determine the SCSI addresses of peripherals on the SCSI bus.
- Be sure that SCSI parity checking is consistently enabled or disabled on all devices on the SCSI bus.
- Verify that the SCSI controller and the SCSI devices are properly configured and installed.
- Be sure to cycle the power OFF and ON after changing any values on a SCSI controller, in a **Setup** program, or on a SCSI device. Doing this ensures that the new initial values are loaded.
- Be sure that the SCSI bus is properly terminated.
- Be sure that the disk is formatted and has a partition.
- Check cable connections and pin-1 orientation.

Using a SCSI Drive as C and Another SCSI Drive as D

- Make sure your computer's CMOS **Setup** is set to **Onboard IDE-Disabled**, as is required for SCSI host controllers. Also ensure Onboard SCSI Boot is Enabled.
- Be sure that the SCSI drive to be used as drive C is set to SCSI ID 0. Check the disk drive manual for information on setting the SCSI ID for that device. You can also use the *SCSISelect* utility to determine the SCSI addresses of peripherals on the SCSI bus.
- Set the SCSI drive to be used as drive D to SCSI ID 1. Check the drive manual for information on setting the SCSI ID for that device.
- Try enabling **Include in BIOS Scan** in the SCSI Device Configuration option of the *SCSISelect* utility. See the section “SCSI Device Configuration”.
- Be sure to cycle the power OFF and ON after changing any values on a SCSI controller, in a **Setup** program, or on a SCSI device. This ensures that the new initial values are loaded.
- Be sure that SCSI parity checking is consistently enabled or disabled on all devices on the SCSI bus.
- Verify that the SCSI controllers and the SCSI devices are properly configured and installed.
- Be sure that the SCSI bus is properly terminated.
- Be sure that, if necessary, the disk has a partition and is formatted.

Computer Hangs, or SCSI Controller Cannot Always Find the Drives

- Check SCSI parity for consistency and be sure SCSI termination is set correctly.
- Check cable length and integrity. Check pin-1 orientation.
- If the SCSI controller LED remains on when the computer hangs, the host adapter may be interfering with your computer's operation. It may be

installed in a motherboard slot that does not support First-Party DMA (i.e., Bus Master) data transfers. See your computer documentation.

Chapter 4 System Housing

This chapter describes the features of the system housing and tells you how to install the basic system components such as disk drives, system board, or expansion boards. Descriptive illustrations accompany the installation procedures.



Turn OFF the system power and all peripherals before opening the system or connecting or removing any peripheral device. Always turn ON any external peripheral device first before you turn on the system.

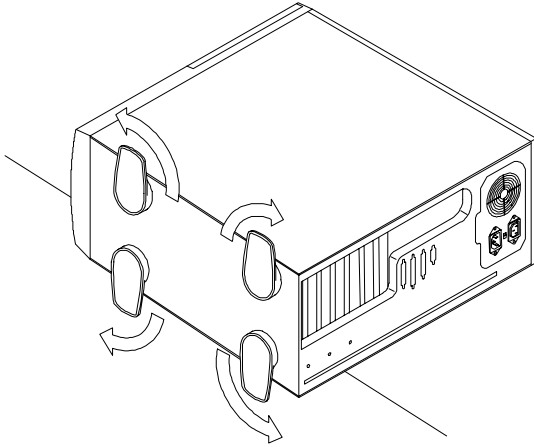


To avoid damaging the system, do not open the housing for service or upgrade unless you are a qualified technician.

Before attempting the procedures described in this chapter, read the ESD precautions and pre- and post-installation instructions in sections 1.5.2 and 1.5.3.

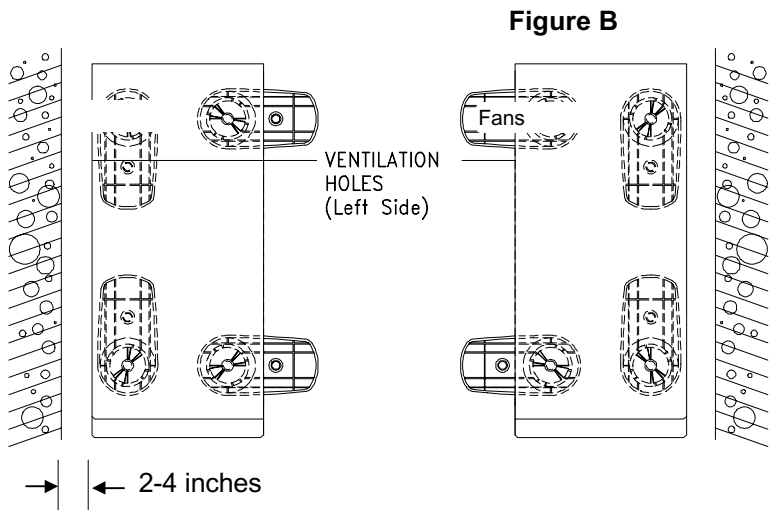
4.1 Positioning the System Housing

4.1.1 Standalone System



For a standalone system, rotate the feet outward to stabilize the housing.

4.1.2 Against a Wall

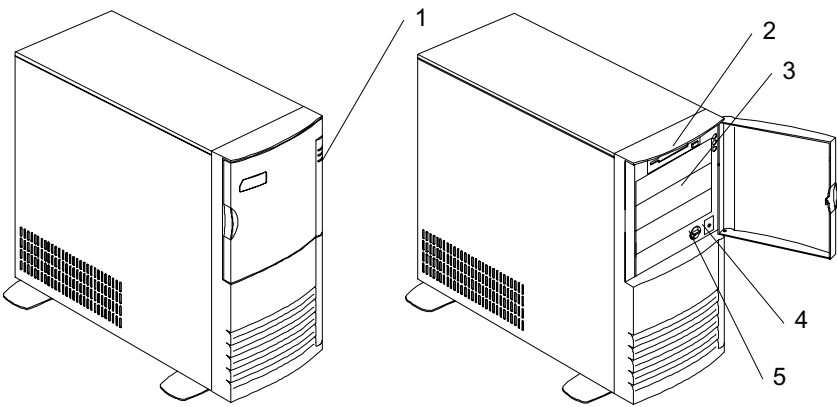


The housing has vents on both sides, with the vent on the left side being the most important. When standing the system with the vents facing a wall, leave a 2-4 inch space from the wall to allow air circulation. See Figure A.

