# *AcerAltos 19000*

*User's Guide*

## Document History

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# IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions carefully. Save them 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. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace the outlet. Do not defeat the purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
10. If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

12. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.

13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    a. When the power cord or plug is damaged or frayed

    b. If liquid has been spilled into the product

    c. If the product has been exposed to rain or water

    d. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.

    e. If the product has been dropped or the cabinet has been damaged

    f. If the product exhibits a distinct change in performance, indicating a need for service

14. Use only the proper type of power supply cord (provided in your keyboard / manual accessories box) for this unit. It should be a detachable type: UL listed / CSA certified, type SJT, rated 12A 125V minimum. Maximum length is 15 feet (4.6 meters).

## FCC Class A Radio Frequency Interference Statement

**Note:**

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

1. Reorient or relocate the receiving antenna.

2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

4. Consult the dealer or an experienced radio / television technician for help.

**Notice 1:**

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

**Notice 2:**

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

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# Conventions

The following conventions are used in this manual:

| | |
|---|---|
| a , e , s , etc. | Represents the actual keys that you have to press on the keyboard. |
|  | **NOTE**<br>Gives bits and pieces of additional information related to the current topic. |
|  | **WARNING**<br>Alerts you to any damage that might result from doing or not doing specific actions. |
|  | **CAUTION**<br>Suggests precautionary measures to avoid potential hardware or software problems. |
|  | **IMPORTANT**<br>Reminds you to take specific action relevant to the accomplishment of the procedure at hand. |
|  | **TIP**<br>Tells how to accomplish a procedure with minimum steps through little shortcuts. |

# Chapter 1 System Introduction

## 1.1 Features

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

### 1.1.1 Intel® Pentium® Pro Processor

The Intel® Pentium® Pro processor is the heart of the AcerAltos 19000 system. Designed to work with the Intel 450 PCIset 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 two Intel Pentium Pro processors for a dual-processor configuration. In this configuration Symmetric MultiProcessing (SMP) significantly increases overall system performance. The AcerAltos 19000 system supports a wide range of applications running under MP operating systems such as WindowsNT, UNIX, and NetWare.

The CPU also incorporates first-level (L1) and second-level (L2) caches, an 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 design integrates both 16-KB first-level and 256 KB second-level cache. These caches produce high hit rates that reduce the processor's external memory bandwidth requirements.

## Advanced Peripheral Interrupt Controller (APIC)

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

## Bus Controller

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

## Pentium Pro Processor Architecture

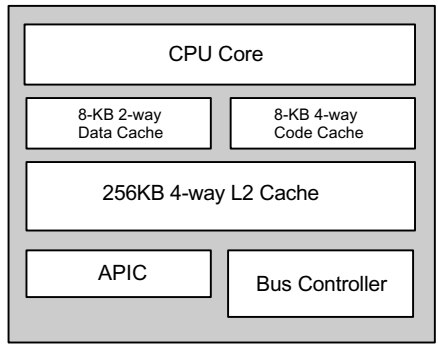



*Figure 1-1 Pentium Pro Processor Architecture*

## 1.1.2 System Architecture

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

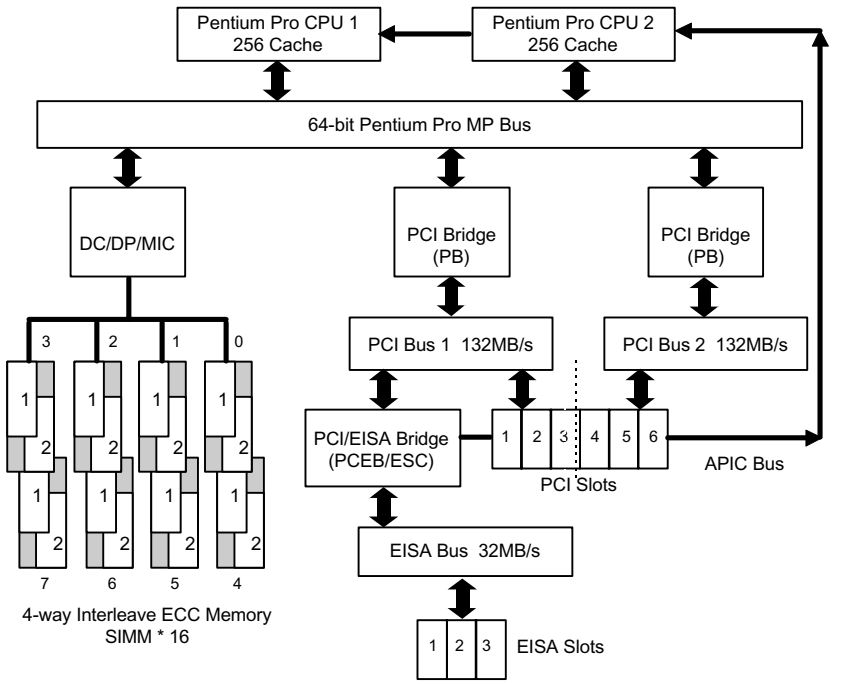



*Figure 1-2 System Architecture*

## 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 controller. It can handle as many as eight outstanding transactions at a time through a 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 to complete before it issues the next transaction. This produces significant improvement in 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 Gunning Transceiver Logic (GTL+) and a synchronous latched bus protocol that simplifies timing constraints. This protocol supports higher frequency system designs and along with GTL+, requires a low voltage which reduces electromagnetic interference (EMI) resulting in a lower power consumption.

## PCI and EISA Buses

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

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

### PCI Bridge (PB)

The PCI Bridge (PB) is an I/O subsystem solution for high-performance systems. The PB translates transactions between the system bus and the PCI buses using 32-byte buffers for inbound and outbound posting. The use of two PBs in the system creates an architecture that allows even faster data transfers.

### Memory Controller (MC)

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

## 1.1.3 SCSI Subsystem

The AcerAltos 19000 system supports an array of 14 hot-pluggable disk drive trays through two 7-slot SCSI backplane boards. The trays accommodate wide SCSI hard disks. With an onboard AIC-7880 SCSI controller, the burst transfer rate can reach 20 MB per second.

## 1.1.4 Server Management

Acer Server Manager (ASM) Pro, a server management feature, monitors voltage and CPU thermal stability, prevents data loss by prompt ECC memory error reporting, maximizes system resources by indicating PCI bus utilization, and promotes efficiency by minimizing system downtime. If this feature has been implemented, refer to the *Acer Server Manager* (*ASM) Pro User's Guide* for information.

Remote Device Manager (RDM) permits system diagnosis from a remote site through a modem. RDM facilitates fixing of certain detected problems, changing system configuration or rebooting in the event of system failure. If this feature has been implemented, refer to the RDM documentation for information.

### 1.1.5 Redundant Power Supply Subsystem

The system ships with two load-sharing power supply modules. Load sharing significantly extends the life of the power supplies. The power subsystem also supports a redundant configuration such that if one power supply fails, the other continues to provide system power.

A third power supply module is available as an option. This power supply module is redundant, but not load-sharing; however, if either the primary or secondary power supply module fails, the third power supply module load shares with the remaining power supply module.

An important segment of the power subsystem is the optional battery module. Providing backup support to the power supply modules, the battery automatically charges whenever the system is on. This gives a fully-configured system the ability to run through short interruptions in wall power or to continue supplying system power for up to eight minutes in the event of total AC power failure.

### 1.1.6 Security

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

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 section contains externally accessible hard disk drive bays and drive trays for wide SCSI drives. The AcerAltos 19000 ships with 7 drive trays in the left side.

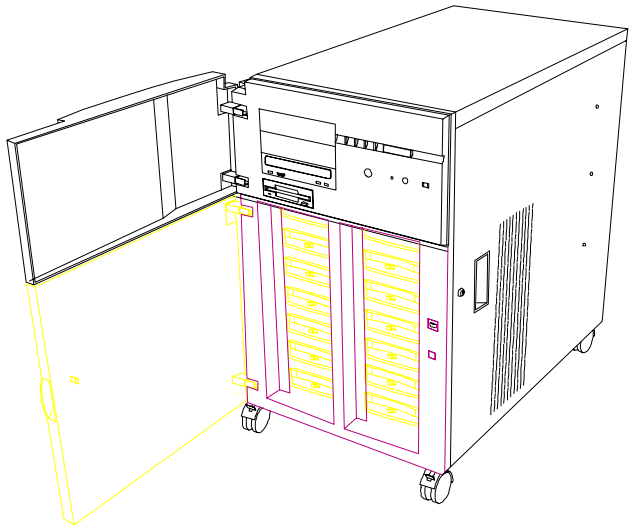


*Figure 1-3 Front Panel*

*The system keys are inside the front panel.*

## Front Panel Features

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

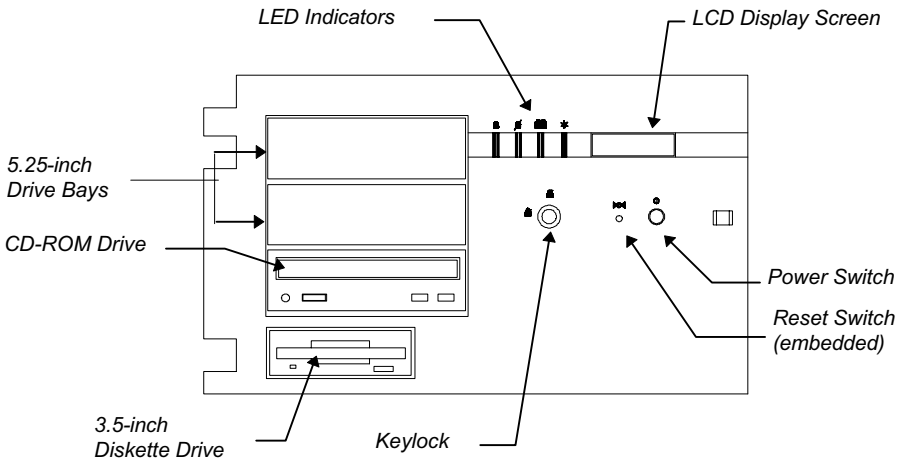



*Figure 1-4 Front Panel Features*

### CD-ROM Drive

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

### 3.5-inch Diskette Drive

A 3.5-inch diskette drive also comes with the basic system.

### 5.25-inch Drive Bays

Two empty 5.25-inch drive bays allow installation of additional externally-accessible 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 (Right to Left)*

| 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, but AC has failed and the system is running on battery power. |
| Battery Status   | **Green** | Indicates that a battery is present. |
| | **Red** | Indicates low battery power. |
| Hard Disk Failure  | **Green** | Indicates that all the hard disks installed in the backplane board are in good condition. |
| | **Red** | Indicates that one of the hard disks installed in the backplane board is bad. |
| Hard Disk Busy  | **Green** | Indicates that at least one of the hard disks is currently being accessed. |

## 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 hook up a special purpose driver to control the LCD module, this driver defines the messages.

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

*Table 1-2 LCD Messages*

| Message | Description |
|---|---|
| Hello! Welcome ! | This is the first message that appears on the LCD screen. This message indicates that the microcontroller is operational. |
| POST Checkpoints | During system Power-On Self-Test (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 the LCD screen. |
| Power #2 Fails ! | If the microcontroller detects that power supply module 2 is bad, it sends this message to the LCD screen. |
| Power #3 Fails ! | If the microcontroller detects that power supply module 3 is bad, it sends this message to the LCD screen. |
| Battery Low ! | This message indicates that battery power is running out. When this message appears, shutdown the system as soon as possible. |
| Power Fan Fails ! | This message indicates that one or more fans of the power subsystem failed. |

*Table 1-2 LCD Messages (continued)*

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

* An optional UPS provides a reliable power backup in case of a total AC power loss. To use the UPS feature, you must have Acer Server Manager (ASM) Pro software installed.

## RDM Button

The RDM button located on the lower right panel enables Remote Device Manager (RDM). If this feature has been implemented, refer to the RDM documentation for information .

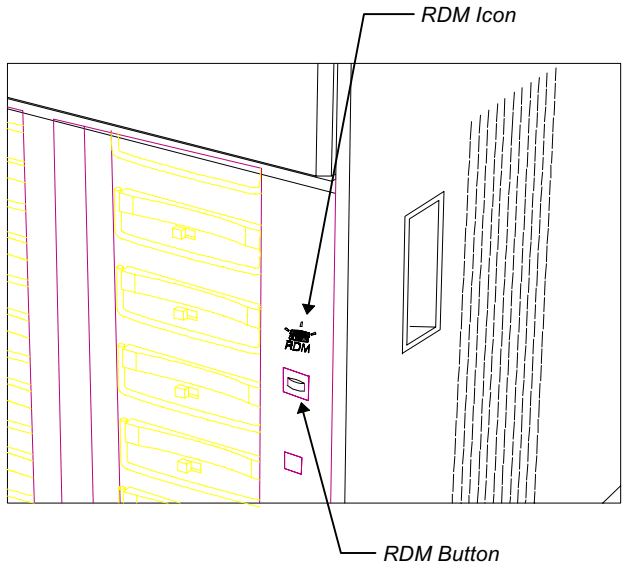


*Figure 1-5 RDM Button*

## 1.2.2 Rear Panel

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

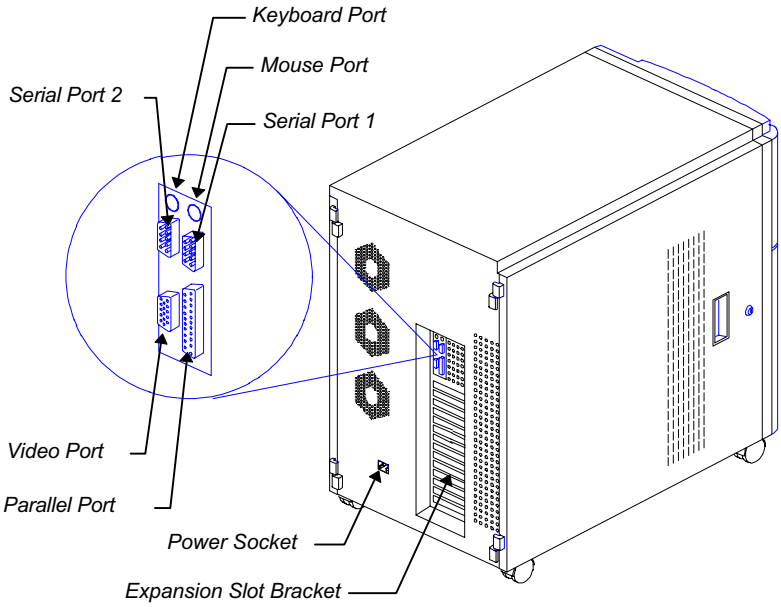



*Figure 1-6 Rear Panel*

# Chapter 2 Setting Up the System

## 2.1 Pre-installation

### 2.1.1 Selecting a Site

Before unpacking and installing the system, select a suitable site for the maximum efficiency of the system. The system is suitable for 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 User's Guide (this manual)
- Acer StartUp CD Software Kit
- Acer Server Manager (ASM) Pro User's Guide (if this feature has been implemented)
- Remote Device Manager (RDM) documentation (if this feature has been implemented)
- System keys (inside front 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.

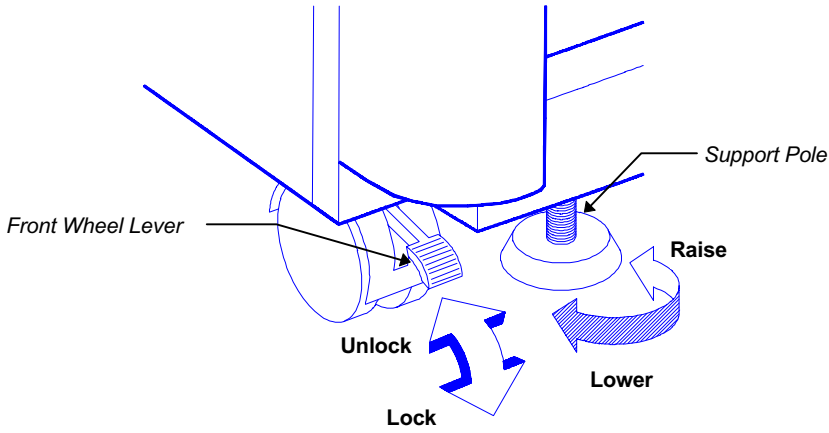



*Figure 2-1 Front Wheel Lever and Support Pole*

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.

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

3. Connect the power cable to the power socket on the rear panel and connect the other end to a grounded outlet.

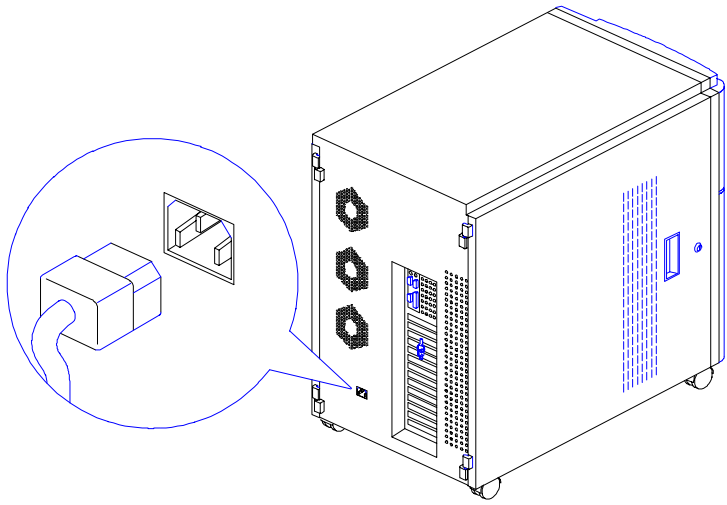


*Figure 2-2 Connecting the Power Cable*

## 2.2 Basic Connections

The system unit, keyboard, mouse, and monitor constitute the basic system. Connect these peripherals first to test for basic system functionality before connecting other peripherals.

### 2.2.1 Keyboard

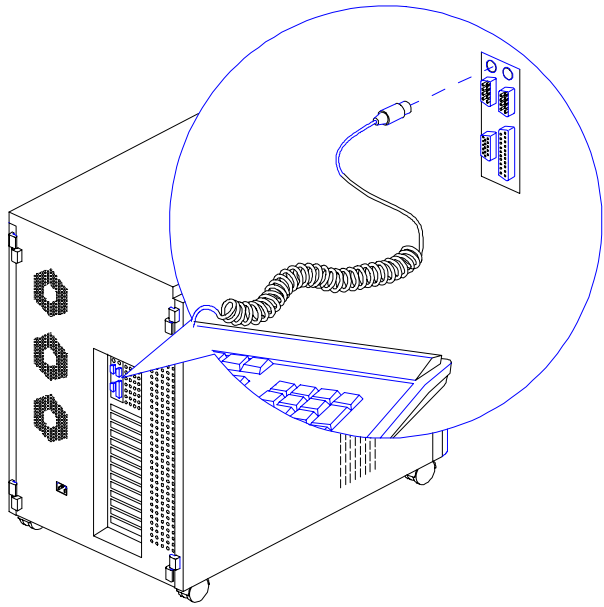


*Figure 2-3 Connecting a Keyboard*

## 2.2.2 Mouse

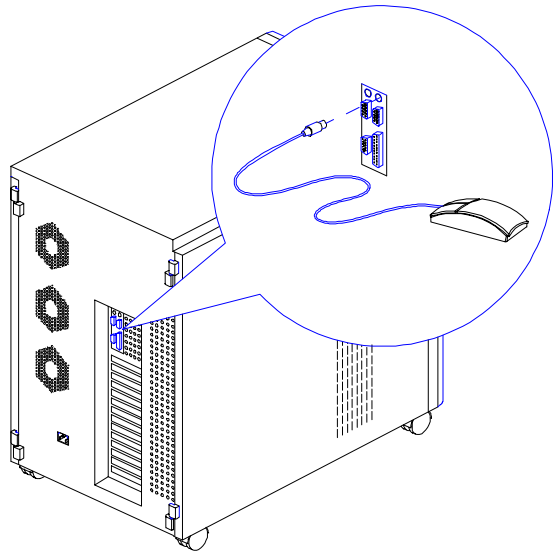


*Figure 2-4 Connecting a Mouse*

## 2.2.3 VGA Monitor

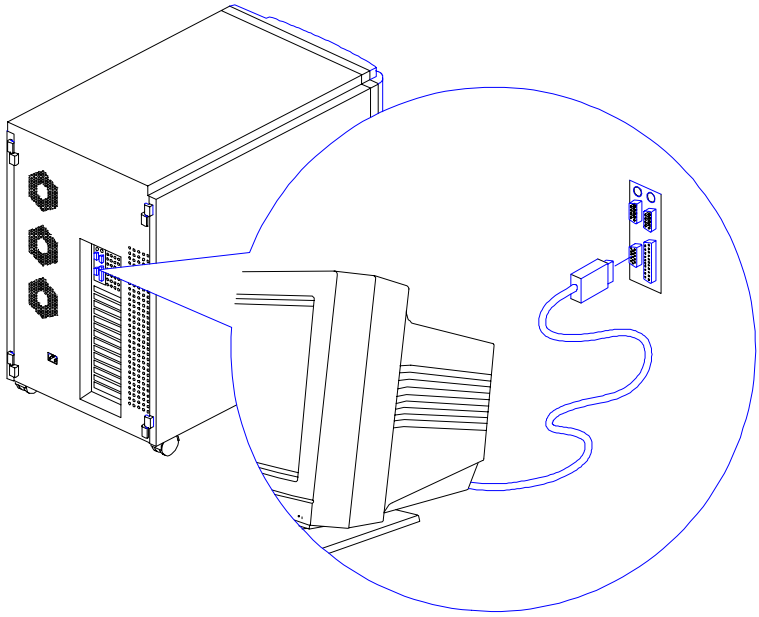


*Figure 2-5 Connecting a VGA Monitor*

## 2.3 System Startup

After making sure that you have set up the system properly and connected all the required cables, you may now unlock the front panel security (as described below) and 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 powering on, open the lock with the key that comes with the system. (The system keys are inside the front panel.)

