



AcerAltos 19000

System Guide

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IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions carefully. Save these instructions for future reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
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. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. 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 your obsolete 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 battery with the same type as the product's battery we recommend. Use of another battery may present a risk of fire or explosion. Refer battery replacement to a qualified serviceman.

-
15. Warning! Battery may explode if not handled properly. 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 set (provided in your keyboard/manual accessories box) for this unit. It should be a detachable type: UL listed/CSA certified, type SVT/SJT, rated 6A 125V minimum, VDE approved or its equivalent. 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.

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 19000 system.

Manual Structure

This system guide consists of five chapters.

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 19000 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 startup 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, disk-array 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 describes how to use the AFlash BIOS Utility and the EISA Configuration Utility.

Conventions

The following are the conventions used in this manual:

Text entered by user

Represents text input by the user.

Screen messages

Denotes actual messages that appear onscreen.

a, e, s, etc.

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.

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Dividers

Chapter 1

◆ ***System Introduction***

Chapter 2

◆ ***Setting Up the System***

Chapter 3

◆ ***System Configuration***

Chapter 4

◆ ***BIOS Utility***

Chapter 5

◆ ***Diagnostics and Utilities***

System Introduction

1.1 Features

The AcerAltos 19000 is a powerful 64-bit dual-processor 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 CPU is the heart of the AcerAltos 19000 system. Designed to work with the Orion 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 two CPU sockets to accommodate up to two Intel Pentium Pro CPUs for a dual-processor configuration. This configuration doubles efficiency and reliability thereby upgrading overall system performance. The Pentium Pro supports a wide range of applications running under operating systems such as DOS, Windows, WindowsNT, OS/2, UNIX, and NetWare.

The CPU 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 has a 16-KB first-level and 256/512-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 have its own interrupts that help minimize centralized system overhead.

Bus Controller

The bus controller integrated in the Pentium Pro CPU 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 CPU Architecture

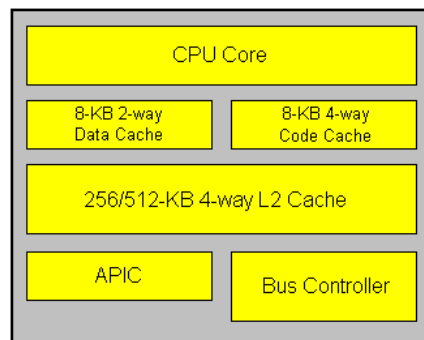


Figure 1-1 Pentium Pro CPU Architecture

1.1.2 System Architecture

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

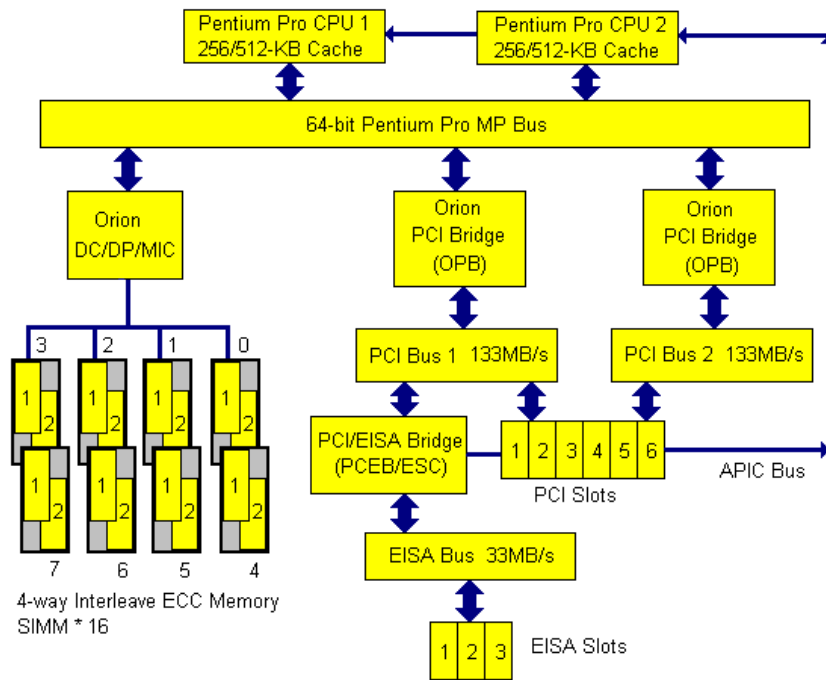


Figure 1-2 System Architecture

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 to 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.

Orion PCI Bridge

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

Orion Memory Controller

The Orion memory controller (OMC) 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 OMC relates to the DRAM array through four memory interface controller (MIC) chips. The OMC supports 256-bit 4-way memory interleaving resulting to a more efficient memory traffic management.

1.1.3 SCSI Disk Array

The system supports an array of 14 hot-swappable disk drive trays through two 7-slot SCSI backplane boards (Acer BP-W7). The trays accommodate wide and narrow SCSI hard disks. With the AIC-7880 SCSI controller onboard, the transfer rate reaches up to 40 MB per second for ultra SCSI and 20 MB per second for wide SCSI.

1.1.4 Server Management

The system comes with the ASM Pro feature 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 is the remote diagnostic management (RDM) that permits system diagnosis from a remote site through a modem. The RDM facilitate the fixing of 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 holds up to three 400-watt power supply modules. The power subsystem supports a redundant configuration such that even if one power supply fails, the remaining two continues to work together to supply the 800-watt requirement for a fully-configured system.

An important segment of the power subsystem configuration is the uninterruptible power supply (UPS) module. Providing an additional support to the three 800-watt power supply modules, the UPS has a battery that automatically charges whenever the system is on. The UPS gives a fully-configured system the ability to run through short interruptions in wall power or to continue supplying system power for eight 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 narrow or wide SCSI drives. (The basic system consists of only seven drive trays.)

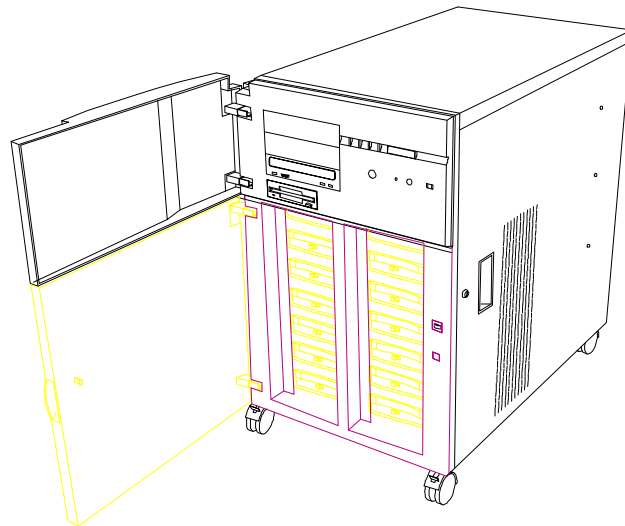


Figure 1-3 Front Panel

Front Panel Features

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

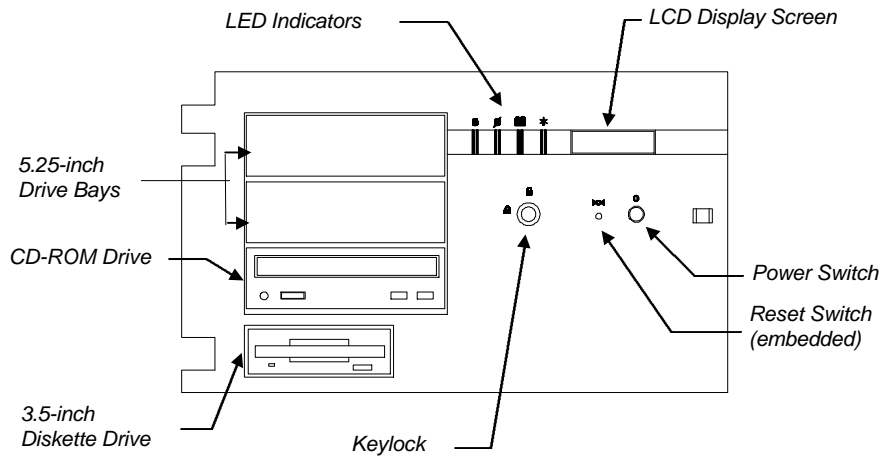


Figure 1-4 Front Panel Features

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 also comes with the basic system.

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 |
|---|--|
| Power Status  | Green Indicates that power is on. All the power supply modules are in good condition and the system is running on AC power. Red Indicates that power is on. The AC power supply fails and the system is running on battery power. |
| Battery Status  | Green Indicates that a battery is present. Red Indicates low battery power. |
| Hard Disk Busy  | Green Indicates that at least one of the hard disks is currently accessing. |
| Hard Disk Failure | Green Indicates that all the hard disks installed on the backplane board are in good |

| | |
|---|---|
|  | <p>condition.</p> <p>Red Indicates that one of the hard disks installed on the backplane board is bad.</p> |
|---|---|

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 define the messages. See the driver manual for more information.

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. Once this message shows up, it 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, it sends this message to appear on the LCD screen. |
| Power #2 Fails ! | If the microcontroller detects that power supply module 2 is bad, it sends this message to appear on the LCD screen. |
| Power #3 Fails ! | If the microcontroller detects that power supply module 3 is bad, it sends this message to appear on the LCD screen. |
| Battery Low ! | This message indicates that the battery energy is running out. When this message |

| | |
|-------------------|---|
| | appears, shutdown the system immediately. |
| Power Fan Fails ! | This message indicates that one or more fans on the power subsystem failed. |

Table 1-2 LCD Messages (continued)

| Message | Description |
|------------------|---|
| AC Power Fails ! | When this message appears, it indicates that there is no power coming from the AC line and the system is currently running only on battery power. |
| AcerAltos 19000 | This message appears after POST and other tests and attests that the system is running fine. |

RDM Button

The RDM button located on the lower right panel enables the remote diagnostic management feature. Refer to the RDM User's Guide for information on the RDM feature.

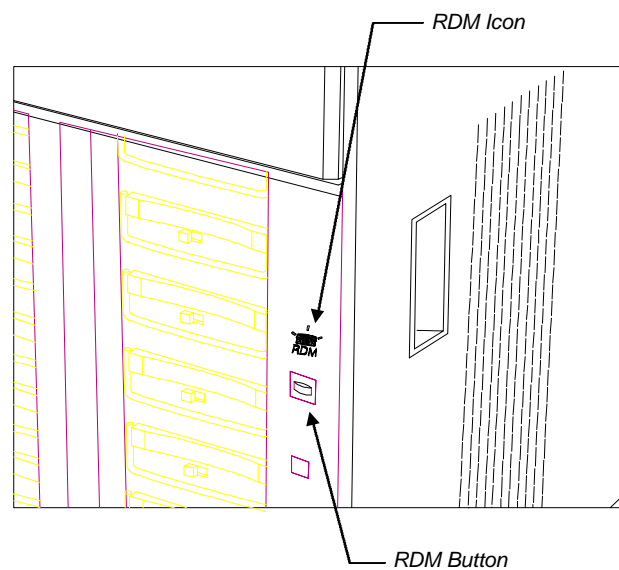


Figure 1-5 RDM Button

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 power cable.

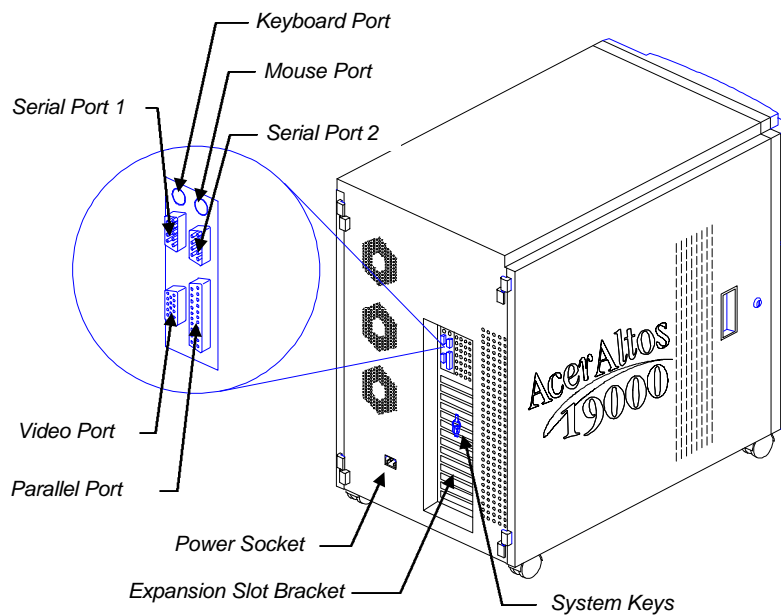


Figure 1-6 Rear Panel



The system keys are taped on the expansion slot bracket.

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

Check the following items from the package:

- AcerAltos 19000 System
- AcerAltos 19000 System Guide
- AcerAltos 19000 EISA Configuration Utility
- VGA Manual and Driver Kit
- ASM Pro Manual and Driver Kit
- RDM Manual and Driver Kit
- SCSI Manuals and Driver Kit
- System keys (taped on the rear panel)

If any of the above items is 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. Beside the front wheels are two adjustable support poles that add stability to the system.

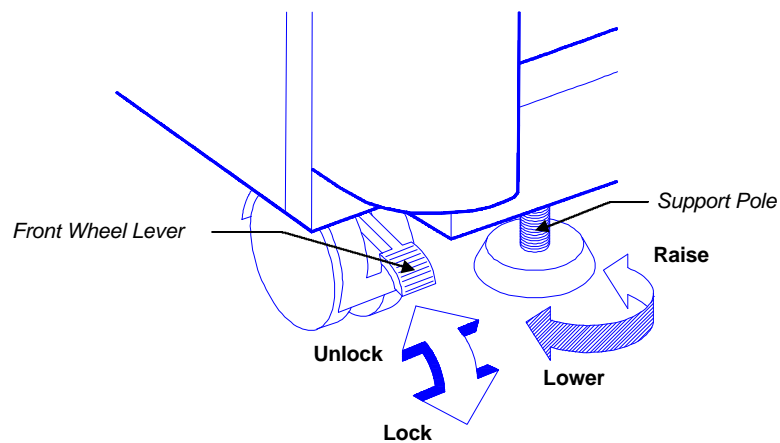


Figure 2-1 Front Wheel Lever and Support Pole

2. After moving, lock the wheels by pressing down the levers. Turn the heads of the support poles to the left until they reach the ground. These steps ensure that the system is stable when you connect the cables.



Make sure to unlock the wheels and raise the support poles when you want to move the system again.

-
3. Connect the power cable to the power socket on the rear panel and check the necessary length to reach the grounded outlet.

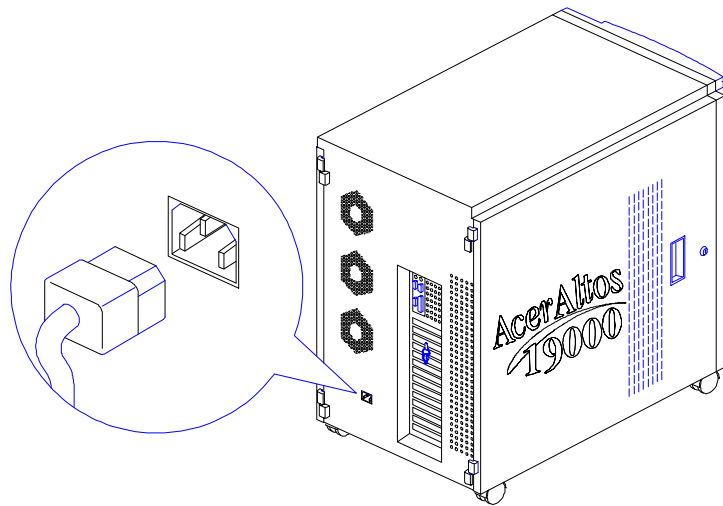


Figure 2-2 Connecting the Power Cable

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 the basic system if it is running properly.