To stand the housing with the vents facing out, place the system close to the wall and position the feet as in Figure B.

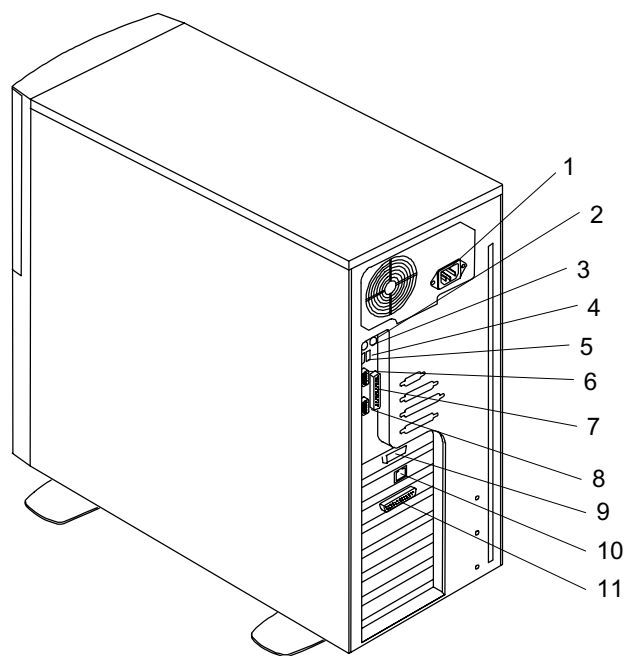
4.2 Features

4.2.1 Front Panel



- 1 *Power/Hard disk/RDM LEDs*
- 2 *3.5-inch diskette drive*
- 3 *5.25-inch drive bays*
- 4 *Power button*
- 5 *Reset button*

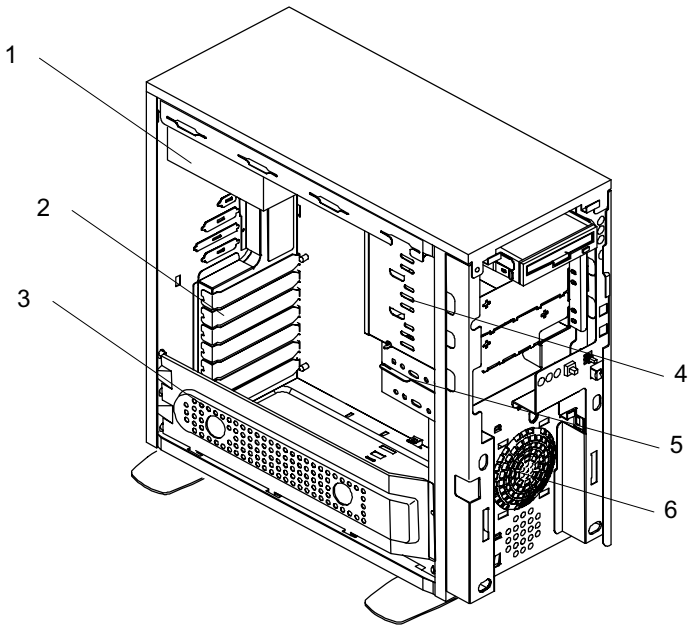
4.2.2 Rear Panel



- | | | | |
|---|--------------------------------------|----|---------------------|
| 1 | Power socket | 6 | Serial port 1 |
| 2 | Keyboard | 7 | Parallel port |
| 3 | Mouse | 8 | Serial port 2 |
| 4 | Universal serial bus (USB) connector | 9 | VGA |
| 5 | Universal serial bus (USB) connector | 10 | RJ-45 LAN connector |
| | | 11 | SCSI Port |

4.2.3 Internal Components

The following figure shows the housing internal structure and some of the basic system components.



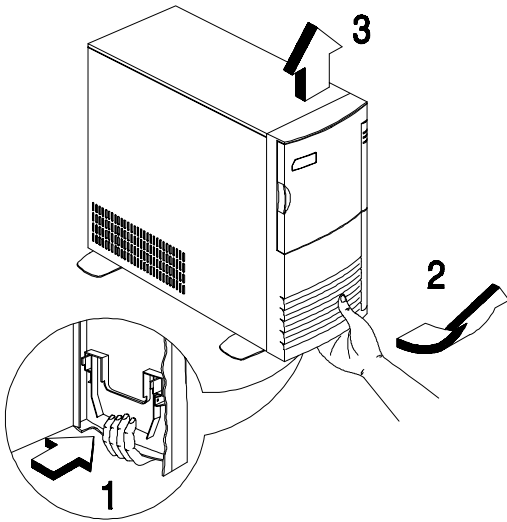
- 1 Power supply
- 2 Expansion board brackets
- 3 Metal frame for additional hard disks
- 4 5.25-inch drive bays (for hard disks or CD-ROM)
- 5 3.5-inch hard disk drive bays
- 6 Fan

4.3 Opening the Housing Panels



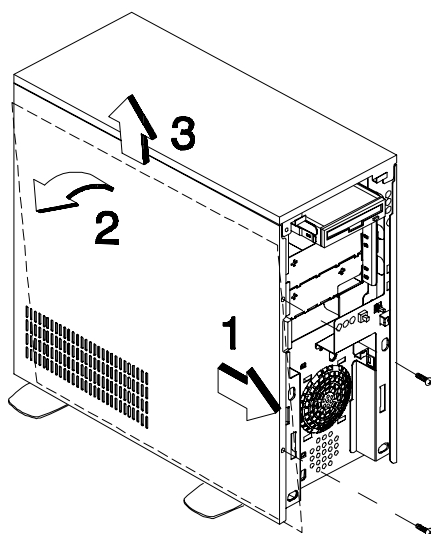
Before opening the system housing, please refer to section 1.5 for ESD precautions and pre- and post-installation instructions.