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

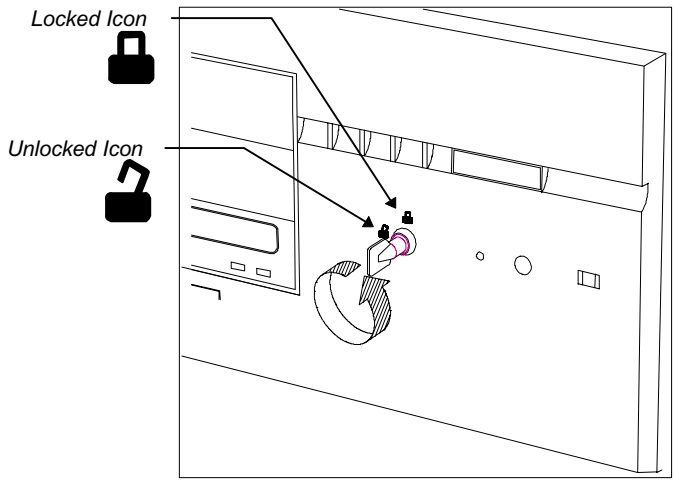



*Figure 2-6 Unlocking the Front Panel Security*

*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 if it failed any of the tests. See Table 1-2 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.*

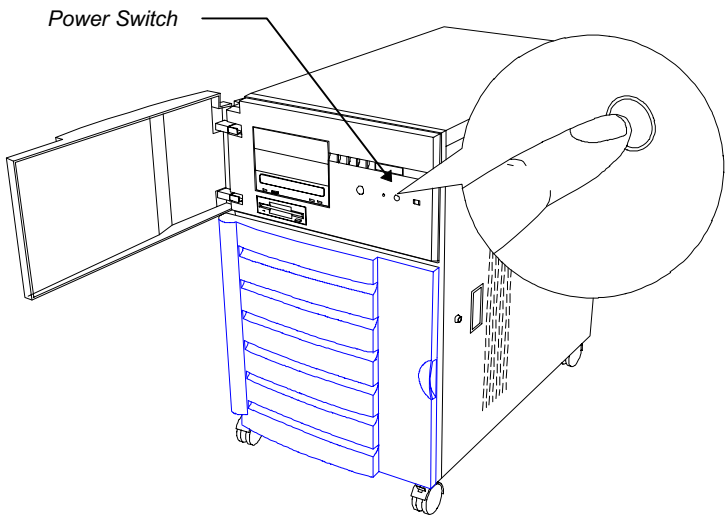



*Figure 2-7 System Power On*

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 a 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 is not completely unlocked.

✓ Insert the front panel key and turn it counter-clockwise until it points to the unlocked icon. See Figure 2-6.

### ☛ The external power cable may be loose.

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

### ☛ No power comes from the grounded power outlet.

✓ Have an electrician check your power outlet.

### ☛ The right panel or left panel door, or both, may be ajar.

✓ Close the panel door(s) completely.

The system has two microswitches located 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 system power. This provides additional system security against unauthorized access.

See Figure 2-8 for the microswitch location.

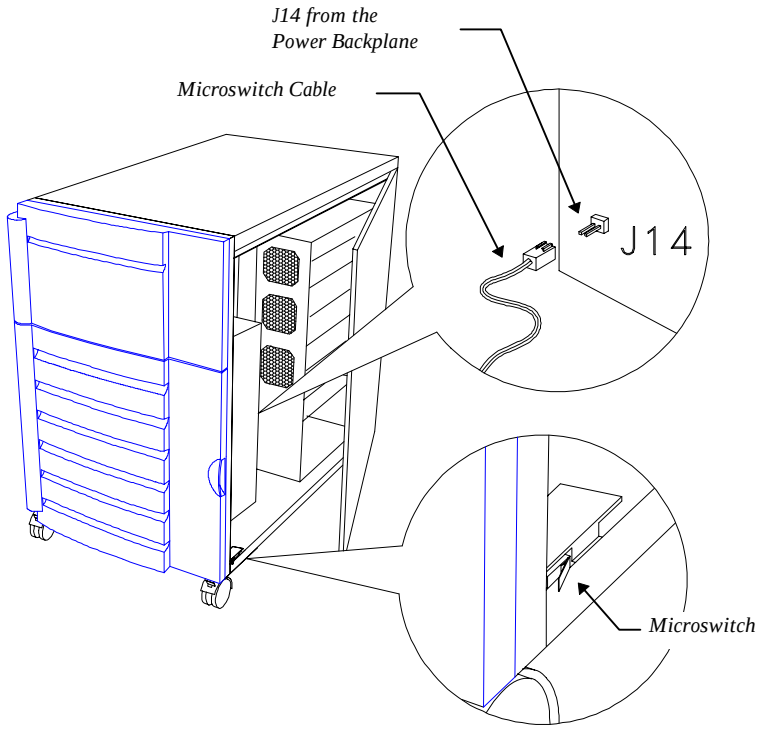



*Figure 2-8 Microswitch Location*

## ☛ Loose or improperly connected internal power cables.

✓ Refer to Appendix C for the power cable connections and check the internal cable connections. If you are not confident you can perform this step, ask a qualified technician to help you.

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

# Chapter 3 System Housing

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

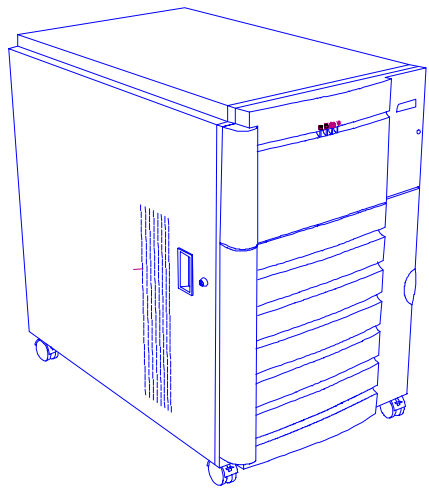


*Figure 3-1 System Housing*

## 3.1 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. In the rear section 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-pluggable 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 inside the left panel of the system housing.

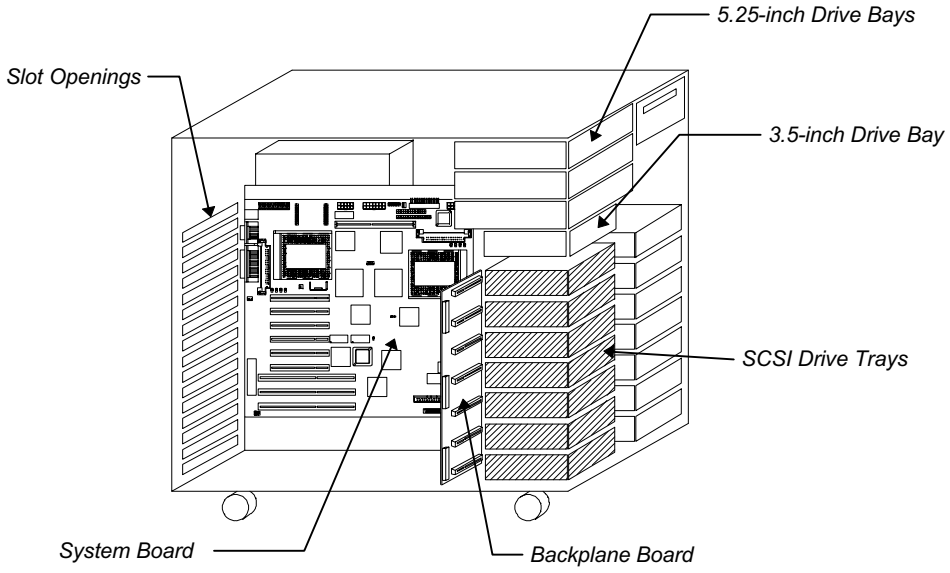



*Figure 3-2 Left Panel System Components*

## Right Panel

The power subsystem fills up most of the right panel. It consists of a power backplane and a metal rack that holds up to three 400-watt power supply modules. The bottom compartment of the power supply rack can hold an optional UPS module with battery and charger. The rear section contains the three built-in power supply fans to cool down components and regulate air flow inside each power supply. See Appendix C for details on the power subsystem.

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

Figure 3-3 shows the components inside the right panel.

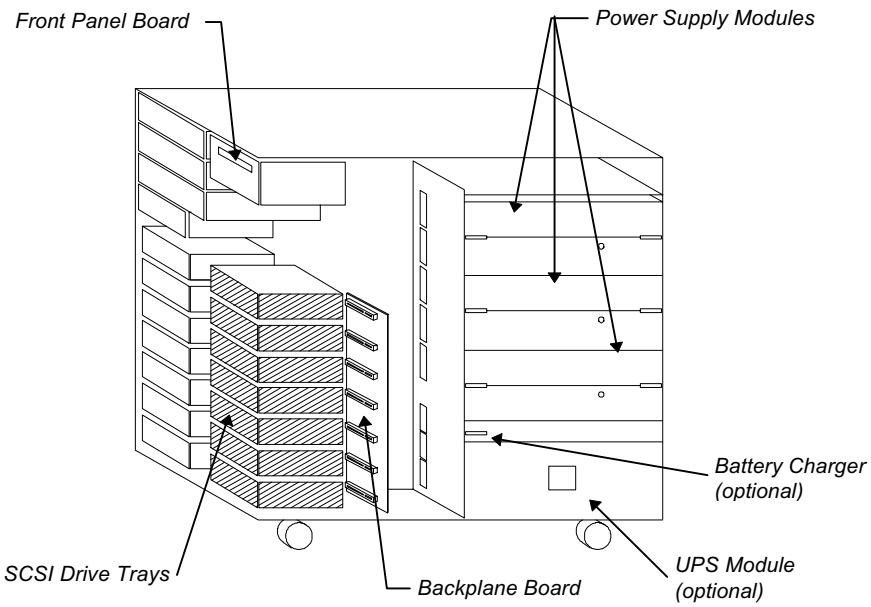



*Figure 3-3 Right Panel System Components*

## 3.2 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 doors have security locks to prevent unauthorized access to the internal components.

*Turn off the system and disconnect the AC power cord before opening the system housing.*

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 | ❶Upper front door plus the upper front panel cover<br>❷Left panel door |
| Installing or removing a SCSI backplane board (left side) | ❶Lower front door<br>❷Left panel door |
| Installing or removing a SCSI backplane board (right side) | ❶Lower front door<br>❷Right panel door |
| Installing or removing hot-pluggable SCSI hard disks | ❶Lower front door |
| Installing or removing the system board, memory board, or expansion boards | ❶Left panel door |
| Installing or removing the power supply modules, UPS, or battery charger | ❶Right panel door |
| Connecting or arranging cables | ❶Left panel door<br>or<br>Right panel door |

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

1. Unlock the door with the key (when necessary).

2. Open it to more than a 45° angle.

3. Lift it up for about an inch, then move the door away from the housing.

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

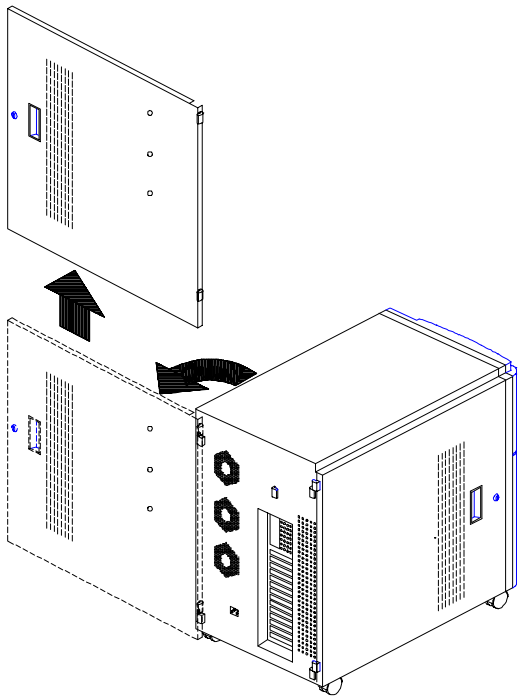


*Figure 3-4 Removing the Right Panel Door*

Follow the same steps to remove the left panel door.

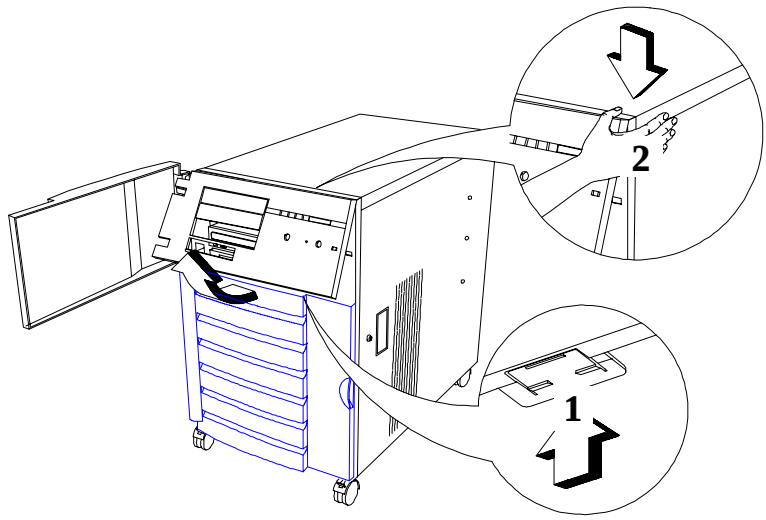



*Figure 3-5 Removing the Upper Front Panel Cover*

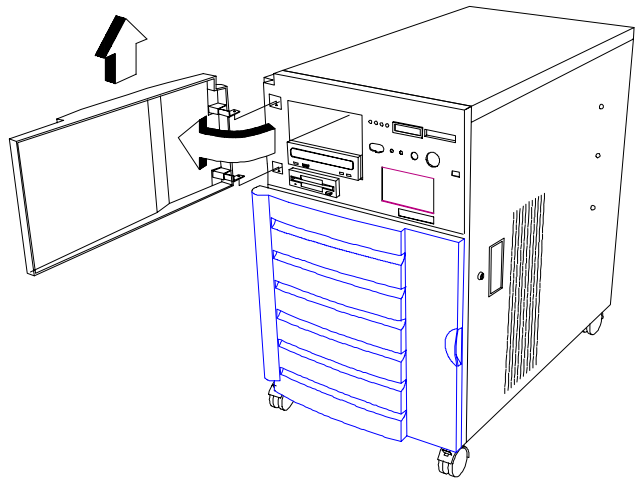


*Figure 3-6 Removing the Upper Front Panel Door*

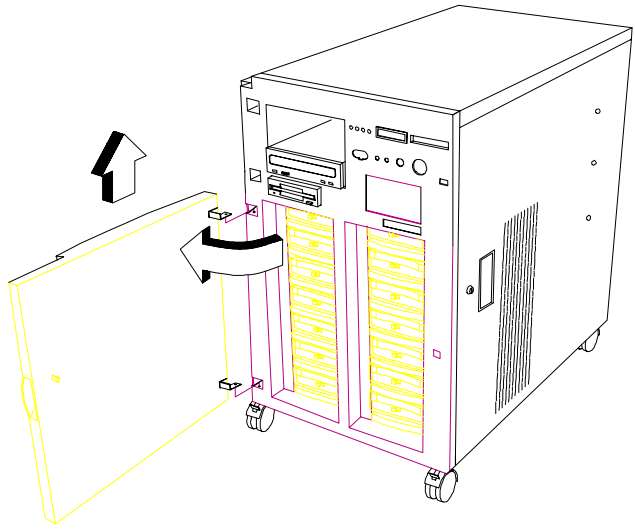


*Figure 3-7 Removing the Lower Front Panel Door*

## 3.3 SCSI Backplane Boards

There are two SCSI backplane boards standard in the AcerAltos 19000. This section gives a brief description of the boards. Refer to Appendix B for a detailed discussion, including information about backplane board major components, jumper settings, hard disk ID feature, and channel configurations (single- and dual-channel).

The SCSI backplane boards provide a convenient interface between the SCSI drives and the system board. Each board 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.

### 3.3.1 Features

Each 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 disk drives
- Each backplane board can be configured as 'split' (2-channels) (default) or combined into a single SCSI channel
- SCSI ID strapping that allows wide SCSI HDD ID configuration through the backplane instead of configuring individual drive IDs

## 3.4 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 Chapter 1 for details about front panel board functions.

Figure 3-8 shows the front panel board connections with the internal components.

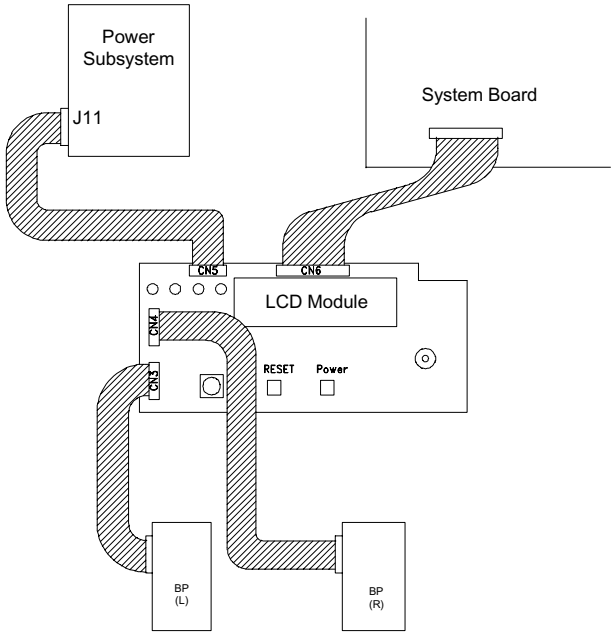



*Figure 3-8 Front Panel Board Connections*

## 3.5 Power Subsystem

This section gives a brief description of the power subsystem. Refer to Appendix C for a detailed discussion.

The power subsystem consists of a power backplane, swappable power supply modules, and an optional 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 load-sharing (across two), redundant configuration.

## 3.6 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.*

## 3.7 Installing Additional Devices

The housing supports one 3.5-inch and three 5.25-inch devices. The empty drive bays on the upper front panel allow you to install additional devices such as a Digital Audio Tape (DAT) drive or another hard disk drive.

*Your basic system ships standard with a CD-ROM drive and a 3.5-inch diskette drive already installed.*

Follow these steps to install a device:

1. Remove the upper front panel cover and the upper front panel door. 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.

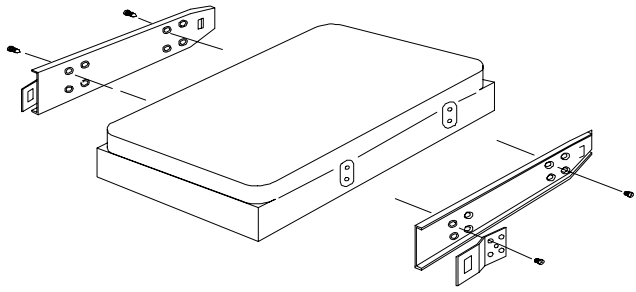


*Figure 3-9 Attaching the Drive Guides*

*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.

