

AcerAltos19000Pro4 Series

User's Guide

Document History

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4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace the outlet. Do not defeat the purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
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.

12. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - 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. Replace the battery with the same type as recommended by Acer. Use of another battery type may present a risk of fire or explosion. Refer battery replacement to a qualified service technician.
15. Warning! The battery may explode if handled improperly. Do not recharge, disassemble or dispose of in fire. Keep away from children and dispose of used battery promptly.
16. 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).

FCC Class A Radio Frequency Interference Statement

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
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:

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2:

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

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About this Manual

Purpose

This system guide aims to give you all the necessary information to enable you to set up and operate the AcerAltos 19000Pro4 system.

Manual Structure

This system guide consists of six chapters and two appendixes.

Chapter 1 System Introduction

This chapter generally describes the system's unique features and powerful architecture. It includes a brief introduction of the new generation Intel Pentium Pro CPU that forms the heart of the AcerAltos 19000Pro4 system.

Chapter 2 Setting Up the System

This chapter helps you get started. It illustrates how to prepare the system for installation, connect the cables, and start the system.

Chapter 3 System Configuration

This chapter describes the six major system components that include the system housing, system board, memory board, front panel board, SCSI backplane boards, and power supply.

Chapter 4 BIOS Utility

This chapter explains the BIOS parameter functions. It tells how to configure the system by setting the parameters.

Chapter 5 Diagnostics and Utilities

This chapter gives a brief description of Advanced Server Manager Pro (ASM Pro) and Remote Diagnostic Manager (RDM) and explains how to use the EISA Configuration Utility (ECU).

Chapter 6 SCSI*Select* Configuration Utility

This chapter describes the SCSI*Select* Configuration Utility that allows you to change SCSI controller settings without opening the computer or changing jumpers.

Appendix A System Resources

This appendix contains two tables: system memory map and system I/O address map.

Appendix B SCSI Backplane Boards

This appendix describes the two standard SCSI backplane boards, including features, layout, jumper settings, Hard Disk ID switch settings, and channel configuration.

Appendix B also describes the front panel board that serves as an interface to the internal system components. It also contains information about the power subsystem, including how to install a new power supply module, charger board, and optional internal UPS.

At the end of the appendix is a section describing the system power cable connections.

Conventions

The following are the conventions used in this manual:

Screen messages

ALT, ENTER, F8, etc.



Denotes actual messages that appear onscreen.

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.



WARNING

Alerts you to any damage that might result from doing or not doing specific actions.



CAUTION

Gives precautionary measures to avoid possible hardware or software problems.



IMPORTANT

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



TIP

Tells how to accomplish a procedure with minimum steps through little shortcuts.

Chapter 1 System Introduction

1.1 Features

The AcerAltos 19000Pro4 is a powerful 64-bit quad-processor capable system loaded with a host of new and innovative features. The system offers a new standard for flexible productivity ideal for local area networks and multiuser server environments.

1.1.1 Intel Pentium Pro Microprocessor

The Intel Pentium Pro processor is the heart of the AcerAltos 19000Pro4 system. Designed to work with the Intel 450GX chipset composed of a PCI bridge and memory controller, the Pentium Pro running at 200 MHz carries a new generation of power not present in its predecessors.

The system board has four CPU sockets to accommodate up to four Intel Pentium Pro processors. This configuration significantly increases efficiency and reliability thereby upgrading overall system performance. The Pentium Pro processor supports a wide range of applications running under SMP network operating systems such as Windows NT, UNIX, NetWare, etc.

The Pentium Pro processor also incorporates the first-level (L1) and second-level (L2) caches, the advanced peripheral interrupt controller (APIC), and the system bus controller. Figure 1-1 shows the CPU architecture.

First-level and Second-level Cache

The Pentium Pro processor has a 16-KB first-level and either 512 or 1024-KB second-level cache. These caches produce a high hit rate that reduces the processor's external memory bandwidth requirements.

Advanced Peripheral Interrupt Controller (APIC)

The APIC unit inside the CPU along with the I/O APIC unit facilitate multiprocessor interrupt management. The APIC works with multiple I/O subsystems where each subsystem has its own interrupts that help minimize centralized system overhead.

Bus Controller

The bus controller integrated in the Pentium Pro processor controls the system bus to make it perform its functions efficiently. It ensures that the bus serves as a reliable interconnection between one or two CPUs, I/O bridge, and memory controllers.

Pentium Pro Processor Architecture

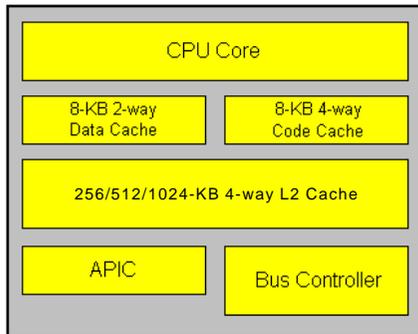


Figure 1-1 Pentium Pro processor Architecture

1.1.2 System Architecture

The system bus, PCI buses, EISA bus, Intel 450GX PCI bridge (OPB), Intel 450GX memory controller (OMC), PCI/EISA Bridge (PCEB), and EISA system controller (ESC) comprise the basic system architecture.

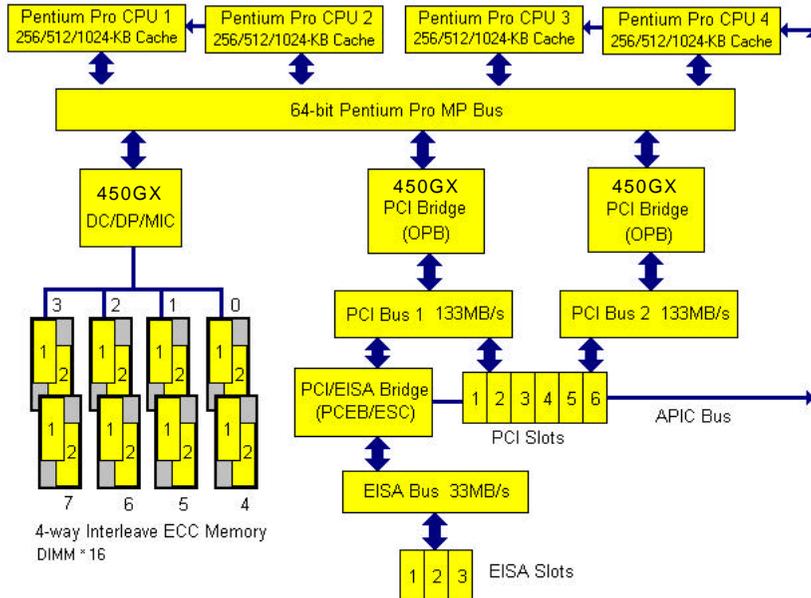


Figure 1-2 System Architecture

System Bus

The system bus is the CPU's major connection to all the system devices, primarily the PCI and EISA bridges, and the memory controllers. It can handle as many as eight outstanding transactions at a time through the transaction pipelining feature in which consecutive tasks from the CPU are queued in and transported to the designated devices on a first-in first-out basis. Pipelining allows for transaction overlapping in different phases as the CPU does not have to wait for each transaction to complete before it issues the next transaction. This produces significant improvement on overall system performance.

The bus architecture supports a number of features that ensure high reliability. It has an 8-bit error correction code (ECC) that protects the data lines and a 2-bit parity code that protects the address lines.

The bus uses the gunning transceiver logic (GTL+), a synchronous latched bus protocol that simplifies timing constraints. This protocol supports higher frequency system designs but requires a low voltage that reduces electromagnetic interference (EMI) resulting in a lower power consumption.

PCI and EISA Buses

The system supports two PCI buses created by the two PCI bridge chipsets (OPB). The PCI buses serve as the links between the PCI bridges and the PCI devices onboard. The presence of two buses instead of one reduces the I/O bottleneck and matches the higher bandwidth of the CPU for faster data transfers.

The EISA bus connects the EISA devices to the other system devices through the PCI/EISA bridge (PCEB) and the EISA system controller (ESC). The use of the PCEB and ESC maintains compatibility with the EISA environment.

Intel 450GX PCI Bridge

The Intel 450GX PCI bridge is a low-cost I/O subsystem solution for high-performance systems. The bridge translates transactions between the system bus and the PCI buses using 32-byte buffers for inbound and outbound postings. The use of two bridges in the system creates an architecture that allows faster data transfers.

Intel 450GX Memory Controller

The Intel 450GX memory controller acts as an interface between the system bus and the system memory. It consists of the DRAM control (DC) chip and the data path (DP) chip. The controller relates to the DRAM array through four memory interface controller (MIC) chips. The controller supports 256-bit 4-way memory interleaving resulting in a more efficient memory traffic management.

1.1.3 SCSI Backplane Boards

The system supports an array of 14 hot-swappable disk drive trays with two 7-slot SCSI backplane boards. The trays accommodate ultra wide hard disks. With the AIC-7880 SCSI controller onboard, the transfer rate reaches up to 40 MB per second.

1.1.4 Server Management

The system comes with Advanced Server Manager Pro (ASM Pro) that allows voltage stability and CPU thermal monitoring, prevents data loss by prompt ECC memory error reporting, maximizes system resources by indicating the PCI bus utilization, and promotes efficiency by minimizing system downtime.

A related feature of ASM Pro is Remote Diagnostic Manager (RDM) that permits system diagnosis from a remote site through a modem. RDM facilitates fixing detected problems, changing system configurations or rebooting in the event of system failure.

1.1.5 Redundant Power Supply Subsystem

The system comes with a power backplane that has two 400-watt power supply modules, upgradable to three. The power subsystem supports a redundant configuration such that even if one power supply fails, the remaining two continue to work together to supply the 800-watt requirement for a fully-configured system.

Two important segments of the power subsystem configuration are the charger board and optional Internal UPS. Together, these two components function like an uninterruptible power supply (UPS). Providing an additional support to the three 400-watt power supply modules, the battery automatically charges whenever the system is on. The battery gives a fully-configured system the ability to run continuously through short interruptions in wall power or for a maximum of six minutes in the event of total AC power shutdown.

1.1.6 Security

The system housing comes with mechanical security locks on both the front panel and the side panel preventing unauthorized access to the internal components and system use.

The system BIOS secures the CMOS data and other system software with power-on password, keyboard password, setup control, disk drive control, and monitor control.

1.2 External Configuration

1.2.1 Front Panel

The system front panel is divided into two sections. The upper front panel consists of the diskette/CD-ROM/tape drive bays, keylock, power switch, LED indicators, LCD display screen, and an embedded reset switch.

The lower part contains the externally accessible hard disk drive bays with 14 drive trays for wide SCSI drives. (The basic system consists of 14 drive trays.)

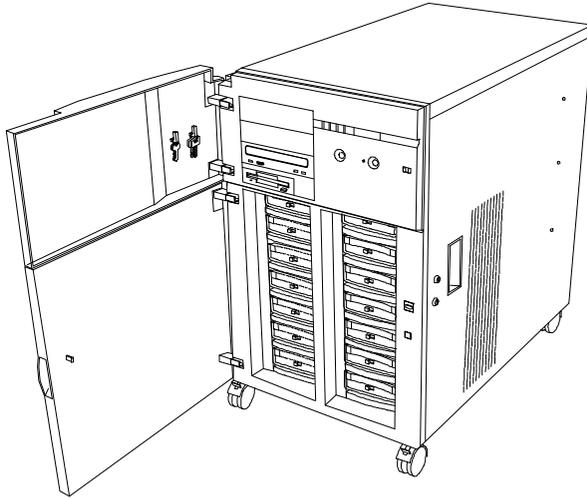


Figure 1-3 Front Panel



One pair of system keys and one pair of power switch keylocks are hung inside the upper front door. Additional duplicate keys can be found at the back of the system.

Front Panel Features

Figure 1-4 gives a closer look at the upper front panel features.

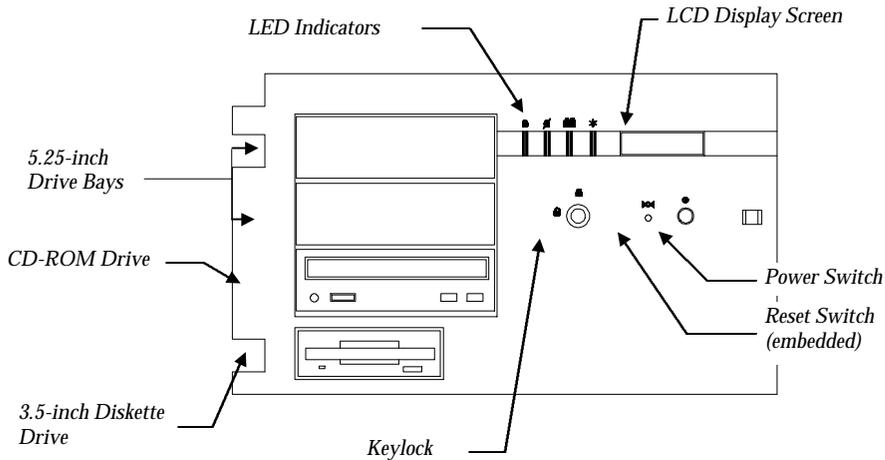


Figure 1-4 Front Panel Features

CD-ROM Drive

The basic system comes with a SCSI CD-ROM drive already installed.

3.5-inch Diskette Drive

A 3.5-inch diskette drive is also standard.

5.25-inch Drive Bays

Two empty 5.25-inch drive bays allow installation of additional devices.

Power Switch

The power switch allows you to turn the system power on or off.

Reset Switch

Pressing the reset switch generates a hardware reset pulse that restarts the system initializing all the registers, buffers, and memory subsystems.

Keylock

The keylock gives security to the system against unauthorized users. Turning the keylock to the unlocked position enables the power and reset switches. Turning the keylock to the locked position disables both switches whether the system is on or off. Supposing the system is on and you intend to reset or turn it off, make sure that the keylock is unlocked. Otherwise, the switches do not respond.

LED Indicators

Table 1-1 LED Indicator Description

LED Icons	Description
<p>Power Status</p> 	<p>Green Indicates that power is on. This color also denotes that the system is running on a good supply of AC power.</p> <p>Red Indicates that power is on. The AC power supply fails and the system is running on battery power.</p>
<p>Battery Status</p> 	<p>Green Indicates that a battery is present and in good condition. The battery LED shows this color during normal system operation, during which the battery automatically charges.</p> <p>When the power status LED is red, a green battery LED also indicates that the system is running on battery power. When this happens, shutdown the system immediately because the battery keeps a fully-configured system running only for about six minutes.</p>

Table 1-1 LED Indicator Description (continued)

LED Icons	Description	
Battery Status (continued)	Red	Normally, this color indicates that the battery is bad. However, there are times when the battery LED turns red for a few seconds due to other factors and NOT because the battery is bad. See below.
Hard Disk Busy 	Green	Indicates that at least one of the hard disks is currently accessing.
Hard Disk Failure 	Green Red	Indicates that all the hard disks installed on the backplane board are in good condition. Indicates that one of the hard disks installed on the backplane board is bad.

In these instances, the battery LED may turn red for a few seconds but DOES NOT necessarily indicate that the battery is bad.

- **System Startup**

At system power on, the battery LED shows red light when the system performs initialization and self-tests. The red light should remain for only a few seconds and eventually turn to green.

- **Resumption of AC power supply while the system is running on battery power.**

When AC power is cut-off, the battery automatically supplies the system power. The sudden return of AC power at this time when the system is running on battery may cause the battery LED to change to red. Simultaneously, the message "Battery Fails !" may appear on the LCD screen. When this happens, allow the battery to recover for a while. Wait for the battery LED to return to green and the LCD message to disappear.



If the battery LED remains red for several seconds and the message "Battery Fails !" still shows on the LCD screen, change the battery or call your dealer or a technician for assistance.

LCD Display Screen

The LCD display is a two-line by 16-character screen that indicates the boot status as well as any BIOS check point errors encountered upon system initialization. Normally, the system BIOS and the microcontroller firmware send the LCD display messages that appear on the screen. However, if you hooked up a special purpose driver to control the LCD module, this driver defines the messages.

Table 1-2 lists the LCD messages from the system BIOS and the microcontroller at power on.

Table 1-2 LCD Messages

Message	Description
Hello! Welcome !	This is the first message that appears on the LCD screen. This message indicates that the microcontroller works fine.
POST Checkpoints	During the system power-on self-tests (POST), the LCD screen shows which POST check-point is currently being tested.
Power #1 Fails !	After POST, the microcontroller checks the power subsystem status. If it detects that power supply module 1 is bad, this message appears on the LCD screen.
Power #2 Fails !	If the microcontroller detects that power supply module 2 is bad, this message appears on the LCD screen.
Power #3 Fails !	If the microcontroller detects that power supply module 3 is bad, this message appears on the LCD screen.

Table 1-2 LCD Messages (continued)

Message	Description
Battery Fails !	Normally, this message indicates that the battery is bad and must be replaced with a new one. There are times when this message appears for a few seconds but do not necessarily mean that the battery is bad. Refer to the previous page for these instances.
AC Power Fails !	This message indicates that there is no power coming from the AC line and the system is currently running only on battery power.
The system is running well !	This message appears after POST and other tests. It shows that the system has passed all the tests and is running fine.

RDM LED

The RDM LED located on the lower right panel enables the remote diagnostic management feature. Refer to the *Remote Diagnostic Manager (RDM) User's Guide* for information on the RDM feature.

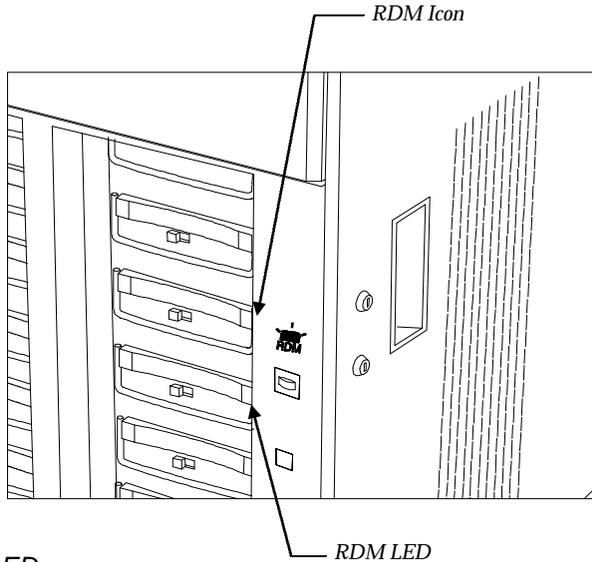


Figure 1-5 RDM LED

1.2.2 Rear Panel

The rear panel includes the connectors for the keyboard, mouse, VGA monitor, printer, and serial devices. Below the connectors are the slot openings for expansion boards. On the lower left is the socket for the system power cable.

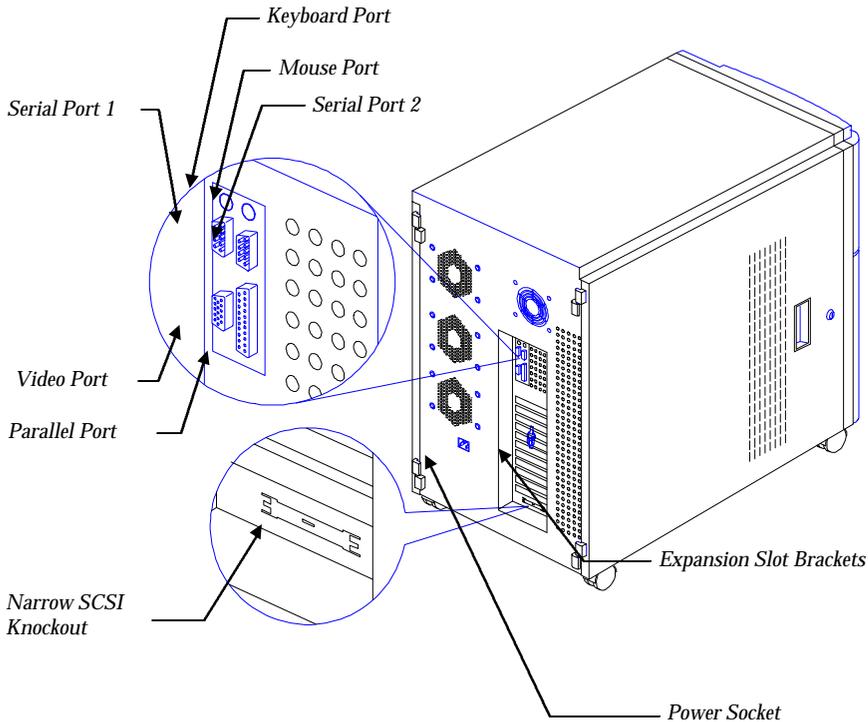


Figure 1-6 Rear Panel

Chapter 2 Setting up the System

This chapter tells how to install and set up the system. It gives instructions on how to select a site for the system, prepare the system for use, connect basic peripherals, and start up the system.

2.1 Pre-installation Requirements

2.1.1 Selecting a Site

Before unpacking and installing the system, select a suitable site for the system for maximum efficiency. The system is suitable to set up in an office environment.

- Consider the following factors when choosing a site for the system:
- Near a grounded power outlet
- Clean and dust-free
- Sturdy surface free from vibration
- Well-ventilated and away from sources of heat
- Secluded from electromagnetic fields produced by electrical devices such as air conditioners, radio and TV transmitters, etc.

2.1.2 Checking the Package Contents

Unpack the contents of the system box, following the instructions enclosed with the system unit. The System Contents sheet, located inside the box, lists what is in the accessory tray for the system.

If any items are damaged or missing, contact your dealer immediately.

Save the boxes and packing materials for future use.

2.1.3 Preparing the System Unit

Do the following to begin setting up the system:

1. Unlock the front wheels and move the system to your desired site.

The system housing design allows for easy transport in spite of its size. It comes with four wheels that facilitate short-distance transits. The two front wheels each include a lever to lock the wheels after you have positioned the system into place.

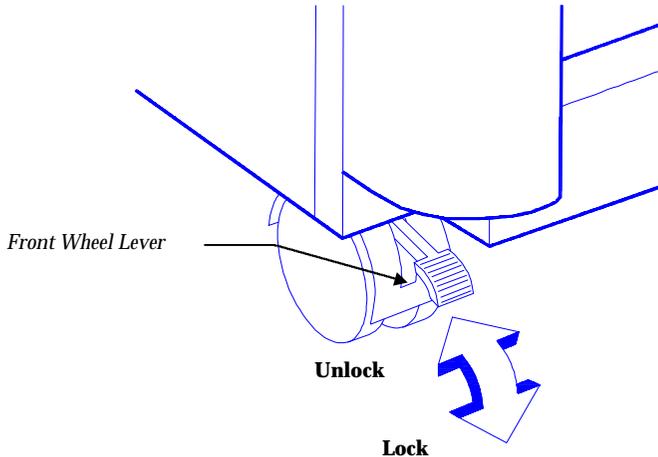


Figure 2-1 Front Wheel Lever

2. After moving, lock the wheels by pressing down the levers.



Be sure to unlock the wheels when you want to move the system again.

3. Connect the system power cable into the socket below the fan outlets on the rear panel.

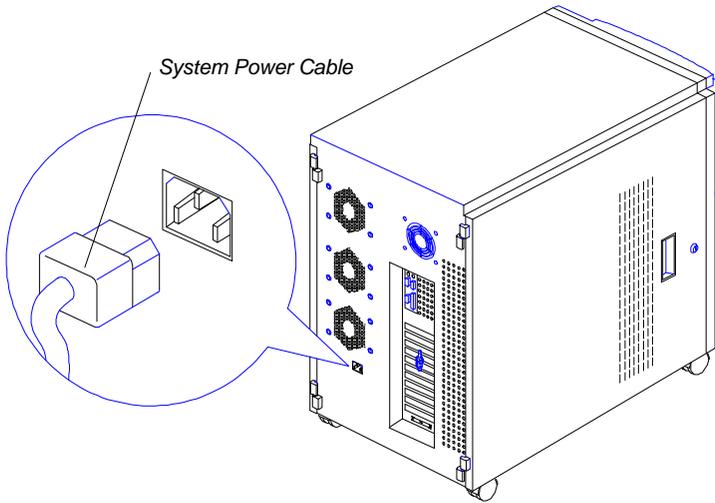


Figure 2-2 Connecting the System Power Cable

2.2 Basic Connections

The system unit, keyboard, mouse, and monitor constitute the basic system. Before connecting any other peripherals, connect these peripherals first to test that the basic system is running properly.

