A2210

User's Manual

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Chapter

1

Introduction

Overview and Features

This document provides guidance for setting up, configuring, and using the A2210 server. This document also supplies general system operation information.

1.1 Overview

The A2210 server is 1U platform based on AMD Opteron™ processors and AMD HyperTransport chipsets. The feature sets are targeted for OEM and system builder markets. Table 1 presents the primary hardware components used on the A2210 platform.

Table 1. Primary Hardware Components

Function	Component
Processors	AMD Opteron™ processors • Two processors each with three 16x16 HyperTransport links • DDR memory controller and bus interface
Memory	• Processor H0 - four DDR DIMM slots with a maximum of 16 Gbytes registered DDR using 1 Gbit x 4 bank technology • Processor H1 - four DDR DIMM slots with a maximum of 16 Gbytes registered DDR using 1 Gbit x 4 bank technology

Function	Component
PCI-X Tunnel	AMD-8131. HyperTransport PCI-X Tunnel • One 16x16 HyperTransport I/O bus interface • One 8x8 HyperTransport I/O bus interface • Two PCI-X bridges and bus interfaces
Peripheral Bus Controller	AMD-8111. HyperTransport I/O Hub • One 8x8 HyperTransport I/O bus interface • Two USB ports controlled by the peripheral bus controller • LPC Interface for ROM and Super I/O • Two UDMA133 EIDE ports • One 33-MHz, 32-bit PCI slot
LPC Super I/O	Winbond W83627HF Super I/O • One Floppy connector • One 16550-compatible serial port • Two PS/2 ports for keyboard and mouse • One hardware monitor
SCSI Controller	LSI 53C1030 • Dual-Channel, Ultra320 capable
Gigabit Ethernet Controller	Broadcom BCM5704 • Dual 10/100/1000 ports
Server Management	Qlogic Zircon UL Baseboard Management Controller • IPMI 1.5 compliant
Optional Video	ATI Rage XL graphics controller with 4 Mbytes of memory via a small form factor PCI card
Clock Generator	• TI A-PCDC960 or ICS 950401AF
Miscellaneous	• Miscellaneous debug and test features • Main Board o Twelve layers o E-ATX form factor • Custom 500W power supply • PC2001 Compliant • WHQL Compliant • Energy Star Compliant • WFM 2.0 Compliant (Wired for Management) • PCI-X 1.0 and PCI 2.2 Compliant • USB 1.1 (OHCI) Compliant • ACPI 1.0b Compliant

1.2 Feature Identification

This section provides a series of drawings to familiarize the user with the many features of the server.

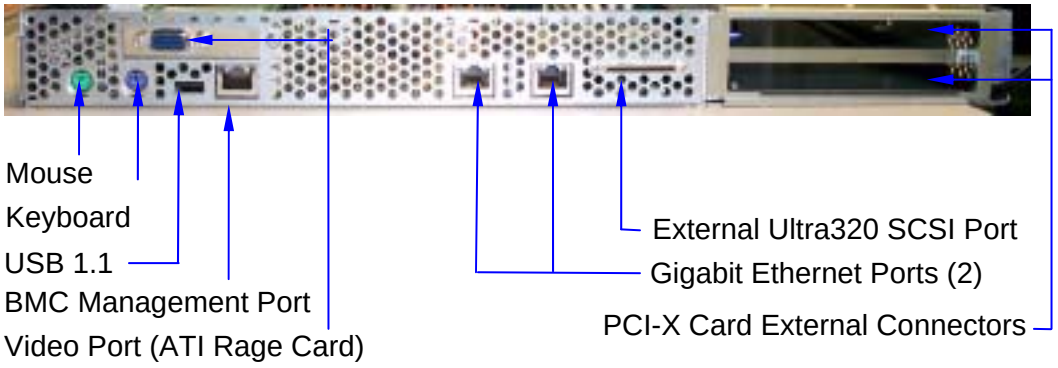


Figure 1 - Rear View - External Features

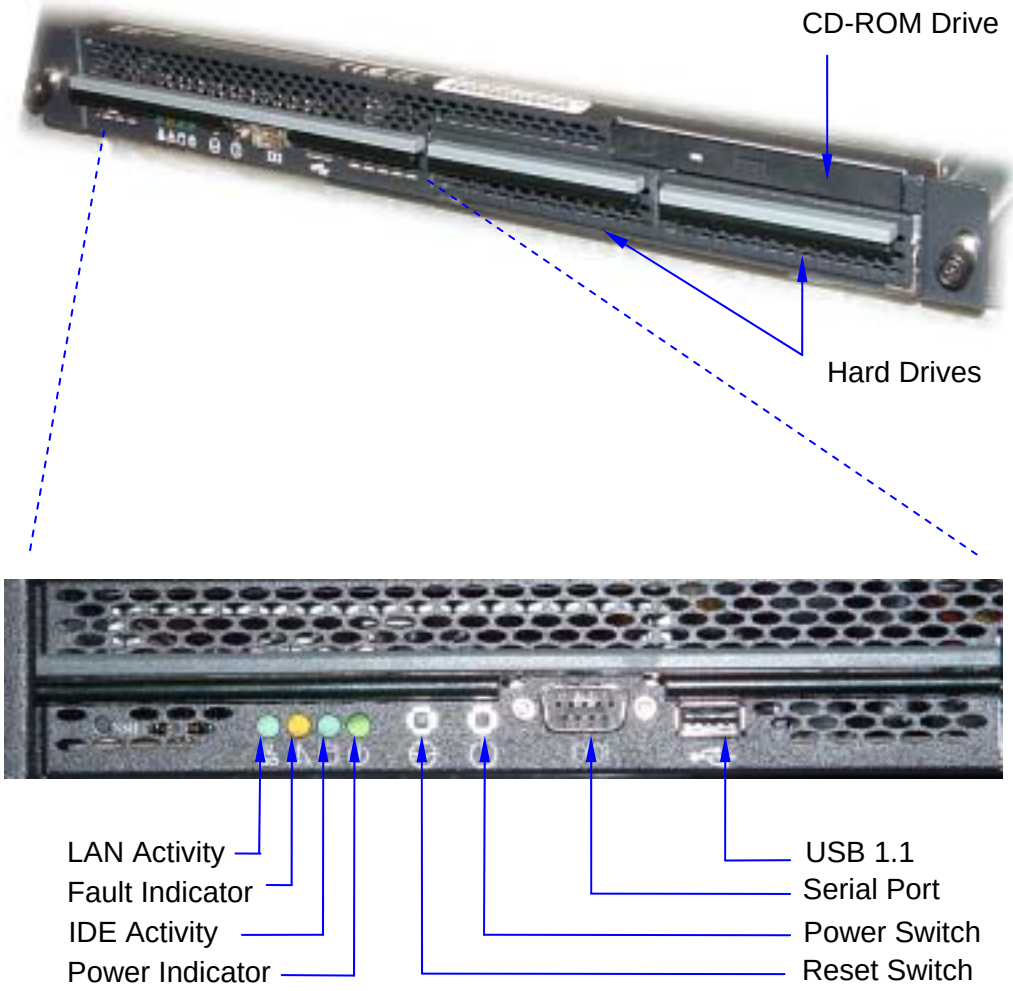


Figure 2 - Front View - External Features

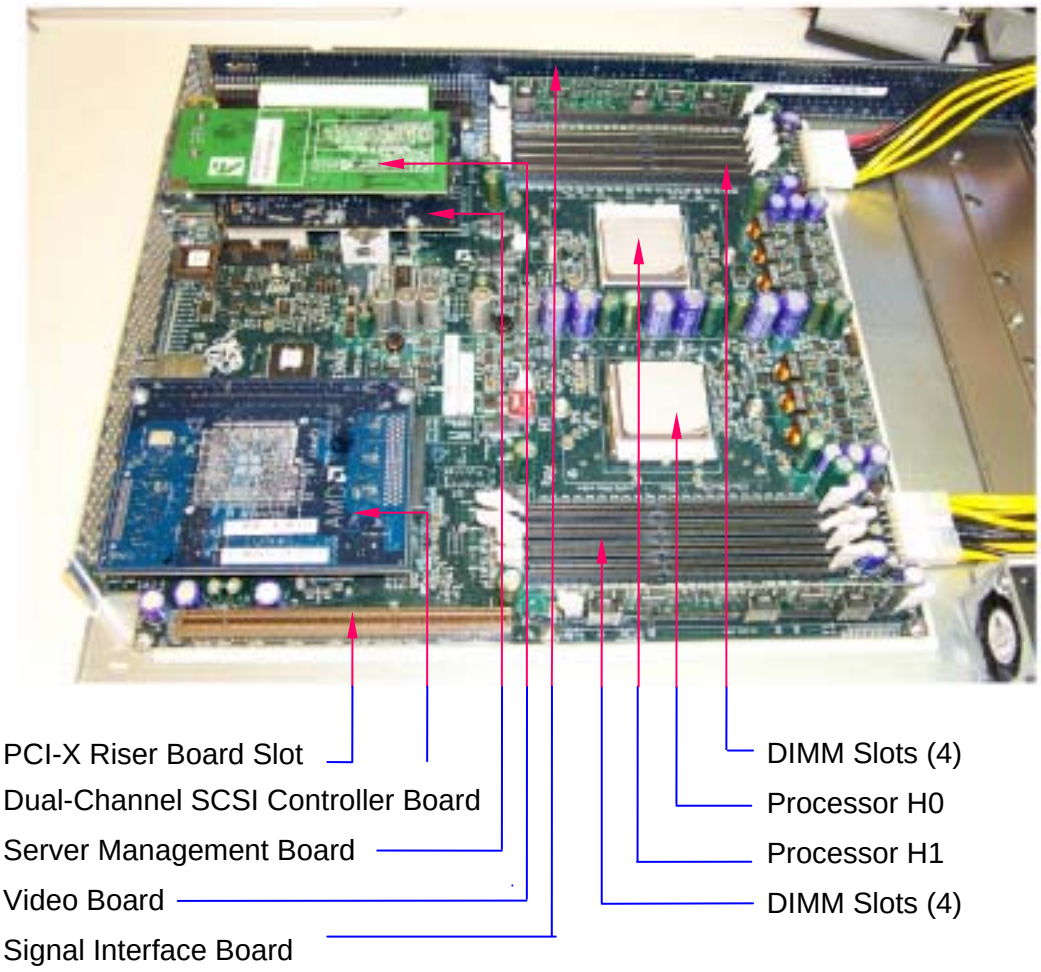


Figure 3 – Interior Features

1.3 Server Architecture

The server's major component is the motherboard. This section gives short descriptions of the main board as well as the other components: the front access panel, server management board, SCSI controller, signal interface board, and PCI-X riser board. Figure 4 is a block diagram of the server's electrical components.

1.3.1 Main Board

The main board is the central hub for the A2210 platform on which most major system devices reside and to which all peripheral boards connect.

1.3.2 Front Access Panel Board

The front access panel board is positioned at the front of the A2210 platform. It serves the following purposes:

- Transfers power from the silver box power supply to the main board
- Provides UDMA 133 EIDE connectivity
- Provides Ultra320 hot swap SCSI connectivity
- Provides A2210 server status LEDs
- Provides connectivity for up to ten 3-pin fans

1.3.3 Server Management Board

The server management board supports the server management functions for the platform. It is designed on a mezzanine board in order to increase board real estate on the main board. Also, by organizing the server management functions on a mezzanine board, a motherboard designer can easily implement an alternate baseboard management controller.

1.3.4 Dual-Channel SCSI Controller Board

The dual channel SCSI controller board is a daughter card to the main board. This card connects to the main board through a 100MHz PCI-X bus and uses a dual SCSI controller to provide two independent ULTRA320 SCSI channels, via SCSI channel A and SCSI channel B.

1.3.5 Signal Interface Board

All signals used by the front access panel board are routed through the signal interface board.

1.3.6 PCI-X Riser Board

The PCI-X riser board allows the A2210 to have connectivity for two full length 64-bit, 100MHz PCI-X cards.