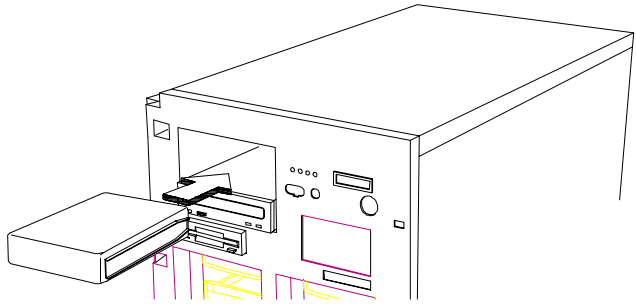


*Figure 3-10 Installing an Additional Externally-Accessible Device*

4. Connect the drive power and signal cables.

5. Remove the plastic cover from the front panel before reinstalling it.

## 3.8 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.

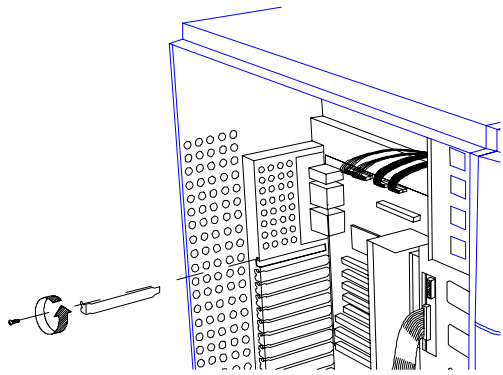


*Figure 3-11 Removing a Bracket Cover*

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.

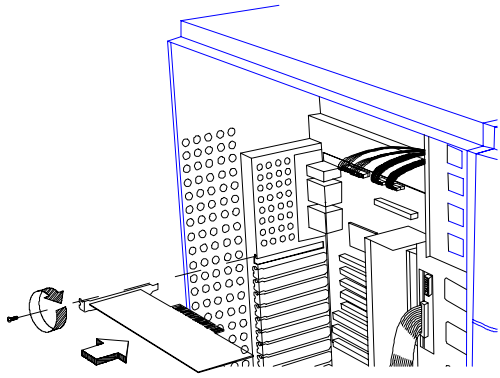


*Figure 3-12 Installing a PCI Expansion Board*

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

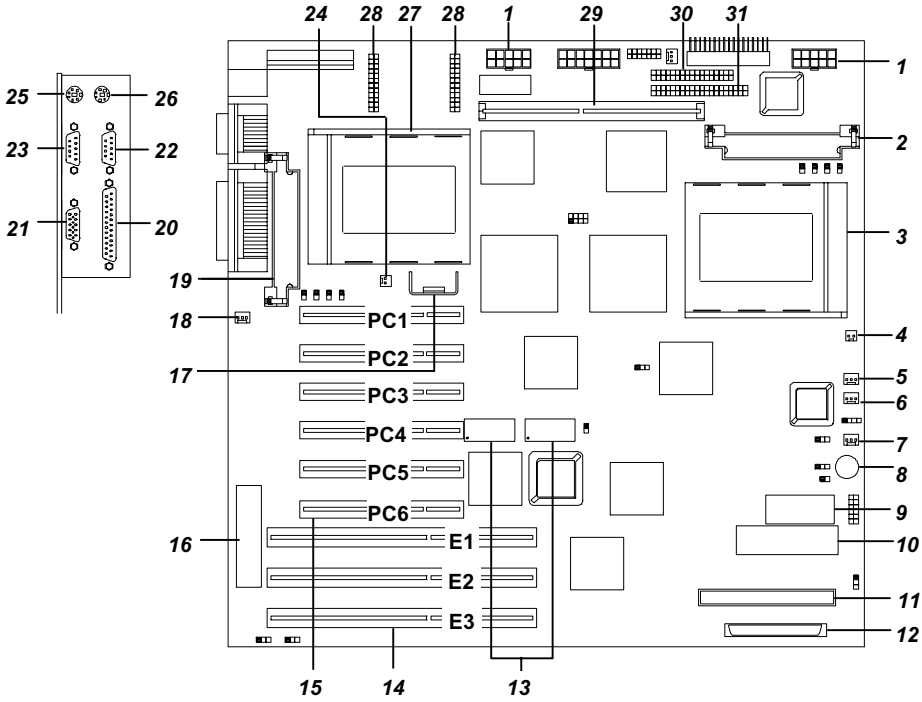
*If you installed an EISA board, run the EISA configuration utility (ECU) to reconfigure the system. See Chapter 6 for information on the ECU.*

# Chapter 4 System Board

## 4.1 Major Components

The system board carries all the major system components including the two sockets for the Intel Pentium Pro processors. Figure 4-1 shows the major components on the system board.

## 4.1.1 Layout




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

*Figure 4-1 System Board Layout*

## 4.1.2 Jumpers and Connectors

Figure 4-2 shows the jumper and connector locations on the system board.

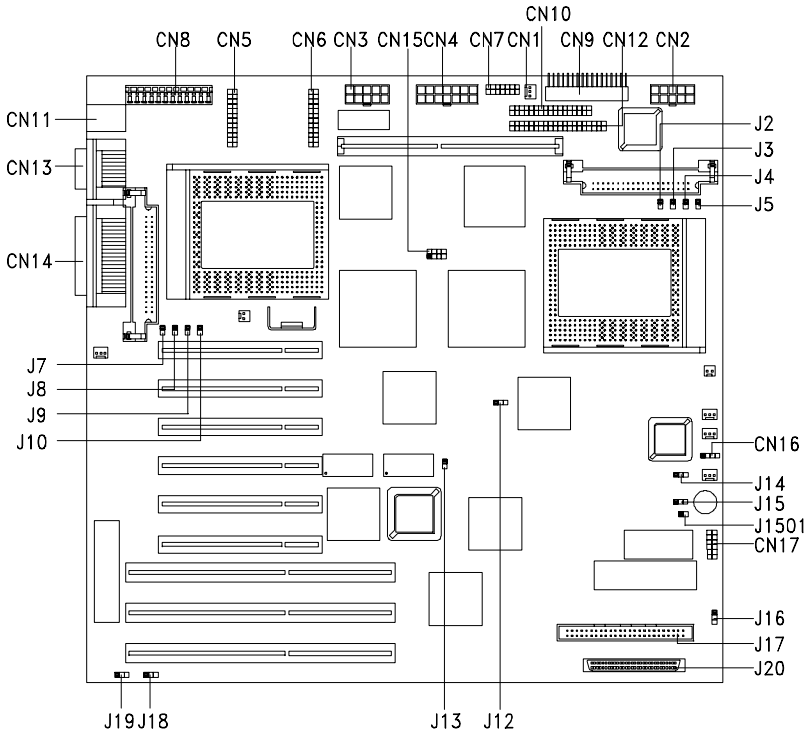



*Figure 4-2 Jumper and Connector Locations*

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

*Table 4-1 Jumper Settings*

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

---

* Default setting

** Fixed setting. Not user-configurable.

## Voltage ID Settings

Figure 4-3 shows the settings of jumpers J2, J3, J4, and J5 to set CPU1 VRM connector (J1) to 3.3V at 200 MHz.

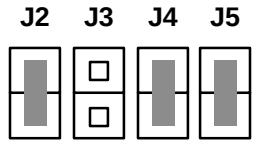



*Figure 4-3 VRM Settings for CPU1 (3.3V for 200 MHz)*

Figure 4-4 shows the settings of jumpers J7, J8, J9, and J10 to set CPU2 VRM connector (J6) to 3.3V at 200 MHz.

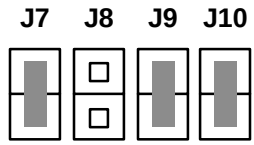



*Figure 4-4 VRM Settings for CPU2 (3.3V for 200 MHz)*

Table 4-2 lists the voltage identification (VID) code indicated by four binary-weighted inputs.

*Table 4-2 Voltage Identification Codes*

| Pentium Pro Pins | | | | $Vcc_P$ |
|---|---|---|---|---|
| VID3 | VID2 | VID1 | VID0 | (VDC) |
| 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 4-3 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 4-5 shows the CN15 default setting indicating the clock frequency ratio of 3. Ask a qualified technician when changing the clock frequency ratio.

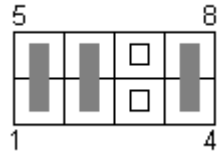



*Figure 4-5 Clock Frequency Ratio Setting (CN15)*

## 4.1.3 Installing a Pentium Pro Processor

The basic system includes an Intel Pentium Pro processor 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 Pentium Pro processor:

1. Check that the heat sink side locks are unlocked.

2. Attach the heat sink by sliding its rails along the longer sides of the rectangular Pentium Pro processor. Make sure that the heat sink completely covers the processor.

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.

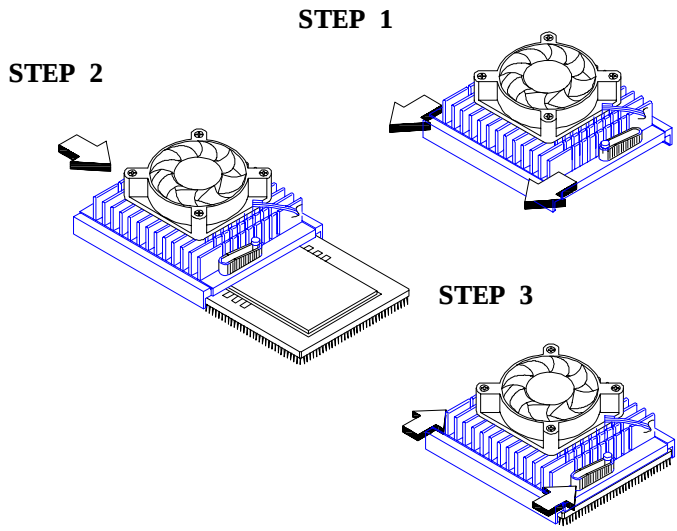



*Figure 4-6 Attaching the Heat Sink to the CPU*

4. Lift up the CPU socket lever.

5. 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.*

6. Push down the socket lever.

7. Connect the CPU fan cable to connector Fan 6 (for CPU 2) on the system board.

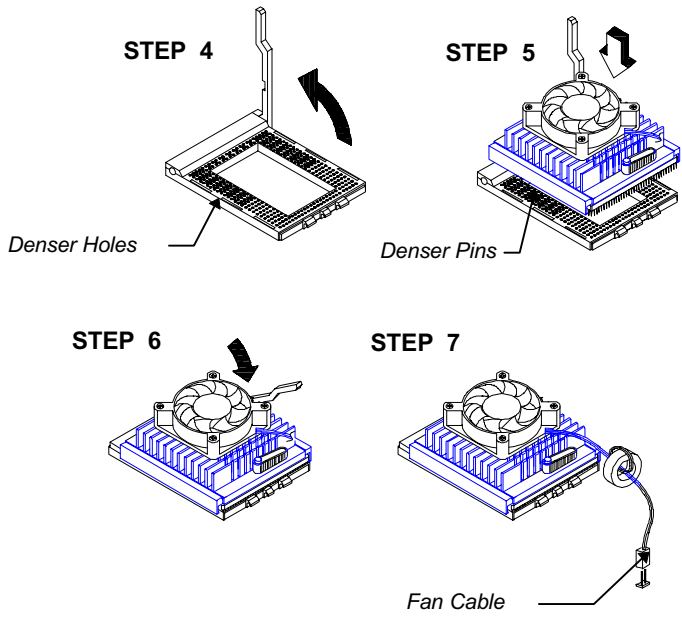



*Figure 4-7 Installing a Pentium Pro Processor*

## 4.2 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, and 32-MB SIMMs for a maximum 512 MB memory configuration.

### 4.2.1 Layout

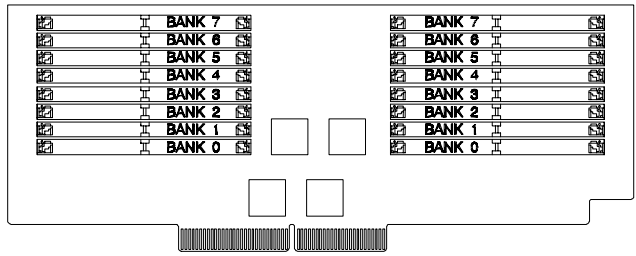



*Figure 4-8 Memory Board Layout*

*When installing or removing memory, first take out the memory board and place it on a flat surface. Re-install the board with sockets facing up.*

## 4.2.2 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 32 MB, install two 16 MB SIMMs in a bank; you cannot use a 32 MB SIMM alone for a 32 MB memory configuration.
- Use only fast-page mode parity 60 nanosecond SIMMs.
- Install SIMMs of the same capacity in a bank. For example, do not mix an 8 MB SIMM with a 16 MB SIMM.
- Each time you change your system's memory configuration, you must run Setup and the EISA Configuration Utility (ECU) to reconfigure the system.

*When removing memory, run the ECU and change memory size **before** physically removing the memory; otherwise, the system may become inoperable.*

## 4.2.3 Memory Configurations

*Table 4-4 Memory Configurations*

| Bank 0 | Bank 1 | Bank 2 | Bank 3 | Bank 4 | Bank 5 | Bank 6 | Bank 7 | Total Memory |
|---|---|---|---|---|---|---|---|---|
| 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 |

## 4.2.4 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 it 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.

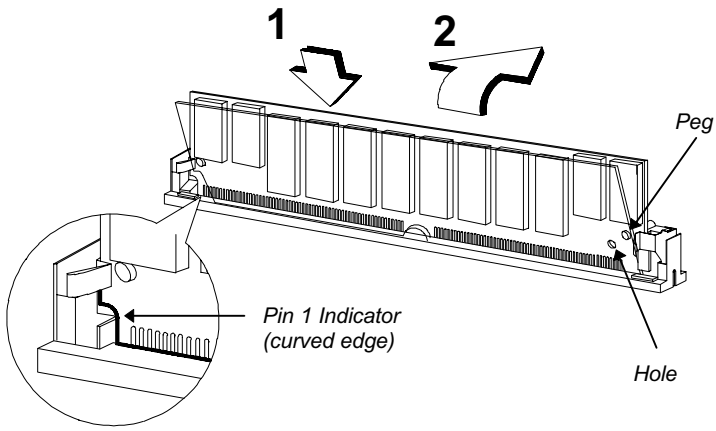



*Figure 4-9 Installing a SIMM*

## 4.2.5 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.

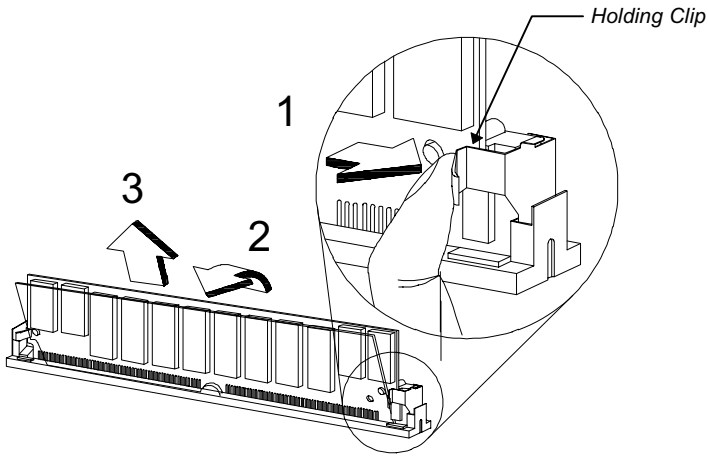



*Figure 4-10 Removing a SIMM*

## 4.2.6 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. Be sure the board is fully seated in the slot.

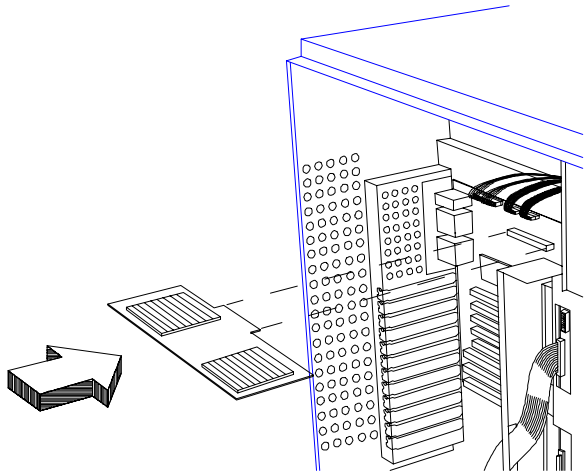


*Figure 4-11 Inserting the Memory Board*

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*

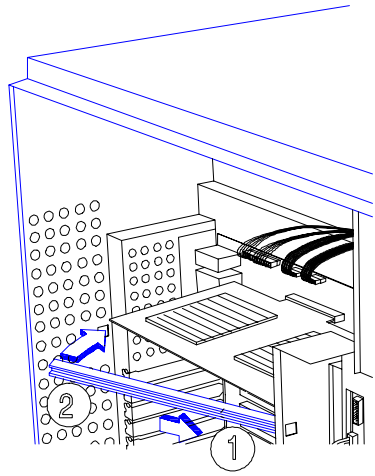



*Figure 4-12 Attaching the Board Holding Clamp*

### 4.2.7 Reconfiguring the System

Each time you change your system's memory configuration, you must run Setup and the EISA Configuration Utility (ECU) 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.

4. Run the EISA Configuration Utility (ECU).

# Chapter 5 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*

- **Diskette drive type** The standard type is 3.5-inch 1.44 MB diskette drive.

## 5.1 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:

```
                    BIOS Utility

          Basic System Configuration
        Advanced System Configuration
               System Security
           PCI System Configuration
      Non-PnP ISA Card Configuration
                      RDM
         Load Setup Default Settings

↑↓ = Move Highlight Bar,  ←  = Select,  Esc = Exit and Reboot
```

*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.*

## 5.2 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 ......... [1.44-MB     3.5-inch]
  Diskette Drive B ......... [None]

                                     Cylinder   Head    Sector

  Hard Disk 0  (xxx MB)..... [None]    xx       xx      xx
  Hard Disk 1  (xxx MB)..... [None]    xx       xx      xx


 *Base Memory  ............. [  640]  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.

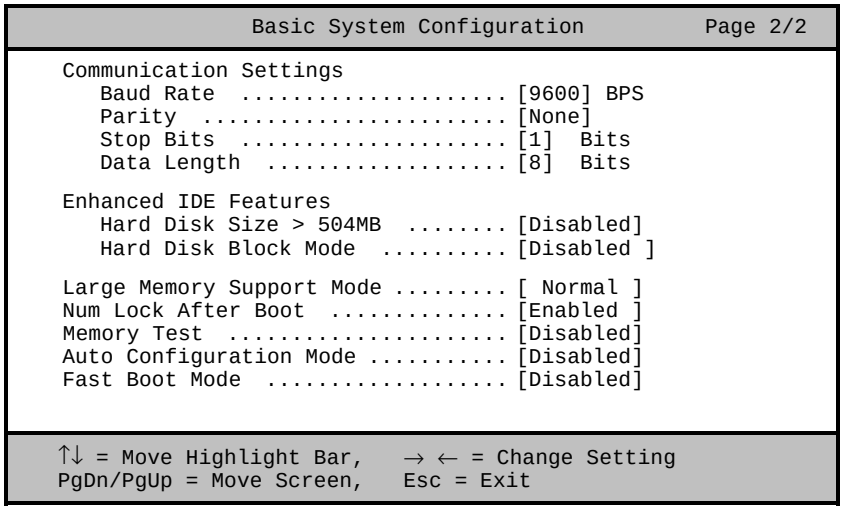
Press [↑] or [↓] on the cursor-edit keypad to highlight the desired parameter.

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.




The following sections explain the different parameters and their settings.

## 5.2.1 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

## 5.2.2 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.

## 5.2.3 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. The default setting is **None**.

**When booting from a SCSI fixed disk installation, have both of these options set to None.**

*The following sections, "Selecting the Auto Option" and "Selecting the User Option, " describe functions used for IDE drives only.*

### Selecting the "Auto" Option

If you do not know the exact type of your IDE fixed 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 IDE 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 IDE fixed 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.

### 5.2.4 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 (refer to section 4.2.7). You must enter CMOS Setup and exit. A message that the memory configuration has changed is displayed. When changing your system's memory configuration, be sure to run the ECU to add in the changes.

### 5.2.5 Math Coprocessor

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

### 5.2.6 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]

## 5.2.7 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.*

## 5.2.8 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**.

## 5.2.9 Large Memory Support Mode

This parameter allows the system to support extended memory higher than 64 MB. Set this parameter to **Advanced** if you are working under Windows NT environment and the system memory size is greater than or equal to 64 MB. Otherwise, set it to **Normal**. The default setting is **Normal**.

## 5.2.10 Num Lock After Boot

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

## 5.2.11 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 5.2.12 and 5.2.13.

## 5.2.12 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 5.2.11 and 5.3.1.

This parameter is **Disabled** by default.

## 5.2.13 Fast Boot Mode

When enabled, this parameter allows the system to boot faster by skipping some POST routines. It bypasses memory test, enables Shadow RAM, and enables primary- and second-level cache. This parameter is **Disabled** by default.