2.2.1 Keyboard

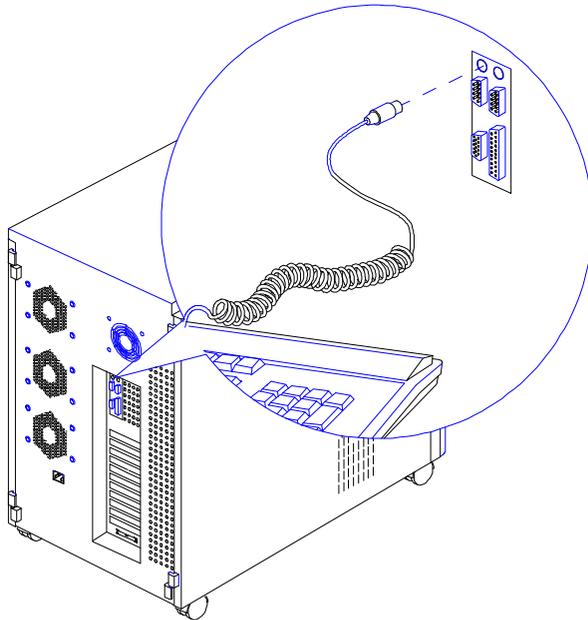


Figure 2-3 Connecting a Keyboard

2.2.2 Mouse

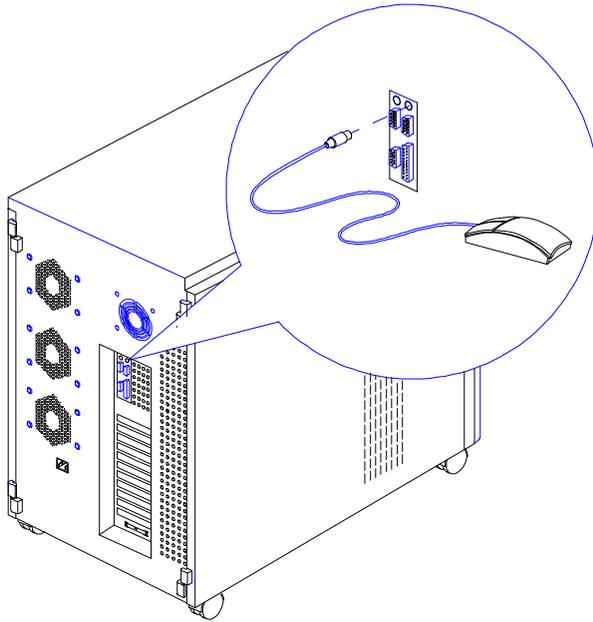


Figure 2-4 Connecting a Mouse

2.2.3 VGA Monitor

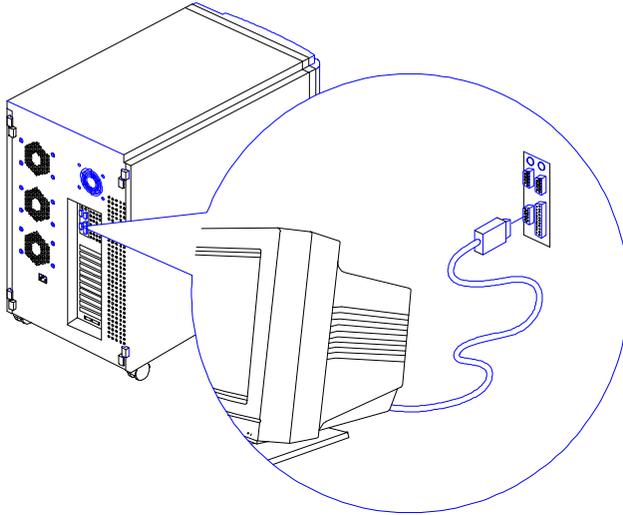


Figure 2-5 Connecting a VGA Monitor

2.3 System Startup

After making sure that you have set up the system properly and connected all the required cables, you may now apply power to the system.

2.3.1 Unlocking the Front Panel Security

The system has a keylock on the front panel to prevent unauthorized use. Before power on, open the lock with the key that comes with the system. (The system keys are attached inside the upper front door.)

To unlock, insert the key and turn it counter-clockwise until it reaches the unlocked icon.

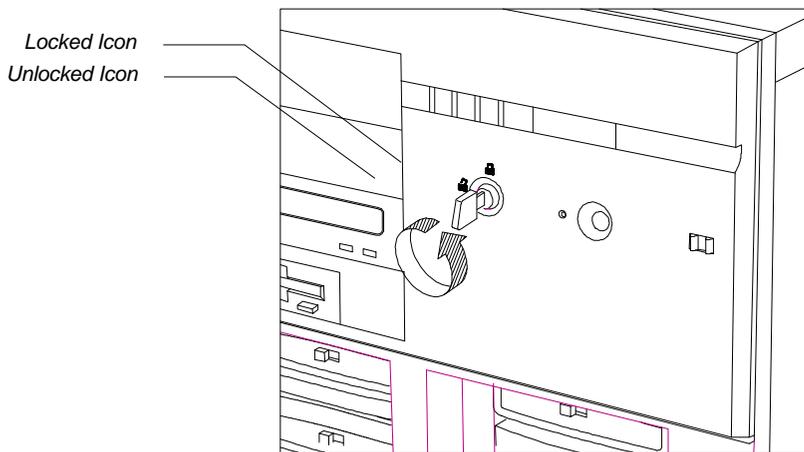


Figure 2-6 Unlocking the Front Panel Security



After locking or unlocking, remove the key from the front panel to prevent unauthorized users from tampering with the system.

2.3.2 Turning On the System Power

To power on the system, press the power switch on the front panel. The system starts up and displays a welcome message, then a series of power-on self-test (POST)

messages on the LCD display screen. The POST messages indicate if the system is running well or failed any of the tests. See Table 1-1 for a list of the LCD messages.



If the system does not turn on or boot after pressing the power switch, go to the next section for the possible causes of the boot failure.

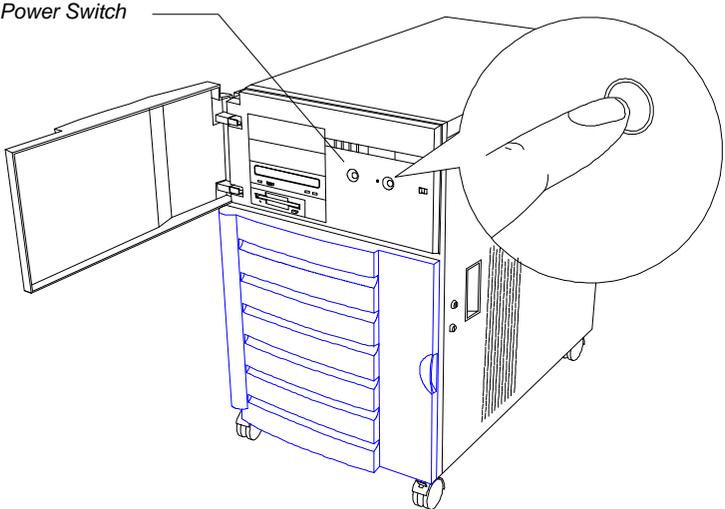


Figure 2-7 System Power On

Aside from the self-test messages, you can determine if the system is in good condition by checking if the following occurred:

- Power indicator LED on the front panel lights up
- Power, Num Lock, and Caps Lock LED indicators on the keyboard light up

2.4 Power-on Problems

If the system does not boot after you have applied power, check the following factors that might have caused the boot failure.

If the system does not boot after you have applied power, check the following factors that might have caused the boot failure.

The pointing symbol (➤) indicates a possible cause of the problem. The check mark (✓) tells you how to correct the problem.

➤ **The front panel security is not completely unlocked.**

- ✓ Insert the front panel key and turn it counter-clockwise until it points to the unlocked icon. See Figure 1-4.

➤ **The external power cable may be loosely connected.**

- ✓ Check the power cable connection from the power source to the power socket on the rear panel. Make sure that the cable is properly connected.

➤ **No power comes from the grounded power outlet.**

- ✓ Have an electrician check your power outlet.

✘ **The right panel or left panel door, or both, may be ajar.**

✔ Close the panel door/s completely.

The system has two microswitches located right inside the lower front corners of the housing. The microswitches connect to the power backplane and are in direct contact with the left and right panel doors. When you open either one of the panel doors, the microswitch goes off thereby cutting off the system power. This provides additional system safety.

See Figure 2-8 for the microswitch location.

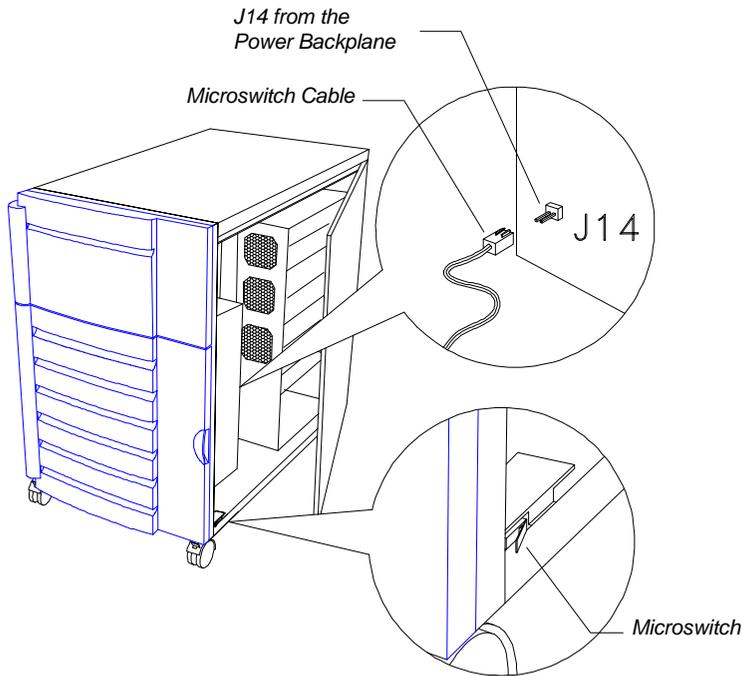


Figure 2-8 Microswitch Location

☛ **Loose or improperly connected internal power cables.**

- ✓ Refer to section 3.6 in Chapter 3 for the power cable connections and check the internal cable connections. If you are not confident that you can perform this step, ask a qualified technician to help you.



If you have gone through the preceding actions and the system still fails to boot, ask your dealer or a qualified technician for assistance.

Chapter 3 System Configuration

The system hardware consists of six major components: housing, system board, memory board, front panel board, SCSI backplane boards, and power supply subsystem. This chapter discusses the system hardware configuration in detail.

3.1 System Housing

The system housing is heavy-duty steel chassis in a twin-tower design. The spacious housing boasts high expansion capability and configuration flexibility.

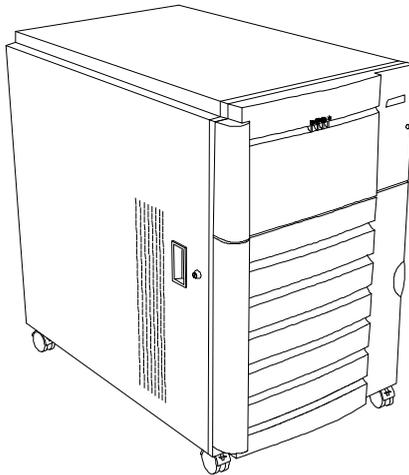


Figure 3-1 System Housing

3.1.1 Internal Structure

The housing is symmetrically divided into left and right panels. The system internal components are accessible through the panels.

Left Panel

The main part of the left panel houses the system board, memory board, and expansion boards. At the back of the left panel are the keyboard, mouse, video, parallel, and serial ports, and the slot openings for installation of EISA and PCI expansion boards.

The upper front section of the left panel accommodates a 3.5-inch and three 5.25-inch drives while the lower section holds the seven hot-swappable SCSI drive trays. These devices on the front section are externally accessible. Right behind the drives is a seven-slot SCSI backplane board that connects the drives to the SCSI interface.

Figure 3-2 shows the left panel components.

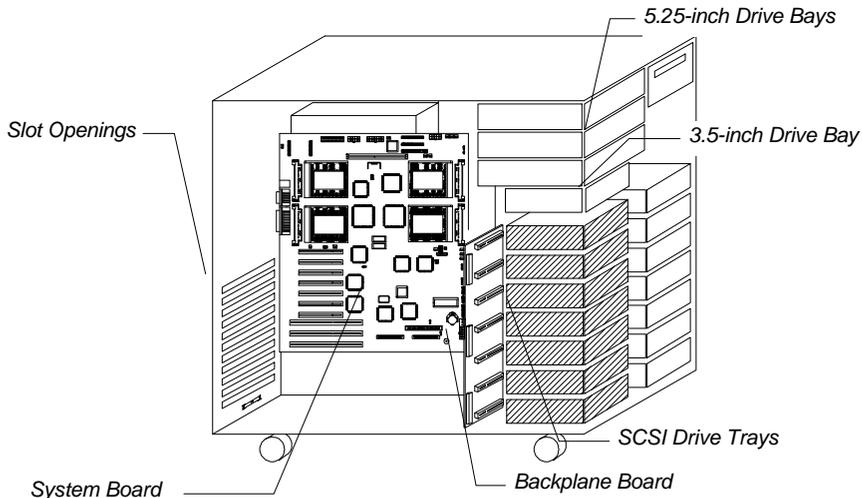


Figure 3-2 Left Panel System Components

Right Panel

The power subsystem fills up most of the rear right panel. It consists of a power backplane and a metal rack that holds up to three 400-watt power supply modules. In the bottom compartment of the power supply rack are the charger board and the optional internal UPS. The rear section contains the three built-in power supply fans that cool down the components and regulate the air flow inside each power supply. See section 3.6 for details about the power subsystem.

The front panel board occupies the upper front section of the right panel. The lower section allows installation of a second SCSI backplane board and another set of seven hot-swappable SCSI drive trays.

Figure 3-3 shows the right panel components.

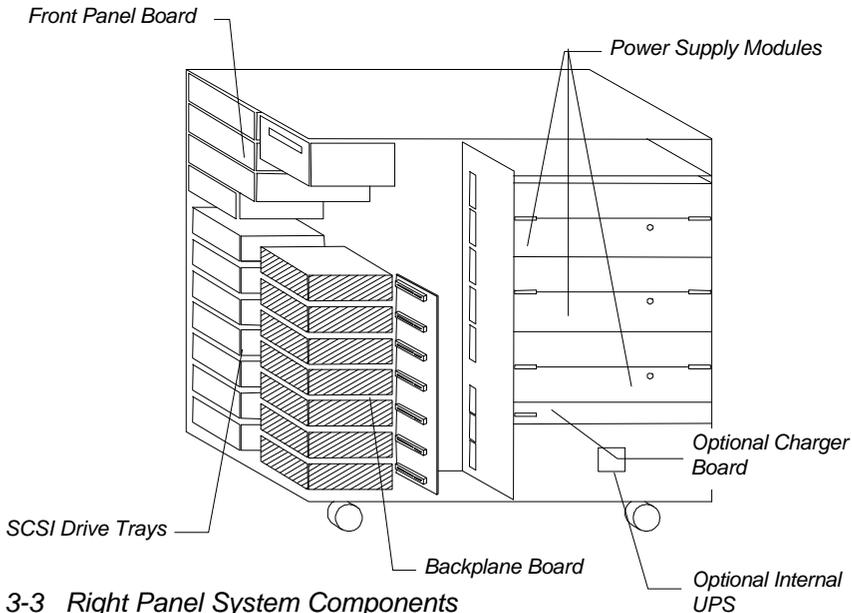


Figure 3-3 Right Panel System Components

3.1.2 Opening and Removing the Housing Doors

The system housing has four doors, two on the front, one on the left panel, and one on the right panel. The housing includes security locks to prevent unauthorized access to the internal components.

Opening the Left Panel Door

To open the left panel door, insert the key into the lock then turn it counter-clockwise until it reaches the unlocked icon. Pull the door open by the hollow holder.

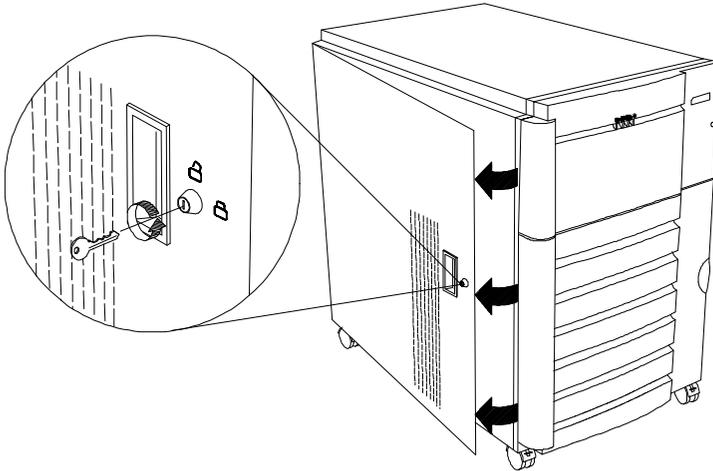


Figure 3-4 Unlocking and Opening the Left Panel Door

Opening the Lower Front and Right Panel Doors

There are two security locks on the right panel door. One secures the lower front door to protect the SCSI hard disks, and the other one secures the right panel internal components.

When you want to access the SCSI hard disks, insert the key into the lower lock and turn it clockwise until it points to the unlocked icon. Pull open the lower front door.

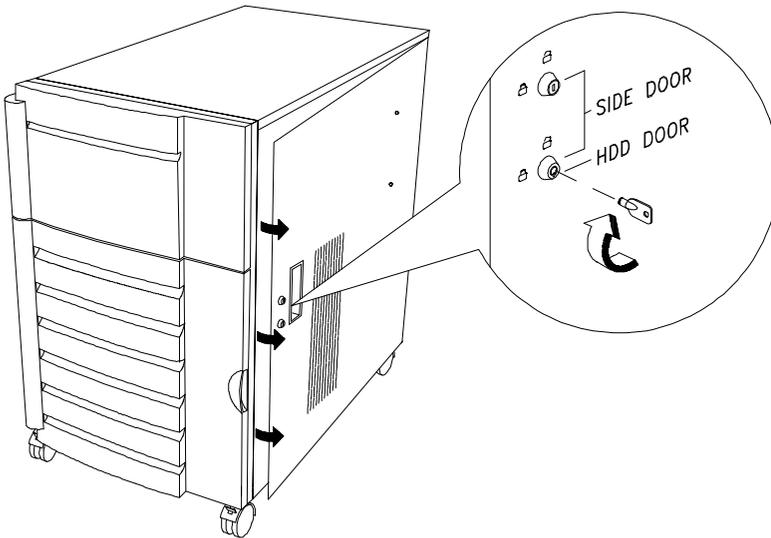


Figure 3-5 Unlocking and Opening the Lower Front Door

When accessing the components inside the right panel, open the lower lock then the upper lock on the right panel door. Pull the door open by the hollow holder.

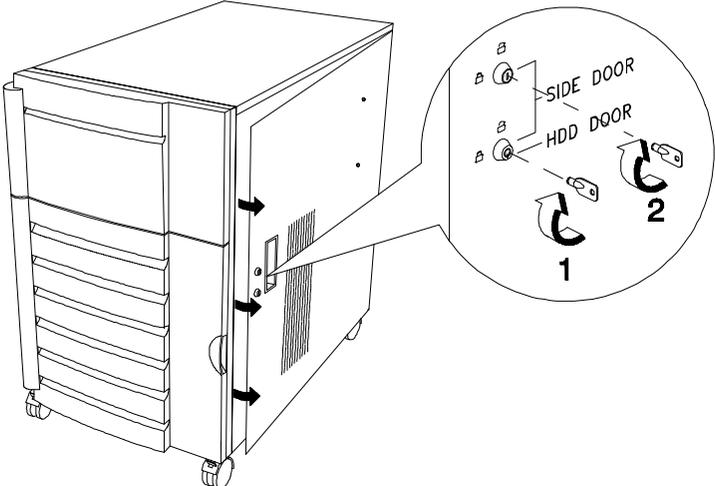


Figure 3-6 Unlocking and Opening the Right Panel Door

Removing the Doors

When installing components, unlock and remove the door or doors that hinder your way. Table 3-1 tells you which door to remove in specific instances to facilitate component installation.



Turn OFF the system power and unplug the power cord and all peripherals before opening the system or connecting or removing any peripheral device.

Table 3-1 Removing the Housing Doors

When	Remove
Installing or removing external 3.5-inch or 5.25-inch devices	❶ Upper front door plus the upper front panel cover ❷ Left panel door
Installing or removing a SCSI backplane board (left side)	❶ Lower front door ❷ Left panel door
Installing or removing a SCSI backplane board (right side)	❶ Lower front door ❷ Right panel door ❸ Thermal air guide
Installing or removing hot-swappable SCSI hard disks	❶ Lower front door ❷ SPS dummy cover
Installing or removing the system board, memory board, or expansion boards	❶ Left panel door
Installing or removing the power supply modules, UPS, or battery charger	❶ Right panel door
Connecting or arranging cables	❶ Left panel door or Right panel door

The doors are attached to the main housing by screwless hinges. Follow these steps to remove a door.

1. Unlock the door with the key (when necessary).
2. Open it to more than a 45° angle.
3. Lift it up about an inch, then move it away from the housing.

Figures 3-7 to 3-10 show how to remove the housing doors and upper front panel cover.

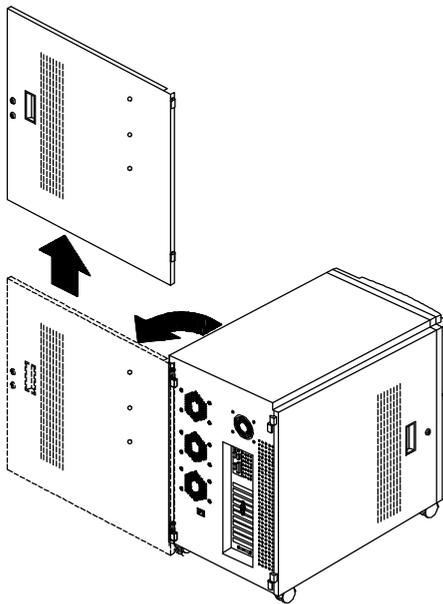


Figure 3-7 Removing the Right Panel Door

Follow the same steps to remove the left panel door.