2.2.1 Keyboard

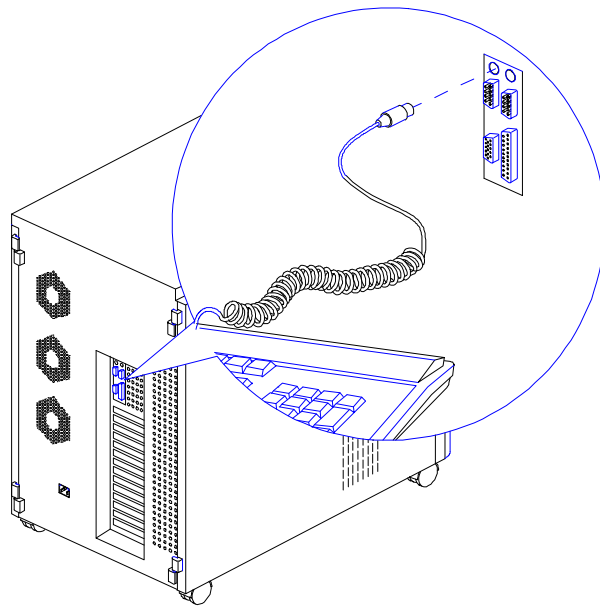


Figure 2-3 Connecting a Keyboard

2.2.2 Mouse

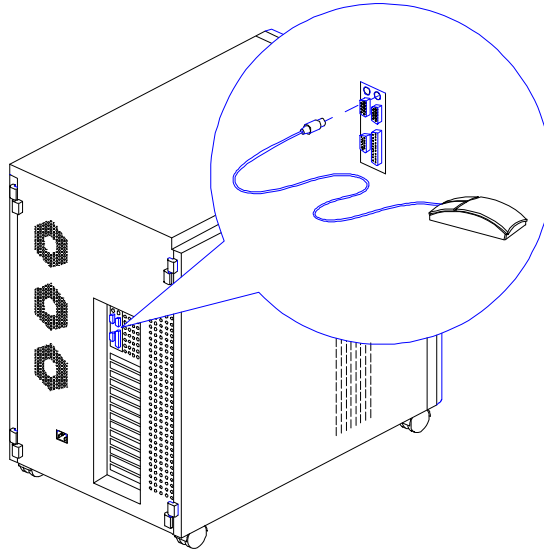


Figure 2-4 Connecting a Mouse

2.2.3 VGA Monitor

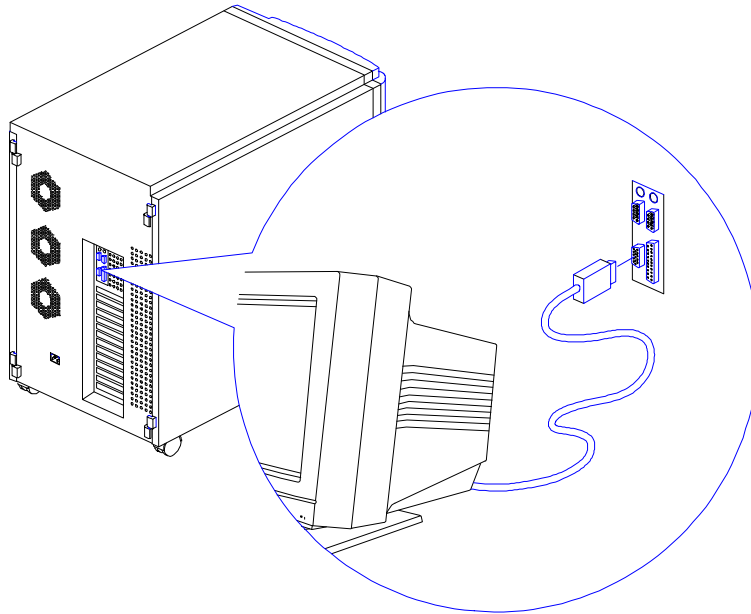


Figure 2-5 Connecting a VGA Monitor

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 on the rear panel.)

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

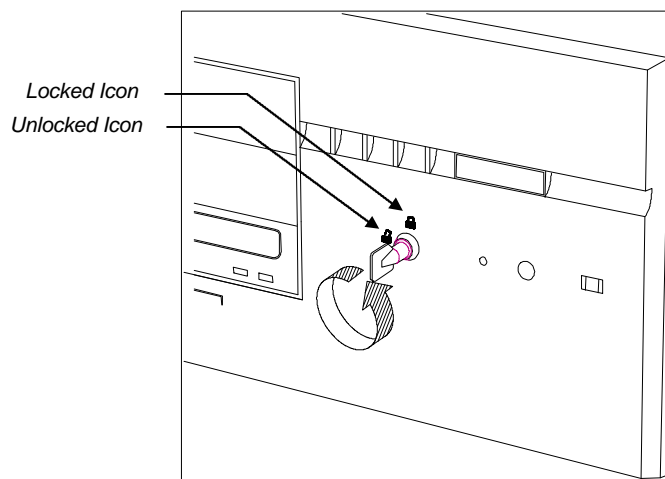


Figure 2-6 Unlocking the Front Panel Security



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.

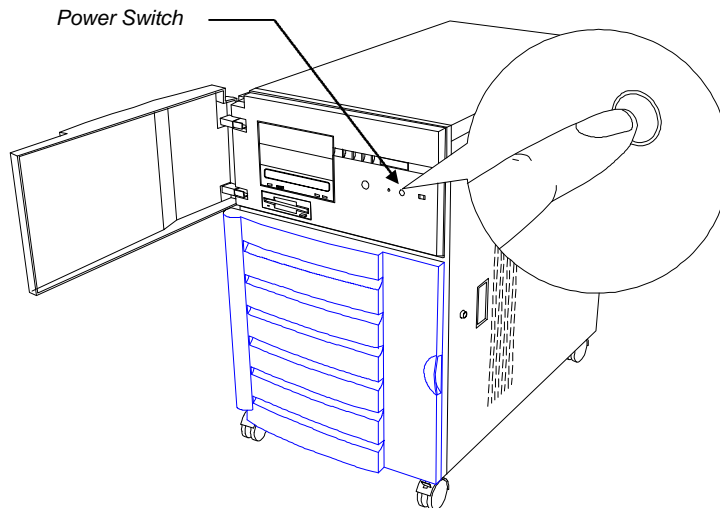


Figure 2-7 System Power On

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.

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 if it is working.

☒ **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 security against unauthorized access.

See Figure 2-8 for the microswitch location.

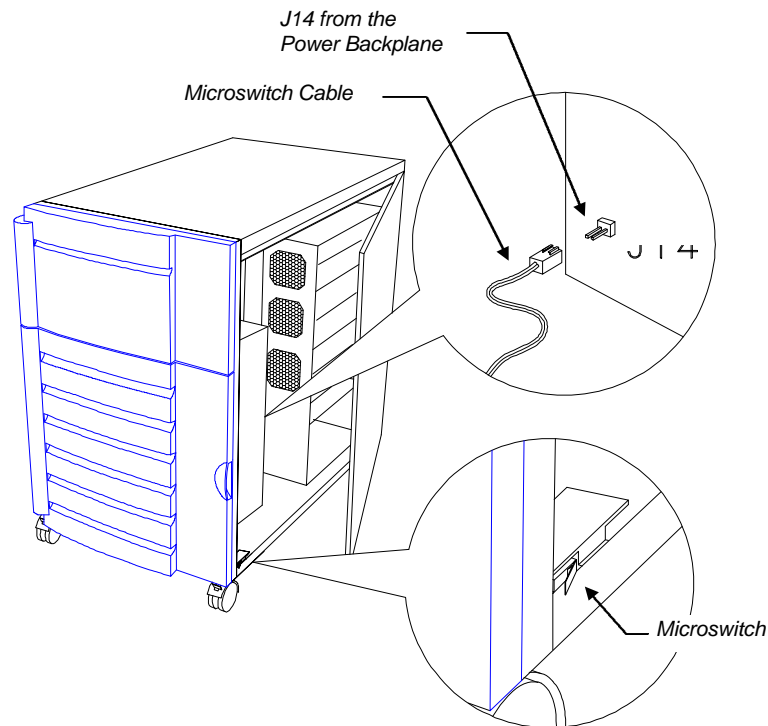


Figure 2-8 Microswitch Location

✉ **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 to 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.

System Configuration

The system hardware basically consists of six major components: housing, system board, memory board, front panel board, disk array 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 flexible configuration.

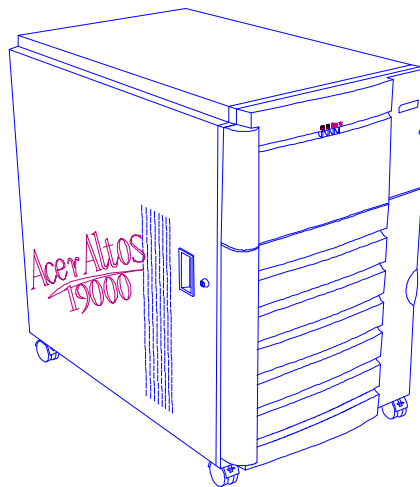


Figure 3-1 System Housing

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. On the rear end 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 system components on the left panel of the system housing.

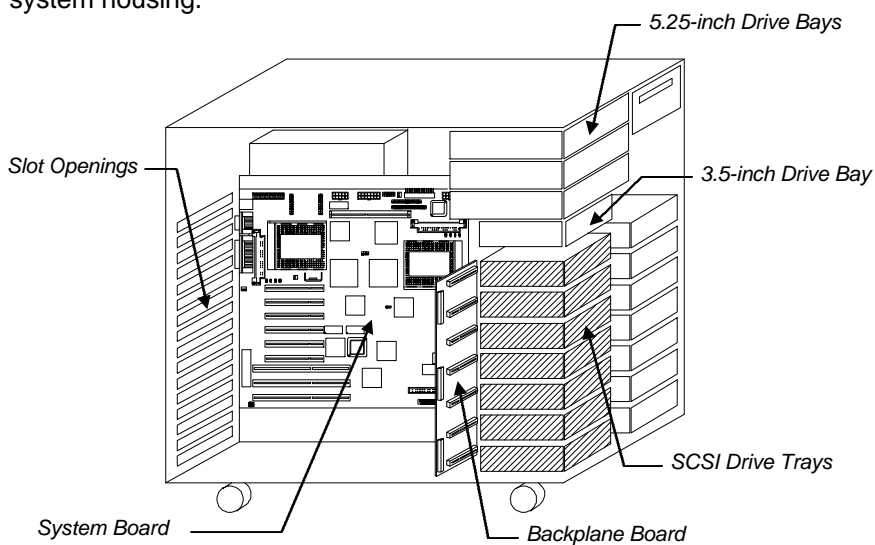


Figure 3-2 Left Panel System Components

Right Panel

The power subsystem fills up most part of the right panel. It consists of a power backplane and a metal rack that holds up to three 400-watt power supply modules. On the bottom compartment of the power supply rack is a UPS module with battery and charger. The rear end carries 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 on 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 components that reside on the right panel.

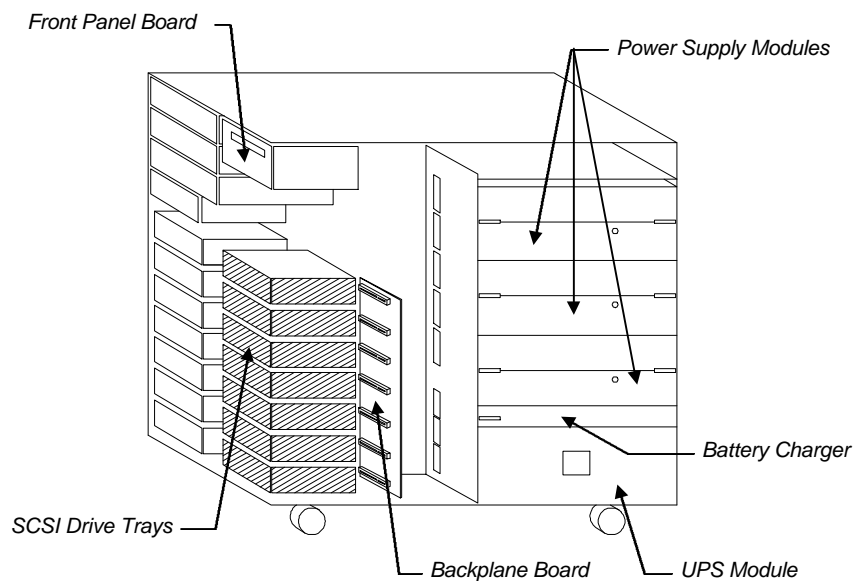


Figure 3-3 Right Panel System Components

3.1.2 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 left and right panel door have security locks to prevent unauthorized access to the internal components.

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.

Table 3-1 *Removing the Housing Doors*

| When | Remove |
|--|--|
| Installing or removing external 3.5-inch or 5.25-inch devices | ↻ Upper front door plus the upper front panel cover ✕ Left panel door |
| Installing or removing a SCSI backplane board (left side) | ↻ Lower front door ✕ Left panel door |
| Installing or removing a SCSI backplane board (right side) | ↻ Lower front door ✕ Right panel door |
| Installing or removing hot-swappable SCSI hard disks | ↻ Lower front door |
| Installing or removing the system board, memory board, or expansion boards | ↻ Left panel door |
| Installing or removing the power supply modules, UPS, or battery charger | ↻ Right panel door |
| Connecting or arranging cables | ↻ 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 45° angle.
3. Lift it up for about an inch, then move it away from the housing.

Figures 3-4 to 3-7 show how to remove the housing doors and upper front panel cover.

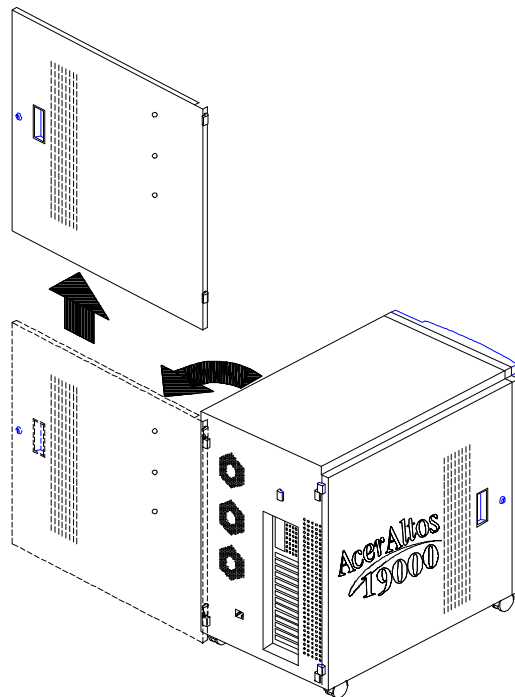


Figure 3-4 Removing the Right Panel Door

Follow the same steps to remove the left panel door.

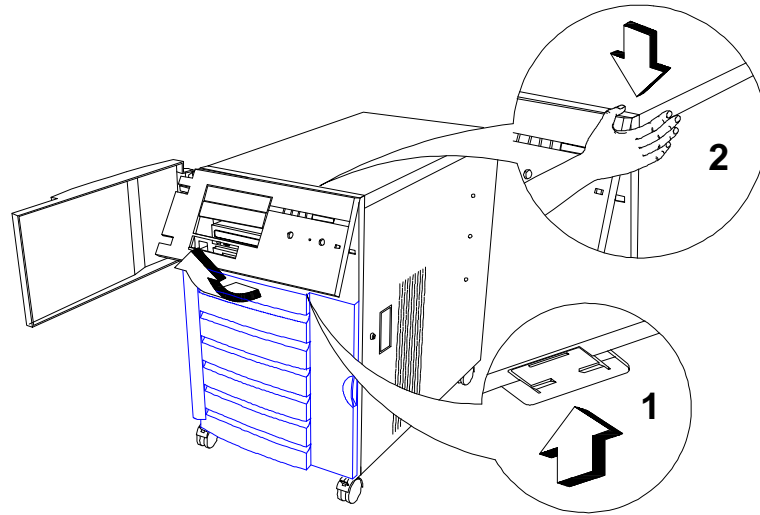


Figure 3-5 Removing the Upper Front Panel Cover

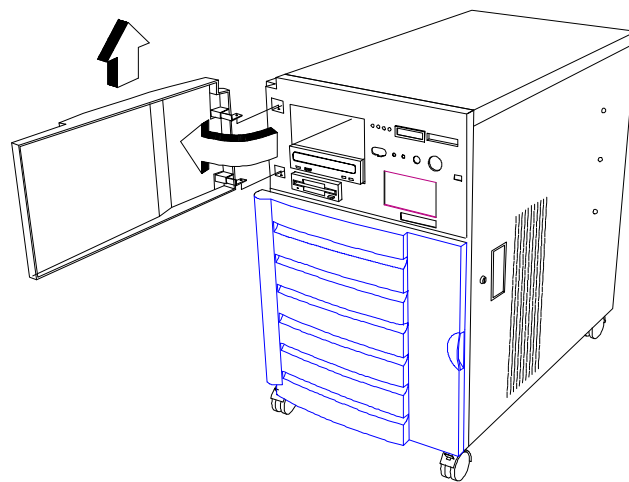


Figure 3-6 Removing the Upper Front Panel Door

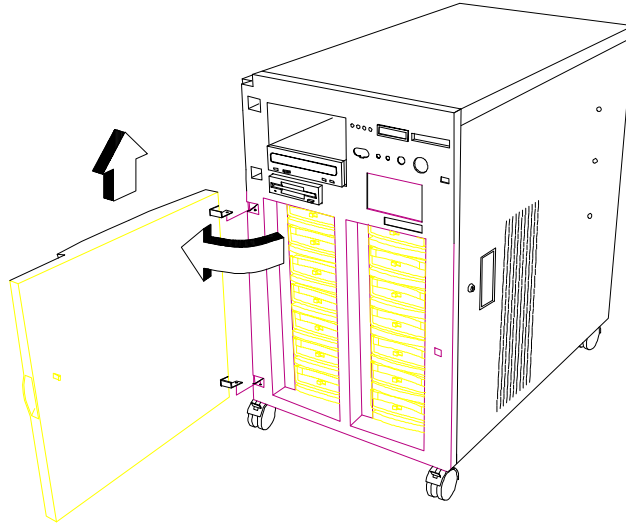


Figure 3-7 Removing the Lower Front Panel Door

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.