When set to **Enabled**, this parameter causes the Memory Test parameter to be fixed to **Disabled** and the shadow RAM regions for system and video BIOS to **Enabled**. See section 5.2.11 and 5.3.1.

## 5.3 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.*

## 5.3.1 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** and is not user-configurable if the Auto Configuration Mode and the Fast Boot Mode parameters on page 2 of the Basic System Configuration menu are enabled. Otherwise, you can choose to disable this item..

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

## 5.3.2 L1 and L2 Cache (CPU Cache)

This parameter enables or disables the first-level and second-level cache integrated in the Pentium Pro processor. 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. The default setting is **Write-back**.

### 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, speculative 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. The default setting, **Non-cacheable**, disables this feature.

## 5.3.3 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, leave this parameter at the default setting of **System Use**.

## 5.4 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 .....  [   3F8h   ]
   Serial Port 2 Base Address .....  [   2F8h   ]
   Parallel Port Base Address .....  [3BC (IRQ 7)]
      Operation Mode ..............  [Enhanced Parallel Port (EPP)] 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
```

### 5.4.1 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 5-1 lists the drive control settings and their corresponding functions.

*Table 5-1 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. |

## 5.4.2 Onboard Communication Ports

### Serial Port 1 Base Address

This parameter enables serial port 1 as COM1 and sets its base address.

*Table 5-2 Serial Port 1 Settings*

| Setting | Description |
|---|---|
| Serial 1 (3F8h) | COM1 with address 3F8h |
| 2F8h | COM2 with address 2F8h |
| 3E8h | COM3 with address 3E8h |
| 2E8h | COM4 with address 2E8h |
| Disabled | Disables serial port 1 |

### Serial Port 2 Base Address

This parameter enables serial port 2 as COM2 and sets its base address.

*Table 5-3 Serial Port 2 Settings*

| Setting | Description |
|---|---|
| Serial 2 (2F8h) | COM2 with address 2F8h |
| 3F8h | COM1 with address 3F8h |
| 2E8h | COM4 with address 2E8h |
| 3E8h | COM3 with address 3E8h |
| Disabled | Disables serial port 2 |

## Parallel Port Base Address

The system has one parallel port. Table 5-4 lists the options for selecting the parallel port address. You also have the option to disable the parallel port.

*Table 5-4 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. The default setting is **3BCh**.

### Operation Mode

This item allows you to set the operation mode of the parallel port. Table 5-5 lists the different operation modes. The default setting is **EPP**.

*Table 5-5 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.

## 5.4.3 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. The default setting is **Enabled**.

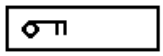
## 5.4.4 Setup Password

The Setup Password prevents unauthorized access to the BIOS utility.

*Set system board 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

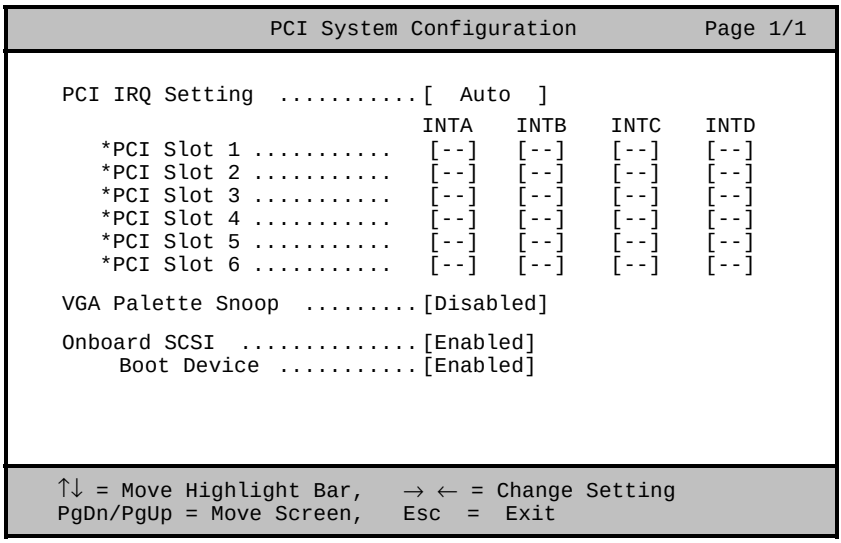
If you forget your password, you must return the configuration values stored in CMOS to their default values. Should this happen, call your dealer for assistance.

## 5.4.5 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.

# 5.5 PCI System Configuration

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




## 5.5.1 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.

### 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, or IRQ15 to the slots.

The IRQs that can be assigned to each PCI slot are listed below:

| | |
|---|---|
| Slots 1-3 | Can be assigned IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, IRQ12, or IRQ15 |
| Slots 4-6 | Can be assigned IRQ3, IRQ9, IRQ10, IRQ11, IRQ12, or IRQ15 |

*To avoid conflicts, make sure that the interrupt you assign to the PCI slot is not used by other devices, embedded or add-on.*

Press ↑ or ↓ to move between fields. Press → or ← to select options.

## 5.5.2 VGA Palette Snoop

PCI devices support a palette snooping technique that enables the device to control access to their palette registers. Set this parameter to **Enabled** if you install an additional video device in an EISA bus slot. Set this parameter to **Disabled** if you don't have an additional video device installed. The default setting is **Disabled**.

## 5.5.3 Onboard SCSI

This parameter allows you to enable or disable the onboard SCSI controller. The default setting is **Enabled**.

### 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. The default setting is **Enabled**.

# 5.6 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.*

### 5.6.1 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.

### 5.6.2 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.

### 5.6.3 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.

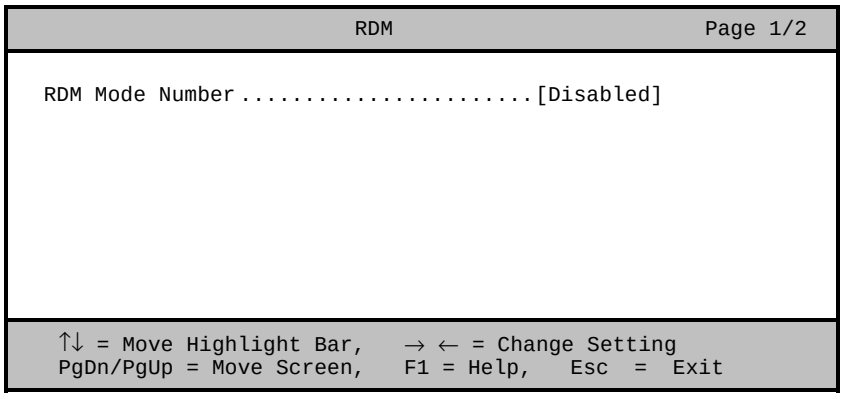
You can assign memory addresses to non-PnP cards at random as long as you cover the address range required by the card. For example, for a card that requires 178h-188h address, you have to set regions 170h-17Fh and 180h-18Fh to Yes.

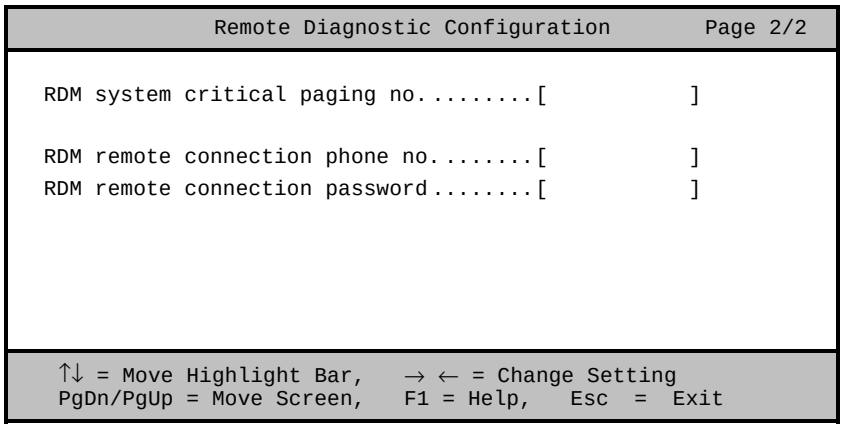
### 5.6.4 Local Memory Region

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.

## 5.7 Remote Device Manager (RDM)

The following screens show the Remote Device Manager Setup parameters. If this feature has been implemented, refer to the RDM documentation for information.



## 5.8 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.

```
Load Setup Default Settings
Are you sure

       [Yes]       [No]
```

Select [Yes] to load the default settings.

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

## 5.9 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].

# Chapter 6 Utilities

This chapter describes the following utilities:

- Acer Server Manager (ASM) Pro
- Remote Device Manager (RDM)
- EISA Configuration Utility (ECU)

## 6.1 Acer Server Manager (ASM) Pro

Acer Server Manager (ASM) Pro is a server management tool based on the Simple Network Management Protocol (SNMP). It detects server problems related to CPU thermal conditions, performs 5V/3.3V detection, and indicates PCI bus utilization.

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

ASM Pro consists of two major parts:

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

If this feature has been implemented, refer to the *Acer Server Manager* (*ASM) Pro User's Guide* for information.

## 6.2 Remote Device Manager (RDM)

Remote Device Manager (RDM) is a network management tool that utilizes modems and telephone lines to control a host of servers from a remote station.

It monitors and analyzes the server condition, updates the BIOS settings if necessary, or reboots the server in the event of failure and quickly returns it to normal operation.

This capability to execute the RDM program from a remote site bridges the distance barrier in fixing server problems and reduces wasted time due to system failure.

If this feature has been implemented, refer to the RDM documentation for information.

## 6.3 EISA Configuration Utility (ECU)

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

### Functions

The ECU does the following:

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

## Making Menu Selections

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

### Using the Keyboard

*Table 6-1 Keyboard Function Keys*

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

## Using the mouse

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

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

1. Position the cursor over the desired option then click on the left mouse button to select it.

2. When a sub-menu appears, click on the left button again to make a selection.

3. If a scroll bar appears on the right side of the screen, place the mouse cursor over the arrow at the top or at the bottom of the scroll bar, then click and hold the left mouse button to scroll up or down the page.

# Getting Help

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

Press F1 to display the help menu. Press ESC to remove the help menu from the screen.

### 6.3.1 Starting the ECU

1. You can access the ECU two ways:

   - From the Acer StartUp main menu, click on the **EISA Configuration** icon, then click on the **EISA Configuration** button on the System Configuration menu.
   - Use **Diskette Maker** in Acer StartUp to make an ECU diskette, then insert the ECU diskette into drive A and reboot the system.

2. System messages display, then the ECU logo screen appears. Press any key to continue.

3. A welcome screen appears. Press **Enter** to leave the Welcome screen and display the ECU main menu—Steps in Configuring Your Computer (see Figure 6-1).

## 6.3.2 ECU Main Menu —Steps in Configuring Your Computer

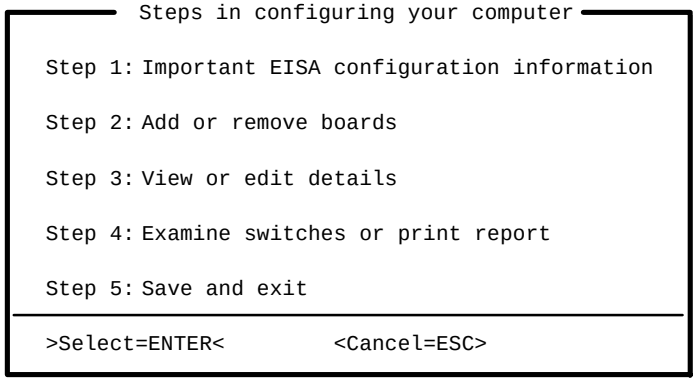



*Figure 6-1 ECU Main Menu — Steps in Configuring Your Computer*

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

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

# Main Menu Selections

## Step 1: Important EISA Configuration Information

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

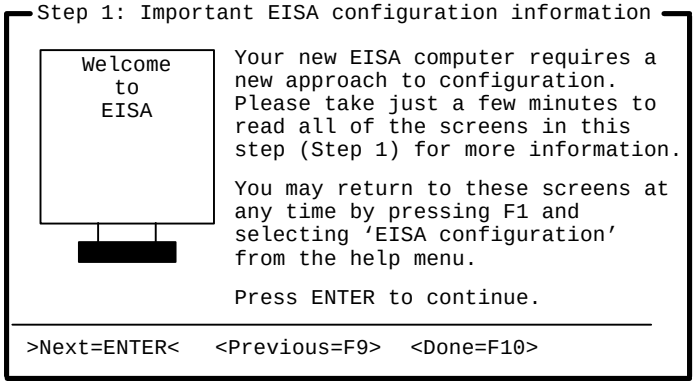



*Figure 6-2 Important EISA Configuration Information*

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

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

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

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

## Step 2: Add or Remove Boards

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

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

Figure 6-3 shows a sample Add or Remove Boards screen.

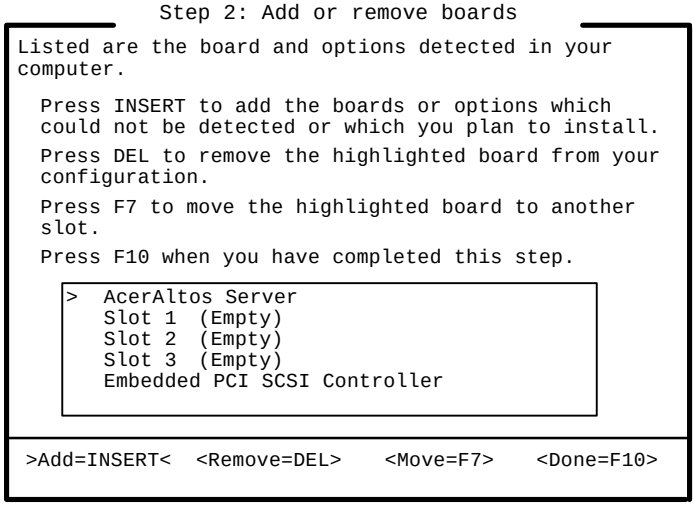



*Figure 6-3 Add or Remove Boards*

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

## Step 3: View or Edit Details

The ECU also allows you to view or edit your system configuration information. You may have to edit your system settings when you add or remove boards, when you make other hardware changes or when there are device assignment conflicts. Figure 6-4 shows a sample View or Edit Details screen.

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

Press ↑ and ↓ to see all information.

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

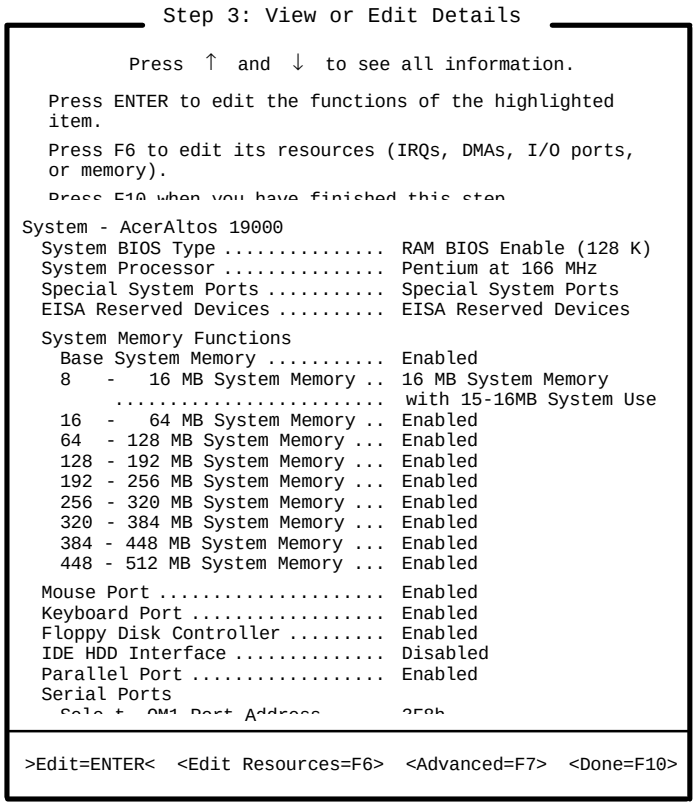



*Figure 6-4 View or Edit Details*

## Step 4: Examine Switches or Print Report

This selection lists the boards installed in your computer. Figure 6-5 shows a sample Examine Switches or Print Report screen.

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

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

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

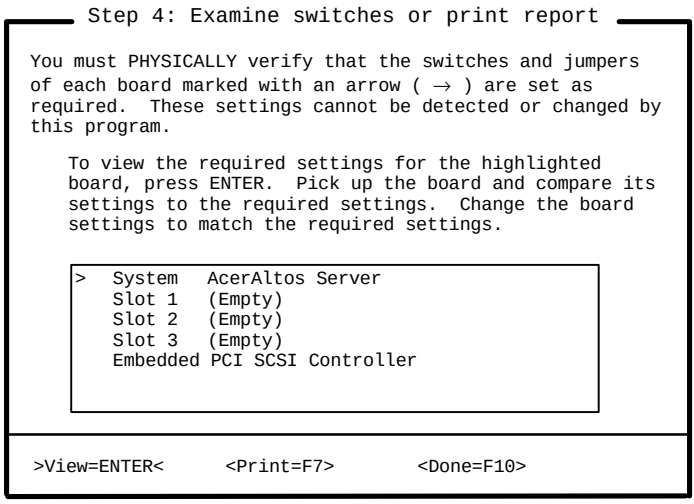



*Figure 6-5 Examine Switches or Print Report*

## Step 5: Save and Exit

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

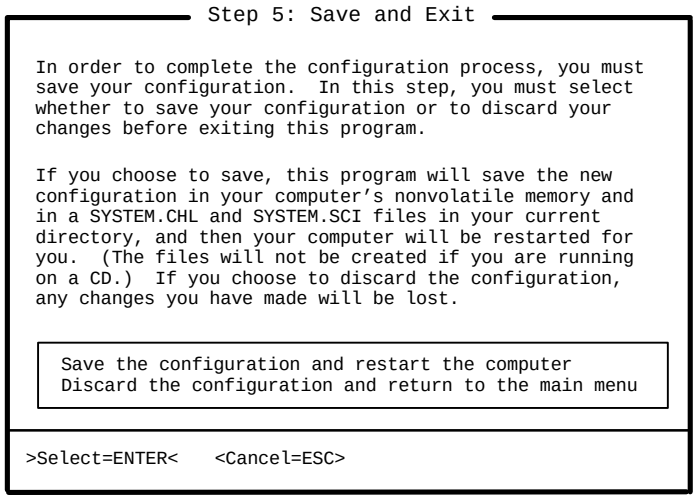



*Figure 6-6 Save and Exit*

## 6.3.3 Configuring Your Computer for the First Time

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

1. Select **Step 1: Important EISA Configuration Information** from the ECU main menu. Read through the information then press **F10** when you are done.

2. Select **Step 4: Examine switches or print report**, then press **Enter** to display the screen shown below.

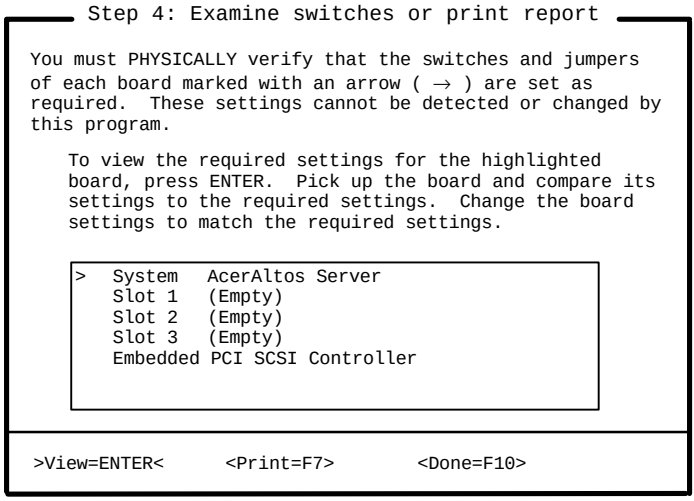



*Figure 6-7 Examine Switches or Print Report*

3. Notice the boards marked with an arrow on the screen, if any. The arrow indicates that the boards in your computer may have defined jumpers and switches that you must physically verify. It may also mean that there is a software statement with additional information about the board.

4. To view the switch and jumper settings, highlight the board marked with an arrow and press **Enter**. The switch/jumpers settings screen for the board appears.

5. Scroll through the switch and jumper settings for the board, and press **F10** when you have finished viewing the information.

6. To print the information, select **Print** by pressing **F7**. The Print Settings screen appears.

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

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

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

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

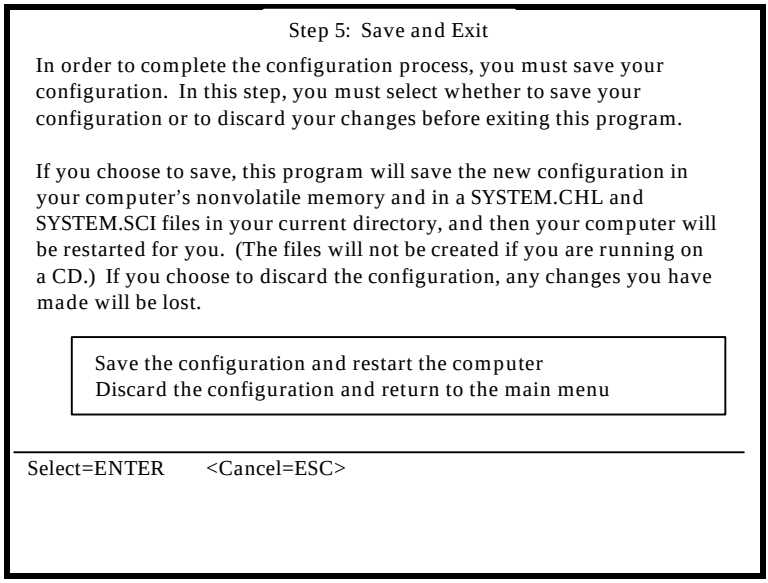



*Figure 6-8 Save and Exit*

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

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

10. When the reboot screen appears, press **Enter**.

11. Turn off the computer and remove the ECU diskette, if not running from CD.

## 6.3.4 Adding or Removing Boards

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

## Adding Boards

Follow these steps when adding a board:

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

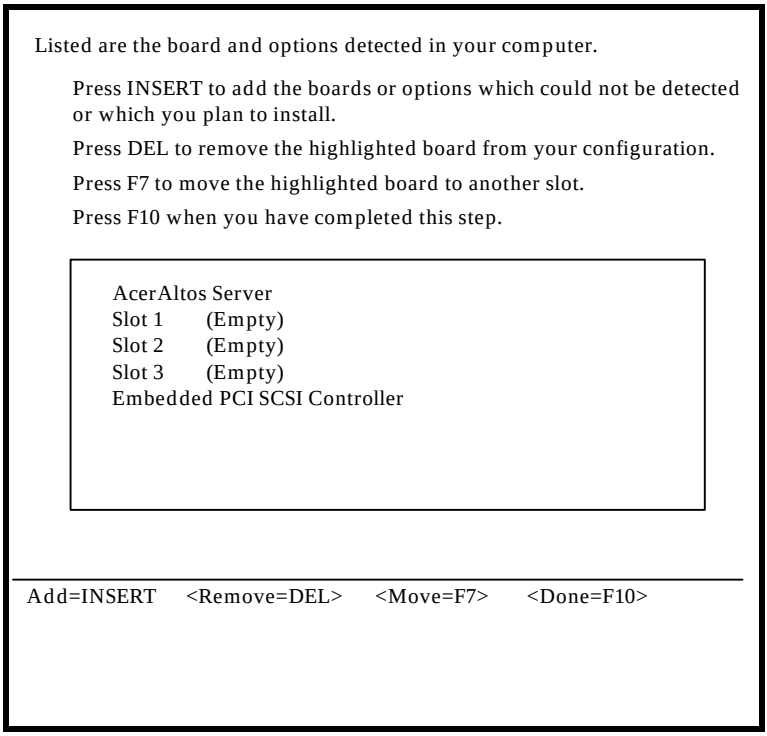



*Figure 6-9 Add or Remove Boards*

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

2. If you want to add or have already added a board, highlight a slot and press h to select an option from the list that appears.

3. Press **F10** when done. The ECU main menu displays.

4. Select **Step 4: Examine switches or print report**, then press **Enter**.

5. On the Examine Switches or Print Report screen that displays, notice the boards marked with an arrow, if any. The arrow indicates that the boards in your computer may have defined jumpers and switches that you must physically verify. It may also mean that there is a software statement with additional information about the board.

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

7. When the switch/jumpers settings screen for the board displays, scroll through the switch and jumper settings for the board. Press **F10** when you have finished viewing the information.

8. To print the information, select **Print** by pressing **F7**. The Print Settings screen appears.

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

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

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

10. Select **Step 5: Save and Exit**, then press **Enter**. The Save and Exit screen displays.

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

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

12. When the reboot screen appears, press **Enter**.

13. Turn off the computer and remove the ECU diskette, if not running from CD.

## Removing a Board

Follow these steps when you remove a board:

1. Select **Step 2: Add or remove boards** from the ECU main menu.

2. Select the board that you want to remove from the configuration and press C . A remove confirmation screen appears.

3. Press **Enter**. The Add or Remove Boards screen reappears.

4. Press **F10** when done. The ECU main menu displays.

5. Follow steps 4 to 13 in the previous section, Adding a Board, to complete your configuration.

## 6.3.5 Configuring Memory

Each time you change your system's memory configuration, you must reconfigure the computer using the ECU.

*When removing memory, run the ECU and change memory size **before** physically removing the memory; otherwise, the system may become inoperable.*

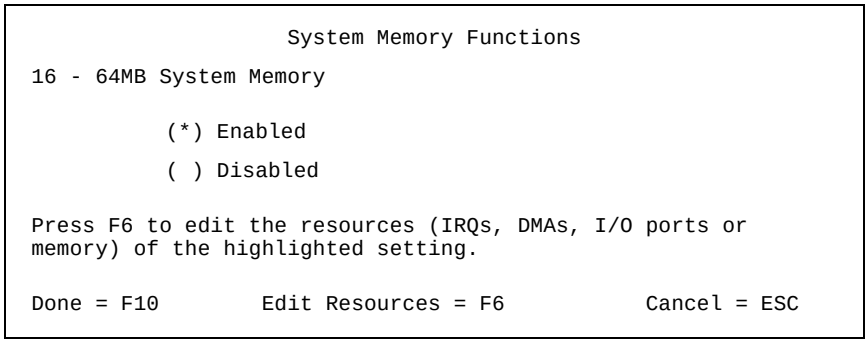
**The following discussion describes how to configure a system for 96 MB of memory.**

1. Highlight **Step 3: View or edit details** from the ECU main menu, then press **Enter**. The View or Edit details screen displays (a sample screen is shown in Figure 6-4).

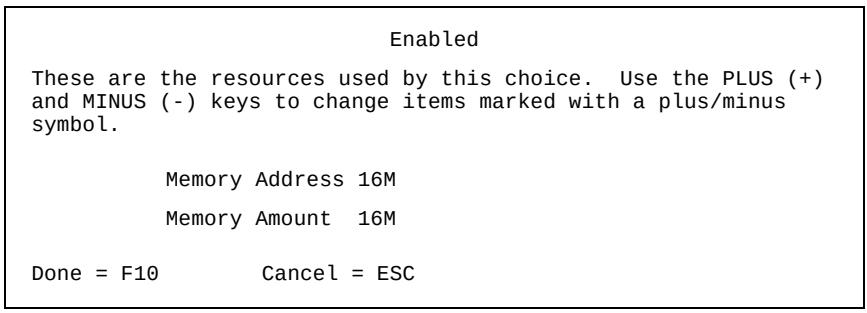
2. Use the up and down arrow keys to highlight the memory function you wish to configure. In this example, your basic system configuration is installed with 32 MB; therefore, the **16 - 64MB System Memory** parameter is the first memory function you must configure.

   a) Highlight **16 - 64MB System Memory**, then press **Enter**.

   b) The System Memory Functions screen displays, showing the function is enabled:




c) Press **F6** to edit resources. The Enabled screen displays. Use the Tab key or the up and down arrow keys to move between fields. Use the plus and minus keys to change resources.




d) On the above screen, the **Memory Address** field shows the beginning memory address (16M); the **Memory Amount** field shows 16M. Configure additional memory by changing the **Memory Amount** field, as described below.

64MB is the total amount that can be configured within each memory function parameter. Therefore, for the 16 - 64MB parameter, change the **Memory Amount** field to 48M.

| | |
|---|---|
| Memory Address: | 16M |
| Memory Amount: | 48M |
| Total | 64M |

Press **F10** to return to the View or Edit Details screen.

3. Use the up and down arrow keys to highlight the next memory function, **64 - 128MB System Memory,** then press **Enter** to display the System Memory Function screen. Press **F6** to edit resources.

   Change the **Memory Amount** field as described below:

   64MB is the total amount that can be configured within each memory function parameter. Therefore, for the 64 - 128MB parameter, change the **Memory Amount** field to 32M.

| | |
|---|---|
| Memory Address: | 64M |
| Memory Amount: | 32M |
| Total | 96M |

   Press **F10** to return to the View or Edit Details screen.

4. Your system is now configured with 96 MB of memory as follows:

| | |
|---|---|
| 8 - 16 MB System Memory | 16 MB |
| 16 - 64 MB System Memory | 48 MB |
| 64 - 128 MB System Memory | 32 MB |
| | 96 MB |

5. Repeat the process to configure additional memory, starting with the last modified field not equaling 64MB. Do not leave gaps between memory addresses. This can cause your system to become inoperable.

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

7. Select **Step 5: Save and exit**, then press **Enter**. The Save and Exit screen displays.

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

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

9. When the reboot screen appears, press **Enter**.

10. Turn off the computer and remove the ECU diskette, if not running from CD.

## 6.3.6 Viewing or Editing Configuration Details

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

To view or edit your configuration, simply click on **Step 3: View or edit details** from the ECU main menu then press **Enter** to display the screen shown in Figure 6-4.

## Advanced Menus

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

### Lock/unlock boards

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

### View additional system information

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

- Board specifications

  Displays information about the identification and physical characteristics of your boards

- System specifications

  Displays system statistics and information about the slots in your computer.

- Used resources

  Displays information about which boards and functions are using your computer's resources, including DMA channels, IRQ levels, I/O ports, and memory addresses.

- Available resources

  Displays a list of those resources which are unassigned and are available for allocation to boards.

### Set verification mode menu

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

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

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

### Maintain SCI files menu

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

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

*This will cause the current configuration information to be lost.*

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

### 6.3.7 What To Do If Your Nonvolatile Memory Is Invalid

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

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

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

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

      (* )  Use backup SCI file

      ( )  Do not use backup SCI file

Select = ENTER              Cancel = ESC
```