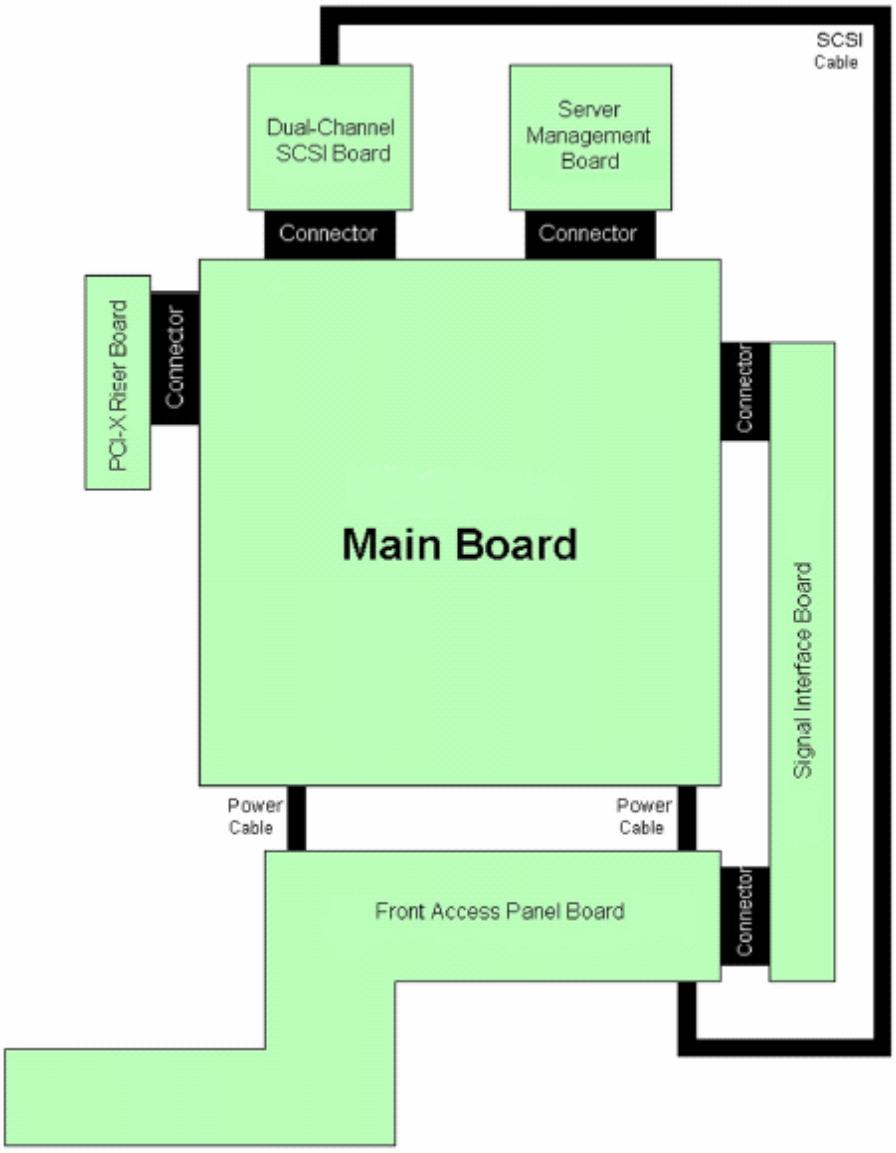


Figure 4 - A2210 Server Block Diagram

1.4 External Connectivity

The majority of the external connections are through the I/O panel in the back of the chassis. The connectors include the PS/2 keyboard and mouse connectors, the serial port, the two USB ports, the SCSI connector, and the Ethernet ports. The following sections explain these connectors.

1.4.1 PS/2 Keyboard and Mouse Connector

The PS/2 keyboard and mouse each use a right angle mini-DIN connector with PC'99 standard coloring (violet for keyboard and light green for mouse).

Keyboard Connector

Once the keyboard data is identified as either system-specific or application-specific, it is processed accordingly. When the operating system is notified that there is data from the keyboard, the operating system checks to see if the keyboard data is a system-level command. If the keyboard data is not a system-level command, the operating system passes the data on to the current application. The current application understands the keyboard data as an application-level command and either accepts the data as content for the application or does not accept the data, ignoring the information.

PS2 Mouse Connector

The data is sent serially on the data line from the mouse to the computer. The clock line pulses to notify the system where each bit starts and stops. Eleven bits are sent for each byte (one start bit, eight data bits, one parity bit, and one stop bit). The PS/2 mouse sends on the order of 1,200 bps, allowing it to report mouse position to the computer at a maximum rate of about 40 reports per second.

1.4.2 Serial Port

There is a single 9-pin subminiature-D serial port (COM 1) on the front panel. This port is designed to allow for wake-up commands from an external source such as a modem.

1.4.3 USB Ports

A OHCI-based USB 1.1 controller exists within the AMD-8111 I/O hub. This controller and its implementation on the main board meet the respective specification design guidelines.

The following are features of the USB ports used on the A2210 server:

- Single USB 1.1 port is mounted on the back panel I/O and routed to the AMD-8111 I/O hub.
- Single USB 1.1 port is mounted on the front access panel board for front access and routed to the AMD-8111 I/O Hub.

Over-current protection is implemented individually for each of the two OHCI controllers inside AMD-8111 I/O hub.

1.4.4 External SCSI

There is a single VHDCI connector on the back panel. This connector is designed to allow for external connectivity to the Dual-Channel LSI53C1030 Ultra320 SCSI controller.

1.4.5 Ethernet

There are three RJ45 ports available on the back panel as follows:

- Two RJ45 connectors allow for external 10/100/1000 Ethernet connectivity to the Dual-Channel Broadcom BCM5704 Gigabit Ethernet Controller.
- One RJ45 connector allows for external 10-BaseT Ethernet connectivity to the Qlogic ZirconUL Baseboard Management Controller (BMC) located on the server management board.

1.5 Internal Connectivity

Internal connectivity includes all interfaces internal to the chassis that provide connection to other devices internal or external to the chassis that are part of the A2210 server feature set. These interfaces include EIDE and floppy storage devices, front panel connections, and other miscellaneous connectors.

1.5.1 Mass Storage

The following sections describe different types of mass storage.

Internal SCSI

There is one internal 68-pin, vertically mounted SCSI connector located on dual-channel SCSI Controller Board. This connector is used to cable the Ultra320 capable SCSI bus to the Front Access Panel Board. This enables a Guardian Enclosure Management (GEM) 318P controller and two hot-plug SCSI connectors that are accessible in the front of the chassis.

EIDE

EIDE is an enhanced IDE controller, implemented through the AMD-8111 I/O hub, with independent primary and secondary ports that support two devices, and both ports are included. Supported protocols include PIO modes 0 through 4, multi word DMA, and ultra-DMA modes through ATA-133 for each device.

The A2210 server contains two on-board (2x20) standard IDE peripheral connectors.

The A2210 server contains two methods implemented for cable type detection. The two different cable types (40 or 80 conductor) dictate the overall transfer rate ability of the host or bus. Transfer rates greater than Ultra DMA 2 require an 80-conductor cable.

Miscellaneous

The miscellaneous connectors that are used internal to the chassis include:

- Ten 3-pin fan headers that provide rotation sense feedback. All headers are for the system fans that are located between the front access panel board and the main board. Default condition has them operated at a full on with the ability to detect a fan failure and report this to the server management board.
- Two supplemental 3-pin fan headers near the processors that provide rotation sense feedback for lab purposes.
- One 132-pin ATX power supply connector, supplying 500W power to the main board and other system devices.

1.6 Contacting Celestica

Global VSP Order Desk and Service Center

- E-Mail**:** **vsp_product_info@celestica.com**
- Phone **1-866-258-8475**

Chapter

2

Installation

Unpacking and Set-Up

The server is delivered in packaging designed to protect it from the stress of shipping. It is recommended that this packaging be saved and reused should the server need to be transported to another location.

2.1 Unpacking the System

Upon opening the shipping carton, the user encounters two additional boxes - the server accessories kit and the chassis slide rails. Remove the accessories kit and inspect its contents. The accessories kit may contain the following items:

- Drive Carriers (Quantity = 2)
- AC Power Cord (Quantity = 1)
- Recovery & Drivers CD (Quantity = 1)

The server is encased in a multi-piece foam carrier. To remove the server, first remove the upper foam inserts and then lift the server out of its foam. Once free of the shipping carton, place the server on a sturdy work surface. The server may be fitted with the following equipment:

- AMD Opteron Processors (Quantity = 2)
- 256MB Registered ECC DDR SDRAM DIMMs, PC2100, CL 2.5 (Quantity = 4)
- Power Supply (Quantity = 1)
- DVD-ROM Drive, IDE (Quantity = 1)

2.2 Before Powering On the System

Prior to applying power to the server for the first time, please perform the following procedures.

2.2.1 Inspect the Server

Open the chassis and perform a visual inspection. Remove the cover lock down screws located on the rear of the chassis. Once the screws are removed, the cover easily slides back by applying gentle pressure toward the back of the unit. Then lift the cover from the chassis. Verify that all cables, processors, memory cards, and I/O cards are properly seated and fully engaged. Then replace the cover or add additional hardware.

2.2.2 Install Slide Rails

The server is shipped without the chassis slide rails installed.

1. To mount a rail, the rail must first be disassembled. Each rail consists of three telescoping beams. Separate the smallest beam (with keyhole slots), as shown in Figure 5, from the other two by extending the beams and releasing the retainer latch while pulling the beams apart. The smallest beam slides free of the main assembly (note the orientation of the beams and keep the slide chassis members with the original outer members).

Figure 5 – Smallest Beam in Chassis Slide Rail

2. Line up the keyhole slots on the beam with the lugs on the side of the chassis and fully engage the beam on the lugs. The beam must be oriented such that the slide compression stop tab (closes off the groove on one end) is toward the front of the unit. See Figure 6. Using the enclosed screw, secure the beam to the chassis, as shown in Figure 7.

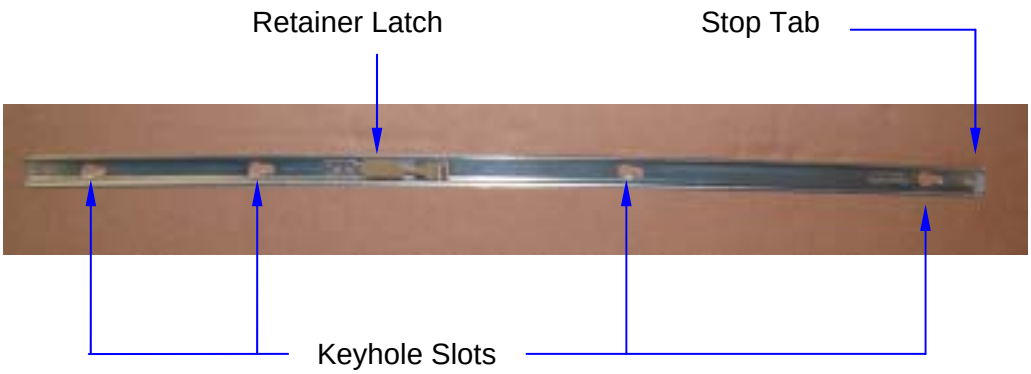


Figure 6 – Smallest Beam Features

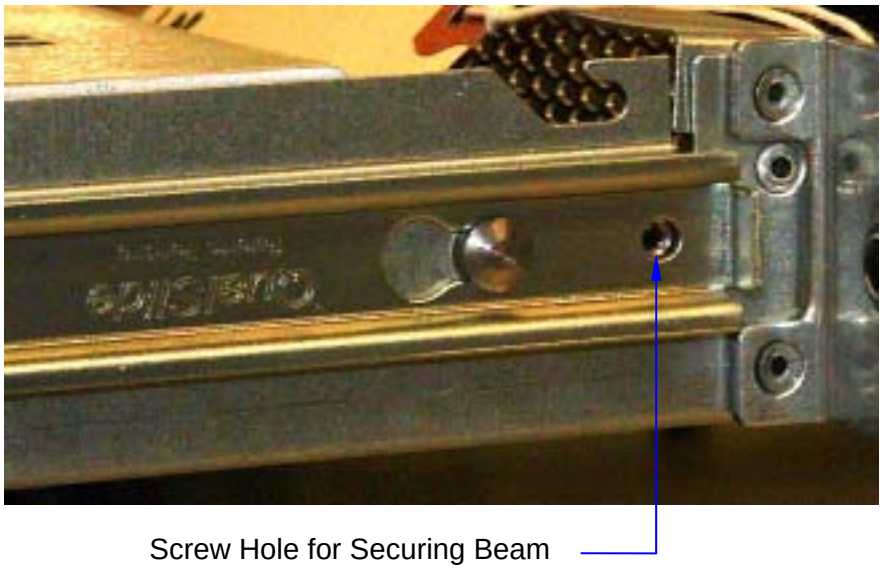


Figure 7 – Screw Hole

3. Place the outer member slide beams into the desired rack position and fully extend against the rack vertical rails.

4. Attach the slide to the rack vertical with the supplied M8 screws and washers. Do not fully tighten screws until final adjustment is made.

5. Establish distance from front cabinet rail to rear cabinet rail and attach rear brackets to slide. Do not fully tighten rear bracket mounting screws until final adjustment is made.

6. Reassemble the rail by sliding the outer two beams over the smaller beam starting from the rear of the server and duplicating the original factory orientation. It may be necessary to release the retainer latch during this process. Repeat the process for the other rail.

7. Adjust the slide position until movement is smooth. Tighten all screws and complete installation.

To remove the chassis from the rack, depress the release lever on each slide.

2.3 Powering On the System

When the server is powered on for the first time after connecting the power cord, the BIOS automatically powers the system up. On subsequent power-ups, the power button on the front panel must be pressed.

In the event that the system cannot be powered down normally, pressing and holding the power button on the front panel for four seconds shuts the system down.

Chapter

3

System Interfaces

Switches, LEDs, and more . . .

This chapter provides details on the switches, buttons, and LEDs that a user will need to know for proper operation of the server.

3.1 Switches/Buttons

There are two switches on the front of the server - the Reset and Power buttons. Table 2 describes the function of each switch.

Table 2. Button Descriptions

Function	Description
Power Button	When in the off state, a press powers up the system. In the booted state, a press shuts the system down.
Reset Button	Pressing reset at any time during the full on state generates a system wide reset.