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 digital audio tape (DAT) drive or another hard disk drive.



Your basic 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.

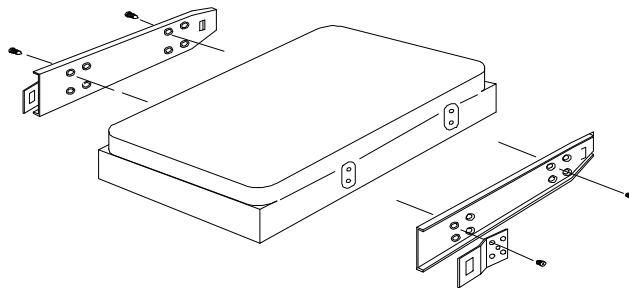


Figure 3-8 Attaching the Drive Guides



If you are installing a SCSI device, set its ID and terminator before installing it into the drive bay.

-
3. Insert the drive into the bay.

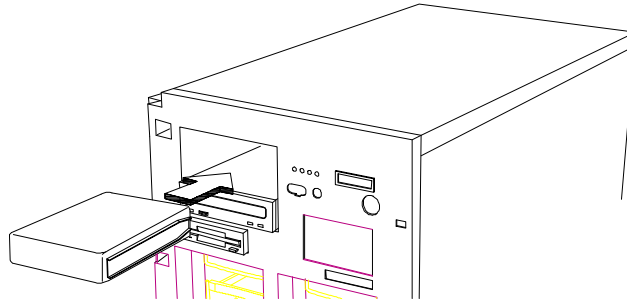


Figure 3-9 Installing an External Device

4. Connect the drive power and signal cables.

3.1.5 Installing a Hot-swappable SCSI Drive

The system supports two kinds of hot-swappable drive trays, one with wide SCSI interface board and one with narrow SCSI interface board. 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.

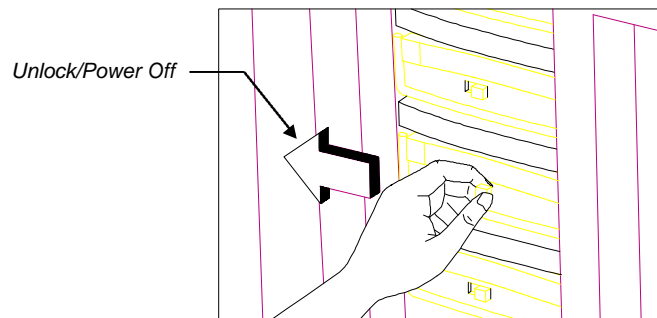


Figure 3-10 Unlocking the Drive Tray Switch

-
3. Hold the handle of a drive tray and pull it upward.
 4. Pull out the drive tray.

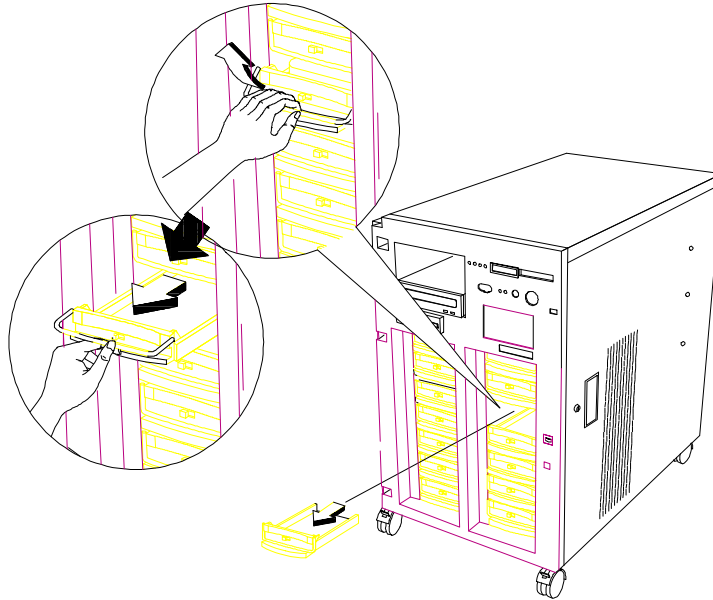


Figure 3-11 Pulling Out a Hot-swap Drive Tray

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

For a narrow SCSI drive, remove the terminators only, then set the SCSI ID on the drive.



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.

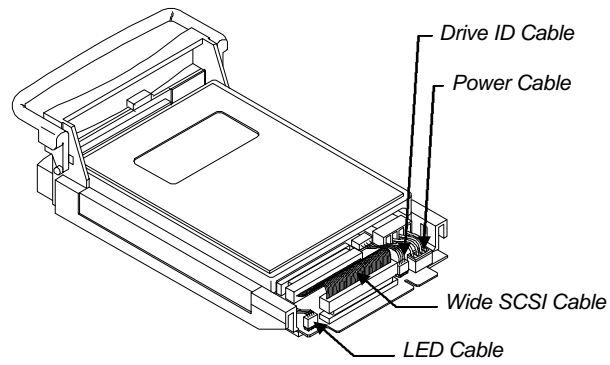


Figure 3-12 Connecting the Drive Cables (Wide SCSI Drive)

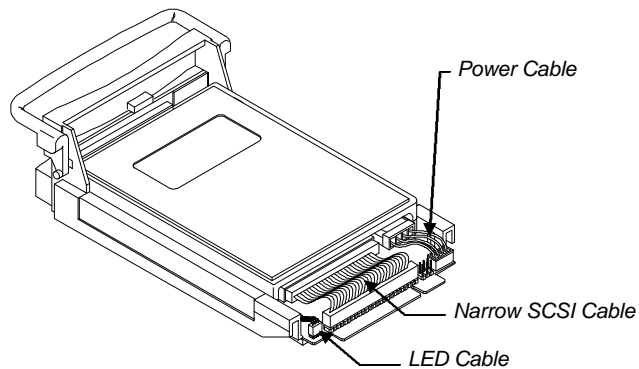


Figure 3-13 Connecting the Drive Cables (Narrow SCSI Drive)

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



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

8. Push the drive handle into place.

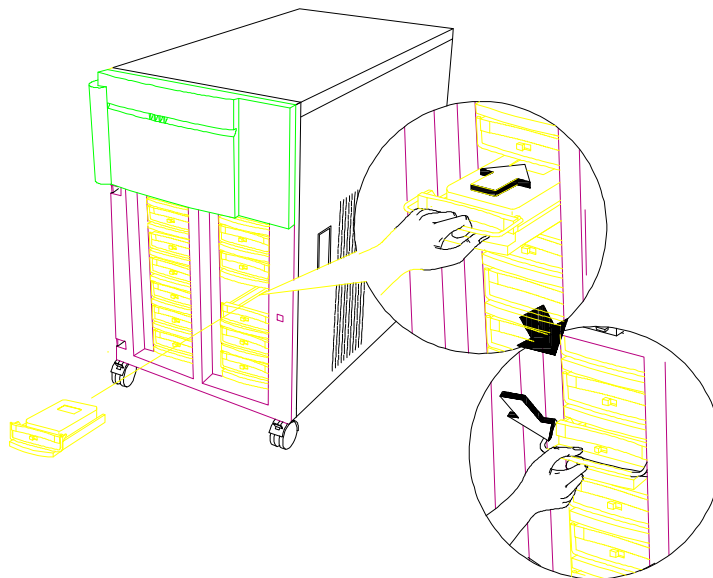


Figure 3-14 Installing a Hot-swap Drive Tray

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

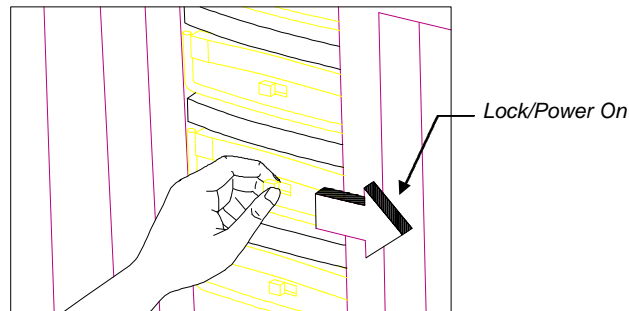


Figure 3-15 Locking the Drive Tray Switch

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.

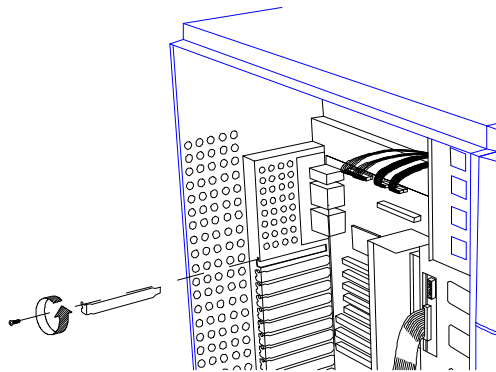


Figure 3-16 Removing a Bracket Cover

-
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.

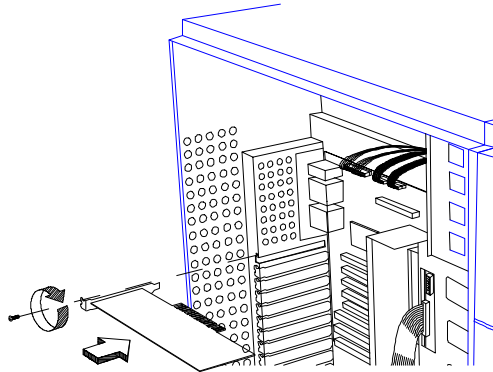


Figure 3-17 Installing a PCI Expansion Board

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

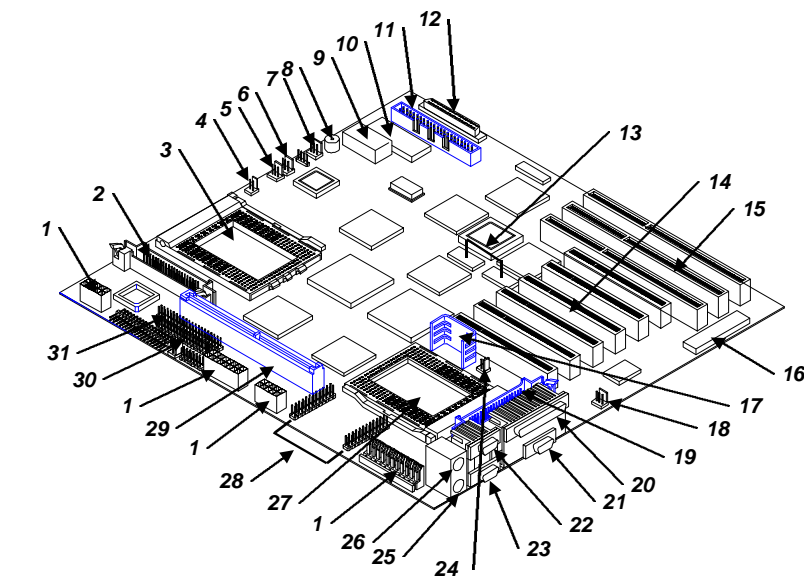


If you installed an EISA board, run the EISA configuration utility (ECU) to reconfigure the system. See Chapter 5 for information on ECU.

3.2 System Board

The system board carries all the major system components including the two sockets for the Intel Pentium Pro CPUs. Figure 3-18 shows the major components on the system board.

3.2.1 Layout



- | | |
|-----------------------------|------------------------------|
| 1. Power connectors | 17. CPU voltage regulator |
| 2. VRM connector 1 | 18. Fan connector 4 (Fan4) |
| 3. Pentium Pro CPU socket 1 | 19. VRM connector 2 |
| 4. Fan connector 5 (Fan5) | 20. Parallel port |
| 5. Fan connector 1 (Fan1) | 21. Video port |
| 6. Fan connector 2 (Fan2) | 22. Serial port 1 |
| 7. Fan connector 3 (Fan3) | 23. Serial port 2 |
| 8. Buzzer | 24. Fan connector 6 (Fan6) |
| 9. Real-time clock | 25. Keyboard port |
| 10. BIOS | 26. Mouse port |
| 11. Narrow SCSI interface | 27. Pentium Pro CPU socket 2 |
| 12. Wide SCSI interface | 28. RDM connectors |
| 13. VGA RAM | 29. Memory board slot |
| 14. EISA slots | 30. Diskette drive connector |
| 15. PCI slots | 31. IDE connector |
| 16. Keyboard controller | |

Figure 3-18 System Board Layout

3.2.2 Jumpers and Connectors

Figure 3-19 shows the jumper and connector locations on the system board.

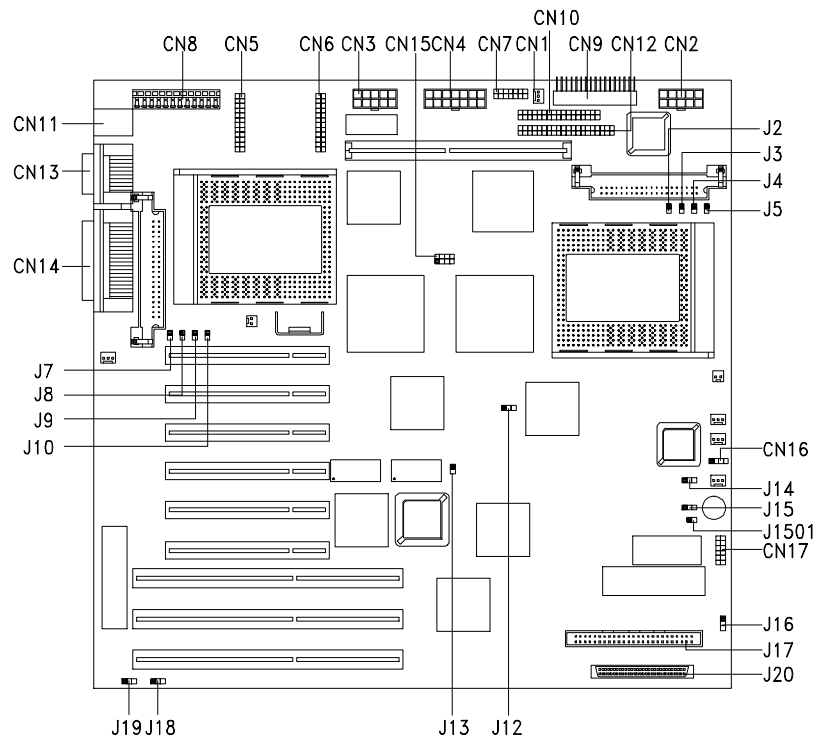


Figure 3-19 Jumper and Connector Locations

Table 3-2 Jumper Settings

| Jumper | Setting | Function |
|---------------------------------|---------------------|---|
| Oscillator Freq. J12 | Open 1-2 2-3* | 50 MHz 60 MHz 66 MHz |
| SCSI Feature J13 | Open Closed* | Narrow SCSI Wide SCSI and narrow SCSI |
| ITP Boundary Scan J14 J15 | Open** 2-3** | J14 and J15 are for CPU testing purposes only. Note: Do not reconfigure. |
| SCSI Termination J16 | 1-2 2-3* | SCSI terminator set to On SCSI terminator switchable to On or Off using the SCSI Setup Utility |
| Password Security J18 | 1-2* 2-3 | Check password Bypass password |
| BIOS Logo J19 | 1-2* 2-3 | For models with Acer BIOS For models with OEM BIOS |
| Sound Output J1501 | 1-2* Open | Enable buzzer output Disable buzzer output |

* Default setting

** Fixed setting. Not user-configurable.

Voltage ID Settings

Figure 3-20 shows the settings of jumpers J2, J3, J4, and J5 to set CPU1 VRM connector (J1) to 3.3V at 200 MHz.

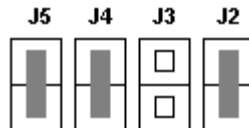


Figure 3-20 VRM Settings for CPU1 (3.3V for 200 MHz)

Figure 3-21 shows the settings of jumpers J7, J8, J9, and J10 to set CPU2 VRM connector (J6) to 3.3V at 200 MHz.

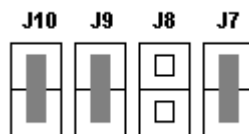


Figure 3-21 VRM Settings for CPU2 (3.3V for 200 MHz)

Table 3-3 lists the voltage identification (VID) code indicated by four binary-weighted inputs.

Table 3-3 Voltage Identification Codes

| Pentium Pro Pins | | | | Vcc _p (VDC) |
|------------------|------|------|------|---------------------------|
| VID3 | VID2 | VID1 | VID0 | |
| 1 | 1 | 1 | 1 | No CPU |
| 1 | 1 | 1 | 0 | 2.1 |
| 1 | 1 | 0 | 1 | 2.2 |
| 1 | 1 | 0 | 0 | 2.3 |
| 1 | 0 | 1 | 1 | 2.4 |
| 1 | 0 | 1 | 0 | 2.5 |
| 1 | 0 | 0 | 1 | 2.6 |
| 1 | 0 | 0 | 0 | 2.7 |
| 0 | 1 | 1 | 1 | 2.8 |
| 0 | 1 | 1 | 0 | 2.9 |
| 0 | 1 | 0 | 1 | 3.0 |
| 0 | 1 | 0 | 0 | 3.1 |
| 0 | 0 | 1 | 1 | 3.2 |
| 0 | 0 | 1 | 0 | 3.3 |
| 0 | 0 | 0 | 1 | 3.4 |
| 0 | 0 | 0 | 0 | 3.5 |

0 = Processor pin connected to Vss
1 = Open



DO NOT change the settings of the voltage ID jumpers unless you are qualified to do so. Ask a technician if you need help when configuring these jumpers.