4.3.1 Front Panel



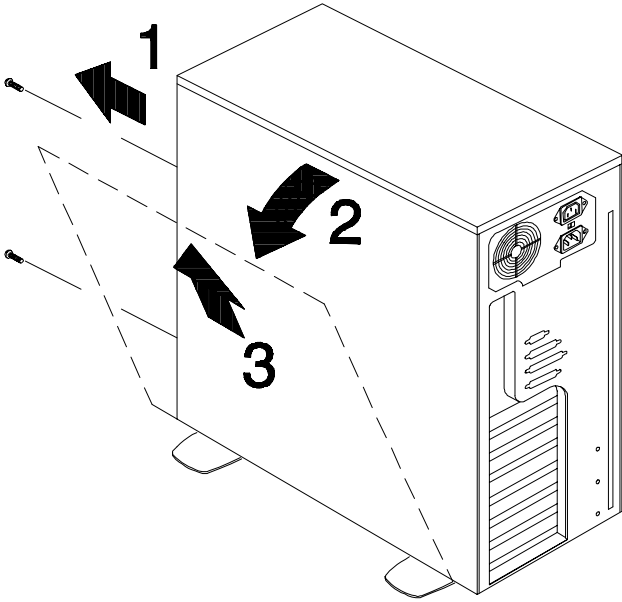
1. Push the safety latch to unlock the system housing.
2. Insert your hand in the opening under the front panel. Reach for the panel handle and press it to release the cover from the housing frame.
3. Pull the cover to detach it completely from the frame.

4.3.2 Removing the Left Cover



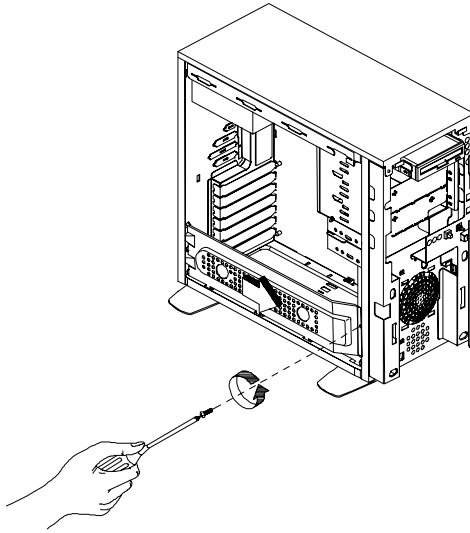
1. Remove the two screws that secure the left cover, then slide the cover toward the front for about an inch.
2. Pull the upper part of the cover outward.
3. Lift the cover out.

4.3.3 Removing the Right Cover



1. Remove the two screws securing the right cover, then slide the cover toward the front for about an inch.
2. Pull the upper part of the cover outward.
3. Lift the cover out.

4.3.4 Removing the Metal Frame for Additional Hard Disks



1. Remove the screw that secures the metal frame for additional hard disks.
2. Slide the frame in the direction of the arrow shown in the figure to release the frame tabs from the slots on the floor of the housing.

4.4 Component Installation



Make sure that you have removed the metal frame for additional hard disks before you proceed. Refer to the previous sections for the instructions.

4.4.1 ESD Precautions

Always observe the following electrostatic discharge (ESD) precautions before installing any system component:

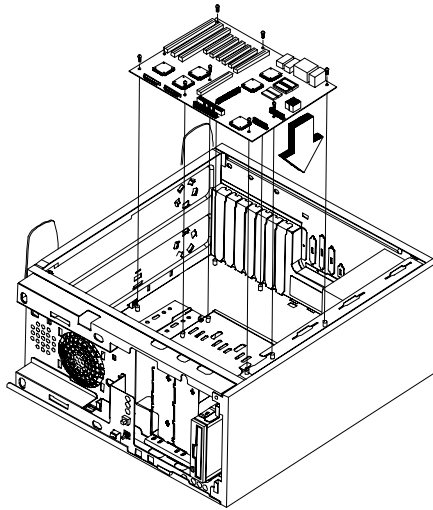
1. Do not remove a component from its anti-static packaging until you are ready to install it.
2. Wear a wrist grounding strap before handling electronic components. Wrist grounding straps are available at most electronic component stores.

4.5 Installing a System Board



Observe the ESD precautions in section 4.4.1.

Follow these steps to install a system board.

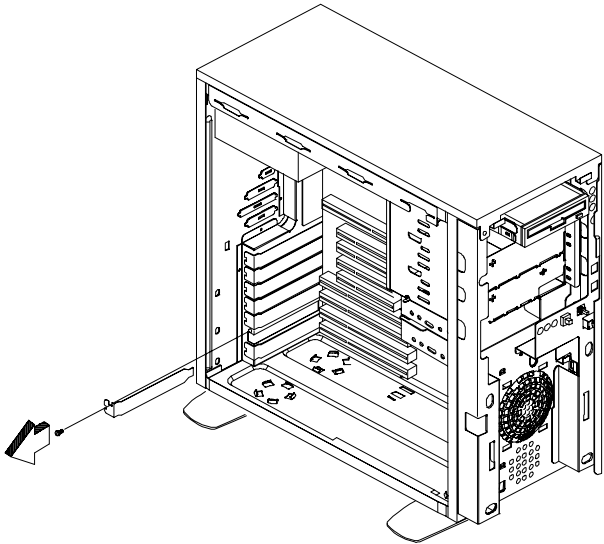


1. Position the housing so that the right side lies flat.
2. Align the board with the pegs on the housing frame.
3. Gently press the board until it is properly seated.
4. Secure the board with screws.
5. Attach the required cables to the connectors on the system board.