3.2 Control Panel LEDs

There are four LEDs that are visible through the front panel, as listed in Table 3.

Table 3. LED Definitions

LED Name	Functional Description
Power	Indicates the full on state when lit. When off, the system is "off" but the ac power cord may still be plugged in.
HD Act	Hard disk activity LED. When blinking or on, indicates the disk drive is being accessed.
LAN	On or blinks when LAN activity is present.
FAULT	Indicates a fan fault or a Baseboard Management Controller (BMC) system fault. The BMC blinks this light to indicate a fault.

The Fault LED is used to provide a visual indication of warning or critical events identified by the BMC. Any fan fault condition will blink this LED through built-in hardware circuitry. For other fault conditions detected by the BMC, and regardless of whether or not there is a fan fault, the BMC overrides this LED and holds it in the lighted condition. When the BMC-detected fault is removed, the BMC relinquishes control of this LED to the fan tachometer fault circuitry, which is the default owner of this LED.

Remote server locating is implemented through an OEM IPMI command. The Remote Server Locate command is designed to provide a visual cue to the location of a single server in a large server farm. Upon receipt of this command, the BMC overrides the Power LED state and implements a software timer to blink the LED.

Chapter

4

Safety

Overview and Features

Please note the following essential safety information before installing the server and while using it.

Caution

This equipment must be serviced only by qualified personnel.

4.1 General Precautions

Follow these rules to ensure general safety:

- This computer is intended to be installed in a restricted access location.
- Keep the area around the server clean and free of clutter.
- Place the chassis top/side cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- Do not wear loose clothing while working on the system, such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors and can create short circuits or harm you if they come into contact with printed circuit boards or areas where power is present.

- Close the system and (if rack-mounted) secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4.2 Electrical Precautions

Follow basic electrical safety precautions to protect persons from harm and the server from damage.

- **Lithium Battery**
  Danger of explosion if battery is incorrectly replaced
  - Replace only with the same or equivalent type recommended by the manufacturer.
  - Dispose of batteries according to the manufacturers instructions.
- Be aware of the locations of the power on/off switch on the chassis as well as the site's emergency power-off switch, disconnection switch, or electrical outlet.
- Never work on the system with the power cord plugged in. Turning the computer off is not sufficient to completely power down the system. The best way to make sure that the system is off is to remove the power cord.
- When working around exposed electrical circuits, another person familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment to avoid making a complete circuit which will cause electrical shock.
- Metal tools can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

4.3 ESD Precautions

The following measures generally protect the equipment from ESD:

- *Always* use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with clothing, which may retain a charge even if you are wearing a wrist strap, since permanent damage can occur to the system.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules, or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.

4.4 Operating Precautions

To ensure proper cooling, all chassis covers must be in place when the server is operating. Permanent damage to the server can occur if this practice is not strictly followed.

Chapter

5

Motherboard Set-up

Making Changes

This section describes the server motherboard configurations, including options that can be changed to improve performance in particular applications.

5.1 Adding or Replacing the Dual Inline Memory Modules

The main board has two banks of DIMM slots. These banks are located adjacent to the processors, and each bank can hold up to four DIMMs.

5.1.1 Installation Procedure

Notes:

- Start adding memory with the slots closest to the processors. The next modules should be added as close to the processor as possible.
- Memory must be installed in pairs.

Use low-profile registered DIMMs in the server. To add memory, make sure that the retainers are flipped outward and insert the DIMM, pressing firmly downward. The slots are keyed to ensure that the memory module is inserted correctly. In the event that DDR VRMs must be replaced, adding and removing them is similar to the procedure outlined above for DIMMs.

5.1.2 Removal Procedure

To remove DIMMs, flip the retainers that are outboard of the DIMMs, ejecting the DIMM.

5.2 Replacing the Processors and Heatsinks

The A2210 system is designed to work with an AMD Opteron™ processor in a 940-pin package. Typically a A2210 system is populated with two processors, but it is also possible to operate the server using only one processor. In this case, the processor is placed in the H0 slot, which is the slot on the left when the chassis is viewed from the front. The thermal solution consists of a heatsink with a clip for each processor, a plastic duct, and five Delta GFB0412VHF-F00 fans. Single processor systems use a baffle plate positioned in the H1 slot in place of a heatsink.

To replace the processors, follow these steps:

1. Remove the duct. The duct is held in place by a single screw and is lifted out after removing the screw as shown in Figure 8.

Figure 8- Removing the Duct

2. The heatsinks are each held in place by a clip that is anchored by two screws. Remove the screws as shown in Figure 9. When the clip is unscrewed, the heatsink and lid will still be stuck to each other. Break this seal by twisting the heatsink back and forth within its frame, while gently lifting the heatsink.

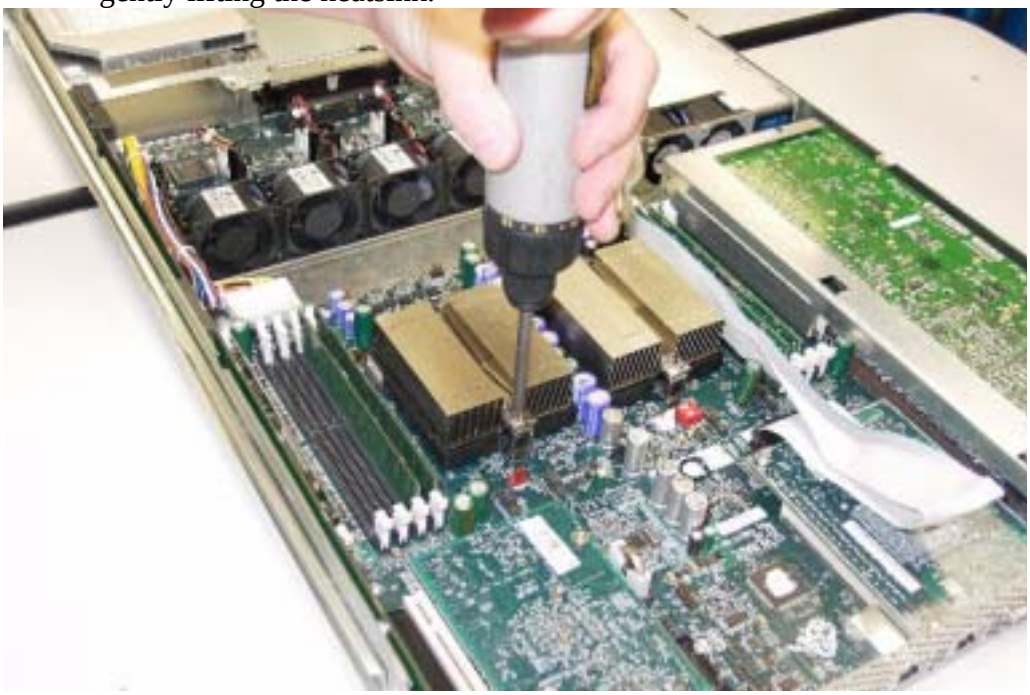


Figure 9 - Removing the Heatsink

3. Unlatch the clip from the two tabs on the heatsink frame that hold it in place, and then take the heatsink and clip assembly off.
4. A processor can be removed by lifting the lever on the side of the socket as shown in Figure 10. This releases the processor pins from the socket. The processor can now be removed freely.

Figure 10 - Releasing the Processor

Installation Procedure

To install the processor, follow these steps:

1. Clean the surfaces of the processor lid and heatsink. Gently scrape off all excess thermal interface material with a flat, plastic edge. Wipe the surfaces clean with a mild solvent such as acetone or alcohol. Allow the surfaces to dry.
2. Apply thermal grease to the processor lid as per *AMD Athlon™ 64 Processor Thermal Design Guide*, order# 26633 before replacing the heatsink. AMD recommends using Shinetsu G-751 or Bergquist TIC-3000 grease.
3. Attach the heatsink by screwing the clip back down.
4. Reattach the duct to complete the processor installation.

5.3 Setting the Switches

Refer to Figure 11 for the location of SW3 on the A2210 main board. Ensure that the following switch is set:

SW3: 12345678=OFF ON OFF OFF OFF OFF OFF OFF

SW4: Don't care

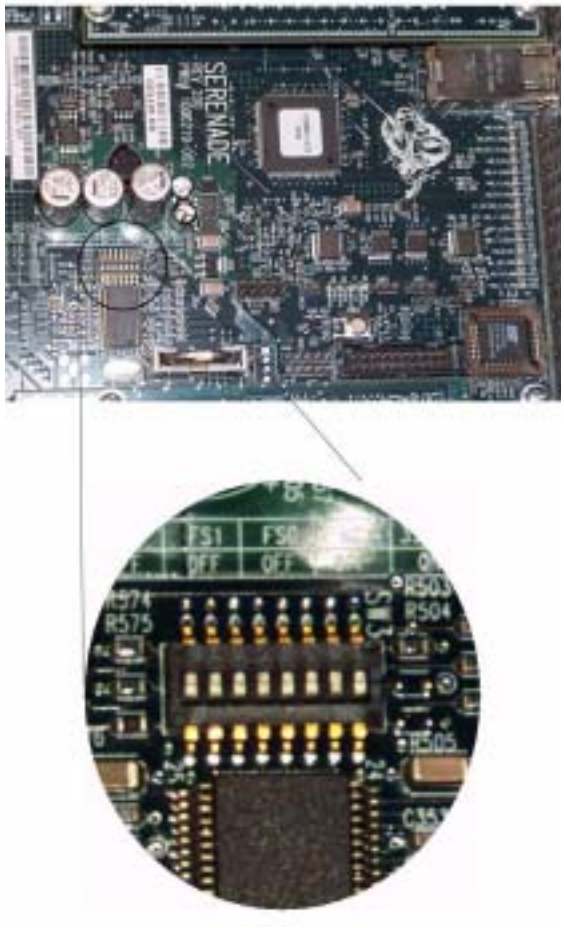


Figure 11 - Location of SW3

5.4 Replacing the Motherboard

There are several other components that must be taken out before the A2210 motherboard can be removed. Follow these steps to remove the motherboard:

1. Remove the heatsinks, Dual-Channel SCSI Controller Board, Signal Interface Board, video card, Server Management Board, and the PCI-X cage. The procedures for removing these components are described in the following sections.
2. Unplug all cables from the motherboard that connect the board to other components.
3. Remove the four screw-lock standoffs that are receptors for the screws that hold the Dual-Channel SCSI Controller Board and Server Management Boards in place.
4. Remove the ten screws that hold the motherboard to the chassis.
5. Remove the motherboard from the chassis.

To install a new motherboard, complete the above steps in reverse order.

Chapter

6

Chassis Set-up

Changing Configurations

This section describes the server chassis configurations, including the default settings as well as options that can be changed to improve performance in particular applications.

Figure 12 – A2210 Server

6.1 Replacing the Signal Interface Board

The signal interface board can be removed by lifting it straight out. The fit between the pins on signal interface board and the two sockets on the motherboard is tight. Rocking the signal interface board back and forth while pulling helps to loosen it from the motherboard to give the user's hands more room.

6.2 Replacing the Server Management Board

To replace the server management board, follow these steps:

1. Remove the video card from the system. The video card is held to the back of the chassis by a screw that fits into a screw lock. Remove the screw as shown in Figure 13.

Figure 13 - Removing the Video Card

2. When the screw and screw lock are removed, the video card can be lifted out. Rocking the video card back and forth while pulling helps to loosen it.
3. Remove the two screws that hold the server management board in place. The server management board can then be taken off the motherboard.
4. When replacing the video card, be sure to reinstall the screw that secures the card into the correct round hole (not a hexagonal air hole) on the rear panel, as shown in Figure 14.

Figure 14 – Replacing the Video Card

6.3 Replacing the Dual-Channel SCSI Controller Board

The dual-channel SCSI controller board is held in place by two screws. Take the screws out, and then the card can be removed. It is replaced similarly.

6.4 Replacing the Front Access Panel Board

There are several components that must be removed before the front access panel board can be replaced.

Follow these steps to replace the Front Access Panel Board:

1. Remove the power cables for the five system fans, as well as the two multicolored power cables that connect the front access panel board to the motherboard. Refer to Figure 15 for the location of these cable connectors.