Table 3-4 Connector Functions

| Connector | Function |
|-----------|--|
| CN1 | 3-pin power connector |
| CN2 | 10-pin power connector |
| CN3 | 10-pin power connector |
| CN4 | 14-pin power connector |
| CN5 | RDM connector |
| CN6 | RDM connector |
| CN7 | Backplane LED connector |
| CN8 | 12-pin power connector |
| CN9 | Front panel connector for twin-tower housing |
| CN10 | Diskette drive connector |
| CN11 | PS/2 keyboard/mouse connector |
| CN12 | IDE hard disk connector |
| CN13 | Serial port connector |
| CN14 | Parallel port/VGA port connector |
| CN16 | Hard disk LED connector |
| CN17 | Reset/RDM cable connector |
| J1 | VRM connector 1 (for CPU 1) |
| J6 | VRM connector 2 (for CPU 2) |
| J17 | 50-pin narrow SCSI connector |
| J20 | 68-pin wide SCSI connector |

Figure 3-22 shows the CN15 default setting indicating the clock frequency ratio of 3. Ask a qualified technician when changing the clock frequency ratio.

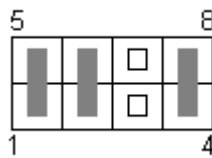


Figure 3-22 Clock Frequency Ratio Setting (CN15)

3.2.3 Installing a Pentium Pro CPU

The basic system includes an Intel Pentium Pro CPU installed in CPU socket 1. A second zero-insertion force (ZIF) CPU socket comes with the board for a dual-processor configuration.

Follow these steps to install a CPU:

1. Release the heat sink locks.
2. Attach the heat sink by sliding its rails along the longer sides of the rectangular Pentium Pro CPU. Make sure that the heat sink completely covers the CPU.
3. Hold the CPU and the heat sink firmly together then slide the locks on the sides of the heat sink to secure the CPU.

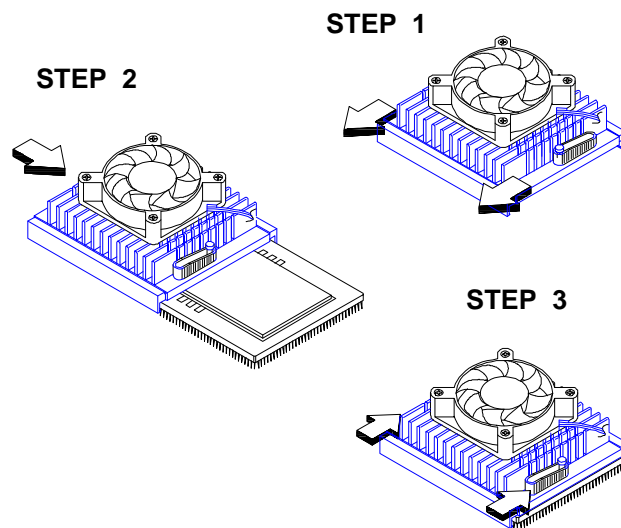


Figure 3-23 Attaching the Heat Sink to the CPU

-
- Lift up the CPU socket lever.
 - 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.



Be careful not to bend any pins.

- Push down the socket lever.
- Connect the CPU fan cable to connector Fan 5 (for CPU 1) or Fan 6 (for CPU 2) on the system board.

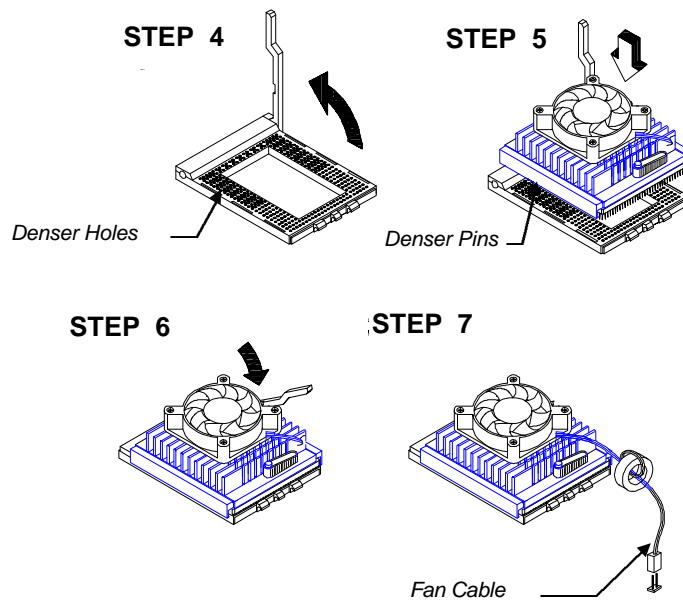


Figure 3-24 Installing a Pentium Pro CPU

3.3 Memory Board

The memory board comes already installed with the basic system. A total of eight memory banks composed of 16 72-pin SIMM sockets reside on the board. The sockets accept 8-MB, 16-MB, 32-MB, and 64-MB SIMMs for a maximum of 1 GB memory configuration.

3.3.1 Layout

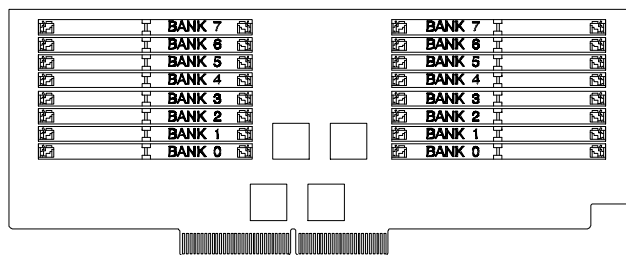


Figure 3-25 Memory Board Layout

3.3.2 Rules for Adding Memory

Adhere to the following rules when you add system memory.

- Always install SIMMs from bank 0. You should use the memory banks consecutively.
- Always install SIMMs in pairs to fill up a bank. For example, for a total memory of 16 MB, install two 8-MB SIMMs in a bank. You can not use a 16-MB SIMM alone for a 16-MB memory.
- Use only fast-page mode parity SIMMs.
- Install SIMMs of the same capacity in a configuration. For example, do not mix an 8-MB SIMM with a 16-MB SIMM.

3.3.3 Memory Configurations

Table 3-5 Memory Configurations

| Bank 0 | Bank 1 | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Bank 7 | Total Memory |
|--------|--------|--------|--------|--------|--------|--------|--------|--------------|
| 8MB*2 | | | | | | | | 16 MB |
| 8MB*2 | 8MB*2 | | | | | | | 32 MB |
| 8MB*2 | 8MB*2 | 8MB*2 | 8MB*2 | | | | | 64 MB |
| 8MB*2 | 8MB*2 | 8MB*2 | 8MB*2 | 8MB*2 | 8MB*2 | 8MB*2 | 8MB*2 | 128 MB |
| 16MB*2 | | | | | | | | 32 MB |
| 16MB*2 | 16MB*2 | | | | | | | 64 MB |
| 16MB*2 | 16MB*2 | 16MB*2 | 16MB*2 | | | | | 128 MB |
| 16MB*2 | 16MB*2 | 16MB*2 | 16MB*2 | 16MB*2 | 16MB*2 | 16MB*2 | 16MB*2 | 256 MB |
| 32MB*2 | | | | | | | | 64 MB |
| 32MB*2 | 32MB*2 | | | | | | | 128 MB |
| 32MB*2 | 32MB*2 | 32MB*2 | 32MB*2 | | | | | 256 MB |
| 32MB*2 | 32MB*2 | 32MB*2 | 32MB*2 | 32MB*2 | 32MB*2 | 32MB*2 | 32MB*2 | 512 MB |
| 64MB*2 | | | | | | | | 128 MB |
| 64MB*2 | 64MB*2 | | | | | | | 256 MB |
| 64MB*2 | 64MB*2 | 64MB*2 | 64MB*2 | | | | | 512 MB |
| 64MB*2 | 64MB*2 | 64MB*2 | 64MB*2 | 64MB*2 | 64MB*2 | 64MB*2 | 64MB*2 | 1024 MB |

3.3.4 Installing a SIMM

Follow these steps to install a SIMM:

1. Carefully slip a SIMM at a 45° angle into a socket making sure that the curved edge indicating the pin 1 of the SIMM matches pin 1 of the socket.



A SIMM fits only in one direction. If you slip in a SIMM but does not completely fit, you may have inserted it the wrong way. Reverse the orientation of the SIMM.

2. Gently push the SIMM to a vertical position until the pegs of the socket slip into the holes on the SIMM, and the holding clips lock the SIMM into position. The SIMM should be at a 90° angle when installed.

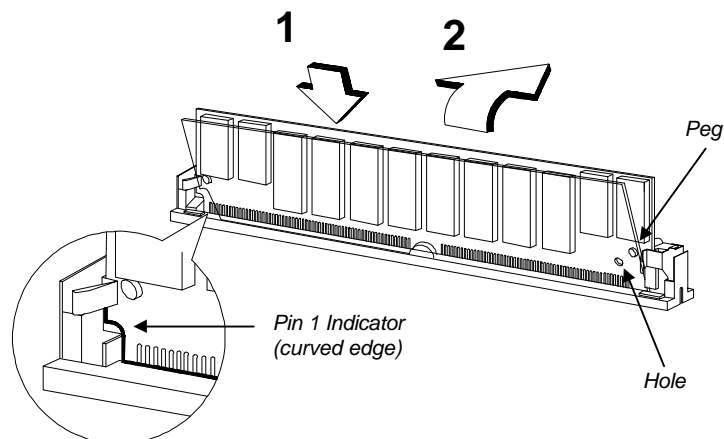


Figure 3-26 Installing a SIMM

3.3.5 Removing a SIMM

Follow these steps to remove a SIMM:

1. Press the holding clips on both sides of the SIMM outward to release it.
2. Move the SIMM to a 45° angle.
3. Pull the SIMM out of the socket.

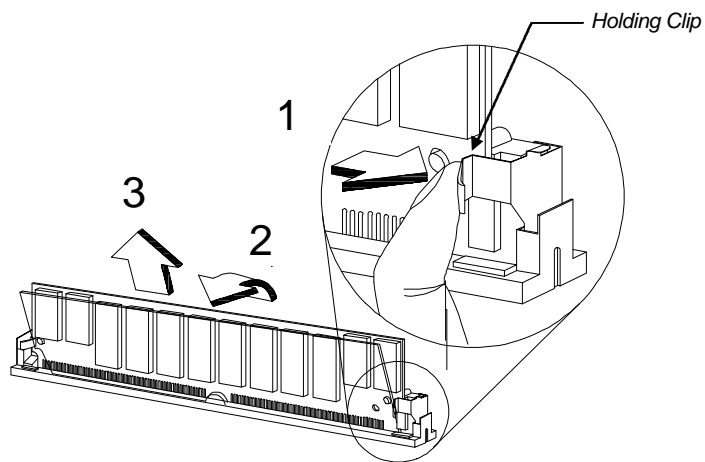


Figure 3-27 Removing a SIMM

3.3.6 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.



Install the memory board with the component side up.

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

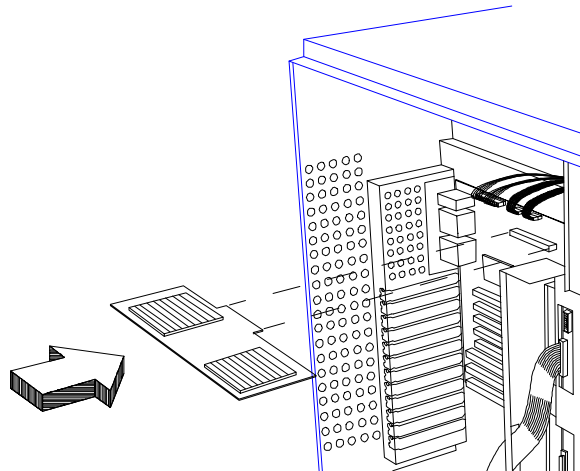


Figure 3-28 Inserting the Memory Board

-
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

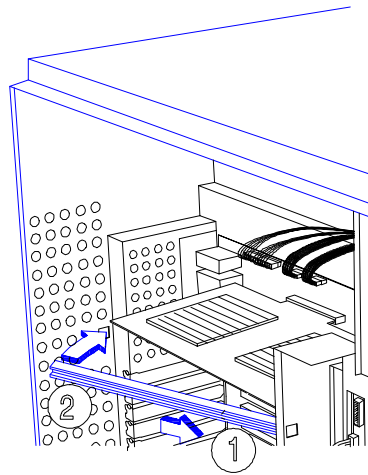


Figure 3-29 Attaching the Board Holding Clamp

3.3.7 Reconfiguring the System

You must enter Setup after installing or removing SIMMs 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.

3.4 SCSI Disk Array Backplane Board

The SCSI disk array backplane board (Acer BP-W7) provides a convenient interface between the SCSI drives and the system board. It includes seven SCSI drive slots to accommodate the drive trays, two SCSI channels to connect to the system board or SCSI controller board, and one SCSI channel out for external devices.

3.4.1 Features

The backplane board has the following major features:

- “Hot-swap” feature that allows replacement of a defective hard drive even while the system is in full operation. This feature requires a RAID controller board and RAID drivers.
- Indicates hard disk drive failure through a front panel board LED
- Supports wide SCSI or narrow SCSI disk drives
- Supports mixed configuration of both fast-and-wide (16-bit) and fast-and-narrow (8-bit) SCSI drives in a single channel
- Allows ‘split’ 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
- Supports other external SCSI devices through the SCSI channel out interface

3.4.2 Layout

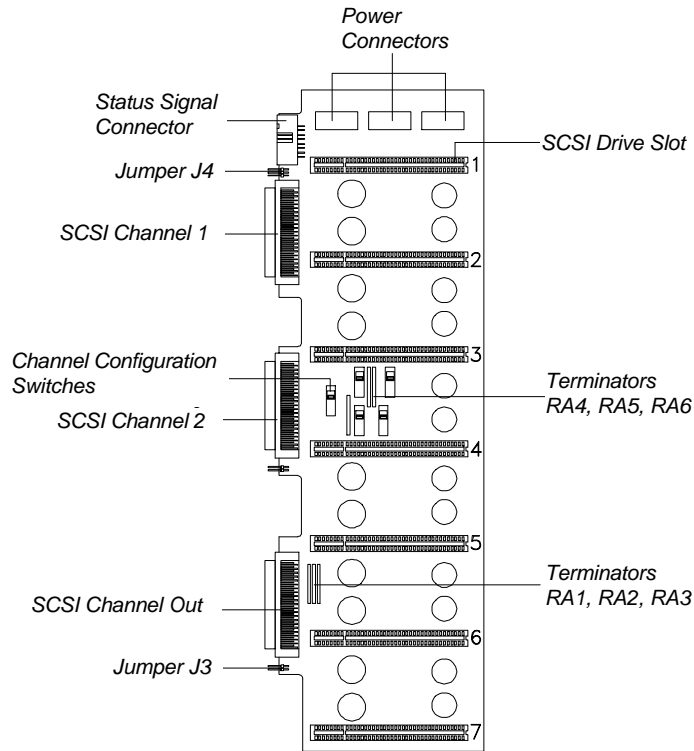


Figure 3-30 SCSI Disk Array Backplane Board

3.4.3 Jumper Settings

The backplane has two jumpers, J3 and J4, that allow you to select the terminator power source and to set drive IDs. 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).

Figures 3-31 and 3-32 show the settings for jumpers J3 and J4.

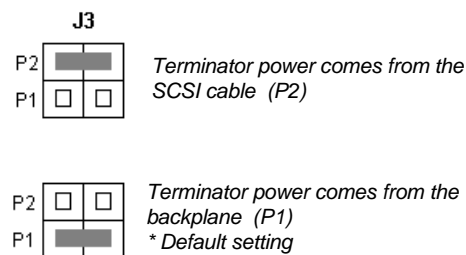


Figure 3-31 Jumper J3 Settings

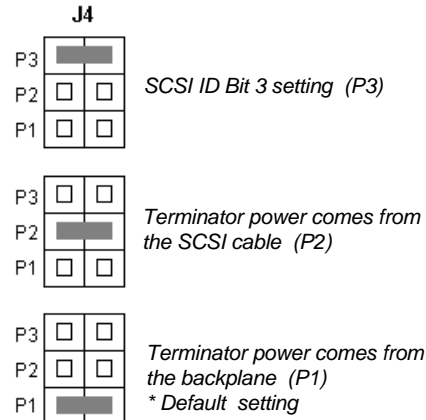


Figure 3-32 Jumper J4 Settings

3.4.4 Hard Disk ID Feature

Closing the P3 pins on jumper J4 on the SCSI backplane board allows you to set seven additional SCSI drive IDs for the second backplane board, if you installed one.

Figure 3-33 illustrates P3 settings for jumper J4.