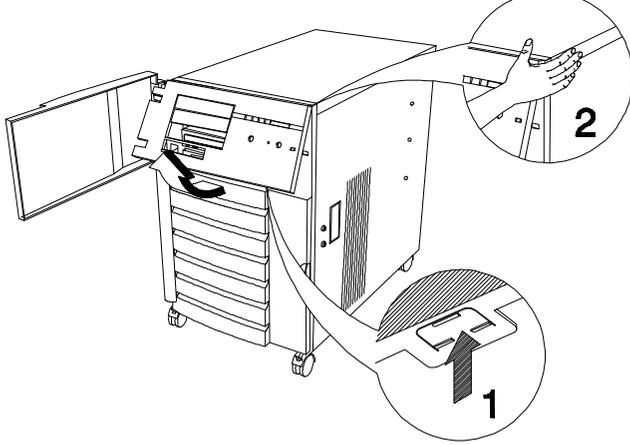


Figure 3-8 Removing the Upper Front Panel Cover

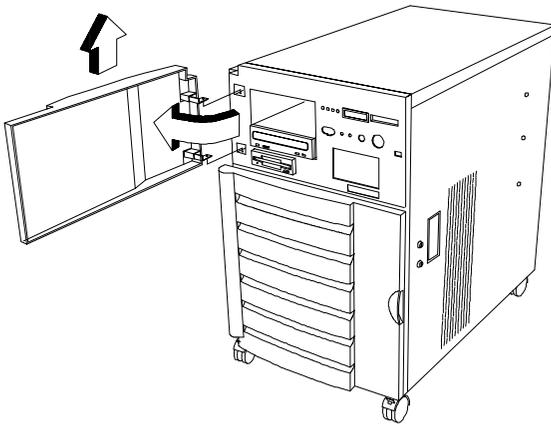


Figure 3-9 Removing the Upper Front Panel Door

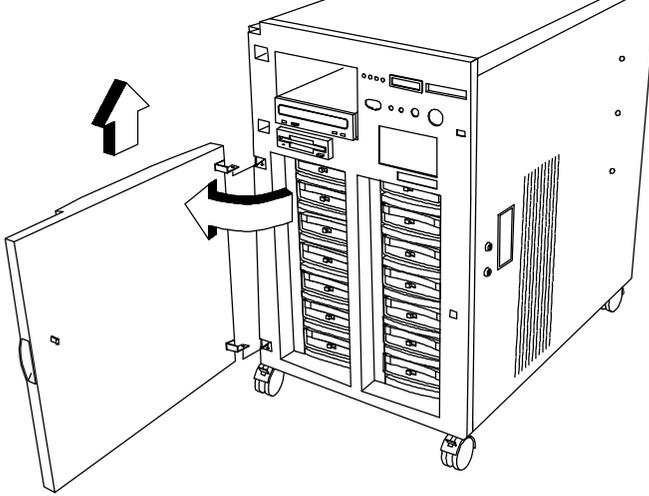


Figure 3-10 Removing the Lower Front Panel Door

3.1.3 ESD Precautions

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

1. Do not remove any system component from its packaging unless 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.



DO NOT attempt the procedures in the following sections unless you are confident of your capability to perform them. Otherwise, ask a service technician for assistance.

Turn OFF the system power and unplug the power cord and all peripherals before opening the system or connecting or removing any peripheral device.

3.1.4 Installing External Devices

The housing supports one 3.5-inch and three 5.25-inch external devices. The empty drive bays on the upper front panel allow you install additional external devices such as a CD-ROM drive, digital audio tape (DAT) drive or another hard disk drive.



Your system comes with a CD-ROM drive and a 3.5-inch diskette drive already installed.

Follow these steps to install an external device:

1. Remove the upper front panel door and the front panel cover. See Figures 3-5 and 3-6 for illustrations.

2. Attach the drive guides on the sides of the external device that you wish to install.

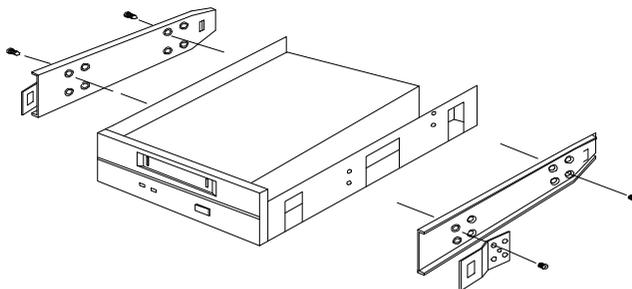


Figure 3-11 Attaching the Drive Guides



If you are installing a SCSI device, set its SCSI ID. Set the terminator if the SCSI device is the last one on a SCSI bus.

3. Insert the drive into the bay.

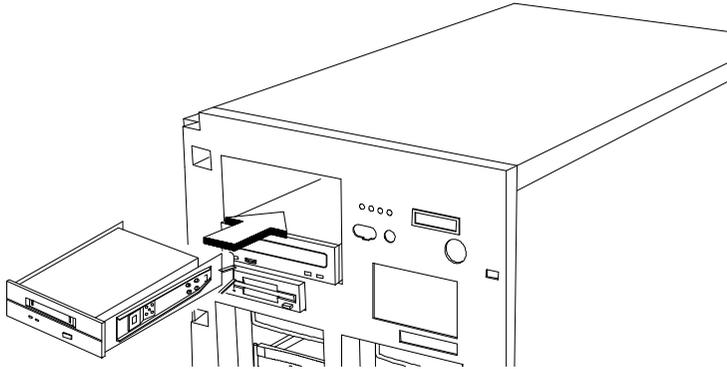


Figure 3-12 Installing an External Device

4. Connect the drive power and signal cables.

3.1.5 Installing a Hot-swappable SCSI Drive

The system supports three kinds of hot-swappable drive trays, one with wide SCSI interface board and one with narrow SCSI interface board. The third is the single connector architecture (SCA) type. The installation steps for the wide and narrow SCSI drives are basically the same except for connecting the wide SCSI drive ID cable.

Follow these steps to install a hot-swap SCSI drive:

1. Open the lower front door.
2. Push the drive tray switch to the Unlock/Power Off position.

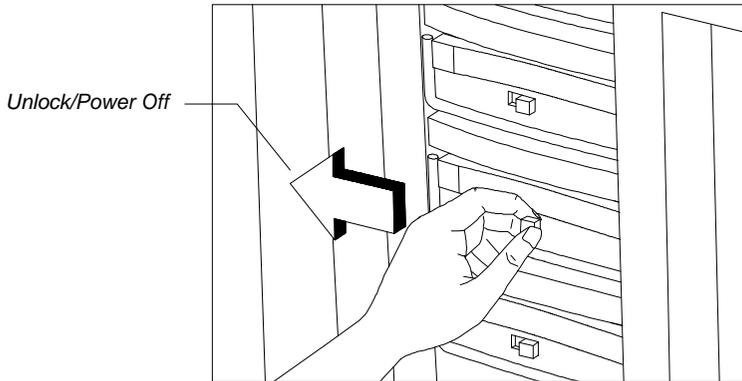
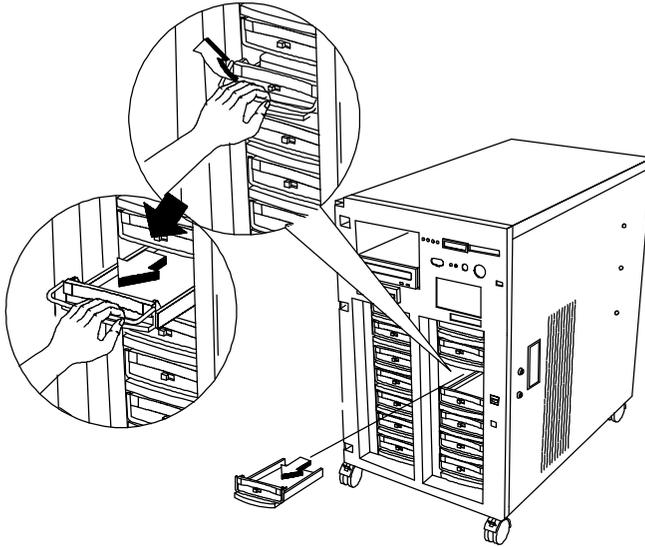


Figure 3-13 Unlocking the Drive Tray Switch

3. Hold the handle of a drive tray. Pull it upward until it is at a 90-degree angle with the tray and you hear a click. You may need to exert force to pull the tray handle up.



4. Pull the drive tray out.

Figure 3-14 Pulling a Hot-swap Drive Tray Out

5. Remove the terminators and the drive ID on the wide SCSI drive that you wish to install.



Make sure that you have closed J4 P3 pins on the backplane board for additional SCSI IDs. See section 3.4 for information on setting the drive ID.

6. Place the drive on the tray and connect the SCSI cable, drive ID cable (for wide SCSI only), and power cable. Make sure that all cables are properly and completely connected.

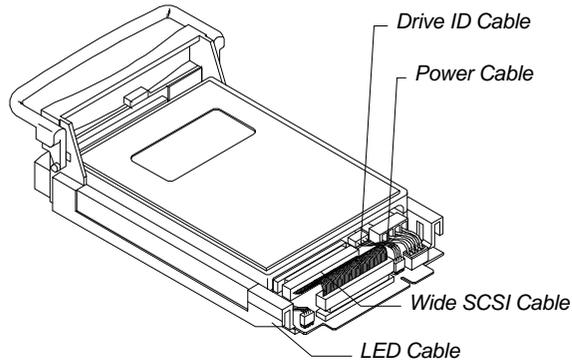


Figure 3-15 Connecting the Drive Cables (Wide SCSI Drive)

7. Install the tray into the drive bay, pushing it gently until it reaches the connector on the backplane board.



Be sure to hold the drive tray handle out when inserting the tray back into the bay. Otherwise, the tray will not fit completely.

8. Push the drive handle into place.

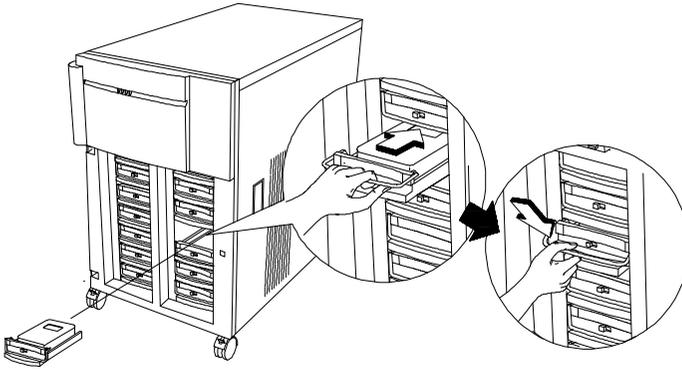


Figure 3-16 Installing a Hot-swap Drive Tray

9. Push the drive tray switch to the Lock/Power On position.

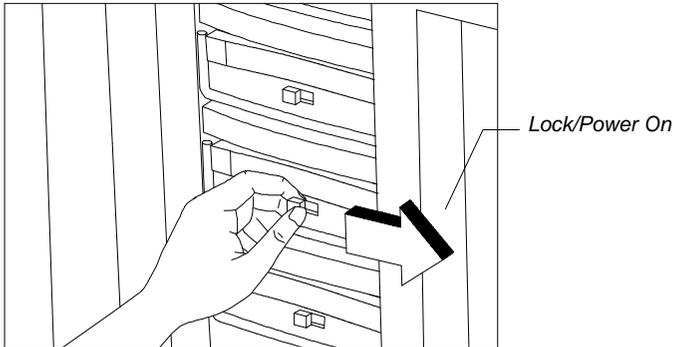


Figure 3-17 Locking the Drive Tray Switch

3.1.6 Installing an Expansion Board

Follow these steps to install a PCI expansion board:

1. Remove the bracket cover opposite an empty PCI slot. Save the screw for later use.

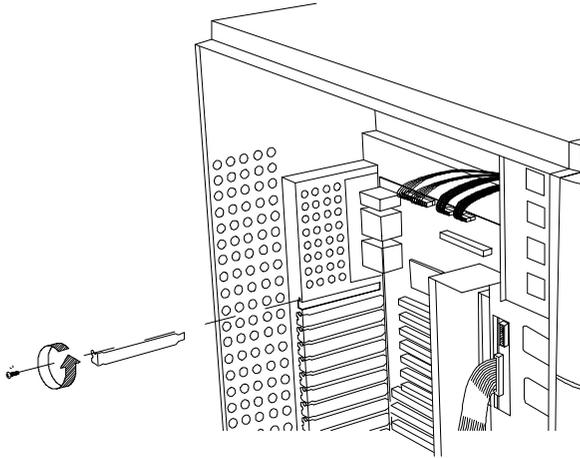


Figure 3-18 Removing a Bracket Cover

2. Align the board with the slot.
3. Insert the board into the slot until it fits completely.
4. Secure the board with a screw.

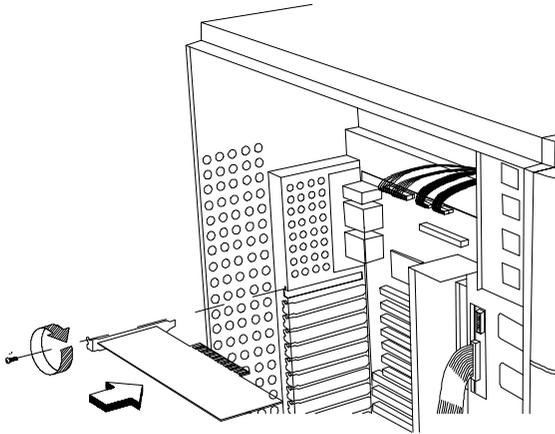


Figure 3-19 Installing a PCI Expansion Board

5. Follow the same steps when installing an EISA board. Just make sure that you remove the bracket cover opposite an EISA slot.



If you installed an EISA board, run the EISA configuration utility (ECU) to reconfigure the system. See Chapter 5 for information on the ECU.

3.1.7 Installing and Removing the Thermal Air Guide

On the right side of the housing, a metal thermal air guide directs the hot air from the disk drives to the fan exhausts on the rear of the housing. The air guide helps maintain good air circulation within the housing.

You have to remove the thermal air guide to access the right backplane board or the power backplane connectors.



To avoid electric shock and damage to the system, DO NOT perform the following procedure while the system is ON.

Removing the Thermal Air Guide

Follow these steps to remove the metal thermal air guide.

1. Unplug all power cables from the wall socket.
2. Open the right panel door. Refer to section 3.1.2 for instructions on opening the door.
3. Remove all the screws (about nine screws) that secure the air guide to the housing. Save the screws.
4. Carefully take the air guide out of the housing and set it aside.

See Figure 3-20 on the next page for an illustration of the above procedure.

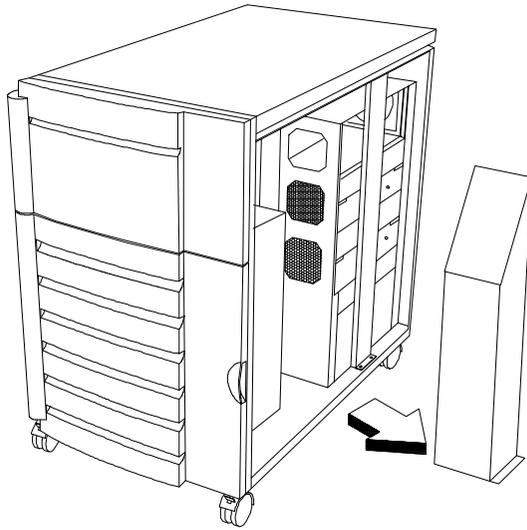


Figure 3-20 Removing the Thermal Air Guide

Reinstalling the Thermal Air Guide

Follow these steps to replace the thermal air guide in the housing:

1. Position the air guide in its place between the hard disk drives and the power supply rack.
2. Make sure that the air guide fits properly.
3. Secure the air guide with screws.
4. Close and lock the right panel door.

The following figure illustrates the above procedure.

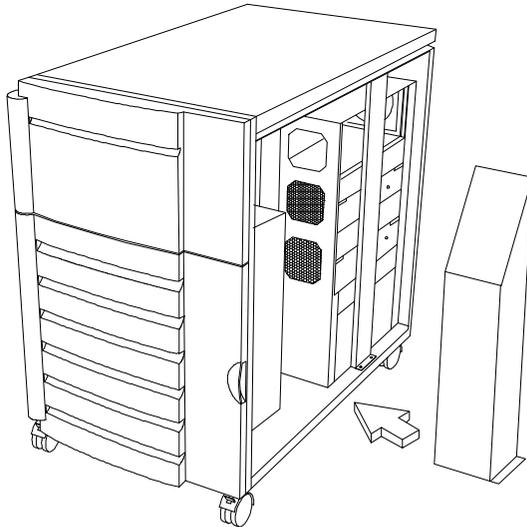
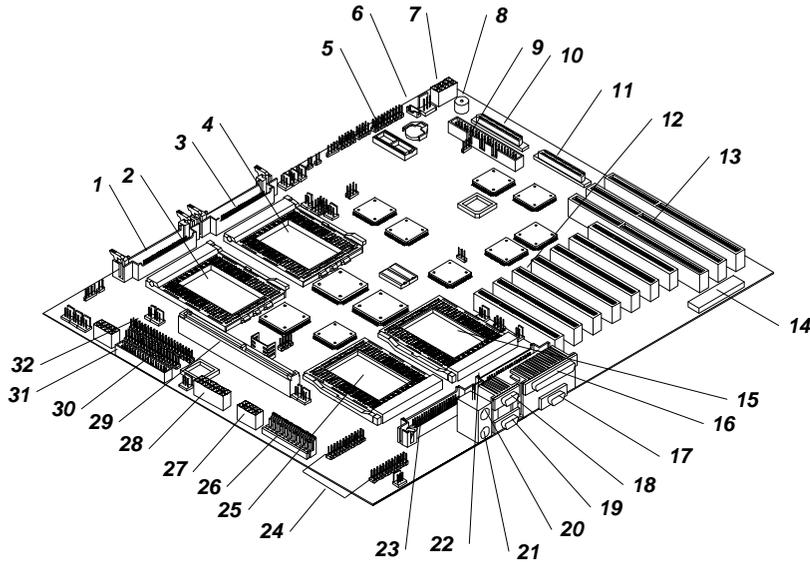


Figure 3-21 Reinstalling the Thermal Air Guide

3.2 System Board

The system board carries all the major system components including the two sockets for the Intel Pentium Pro CPUs. Figure 3-22 shows the major components on the system board.

3.2.1 Layout



- | | |
|---------------------------------------|-------------------------------|
| 1. VRM connector 1 | 17. Video port |
| 2. Pentium Pro CPU socket 1 | 18. Serial port 1 |
| 3. VRM connector 3 | 19. Serial port 2 |
| 4. Pentium Pro CPU socket 3 | 20. Mouse port |
| 5. BIOS | 21. Keyboard port |
| 6. Battery | 22. VRM connector 4 |
| 7. +12V, +5V downside power connector | 23. VRM connector 2 |
| 8. Buzzer | 24. RDM connectors |
| 9. Narrow SCSI interface | 25. Pentium Pro CPU socket 2 |
| 10. Wide SCSI interface 1 | 26. ±12V, ±5V power connector |
| 11. Wide SCSI interface 2 | 27. +12V, +5V power connector |
| 12. PCI slots | 28. VCC3 power connector |
| 13. EISA slots | 29. Memory board slot |
| 14. Keyboard controller | 30. IDE connector |
| 15. Pentium Pro CPU socket 4 | 31. Front Panel Connector |
| 16. Parallel port | 32. Diskette drive connector |

Figure 3-22 System Board Layout

3.2.2 Jumpers and Connectors

Then

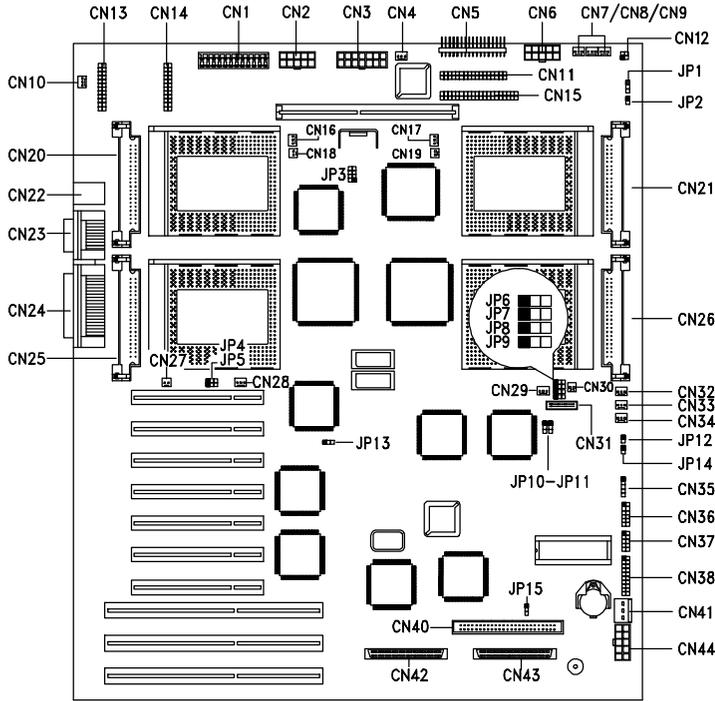


Figure 3-23 shows the jumper and connector locations on the system board.

Figure 3-23 Jumper and Connector Locations



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

Jumper Settings

Table 3-2 Jumper Settings

Jumper	Setting	Function
JP1		Reserved
JP2		Reserved (Open)
JP4	1-2*	Reserved
JP5	1-2*	Reserved
JP6	1-2*	Reserved
JP7	1-2*	Reserved
JP8	1-2*	Reserved
JP9	1-2*	Reserved
JP10	1-2* 2-3	Acer BIOS Reserved
JP11	1-2 2-3*	Password Security Check password Bypass password
JP12		Reserved
JP13	1-2* 2-3	Onboard VGA Enabled Disabled
JP14		Reserved
JP15	1-2 2-3* Open	CPU Bus Frequency 60 MHz 66 MHz 50 MHz
JPX1	1-2 2-3*	Reserved
JPX2	1-2 2-3*	Reserved
JPX3	1-2 2-3*	Reserved

* Default Setting



DO NOT change the settings of the reserved jumpers. Doing so may cause system malfunction.

The following sections describe and illustrate the jumpers that are not listed in the above table.

CPU Frequency Jumper

Table 3-3 CPU Frequency Ratios (JP3)

JP3 Settings				Core/Bus
1-2	3-4	5-6	7-8	
C	C	C	C	2
C	C	O	C	3
C	C	C	O	4
C	C	O	O	5
O	C	C	C	2.5
O	C	O	C	3.5

C = Closed (Processor pin connected to Vss)

O = Open



DO NOT change JP3 settings unless you are qualified to do so. Ask a technician if you need help when configuring the jumper.

Connector List

Table 3-4 Connector Functions

Connector	Function
CN1	Power connector for $\pm 12V$, $\pm 5V$
CN2	Power connector for $\pm 12V$, $\pm 5V$
CN3	Power connector for VCC3
CN4	Power switch connector
CN5	Front panel connector
CN6	Power connector for $\pm 12V$, $\pm 5V$
CN7	System fan connector
CN8	System fan connector
CN9	System fan connector
CN10	System fan connector
CN11	Diskette drive connector
CN12	RDM LED connector
CN13	RDM connector (to FP11 on the front panel board)
CN14	RDM connector (to FP11 on the front panel board)
CN15	IDE connector
CN16	CPU2 fan connector
CN17	CPU1 fan connector
CN18	CPU2 temp. connector
CN19	CPU1 temp. connector
CN20	Voltage regulator module 2 (VRM2)
CN21	Voltage regulator module 1 (VRM1)
CN22	Keyboard/mouse connector
CN23	Serial ports 1 and 2
CN24	Video port/Parallel port
CN25	Voltage regulator module 4 (VRM4)

Table 3-4 Connector Functions (continued)

Connector	Function
CN26	Voltage regulator module 3 (VRM3)
CN27	CPU4 temp. connector
CN28	CPU4 fan connector
CN29	CPU3 fan connector
CN30	CPU3 temp. connector
CN31	ITP connector
CN32	System fan connector
CN33	System fan connector
CN34	System fan connector
CN35	HDD LED connector
CN36	Extended controller connector
CN37	Redundant power signal connector
CN38	Intel feature connector
CN39	Reserved
CN40	Narrow SCSI connector
CN41	Reserved
CN42	Wide SCSI connector 2
CN43	Wide SCSI connector 1
CN44	Down-side power connector for +12V, +5V

3.2.3 Installing a Pentium Pro CPU

The basic system includes two Intel Pentium Pro CPUs installed in CPU sockets 1 and 2 (CPU1 and CPU2). Two other second zero-insertion force (ZIF) CPU sockets come with the system board for a multiprocessor configuration. Your CPU package includes a hook-type heat sink. The following sections describe the installation procedures.



Do not mix Pentium Pro 200/512K cache and Pentium Pro 200/1MB cache CPUs.