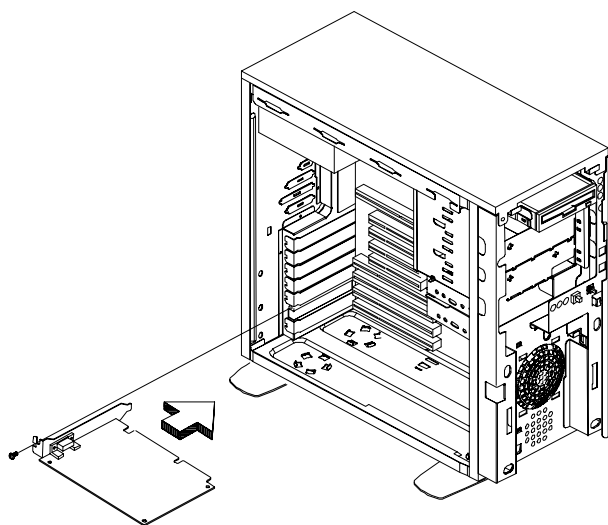
4.6 Installing Expansion Boards



Observe the ESD precautions in section 4.4.1.



1. Remove a bracket from any empty expansion slot. Save the screw to secure the new board. Save the bracket for future use.



2. Gently insert the board into the open expansion slot. Make sure that the board is inserted completely.
3. Secure the board with the screw.



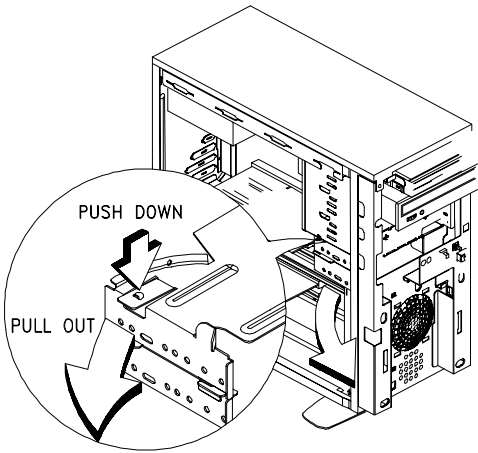
Do not neglect this step. The board uses the screw for grounding.

4.7 Installing Drives

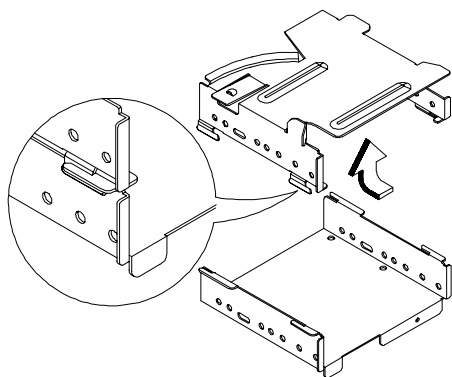


Observe the ESD precautions in section 4.4.1.

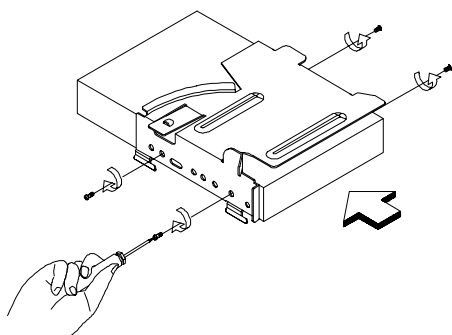
Installing Hard Disks



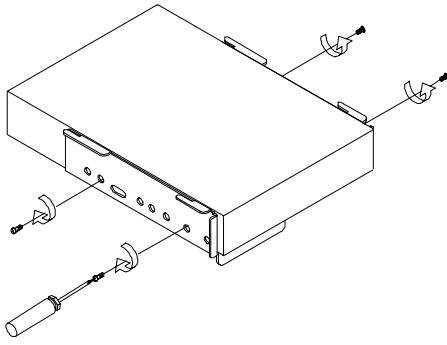
1. Push down the tab that locks the 3.5-inch hard disk drive frames to the housing, then pull the frames out.



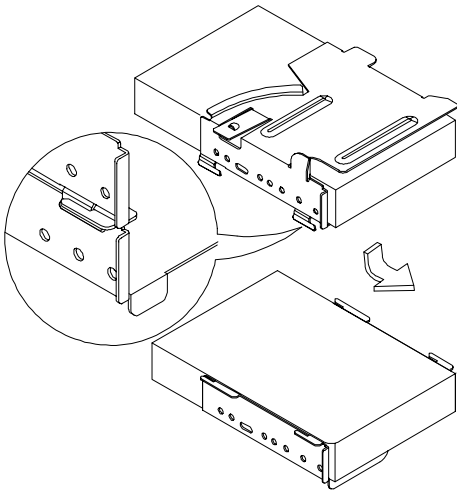
2. Detach the upper drive frame from the lower drive frame.



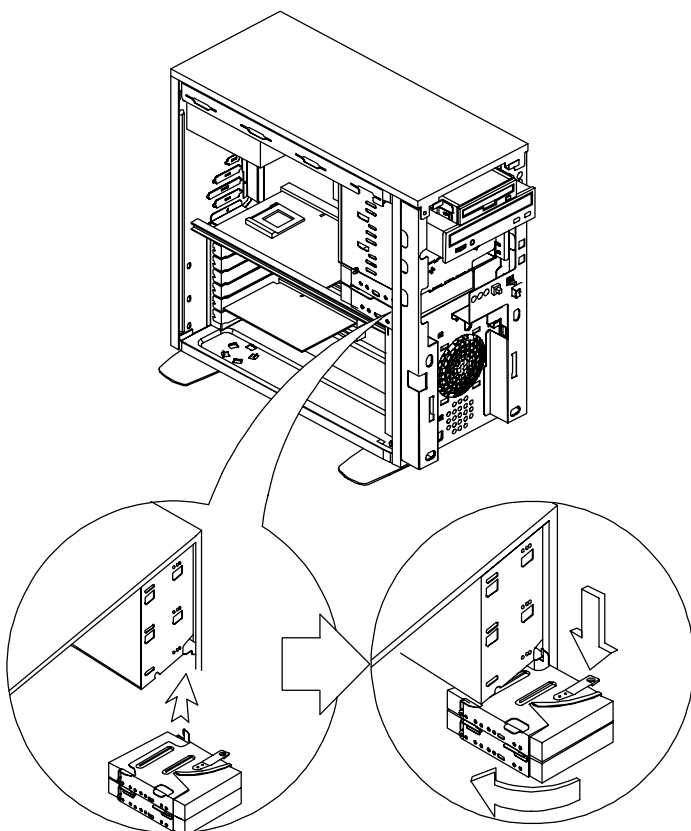
3. Secure a hard disk on the upper drive frame.