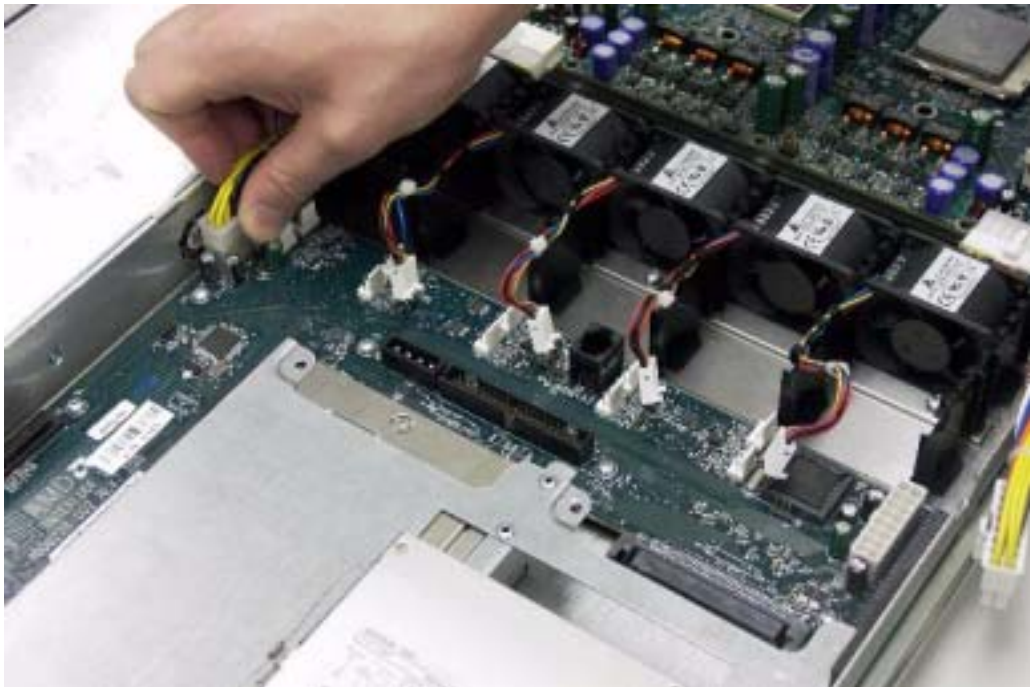


Figure 15 - Removing Power and Fan Cables

2. Disconnect the hard drives from the front access panel board. Disconnect the cables if an IDE hard drive is used, or ejecting the hard drive if the system is SCSI based. Refer to the section entitled "Replacing the IDE Disk Drives" for hard-drive removal procedures.
3. Remove the power supply to free access to the front access panel board. The power supply is held in place by a single screw, which is removed as shown in Figure 16.

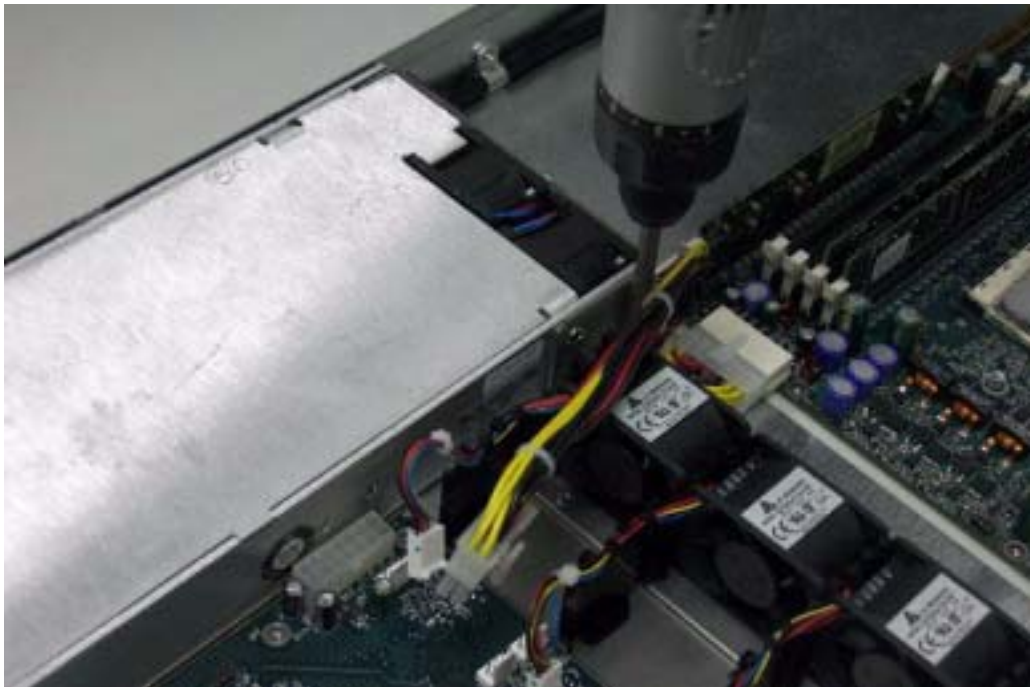


Figure 16 - Removing the Power Supply

4. Remove the plug in the rear of the power supply and disconnect it from the Front Access Panel Board by pulling it toward the rear of the chassis. Separate the power supply from the front access panel board by pulling the power supply toward the rear of the chassis.
5. Remove the 11 screws that holds the front access panel board to the chassis to free the board.

To replace the board, complete all of the above steps in the reverse order with a new front access panel board.

6.5 Replacing the PCI Riser Card

The A2210 uses one of two PCI riser cards – one that supports two PCI-X cards, or one that only supports one. It is preferable to use the single-card riser if only one PCI-X card is used in a system. To replace the PCI riser card, follow these steps:

1. Remove the PCI-X cage and all PCI-X cards as described in the section entitled "Replacing the PCI-X Cards."
2. Unscrew the riser from the PCI-X cage as shown in Figure 17.

Figure 17 - Removing PCI Riser from PCI-X Cage

3. Replace and secure the new card.
4. Replace all PCI-X cards.

6.6 Replacing the PCI-X Cards

The A2210 system can support up to two PCI-X cards. The PCI-X cards are contained within a cage in the rear of the chassis.

1. The cage is not held in place by any screws, so it can be lifted straight out after moving the SCSI cable connected to Dual-Channel SCSI Controller Board out of the way, as shown in Figure 18 and Figure 19.

Figure 18 - Moving the SCSI Cable

Figure 19 - Moving the PCI Cage

2. Once the cage is removed, take out the PCI-X cards by removing the screw holding each card in place as shown in Figure 19.

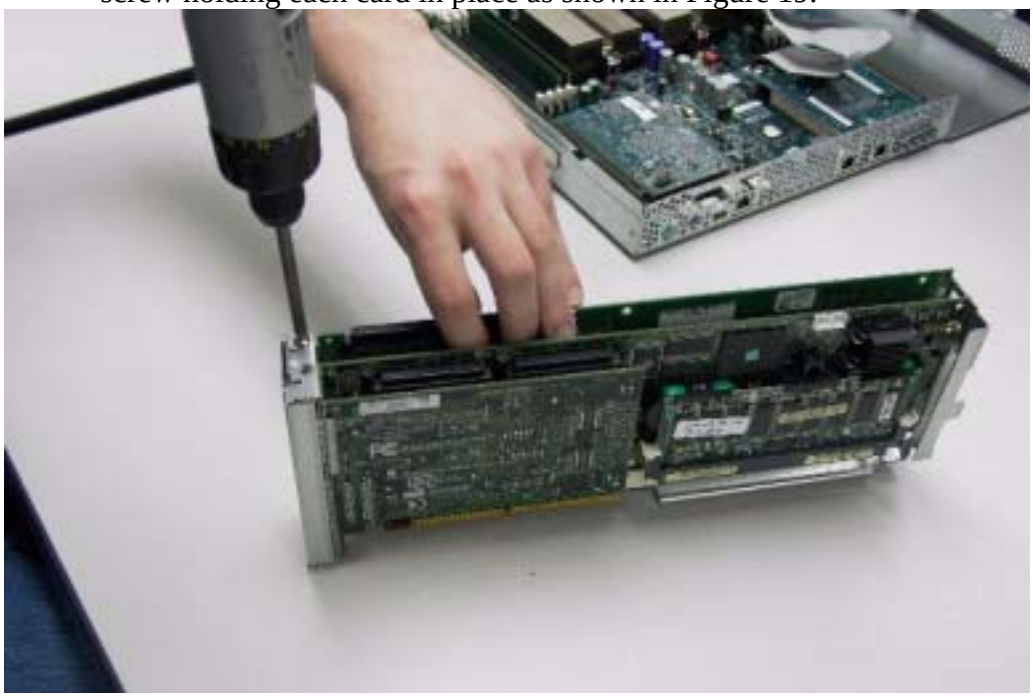


Figure 20 - Removing a PCI-X Card

3. Install the new PCI-X card.

Replacing the PCI-X Cage

Adhere to the following cautions when replacing the PCI-X cage.

Caution

- Ensure that the hole on the front of the PCI-X cage lines up with the peg sticking out of the chassis.
- Ensure that the flanges in the rear of the PCI-X cage go between the sheet metal encasing them in the rear panel of the chassis.
- Ensure that the PCI-X cage does not accidentally eject the H0 DDR VRM.

To replace the PCI-X cage, press the cage into the chassis such that the connectors in the PCI riser card go into the appropriate socket.

6.7 EIDE Cabling

The A2210 platform presents a unique EIDE solution to an end user. The primary EIDE channel is located on the chassis front board, while the secondary EIDE channel is located on the chassis sideboard. The appropriate usage of EIDE cables is critical for proper and optimal performance of devices connected to the primary and secondary EIDE channels. Only approved and appropriate EIDE cables can be used. Because of the unique EIDE cabling solution, the platform does not support any EIDE speeds faster than ATA-100. If an ATA-133 device is connected to either EIDE channel, a combination of AMD driver and BIOS will force the device to operate at ATA-100 speeds. The following sections describe the two valid cables that can be used on any platform. Under no circumstances can any other EIDE cable be used.

6.7.1 Primary EIDE Cable

The primary EIDE channel has only one valid cable that can be used. This cable is a 4-inch EIDE cable with two connectors (one blue and one black). The blue connector plugs into the front board, and the black connector plugs into the hard disk drive.

6.7.2 Secondary EIDE Cable

The secondary EIDE channel has only one valid cable that can be used. This is a 14-inch cable that has three connectors and is used when connecting either one or two devices off the secondary EIDE channel. This cable must only be used on the secondary EIDE. The blue connector plugs into the sideboard, the DVD-ROM drive, if present, connects to the gray connector, and a hard drive device may connect to the black connector.

6.8 Replacing the IDE Disk Drives

Hard drives and floppy disk drives are located near the front of the chassis on the right side. IDE and SCSI drives are held in different drive cages. The difference between the cages is that the IDE drive cage is designed to be rigidly held in place with a screw, while the SCSI drive cage is designed for a hot-swappable drive so that it can be taken out without opening the chassis. The cages are shown side-by-side in Figure 21.

Figure 21 - IDE Drive Cage (left) and SCSI Drive Cage

6.8.1 Removing the IDE Drive Cage

Follow these steps to remove the IDE drive cage:

1. Unplug the IDE cable and power cable.
2. Remove the one screw holding the IDE drive cage in place as shown in Figure 22.

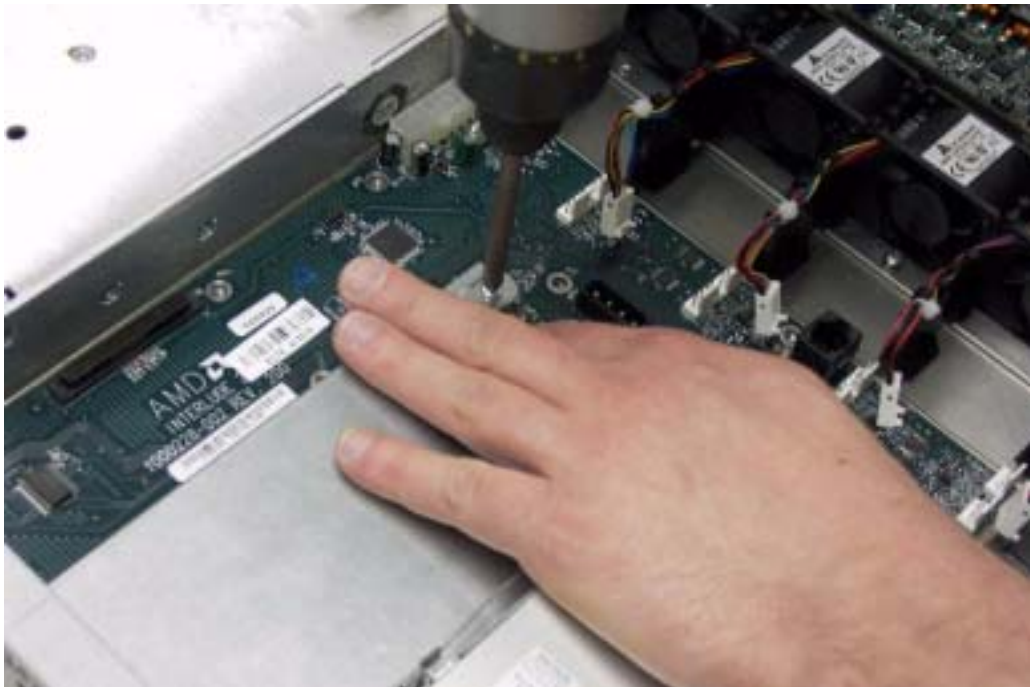


Figure 22 - Removing the IDE Drive Cage

4. Pull out the IDE drive cage from the front of the chassis.

6.8.2 Removing the SCSI Drive Cage

To remove a SCSI drive cage, pull the latch in the front of the drive cage, and then pull the drive cage out of the front of the chassis as shown in Figure 23.

Figure 23 - Removing the SCSI Drive Cage

6.8.3 Removing the Drive from the Drive Cage

After removing an IDE or SCSI drive cage, the hard drive itself can be taken out of the cage by removing the four screws that hold it in the cage.

6.8.4 Removing the CD or DVD Drive

The CD or DVD drive is held in place by a wire clip. This can be removed by stretching the clip free of the drive cage, as shown in Figure 24.