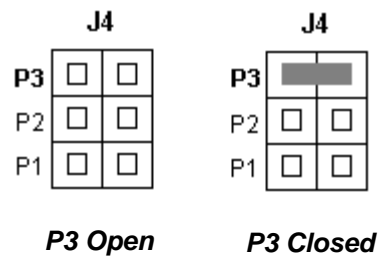


Figure 3-33 P3 Setting for Jumper J4

Table 3-6 shows the P3 settings and their corresponding functions.

Table 3-6 P3 Settings and Functions

| P3 Setting | Function |
|-----------------------|--|
| Open (Bit 3 = 0) | Allows you to set IDs 0, 1, 2, 3, 4, 5, and 6 to the SCSI drives on the left panel backplane board. This is the default setting. |
| Closed (Bit 3 = 1) | Allows you to set additional IDs 8, 9, A, B, C, D, and E to the SCSI drives on the right panel backplane board. |



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

3.4.5 Channel Configuration

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

Single-Channel Configuration

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 3-7) to achieve a single-channel configuration. See Figure 3-30 for the locations of the switches and terminators.

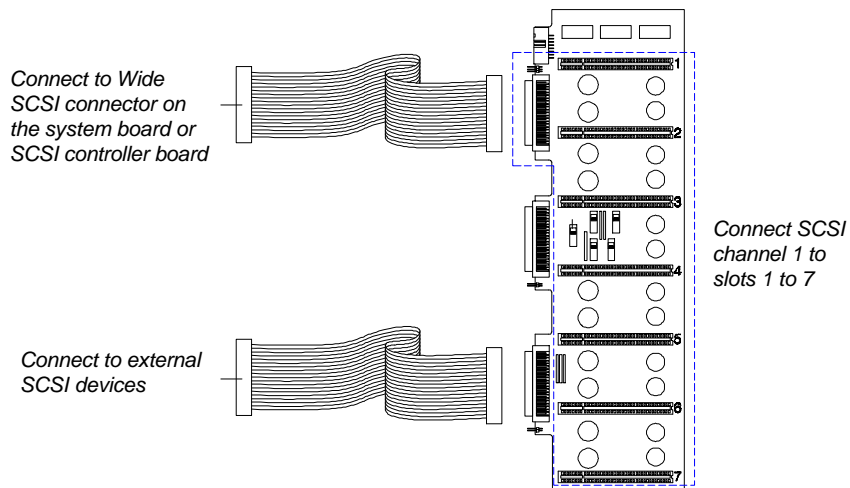


Figure 3-34 Single-Channel Configuration

Table 3-7 lists the terminator settings for the single-channel configuration.

Table 3-7 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 3-8) to achieve a dual-channel configuration. See Figure 3-30 for the locations of the switches and terminators.

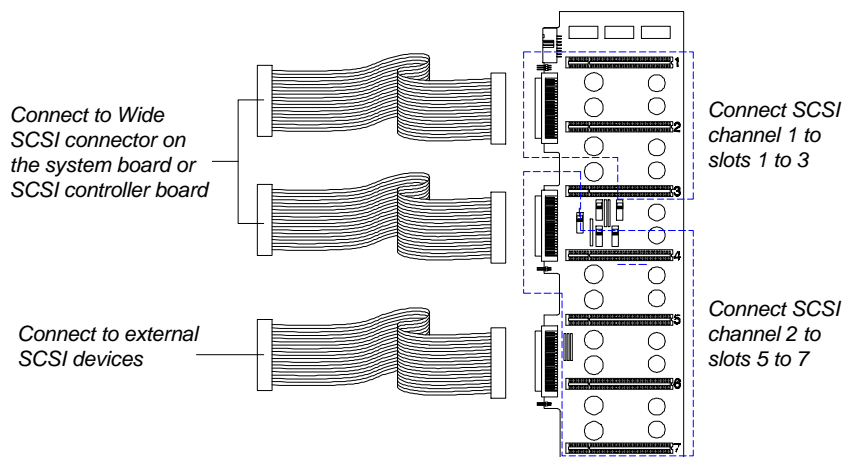


Figure 3-35 Dual-Channel Configuration

Table 3-8 lists the terminator settings for the dual-channel configuration.

Table 3-8 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 |

3.4.6 Installing a Backplane Board

The housing supports two backplane boards. The basic system includes a backplane already installed on the left panel. Should you need to install more SCSI hot-swap drives, you need to install another backplane on the right panel.

Follow these steps to install a backplane board:

1. Remove the upper and lower front panel doors. See section 3.1.2 for illustrations.
2. Remove the drive bay plastic covers.

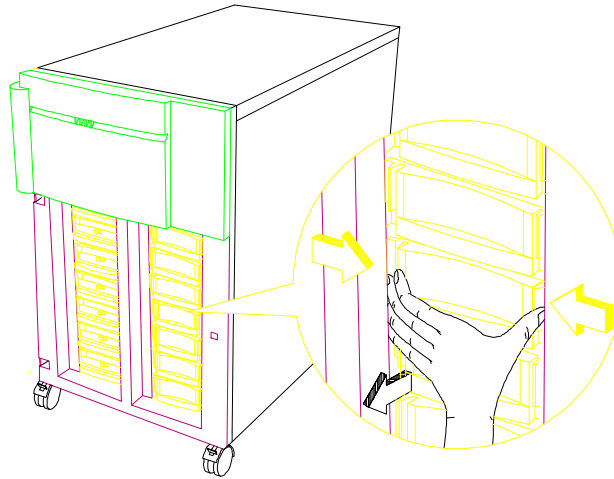


Figure 3-36 Removing the Drive Bay Covers

-
3. Position the backplane to the front of the housing and push it back until it fits into place. See Figure 3-37.



Make sure that you have configured the terminators, switches, and jumpers on the backplane before installing it into the housing.

4. Secure the backplane with eight screws.

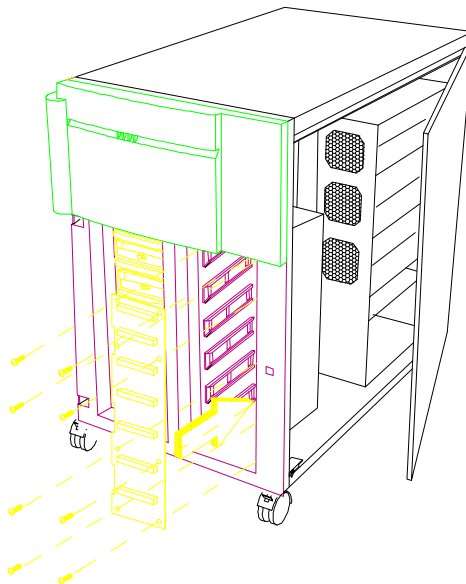


Figure 3-37 Installing a Backplane Board

5. Connect one end of the SCSI cable to SCSI channel out of the left backplane board and the other end to SCSI channel 1 of the right backplane. See Figure 3-38.

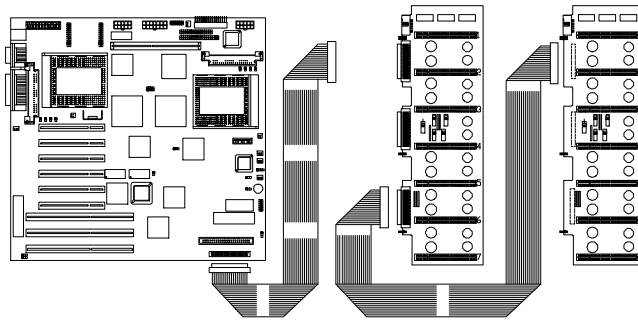


Figure 3-38 SCSI Cable Connections



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.

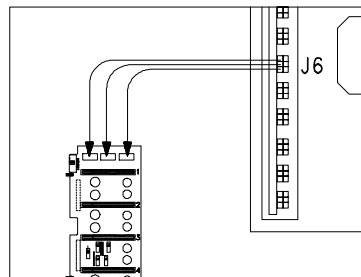


Figure 3-39 Connecting the Backplane Power Cables

3.5 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 3-40 shows the front panel board connections with the internal components.

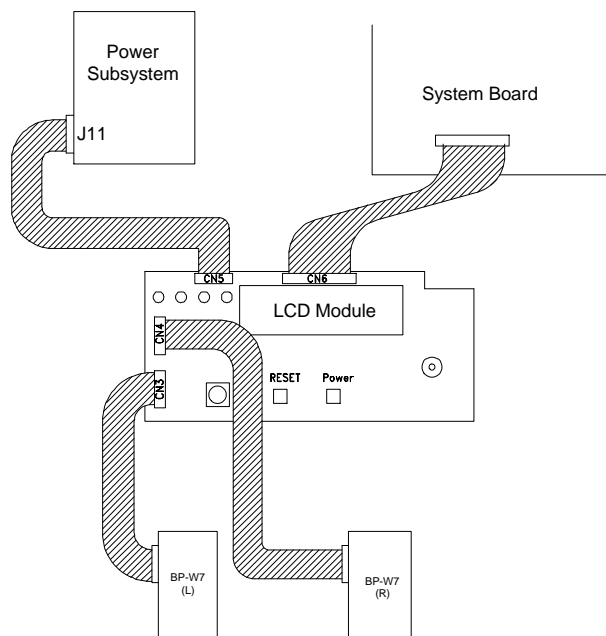


Figure 3-40 Front Panel Board Connections

3.6 Power Subsystem

The power subsystem consists of a power backplane, swappable power supply modules, and a uninterruptible power supply (UPS) module held in place by a metal rack enclosure. 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 UPS provides a reliable power backup in case of a total AC power shutdown. It comes with a battery and a charger to continuously load power whenever the system power is on.

The power subsystem provide a standby current and a remote on/off feature to support cold reboot from a remote site. See Chapter 5 for an overview of the remote diagnostic management (RDM).

Table 3-9 Power Subsystem Configuration

| 400W Power Module | | Configuration |
|-------------------|-----------|--|
| Normal | Redundant | |
| 1 unit | 2 units | 1~2 Pentium Pro CPUs BP-W7 (L) 7 SCSI hard disks Full add-on card configuration |
| 2 units | 3 units | 1~2 Pentium Pro CPUs BP-W7 (L) BP-W7 (R) 14 SCSI hard disks Full add-on card configuration |

3.6.1 Power Supply Upgrade

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

Installing a Power Supply

Follow these steps to install a power supply module:

1. Remove the right panel door as in Figure 3-4.
2. Remove the two screws that secure the metal bar over the power supply enclosure. Save the screws.

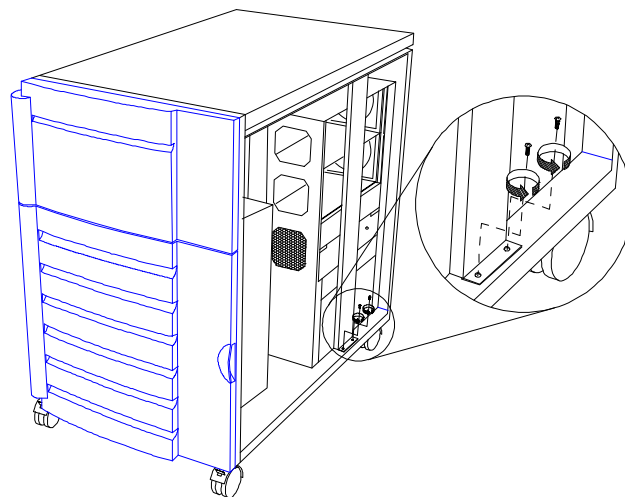


Figure 3-41 Removing the Metal Bar Screws

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

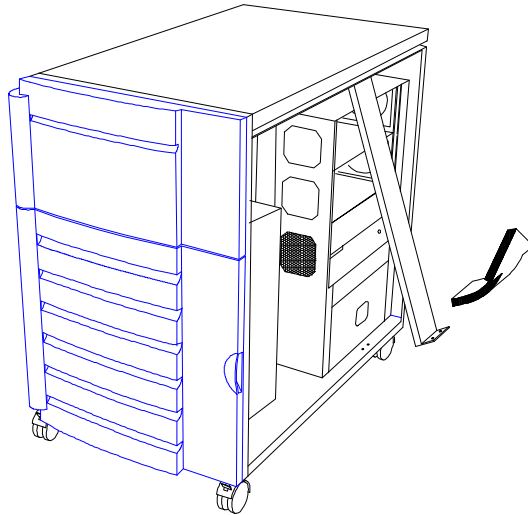


Figure 3-42 Pulling-out the Metal Bar

4. Unpack a new power supply module.
5. 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 golden fingers completely fit into the slot on the power backplane. See Figure 3-43.

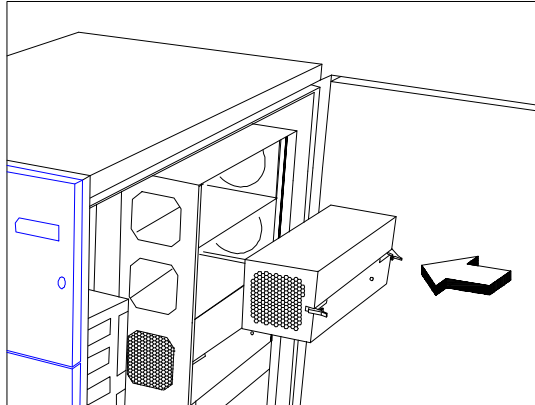


Figure 3-43 Installing a Power Supply Module

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

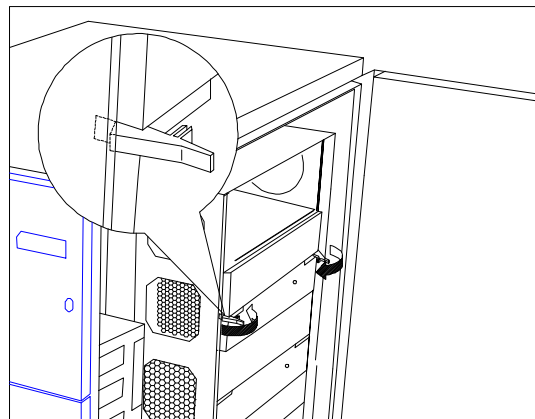


Figure 3-44 Locking the Holding Clips

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

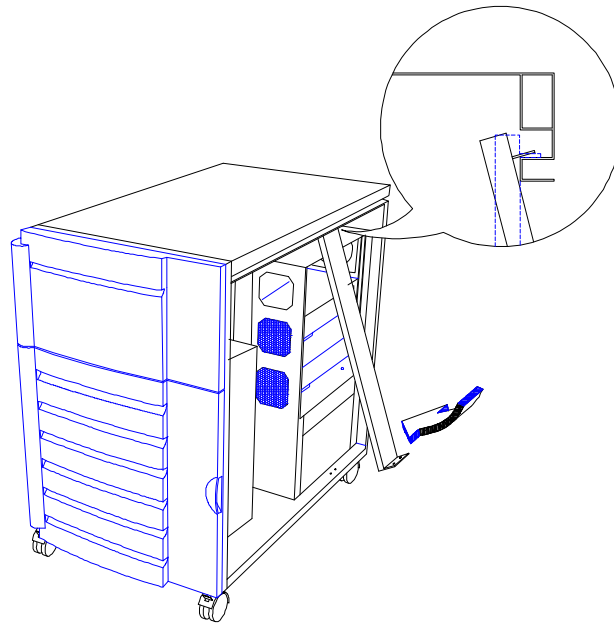


Figure 3-45 Reinstalling the Metal Bar

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

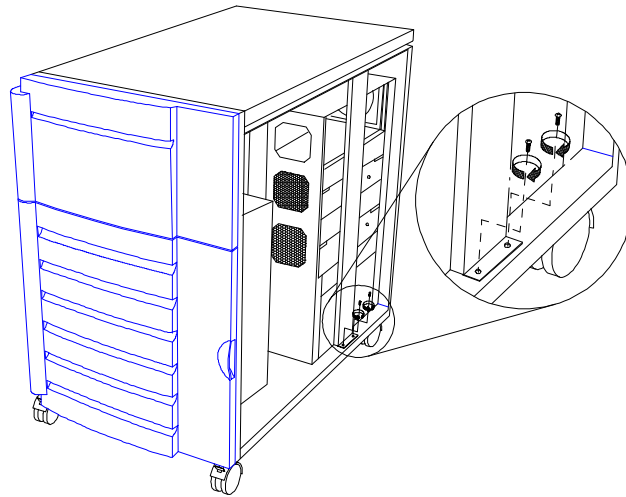


Figure 3-46 Securing the Metal Bar with Screws

- Replace the right panel door to the housing.

Removing a Power Supply Module

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

Follow these steps to remove a power supply module:

1. Remove the right panel door as in Figure 3-4.
2. Remove the metal bar over the power supply rack as in section 3.6.1.
3. Unlock the power supply module holding clips by pressing them outward.