4. Secure a hard disk on the lower drive frame.



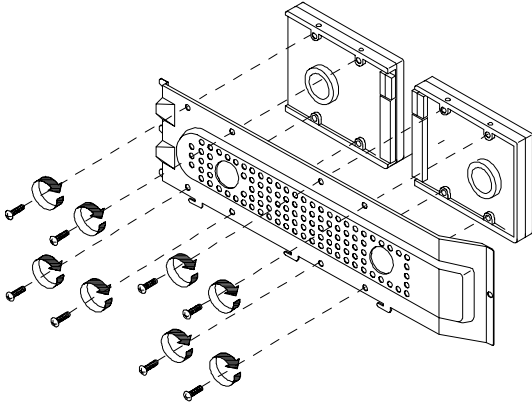
5. Reattach the lower drive frame to the upper drive frame.



6. Reinstall the drive frames into the housing.
7. Connect the power supply and drive cables.

Installing Additional Hard Disks

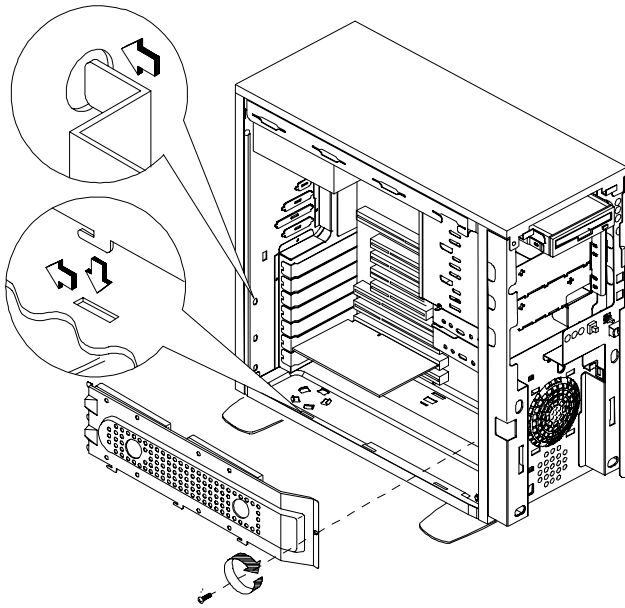
The system housing comes with a metal frame for additional hard disks. This frame accommodates two half-height hard disks.



1. Secure the hard disks on the metal frame one at a time.



Before you re-install the additional hard disk frame back into the housing, make sure that you have installed the system board and expansion boards, if any.



2. Locate the slots at the back of the housing floor.
3. Insert the frame tabs into these slots, with the hard disks facing the system board.
4. Carefully slide the frame toward the rear of the housing until it fits in place.
5. Secure the hard disk frame with a screw.

Removing the Frame with Installed Hard Disks

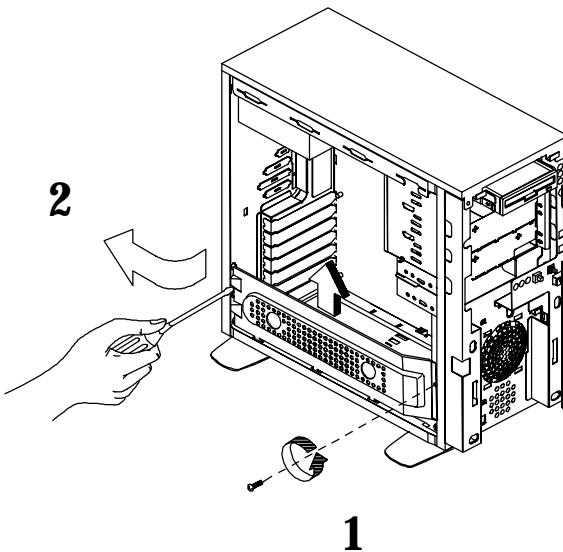
Follow these steps when removing the frame with hard disks installed.

1. Detach the hard disk cables, then remove the screws that secure the frame to the housing.
2. Use a flat screwdriver to slowly slide the frame toward the front. See the following figure.



*Do not use your hands to slide the frame.
Using a screwdriver prevents sudden shock that
might damage the hard disks.*

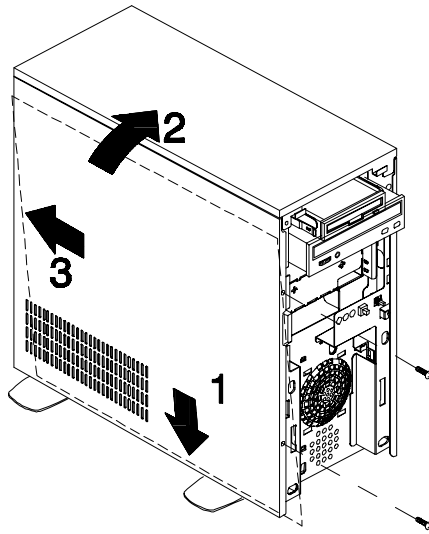
3. Lift up the frame with the hard disks carefully.