Installation with Hook-Type Heat Sink

Follow these installation steps:

1. Lift up the CPU socket lever.
2. Look at the underside of the CPU and note the area where the pins are denser or closely embedded. Gently insert the CPU pins into the socket, matching the denser pins with the denser holes on the socket.
3. Push the socket lever down.
4. Place the heat sink and fan over the CPU so that the rear heat sink hook matches the holding tab on the socket base, and the front heat sink hook (locking hook) matches the tab on the front of the socket. See the figure on the following page.

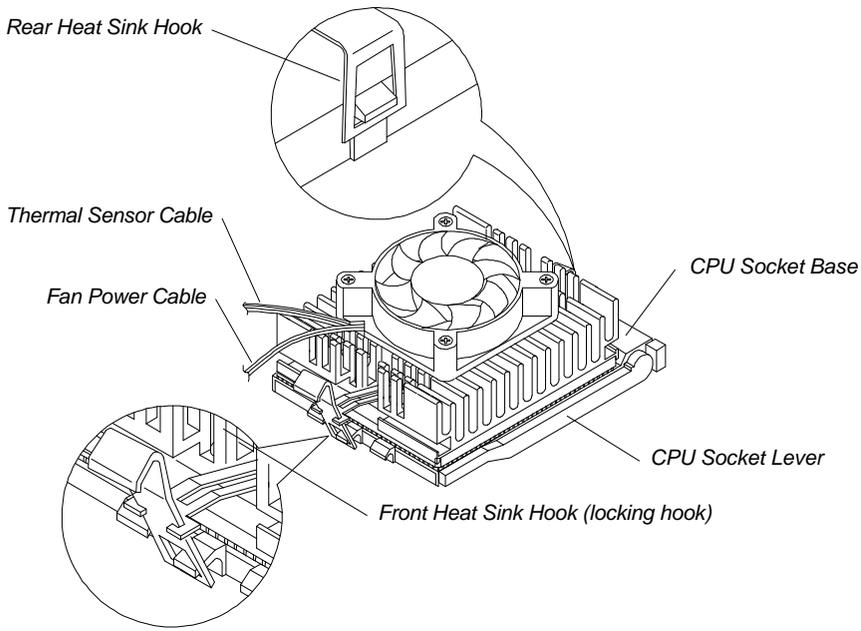


Figure 3-24 Installing the Hook-Type Heat Sink and Fan

5. Link the rear heat sink hook to the holding tab at the base of the socket, then the front hook to the holding tab on the front. This locks the heat sink and fan to the CPU socket.



Be sure that the heat sink is in full contact with the CPU. Check that there is no gap between the CPU and heat sink.



To remove the heat sink and fan, simply press the upper part of the front heat sink hook inward.

6. Connect the CPU fan cable to connector CN17 (for CPU 1) on the system board. See Table 3-5 for the correct fan connector when installing other CPUs.
7. Connect the thermal sensor cable to CN19 (for CPU1) on the system board. See Table 3-5 for the correct thermal sensor connector when installing other CPUs.
8. A VRM module is also required for each CPU. Refer to Figure 3-22 and Table 3-5 for the location and connector for each VRM module.

3.3 Memory Board

The memory board comes already installed with the basic system. A total of 16 168-pin DIMM sockets reside on the board. The system supports 32, 64, and 128MB ECC/EDO DIMMs and 256MB FPM DIMMs for a maximum total of 4GB of main memory.

3.3.1 Layout

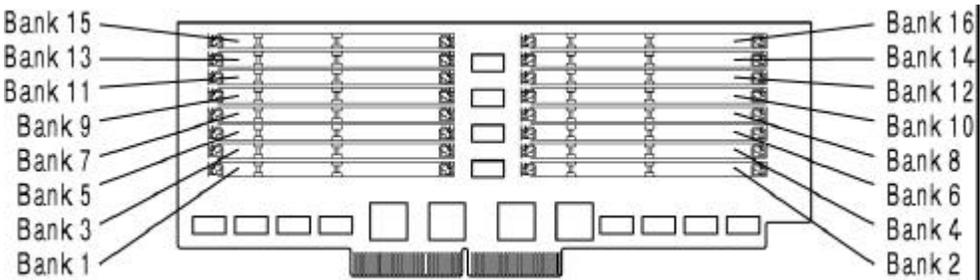


Figure 3-25 Memory Board Layout

3.3.2 Memory Configurations

Some possible memory configurations are shown in the table below.

Table 3-5 Memory Configurations

Bank 1	Bank 2	Bank 3-4	Bank 5-8	Bank 9-12	Bank 13-16	Total Memory
32MB * 1						32MB
32MB * 1	32MB * 1					64MB
32MB * 1	32MB * 1	32MB * 2				128MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4			256MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	32MB * 4		384MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	32MB * 4	32MB * 4	512MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	64MB * 4		512MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	64MB * 4	64MB * 4	768MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	128MB * 4		768MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	128MB * 4	128MB * 4	1280MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	256MB * 4		1280MB
32MB * 1	32MB * 1	32MB * 2	32MB * 4	256MB * 4	256MB * 4	2304MB
64MB * 1						64MB
64MB * 1	64MB * 1					128MB
64MB * 1	64MB * 1	64MB * 2				256MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4			512MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	32MB * 4		640MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	32MB * 4	32MB * 4	768MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	64MB * 4		768MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	64MB * 4	64MB * 4	1024MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	128MB * 4		1024MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	128MB * 4	128MB * 4	1536MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	256MB * 4		1536MB
64MB * 1	64MB * 1	64MB * 2	64MB * 4	256MB * 4	256MB * 4	2560MB
128MB * 1						128MB
128MB * 1	128MB * 1					256MB
128MB * 1	128MB * 1	128MB * 2				512MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4			1024MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	32MB * 4		1152MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	32MB * 4	32MB * 4	1280MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	64MB * 4		1280MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	64MB * 4	64MB * 4	1536MB

Table 3-5 Memory Configurations (continued)

Bank 1	Bank 2	Bank 3-4	Bank 5-8	Bank 9-12	Bank 13-16	Total Memory
128MB * 1	128MB * 1	128MB * 2	128MB * 4	128MB * 4		1536MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	128MB * 4	128MB * 4	2048MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	256MB * 4		2048MB
128MB * 1	128MB * 1	128MB * 2	128MB * 4	256MB * 4	256MB * 4	3072MB
256MB * 1						256MB
256MB * 1	256MB * 1					512MB
256MB * 1	256MB * 1	256MB * 2				1024MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4			2048MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	32MB * 4		2176MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	32MB * 4	32MB * 4	2304MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	64MB * 4		2304MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	64MB * 4	64MB * 4	2560MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	128MB * 4		2560MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	128MB * 4	128MB * 4	3072MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	256MB * 4		3072MB
256MB * 1	256MB * 1	256MB * 2	256MB * 4	256MB * 4	256MB * 4	4096MB

Rules for Adding Memory

- Memory banks 5-16 must be sequentially populated in groups of four banks. For example, either banks 5-8, and/or 9-12, and/or 13-16.

Exception: In the first group (first four banks) you can have 1, 2, or 4 DIMMS.

- Each group of four banks must be populated with the same type, size, vendor, and speed of memory.
- The system supports 32, 64, and 128MB ECC/EDO DIMMs and 256MB FPM DIMMs.

3.3.3 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 the DIMM does not completely fit, you may have inserted it the wrong way. Reverse the orientation of the DIMM.

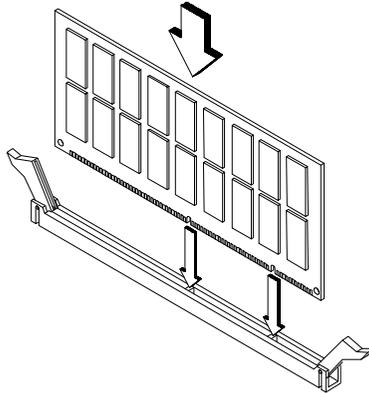


Figure 3-26 Installing a DIMM

3.3.4 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.

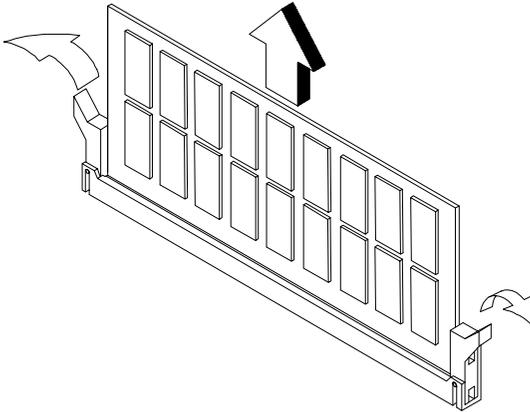


Figure 3-27 Removing a DIMM

3.3.5 Installing the Memory Board

Follow these steps to install the memory board:

1. Align the memory board with the memory board slot on the system board. See Figure 3-22 for the location of the memory board slot.



Install the memory board with the component side up.

2. Insert the board into the slot until it fits into place.

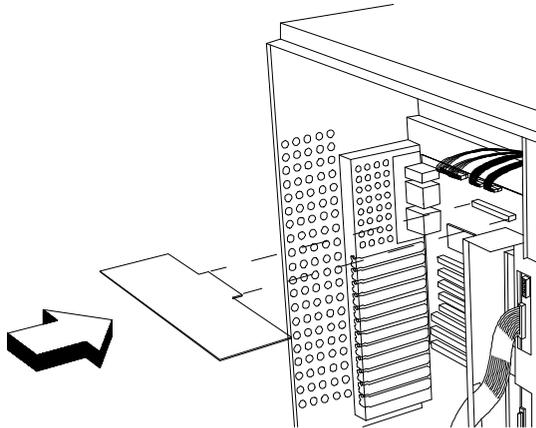


Figure 3-28 Inserting the Memory Board

3. Insert one end of the board holding clamp into the hole on the bracket behind the disk drives.
4. Align the clamp rail with the board edge.
5. Insert the other end of the clamp into the hole on the rear panel bracket.



Make sure to install the holding clamp properly. It protects the memory board and keeps it in place

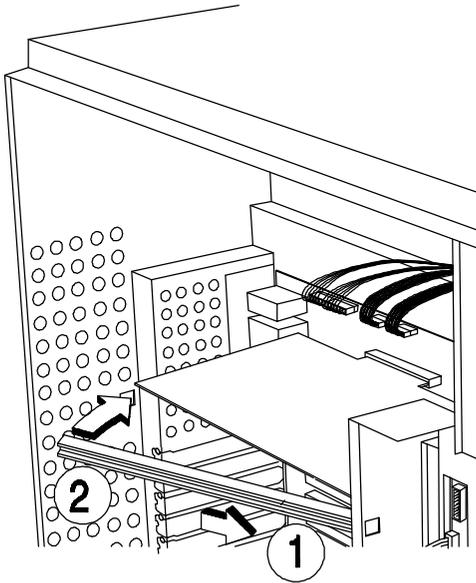


Figure 3-29 Attaching the Board Holding Clamp

3.3.6 Reconfiguring the System

You must enter Setup (see section 4.1) after installing or removing DIMMs to reconfigure the system.

Follow these steps to reconfigure the system:

1. Turn the system on. A memory error message appears, indicating that the total memory does not match the value stored in CMOS.
2. Press **CTRL** + **ALT** + **ESC** to enter Setup. A warning message appears indicating an incorrect memory configuration.
3. Press **ESC** twice to exit and reboot the system.

The system boots with the new memory configuration.



For some operating systems, it may be necessary to run the EISA Configuration Utility after changing the memory size. Please refer to the documentation that comes with the operating system.

3.4 SCSI Backplane Boards

The two standard SCSI backplane boards provide a convenient interface between the SCSI drives and the system board. Each backplane board includes seven SCSI drive slots to accommodate the drive trays and two SCSI channels to connect to the system board or SCSI controller board. Refer to Appendix B for a detailed discussion.

3.4.1 Features

The backplane boards have the following major features:

- “Hot-swap” capability that allows replacement of a defective hard drive even while the system is in full operation.



This feature requires an optional RAID controller board and appropriate RAID drivers.

- Indicates hard disk drive failure through a front panel board LED
- Supports 16-bit wide SCSI disk drives
- Allows ‘split’ (default) and ‘combine’ SCSI-channel configurations
- SCSI ID strapping that allows wide SCSI HDD ID configuration through the backplane switches instead of configuring the individual drive IDs

Chapter 4 BIOS Utility

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.



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.

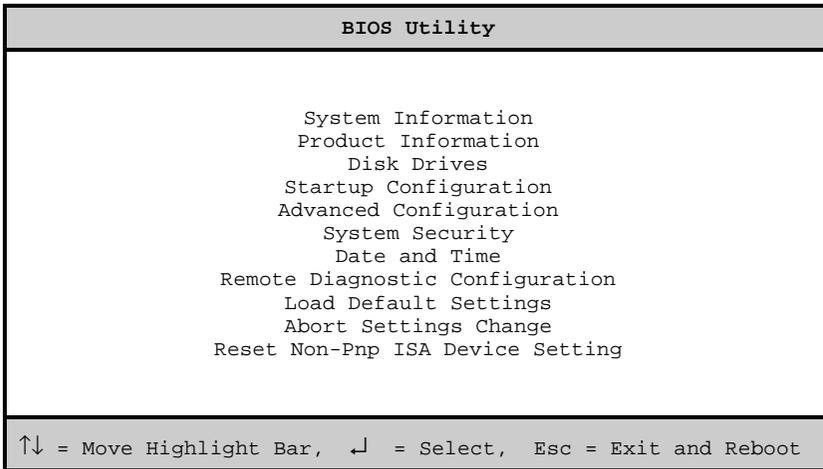
4.1 Entering Setup

To enter Setup, 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 BIOS Utility main menu then appears:



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

The system as you receive it may have had the default settings changed.

4.2 System Information

The following screen shows the items that appear when you select System Information from the main menu.

```
System Information                               Page 1/1

Processor ..... Pentium Pro
Processor Speed ..... 200 MHz
Bus Frequency ..... 66 MHz
Internal Cache ..... 16 KB, Enabled
External Cache ..... 512 KB, Enabled
Floppy Drive A ..... 1.44 MB, 3.5-inch
Floppy Drive B ..... None
IDE Primary Channel Master.. None
IDE Primary Channel Slave.. None
Total Memory ..... xx MB
Serial Port 1 ..... 3F8h, IRQ 4
Serial Port 2 ..... 2E8h, IRQ 3
Parallel Port ..... 378h, IRQ 7
Pointing Device ..... Installed

Note: New values after change will not be displayed until
      next reboot

PgUp PgDn = Move Screen, Esc = Back to Main Menu
```

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

The command line at the bottom of the menu tells you how to move from one screen to another and return to the main menu.

Press **PGDN** to move to the next page or **PGUP** to return to the previous page.

Press **ESC** to return to the main menu.

The following sections explain the parameters.



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.

4.2.1 Processor

The Processor parameter specifies the type of processor currently installed in your system. The system is designed to support the Intel Pentium Pro CPU.

4.2.2 Processor Speed

The Processor Speed parameter specifies the speed of the CPU currently installed in your system. The system supports Intel Pentium Pro CPU running at 200 MHz.

4.2.3 Bus Frequency

The Bus Frequency parameter specifies the system external clock. The bus frequency can be either 50, 60 or 66 MHz.

4.2.4 Internal Cache

This parameter specifies the first-level or the internal memory size (i.e., the memory integrated into the CPU), and whether it is enabled or disabled. For information on how to configure the system memory, see section 3.3.3.

4.2.5 External Cache

This parameter specifies the second-level cache memory size currently supported by the system, and whether it is enabled or disabled. For information on how to configure the system memory, see section 3.3.3.

4.2.6 Floppy Drive A

This parameter specifies the type of drive designated as Floppy Drive A. For information on how to configure the floppy drives, see section 4.4.1.

4.2.7 Floppy Drive B

This parameter specifies the system's current floppy drive B settings. For information on how to configure the floppy drives, see section 4.4.1.

4.2.8 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 IDE devices, see section 4.4.2.

4.2.9 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 IDE devices, see section 4.4.2.

4.2.10 Total Memory

This parameter specifies the total system 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.

4.2.11 Serial Port 1

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

4.2.12 Serial Port 2

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

4.2.13 Parallel Port

This parameter indicates the parallel port address and IRQ setting.

4.2.14 Pointing Device

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

4.3 Product Information

The Product Information screen contains general data about the system. It includes the product name, main board ID, main board P/N, system BIOS version, etc. This information is necessary for troubleshooting and may be required when asking for technical support.

The following screen shows the Product Information items.

```
Product Information                               Page 1/1

Product Name ..... 91.AB555.202
Main Board ID ..... X3
Main Board P/N ..... 55.59901.001
System BIOS Version ..... V3.0
System BIOS ID ..... R01-B0
BIOS Release Date ..... Nov 06, '97

Esc = Back to Main Menu
```

4.3.1 Product Name

This parameter specifies the product part number.

4.3.2 Main Board ID

This parameter specifies the system board model.

4.3.3 Main Board P/N

This parameter specifies the system board's part number.

4.3.4 System BIOS Version

This parameter specifies the system BIOS version.

4.3.5 System BIOS ID

This parameter specifies the system BIOS release number.

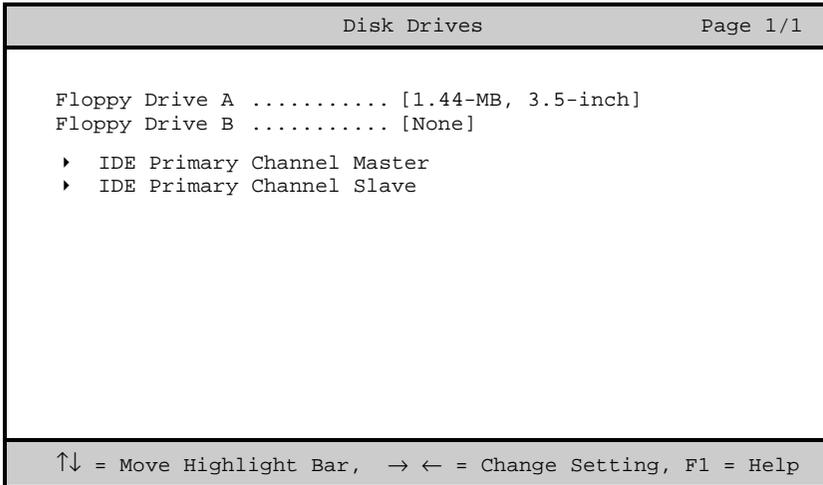
4.3.6 BIOS Release Date

This parameter specifies the official release date of the system BIOS.

4.4 Disk Drives

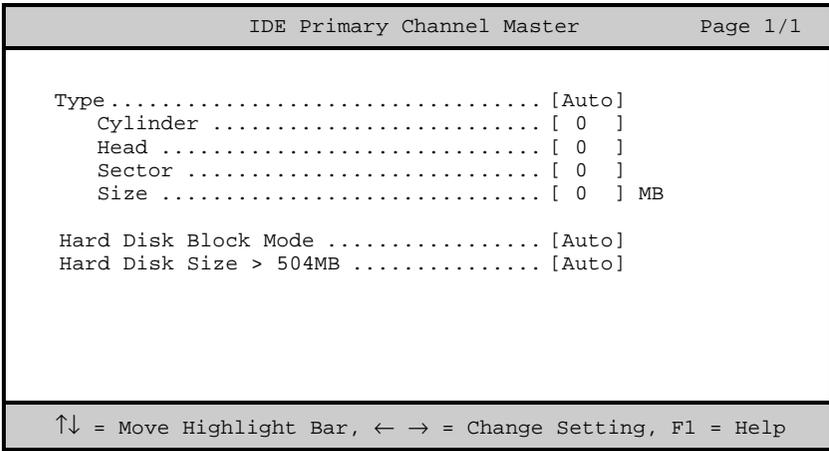
The Disk Drives menu lets you configure the IDE hard disk and disk drive settings.

The following screen shows the Disk Drives parameters and their default settings:



The triangle mark that precedes an item within a menu indicates that there is a detailed menu for that particular item. Select the item to display the menu.

From the Disk Drives screen, select the IDE Primary Channel Master and IDE Primary Channel Slave items to display their respective menus. The screen on the next page shows the menu.



The parameters for the IDE Primary Channel Slave menu are the same as in the above screen.

4.4.1 Floppy Drives

To configure the first floppy drive (drive A), highlight the Floppy Drive A parameter. Press  or  key to view the options, then select the appropriate value.

Possible settings for the Floppy Drive parameters:

- [**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.

4.4.2 IDE Drives

There are two IDE drive option items under the Disk Drives menu. Select the IDE Primary Channel Master if you want to configure an IDE device set as master. Select the IDE Primary Channel Slave if you want to configure an IDE device set as slave.

To configure an IDE device designated as master:

1. Select the IDE Primary Channel Master option to display its menu.
2. Highlight the parameter Type, then press  or  to display the IDE drive types with their respective values for cylinder, head, sector, and size.

You may do any of the following:

- Select the type that corresponds to your IDE hard disk drive.
- If you do not know the exact type of your IDE device, select the **Auto** option to let the BIOS utility automatically detect the installed IDE drive type.
- You may save the values under the option **User**. The next time you boot the system, the BIOS utility does not have to auto-configure your IDE drive as it detects the saved disk information during POST.



Copy the IDE disk drive values and keep them in a safe place in case you have to reconfigure the disk in the future.

- If you have installed an IDE hard disk that was previously formatted but does not use the disk native parameters or structure, i.e., the disk may be formatted according to the user-specified number of cylinders, heads, and sectors, select the **User** option. Then enter the appropriate drive information.
- If there is no device connected, choose **None**.

To configure an IDE device designated as slave:

1. Select the IDE Primary Channel Slave option to display its menu.
2. Follow step 2 of the procedure when configuring a master device.

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**.

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, enhanced IDE feature works only under DOS and Windows 3.x, 95 environment. Other operating systems require this parameter to be set to **Disabled**.

4.5 Startup Configuration

The Startup Configuration allows you to specify your preferred setting for bootup.

The following screen appears if you select the Startup Configuration option from the main menu:

```
Startup Configuration                               Page 1/1

System POST Mode .....[ Normal ]
Silent Boot .....[Disabled]
Num Lock After Boot .....[Enabled ]
Memory Test .....[Disabled]

Initialize SCSI Before IDE .....[Disabled]
Boot From IDE CD-ROM .....[Disabled]
System Boot Drive .....[Drive A Then C]

MP Compliant Revision .....[ V1.4 ]

↑↓ = Move Highlight Bar, ← → = Change Setting, F1 = Help
```

4.5.1 System POST Mode

This parameter allows the system to perform the POST routines in **Diagnostic** and **Normal** modes. The **Diagnostic** mode shows the current status on the front panel LCD display. The default setting is **Normal**.

4.5.2 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 which the screen displays the operating system prompt (such as DOS) or logo (such as Windows 95). If any error occurred 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  after you hear a beep that indicates the activation of the keyboard.

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

4.5.3 Num Lock After Boot

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

4.5.4 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 **Disabled**.

4.5.5 Initialize SCSI Before IDE

When set to **Disabled**, the system checks for an IDE device, if any, during the boot-up process.

When set to **Enabled**, the system scans for SCSI devices first, whether or not an IDE device is present.

4.5.6 Boot From IDE CD-ROM

When set to **Enabled**, the system checks for a bootable CD in the IDE CD-ROM drive. If a CD is present, the system boots from the IDE CD-ROM; otherwise, it boots from the drive specified in the System Boot Drive parameter.

When set to **Disabled**, the system boots from the drive specified in the System Boot Drive parameter.

4.5.7 System Boot Drive

This parameter allows you to specify the system search sequence. The selections are:

- **Drive A then C:** The system checks drive A first. If there is a diskette in the drive, the system boots from drive A. Otherwise, it boots from drive C.
- **Drive C then A:** The system checks drive C first. If there is a hard disk (drive C) installed, the system boots from drive C. Otherwise, it boots from drive A.
- **C:** The system always boots from drive C.
- **A:** The system always boots from drive A.