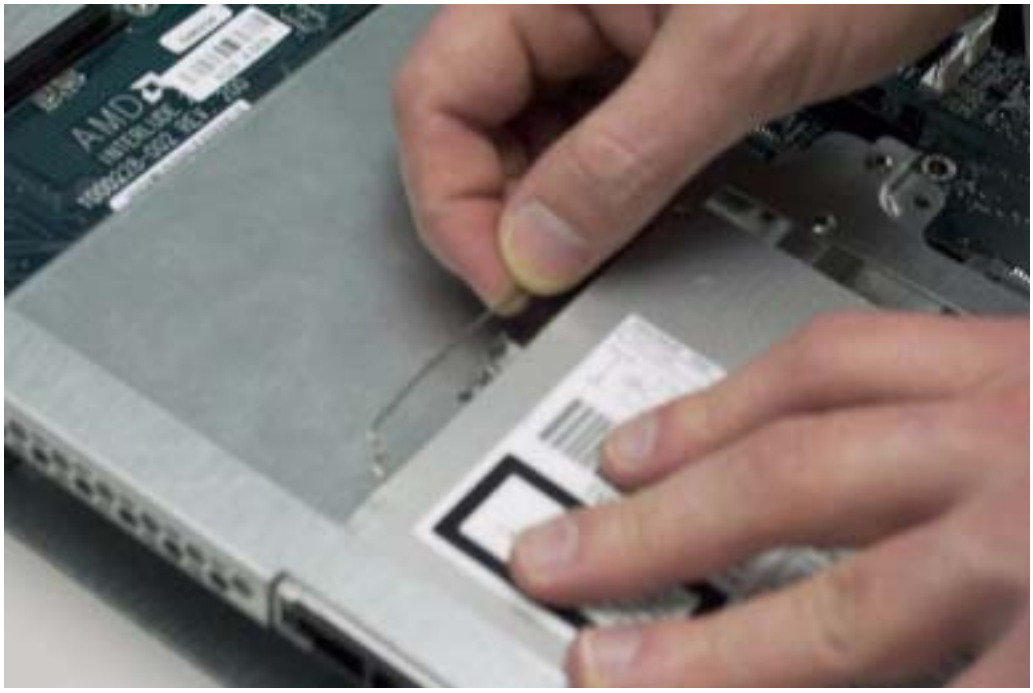


Figure 24 - Removing Clip from the CD Drive

Chapter

7

BIOS

Upgrades, Clearing, and Screens

This chapter describes the BIOS configurations, including the default settings as well as options that can be changed to improve performance in particular applications.

7.1 BIOS Requirements

The initial BIOS supports the AMD Opteron™ processor, AMD-8131™ HyperTransport™ PCI-X tunnel, AMD-8111™ HyperTransport™ I/O hub, and Winbond S I/O W83627HF. The BIOS code is contained in a 4-Mbit LPC Flash ROM (Winbond W49V040P10 or SST49LF040-33-4C-NH) in a 32-pin PLCC package with socket.

BIOS features include the following:

- Compliant with Windows® Logo Program, Version 2.0 (Section A6.0, "Server System Requirements" excluding IA-64 requirements)
- Supports Headless Server (Microsoft® Server Design Guide 3.0)
- Compliant with ACPI specification version 1.0b, with 2.0 CPU extensions
- Compliant with System Management BIOS (SMBIOS) specification, version 2.3.2
- Compliant with Pre-boot Execution Environment (PXE), version 2.0
- Supports memory configuration greater than 4 Gbytes

- Supports ACPI Power states C0, C1, S0, and S5
- Supports Zircom UL BMC and IPMI 1.5 specification
- Integrates option ROM and PXE ROM to support on-board Gigabit NIC
- Integrates option ROM to support on-board dual-channel SCSI controller

BIOS Firmware

A base firmware supports the following BMC features:

- Remote power on/off
- Remote server reset
- Remote LED indicator control
- Remote flash update
- IPMI 1.5 over LAN
- The BIOS supports the following features with software:
    - Voltage reading from VRM for CPU and DIMM slots
    - CPU thermal diode reporting
    - Chassis temperature reporting
    - FAN status reporting

7.2 Clearing the CMOS BIOS

Before debugging any board issue, clear the CMOS by following these steps:

1. Press the power button on the front access panel board for four seconds to power down the system.
2. Unplug the power cord from the power supply.
3. Move the jumper on J9 on the main board from pins 1–2 to pins 2–3 (marked CLEAR). Refer to Figure 25 for the jumper location.
4. Leave the jumper for one minute.
5. Return the jumper to pins 1–2 (marked SET).
6. Power up the system.
7. Write down the BIOS revision on the splash screen.
8. Press <**Delete**> to enter BIOS Setup.
9. Press **<F9 >** and then **OK** to load defaults.
10. Press <**F10**> and then **OK** to save and exit.

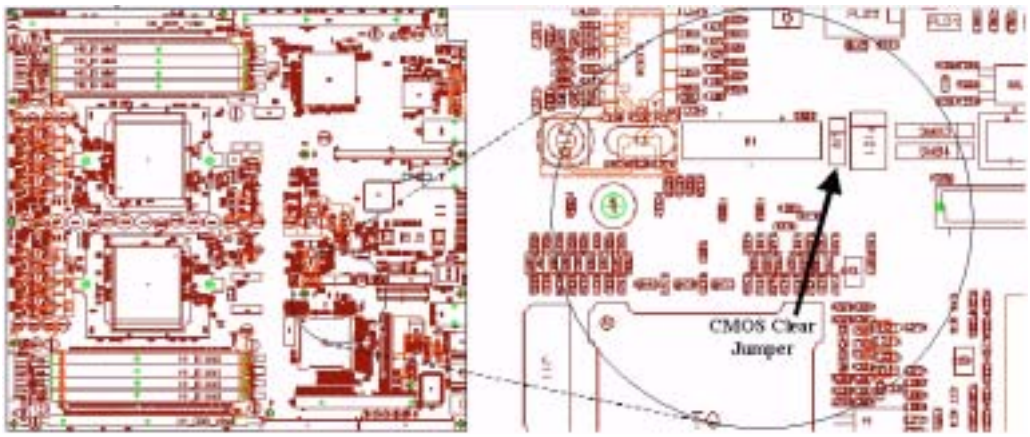


Figure 25 - J9 (Clear CMOS) Jumper Location on the motherboard

7.3 Flashing New BIOS

Follow these steps to flash a new BIOS:

1. Create a bootable CD, copy the new BIOS image onto it, and insert it into the CD-ROM drive.
2. Power on the system.
3. At the DOS prompt, enter the following:

   AMIFLASH.EXE xxxxxxxx.fla /a/b/c

   Where:

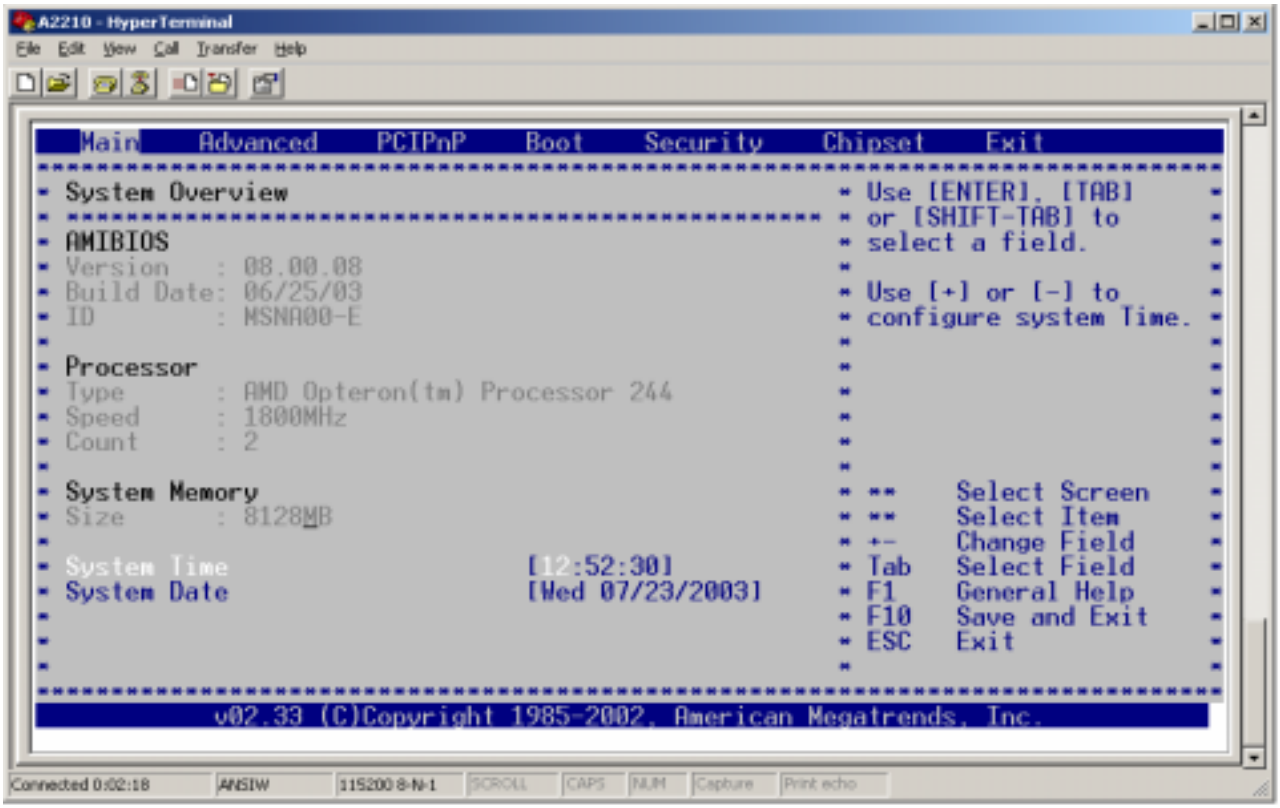
   AMIFLASH.EXE is the flash utility program

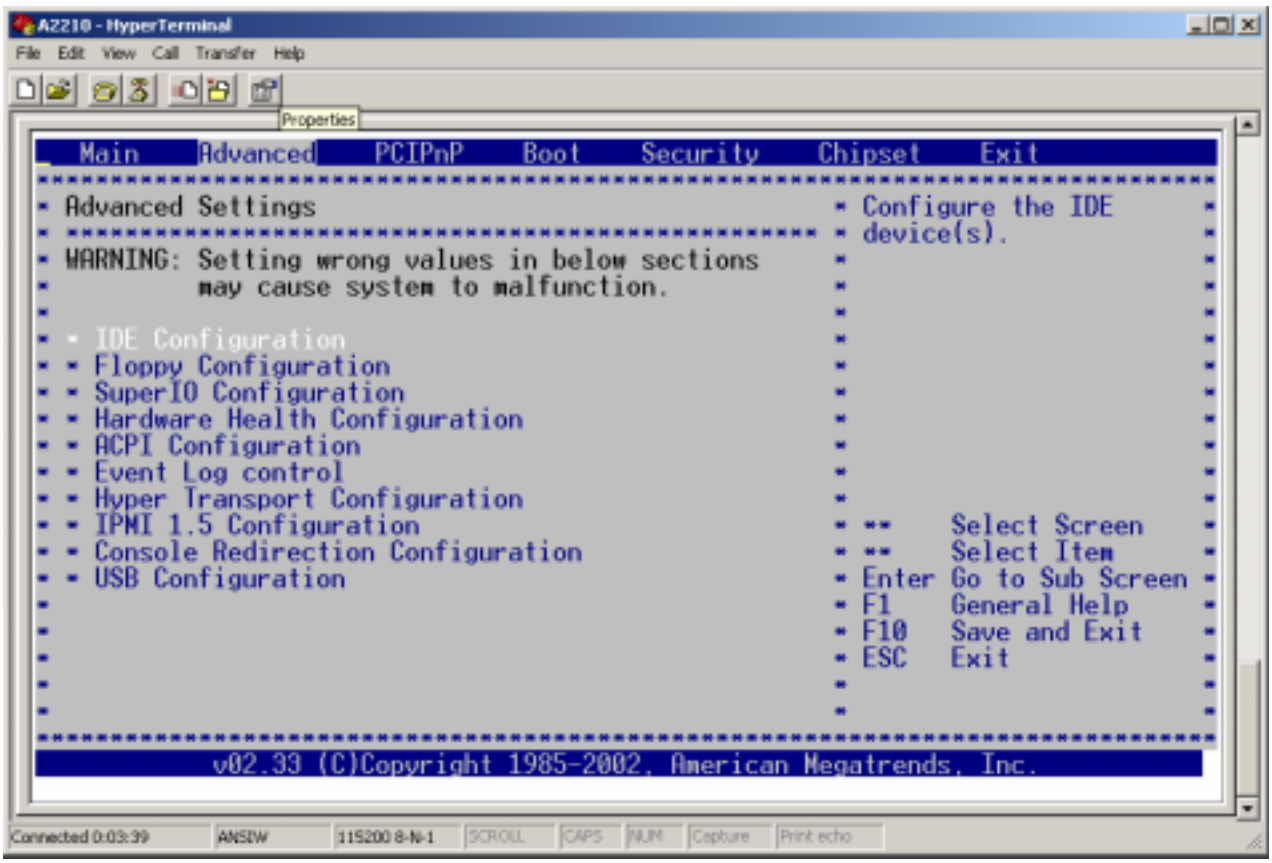
   xxxxxxxx.fla is the BIOS image filename