4.8 Cover Installation

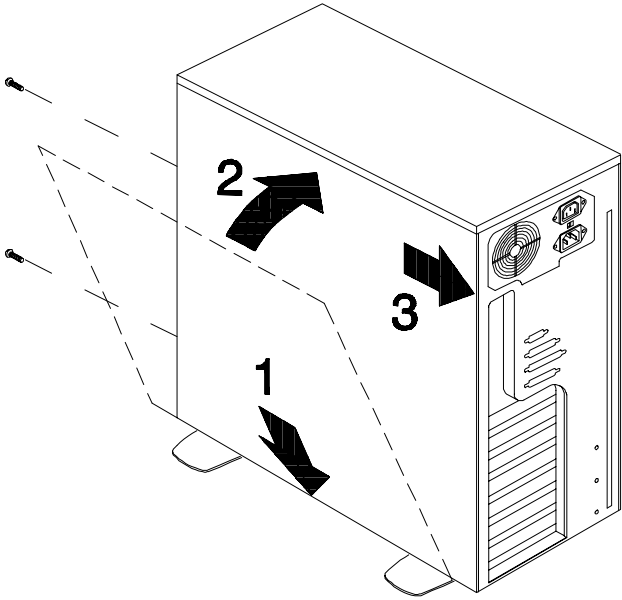
After you install the necessary system components into the housing, you must reinstall the left and right covers and the front panel.

4.8.1 Installing the Left Cover



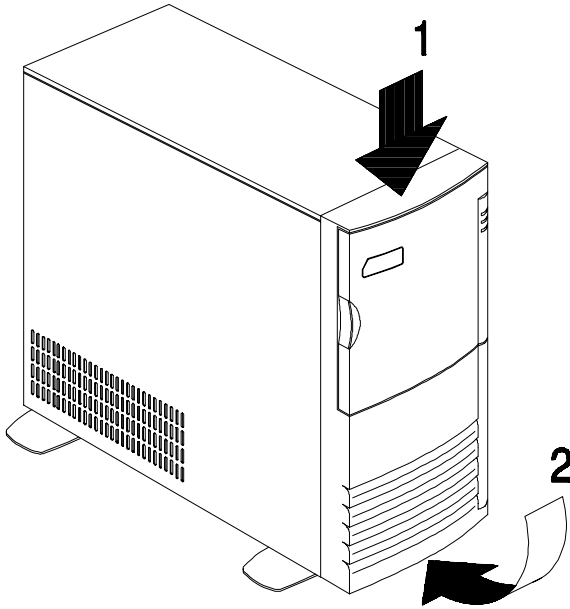
1. Align the hooks on the bottom edge of the left cover with the rail on the bottom of the housing.
2. Push the upper part of the left cover.
3. Slide the cover toward the rear panel until it fits in place.

4.8.2 Installing the Right Cover



1. Align the hooks on the bottom edge of the right cover with the rail on the bottom of the housing.
2. Push the upper part of the right cover.
3. Slide the cover toward the rear panel until it fits in place.

4.8.3 Installing the Front Panel



1. Insert the hooks on the inner side of the front panel into the protruding tabs on the edge of the roof.
2. Fit the lower front panel until it clicks in place.

Index

A

- Abort settings change, 2-41
- Advanced configuration options, 3-16
- Advanced options, 2-28
 - AGP, 2-32
 - Bus frequency, 2-34
 - Cache scheme, 2-29
 - CPU frequency, 2-34
 - CPU multiple, 2-34
 - External cache, 2-5, 2-29
 - Graphics aperture size, 2-33
 - Internal cache (CPU cache), 2-29
 - Memory at 15MB-16MB reserved for, 2-30
 - Memory parity mode, 2-30
 - Memory/cache options, 2-29
 - PCI IRQ setting, 2-31
 - PCI IRQ sharing, 2-32
 - PCI slots, 2-32
 - Plug and play OS, 2-33
 - PnP/PCI options, 2-31
 - Processor speed, 2-5, 2-34
 - Reset resource assignments, 2-33
- Advanced PIO mode, 2-15
- Advanced server manager (ASM pro), 1-18
- AGP, 2-32
- ASM Pro, 1-18

B

- Base address, 2-16, 2-17
- BIOS startup messages, 3-25

- Booting the computer from a SCSI drive, 3-28
- Computer hands, or SCSI controller cannot always find the drives, 3-30
- Device connected, but not ready, 3-26
- Disk drive configuration problems, 3-27
- Start unit request failed, 3-27
- Using a SCSI drive as C and another SCSI drive as D, 3-30
- Using a standard drive as C and a SCSI drive as D, 3-29

BIOS utility, 2-1

- Advanced options, 2-28
- Boot options, 2-23
- Date and time, 2-26
- Disk drives, 2-10
- Entering setup, 2-1
- Exit setup, 2-42
- Load default settings, 2-41
- Onboard peripherals, 2-16
- Product information, 2-8
- System information, 2-4
- System security, 2-35, 2-39

BIOS support for bootable CD-ROM, 3-18

BIOS support for int13 extensions, 3-18

BIOS Utility

- Abort settings change, 2-41

Boot device options, 3-11

Boot options, 2-23

- Boot sequence, 2-24
- Configuration table, 2-25
- Fast boot, 2-24
- First hard disk drive, 2-24
- Memory test, 2-25
- Num lock after boot, 2-25
- Silent boot, 2-24

Boot sequence, 2-24

- Booting the computer from a SCSI drive, 3-28
- Bus frequency, 2-34

C

- Cache scheme, 2-29
- CD-ROM drive DMA mode, 2-15
- Component installation, 4-11
 - ESD precautions, 4-11
- Computer hangs, or SCSI controller cannot always find the drives, 3-30
- Configure/view host adapter settings menu, 3-7
- Configuring multiple SCSI controllers, 3-21
- Configuration table, 2-25
- Connector functions, 1-5
- Correcting error conditions, 1-22
- Cover installation, 4-22
 - Front panel, 4-24
 - Left cover, 4-22
 - Right cover, 4-23
- CPU frequency, 2-34
- CPU multiple, 2-34

D

- Date, 2-26
- Date and time, 2-26
 - Date, 2-26
 - Time, 2-27
- Default values, 3-4
- Device connected, but not ready, 3-26
- Disk drive configuration problems, 3-27
- Disk drive control, 2-40
- Disk drives, 2-10
 - Advanced PIO mode, 2-15
 - CD-ROM drive DMA mode, 2-15
 - Floppy drives, 2-10
 - Hard disk block mode, 2-14