4.5.8 MP Compliant Revision

This parameter shows the version of Multiprocessor Compliant Specification from Intel (V1.1 for old MPX table; V1.4 is the default).

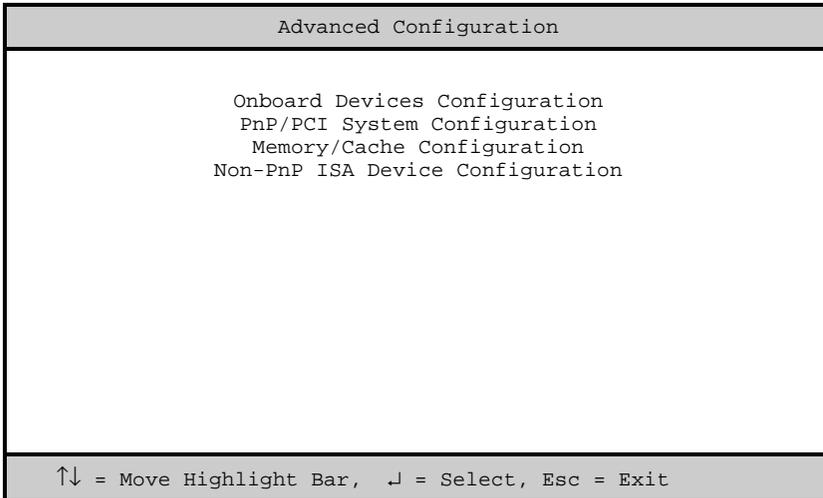
4.6 Advanced Configuration

The Advanced Configuration option allows you to configure the advanced system memory functions.



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

The following screen shows the Advanced Configuration parameters.



4.6.1 Onboard Devices Configuration

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

Onboard Devices Configuration		Page 1/2
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	[Standard]	
ECP DMA Channel	[-]	

↑↓ = Move Highlight Bar, ← → = Change Setting, F1 = Help
PgUp/PgDn = Move Screen

The following screen shows page 2 of the Onboard Devices Configuration menu.

```
Onboard Devices Configuration           Page 2/2

Onboard Floppy Disk Controller .....[Enabled ]
Onboard IDE Primary Channel .....[Enabled ]

Onboard PS/2 Mouse (IRQ 12) .....[Enabled ]

Onboard SCSI1 .....[Enabled ]
  Boot from SCSI1 Device .....[Enabled ]
OnboardSCSI2 .....[Enabled ]
  Boot from SCSI2 Device .....[Enabled ]

↑↓ = Move Highlight Bar, ← → = Change Setting, F1 = Help
PgUp/PgDn = Move Screen
```

Serial Port 1

This parameter allows you to enable or disable the serial port 1.

Base Address

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

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

IRQ

This function lets you assign an interrupt for serial port 1. The options are IRQ **3** and **4**.



The Base Address and IRQ parameters are configurable only if Serial Port 1 is enabled.

Serial Port 2

This parameter allows you to enable or disable the serial port 2.

Base Address

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

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

IRQ

This function lets you assign an interrupt for serial port 2. The options are IRQ **3** and **4**.

Note that the Base Address and IRQ parameters are configurable only if Serial Port 2 is enabled.



If you assign 3F8h to serial port 1, you may only assign 2F8h or 2E8h to serial port 2.

If you assign 2F8h to serial port 1, you may only assign 3F8h or 3E8h to serial port 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 parallel port onboard, the system automatically disables the onboard functions.

Check the parallel port address on 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 4-1 lists the different operation modes.

Table 4-1 Parallel Port Operation Mode Settings

Setting	Function
Standard Parallel Port (SPP)	Allows normal speed one-way operation
Standard and Bidirectional	Allows normal speed operation in a two-way mode
Enhanced Parallel Port (EPP)	Allows bidirectional parallel port operation at maximum speed
Extended Capabilities Port (ECP)	Allows parallel port to operate in bidirectional 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).

Onboard Floppy Disk Controller

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

Onboard IDE Primary Channel

This parameter lets you enable or disable the primary IDE channel. When enabled, it allows access to the devices connected to the primary channel. When disabled, it deactivates the devices.

Onboard PS/2 Mouse (IRQ 12)

This parameter enables or disables the onboard PS/2 mouse. When enabled, it allows you to use the onboard PS/2 mouse assigned with IRQ12. When disabled, it deactivates the mouse and makes IRQ12 available for use of other devices.

4.6.2 PnP/PCI System Configuration

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

PnP/PCI System Configuration		Page 1/1		
PCI IRQ Setting	[Auto]			
	INTA	INTB	INTC	INTD
PCI Slot 1	[--]	[--]	[--]	[--]
PCI Slot 2	[--]	[--]	[--]	[--]
PCI Slot 3	[--]	[--]	[--]	[--]
PCI Slot 4	[--]	[--]	[--]	[--]
PCI Slot 5	[--]	[--]	[--]	[11]
PCI Slot 6	[--]	[--]	[11]	[--]
PCI Slot 7	[--]	[11]	[--]	[--]
PCI OB SCSI1	[11]			
PCI OB SCSI2	[--]			
PCI IRQ Sharing	[No]			
VGA Palette Snoop	[Disabled]			

↑↓ = Move Highlight Bar, ← → = Change Setting, F1 = Help

PCI IRQ Setting

This function is fixed at **Auto** setting and is nonconfigurable. It automatically configures the plug-and-play (PnP) devices installed in your system.

Refer to your manual for technical information about the PCI card.

PCI Slots

These parameters specify the auto-assigned interrupt for each of the PCI devices. Like the PCI IRQ Setting parameter, these are also nonconfigurable.

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 have been updated. This allows 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.

4.6.3 Memory/Cache Configuration

The Memory/Cache Configuration allows you to specify the appropriate settings for your system memory. Selecting the option displays the following screen.

Memory/Cache Configuration		Page 1/1
Internal Cache (CPU Cache)	[Enabled]	
Cache Scheme	[Write Back]	
Memory at 15MB-16MB Reserved for	[System]	

↑↓ = Move Highlight Bar, ← → = Change Setting, F1 = Help

Internal Cache (CPU Cache)

This parameter enables or disables the first-level or internal memory. The default setting is **Enabled**.

Cache Scheme

This parameter allows you to select **Write back** or **Write through** for the cache 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. **Write through** updates both the cache and the memory whenever there is a write instruction.

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.

4.6.4 Non-PnP ISA Device Configuration

The Non-PnP ISA Device Configuration parameters allow you to specify the settings for cards without the plug-and-play (PnP) feature.

Non-PnP ISA Device Configuration		Page 1/4
System Resources Used by Non-PnP ISA Cards		
IRQ		
IRQ 0 ---- [---]	IRQ 8 ---- [---]	
IRQ 1 ---- [---]	IRQ 9 ---- [No]	
IRQ 2 ---- [---]	IRQ 10 --- [No]	
IRQ 3 ---- [No]	IRQ 11 --- [No]	
IRQ 4 ---- [No]	IRQ 12 --- [No]	
IRQ 5 ---- [No]	IRQ 13 --- [---]	
IRQ 6 ---- [---]	IRQ 14 --- [No]	
IRQ 7 ---- [No]	IRQ 15 --- [No]	
↑↓ = Move Highlight Bar, ← → = Change Setting F1 = Help PgUp/PgDn = Move Screen		



*The items marked **No** are currently not in use, while those marked **Yes** are in use by PnP devices.*

DMA

DMA 0 ---- [No]	DMA 4-----[---]
DMA 1 ---- [No]	DMA 5-----[No]
DMA 2 ---- [---]	DMA 6-----[---]
DMA 3 ---- [No]	DMA 7-----[No]

Expansion ROM Region

C8000h - CBFFFh -----	[No]
CC000h - CFFFFh -----	[No]
D0000h - D3FFFh -----	[No]
D4000h - D7FFFh -----	[No]
D8000h - DBFFFh -----	[No]
DC000h - DFFFFh -----	[No]

↑↓ = Move Highlight Bar, ← →= Change Setting F1 = Help
PgUp/PgDn = Move Screen

I/O Region

100h-10Fh ----[No]	1E0h-1EFh --- [No]
110h-11Fh ----[No]	1F0h-1FFh --- [---]
120h-12Fh ----[No]	200h-20Fh --- [No]
130h-13Fh ----[No]	210h-21Fh --- [No]
140h-14Fh ----[No]	220h-22Fh --- [No]
150h-15Fh ----[No]	230h-23Fh --- [No]
160h-16Fh ----[No]	240h-24Fh --- [No]
170h-17Fh ----[---]	250h-25Fh --- [No]
180h-18Fh ----[No]	260h-26Fh --- [No]
190h-19Fh ----[No]	270h-27Fh --- [No]
1A0h-1AFh ----[No]	280h-28Fh --- [No]
1B0h-1BFh ----[No]	290h-29Fh --- [No]
1C0h-1CFh ----[No]	2A0h-2AFh --- [No]
1D0h-1DFh ----[No]	2B0h-2BFh --- [No]

↑↓ = Move Highlight Bar, ← →= Change Setting F1 = Help
PgUp/PgDn = Move Screen

I/O Region

2C0h-2CFh ----- [No]	3A0h-3AFh --- [No]
2D0h-2DFh ----- [No]	3B0h-3BFh --- [No]
2E0h-2EFh ----- [No]	3C0h-3CFh --- [No]
2F0h-2FFh ----- [No]	3D0h-3DFh --- [No]
300h-30Fh ----- [No]	3E0h-3EFh --- [No]
310h-31Fh ----- [No]	3F0h-3FFh --- [No]
320h-32Fh ----- [No]	
330h-33Fh ----- [No]	
340h-34Fh ----- [No]	
350h-35Fh ----- [No]	
360h-36Fh ----- [No]	
370h-37Fh ----- [No]	
380h-38Fh ----- [No]	
390h-39Fh ----- [No]	

↑↓ = Move Highlight Bar, ← → = Change Setting F1 = Help
PgUp/PgDn = Move Screen



*Refer to your non-PnP ISA device manual
when setting the following parameters.*

IRQ/DMA

These items allow you to assign specific IRQ and DMA channels to non-PnP ISA devices. The system will not use such IRQ and DMA channels when it automatically assigns channels to PnP devices.

Expansion ROM Region

These items specify the memory regions available for add-on card use. It allows you to manually assign specific regions to non-PnP devices so that the system will not use those regions anymore when it automatically configures PnP devices.

I/O Region

The items under this parameter allow you to reserve 16-byte memory address ranges for non-PnP devices. When the system configures PnP devices, the address ranges that you marked will not be used anymore.

You can assign memory addresses to non-PnP devices at random as long as you cover the address range required by the device. For example, for a card that requires 178h-188h address, you have to set regions 170h-17Fh and 180h-18Fh to **Yes**.

4.7 System Security Setup

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

The following screen appears if select System Security from the main menu.

System Security		Page 1/1
IDE Disk Drive Control		
Floppy Drive	[Normal]	
IDE Hard Disk Drive ...	[Normal]	
Setup Password.....	[None]	
Power On Password.....	[None]	
Operation Mode.....	[Normal]	

↑↓ = Move Highlight Bar, ← →= Change Setting, F1 = Help

4.7.1 IDE 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.

Table 4-2 lists the drive control settings and their corresponding functions.

Table 4-2 Drive Control Settings

Setting	Description
Floppy Drive	
Normal	Diskette 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
Disabled	Disables all diskette functions
IDE Hard Disk Drive	
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
Disabled	Disables all hard disk functions

4.7.2 Setup Password

The Setup Password prevents unauthorized access to the BIOS utility.

Setting a Password

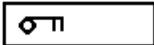
1. Make sure that JP11 is set to **2-4** (bypass password).



You cannot enter the BIOS utility if a Setup password does not exist and JP11 is set to 1-2 (password check enabled).

By default, JP11 is set to 2-4 (bypass password).

2. Enter BIOS utility and select System Security.
3. Highlight the Setup Password parameter and press the  or  key. The password prompt appears:

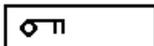
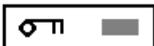


4. Type a password. The password may consist of up to seven characters.



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

5. Press . A prompt asks you to retype the password to verify your first entry.



6. Retype the password then press .

After setting the password, the system automatically sets the Setup Password parameter to **Present**.

7. Press  to exit the System Security screen and return to the main menu.
8. Press  to exit the BIOS utility. A dialog box appears asking if you want to save the CMOS data.
9. Select **Yes** to save the changes and reboot the system.
10. While rebooting, turn off the system then open the housing.
11. Set JP11 to **1-2** to enable the password function.

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

Changing or Removing the Setup Password

Should you want to change your setup password, do the following:

1. Enter the BIOS utility and select System Security.
2. Highlight the Setup Password parameter.
3. Press  or  to display the password prompt and key-in a new password.

or

Press  or  and select **None** to remove the existing password.

4. Press **ESC** to exit the System Security screen and return to the main menu.
5. Press **ESC** to exit the BIOS utility. A dialog box appears asking if you want to save the CMOS data.
6. Select **Yes** to save the changes.

Bypassing the 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 system.
2. Open the system housing and JP11 is set to **2-4** to bypass the password function.
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.*

4.7.3 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 the BIOS 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 JP11 to 1-2 to enable the Power-on password.

Operation Mode

This function lets you enable or disable the password prompt display. When set to **Normal**, the password prompt appears before the system boots. When set to **Network**, the password prompt does not appear; however, the keyboard is locked after the system has booted and remains locked until the correct password is entered.

4.8 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.

The following screen appears if you select Date and Time from the main menu.

Date and Time		Page 1/1
Date	[xxx xx xx, 199x]	
Time	[xx:xx:xx]	
↑↓ = Move Highlight Bar, ← → = Change Setting, F1 = Help		

4.8.1 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:

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

4.8.2 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**

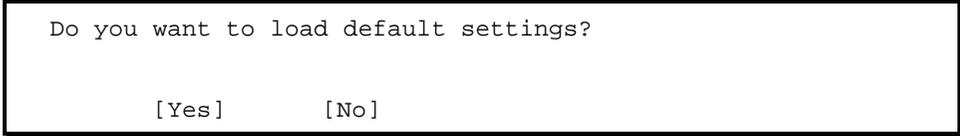
4.9 Remote Diagnostic Configuration

The Remote Diagnostic Configuration parameters allow you to configure your RDM settings. Refer to the *Remote Diagnostic Manager (RDM) User's Guide* for information on RDM.

4.10 Load Setup 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 Setup Default Settings from the main menu.



```
Do you want to load default settings?  
  
[Yes]      [No]
```

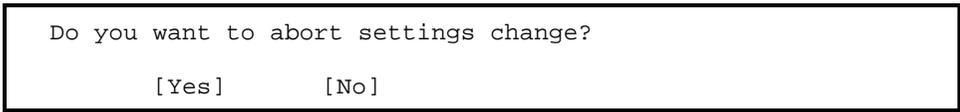
Select **Yes** to load the default settings.

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

4.11 Abort Settings Change

Use this option to disregard your changes to the BIOS and reload your previous settings.

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



```
Do you want to abort settings change?  
  
[Yes]      [No]
```

Select **Yes** to disregard your changes and reload your previous settings. After reload, the main menu appears on screen.

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

4.12 Reset Non-PnP ISA Device Setting

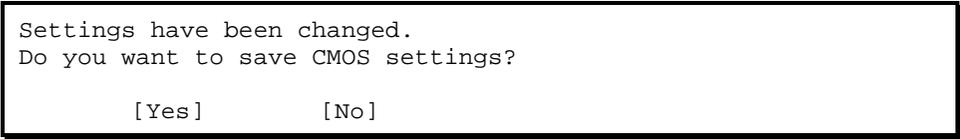
Selecting this option from the main menu resets all the Non-PnP ISA Device Configuration parameter settings to their defaults.

Refer to section 4.6.4 for details on the Non-PnP ISA device parameters.

4.13 Leaving 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  to leave the system configuration setup. The following screen appears:



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

Use the arrow keys to select your response. Select **Yes** to store the new data in CMOS. Select **No** to retain the old configuration values. Press .

Chapter 5 Diagnostics and Utilities

5.1 Advanced Server Manager Pro (ASM Pro)

Advanced Server Manager Pro (ASM Pro) is a server management tool based on the Simple Network Management Protocol (SNMP). It detects server problems related to CPU thermal conditions, performs 5V/3.3V detection, and indicates 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 *Advanced Server Manager Pro (ASM Pro) User's Guide* for information on ASM Pro.

5.2 Remote Diagnostic Manager (RDM)

Remote Diagnostic Manager (RDM) is a network management tool that utilizes modems and telephone lines to control a host of servers from a remote station. It monitors and analyzes the server condition, updates the BIOS settings if necessary, or reboots the server in the event of failure and quickly returns it to normal operation. This capability to execute the RDM program from a remote site bridges the distance barrier in fixing server problems and reduces wasted time due to system failure.

Refer to the *Remote Diagnostic Manager (RDM) User's Guide* for information on RDM.

5.3 EISA Configuration Utility (ECU)

The EISA Configuration Utility (ECU) is a program that allows you to easily configure your EISA computer. Use this utility when you set up your EISA computer for the first time or any time you change your configuration by adding or removing an EISA or ISA board or memory. The program stores the configuration information in the computer's nonvolatile memory where it is available whenever you use your computer.

Functions

The ECU does the following:

- Configures memory and main board options.
- Supports EISA and ISA boards, PCI devices, and plug-and-play ISA boards.
- Automatically detects EISA boards, PCI devices, and plug-and-play ISA boards installed in the computer.
- Helps you configure ISA boards by providing the appropriate switch and jumper settings, if the ISA board has a CFG file.
- Notifies you if a conflict occurs during configuration.
- Creates and maintains the System Configuration Information (SCI) file as a backup for the computer's nonvolatile memory.
- Supports configuration (CFG) file extensions.

Making Menu Selections

You can either use the keyboard or the mouse (if a mouse driver was loaded) to make menu selections in the EISA Configuration Utility program.

Using the Keyboard

Table 5-1 Keyboard Function Keys

Key	Function
Tab or y	Moves the cursor to the next field
j + Tab or w	Moves the cursor to the previous field
w or y	Moves the cursor between items within a list
e	Selects an item
^	Cancel the most recent action
{, }, w or y	Scrolls a screen
g	Moves the cursor to the top of a list
d	Moves the cursor to the bottom of a list
b + g	Moves the cursor to the beginning of a menu
b + d	Moves the cursor to the end of a menu

Using the mouse



A mouse driver must be loaded in order to use the mouse. When you access the ECU through Acer StartUp, a mouse driver is loaded.

Follow these steps to use the mouse when making menu selections:

1. Position the cursor over the desired option then click on the left mouse button to select it.
2. When a sub-menu appears, click on the left button again to make a selection.
3. If a scroll bar appears on the right side of the screen, place the mouse cursor over the arrow at the top or at the bottom of the scroll bar, then click and hold the left mouse button to scroll up or down the page.

Getting Help

The EISA Configuration Utility automatically displays information about each choice on the ECU main menu and the second-level menus. The utility also allows you to access online help once you begin the configuration process.

Press **h** to display the help menu. Press **^** to remove the help menu from the screen.

5.3.1 Starting the ECU

1. You can access the ECU two ways:
 - From the Acer StartUp main menu, click on the **EISA Configuration** icon, then click on the **EISA Configuration** button on the System Configuration menu.
 - Use **Diskette Maker** in Acer StartUp to make an ECU diskette, then insert the ECU diskette into drive A and reboot the system.
2. System messages display, then the ECU logo screen appears. Press any key to continue.
3. A Welcome screen appears. Press **Enter** to leave the Welcome screen and display the ECU main menu—Steps in Configuring Your Computer (see Figure 5-1).



*Any configuration changes will be listed on the Configuration Changes screen that displays between the Welcome screen and ECU main menu. This screen appears **only** when changes have been made since the last time you ran the ECU. Press **Enter** to leave the Configuration Changes screen.*

5.3.2 ECU Main Menu —Steps in Configuring Your Computer

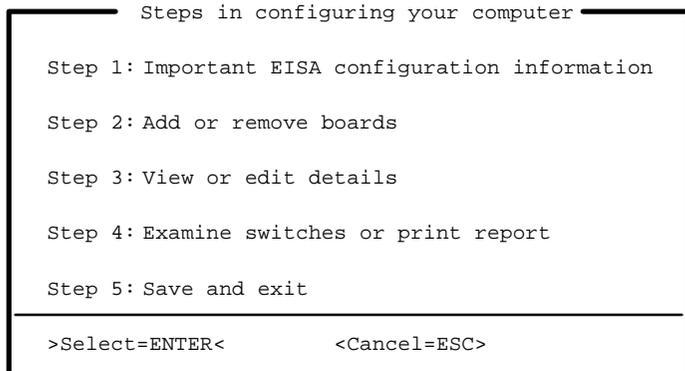


Figure 5-1 ECU Main Menu ¾ Steps in Configuring Your Computer

The five selections on the ECU main menu are briefly described below. Specific tasks, such as configuring your computer for the first time, adding or removing boards, and configuring memory are discussed in detail later in this chapter.

All the ECU screens have a command bar at the bottom to guide you through the utility.

Main Menu Selections

Step 1: Important EISA Configuration Information

This selection is highlighted when you first enter the main menu. It gives an overview of how to configure your computer with the EISA Configuration Utility. Press **Enter** to select this item. Then press the up and down arrow keys to move up or down the text. When you select **Step 1: Important EISA Configuration Information**, the following screen displays:

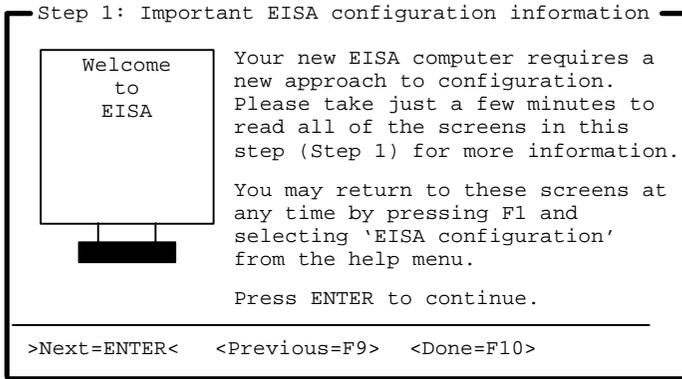


Figure 5-2 Important EISA Configuration Information

Take a few moments to read all screens in this step. The screens provide details about using the ECU program to configure EISA and ISA boards. You can learn how to determine if a board is EISA or ISA and how to use steps 2, 3, and 4 on the ECU main menu. The last screen in the series summarizes the steps to follow when configuring your computer.

You can move between screens by pressing **Enter** to go to the next screen, or **F9** to go back to the previous screen. After viewing the screens, press **Enter** or **F10** to return to the ECU main menu.

Additional information is available in the Help sub-menus that automatically display at the bottom right of the window. The Help submenus consist of a series of screens that describe the ECU process and how the process differs for EISA and ISA boards.

Use the up and down arrow keys to read a short explanation of each of the configuration steps.

Step 2: Add or Remove Boards

Each time you add or remove a configurable board, you must reconfigure the computer using the ECU program. When you select this item, the screen displays a list of the boards and options installed in your computer.

The screen contains the configuration data that the ECU read from your CFG file. It includes the number of EISA slots and device controllers detected.

Figure 5-3 shows a sample Add or Remove Boards screen.

```
Step 2: Add or remove boards

Listed are the board and options detected in your
computer.

Press INSERT to add the boards or options which
could not be detected or which you plan to install.
Press DEL to remove the highlighted board from your
configuration.

Press F7 to move the highlighted board to another
slot.

Press F10 when you have completed this step.

> X3 with Max Four Intel Pentium Pros
  Slot 1 (Empty)
  Slot 2 (Empty)
  Slot 3 (Empty)
  Embedded PCI SCSI Controller

>Add=INSERT<  <Remove=DEL>  <Move=F7>  <Done=F10>
```

Figure 5-3 Add or Remove Boards

See the section “Adding or Removing Boards” for a detailed procedure.