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

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

# Chapter 7 SCSI*Select* Configuration Utility

## 7.1 The SCSI*Select* Configuration Utility

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

### 7.1.1 Default Values

Table 7-1 lists the settings you can change with the SCSI*Select* utility and the default value for each setting. Some settings apply globally to the SCSI controller and all SCSI devices on the bus; other settings apply individually to each device on the bus.

*Table 7-1 Default Settings for SCSI Controller and All Devices*

| **Global Settings for SCSI Controller and All Devices** | **Default Value** |
|---|---|
| Host Adapter SCSI ID | 7 |
| SCSI Parity Checking | Enabled |
| Host Adapter SCSI Termination | Enabled<br>Low OFF/High ON |
| Boot Device Option | 0 (zero) |
| Host Adapter BIOS[1] | Enabled |
| Support Removable Disks Under BIOS as Fixed Disks | Boot only |
| Extended BIOS Translation for DOS Drives > 1 Gbyte | Disabled |
| Display <Ctrl-A> Message During BIOS Initialization | Enabled |
| Multiple Lun Support | Disabled |
| BIOS Support for More Than 2 Drives[1] | Enabled |
| BIOS Support for Bootable CD-ROM | Enabled |
| BIOS Support for Int13 Extensions | Enabled |
| Support for Ultra SCSI Speed | Disabled |
| **Individual Settings for Each SCSI Device** | **Default Value** |
| Initiate Sync Negotiation | Yes |
| Maximum Sync Transfer Rate | 20 MBytes/sec. |
| Enable Disconnection | Yes |
| Send Start Unit SCSI Command[1] | No |
| Initiate Wide Negotiation | Yes |

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

## 7.1.2 When to Use the SCSI*Select* Utility

Use the SCSI*Select* utility if you need to

- Change any of the default values listed in Table 7-1
- Check and/or change SCSI device settings that may conflict with those of other devices (e.g, SCSI ID)
- Perform low-level formatting on new SCSI disk devices

## 7.1.3 Running the SCSI*Select* Utility

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

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

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

## 7.2 SCSI*Select* Utility Options

When the SCSI*Select* utility detects the AIC-7880 SCSI controller in your computer, it displays the Options menu shown in Figure 7-1.

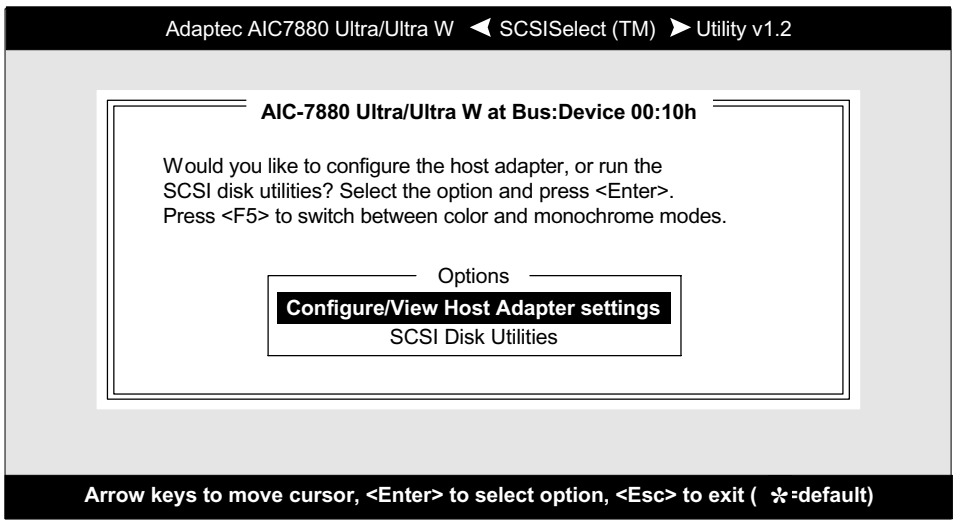



*Figure 7-1 Options Menu Screen*

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

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

## 7.2.1 Configure/View Host Adapter Settings Menu

The Configure/View Host Adapter Settings menu lists three settings under SCSI Bus Interface Definitions and three additional options, as shown in Figure 7-2:

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

Advanced users can access Boot Device Options, SCSI Device Configuration, and Advanced Configuration Options through this menu.

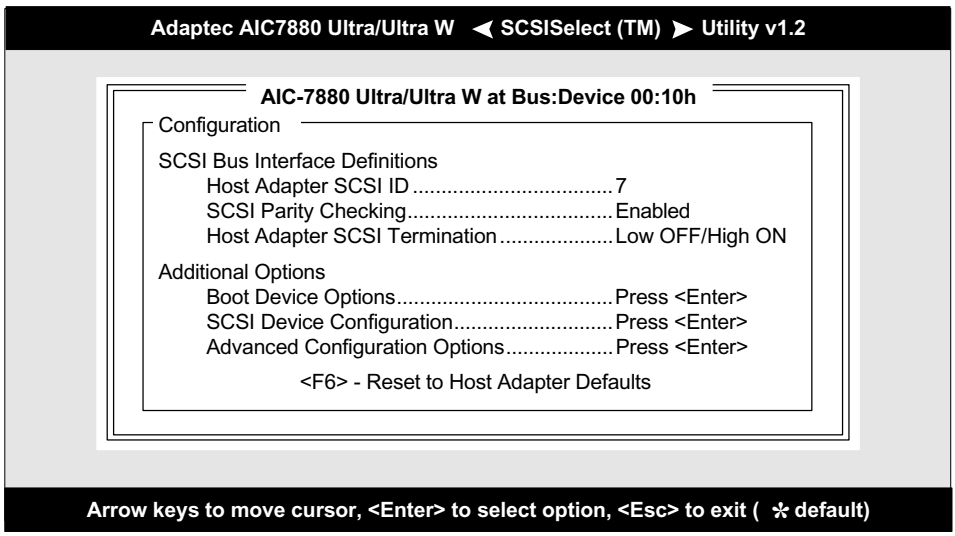



*Figure 7-2 Configure/View Host Adapter Settings Screen*

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

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

## Host Adapter SCSI ID

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

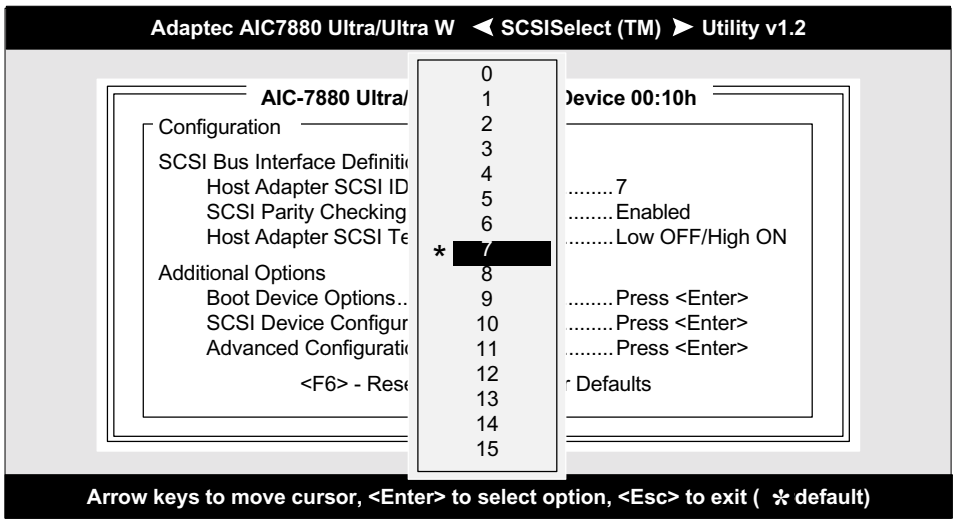



*Figure 7-3 Host Adapter SCSI ID Selection Screen for AIC-7880*

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

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

## SCSI Parity Checking

Select this option to enable or disable SCSI Parity Checking on the SCSI controller. Figure 7-4 displays your choices. The default setting is Enabled.

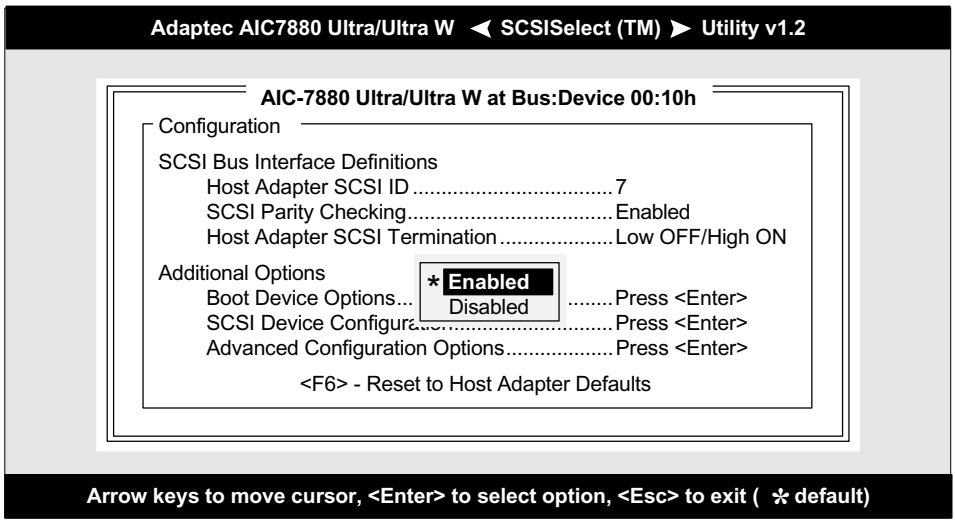



*Figure 7-4 SCSI Parity Checking Selection*

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

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

## Host Adapter SCSI Termination

This option allows you to configure host controller SCSI termination. Figure 7-5 shows the choices available if you have an AIC-7880. The default setting is *Low OFF/High ON*.