- Hard disk size > 504 MB, 2-14
- IDE drives, 2-12
- LS-120 drive compatible as, 2-11
- Disk drives over 1 Gbyte
 - Extended translation, 3-22
 - Using Fdisk, 3-23
 - When to use extended translation, 3-23
- Display <Ctrl-A> message during BIOS initialization, 3-18
- DMI BIOS version, 2-9
- Drive control settings, 2-40

E

- ECP DMA channel, 2-18
- Enable disconnection, 3-14
- Enter setup, 2-1
- Entering setup, 2-1
- Error conditions, correcting, 1-22
- Error messages, 1-18, 1-19
 - Correcting, 1-22
 - Software, 1-19
 - System, 1-19
- ESD precautions, 1-8, 4-11
- Executing AFlash, 3-2
- Exit setup, 2-42
- Extended translation, 3-22
- External cache, 2-5, 2-29

F

- Fast boot, 2-24
- Features, 1-1, 4-4
 - Front panel, 4-4, 4-7
 - Internal components, 4-6
 - Rear panel, 4-5
- First hard disk drive, 2-24
- Floppy disk controller, 2-19
- Floppy drive A, 2-5
- Floppy drive B, 2-6

- Floppy drives, 2-10
- Format disk, 3-20
- Front panel, 4-4, 4-7
- Front panel connectors, 1-7
- Front panel features, 4-4

G

- Graphics aperture size, 2-33

H

- Hard disk block mode, 2-14
- Hard disk size > 504 MB, 2-14
- Host adapter BIOS, 3-4, 3-17
- Host adapter SCSI ID, 3-8
- Host adapter SCSI termination, 3-10

I

- IDE controller, 2-19
- IDE drives, 2-12
- IDE hard disk standby timer, 2-22
- IDE primary channel master, 2-6, 2-12
- IDE primary channel slave, 2-6, 2-12
- IDE secondary channel master, 2-6, 2-12
- IDE secondary channel slave, 2-6, 2-12
- Initiate sync negotiation, 3-13
- Initiate wide negotiation, 3-14
- Installing a DIMM, 1-15
- Installing a Pentium II processor, 1-10
- Installing a system board, 4-12
- Installing additional hard disks, 4-19
- Installing components on the system board, 1-8
 - Post-installation instructions, 1-9
 - Pre-installation instructions, 1-8
- Installing drives, 4-15
 - Additional hard disks, 4-19
 - Hard disks, 4-15

- Removing the frame with installed hard disks, 4-21
- Installing expansion boards, 4-13
- Installing hard disks, 4-15
- Installing system board components, 1-8
- Installing the front panel, 4-24
- Installing the left cover, 4-22
- Installing the right cover, 4-23
- Internal cache (CPU cache), 2-29
- Internal cache size, 2-5
- Internal components, 4-6
- Internal structure, 4-6
- IRQ, 2-16, 2-17

J

- Jumper and connector locations, 1-4
- Jumper settings, 1-5
- Jumpers and connectors, 1-4
 - Connector functions, 1-5
 - Jumper settings, 1-5
 - Locations, 1-4

L

- Load default settings, 2-41
- LS-120 drive compatible as, 2-11

M

- Main board ID, 2-8
- Main board S/N, 2-9
- Major components, 1-2
 - System board layout, 1-3
- Maximum sync transfer rate, 3-13
- Memory at 15MB-16MB reserved for, 2-30
- Memory configurations, 1-14
- Memory parity mode, 2-30
- Memory test, 2-25

- Memory upgrade, 1-14
 - Installing a DIMM, 1-15
 - Memory configurations, 1-14
 - Reconfiguring the system, 1-17
 - Removing a DIMM, 1-16
- Memory/cache options, 2-29
- Modem ring indicator, 2-22
- Multiple lun support, 3-18

N

- Num lock after boot, 2-25

O

- Onboard device settings, 2-19
- Onboard peripherals, 2-16
 - Base address, 2-16, 2-17
 - Device settings, 2-19
 - ECP DMA channel, 2-18
 - Floppy disk controller, 2-19
 - IDE controller, 2-19
 - IRQ, 2-17
 - Operation mode, 2-18, 2-39
 - Parallel port, 2-7, 2-17
 - PS/2 mouse controller, 2-19
 - Serial port 1 and 2, 2-16
 - SMBus interrupt (IRQ9), 2-20
 - USB host controller, 2-20
 - USB legacy mode, 2-20
- Opening the housing panels, 4-7
 - Removing the left cover, 4-8
 - Removing the right cover, 4-9
 - Upper front panel, 4-7
- Operation mode, 2-18, 2-39
- Overview, 3-4

P

- Parallel port, 2-7, 2-17

- PCI IRQ setting, 2-31
- PCI IRQ sharing, 2-32
- PCI slots, 2-32
- Plug and play OS, 2-33
- PnP/PCI options, 2-31
- Positioning the system housing, 4-2
 - Against a wall, 4-3
 - Standalone system, 4-2
- Post-installation instructions, 1-9
- Power management, 2-21
 - IDE hard disk standby timer, 2-22
 - Modem ring indicator, 2-22
 - Power management mode, 2-21
 - Power switch < 4 sec, 2-22
 - Sleep mode, 2-22
 - System sleep timer, 2-22
 - System wake-up event, 2-22
- Power management mode, 2-21
- Power On password, 2-39
- Power switch < 4 sec., 2-22
- Power-on password, 2-39
- Pre-installation instructions, 1-8
- Processor, 2-5, 2-34
- Processor speed, 2-5, 2-34
- Product information
 - System S/N, 2-8
- Product information, 2-8
 - DMI BIOS version, 2-9
 - Main board ID, 2-8
 - Main board S/N, 2-9
 - Product name, 2-8
 - System BIOS version, 2-9
- Product name, 2-8
- PS/2 mouse, 2-7, 2-19
- PS/2 mouse controller, 2-19