Step 3: View or Edit Details

The ECU also allows you to view or edit your system configuration information. You may have to edit your system settings when you add or remove boards, when you make other hardware changes or when there are device assignment conflicts. Figure 5-4 shows a sample View or Edit Details screen.

The configuration data on the following screen depends on your CFG file and may not be exactly the same as the one on your actual screen.

Press ↑ and ↓ to see all information.

See also: Advanced Menus ⇒ View Additional System Information ⇒ Used Resources and Available Resources

Step 3: View or Edit Details

```
Press ↑ and ↓ to see all information.

Press ENTER to edit the functions of the highlighted
item.

Press F6 to edit its resources (IRQs, DMAs, I/O ports,
or memory).

Press F10 when you have finished this step

System - X3 with Max Four Intel Pentium Pros
System Memory
  Base System Memory ..... Enabled
  System BIOS ..... Enabled
  Memory at 15M-16M ..... 15-16MB System Use
  Total Memory ..... 64 MB

PCI Devices IRQ Assignment
Onboard 7880 SCSI1 Controller .. Disabled
Onboard 7880 SCSI2 Controller . Disabled
PCI Slot 1 ..... Disabled
PCI Slot 2 ..... Disabled
PCI Slot 3 ..... Disabled
PCI Slot 4 ..... Disabled
PCI Slot 5 ..... Disabled
PCI Slot 6 ..... Disabled
PCI Slot 7 ..... Disabled
PCI Slot 8 ..... Disabled

Peripheral Device Status
Mouse Port ..... Enabled
Keyboard Port ..... Enabled
Floppy Disk Controller ..... Enabled
IDE HDD Interface ..... Enabled
Parallel Port ..... Enabled as LPT1 (3BCh)

>Edit=ENTER< <Edit Resources=F6> <Advanced=F7> <Done=F10>
```

Figure 5-4 View or Edit Details

Step 4: Examine Switches or Print Report

This selection lists the boards installed in your computer. Figure 5-5 shows a sample Examine Switches or Print Report screen.

Boards marked with an arrow on the screen may have defined jumpers and switches that you must physically verify. It may also mean that there is a software statement with additional information about the board.

To view the switch and jumper settings, highlight the board marked with an arrow and press **Enter**.

You can print a hard copy of the switch and jumpers settings or you can print the information to a TXT file (see the section “Configuring Your Computer for the First Time” for details).

```
Step 4: Examine switches or print report

You must PHYSICALLY verify that the switches and jumpers
of each board marked with an arrow ( → ) are set as
required. These settings cannot be detected or changed by
this program.

To view the required settings for the highlighted
board, press ENTER. Pick up the board and compare its
settings to the required settings. Change the board
settings to match the required settings.

> System      X3 with Max Four Intel Pentium Pros
Slot 1      (Empty)
Slot 2      (Empty)
Slot 3      (Empty)
Embedded PCI SCSI Controller

>View=ENTER<      <Print=F7>      <Done=F10>
```

Figure 5-5 Examine Switches or Print Report

Step 5: Save and Exit

Figure 5-6 shows the Save and Exit screen. Press **Enter** to save your configuration and exit the ECU program. You can also exit without saving in this step.

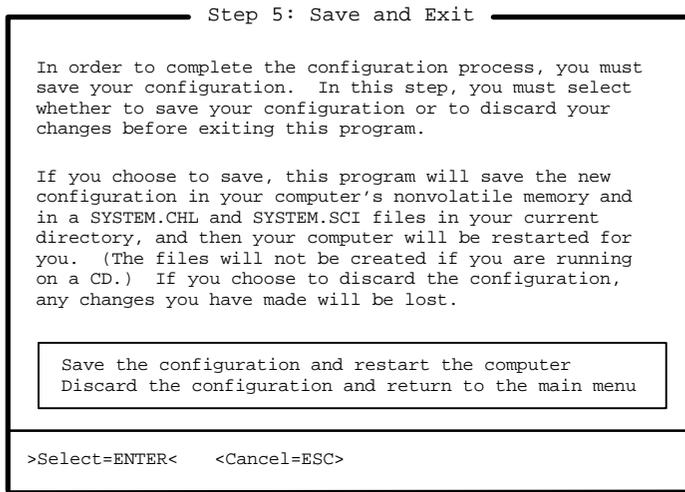


Figure 5-6 Save and Exit

5.3.3 Configuring Your Computer for the First Time

Follow these steps when configuring your computer for the first time:

1. Select **Step 1: Important EISA Configuration Information** from the ECU main menu. Read through the information then press **F10** when you are done.
2. Select **Step 4: Examine switches or print report**, then press **Enter** to display the screen shown below.

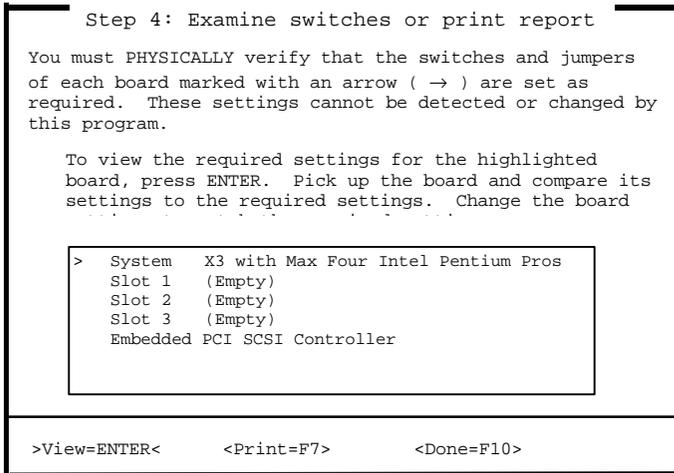


Figure 5-7 Examine Switches or Print Report

3. Notice the boards marked with an arrow on the screen, if any. The arrow indicates that the boards in your computer may have defined jumpers and switches that you must physically verify. It may also mean that there is a software statement with additional information about the board.
4. To view the switch and jumper settings, highlight the board marked with an arrow and press **Enter**. The switch/jumpers settings screen for the board appears.
5. Scroll through the switch and jumper settings for the board, and press **F10** when you have finished viewing the information.

6. To print the information, select **Print** by pressing **F7**. The Print Settings screen appears.
- If you have a printer attached to your computer, select **Print all configuration settings** or **Print settings for selected board or option**, then press **Enter** to print a hard copy of the switch and jumper settings and other configuration information.
 - If you do not have a printer, select **Print all configuration settings to a file** or **Print settings for selected board or option to a file**. A Print Information to TXT File screen appears.
 - If you want to print the switch and jumper settings to a different diskette, insert a diskette in drive A and press **Enter**. Another Print Information to TXT File screen appears. Enter the name of your file or choose an existing filename and press **Enter**.



If you inserted a different diskette, remember to reinsert the ECU diskette after printing is complete.

7. Press **F10** when you are through. The ECU main menu, Steps in Configuring Your Computer, reappears.

8. Select **Step 5: Save and Exit**, then press **Enter**. The following screen appears.

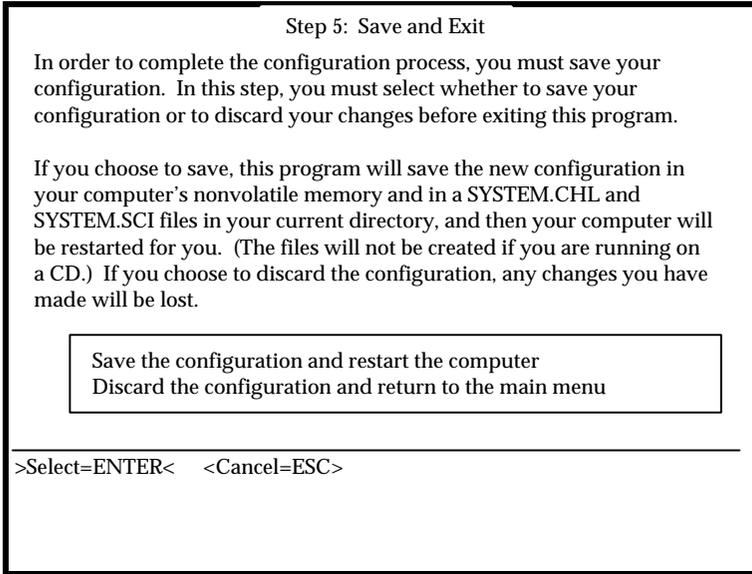


Figure 5-8 Save and Exit

9. To save your changes, select **Save the configuration and restart the computer**, then press **Enter**.

To discard the changes, choose the option **Discard the configuration and return to the main menu**. Any changes that you made are lost.

10. When the reboot screen appears, press **Enter**.
11. Turn off the computer and remove the ECU diskette, if not running from CD.

5.3.4 Adding or Removing Boards

Each time you add or remove a board, you must reconfigure the computer using the EISA Configuration Utility program.

Adding Boards

Follow these steps when adding a board:

1. Select **Step 2: Add or remove boards** from the ECU main menu. Press **Enter** to display the following screen:

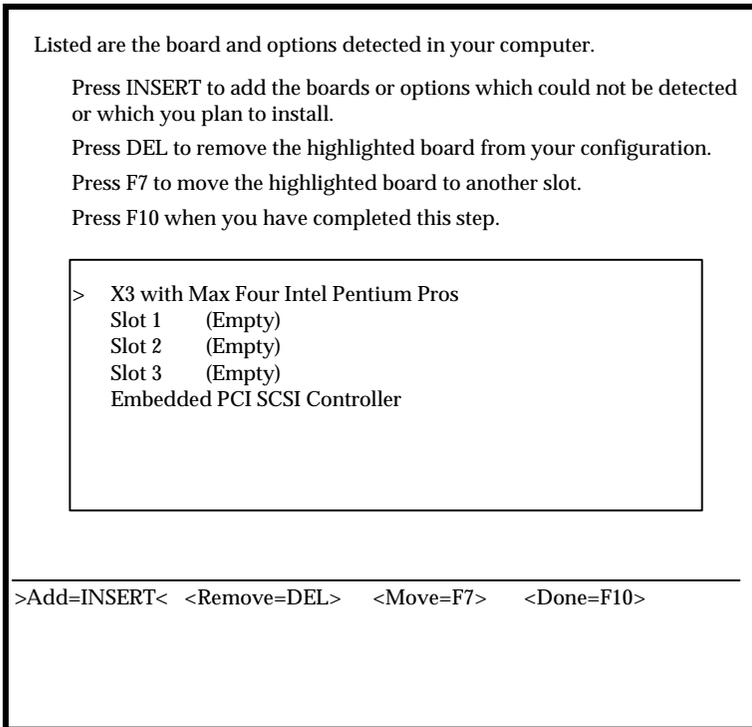


Figure 5-9 Add or Remove Boards

The screen contains the configuration data that the ECU read from your CFG file. It includes the number of EISA slots and device controllers detected.

2. If you want to add or have already added a board, highlight a slot and press **h** to select an option from the list that appears.
3. Press **F10** when done. The ECU main menu displays.
4. Select **Step 4: Examine switches or print report**, then press **Enter**.
5. On the Examine Switches or Print Report screen that displays, notice the boards marked with an arrow, if any. The arrow indicates that the boards in your computer may have defined jumpers and switches that you must physically verify. It may also mean that there is a software statement with additional information about the board.
6. To view the switch and jumper settings, highlight the board marked with an arrow and press **Enter**.
7. When the switch/jumpers settings screen for the board displays, scroll through the switch and jumper settings for the board. Press **F10** when you have finished viewing the information.
8. To print the information, select **Print** by pressing **F7**. The Print Settings screen appears.
 - If you have a printer attached to your computer, select **Print all configuration settings** or **Print settings for selected board or option**, then press **Enter** to print a hard copy of the switch and jumper settings and other configuration information.
 - If you do not have a printer, select **Print all configuration settings to a file** or **Print settings for selected board or option to a file**. A Print Information to TXT File screen appears.
 - If you want to print the switch and jumper settings to a different diskette, insert a diskette in drive A and press **Enter**. Another Print Information to TXT File screen appears. Enter the name of your file or choose an existing filename and press **Enter**.



If you inserted a different diskette, remember to reinsert the ECU diskette after printing is complete.

9. Press **F10** when you are through. The ECU main menu, Steps in Configuring Your Computer, reappears.
10. Select **Step 5: Save and Exit**, then press **Enter**. The Save and Exit screen displays.
11. To save your changes, select **Save the configuration and restart the computer**, then press **Enter**.

To discard the changes, choose the option **Discard the configuration and return to the main menu**. Any changes that you made are lost.

12. When the reboot screen appears, press **Enter**.
13. Turn off the computer and remove the ECU diskette, if not running from CD.

Removing a Board

Follow these steps when you remove a board:

1. Select **Step 2: Add or remove boards** from the ECU main menu.
2. Select the board that you want to remove from the configuration and press c. A remove confirmation screen appears.
3. Press **Enter**. The Add or Remove Boards screen reappears.
4. Press **F10** when done. The ECU main menu displays.
5. Follow steps 4 to 13 in the previous section, Adding a Board, to complete your configuration.

5.3.5 System Memory

The ECU automatically detects and configures the size of your system memory. When the memory size is changed, enter the ECU and exit/save the configuration.

5.3.6 Viewing or Editing Configuration Details

The ECU also allows you to view or edit your system configuration information. You may have to edit your system settings when you add or remove boards, when you made any other hardware changes, or when there are device assignment conflicts.

To view or edit your configuration, simply click on **Step 3: View or edit details** from the ECU main menu then press **Enter** to display the screen shown in Figure 5-4.

Advanced Menus

Press **F7** from the View or Edit Details screen to display the Advanced menu. This menu contains four options: Lock/unlock boards, View additional system information menu, Set verification mode menu, and Maintain SCI files menu.

Lock/unlock boards

This option allows you to secure choices for the current board or the entire system to the current selections, or to unlock those choices so that changes can be made. Locking a board prevents changes to a board's settings. An exclamation point (!) next to the selection indicates that a board is locked.

View additional system information

This option allows you to choose from a menu of options for displaying detailed information about system specifications and resources, including:

- **Board specifications**
Displays information about the identification and physical characteristics of your boards
- **System specifications**
Displays system statistics and information about the slots in your computer.
- **Used resources**
Displays information about which boards and functions are using your computer's resources, including DMA channels, IRQ levels, I/O ports, and memory addresses.
- **Available resources**
Displays a list of those resources which are unassigned and are available for allocation to boards.

Set verification mode menu

This option allows you to specify whether your computer's configuration should be checked each time you make a change or only when you choose.

Select **Automatic** to have the computer's configuration verified automatically each time a change is made and have conflicts identified and resolved as they occur.

Select **Manual** to verify your computer's configuration only when you select the <Verify> push-button on the **Step 3: View or edit details** screen. Note that the <Verify> push-button displays only when the program is in **Manual** verification mode.

Maintain SCI files menu

This option allows you to select from a menu of options regarding System Configuration Information (SCI) files.

Select **Open...** to display a previously created System Configuration Information (SCI) file.



This will cause the current configuration information to be lost.

Select **Save as...** to save the current configuration information to a backup file.

5.3.7 What To Do If Your Nonvolatile Memory Is Invalid

If the nonvolatile memory has become invalid or it has not been initialized, the following screen may display before the ECU main menu appears.

```
The EISA configuration nonvolatile memory for this system is invalid. A backup
system configuration information (SYSTEM.SCI) file, however, does exist.
```

```
Press ENTER to use this backup SCI file to restore your configuration.
```

```
Press ESC if you prefer to reconfigure your system and you do not want to load
the backup.
```

```
( * ) Use backup SCI file
```

```
( ) Do not use backup SCI file
```

```
Select = ENTER
```

```
Cancel = ESC
```

If you have previously run the ECU from floppy disk and saved your system configuration, select **Use backup SCI file**.

For systems where the nonvolatile memory has not been initialized, select **Do not use backup SCI file** and proceed with the system configuration.

5.3.8 PCI Devices IRQ Assignment

This section, although present in the ECU, does not affect functionality since the BIOS controls these parameters. If you have to change settings, please do so in the BIOS.

5.3.9 Peripheral Device Status

This section, although present in the ECU, does not affect functionality since the BIOS controls these parameters. If you have to change settings, please do so in the BIOS.

Chapter 6 *SCSISelect* Configuration Utility

6.1 *SCSISelect* Configuration Utility Overview

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

6.1.1 Default Values

Table 6-1 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.



The AcerAltos 19000Pro4 Series motherboard is equipped with dual SCSI controllers, enhancing your system's performance.

Table 6-1 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)
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
Send Start Unit SCSI Command ¹	No
Initiate Wide Negotiation	Yes

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

² Do not change this setting from the default.

6.1.2 When to Use the SCSISelect Utility

Use the SCSISelect utility if you need to

- Change any of the default values listed in Table 6-1
- 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

6.1.3 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.

6.2 SCSISelect Utility Options

When the SCSISelect utility detects more than one AIC-7880 SCSI controller in your computer, it displays the screen shown in Figure 6-1.

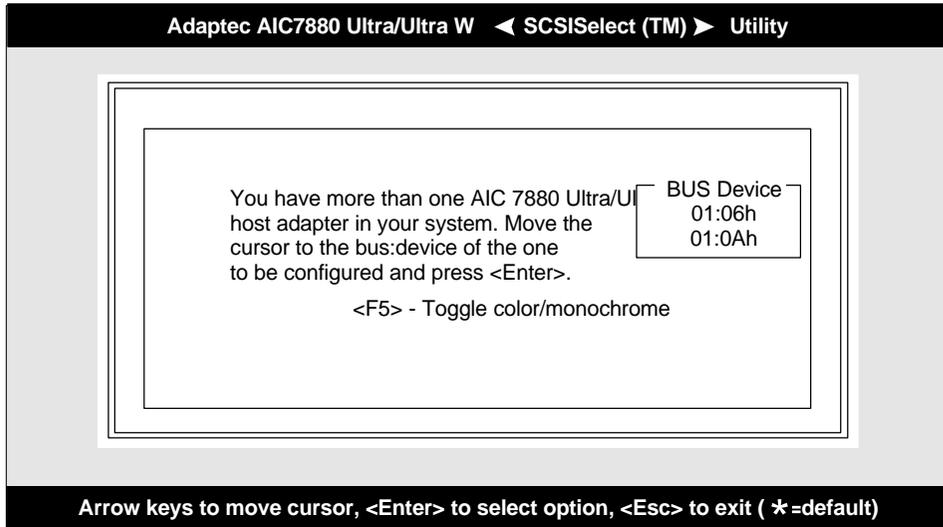
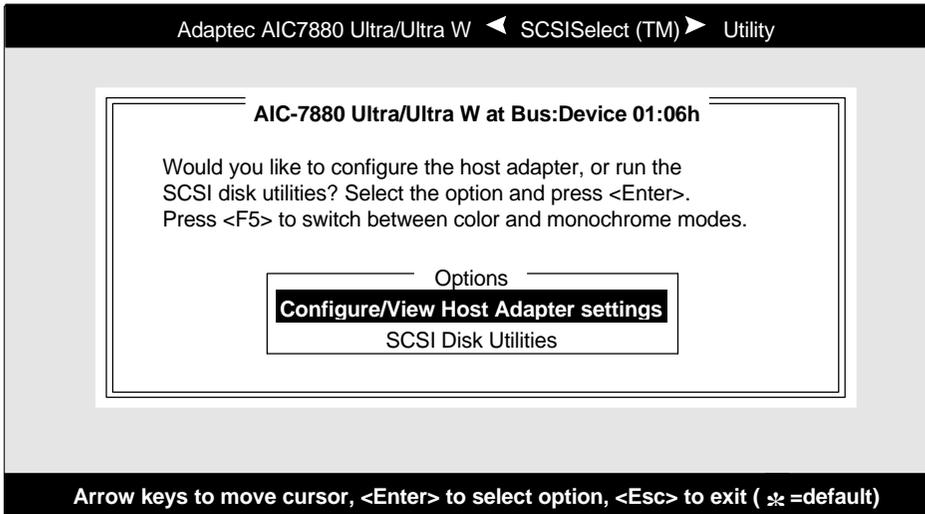


Figure 6-1 Options Menu Screen (1 of 2)

Select the bus device to be configured and press **Enter**. The options menu shown in Figure 6-2 displays.



Figure

6-2 Options Menu Screen (2 of 2)

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.)*

6.2.1 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 6-3:

- **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:

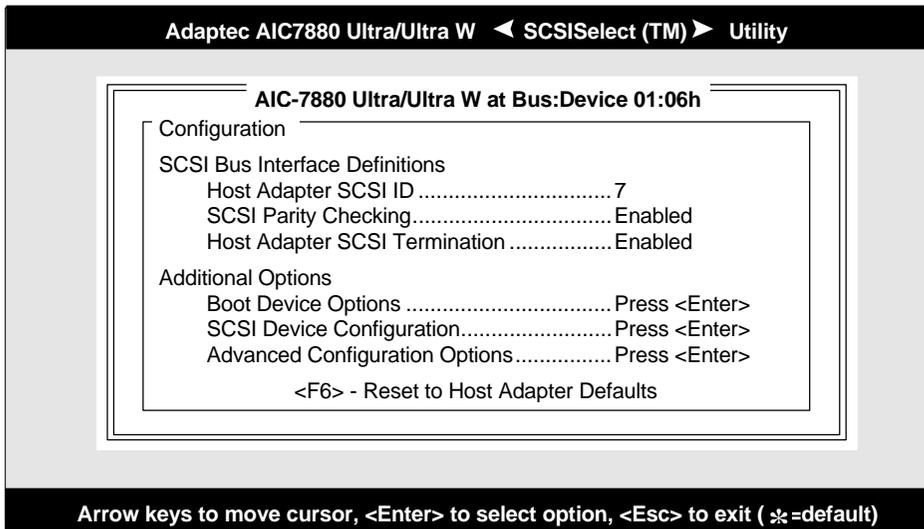


Figure 6-3 Configure/View Host Adapter Settings Screen

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 6-4 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.

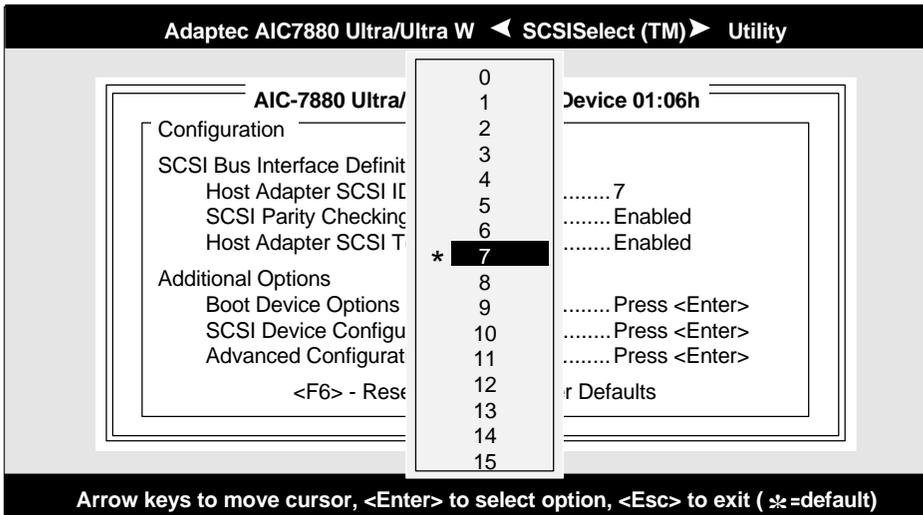


Figure 6-4 Host Adapter SCSI ID Selection Screen for AIC-7880

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 6-5 displays your choices. The default setting is **Enabled**.