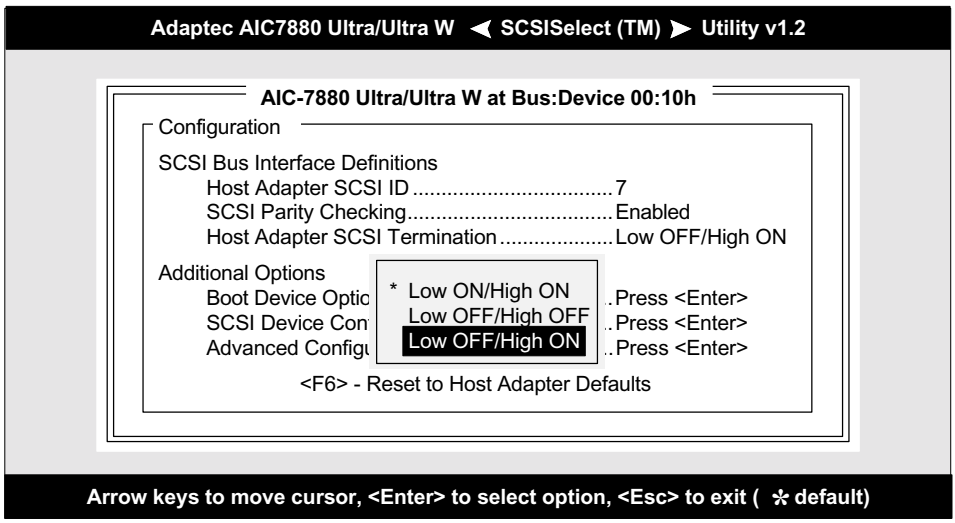



*Figure 7-5 Host Adapter SCSI Termination Selection for AIC-7880*

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

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

## Boot Device Options

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

Figure 7-6 shows the Boot Device Options screen.

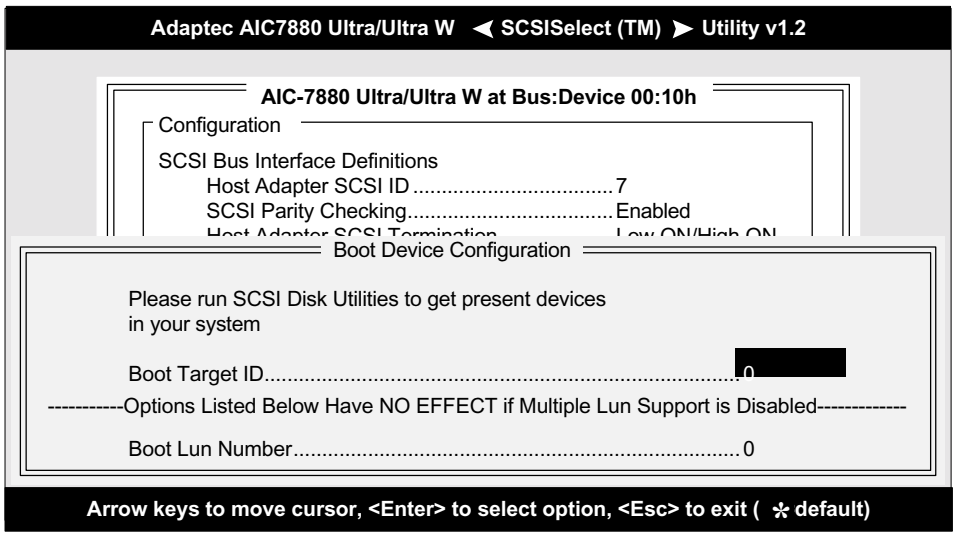



*Figure 7-6 Boot Device Options Screen*

## SCSI Device Configuration

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

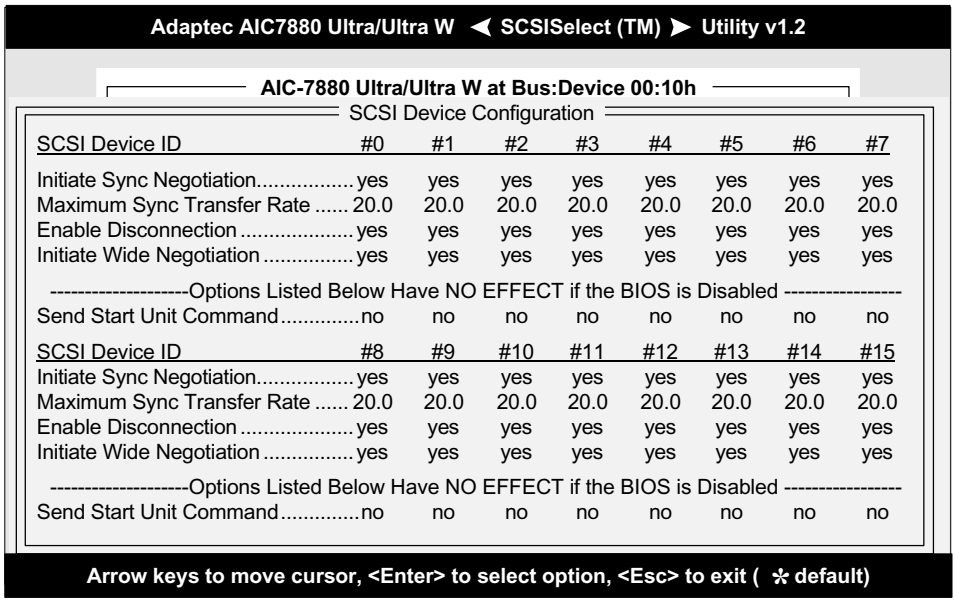



*Figure 7-7 SCSI Device Configuration Screen for AIC-7880*

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

### Initiate Sync Negotiation

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

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

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

*Some older SCSI-1 devices do not support synchronous negotiation. This may cause your computer to operate erratically or hang if Initiate Sync Negotiation is enabled. Set Initiate Sync Negotiation to* ***no*** *for these devices.*

### Maximum Sync Transfer Rate

This option determines the maximum synchronous data transfer rate that the SCSI controller can support. The SCSI controller supports rates up to the Fast Wide SCSI maximum of 20.0 MBytes / sec. The default value is 20.0.

In most cases, you can use the maximum value of 20.0. If the SCSI controller is set *not* to negotiate for synchronous data transfer (i.e., Initiate Sync Negotiation is set to **no**), then the value selected here is the maximum rate that the SCSI controller accepts from the device during negotiation. (This is standard SCSI protocol.)

*Some older SCSI-1 devices do not support Fast SCSI data transfer rates. This may cause your computer to operate erratically or hang if the transfer rate is set too high. Set Initiate Sync Negotiation to **no** for these devices.*

### Enable Disconnection

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

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

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

### Initiate Wide Negotiation

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

### Send Start Unit Command

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

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

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

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

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

## Advanced Configuration Options

When you select Advanced Configuration Options, a screen similar to Figure 7-8 appears. Do not change these options unless absolutely necessary.

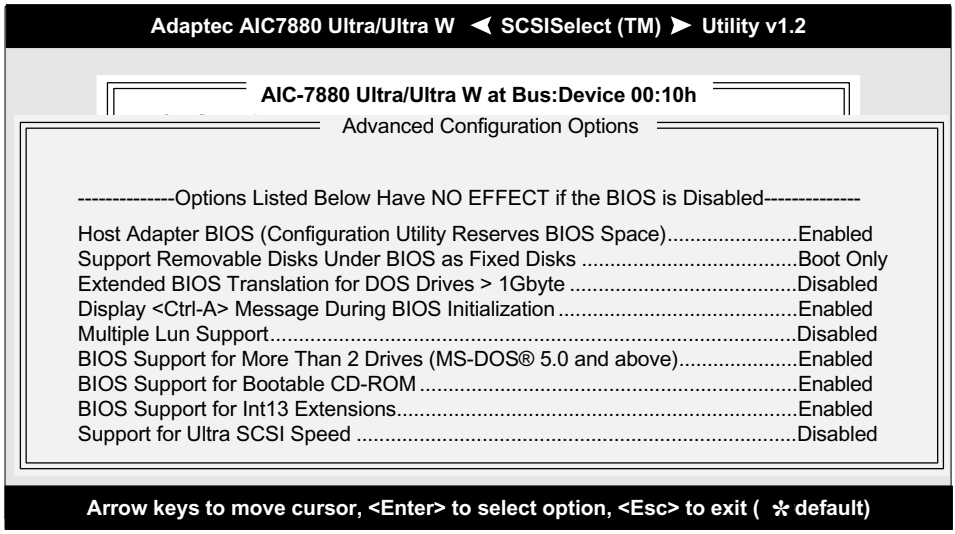



*Figure 7-8 Advanced Configuration Options Screen*

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

### Host Adapter BIOS

This option enables or disables the SCSI controller BIOS. The default setting is *Enabled*.

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

### Support Removable Disks Under BIOS as Fixed Disks

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

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

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

### Extended BIOS Translation for DOS Drives > 1 GByte

This option allows you to enable or disable extended translation for SCSI hard disks with a capacity greater than 1 GByte. It is only valid if the SCSI controller BIOS is enabled. The default factory setting is *Disabled.*

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

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

See the section "Disk Drives Over 1 Gbyte" in this chapter, for more information on this option. This option should be left Disabled for most operating systems except DOS/Windows.

### Display <Ctrl-A> Message During BIOS Initialization

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

### Multiple Lun Support

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

### BIOS Support for More Than 2 Drives

This option allows you to enable or disable BIOS support for more than two SCSI hard disk drives. It is only valid if the SCSI controller BIOS is enabled. This feature is supported by DOS 5.0 and above. The default setting is *Enabled.*

### BIOS Support for Bootable CD-ROM

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

### BIOS Support for Int13 Extensions

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

### Support for Ultra SCSI Speed

This option enables wide SCSI data transfers at 40 MB/sec. Most hard disk drives or other SCSI devices do not currently support a communication rate this high. If enabled, be sure the device is capable of running at this rate. The default setting is *Disabled*.

## 7.2.2 SCSI Disk Utilities

When you select SCSI Disk Utilities from the Options menu the SCSI*Select* utility scans the SCSI bus and lists all SCSI devices installed on the SCSI bus. You will see a screen similar to Figure 7-9. You can easily determine from this screen which SCSI ID is assigned to each device on the SCSI bus.

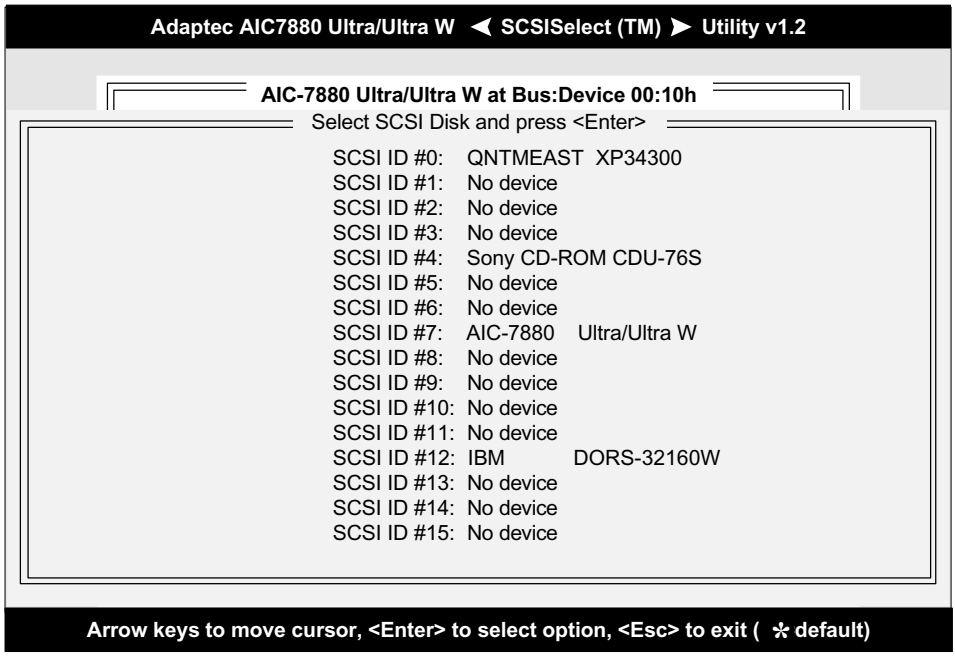



*Figure 7-9 SCSI Disk Utilities Screen for AIC-7880*

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

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

## Format Disk

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

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

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

## Verify Disk Media

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

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

## 7.3 Configuring Multiple SCSI Controllers

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

To use multiple PCI SCSI controllers, do the following:

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

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

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

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

- If you are booting from the AHA-2940 and using ISA/EISA-based host adapters as secondary devices, you must disable the BIOS on all ISA/EISA-based SCSI controllers.

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

# 7.4 Disk Drives Over 1 Gbyte

## 7.4.1 Extended Translation

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

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

## 7.4.2 The DOS 1 GByte Limit

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

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

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

## 7.4.3 When to Use Extended Translation

### With MS-DOS 5.0 and Above

NetWare 386 (versions 3.0 and above) and the versions of UNIX do not share the 1024 cylinder limit of DOS and do not require extended translation to support large disk drives and should not be enabled.

### Drives With Mixed Partitions

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

*The term UNIX, as used here, includes all versions of UNIX, SCO OpenServer Release 5.0, and ISC v3.0 (or later).*

### Using Fdisk

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

### Questions and Answers About Extended Translation

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

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

## 7.5 SCSI Troubleshooting Checklist

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

Answer these questions first if a problem occurs during installation:

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

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

- Is pin-1 orientation maintained throughout the SCSI bus?

- Are the PCI bus and slot parameters set correctly in your computer's **Setup** program?

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

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

- Is SCSI termination set correctly?

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

## 7.6 BIOS Startup Messages

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

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

```
WARNING!!!

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

Press any key to continue.
```

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

Extended BIOS Translation is used only with MS-DOS 5.0 or above. You do not need to enable this option if you are using another operating system such as OS/2® or UNIX®.

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

1. Run the SCSI*Select* utility and set Extended BIOS Translation to **Disabled**. (See Extended BIOS Translation for DOS Drives > 1 GByte in the Advanced Configuration Options section)

2. Exit from the SCSI*Select* utility and back up the data on the disk drive, if you want to save it.

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

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

4. In the SCSI*Select* Advanced Configuration Options menu, set Extended BIOS - Translation to **Enabled**.

5. Partition the drive again.

6. Restore data to the drive, if necessary.

### 7.6.1 Device connected, but not ready.

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

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

1. Run the SCSI*Select* utility and access SCSI Device Configuration. Locate the host controller's SCSI ID and set Send Start Unit Command to **yes**.

2. Exit the SCSI*Select* utility and request data from the drive again.

3. If the message still appears, follow the drive manufacturer's instructions to make sure the drive is set to spin-up when the power is switched ON.

## 7.6.2 Start unit request failed.

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

**Time-out failure during SCSI Inquiry command!**

or

**Time-out failure during SCSI Test Unit Ready command!**

or

**Time-out failure during Start Unit command!**

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

## 7.6.3 Disk Drive Configuration Problems

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

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

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

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

## Booting the Computer from a SCSI Drive

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

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

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

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

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

- Make sure your computer's CMOS **Setup** is set to **No Drives Installed**, as is required for SCSI host controllers.
- Be sure that the SCSI drive to be used as drive C is set to SCSI ID 0. Check the disk drive manual for information on setting the SCSI ID for that device. You can also use the SCSI*Select* utility to determine the SCSI addresses of peripherals on the SCSI bus.
- Set the SCSI drive to be used as drive D to SCSI ID 1. Check the drive manual for information on setting the SCSI ID for that device.

- Try enabling **Include in BIOS Scan** in the SCSI Device Configuration option of the SCSI*Select* utility. See the section “SCSI Device Configuration”.

- Be sure to cycle the power OFF and ON after changing any values on a SCSI controller, in a **Setup** program, or on a SCSI device. This ensures that the new initial values are loaded.

- Be sure that SCSI parity checking is consistently enabled or disabled on all devices on the SCSI bus.

- Verify that the SCSI controllers and the SCSI devices are properly configured and installed.

- Be sure that the SCSI bus is properly terminated.

- Be sure that, if necessary, the disk has a partition and is formatted.

## Computer Hangs, or SCSI Controller Cannot Always Find the Drives

- Check SCSI parity for consistency and be sure SCSI termination is set correctly.

- Check cable length and integrity. Check pin-1 orientation.

- If the SCSI controller LED remains on when the computer hangs, the host adapter may be interfering with your computer's operation. It may be installed in a motherboard slot that does not support First-Party DMA (i.e., Bus Master) data transfers. See your computer documentation.

# Appendix A System Resources

## A.1 Memory Map

*Table A-1 System Memory Map*

| Address | Size | Function |
|---|---|---|
| 0000000 ~ 009FFFF | 640 KB system memory | Onboard DRAM |
| 00A0000 ~ 00BFFFF | 128 KB video RAM | Reserved for graphics display buffer, non-cacheable |
| 00C0000 ~ 00C7FFF | 32 KB for VGA BIOS | Reserved for ROM on I/O adapters |
| 00C8000 ~ 00CFFFF | 32 KB I/O expansion ROM | Reserved for ROM on I/O adapters |
| 00D0000 ~ 00D3FFF | 16 KB I/O expansion ROM | Reserved for ROM on I/O adapters |
| 00D4000 ~ 00D7FFF | 16 KB I/O expansion ROM | Reserved for ROM on I/O adapters |
| 00D8000 ~ 00DBFFF | 16 KB I/O expansion ROM | Reserved for ROM on I/O adapters |
| 00DC000 ~ 00DFFFF | 16 KB I/O expansion ROM | Reserved for ROM on I/O adapters |
| 00E0000 ~ 00E7FFF | 32 KB for SCSI BIOS | Reserved SCSI BIOS |
| 00E8000 ~ 00EFFFF | 32 KB | Reserved onboard (video RAM BIOS) |
| 00F0000 ~ 00FFFFF | 64 KB BIOS | System ROM BIOS (ROM)<br>System RAM BIOS (DRAM) |
| 0100000 ~ 0F9FFFF | System memory | Onboard DRAM |
| 0FA0000 ~ 0FFFFFF | 384 KB I/O card memory | Reserved for memory map I/O card, non-cacheable |
| 1000000 ~ FFFFFFF | System memory | Onboard DRAM |

# A.2 I/O Address Map

*Table A-2 System I/O Address Map*

| Address Range (hex) | Device |
|---|---|
| 000 ~ 01F | DMA controller 1 |
| 020 ~ 027 | Interrupt controller 1 |
| 030 ~ 037 | Interrupt controller 1 |
| 040 ~ 047 | System timer |
| 050 ~ 057 | System timer |
| 060 ~ 06F | Keyboard controller |
| 070 ~ 07F | Real-time clock, NMI mask |
| 080 ~ 09F | DMA page register/speed status register |
| 0A0 ~ 0BF | Interrupt controller 2 |
| 0C0 ~ 0DF | DMA controller 2 |
| 0F0 | Clear math coprocessor |
| 0F1 | Reset math coprocessor |
| 0F8 ~ 0FF | Math coprocessor |
| 4F0 | AEN4 enables (onboard VGA enabled)<br>Flash ROM programming<br>IRQ12 enabled<br>3.5-inch diskette 3 -mode selection<br>DMA channel 1 selection<br>DMA channel 3 selection |
| 4F1 | ASM data read/write port |
| 4F2 | ASM index write port |
| 0CF8 | PCI configuration address regulation |

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

| Address Range (hex) | Device |
|---|---|
| 0CFC | PCI configuration data regulation |
| 1F0 ~ 1F7 | Hard disk |
| 278 ~ 27F | Parallel port 3 |
| 2F8 ~ 2FF | Serial port 2 |
| 378 ~ 37F | Parallel port 2 |
| 3BC ~ 3BF | Parallel port 1 |
| 3C0 ~ 3CF | EGA, VGA, SVGA |
| 3D0 ~ 3DF | CGA, VGA, SVGA |
| 3F0 ~ 3F7 | Diskette drive controller |
| 3F8 ~ 3FF | Serial port 1 |

# A.3 Interrupt Channels

*Table A-3 Interrupt Channels*

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

# A.4 System Default Configuration

The following tables show your system's factory default configuration.