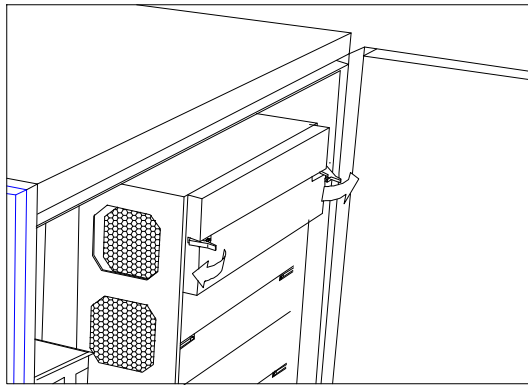


Figure 3-47 Unlocking the Power Supply Holding Clips

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

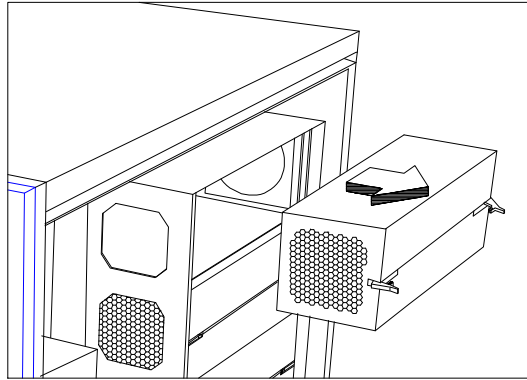


Figure 3-48 Removing the Power Supply Module

5. Install a new power supply module as in section 3.6.1.

3.6.2 Power Cable Connections

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

Table 3-9 lists a summary of the power backplane connectors and to which components they connect.

Table 3-9 Power Backplane Connections

| Power Connector | Connect to | | | |
|-----------------|--------------|-------------------|----------------|-------------------------------------|
| | System Board | Front Panel Board | SCSI B/P Board | Other Peripherals |
| J1 (reserved) | | | | |
| J11 | | → CN5 | | |
| J2 | → CN8 | | | |
| J3 | → CN4 | | | |
| J4 | → CN3 | | | |
| J7 | → CN2 | | | |
| J8 (reserved) | | | | |
| J5 | | | → P1 ~ P3 | |
| J6 | | | → P1 ~ P3 | |
| J12 | | | | → Diskette drives/ CD-ROM drives |
| J13 (reserved) | | | | |
| J9 | | | | → Extra fan |
| J10 | → CN1 | | | |
| J14 | | | | → Side door microswitches |

Figure 3-49 illustrates the power cables that connect to the system board.

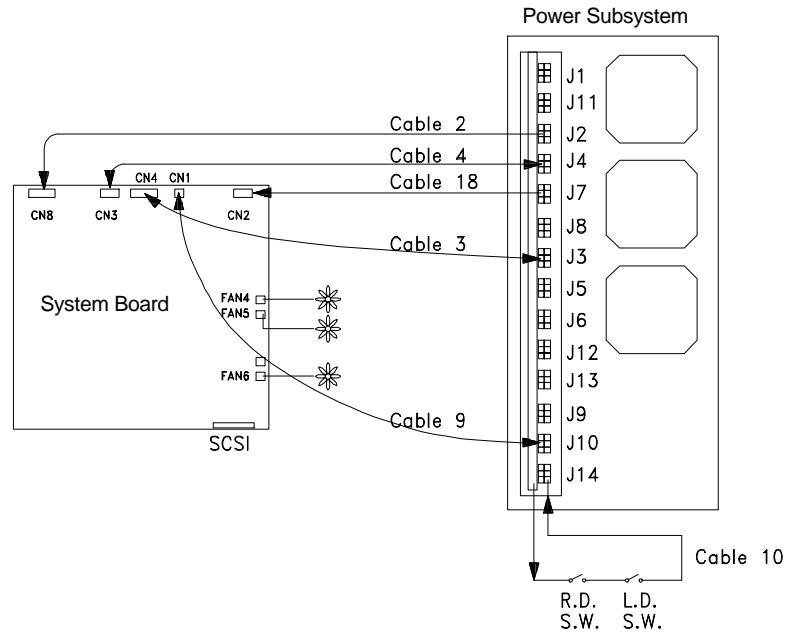


Figure 3-49 System Board Power Connections



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 3-50 shows the system board, SCSI backplane board, front panel board, and power subsystem interconnections.

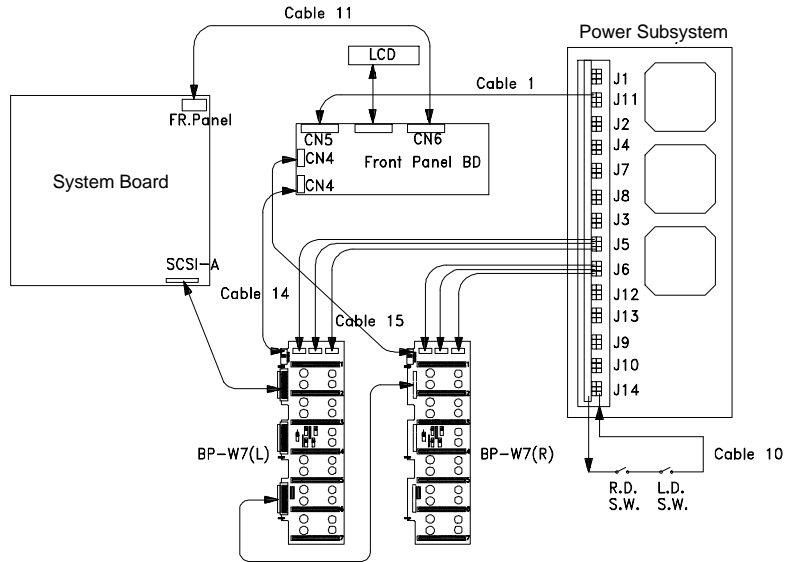


Figure 3-50 System Boards and Power Subsystem Interconnections

Chapter 4

BIOS Utility

The system is already configured by the manufacturer or the dealer. There is no need to run Setup when starting the computer unless you get a configuration error.

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



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

Before you run Setup, have the following information ready:

- **Diskette drive type** The standard type is a 3.5-inch 1.44-MB diskette drive.
- **IDE hard disk drive type** The drive information is on a label pasted on your hard disk or in the documentation supplied by the vendor. Refer also to the hard disk table at the end of this chapter.

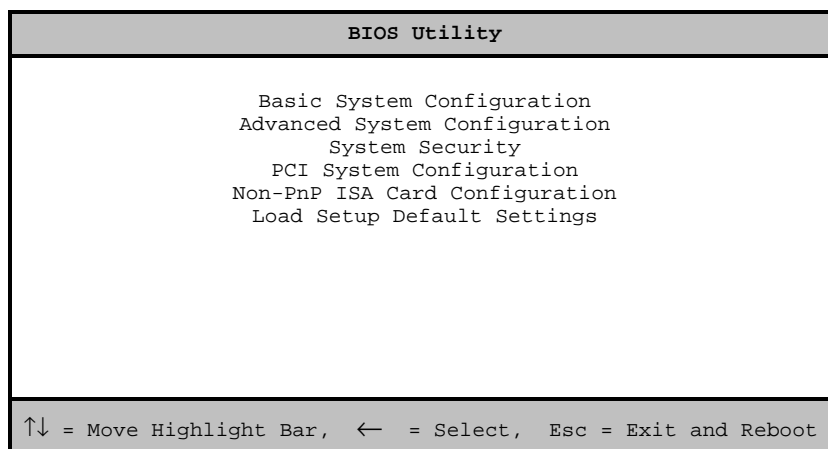
4.1 Entering Setup

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

The grayed items (denoted with asterisks) on the screens have fixed settings and are not user-configurable.

4.2 Basic System Configuration

Select Basic System Configuration to input configuration values such as date, time, and disk types.

The following screen shows the Basic System Configuration menu.

| Basic System Configuration | | Page 1/2 | | |
|--|----------------------|----------|------|--------|
| Date | [MM/DD/YY] | | | |
| Time | [HH:MM:SS] | | | |
| Diskette Drive A | [xx-MB xx-inch] | | | |
| Diskette Drive B | [xx-MB xx-inch] | | | |
| | | Cylinder | Head | Sector |
| Hard Disk 0 (xxx MB) | [Auto] | xx | xx | xx |
| Hard Disk 1 (xxx MB) | [Auto] | xx | xx | xx |
| *Base Memory | [xxx] KB | | | |
| *Extended Memory | [xxxx] KB | | | |
| *Total Memory | [xxxx] KB | | | |
| *Math Coprocessor | [Installed] | | | |
| *Video Display | [VGA/EGA] | | | |
| ↑↓ = Move Highlight Bar, → ← = Change Setting | | | | |
| PgDn/PgUp = Move Screen, Esc = Exit | | | | |

The command line at the bottom of the menu tells you how to highlight items, change settings, and move from one screen to another.

Press **↑** or **↓** on the cursor-edit keypad to highlight the desired parameter.

Press **→** or **←** to select the desired option for a parameter.

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

Press **ESC** to exit the configuration menu.

The following screen shows page 2 of the Basic System Configuration menu.

```
Basic System Configuration                               Page 2 / 2
Communication Settings
  Baud Rate ..... [9600] BPS
  Parity ..... [None]
  Stop Bits ..... [1] Bits
  Data Length ..... [8] Bits

Enhanced IDE Features
  Hard Disk Size > 504MB ..... [Disabled]
  Hard Disk Block Mode ..... [Enabled ]

Large Memory Support Mode ..... [ Normal ]
Num Lock After Boot ..... [Enabled ]
*Memory Test ..... [Disabled]
Auto Configuration Mode ..... [Disabled]
Fast Boot Mode ..... [Disabled]



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

The following sections explain the different parameters and their settings.

4.2.1 Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you need not 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.



Date

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

Valid values for month, day, and year are:

- Month 1 to 12
- Day 1 to 31
- Year 00 to 99



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

4.2.2 Diskette Drives

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

Possible settings for the Diskette 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 for Diskette Drive B. Choose None if you do not have a second diskette drive.

4.2.3 Hard Disk Drives

Move the highlight bar to the hard disk 0 parameter to configure the first hard disk (drive C). Press **[→]** or **[←]** to display the hard disk types with their respective values. Select the type that corresponds to your hard disk drive. Follow the same procedure for the other hard disks, if any. Choose **None** if you do not have other drives.

Selecting the “Auto” Option

If you do not know the exact type of your hard disk, select the option **Auto**. During the power-on self-test (POST), when the system performs self-testing and self-initialization before loading the operating system and applications, the BIOS utility automatically determines your hard disk type. You can see the drive type and its values when you enter the BIOS Utility.

| | Cylinder | Head | Sector |
|--------------------------------|----------|------|--------|
| Hard Disk 0 (xx MB) ... [Auto] | xx | xx | xx |

If desired, you can save the values under the option **User**.

| | Cylinder | Head | Sector |
|--------------------------------|----------|------|--------|
| Hard Disk 0 (xx MB) ... [User] | xx | xx | xx |

The next time you boot the system, the BIOS utility does not have to auto-configure your hard disk as it detects the saved disk information during POST.



We recommend that you copy the IDE disk drive values and keep them in a safe place in case you have to reconfigure the disk in the future.

Follow the same procedure to auto-configure other hard disks.

Selecting the “User” Option

There are cases when you cannot use the option `Auto`, instead you have to select `User`. Choose the `User` option when you have installed an hard disk that was previously formatted but does not use the disk native parameters or structure, that is, the disk type may be in the hard disk types list but the number of cylinders, heads, and sectors differ.

Follow these steps to configure a hard disk with the `User` option:

1. Highlight an hard disk parameter.
2. Select the option `User` and press `ENTER`.
3. Type in the number of cylinders, heads, and sectors of the drive under the appropriate columns.



Be sure to have the correct hard disk information beforehand.

4. Choose `YES` when asked if you want to save CMOS data.

4.2.4 System Memory

The system automatically detects the total amount of onboard memory during the POST and sets the memory parameters accordingly. If you install additional memory, the system automatically adjusts the Total Memory parameter to display the new memory size.

4.2.5 Math Coprocessor

The CPU includes a math coprocessor so this parameter shows `Installed` by default.

4.2.6 Video Display

The video display is the monitor on which the operating system prompt appears when you boot the system. The system automatically detects the video mode of your primary display and sets the configuration value accordingly. Values for this parameter are:

- [Monochrome]
- [CGA 40 columns x 25 rows]
- [CGA 80 columns x 25 rows]
- [VGA/EGA]

4.2.7 Communication Settings

The Communication Settings parameters allow you to set the baud rate, parity, stop bit, and data length for the first serial port. The values for this parameter are:

- Baud rate : 110 to 9600 bits per second (bps)
- Parity : odd, even, or none
- Stop bit : 1 or 2 stop bits
- Data length : 7- or 8-bit data word



The baud rate maximum value 9600 bps applies only to POST under UNIX environment. The system I/O chipset SMC 37C665 supports up to 115.2K bps.

4.2.8 Enhanced IDE Features

Hard Disk Size > 504 MB

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

To prevent data loss, set this parameter set to *Enabled* if you are using a hard disk with more than 504 MB capacity that was previously configured through LBA mode. If you use a hard disk configured through cylinder-head-sector (CHS) mode, set this item to *Disabled*.

Hard Disk Block Mode

This function enhances disk performance depending on the hard disk in use. If you set this parameter to *Enabled*, it allows data transfer in block (multiple sectors) by increasing the data transfer rate to 256 bytes per cycle. If your system does not boot after enabling this parameter, change the setting to *Disabled*. This parameter is normally set to *Disabled*.

4.2.9 Num Lock After Boot

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

4.2.10 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*.

This item is fixed to *Disabled* and is not user-configurable if you enabled the *Auto Configuration Mode* and the *Fast Boot Mode* parameters on page 2 of the Basic System Configuration menu. See section 4.2.11 and 4.2.12.

4.2.11 Auto Configuration Mode

When enabled, this parameter automatically sets the system configuration values to their optimized settings. At the same time, it causes the *Memory Test* parameter to be fixed to *Disabled* and the shadow RAM regions for system and video BIOS to *Enabled*. See sections 4.2.10 and 4.3.1.

Set this parameter to the default *Enabled* if you do not know the hard disk drive parameters and the onboard communication port configurations.

4.2.12 Fast Boot Mode

When enabled, this parameter allows the system to boot faster by skipping some POST routines. This parameter is enabled by default.

When set to *Enabled*, this parameter causes the *Memory Test* parameter to be fixed to *Disabled*. See sections 4.2.10.

4.3 Advanced System Configuration

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



Do not change any settings in the Advanced Configuration if you are not a qualified technician to avoid damaging system.

The following screen shows page one of the Advanced System Configuration parameters.

```
Advanced System Configuration Page 1/1

Shadow RAM
*E0000h - FFFFFh (System BIOS) ... [Enabled ]
*C0000h - C7FFFh (Video BIOS) ..... [Enabled ]
C8000h - CBFFFh ..... [Disabled]
CC000h - CFFFFh ..... [Disabled]
D0000h - D3FFFh ..... [Disabled]
D4000h - D7FFFh ..... [Disabled]
D8000h - DBFFFh ..... [Disabled]
DC000h - DFFFFh ..... [Disabled]

L1 & L2 Cache (CPU Cache) ..... [Enabled ]
Cache Scheme ..... [ Write Back ]
Video Buffer Memory Type ..... [Non-cacheable]

Memory at 15MB-16MB Reserved for ..... [ System ] Use

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



The grayed parameters (denoted with asterisks) are not user-configurable.

4.3.1 Shadow RAM

The system reserves 384 KB of random access memory (RAM) for the shadow RAM function. This parameter has eight range addresses. When you set these addresses to *Enabled*, the system BIOS, video BIOS, and I/O ROM functions run directly from the shadow RAM for faster operation. When you set them to *Disabled*, the functions run normally from ROM.

The address range E0000h - FFFFFh is for shadowing the system BIOS. This item is always set to *Enabled* and is not user-configurable. The address range C0000h - C7FFFh is for shadowing the video BIOS. This item is fixed to *Enabled*.

The remaining address ranges are for I/O ROM functions.

4.3.2 L1 and L2 Cache (CPU Cache)

This parameter enables or disables the first-level and second-level cache integrated in the Pentium Pro CPU. This item is fixed to *Enabled* and is not user-configurable if you enabled the Auto configuration Mode and Fast Boot Mode parameters on page 2 of the Basic System Configuration menu.

Cache Scheme

This parameter sets the cache to *Write-through* or *Write-back* modes. *Write-back* updates the cache but not the memory when there is a write instruction. It updates the memory only when there is cache miss or an inconsistency between the cache and the memory. *Write-through* updates both the cache and the memory whenever there is a write instruction.

Video Buffer Memory Type

This parameter allows you to enable or disable the video cache buffer feature. When you set this parameter to `USWC`, the uncacheable, speculatable write-combining (USWC) buffer in the CPU temporarily stores video write data. When the USWC buffer is full, the CPU eventually writes the data to the memory address `A0000h~BFFFFh` reserved for video data. Setting to `Non-cacheable` disables this feature.

4.3.3 Memory at 15MB-16MB

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. Before setting this parameter, check your add-on card manual to determine if your add-on card needs this memory space. If not, set this parameter to `System Use`.