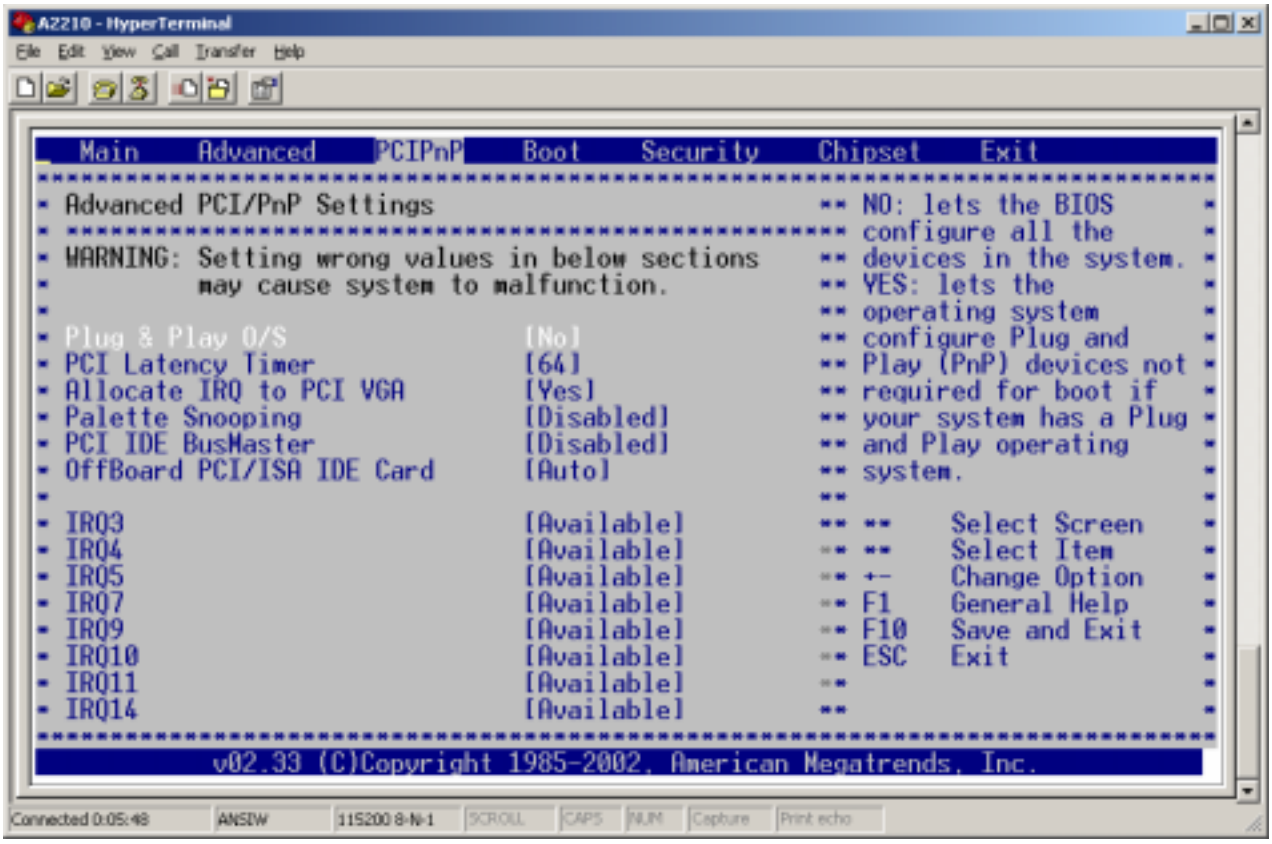
   /a/b/c are modifiers to clear CMOS
4. Let the program run to completion without restarting or powering down the system.
5. The program displays the prompt for restarting. Eject the CD and strike a key to restart.
6. Verify that the BIOS is programmed correctly by checking the version reported as the system begins POST.

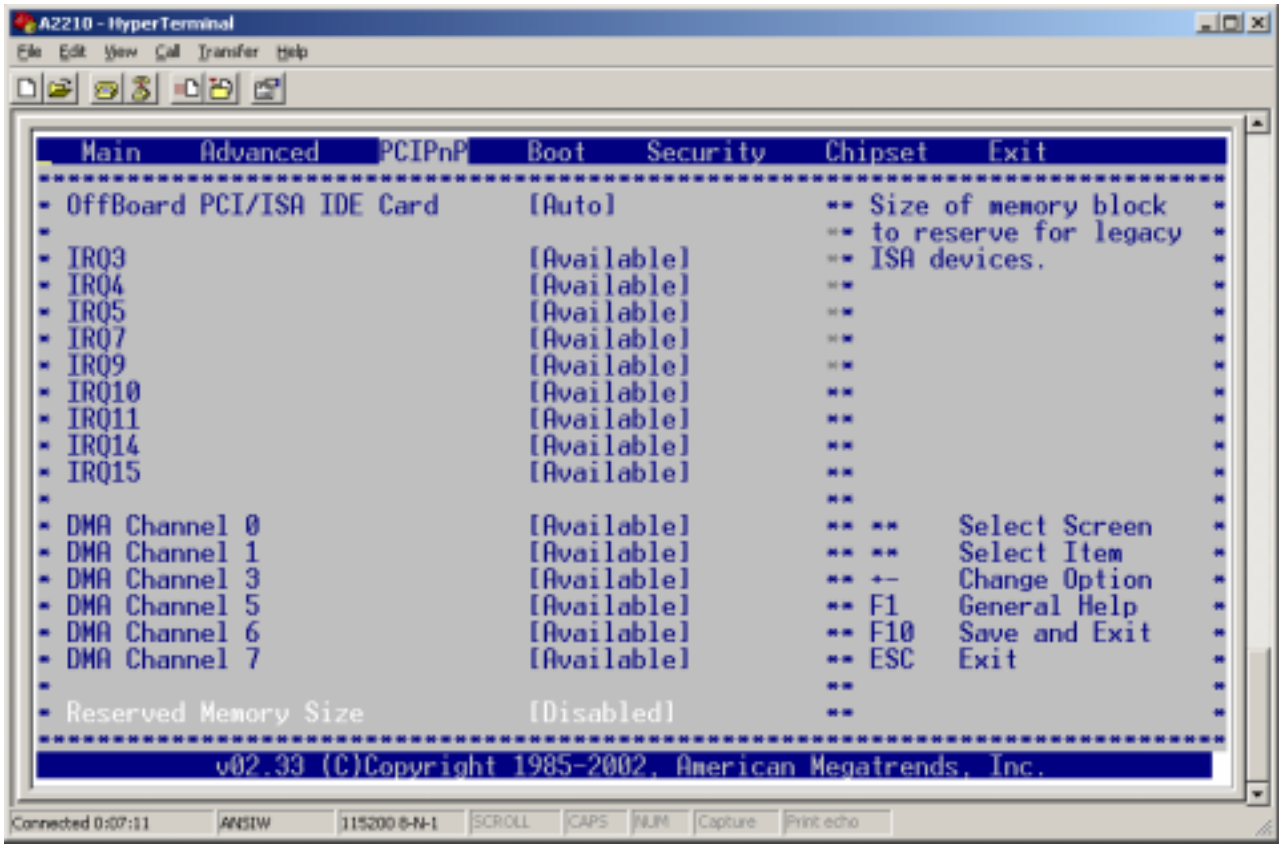
7.4 BIOS Screenshots

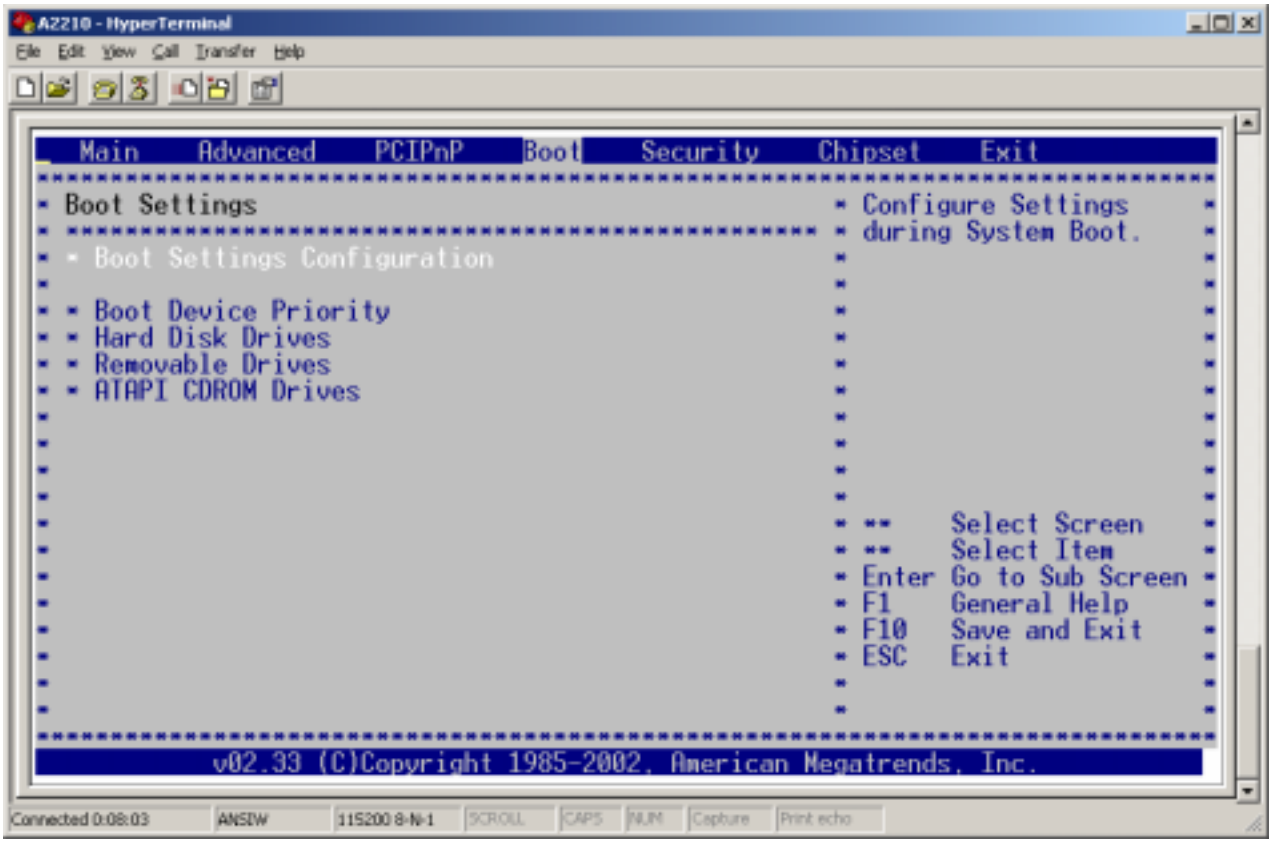
Below are a series of snapshots that are representative of the major screens taken from the A2210 BIOS.