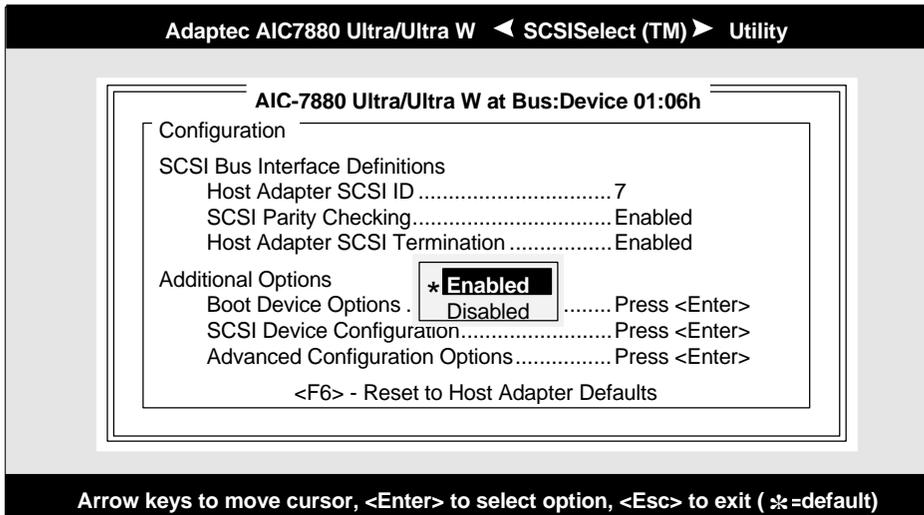


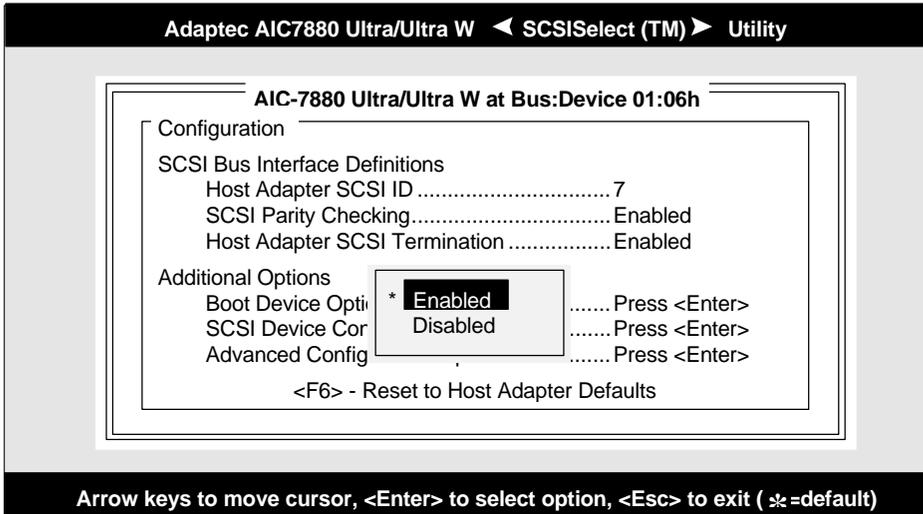
Figure 6-5 SCSI Parity Checking Selection

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 6-6 shows the choices available if you have an AIC-7880. The default setting is **Low OFF/High ON**.



6-6 Host Adapter SCSI Termination Selection for AIC-7880

Figure

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



Since the system contains both UltraWide (68-pin) SCSI devices and narrow (50-pin) SCSI devices, termination must be set to allow each section of the SCSI bus to be terminated. The narrow device in this system is terminated, causing the LOW byte on the motherboard to be turned off. On the other end, the back panel terminates both bytes (Low OFF/High ON).

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 6-7 shows the Boot Device Options screen.

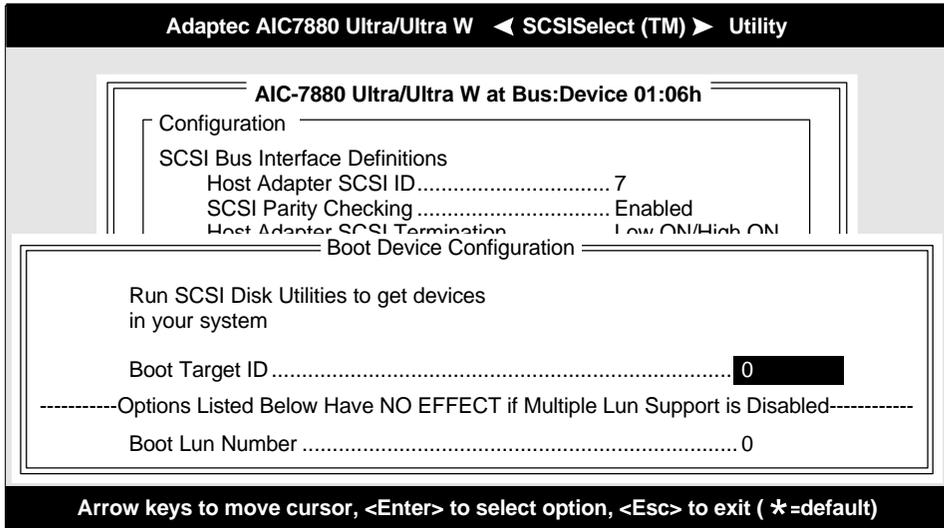


Figure 6-7 Boot Device Options Screen

SCSI Device Configuration

This option allows you to configure certain parameters of each SCSI device on the SCSI bus. A screen similar to Figure 6-8 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								
AIC-7880 Ultra/Ultra W at Bus:Device 01:06h								
SCSI Device Configuration								
SCSI Device ID	#0	#1	#2	#3	#4	#5	#6	#7
Initiate Sync Negotiation	yes							
Maximum Sync Transfer Rate.....	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Enable Disconnection	yes							
Initiate Wide Negotiation	yes							
-----Options Listed Below Have NO EFFECT if the BIOS is Disabled -----								
Send Start Unit Command	no							
Include in BIOS Scan	yes							
SCSI Device ID	#8	#9	#10	#11	#12	#13	#14	#15
Initiate Sync Negotiation	yes							
Maximum Sync Transfer Rate.....	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Enable Disconnection	yes							
Initiate Wide Negotiation	yes							
-----Options Listed Below Have NO EFFECT if the BIOS is Disabled -----								
Send Start Unit Command	no							
Include in BIOS Scan	yes							

Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (* =default)

Figure 6-8 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-1 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-1 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 6-9 appears. **Do not change these options unless absolutely necessary.**

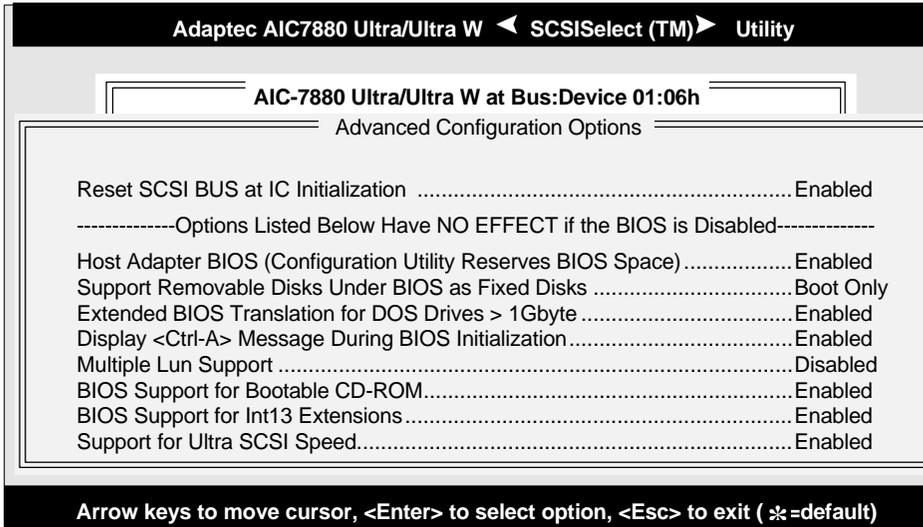


Figure 6-9 Advanced Configuration Options Screen

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 SCSI*Select* 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**.

6.2.2 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 6-10. You can easily determine from this screen which SCSI ID is assigned to each device on the SCSI bus.

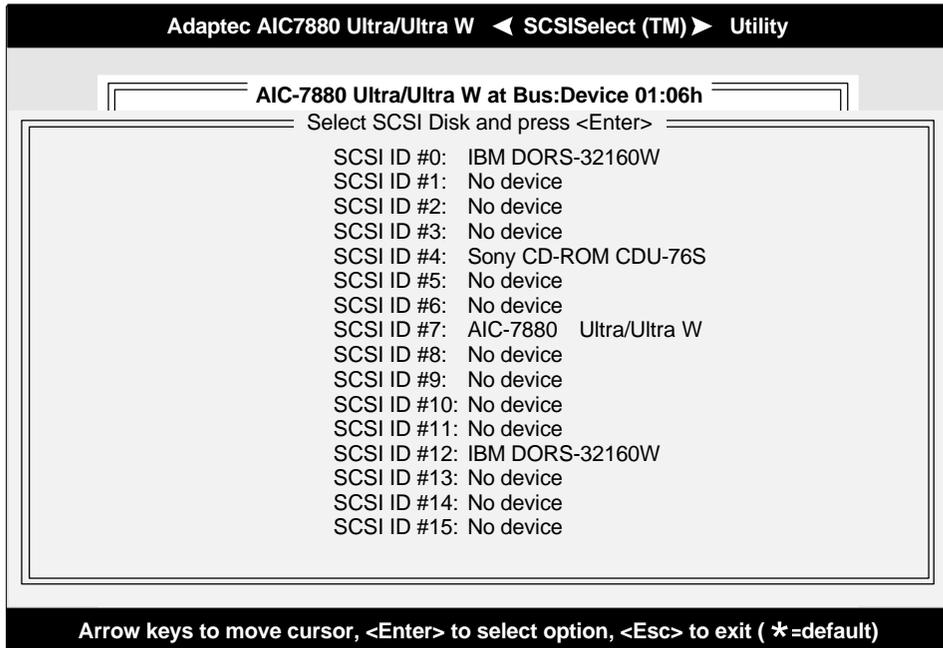


Figure 6-10 SCSI Disk Utilities Screen for AIC-7880

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.*

6.3 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.

6.4 Disk Drives Over 1 GByte

6.4.1 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* in this chapter explains how to change the setting of this option in the *SCSISelect* utility.

6.4.2 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.*

6.4.3 When to Use Extended Translation

Drives With Mixed Partitions

Use standard translation, not extended translation, on drives formatted with two or more partitions for different operating systems. Partitions for UNIX and NetWare can be larger than 1 GByte when using standard translation.



The term UNIX, as used here, includes all versions of AT&T/USL UNIX, SCO v3.2.4 (or later), and ISC v3.0 (or later).

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.

6.5 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.

6.6 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.

6.6.1 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.

6.6.2 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.

6.6.3 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.

Appendix A System Resources

A.1 Memory Map

Table A-1 System Memory Map

Address	Name	Function
00000000 ~ 0009FFFF	640 KB system memory	Main memory
000A0000 ~ 000BFFFF	128 KB video RAM	Graphics display buffer
000C0000 ~ 000C7FFF	32 KB I/O expansion ROM	Video BIOS
000C8000 ~ 000CFFFF	32 KB I/O expansion ROM	Reserved for ROM on I/O adapters
000D0000 ~ 000DFFFF	64 KB I/O expansion ROM	Reserved for ROM on I/O adapters
000E0000 ~ 000E7FFF	32 KB	System extended BIOS (SCSI BIOS)
000E8000 ~ 000EFFFF	32 KB	Reserved for system extended BIOS
000F0000 ~ 000FFFFF	64 KB	System BIOS
00100000 ~ FFFFFFFF	System memory	System memory

A.2 I/O Address Map

Table A-2 System I/O Address Map

Address Range (hex)	Device
000 ~ 00F	DMA controller - 1
020 ~ 021	Interrupt controller - 1
022 ~ 023	ESC (82374) configuration
040 ~ 043	System timer - 1
048 ~ 04B	System timer - 2
061	NMI status and control
070	NMI mask
080 ~ 08F	DMA page register
092	System control port
0A0 ~ 0A1	Interrupt controller - 2
0B2 ~ 0B3	Advanced power management
0C0 ~ 0DE	DMA controller - 2
0F0	Reset IRQ 13
1F0 ~ 1F7	Fixed hard disk
278 ~ 27F	Parallel port 2
2F8 ~ 2FF	Serial port 2
378 ~ 37F	Parallel port 1

Table A-2 System I/O Address Map (continued)

Address Range (hex)	Device
3B0 ~ 3BF	Monochrome display
3C0 ~ 3CF	EGA, VGA, SVGA
3D0 ~ 3DF	CGA, VGA, SVGA
3F0 ~ 3F7	Floppy disk controller
3F8 ~ 3FF	Serial port 1
*4A0	On board peripherals control
*4A1 ~ 4A3	ASM control and status (1)
*4A4	Redundant power supply status
*4A5	ASM control and status (2)
*4A6	RDM control and status
*4A7	Backplane board status
*4A8 ~ 4AF	ASM control and status (3)
CF8	PCI configuration address reg
CFC	PCI configuration data reg

* Special I/O Port

A.3 Interrupt Channels

Table A-3 *Interrupt Channels*

Channel	Function
IRQ0	Timer output 0
IRQ1	Keyboard
IRQ2	Reserved
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	Reserved
IRQ6	Diskette drive
IRQ7	Parallel port
IRQ8	Real-time clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 mouse
IRQ13	Math coprocessor
IRQ14	IDE
IRQ15	Reserved

Appendix B SCSI Backplane Boards

The two standard SCSI backplane boards provide a convenient interface between the SCSI drives and the system board. Each backplane board includes seven SCSI drive slots to accommodate the drive trays and two SCSI channels to connect to the system board or SCSI controller board.

B.1 Features

The backplane boards have the following major features:

- “Hot-swap” capability that allows replacement of a defective hard drive even while the system is in full operation.



This feature requires an optional RAID controller board and appropriate RAID drivers.

- Indicates hard disk drive failure through a front panel board LED
- Supports 16-bit wide SCSI disk drives
- Allows ‘split’ (default) and ‘combine’ SCSI-channel configurations
- SCSI ID strapping that allows wide SCSI HDD ID configuration through the backplane switches instead of configuring the individual drive IDs

B.2 Layout

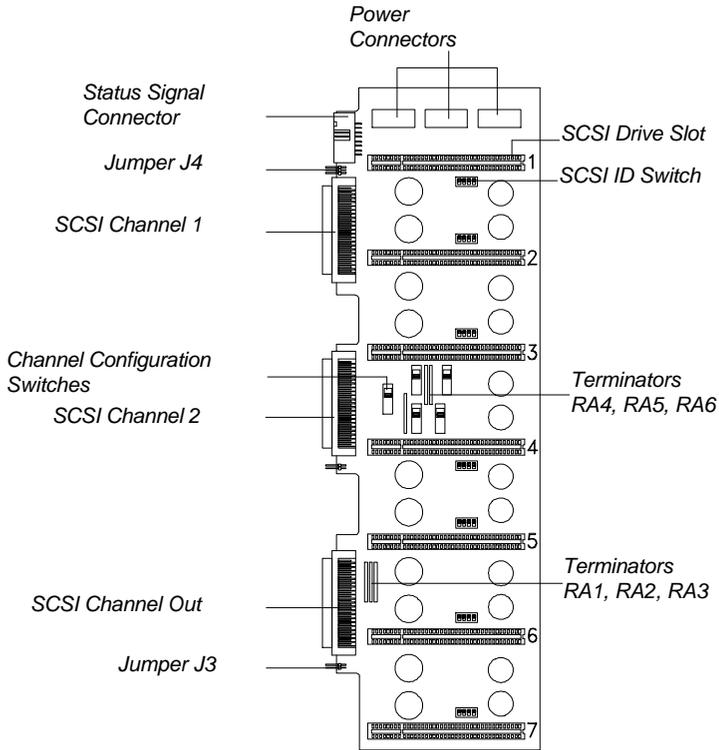


Figure B-1 SCSI Backplane Board

B.3 Jumper Settings

The backplane has two jumpers, J3 and J4, that allow you to select the terminator power source. J4 supports the three upper drive slots (slots 1, 2, and 3) on the backplane. J3 supports the four lower drive slots (slots 4, 5, 6, and 7).

Figure B-2 shows the settings for jumpers J3 and J4.

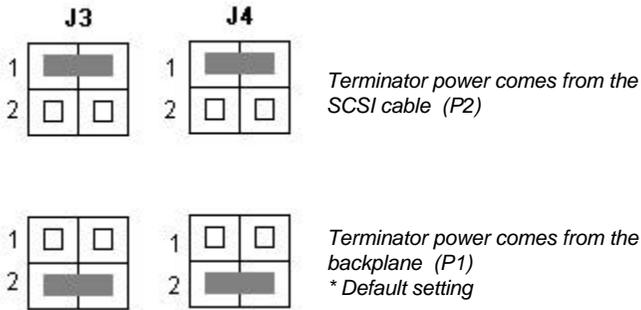


Figure B-2 Settings for Jumpers J3 and J4



You may also set J3 to setting 1 and J4 to setting 2, or vice versa.

For single-channel configuration, settings 1 and 2 for J3 are disabled since terminators RA4, RA5, and RA6 are removed.

B.4 Hard Disk ID Switch Settings

The backplane board comes with seven ID switches that allow you to define up to 14 hard disk IDs.

Figure B-3 illustrates the default switch settings (split, dual-channel) with corresponding hard disk IDs; Figure B-3A illustrates combine (single-channel) switch settings with corresponding hard disk IDs.

ID Switch Setting	Hard Disk ID
ON 	0 _____
ON 	1 _____
ON 	2 _____
ON 	0 _____
ON 	1 _____
ON 	2 _____
ON 	3 _____

Figure B-3 Hard Disk ID Switch Settings (split, dual-channel (default))

Figure B-3A illustrates 'combine' (single-channel) switch settings with corresponding hard disk IDs.

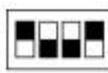
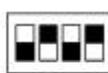
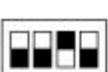
ID Switch Setting	Hard Disk ID		Hard Disk ID	ID Switch Setting
ON 	0	—	8	
ON 	1	—	9	
ON 	2	—	10	
ON 	3	—	11	
ON 	4	—	12	
ON 	5	—	13	
ON 	6	—	14	

Figure B-3A Hard Disk ID Switch Settings (combine, single-channel)



Normally, hard disk ID7 is assigned to the SCSI controller board.

Note that this figure shows a sample configuration; hard disk IDs can be set from 0-15.

B.5 Channel Configuration

You may configure the backplane as single-channel (combine) or dual-channel (split) controller.

In a single-channel configuration, channel 1 supports the SCSI devices plugged into slots 1 to 7. Set the channel configuration switches to “Combine” and set the terminators accordingly (Table B-1) to achieve a single-channel configuration. See Figure B-1 for the locations of the switches and terminators.

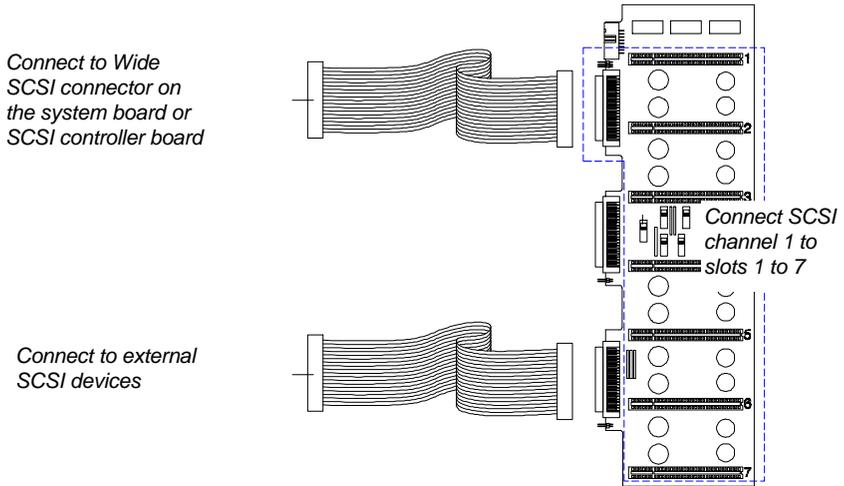


Figure B-4 Single-Channel Configuration

Table B-1 lists the terminator settings for the single-channel configuration.

Table B-1 Terminator Settings for Single-Channel Configuration

Terminator	Setting
With External Device	
RA1, RA2, RA3	Removed
RA4, RA5, RA6	Removed
Without External Device	
RA1, RA2, RA3	Installed
RA4, RA5, RA6	Removed



*For configurations with external device,
terminate the signal at the external device.*

*Do not forget to remove the terminators on
all the SCSI drives.*

Dual-Channel Configuration

In a dual-channel configuration, channel 1 supports the devices in slots 1 to 3, and channel 2 supports the devices in slots 4 to 7. Set the channel configuration switches to “Split” and set the terminators accordingly (Table B-2) to achieve a dual-channel configuration. See Figure B-1 for the locations of the switches and terminators.

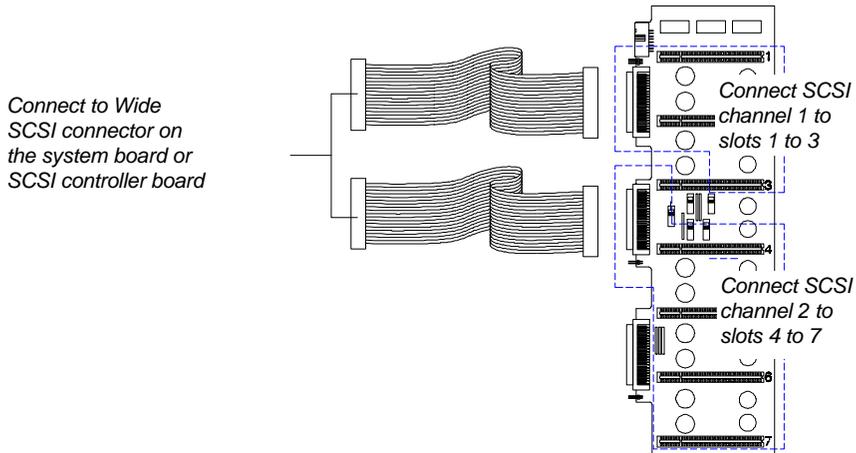


Figure B-5 Dual-Channel Configuration

Table B-2 lists the terminator settings for the dual-channel configuration.

Table B-2 Terminator Settings for Dual-Channel Configuration

Terminator	Setting
With External Device	
RA1, RA2, RA3	Removed
RA4, RA5, RA6	Installed
Without External Device	
RA1, RA2, RA3	Installed
RA4, RA5, RA6	Installed

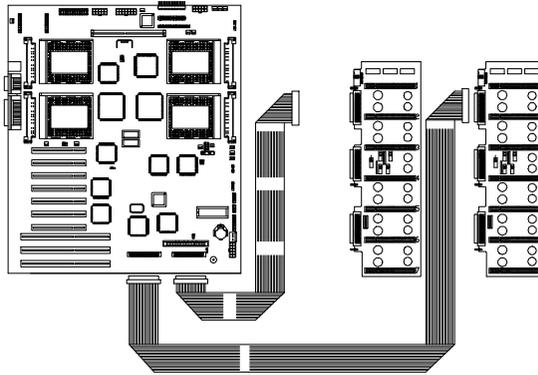


Figure B-6 Dual SCSI Configuration for Separate Backplane Boards

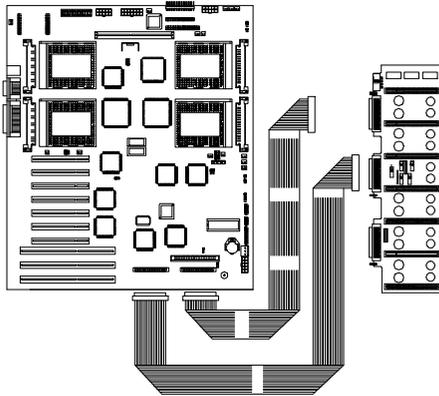


Figure B-7 Dual SCSI Configuration for Single Backplane Board



Due to the SCSI cable length limitation for ultra-wide transfer, do not connect more than four ultra-wide hard disk drives per channel.