4.4 System Security Setup

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

Enter the Setup program and select System Security. The following screen appears:

```
System Security                                     Page 1/1
Disk Drive Control
Diskette Drive..... [      Normal      ]
Hard Disk Drive..... [      Normal      ]
System Boot Drive..... [Drive A then C]
Onboard Communication Ports
Serial Port 1 Base Address..... [Disabled ]
Serial Port 2 Base Address..... [ 2F8h  ]
Parallel Port Base Address..... [378h (IRQ 7)]
  Operation Mode..... [Standard Parallel Port (SPP)] Mode
  ECP DMA Channel ..... [-]
Onboard PS/2 Mouse (IRQ12) ... [Enabled ]
Setup Password..... [ None ]
Power On Password..... [ None ]

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

4.4.1 Disk Drive Control

The disk drive control features allow you to enable or disable the read/write functions of a disk drive. These features can also control the diskette 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 4-1 lists the drive control settings and their corresponding functions.

Table 4-1 Drive Control Settings

| Diskette Drive | |
|---------------------------|--|
| Setting | Description |
| 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 |
| Hard Disk Drive | |
| Setting | Description |
| Normal | Hard disk drive functions normally |
| Write Protect All Sectors | Disables the write function on all sectors |
| Write Protect Boot Sector | Disables the write function only on the boot sector |
| Disabled | Disables all hard disk functions |
| System Boot Drive | |
| Setting | Description |
| 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. |

4.4.2 Onboard Communication Ports

Serial Port 1 Base Address

This parameter allows you to set the serial port 1 logical base address.

Table 4-2 Serial Port 1 Settings

| Setting | Description |
|----------|--|
| 3F8h | Serial port 1 with address 3F8h using IRQ4 |
| 2F8h | Serial port 1 with address 2F8h using IRQ3 |
| 3E8h | Serial port 1 with address 3E8h using IRQ4 |
| 2E8h | Serial port 1 with address 2E8h using IRQ3 |
| Disabled | Disables serial port 1 |

Serial Port 2 Base Address

This parameter allows you to set the serial port 2 logical base address.

Table 4-3 Serial Port 2 Settings

| Setting | Description |
|----------|--|
| 3F8h | Serial port 2 with address 3F8h using IRQ4 |
| 2F8h | Serial port 2 with address 2F8h using IRQ3 |
| 3E8h | Serial port 2 with address 3E8h using IRQ4 |
| 2E8h | Serial port 2 with address 2E8h using IRQ3 |
| Disabled | Disables serial port 2 |



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 Base Address

The system has one parallel port. Table 4-4 lists the options for selecting the parallel port address. You also have the option to disable the parallel port.

Table 4-4 Parallel Port Settings

| Setting | Function |
|--------------|--|
| 3BCh (IRQ 7) | Corresponds to the parallel port with address 3BCh |
| 378h (IRQ 7) | Corresponds to the parallel port with address 378h |
| 278h (IRQ 5) | Corresponds to the parallel port with address 278h |
| Disabled | Disables the parallel port |

To deactivate the parallel port, select the *Disabled* option. 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 4-5 lists the different operation modes.

Table 4-5 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) for the operation mode parameter. It allows you to select DMA channel 1 or DMA channel 3 depending on the available system resource.

4.4.3 Onboard PS/2 Mouse (IRQ12)

This parameter enables or disables the onboard PS/2 mouse. When set to *Enabled*, it allows you to use the onboard PS/2 mouse assigned with IRQ12. When set to *Disabled*, it deactivates the mouse and frees IRQ12 for the use of other devices.

4.4.4 Setup Password

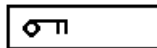
The Setup Password prevents unauthorized access to the BIOS utility.



Set jumper JP18 to pins 1-2 to enable the password function.

Setting a Password

1. Highlight the Setup Password parameter and press the left- or right-arrow key. The password prompt appears:



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



Exercise caution when typing your password because the characters do not appear on the screen.

3. Press **ENTER**. A prompt asks you to retype the password to verify your first entry.



4. Retype the password then press **ENTER**.

After setting the password, the system automatically sets the Setup Password parameter to *Present*. The next time you want to enter the BIOS utility, you must key-in your Setup password.

If You Forget the Password

If you forget your password, you must return the configuration values stored in CMOS to their default values. Should this happen, call your dealer for assistance.

4.4.5 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, follow the same procedure as in setting the Setup password.

4.5 PCI System Configuration

The PCI System Configuration allows you to specify the settings for your PCI devices.

| 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 | | [--] | [--] | [--] | [--] |
| *PCI Slot 6 | | [--] | [--] | [--] | [--] |
| VGA Palette Snoop [Disabled] | | | | | |
| Onboard SCSI [Disabled] | | | | | |
| Boot Device [Disabled] | | | | | |
| ↑↓ = Move Highlight Bar, → ← = Change Setting | | | | | |
| PgDn/PgUp = Move Screen, Esc = Exit | | | | | |

4.5.1 PCI IRQ Setting

This parameter allows for Auto or Manual configuration of PCI devices. If you use plug-and-play (PnP) devices, you can keep the default setting Auto. The system then automatically configures the PnP devices. If your PCI device is not a PnP, you can manually assign the interrupt for each device. Refer to your manual for technical information about the PCI card.







If you set this parameter to Manual and you enabled the onboard SCSI, make sure that you assign the onboard SCSI IRQ to PCI Slot 4.

PCI Slots

These parameters allow you to specify the appropriate interrupt for each of the PCI devices. You can assign IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, IRQ12, IRQ14, or IRQ15 to the slots.



Make sure that the interrupt you assign in any of the PCI slots are not used by other devices to avoid conflicts.

Press  or  to move between fields. Press  or  to select options.

4.5.2 VGA Palette Snoop

PCI devices support the palette snooping technique that enables the device to control access to their palette registers. Set this parameter to `Enabled` if you installed a video card in the ISA bus slot. Set this parameter to `Disabled` if you don't have a video card installed.

4.5.3 Onboard SCSI

This parameter allows you to enable or disable the SCSI feature.

Boot Device

This parameter allows you to enable or disable the onboard SCSI boot priority. Setting this item to `Enabled` allows the onboard SCSI device to be the first priority boot device.

4.6 Non-PnP ISA Card Configuration

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

| Non-PnP ISA Card Configuration | | Page 1/3 |
|--|----------------------------|------------------|
| IRQ/DMA | | |
| IRQ 00 ... [---]* | IRQ 08 ... [---]* | DMA 0 ... [No] |
| IRQ 01 ... [---]* | IRQ 09 ... [No] | DMA 1 ... [No] |
| IRQ 02 ... [---]* | IRQ 10 ... [No] | DMA 2 ... [---]* |
| IRQ 03 ... [No] | IRQ 11 ... [No] | DMA 3 ... [No] |
| IRQ 04 ... [No] | IRQ 12 ... [No] | DMA 4 ... [---]* |
| IRQ 05 ... [No] | IRQ 13 ... [---]* | DMA 5 ... [No] |
| IRQ 06 ... [---]* | IRQ 14 ... [---]* | DMA 6 ... [No] |
| IRQ 07 ... [No] | IRQ 15 ... [No] | DMA 7 ... [No] |
| Expansion ROM Region | | |
| C8000h - CBFFFh [No] | D4000h - D7FFFh [No] | |
| CC000h - CFFFFh [No] | D8000h - DBFFFh [No] | |
| D0000h - D3FFFh [No] | DC000h - DFFFFH [No] | |
| ↑↓ = Move Highlight Bar, → ← = Change Setting PgDn/PgUp = Move Screen, Esc = Exit | | |



The grayed items (denoted with asterisks) have fixed settings and are not user-configurable.

| Non-PnP ISA Card Configuration | | | Page 2/3 |
|--|-------------------|--------------------|----------|
| I/O Region | | | |
| 100h-10Fh .. [No] | 200h-20Fh . [No] | 300h-30Fh .. [No] | |
| 110h-11Fh .. [No] | 210h-21Fh . [No] | 310h-31Fh .. [No] | |
| 120h-12Fh .. [No] | 220h-22Fh . [No] | 320h-32Fh .. [No] | |
| 130h-13Fh .. [No] | 230h-23Fh . [No] | 330h-33Fh .. [No] | |
| 140h-14Fh .. [No] | 240h-24Fh . [No] | 340h-34Fh .. [No] | |
| 150h-15Fh .. [No] | 250h-25Fh . [No] | 350h-35Fh .. [No] | |
| 160h-16Fh .. [No] | 260h-26Fh . [No] | 360h-36Fh .. [No] | |
| 170h-17Fh .. [No] | 270h-27Fh . [No] | 370h-37Fh .. [No] | |
| 180h-18Fh .. [No] | 280h-28Fh . [No] | 380h-38Fh .. [No] | |
| 190h-19Fh .. [No] | 290h-29Fh . [No] | 390h-39Fh .. [No] | |
| 1A0h-1AFh .. [No] | 2A0h-2AFh . [No] | 3A0h-3AFh .. [No] | |
| 1B0h-1BFh .. [No] | 2B0h-2BFh . [No] | 3B0h-3BFh .. [No] | |
| 1C0h-1CFh .. [No] | 2C0h-2CFh . [No] | 3C0h-3CFh .. [No] | |
| 1D0h-1DFh .. [No] | 2D0h-2DFh . [No] | 3D0h-3DFh .. [No] | |
| 1E0h-1EFh .. [No] | 2E0h-2EFh . [No] | 3E0h-3EFh .. [No] | |
| 1F0h-1FFh .. [---]* | 2F0h-2FFh . [No] | 3F0h-3FFh .. [No] | |
| ↑↓ = Move Highlight Bar, → ← = Change Setting PgDn/PgUp = Move Screen, Esc = Exit | | | |

| Non-PnP ISA Card Configuration | | Page 3/3 |
|--|------|----------|
| Local Memory Region | | |
| 1MB - 2MB | [No] | |
| 2MB - 3MB | [No] | |
| 3MB - 4MB | [No] | |
| 4MB - 5MB | [No] | |
| 5MB - 6MB | [No] | |
| 6MB - 7MB | [No] | |
| 7MB - 8MB | [No] | |
| 8MB - 9MB | [No] | |
| 9MB - 10MB | [No] | |
| 10MB - 11MB | [No] | |
| 11MB - 12MB | [No] | |
| 12MB - 13MB | [No] | |
| 13MB - 14MB | [No] | |
| 15MB - 16MB | [No] | |
| ↑↓ = Move Highlight Bar, → ← = Change Setting PgDn/PgUp = Move Screen, Esc = Exit | | |



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

4.6.1 IRQ/DMA

This parameter allows you to assign specific IRQ and DMA channels to non-PnP ISA cards. The system will not use such IRQ and DMA channels when it automatically assigns channels to PnP cards.

4.6.2 Expansion ROM Region

This parameter specifies the memory regions available for add-on card use. It allows you to manually assign specific regions to non-PnP cards so that the system will not use those regions anymore when it automatically configures PnP cards.

4.6.3 I/O Region

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

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

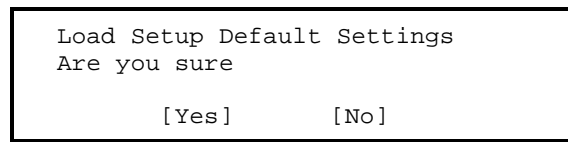
4.6.4 Local Memory Region

The items under this parameter allow you to reserve areas in the local memory region for non-PnP cards. When the system configures PnP cards, the memory areas that you marked will not be used anymore.

4.7 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. If you want to change the settings of these items, disable the Fast Boot Mode parameter in the Basic System Configuration menu.

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



Select [Yes] to load the default settings.

4.8 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 **ESC** to leave the system configuration setup. If there is any change in the BIOS utility functions, the following screen appears:

```
Do you want to save CMOS data?
```

```
[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 **ENTER**.

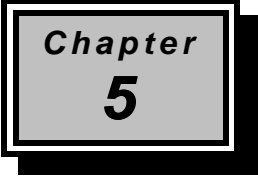
4.9 IDE Hard Disk Types

| Type | Cylinders | Heads | Sectors Per Track |
|------|----------------------------------|-------|-------------------|
| None | (indicates SCSI or no hard disk) | | |
| 1 | 306 | 4 | 17 |
| 2 | 615 | 4 | 17 |
| 3 | 615 | 6 | 17 |
| 4 | 940 | 8 | 17 |
| 5 | 940 | 6 | 17 |
| 6 | 615 | 4 | 17 |
| 7 | 462 | 8 | 17 |
| 8 | 733 | 5 | 17 |
| 9 | 900 | 15 | 17 |
| 10 | 820 | 3 | 17 |
| 11 | 855 | 5 | 17 |
| 12 | 855 | 7 | 17 |
| 13 | 306 | 8 | 17 |
| 14 | 733 | 7 | 17 |
| 15 | (reserved) | | |
| 16 | 612 | 4 | 17 |
| 17 | 977 | 5 | 17 |
| 18 | 977 | 7 | 17 |
| 19 | 1024 | 7 | 17 |
| 20 | 733 | 5 | 17 |
| 21 | 733 | 7 | 17 |
| 22 | 733 | 5 | 17 |
| 23 | 306 | 4 | 17 |
| 24 | 612 | 4 | 17 |
| 25 | 306 | 4 | 17 |
| 26 | 612 | 4 | 17 |
| 27 | 698 | 7 | 17 |

| Type | Cylinders | Heads | Sectors Per Track |
|------|-----------|-------|-------------------|
| 28 | 976 | 5 | 17 |
| 29 | 306 | 4 | 17 |
| 30 | 611 | 4 | 17 |
| 31 | 732 | 7 | 17 |
| 32 | 1023 | 5 | 17 |
| 33 | 751 | 8 | 17 |
| 34 | 755 | 16 | 17 |
| 35 | 731 | 13 | 26 |
| 36 | 980 | 15 | 17 |
| 37 | 936 | 16 | 17 |
| 38 | 981 | 5 | 17 |
| 39 | 981 | 10 | 17 |
| 40 | 762 | 8 | 39 |
| 41 | 980 | 5 | 17 |
| 42 | 832 | 8 | 33 |
| 43 | 683 | 12 | 38 |
| 44 | 513 | 16 | 38 |
| 45 | 776 | 8 | 33 |
| 46 | 683 | 16 | 38 |
| 47 | 832 | 6 | 33 |
| 48 | 615 | 2 | 34 |
| 49 | 989 | 16 | 63 |
| 50 | 823 | 4 | 38 |
| 51 | 1001 | 15 | 17 |
| 52 | 1024 | 17 | 22 |
| 53 | 723 | 13 | 51 |
| 54 | 548 | 8 | 38 |
| 55 | 1013 | 4 | 41 |
| 56 | 929 | 15 | 17 |

| Type | Cylinders | Heads | Sectors Per Track |
|------|------------|-------|-------------------|
| 57 | 817 | 14 | 36 |
| 58 | 723 | 13 | 81 |
| 59 | 802 | 4 | 39 |
| 60 | 1024 | 9 | 17 |
| 61 | 895 | 5 | 55 |
| 62 | (reserved) | | |
| 63 | 966 | 10 | 34 |
| 64 | 1024 | 8 | 17 |
| 65 | 1024 | 11 | 17 |
| 66 | 918 | 11 | 17 |
| 67 | 965 | 14 | 49 |
| 68 | 1024 | 10 | 17 |
| 69 | 1024 | 12 | 17 |
| 70 | 1024 | 13 | 17 |
| 71 | 1024 | 14 | 17 |
| 72 | 1024 | 11 | 50 |
| 73 | 1024 | 16 | 17 |
| 74 | 918 | 15 | 17 |
| 75 | 1010 | 16 | 51 |
| 76 | 1024 | 5 | 17 |
| 77 | 1024 | 8 | 17 |
| 78 | (reserved) | | |
| 79 | 1001 | 15 | 32 |
| 80 | 1024 | 16 | 63 |
| 81 | 1024 | 7 | 17 |
| 82 | 988 | 16 | 52 |
| 83 | 1024 | 15 | 17 |
| 84 | 776 | 8 | 33 |
| 85 | 926 | 13 | 17 |

| Type | Cylinders | Heads | Sectors Per Track |
|--------------|----------------|-------|-------------------|
| 86 | 805 | 4 | 26 |
| 87 | 976 | 5 | 17 |
| 88 | 685 | 16 | 38 |
| 89 | 1011 | 15 | 22 |
| 90 | 997 | 10 | 53 |
| 91 | 985 | 13 | 32 |
| 92 | 816 | 15 | 32 |
| 93 | 968 | 5 | 17 |
| 94 | 903 | 8 | 46 |
| 95 | 966 | 5 | 34 |
| 96 | 535 | 10 | 50 |
| 97 | 715 | 10 | 50 |
| 98 | 1016 | 16 | 63 |
| 99 | 996 | 16 | 63 |
| Auto or User | (User-defined) | | |

A graphic consisting of a grey square with a black border, containing the text 'Chapter 5'. The square is set against a black rectangular background that is slightly offset to the right and bottom.

Chapter
5

Diagnostics and Utilities

5.1 ASM Pro

The ASM Pro is a server management tool based on the Simple Network Management Protocol (SNMP). It detects server problems related to the CPU thermal condition, 5V/3.3V detection, or PCI bus utilization calculation.

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.

The ASM Pro consists of two major parts:

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

Refer to the ASM Pro user's manual for more information.

5.2 Remote Diagnostic Management

The Remote Diagnostic Management (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 return 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 RDM user's manual for more information.

5.3 EISA Configuration Utility v3.0

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. The program stores the configuration information the computer's nonvolatile memory where it is available whenever you use your computer.