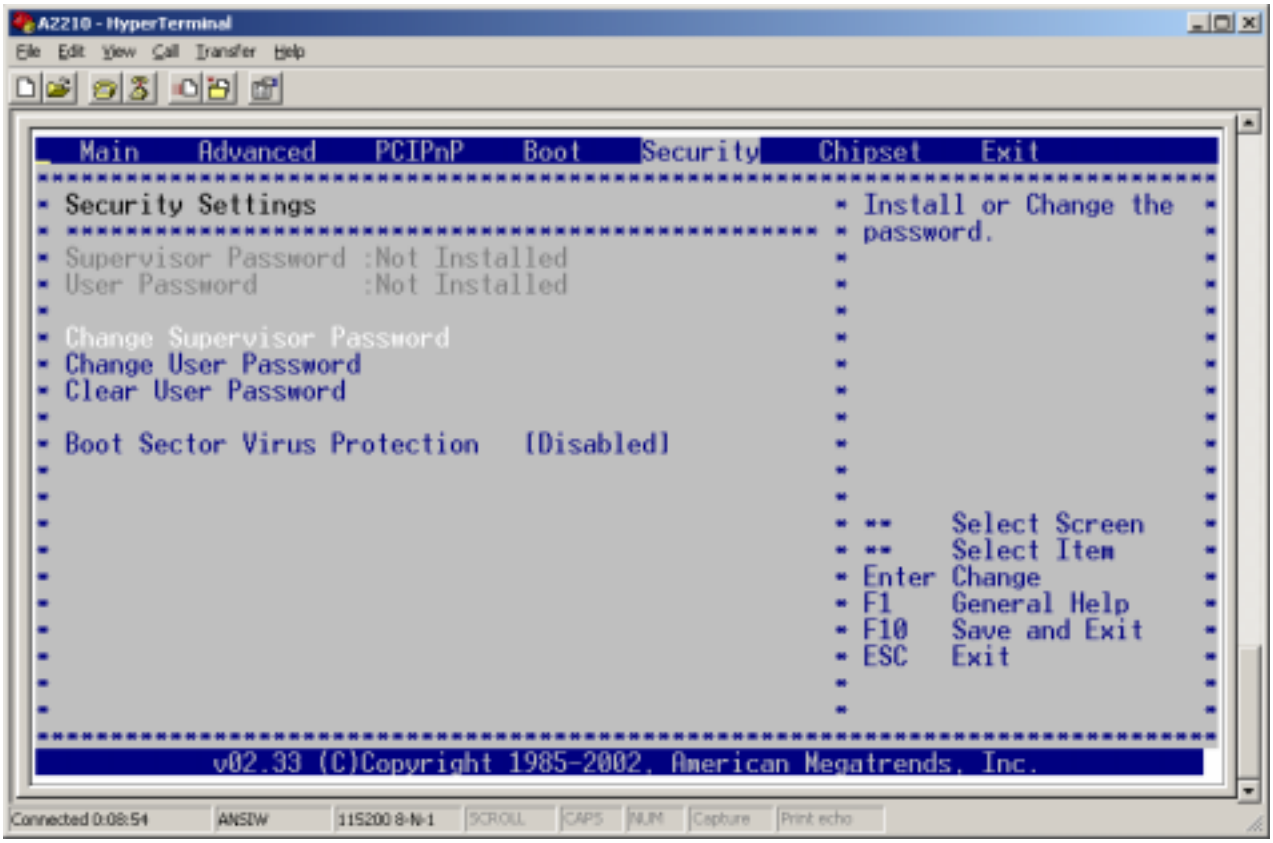

A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
System Overview
AMIBIOS
Version : 08.00.08
Build Date: 06/25/03
ID : MSNA00-E
Processor
Type : AMD Opteron(tm) Processor 244
Speed : 1800MHz
Count : 2
System Memory
Size : 8128MB
System Time [12:52:30]
System Date [Wed 07/23/2003]
Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Use [+] or [-] to configure system Time.
** Select Screen
** Select Item
+- Change Field
Tab Select Field
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:02:18
ANSIW
115200 8-N-1
SCROLL
CAPS
NUM
Capture
Print echo

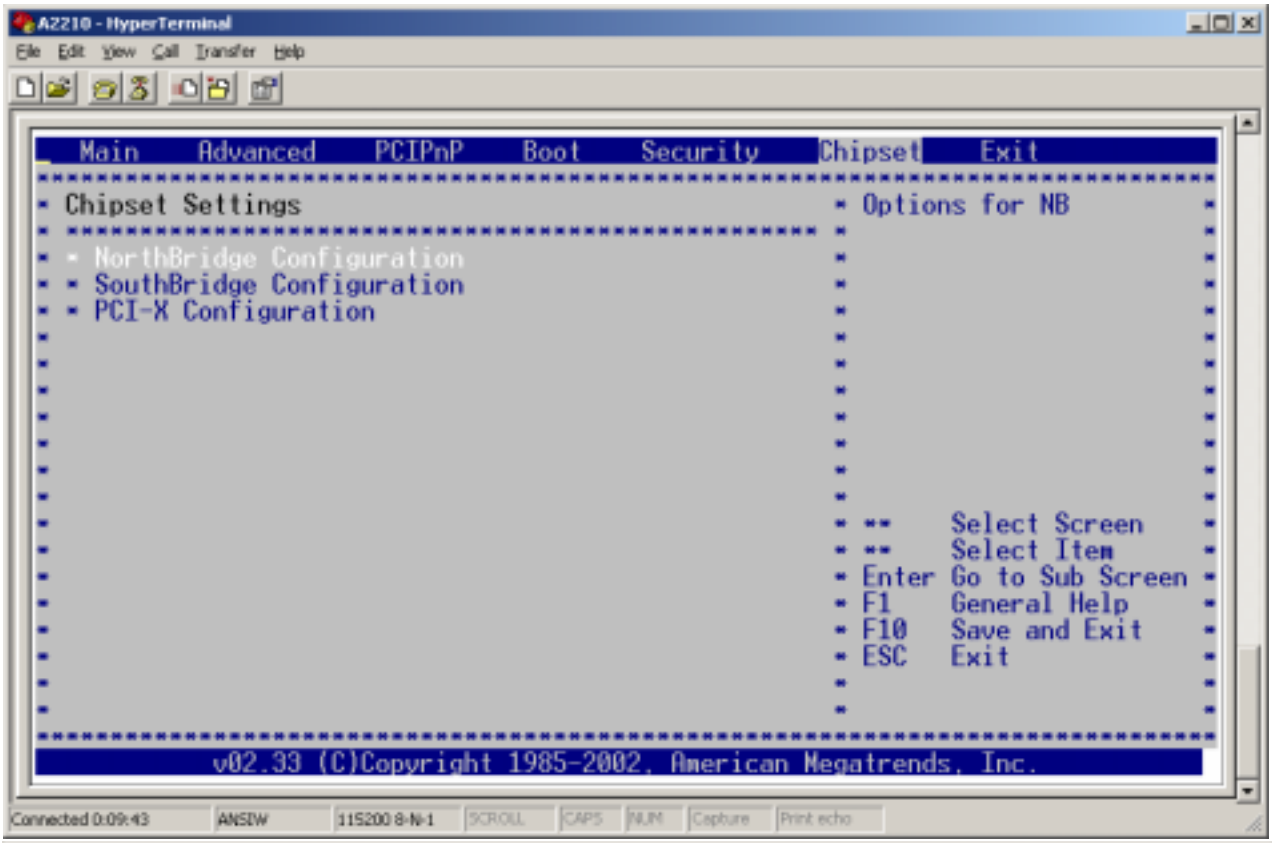

A2210 - HyperTerminal
File Edit View Call Transfer Help
Properties
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
- IDE Configuration
- Floppy Configuration
- SuperIO Configuration
- Hardware Health Configuration
- ACPI Configuration
- Event Log control
- Hyper Transport Configuration
- IPMI 1.5 Configuration
- Console Redirection Configuration
- USB Configuration
Configure the IDE device(s).
** Select Screen
** Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:03:39
ANSIW
115200 8-N-1
SCROLL
CAPS
NUM
Capture
Print echo

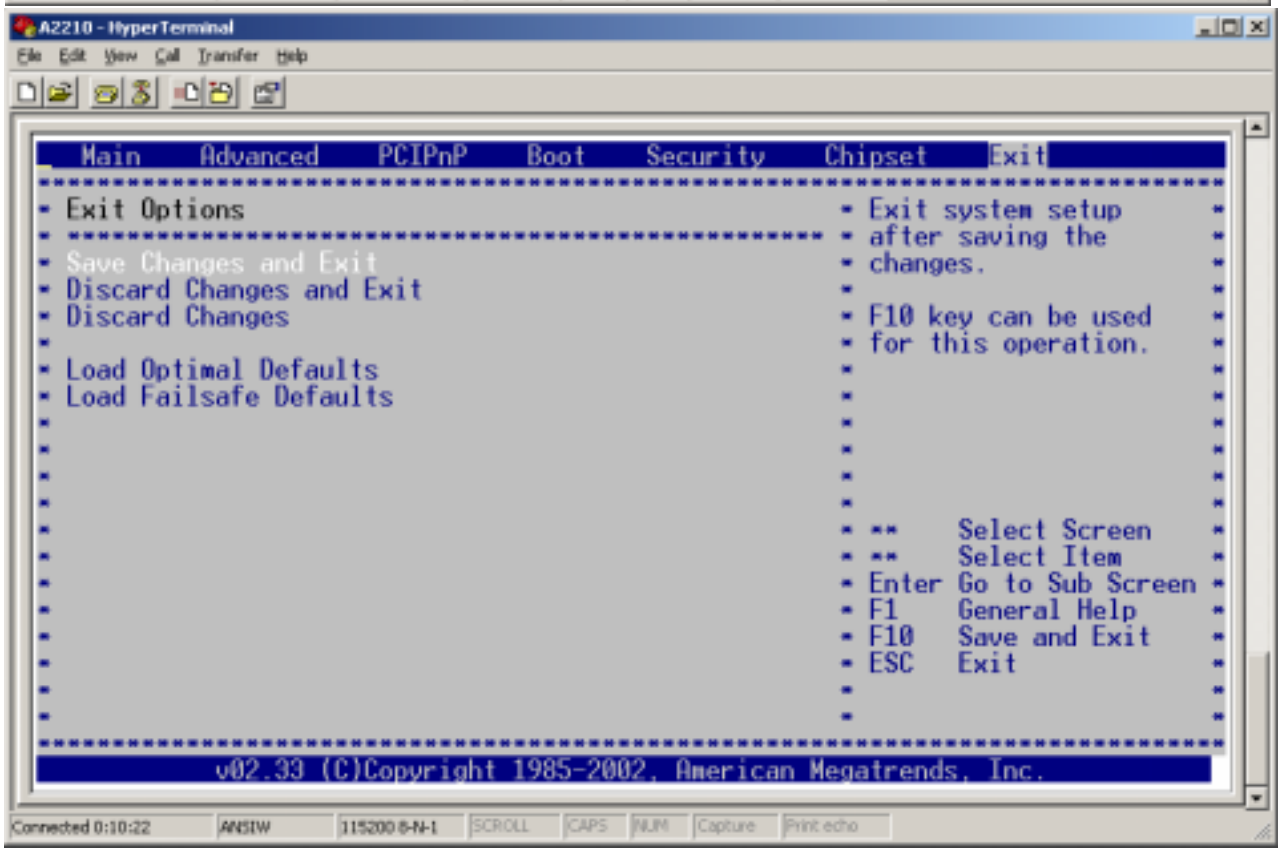

A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
Plug & Play O/S [No]
PCI Latency Timer [64]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
PCI IDE BusMaster [Disabled]
OffBoard PCI/ISA IDE Card [Auto]
IRQ3 [Available]
IRQ4 [Available]
IRQ5 [Available]
IRQ7 [Available]
IRQ9 [Available]
IRQ10 [Available]
IRQ11 [Available]
IRQ14 [Available]
** NO: lets the BIOS configure all the devices in the system. ** YES: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
** Select Screen
** Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:05:48 ANSIW 115200 8-N-1 SCROLL CAPS NUM Capture Print echo


A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
OffBoard PCI/ISA IDE Card [Auto]
IRQ3 [Available]
IRQ4 [Available]
IRQ5 [Available]
IRQ7 [Available]
IRQ9 [Available]
IRQ10 [Available]
IRQ11 [Available]
IRQ14 [Available]
IRQ15 [Available]
DMA Channel 0 [Available]
DMA Channel 1 [Available]
DMA Channel 3 [Available]
DMA Channel 5 [Available]
DMA Channel 6 [Available]
DMA Channel 7 [Available]
Reserved Memory Size [Disabled]
** Size of memory block to reserve for legacy ISA devices.
** Select Screen
** Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:07:11 ANSIW 115200 8-N-1 SCROLL CAPS NUM Capture Print echo


A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
Boot Settings
Boot Settings Configuration
Boot Device Priority
Hard Disk Drives
Removable Drives
ATAPI CDROM Drives
Configure Settings during System Boot.
** Select Screen
** Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:08:03
ANSIW
115200 8-N-1


A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
Security Settings
Supervisor Password :Not Installed
User Password :Not Installed
Change Supervisor Password
Change User Password
Clear User Password
Boot Sector Virus Protection [Disabled]
Install or Change the password.
** Select Screen
** Select Item
Enter Change
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:08:54
ANSIW
115200 8-N-1


A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
Chipset Settings
NorthBridge Configuration
SouthBridge Configuration
PCI-X Configuration
Options for NB
** Select Screen
** Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:09:43
ANSIW
115200 8-N-1
SCROLL
CAPS
NUM
Capture
Print echo


A2210 - HyperTerminal
File Edit View Call Transfer Help
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
** Select Screen
** Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
v02.33 (C)Copyright 1985-2002, American Megatrends, Inc.
Connected 0:10:22
ANSIW
115200 8-N-1
SCROLL
CAPS
NUM
Capture
Print echo

Appendix

A

Technical Specifications

Electrical Rating: 2.5Amps@100Vac; 1.0Amps@240Vac
Weight: 30 lbs
Dimensions: Height: 1.7 inches; Width: 17 inches; Depth: 28 inches
Safety Certifications: CSA 22.2 #950-95; EN60950

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Environmental Requirements

Operational Environment

Measurement	Range
Ambient Temperature	10° to 35°C (50° to 95°F)
Relative Humidity	20% to 80% (non-condensing)
Shock	5 G, 10ms duration, X,Y, & Z axis orientations
Vibration	0.25 G, < 400 Hz
Altitude	0 – 9500 ft (102 – 71 kPa)

Non-operational Environment

Measurement	Range
Ambient temperature	–30° to 60°C (–4° to 140°F)
Relative humidity	5% to 95% (non condensing)
Maximum wet-bulb temperature	38.7°C
Shock	15 G, 10ms duration, X, Y, & Z axis orientations
Vibration	0.75 G 5 – 100 Hz, 1.5 G 100 – 500 Hz
Altitude	0 – 30000 ft (102 – 30.3 kPa)

Appendix

B

Connector Assignments

This appendix defines the different connectors and pin assignments used externally and internally to the A2210 server.