*Table A-4 Basic System Configuration (Page 1/2)*

| Parameter | Default Setting |
|---|---|
| Diskette Drive A | 1.44 MB 3.5-inch |
| Diskette Drive B | None |
| Fixed Disk 0 | None |
| Fixed Disk 1 | None |
| Base Memory is always 640 KB, while the total amount is determined by configuration. | |
| Math coprocessor is always installed. | |
| Video display is automatically detected. | |

*Table A-5 Basic System Configuration (Page 2/2)*

| Parameter | Default Setting |
|---|---|
| Baud Rate | 9600BPS |
| Parity | None |
| Stop Bits | 1 |
| Data Length | 8 |
| Hard Disk Block Mode | Disabled |
| Hard Disk Size > 504 MB | Disabled |
| Large Memory Support Mode | Normal |
| NUM Lock After Boot | Enabled |
| Memory Test | Disabled |
| Auto Configuration Mode | Disabled |
| Fast Boot Mode | Disabled |

*Table A-6 Advanced System Configuration (Page 1/1)*

| Parameter | Default Setting |
|---|---|
| E0000h - FFFFFh | Enabled |
| C0000h - C7FFFh | 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 15 MB - 16 MB | System Use |

*Table A-7 PCI System Configuration*

| Parameter | Default Setting |
|---|---|
| PCI IRQ Setting | Auto |
| PCI Slots 1, 2, 3, 4, 5, and 6 | Not Configured |
| Onboard SCSI | 11 |
| Onboard VGA | 9 |
| VGA Palette Snoop | Disabled |
| Onboard SCSI | Enabled |
| Boot Device | Enabled |

*Table A-8 System Security*

| Parameter | Default Setting |
|---|---|
| **Disk Drive Control** | |
| Diskette Drive | Normal |
| Fixed Disk Drive | Normal |
| System Boot Drive | Drive A then C |
| **On-board Communication Ports** | |
| Serial Port 1 | 3F8h |
| Serial Port 2 | 2F8h |
| Parallel Port | 3BC (IRQ 7) |
| Operation Mode | Enhanced Parallel Port |
| Onboard PS/2 Mouse | Enabled |
| Setup Password | None |
| Power-On Password | None |

*Table A-9 EISA Configuration Utility - ECU*

| Parameter | Default Setting |
|---|---|
| **Step 3: View or edit details** | |
| Base System Memory | 640 KB Base Memory |
| 8 - 16 MB Extended Memory | 16 MB Ext Memory with<br>15 - 16 MB System Use |
| 16 - 64 MB System Memory | 16M |
| **Peripheral Device Status** | |
| Mouse Port | Enabled |
| Keyboard Port | Enabled |
| Floppy Disk Controller | Enabled |
| IDE HDD Interface | Disabled |
| Parallel Port | Enabled |
| Serial Port 1 (9-pin) | Enabled as COM1 (3F8h) |
| Serial Port 2 (9-pin) | Enabled as COM2 (2F8h) |

# Appendix B SCSI Backplane Boards

There are two SCSI backplane boards standard in the AcerAltos 19000. The SCSI backplane boards provide a convenient interface between the SCSI drives and the system board. Each board includes seven SCSI drive slots to accommodate the drive trays, two SCSI channels to connect to the system board and/or SCSI controller board(s), and one SCSI channel out for external devices.

## B.1 Features

Each 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 disk drives
- Each backplane board can be configured as 'split' (2-channels) (default) or combined into a single SCSI channel
- SCSI ID strapping that allows wide SCSI HDD ID configuration through the backplane instead of configuring individual drive IDs

# B.2 Layout

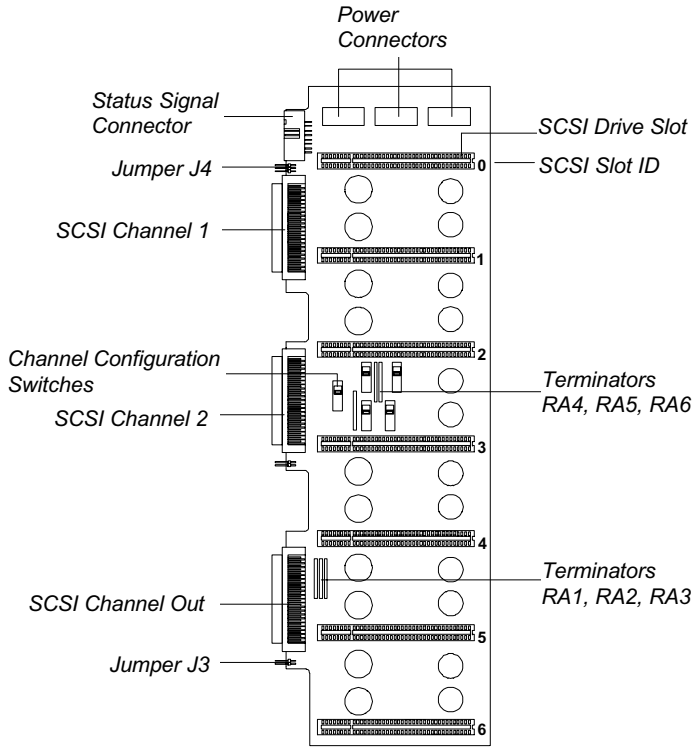



*Figure B-1 SCSI Backplane Board*

## B.3 Jumper Settings

The backplane has two jumpers, J3 and J4, that allow you to select the terminator power source and to set drive IDs. J4 supports the three upper drive slots (slots 0, 1, and 2) on the backplane. J3 supports the four lower drive slots (slots 3, 4, 5, and 6).

Figures B-2 and B-3 show the settings for jumpers J3 and J4.

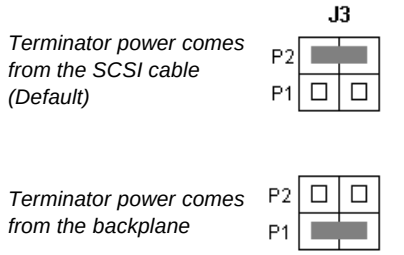



*Figure B-2 Jumper J3 Settings*

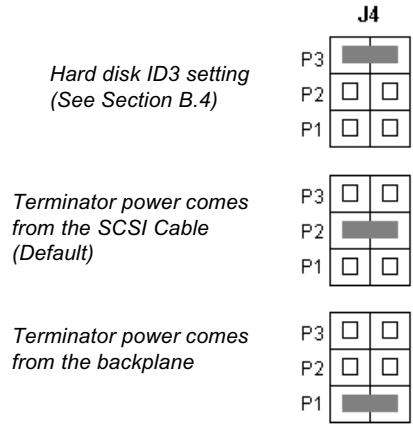



*Figure B-3 Jumper J4 Settings*

# B.4 Hard Disk ID Feature

Closing the P3 pins on jumper J4 on the SCSI backplane board sets seven additional SCSI drive IDs for the second backplane board. Figure B-4 illustrates P3 settings for jumper J4.

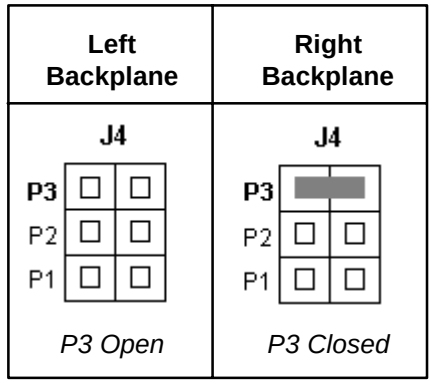



*Figure B-4 P3 Setting for Jumper J4*

Table B-1 shows the P3 settings and their corresponding functions in two 'combined' channel configurations.

*Table B-1 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**. This is the default setting. |

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

# B.5 Channel Configuration

You may configure each backplane as single-channel (combine) or dual-channel (split) backplane (default).

## Single-Channel Configuration

In a single-channel configuration, channel 1 supports the SCSI devices plugged into slots 0 to 6. Set the channel configuration switches to "Combine" and set the terminators accordingly (Table B-2) to achieve a single-channel configuration. See Figure B-1 for the locations of the switches and terminators.

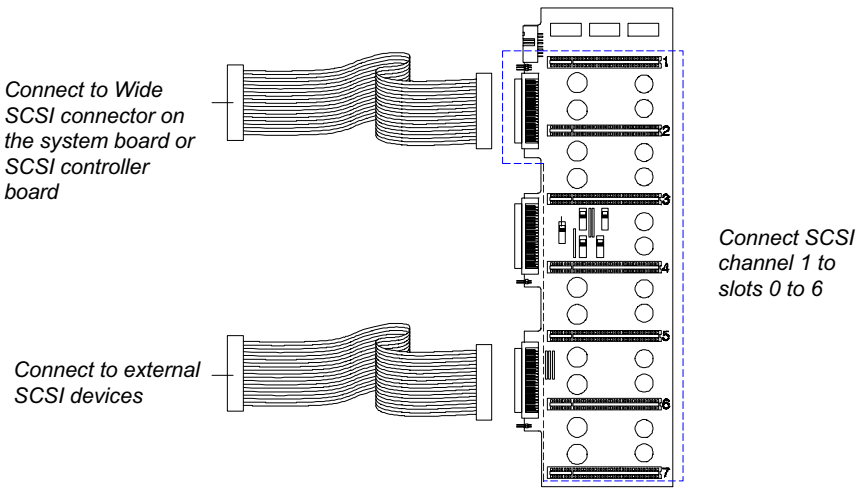



*Figure B-5 Single-Channel Configuration*

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

*Table B-2 Terminator Settings for Single-Channel Configuration*

| Terminator | Setting |
|---|---|
| **With External Device** | |
| RA1, RA2, RA3<br>RA4, RA5, RA6 | Removed<br>Removed |
| **Without External Device** | |
| RA1, RA2, RA3<br>RA4, RA5, RA6 | Installed<br>Removed |

*For configurations with external devices, terminate the cable at the external device end.*

*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 0 to 2, and channel 2 supports the devices in slots 3 to 6. Set the channel configuration switches to "Split" and set the terminators accordingly (Table B-3) to achieve a dual-channel configuration. See Figure B-1 for the locations of the switches and terminators.

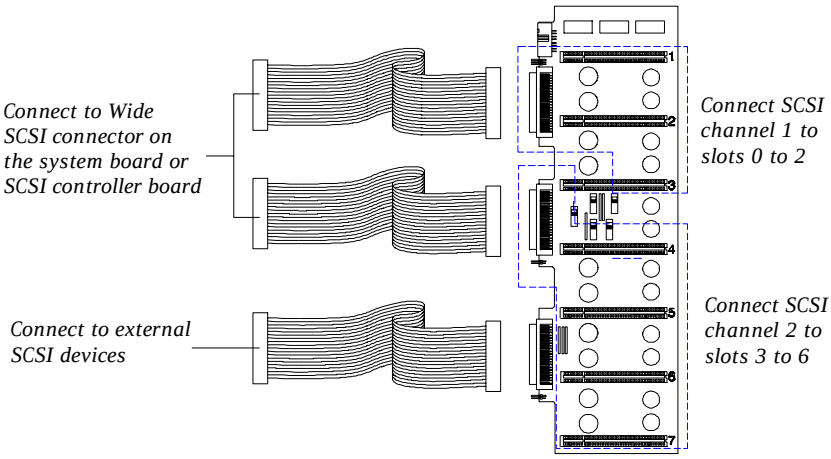



*Figure B-6 Dual-Channel Configuration*

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

*Table B-3 Terminator Settings for Dual-Channel Configuration*

| Terminator | Setting |
|---|---|
| **With External Device** | |
| RA1, RA2, RA3<br>RA4, RA5, RA6 | Removed<br>Installed |
| **Without External Device** | |
| RA1, RA2, RA3<br>RA4, RA5, RA6 | Installed<br>Installed |

## B.6 Installing a SCSI Hard Disk

The system supports hot-pluggable drive trays.

Follow these steps to install a SCSI hard disk in a hot-plug drive tray:

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

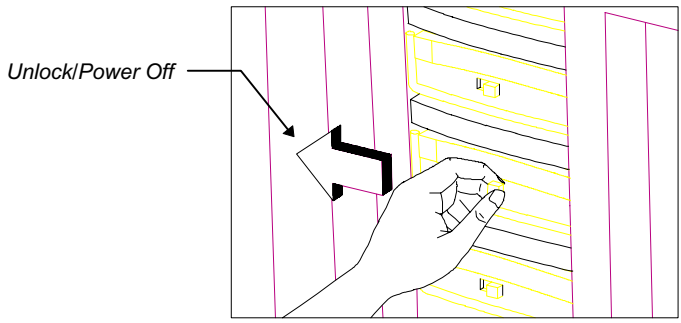



*Figure B-7 Unlocking the Drive Tray Switch*

3. Pull the drive tray handle down.

4. Pull the drive tray out.

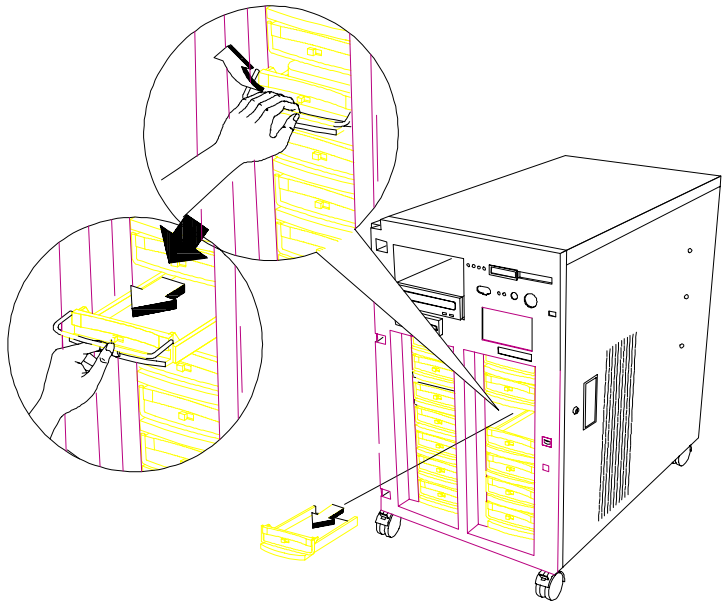


*Figure B-8 Pulling Out a Hot-plug Drive Tray*

5. Remove any terminators and set any drive options on the wide SCSI drive that you wish to install.

*Make sure that you have closed J4 P3 pins on the backplane board when choosing additional SCSI IDs. See section B.4.*

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

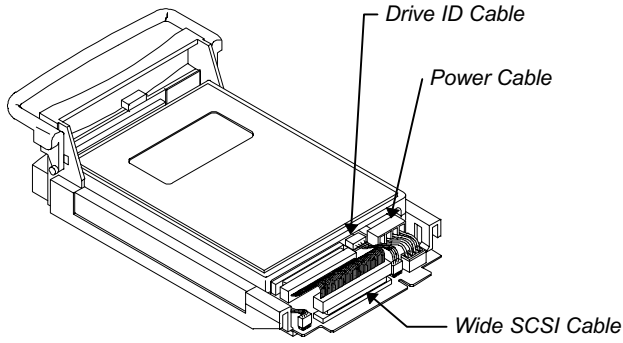



*Figure B-9 Connecting the Drive Cables (Wide SCSI Drive)*

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

*Make sure to place the drive tray handle in the up position when inserting the tray back into the bay. Otherwise, the tray will not fit in completely.*

8. Push the drive handle into place.

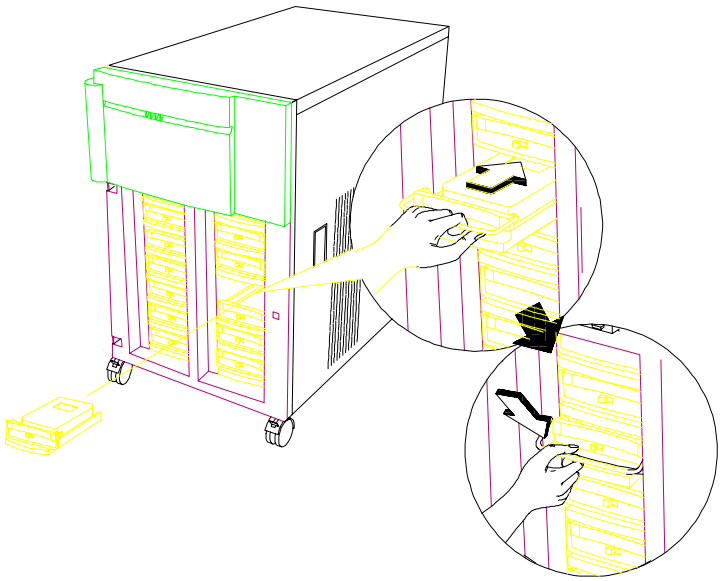


*Figure B-10 Installing a Hot-plug Drive Tray*

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

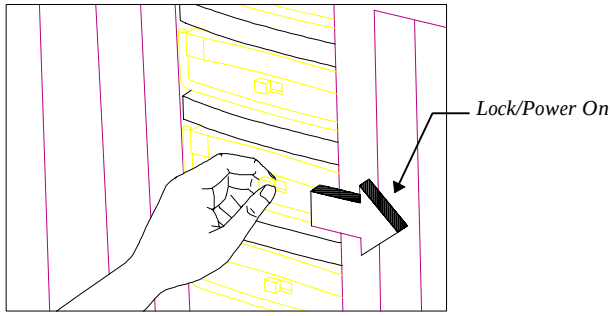



*Figure B-11 Locking the Drive Tray Switch*

## B.7 Using the Hot-swap Feature

The backplane board supports a hot-swap feature that allows you to replace defective drives even while the system is running.

*The hot-swap feature requires a RAID controller board and RAID drivers.*

The drive fault indicator[1] on the hot-plug drive tray lights up whenever the drive that it carries becomes bad or defective. When this happens, you can replace the defective drive without shutting off the system.

Follow these steps to use the hot-swap feature:

1. Set the hot-swap drive tray power switch to the Unlock / Power Off position.

2. Pull out the drive tray.

---

[1] This feature requires a software driver that coordinates the system signals prompting the indicator to light up.

3. Take the defective drive out of the tray.

4. Configure the new hard disk. If you are not using an ID cable, make sure that the new drive ID is the same as the old drive ID. If you are using an ID cable, make sure that you connect the cable properly.

5. Install the new disk according to the installation steps in “Installing a SCSI Hard Disk.”

*Make sure that the power switch on the drive tray is set to the Unlock/Power Off position before you plug it into the backplane board.*

# Appendix C  Power Subsystem

The power subsystem consists of a power backplane, swappable power supply modules, and an optional 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 load-sharing (across two), redundant configuration.

A redundant power configuration enables a fully-configured system to continue running even if one power supply fails. The remaining power supply module(s) still satisfy the system's power requirement.

The optional UPS provides a reliable power backup in case of a total AC power loss.[1] It comes with a battery and a charger to continuously recharge the battery whenever the system power is on.

[1] To use the UPS feature, you must have Acer Server Manager (ASM) Pro installed.

# C.1 Power Supply Upgrade

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

# C.2 Installing a Power Supply

Follow these steps to install a power supply module:

1. **Turn off the system and disconnect the AC power before opening the system housing.** 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.

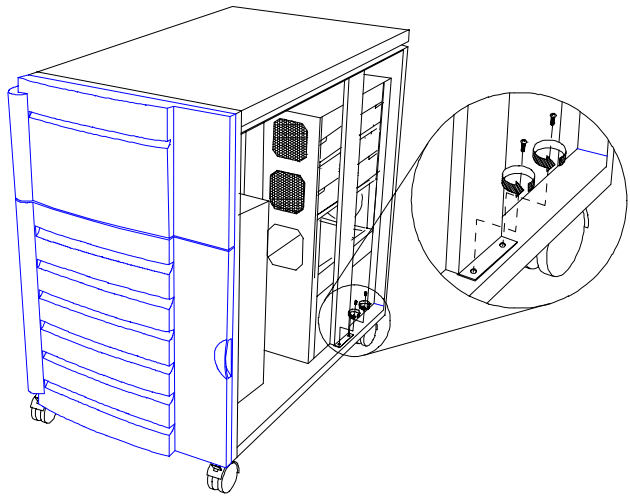


*Figure C-1 Removing the Metal Bar Screws*

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

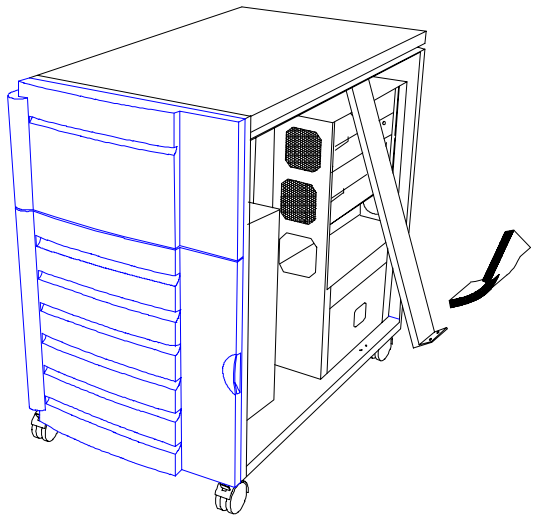


*Figure C-2 Pulling Out the Metal Bar*

4. Unpack the 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 edge connector completely fits into the slot on the power backplane. See Figure C-3.