If you have a SCSI controller board or a RAID controller board to accommodate the SCSI cables, connect the cable from the backplane to the corresponding channel on the controller board.

6. Connect three power cables into the connectors on the backplane board.

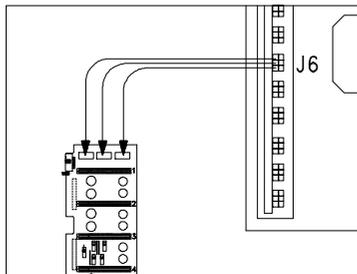


Figure B-8 Connecting the Backplane Power Cables

B.6 Front Panel Board

The system includes a front panel controller board that serves as an interface to the internal system components and relays external messages through the LED indicators and the LCD display screen.

Refer to section 1.2.1 in Chapter 1 for details on the front panel board functions.

Figure B-9 shows the front panel board connections with the internal components.

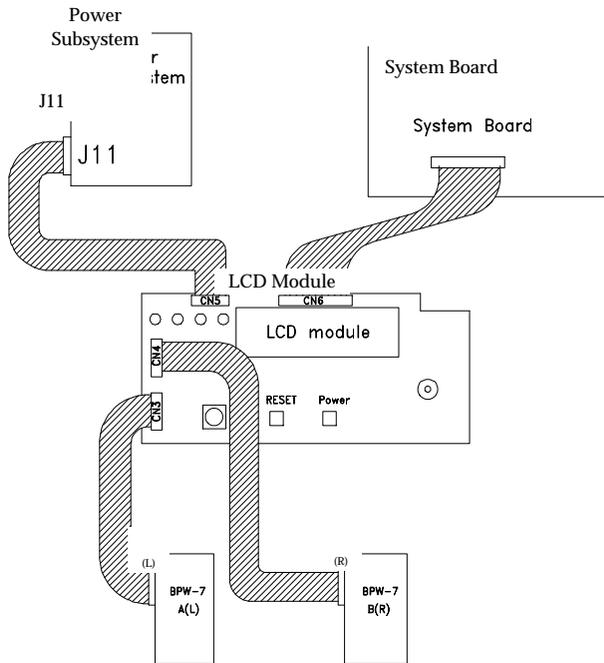


Figure B-9 Front Panel Board Connections

B.7 Power Subsystem

The power subsystem consists of a power backplane, power supply modules, an optional charger board, and an optional internal UPS. These components are held in place by a metal rack enclosure.



The standard system ships with two 400-watt power supply modules installed.



If one of the power supply modules fails, you must immediately replace it. (Refer to “Installing a New Power Supply” for instructions.)

The backplane and the rack allow installation of up to three 400-watt power supply modules in a redundant configuration. A redundant power configuration enables a fully configured system to continue running even if one power supply fails. The remaining two power supply modules still satisfy the 800-watt system power requirement.

The charger board and the optional internal UPS provide a reliable temporary power backup in case of a total AC power shutdown. Through the charger board, the battery continuously loads power whenever the system power is on.

The power subsystem provides a standby current and a remote on/off feature to support cold reboot from a remote site. See the *Remote Diagnostic Manager (RDM) User’s Guide* for an overview of RDM.

Table B-3 Power Subsystem Configuration

400W Power Module		Configuration
Normal	Redundant	
2 units	3 units	1~2 Pentium Pro CPUs (L)(R) 14 SCSI hard disks

B.8 Installing a New Power Supply Module

The system comes with two 400-watt power supply modules installed. The power subsystem design allows you to upgrade the basic power configuration by adding a third power supply module.



Make sure to unplug the power cable from the wall socket before you install or remove a power supply module.

Installing a Power Supply Module

Follow these steps to install a power supply module:

1. Remove the right panel door as in Figure 3-6.
2. Remove the two screws that secure the metal bar over the power supply enclosure. Save the screws.

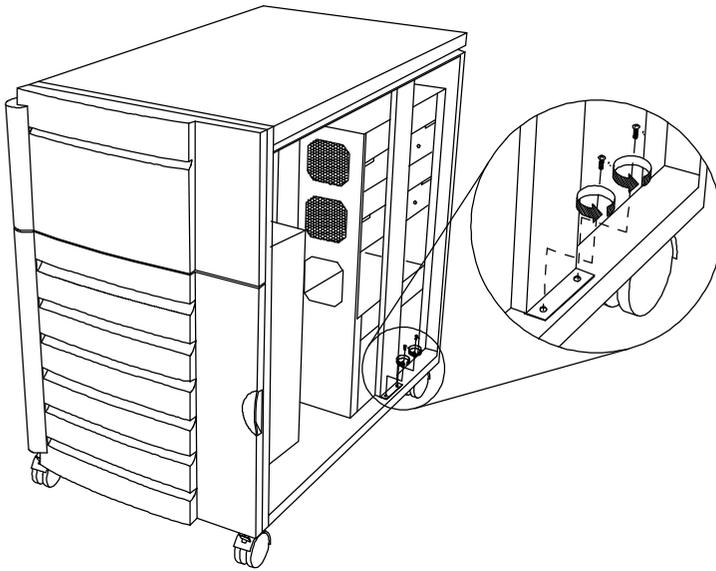


Figure B-10 Removing the Metal Bar Screws

3. Pull out the metal bar from the lower end and unhook the upper end from the housing roof.

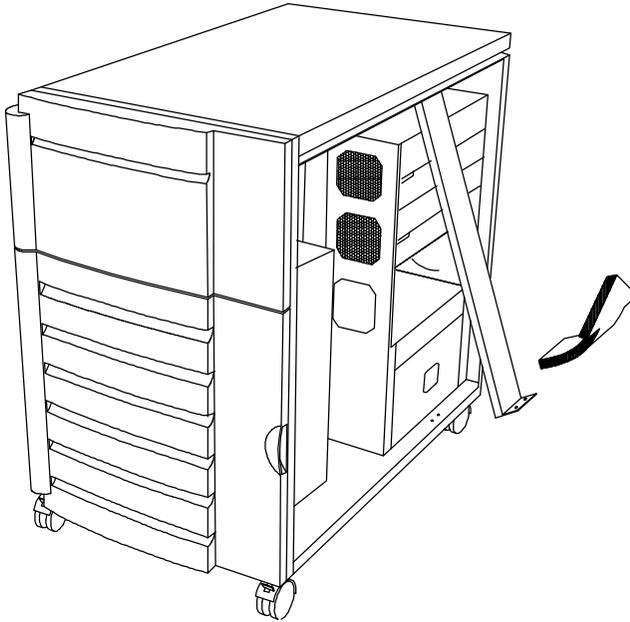


Figure B-11 Pulling Out the Metal Bar

4. Remove the metal cover of the compartment where you intend to install a power supply module.
5. Unpack a new power supply module.
6. Firmly hold the power supply and align it with a compartment on the power supply rack. Pressing the holding clips on the sides, push back the power supply until its gold edge connectors completely fit into the slot on the power backplane. See Figure B-12.

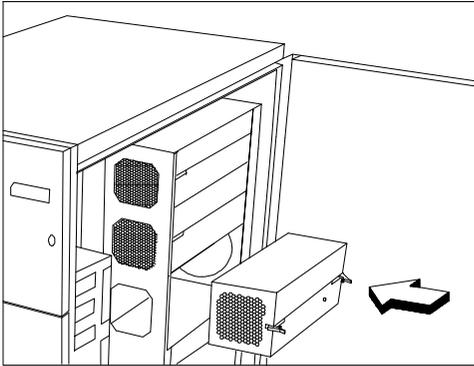


Figure B-12 Installing a Power Supply Module

7. Press the holding clips inward to lock the power supply module.

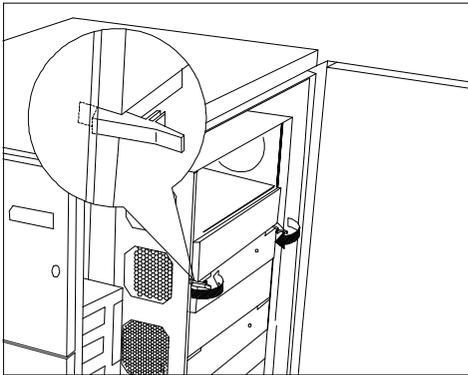
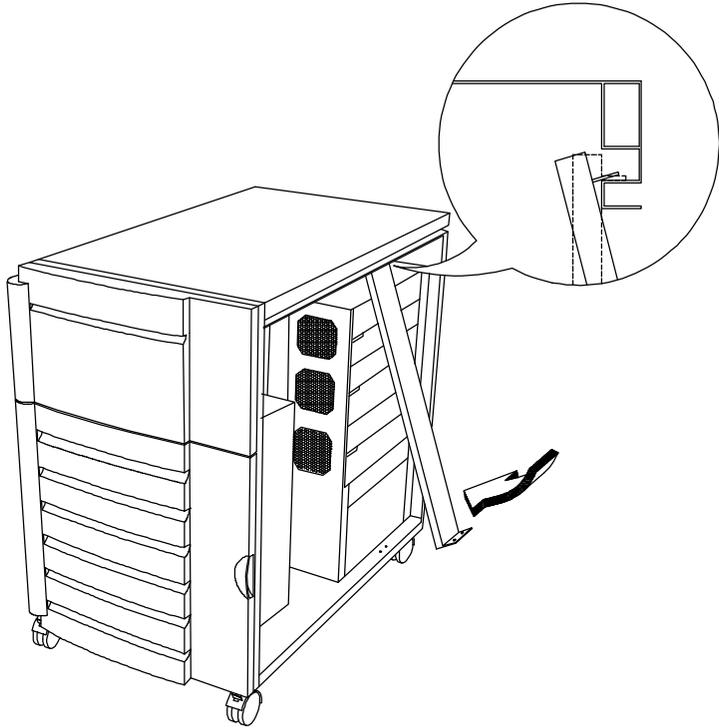
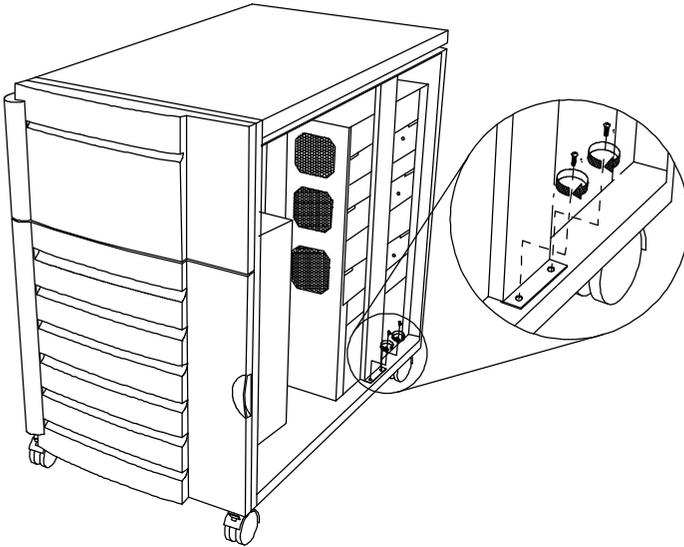


Figure B-13 Locking the Holding Clips



8. Reinstall the metal bar by inserting the hook to the rail on the housing roof.

Figure B-14 Reinstalling the Metal Bar



9. Secure the lower end of the bar to the housing using two screws.

Figure B-15 Securing the Metal Bar with Screws

10. Replace the right panel door of the housing.

Changing a Power Supply Module

Should a power supply module become defective, remove the power supply and replace it with a new one.

Follow these steps to change a power supply module:

1. Remove the right panel door as in Figure 3-6.
2. Remove the metal bar over the power supply rack as in section B.8.
3. Unlock the power supply module holding clips by pressing them outward.

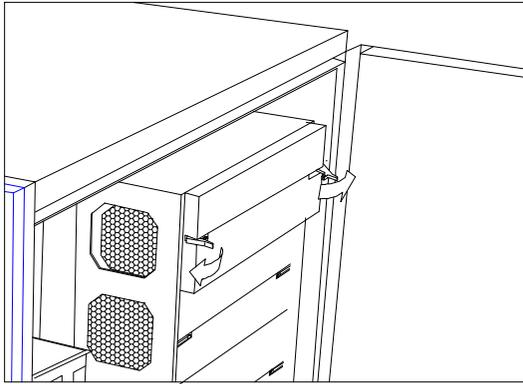


Figure B-16 Unlocking the Power Supply Holding Clips

4. Firmly hold on the clips to pull the power supply module out.

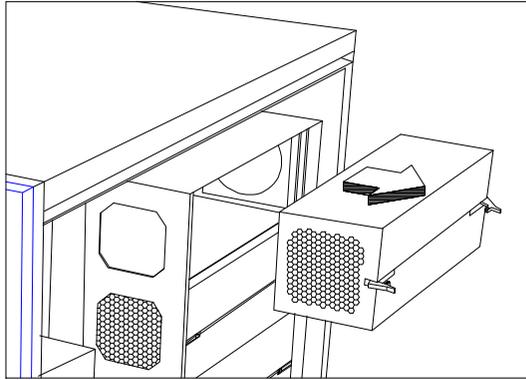


Figure B-17 Removing the Power Supply Module

5. Install a new power supply module following the procedure in the preceding section, *Installing a Power Supply Module*.



If you are not planning to install a power supply module, make sure to reinstall the compartment metal cover. See the next section for the steps.

Installing the Power Supply Compartment Metal Cover

The power supply compartment metal cover has two important functions:

1. It prevents you from accidentally touching the power backplane.
2. It guides the thermal air flow to the fan exhausts on the rear of the housing.

Follow these steps to install the metal cover:

1. Insert the tab on the right side of the metal cover into the groove on the compartment.
2. Carefully push the metal cover until it fits in place.

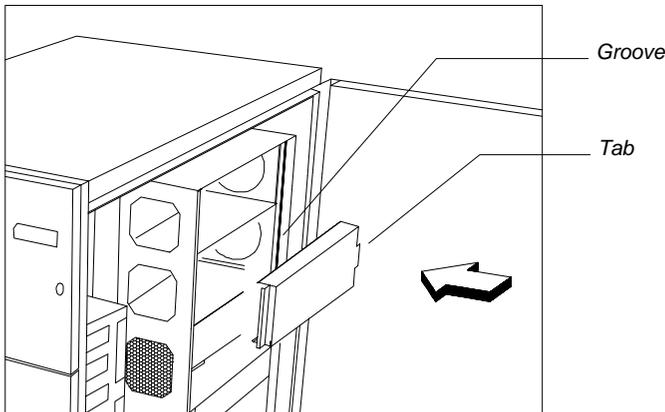


Figure B-18 Installing the Power Supply Compartment Metal Cover

B.9 Charger Board and Optional Internal UPS



Unplug the power cable from the wall socket and remove all power supply units before you install or remove an optional internal UPS or a charger board.

Installing a Charger Board and an Optional Internal UPS

Follow these steps to install a charger board and an optional internal UPS:

1. Remove the right panel door as in Figure 3-6.
2. Remove the two screws that secure the metal bar over the power supply enclosure. Save the screws.
3. Pull-out the metal bar from the lower end and unhook the upper end from the housing roof. See Figure B-11.
4. Unpack a charger board.
5. Remove the screws that secure the charger compartment metal cover.

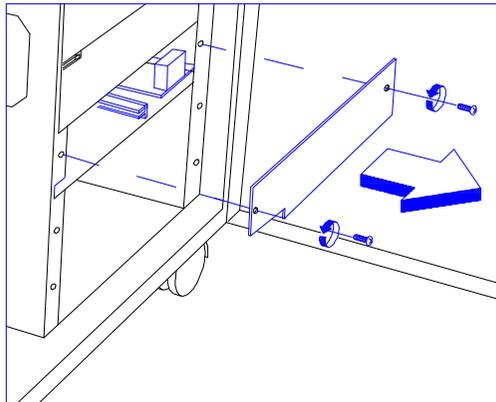


Figure B-19 Removing the Charger Compartment Metal Cover

- Align the charger board with the rails on the charger compartment, then push it back until its gold edge connectors reach the slot on the power backplane.



The charger board does not completely fit until you press the holding clip in. Do not force the board in.

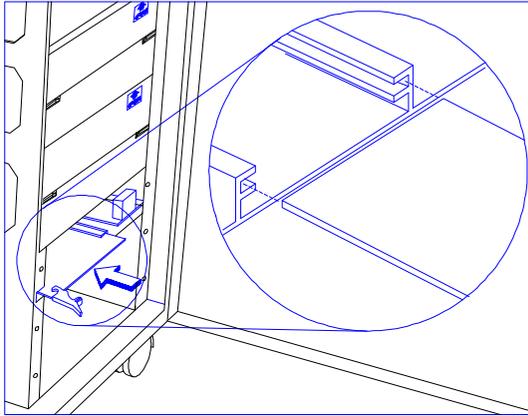


Figure B-20 Installing a Charger Board

- Press the holding clip inward to lock the charger board to the enclosure.

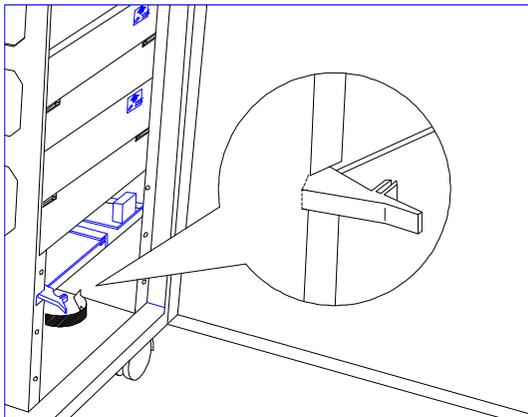


Figure B-21 Locking the Charger Board

8. Unpack an internal UPS.
9. Firmly hold the internal UPS with both hands and insert it into the bottom compartment, below the charger board.

See Figure B-22.



Make sure that the “Up Side” mark on the internal UPS points up. If your internal UPS does not have this mark, ensure that the other labels on the module are upright.

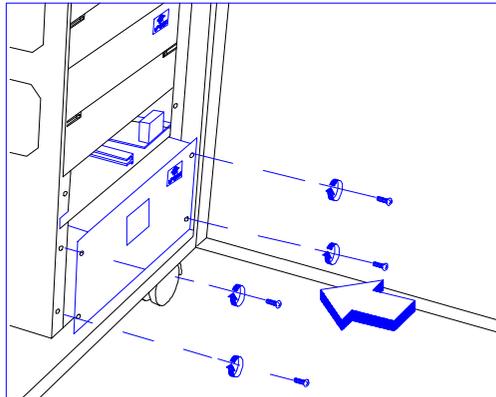


Figure B-22 Installing an Optional Internal UPS

10. Secure the internal UPS with screws.
11. Attach the charger compartment metal cover and secure it with screws.

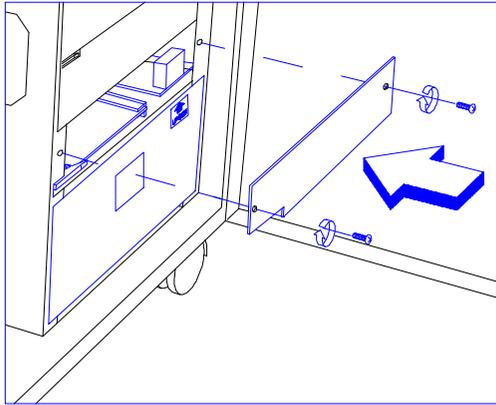
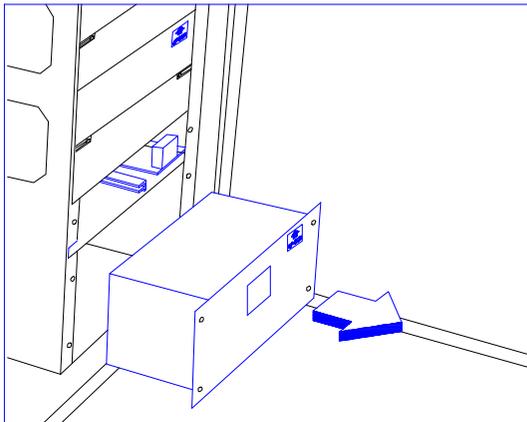


Figure B-23 Attaching the Charger Compartment Metal Cover

Removing the Optional Internal UPS

Follow these steps to remove the optional internal UPS from the metal rack:

1. Remove the screws that secure the internal UPS to the enclosure.
2. Holding onto the hole in the center, pull the internal UPS out about an inch.
3. Firmly hold the internal UPS by the sides using both hands to remove it completely.



Removing the Charger Board



Before installing or removing the charger board, turn off the system, unplug the power cord from the AC outlet, and unplug all SPS modules from the power rack. Failure to do so may cause damage to the UPS and/or SPS.

Follow these steps to remove the charger board:

1. Remove the screws that secure the charger compartment metal cover.
2. Press the holding clip outward to unlock the charger board.
3. Pull the charger board out.

B.10 Power Cable Connections

The power backplane is complete with connectors to accommodate the power cables for all the system components.

Figure B-25 illustrates the power cables that connect to the system board.

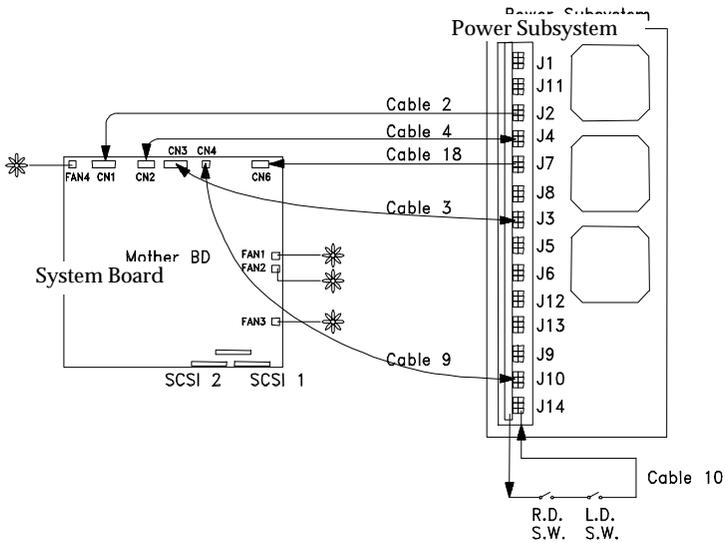


Figure B-25 System Board Power Connections



Power cables 3, 4 and 18 come with yellow stickers telling you which connectors to attach to the system board and to the power backplane.

Make sure to connect the cables correctly; otherwise the system may not power up.

Figure B-26 shows the system board, SCSI backplane board, front panel board, and power subsystem interconnections.

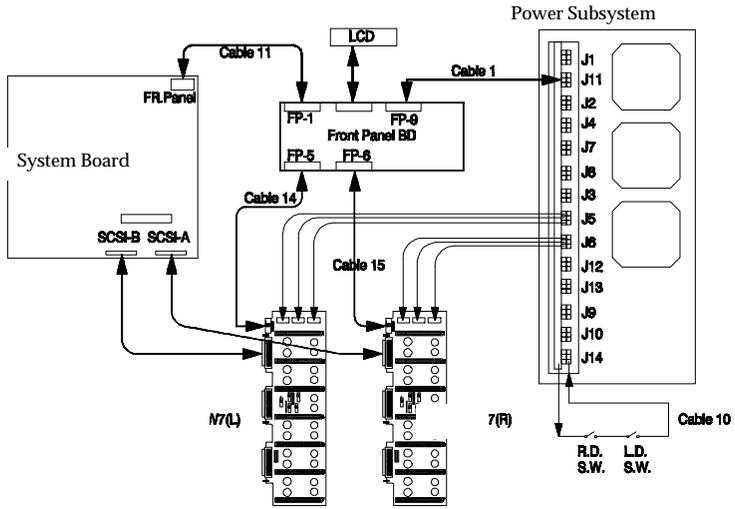


Figure B-26 System Boards and Power Subsystem Interconnections

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