5.3.1 Functions

The ECU does the following:


















- 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 board by providing the appropriate switch and jumper settings.
- Notifies you immediately 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.
- Allows you to set the computer's date and time.

5.3.2 Making Menu Selections

You can either use the keyboard or the mouse to make menu selections in the EISA Configuration Utility program.

Using the Keyboard

Table 5-1 Keyboard Function Keys

| Key | Function |
|--|--|
| Tab or  | Moves the cursor to the next field |
|  + Tab or  | Moves the cursor to the previous field |
|  or  | Moves the cursor between items within a list |
|  | Selects an item |
|  | Cancels the most recent action |
|  ,  ,  or  | Scrolls a screen |
|  | Moves the cursor to the top of a list |
|  | Moves the cursor to the bottom of a list |
|  +  | Moves the cursor to the beginning of a menu |
|  +  | Moves the cursor to the end of a menu |

Using the mouse

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.

5.3.3 Getting Help

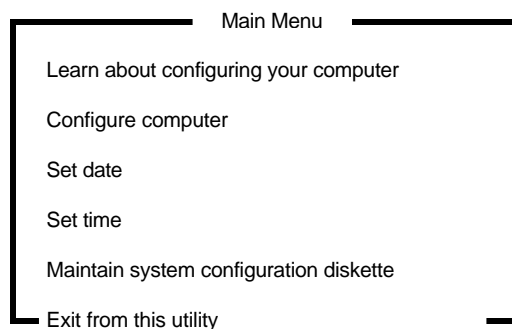
The EISA Configuration Utility automatically displays information about each choice on the Main Menu and the second-level menus. The utility also allows you to access an online help once you begin the configuration process.

Press **F1** to display the help menu. Press **ESC** to remove the help menu on the screen.

5.3.4 Program Menus

Follow these steps to use the basic ECU functions:

1. Insert the System Configuration diskette in drive A and turn on the computer. (Reset the system if the power is already on.) The ECU logo screen appears.
2. Press any key to continue. A welcome screen appears.
3. Press **ENTER** to display the main menu.



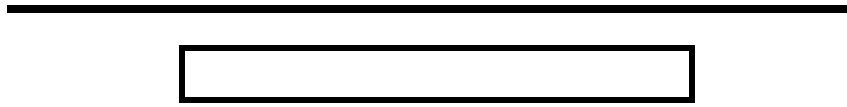


Figure 5-1 ECU Main Menu

Learn About Configuring Your Computer

This item is highlighted when you first enter the main menu. It gives an overview on how to configure your computer with this utility. Press **ENTER** to select this item. Then press the **↑** and **↓** keys to move up or down the text.

Configure Computer

This option allows you to view or change the system configuration. Highlight the option `Configure computer` from the main menu then press **ENTER** to display the following screen.

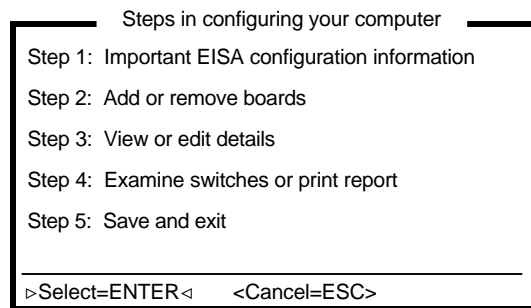


Figure 5-2 Steps in Configuring Your Computer

See section 5.3.5 for more information on configuring your computer.

Setting the Date and Time

The Set Date and Set Time options allow you to set your computer date and time. Once you set the date and time, your computer will keep track of it, even when the power is turned off.



If you want to set the date and time for your computer, you must do so before you configure the system.

Maintain System Configuration Diskette

The System Configuration diskette contains the Configuration Utility and CFG files. When you run the utility to configure your computer, the configuration information is stored in the computer's nonvolatile memory and in a system configuration information (SCI) file, which is stored in the System Configuration diskette.

Select the **Maintain system configuration diskette** option from the main menu to display the following screen.

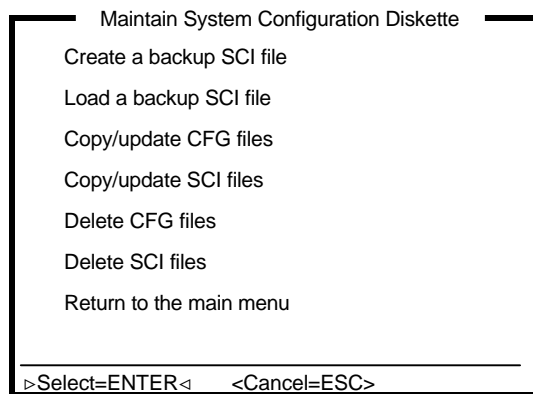


Figure 5-3 Maintain Configuration Diskette

Exit from this Utility

This selection exits the utility. The system reboots. If you do not have an operating system installed on your hard disk, replace the system utilities diskette in the diskette drive with an operating system diskette.



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

5.3.5 Configuring Your Computer for the First Time

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

1. Select `Configure computer` from the main menu. See section 5.3.4 on how to access the main menu. The `Steps in configuring your computer` screen appears.
2. Select `Step 1: Important EISA configuration information:` from the menu to display the following screen.

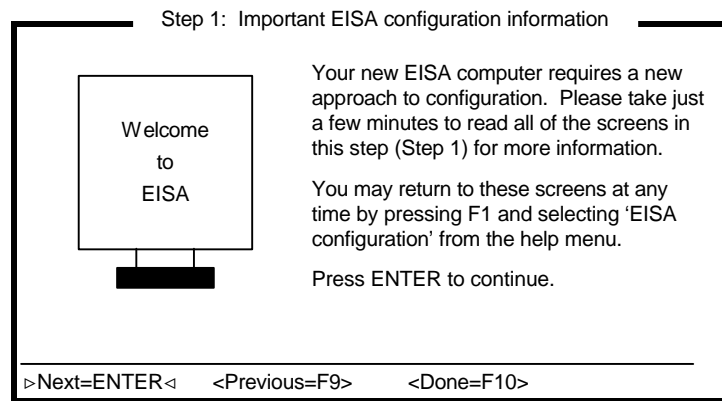


Figure 5-4 Important EISA Configuration Information

3. Read through the information then press `F10` when you are done.
4. Select `Step 4: Examine switches or print report`, then press `ENTER` to display the screen as in Figure 5-5.

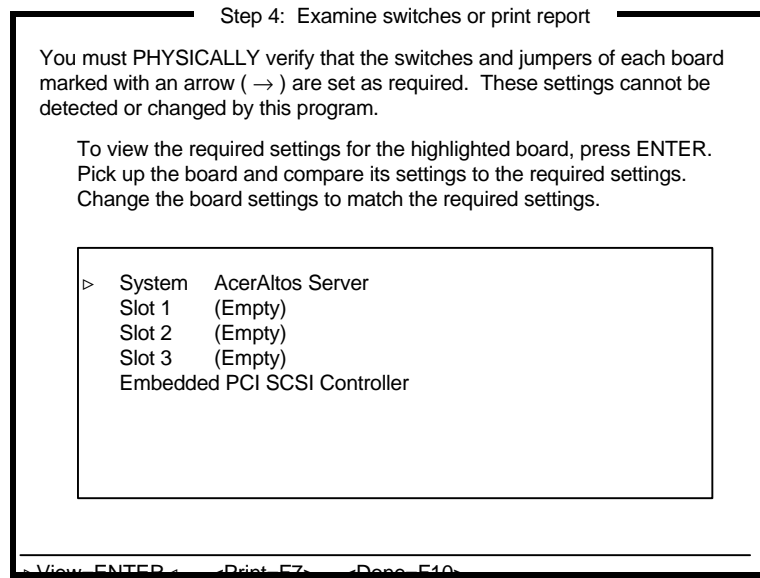


Figure 5-5 Examine Switches or Print Report

5. 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.
6. 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.
7. Scroll through the switch and jumper settings for the board, and 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 System Configuration diskette after printing is complete.

9. Press **F10** when you are through. The Steps in configuring your computer reappears.

10. Select Step 5: Save and exit then press **ENTER**. The following screen appears.

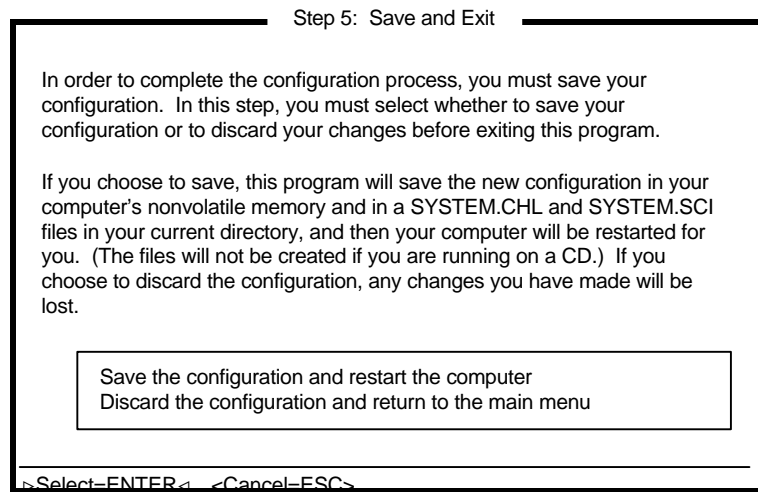


Figure 5-6 Save and Exit

11. To save your changes, select the 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 System Configuration diskette.

5.3.6 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



If you are adding a PCI device or a plug-and-play ISA board, proceed to step 5.

PCI devices and plug-and-play (PnP) ISA boards do not require a corresponding CFG file. The configuration information is already stored on the board.

Follow these steps when adding a board:

1. Select `Maintain system configuration diskette` from the main menu then press `ENTER`.
2. From the screen that appears, select `Copy/update CFG files` then press `ENTER`. A list of CFG files from your system configuration diskette appears.



The EISA Configuration Utility uses the CFG file to configure the board into the system without creating conflict with other boards or devices.

3. Select the appropriate CFG files then press `ENTER` to return to `Maintain system configuration diskette` screen.
4. Select the option `Return to the main menu` then press `ENTER`.
5. From the main menu, select the option `Configure computer` then press `ENTER`. The screen `Steps in configuring your computer` appears.

6. Select Step 2: Add or remove boards then press **ENTER** to display the following screen.

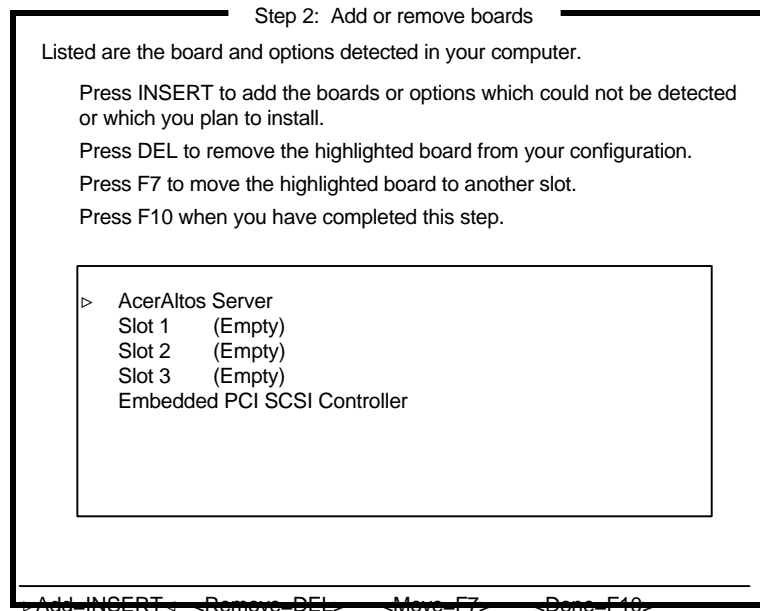


Figure 5-7 Add or Remove Boards

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.

7. If you want to add or have already added a board, highlight a slot and press **INS** to select an option from the list that appears.
8. Press **F10** when done.
9. Follow steps 4 to 13 in section 5.3.5 to complete your configuration.

Removing a Board

Follow these steps when you remove a board:

1. Do steps 5 and 6 in section 5.3.6.
2. Select the board that you want to remove from the configuration and press **[DEL]**. A remove confirmation screen appears.
3. Press **[ENTER]**. The Step 2: Add or remove boards screen reappears.
4. Press **[F10]** when done.
5. Follow steps 4 to 13 in section 5.3.5 to complete your configuration.

5.3.7 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 main menu then press **[ENTER]** to display the screen as in Figure 5-8.

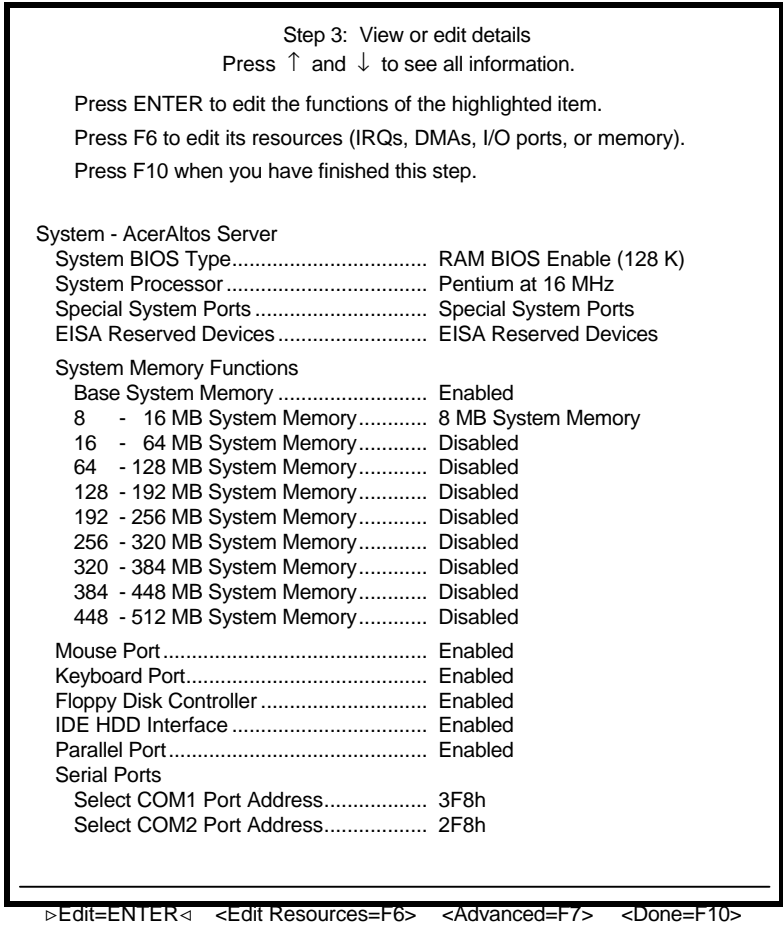
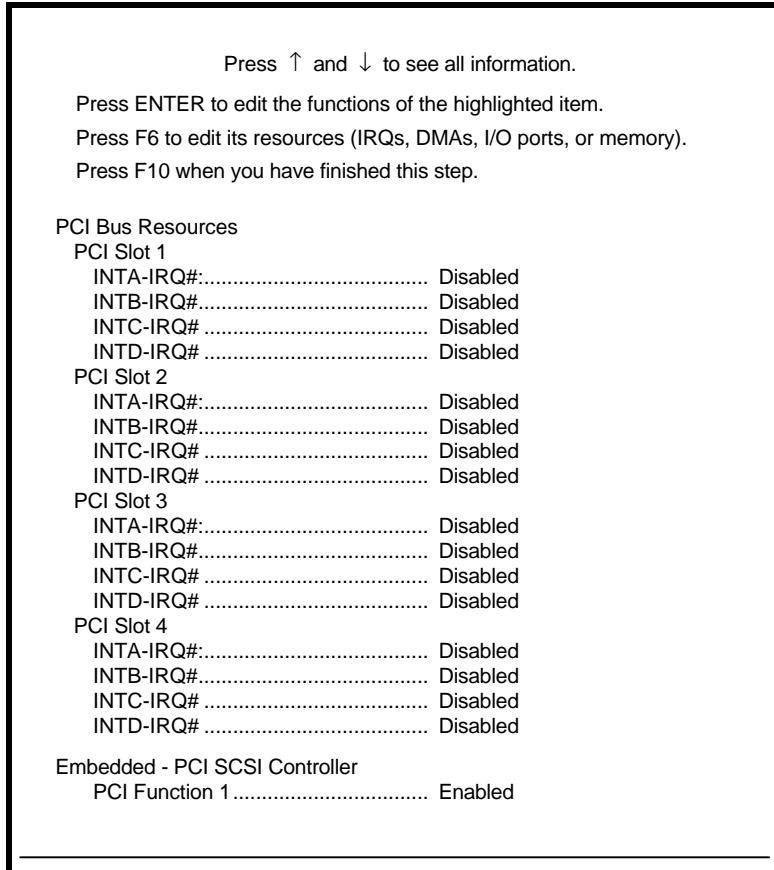


Figure 5-8 View or Edit Details

See the next page for continuation of the above screen.



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

Figure 5-8 View or Edit Details (continued from previous page)



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