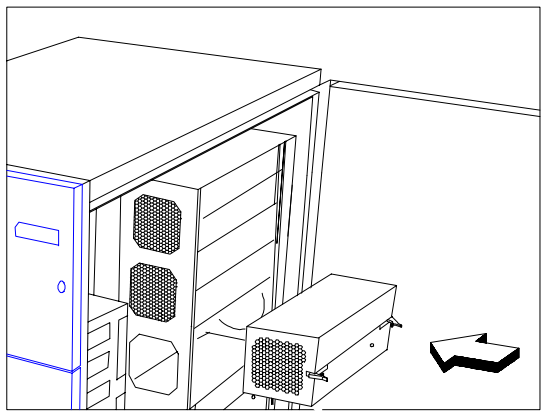


*Figure C-3 Installing a Power Supply Module*

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

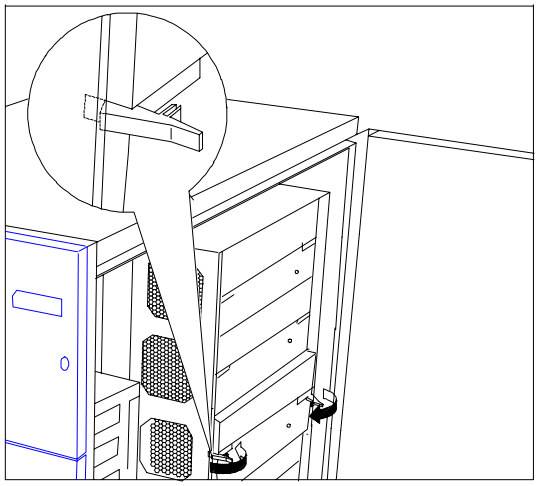


*Figure C-4 Locking the Holding Clips*

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

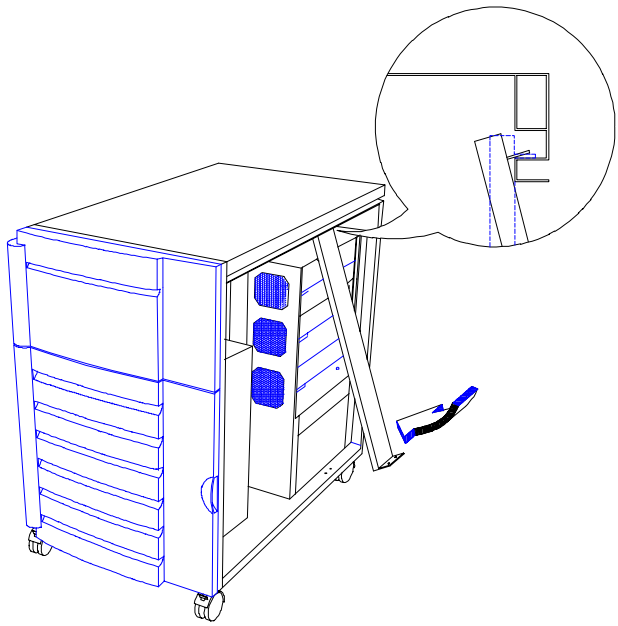


*Figure C-5 Reinstalling the Metal Bar*

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

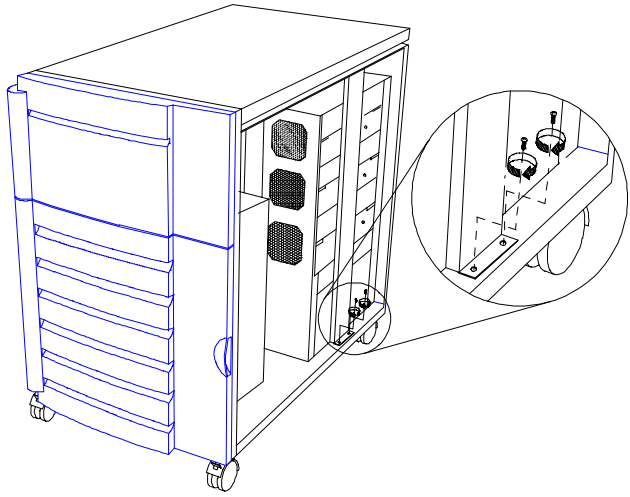


*Figure C-6 Securing the Metal Bar with Screws*

9. Replace the right panel door.

## C.3 Removing a Power Supply Module

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

Follow these steps to remove a power supply module:

1. **Turn off the system and disconnect the AC power before opening the system housing.** Remove the right panel door as in Figure 3-4.

2. Remove the metal bar over the power supply rack as in the previous section.

3. Unlock the power supply module holding clips by pressing them outward.

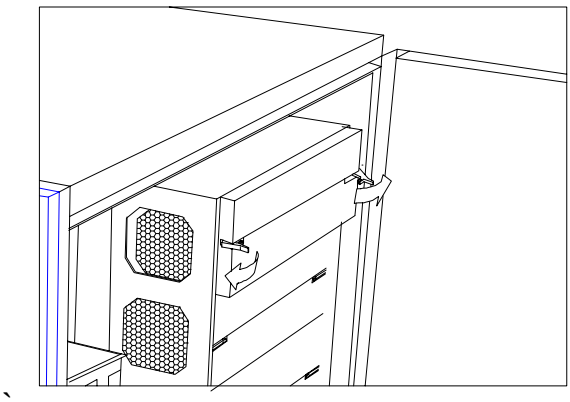


*Figure C-7 Unlocking the Power Supply Holding Clips*

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

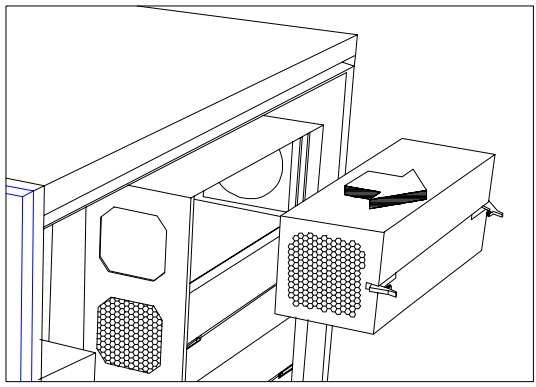


*Figure C-8 Removing the Power Supply Module*

5. Install a new power supply module as in the previous section.

# C.4 Power Cable Connections

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

Table C-1 shows the power backplane connections.

*Table C-1 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 C-9 illustrates the power cables that connect to the system board.

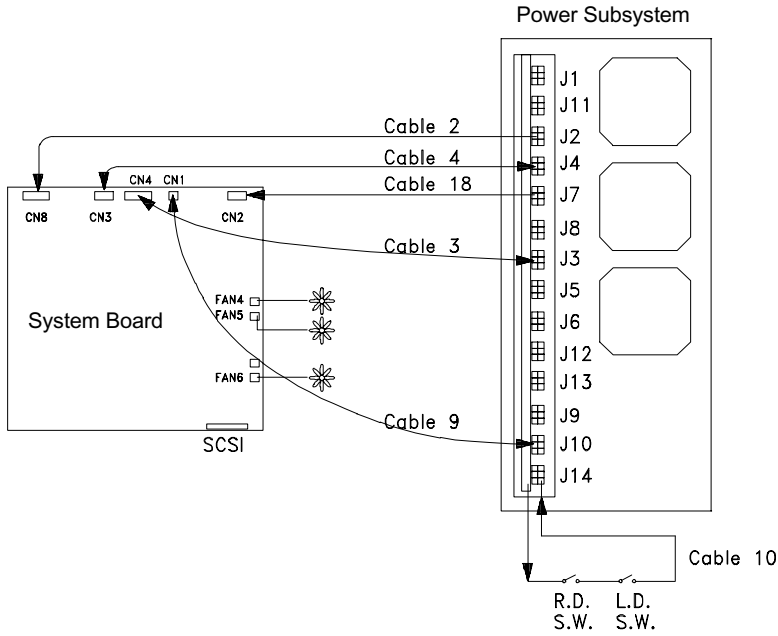



*Figure C-9 System Board Power Connections*

*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 C-10 shows the system board, SCSI backplane board, front panel board, and power subsystem interconnections.

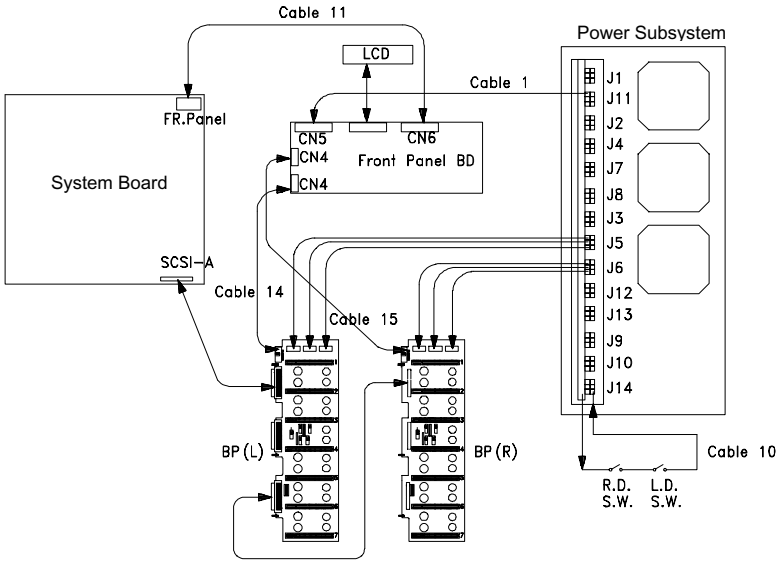



*Figure C-10 System Board and Power Subsystem Interconnections*

## C.5 Installing a Charger Board and a Battery Box

*Turn off the system and disconnect the AC power cord before opening the system housing.*

Follow these steps to install a charger board and battery box:

1. Remove the right panel door (see Figure 3-4).

2. Remove the two screws that secure the metal bar over the power supply enclosure (see Figure C-1).

3. Pull out the metal bar from the lower end and unhook the upper end from the housing roof (see Figure C-2).

4. Unpack a charger board.

5. Remove the screws that secure the charger compartment metal cover.

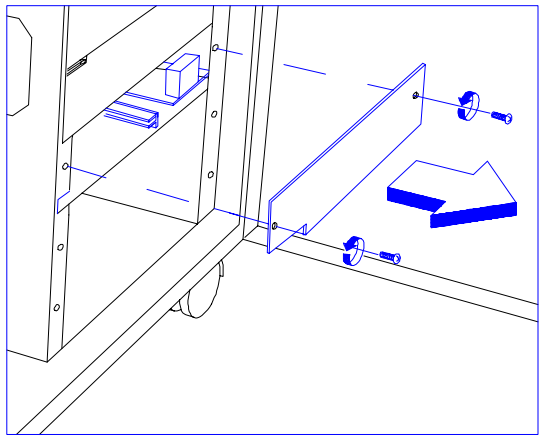


*Figure C-11 Removing the Charger Compartment Metal Cover*

6. Align the charger board with the rails in the charger compartment, then insert it until the edge connector reaches the power backplane.

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

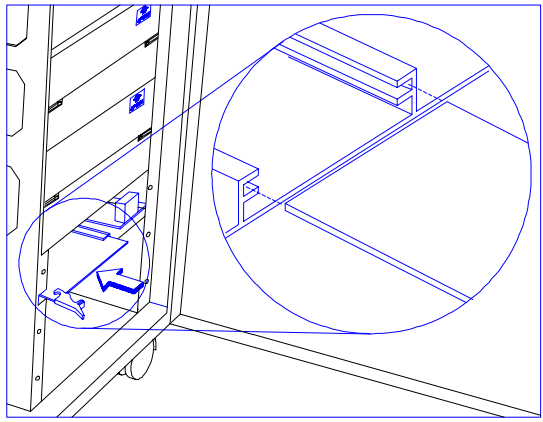


*Figure C-12 Installing a Charger Board*

7. Press the holding clip inward to lock the charger board into the enclosure.

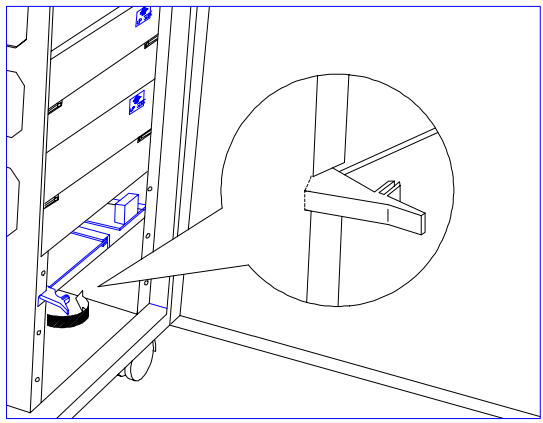


*Figure C-13 Locking the Charger Board*

8. Unpack the battery box.

9. Firmly hold the battery box with both hands and insert it into the bottom compartment, below the charger.

*Be careful! The battery box is heavy.*

*Make sure that the "Up Side" mark on the battery box is pointing up. If your battery box does not have this mark, ensure that the other labels on the module are upright.*

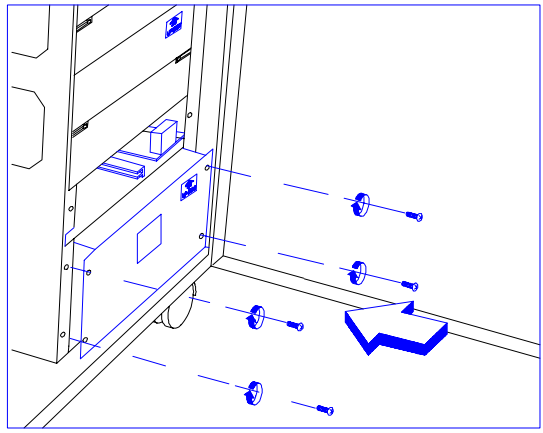


*Figure C-14 Installing a Battery Box*

10. Secure the battery box with screws.

11. Attach the charger compartment metal cover and secure it with screws.

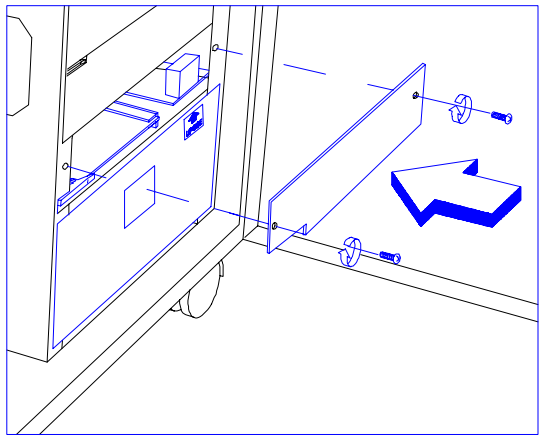


*Figure C-15 Attaching the Charger Compartment Metal Cover*

## Removing a Battery Box

Follow these steps to remove a battery box from the power supply rack:

1. Remove the screws that secure the battery box to the enclosure.
2. Holding on the hole in the center, pull the battery box out about an inch.
3. Firmly hold the battery box by the sides to remove it completely.

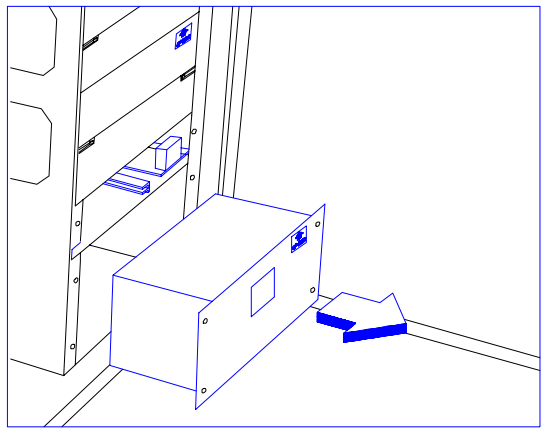


*Figure C-16  Removing a Battery Box*

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# *Release Note*

# AcerAltos 19000 Update

Thank you for purchasing an AcerAltos 19000 server. We want to provide you with the most up-to-date information about your new server.

This release note updates the *AcerAltos 19000 User's Guide* (P/N 49.AA985.001) with information about RDM, a key component in Acer's suite of management software. **For the latest information about RDM, look to this release note and the *Remote Diagnostic Manager (RDM) User's Guide* (P/N 49.AB330.001).**

**Similarly, for the latest information about ASM Pro, refer to the *Advanced Server Manager Pro (ASM Pro) User's Guide* (P/N 49.AB006.002).**

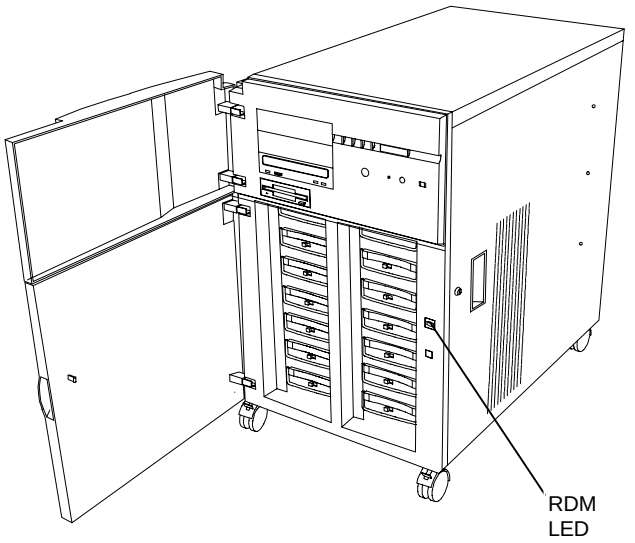
In addition, the information on page 2-2 of the *AcerAltos 19000 User's Guide,* "Checking the Package Contents," can now be found on the System Contents sheet included with your system.

Also, please note the default setting for "Extended BIOS translation for DOS Drives > 1 Gbyte" (an Advanced Configuration option discussed in Chapter 4, SCSI*Select* Configuration Utility). The default setting is **Enabled**. **Do not change this setting**.

# RDM LED Location

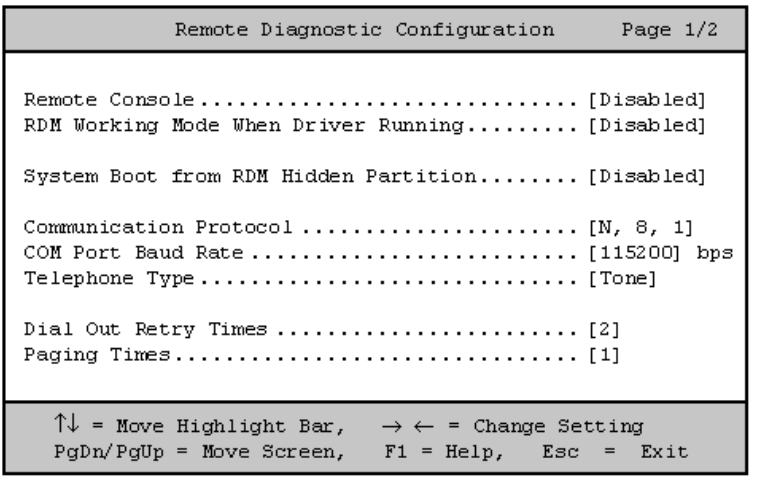
The figure below shows the location of the RDM LED indicator. This indicator remains lit (on) whenever RDM is activated in Runtime Remote Mode. The figure below replaces the figure on page 1-12 of the AcerAltos 19000 *User's Guide.* For more information about RDM hardware, including how to reinstall the RDM module and LED, refer to the *Remote Diagnostic Manager (RDM) User's Guide*.

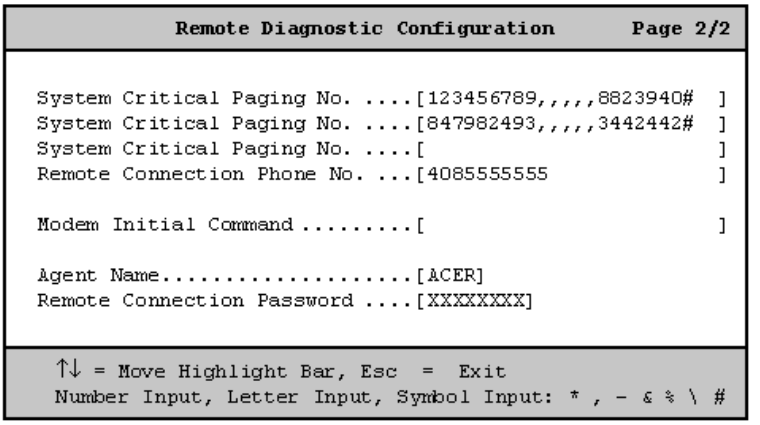
*The RDM module and LED are pre-installed at the Acer factory.*



# RDM BIOS Utility

The current RDM BIOS screen is similar to the following two screens. Refer to Chapter 2 of the RDM *User's Guide* (P / N 49.AB330.001) for details on the current RDM BIOS.



# Advanced Server Manager (ASM) Pro

References in the AcerAltos 19000 *User's Guide* to Acer Server Manager (ASM) Pro should read Advanced Server Manager (ASM) Pro.

# Remote Diagnostic Manager (RDM)

References in the AcerAltos 19000 *User's Guide* to Remote Device Manager (RDM) should read Remote Diagnostic Manager (RDM).