Q

- Questions and answers about extended translation, 3-23
- Quick way to execute AFlash, 3-3

R

- Rear panel, 4-5
- Rear panel features, 4-5
- Reconfiguring the system, 1-17
- Removing a DIMM, 1-16
- Removing a Pentium II processor, 1-12
- Removing the frame with installed hard disks, 4-21
- Removing the left cover, 4-8
- Removing the right cover, 4-9
- Reset resource assignments, 2-33
- Running the SCSISelect utility, 3-5

S

- SCSI device configuration, 3-12
- SCSI disk utilities, 3-19
- SCSI parity checking, 3-9
- SCSI troubleshooting checklist, 3-24
- SCSISelect configuration utility, 3-4
 - Advanced configuration options, 3-16
 - BIOS startup messages, 3-25
 - configure/view host adapter settings, 3-7
 - Default values, 3-4
 - Device connected, but not ready, 3-26
 - Disk drive configuration problems, 3-27
 - Disk drives over 1 gbyte, 3-22
 - Multiple controllers, configuring, 3-21
 - Options, 3-6
 - Overview, 3-4
 - Running, 3-5
 - SCSI disk utilities, 3-19
 - Start unit request failed, 3-27
 - Troubleshooting checklist, 3-24
 - When to use, 3-5
- SCSISelect utility options, 3-6
 - Advanced configuration options, 3-16
 - BIOS support for bootable CD-ROM, 3-18
 - Boot device options, 3-11
 - Configure/view host adapter settings menu, 3-7
 - Display <Ctrl-A> message during BIOS initialization, 3-18
 - Enable disconnection, 3-14
 - Format disk, 3-20
 - Host adapter BIOS, 3-17
 - Host adapter SCSI ID, 3-8
 - Host adapter SCSI termination, 3-10
 - Initiate sync negotiation, 3-13
 - Initiate wide negotiation, 3-14
 - Maximum sync transfer rate, 3-13
 - Multiple lun support, 3-18
 - SCSI device configuration, 3-12
 - SCSI disk utilities, 3-19
 - SCSI parity checking, 3-9
 - Send start unit command, 3-15
 - Support for ultra SCSI speed, 3-18
 - Support removable disks under BIOS as fixed disks, 3-17
 - Verify disk media, 3-20
- Send start unit command, 3-15
- Serial port 1, 2-7
- Serial ports 1 and 2, 2-16
- Server management features, 1-18
 - Advanced server manager (ASM pro), 1-18
- Setup password, 2-35
 - bypassing, 2-38
 - changing, 2-37
 - removing, 2-37
- Silent boot, 2-24
- Sleep mode, 2-22
- SMBus interrupt (IRQ9), 2-20
- Software error messages, 1-19
- Standalone system, 4-2
- Start unit request failed, 3-27
- Support for ultra SCSI speed, 3-18

- Support removable disks under BIOS as fixed disks, 3-17
 - System BIOS version, 2-9
 - System board, 1-1, 1-3
 - ASM Pro, 1-18
 - Correcting error condition, 1-22
 - Error messages, 1-18, 1-19
 - ESD precautions, 1-8
 - Features, 1-1
 - Front panel connectors, 1-7
 - Installing a Pentium II processor, 1-10
 - Installing components, 1-8
 - Jumpers and connectors, 1-4
 - Major components, 1-2
 - Memory upgrade, 1-14
 - Post-installation instructions, 1-9
 - Pre-installation instructions, 1-8
 - Removing a Pentium II processor, 1-12
 - Server management features, 1-18
 - System board layout, 1-3
 - System error messages, 1-19
 - System housing, 4-1, 4-2
 - Component installation, 4-11
 - Cover installation, 4-22
 - Features, 4-4
 - Front panel features, 4-4
 - Installing a system board, 4-12
 - Installing drives, 4-15
 - Installing expansion boards, 4-13
 - Internal structure, 4-6
 - Opening the housing panels, 4-7
 - Positioning, 4-2
 - Rear panel features, 4-5
 - Upper front panel, 4-7
 - System information, 2-4
 - 1st bank/2nd bank/3rd bank, 2-7
 - External cache, 2-5, 2-29
 - Floppy drive A, 2-5
 - Floppy drive B, 2-6
 - IDE primary channel master, 2-6, 2-12
 - IDE primary channel slave, 2-6, 2-12
 - IDE secondary channel master, 2-6, 2-12
 - IDE secondary channel slave, 2-6, 2-12
 - Internal cache size, 2-5
 - Parallel port, 2-7, 2-17
 - Processor, 2-5, 2-34
 - Processor speed, 2-5, 2-34
 - PS/2 mouse, 2-7, 2-19
 - Serial port 1, 2-7
 - Serial port 2, 2-7
 - Total memory, 2-7
 - System S/N, 2-8
 - System security, 2-35, 2-39
 - Disk drive control, 2-40
 - Operation mode, 2-18, 2-39
 - Power-on password, 2-39
 - Setup password, 2-35
 - To bypass setup password, 2-38
 - To remove your setup password, 2-37
 - System sleep timer, 2-22
 - System utilities, 3-1
 - BIOS startup messages, 3-25
 - Configuring multiple SCSI controllers, 3-21
 - Disk drives over 1 Gbyte, 3-22
 - SCSI troubleshooting checklist, 3-24
 - SCSISelect configuration utility, 3-4
 - SCSISelect utility options, 3-6
 - System wake-up event, 2-22
- ## T
- Time, 2-27
 - To bypass setup password, 2-38
 - To remove your setup password, 2-37
 - Total memory, 2-7
- ## U
- USB host controller, 2-20
 - USB legacy mode, 2-20

Using a SCSI drive as C and another
SCSI drive as D, 3-30
Using a standard drive as C and a SCSI
drive as D, 3-29
Using Fdisk, 3-23

V

Verify disk media, 3-20
VGA palette snoop, 2-32

W

When to use extended translation, 3-23
When to use the SCSI*Select* utility, 3-5