External Connectors

VHDCI SCSI Connector

The external SCSI connector is the Molex VHDCI SCSI connector, 71430 or equivalent, as shown in Figure 26. The pin assignments for this connector are listed in Table 4.

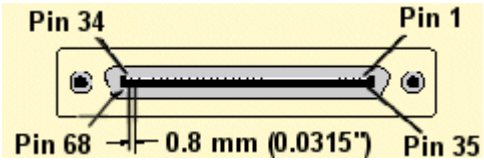


Figure 26. VHDCI SCSI Connector

Table 4. VHDCI SCSI Connector Pin Assignments

Pin	Name	Description	Pin	Name	Description
1	D12_H	Data 12 +	35	D12_L	Data 12 -
2	D13_H	Data 13 +	36	D13_L	Data 13 -
3	D14_H	Data 14 +	37	D14_L	Data 14 -
4	D15_H	Data 15 +	38	D15_L	Data 15 -
5	P1_H	Parity 1 +	39	P1_L	Parity 1 -
6	D0_H	Data 0 +	40	D0_L	Data 0 -

Pin	Name	Description	Pin	Name	Description
7	D1_H	Data 1 +	41	D1_L	Data 1 -
8	D2_H	Data 2 +	42	D2_L	Data 2 -
9	D3_H	Data 3 +	43	D3_L	Data 3 -
10	D4_H	Data 4 +	44	D4_L	Data 4 -
11	D5_H	Data 5 +	45	D5_L	Data 5 -
12	D6_H	Data 6 +	46	D6_L	Data 6 -
13	D7_H	Data 7 +	47	D7_L	Data 7 -
14	P0_H	Parity 0 +	48	P0_L	Parity 0 -
15	GND	Ground	49	GND	Ground
16	Diffsens	Differential sense	50	GND	Ground
17	Term_pwr	Termination power	51	Term_pwr	Termination power
18	Term_pwr	Termination power	52	Term_pwr	Termination power
19	N/C	No Connect	53	N/C	No Connect
20	GND	Ground	54	GND	Ground
21	ATN_H	Attn +	55	ATN_L	Attn -
22	GND	Ground	56	GND	Ground
23	BSY_H	Busy +	57	BSY_L	Busy -
24	ACK_H	Acknowledge +	58	ACK_L	Acknowledge -
25	RST_H	Reset +	59	RST_L	Reset -
26	MSG_H	Message +	60	MSG_L	Message -
27	SEL_H	Select +	61	SEL_L	Select -
28	CD_H	CD +	62	CD_L	CD -
29	REQ_H	Request +	63	REQ_L	Request -
30	I/O_H	I/O +	64	I/O_L	I/O -
31	D8_H	Data 8 +	65	D8_L	Data 8 -
32	D9_H	Data 9 +	66	D9_L	Data 9 -
33	D10_H	Data 10 +	67	D10_L	Data 10 -
34	D11_H	Data 11 +	68	D11_L	Data 11 -

PS/2 Keyboard and Mouse Connector

The PS/2 keyboard and mouse use right-angle mini-DIN connectors with PC 99 standard coloring (violet for keyboard and light green for mouse), as shown in Figure 27. The pin assignments for the PS/2 connectors are listed in Table 5.

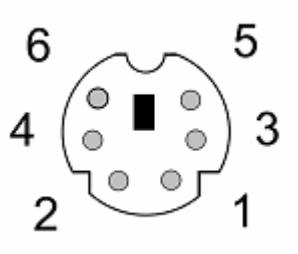


Figure 27. PS/2 Connector

Table 5. Dual PS/2 Connector Pin Assignments

Pin	Name	Description
1	KDATA or MDATA	Keyboard or Mouse Data
2	N/C	Not Connected
3	GND	System Ground
4	VDD	Power, +5 VDC
5	KCLK or MCLK	Keyboard or Mouse Clock
6	N/C	Not Connected
7	CGND	Chassis Ground

Serial Port Connector

The serial connector is a 9-pin right-angle Subminiature D male Connector, AMP 748879-1 or equivalent, as illustrated in Figure 28. The pin assignments for this connector are listed in Table 6.

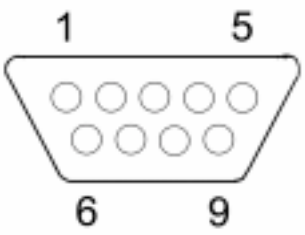


Figure 28. Serial Connector

Table 6. Serial Connector Pin Assignments

Pin	Name	Description
1	CD	Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	System Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

USB Connector

There is one USB connector used on the A2210 server platform, the Molex 87531, shown in Figure 29. The pin assignments for the USB connector are listed in Table 7.

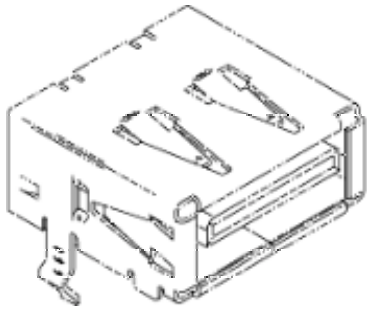


Figure 29. USB Connector

Table 7. USB Connector Pin Assignments

Pin	Name	Description
1	VCC	Power
2	DATA-	USB data -
3	DATA+	USB data +
4	GND	Ground

Internal Connectors

The following connectors are internal connectors.

68-Pin SCSI Connector

The SCSI connector used in the A2210 platform is the 68-pin Molex 15-87-0307, or equivalent, as shown in Figure 30. The pin assignments are listed in Table 8.

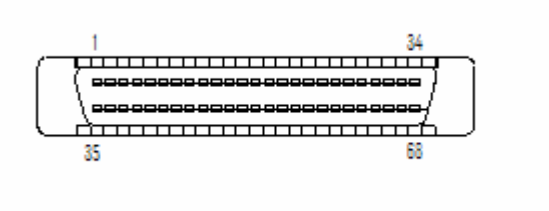


Figure 30. 68-Pin SCSI Connector

Table 8. 68-Pin SCSI Connector Pin Assignments

Pin	Name	Description	Pin	Name	Description
1	D12_H	Data 12 +	35	D12_L	Data 12 -
2	D13_H	Data 13 +	36	D13_L	Data 13 -
3	D14_H	Data 14 +	37	D14_L	Data 14 -
4	D15_H	Data 15 +	38	D15_L	Data 15 -
5	P1_H	Parity 1 +	39	P1_L	Parity 1 -
6	D0_H	Data 0 +	40	D0_L	Data 0 -
7	D1_H	Data 1 +	41	D1_L	Data 1 -
8	D2_H	Data 2 +	42	D2_L	Data 2 -
9	D3_H	Data 3 +	43	D3_L	Data 3 -
10	D4_H	Data 4 +	44	D4_L	Data 4 -
11	D5_H	Data 5 +	45	D5_L	Data 5 -
12	D6_H	Data 6 +	46	D6_L	Data 6 -
13	D7_H	Data 7 +	47	D7_L	Data 7 -
14	P0_H	Parity 0 +	48	P0_L	Parity 0 -
15	GND	Ground	49	GND	Ground
16	Diffsens	Differential sense	50	GND	Ground
17	Term_pwr	Termination power	51	Term_pwr	Termination power
18	Term_pwr	Termination power	52	Term_pwr	Termination power
19	N/C	No Connect	53	N/C	No Connect

Pin	Name	Description	Pin	Name	Description
20	GND	Ground	54	GND	Ground
21	ATN_H	Attn +	55	ATN_L	Attn -
22	GND	Ground	56	GND	Ground
23	BSY_H	Busy +	57	BSY_L	Busy -
24	ACK_H	Acknowledge +	58	ACK_L	Acknowledge -
25	RST_H	Reset +	59	RST_L	Reset -
26	MSG_H	Message +	60	MSG_L	Message -
27	SEL_H	Select +	61	SEL_L	Select -
28	CD_H	CD +	62	CD_L	CD -
29	REQ_H	Request +	63	REQ_L	Request -
30	I/O_H	I/O +	64	I/O_L	I/O -
31	D8_H	Data 8 +	65	D8_L	Data 8 -
32	D9_H	Data 9 +	66	D9_L	Data 9 -
33	D10_H	Data 10 +	67	D10_L	Data 10 -
34	D11_H	Data 11 +	68	D11_L	Data 11 -

SCSI SCA Connector

Figure 31 shows the connector used to connect the SCSI drive to the SCSI backplane. It is Molex 73829 or equivalent. The pin assignments for this connector are listed in Table 9.

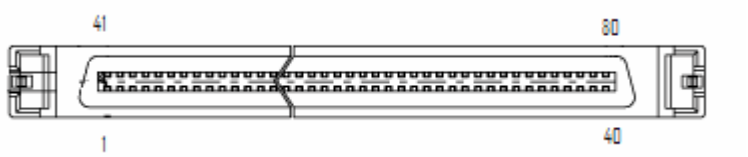


Figure 31. SCSI SCA Connector

Table 9. SCSI SCA Connector Pin Assignments

Pin	Name	Description	Pin	Name	Description
1	+12V	+12V power	41	GND	Ground
2	+12V	+12V power	42	GND	Ground
3	+12V	+12V power	43	GND	Ground
4	+12V	+12V power	44	Mated	Drive mated
5	+3.3V	+3.3V power	45	+3.3V	+3.3V power
6	+3.3V	+3.3V power	46	Diffsens	Differential Sense
7	D11_L	Data 11 -	47	D11_H	Data 11 +
8	D10_L	Data 10 -	48	D10_H	Data 10 +
9	D9_L	Data 9 -	49	D9_H	Data 9 +
10	D8_L	Data 8 -	50	D8_H	Data 8 +
11	I/O_L	I/O -	51	I/O_H	I/O +
12	REQ_L	Request -	52	REQ_H	Request +
13	CD_L	CD -	53	CD_H	CD +
14	SEL_L	Select -	54	SEL_H	Select +
15	MSG_L	Message -	55	MSG_H	Message +
16	RST_L	Reset -	56	RST_H	Reset +
17	ACK_L	Acknowledge -	57	ACK_H	Acknowledge +
18	BSY_L	Busy -	58	BSY_H	Busy +
19	ATN_L	Attn -	59	ATN_H	Attn +
20	P0_L	Parity 0 -	60	P0_H	Parity 0 +
21	D7_L	Data 7 -	61	D7_H	Data 7 +
22	D6_L	Data 6 -	62	D6_H	Data 6 +

Pin	Name	Description	Pin	Name	Description
23	D5_L	Data 5 -	63	D5_H	Data 5 +
24	D4_L	Data 4 -	64	D4_H	Data 4 +
25	D3_L	Data 3 -	65	D3_H	Data 3 +
26	D2_L	Data 2 -	66	D2_H	Data 2 +
27	D1_L	Data 1 -	67	D1_H	Data 1 +
28	D0_L	Data 0 -	68	D0_H	Data 0 +
29	P1_L	Parity 1 -	69	P1_H	Parity 1 +
30	D15_L	Data 15 -	70	D15_H	Data 15 +
31	D14_L	Data 14 -	71	D14_H	Data 14 +
32	D13_L	Data 13 -	72	D13_H	Data 13 +
33	D12_L	Data 12 -	73	D12_H	Data 12 +
34	+5V	+5V power	74	Mated	Drive mated
35	+5V	+5V power	75	GND	Ground
36	+5V	+5V power	76	GND	Ground
37	N/C	No Connect	77	LED	Drive activity LED
38	N/C	No Connect	78	GND	Ground
39	ID0	SCSI ID0	79	ID1	SCSI ID1
40	ID2	SCSI ID2	80	ID3	SCSI ID3

EIDE Port

The EIDE port uses a 2x20 pin 0.1 in shrouded header, AMP 103308-8. The pin assignments for the EIDE Header are listed in Table 10.

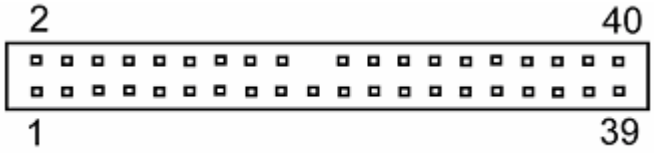


Figure 32. EIDE Header

Table 10. EIDE Header Pin Assignments

Pin	Name	Description	Pin	Name	Description
1	/RESET	Reset	2	GND	Ground
3	DD7	Data 7	4	DD8	Data 8
5	DD6	Data 6	6	DD9	Data 9
7	DD5	Data 5	8	DD10	Data 10

Pin	Name	Description	Pin	Name	Description
9	DD4	Data 4	10	DD11	Data 11
11	DD3	Data 3	12	DD12	Data 12
13	DD2	Data 2	14	DD13	Data 13
15	DD1	Data 1	16	DD14	Data 14
17	DD0	Data 0	18	DD15	Data 15
19	GND	Ground	20	(KEY)	Key (pin missing)
21	DMARQ	DMA Request	22	GND	Ground
23	/DIOW	Write Strobe	24	GND	Ground
25	/DIOR	Read Strobe	26	GND	Ground
27	IORDY	I/O Ready	28	SPSYNC:CSEL	Spindle Sync or Cable Select
29	/DMACK	DMA Acknowledge	30	GND	Ground
31	INTRQ	Interrupt Request	32	/IOCS16	I/O Chip Select 16
33	DA1	Address 1	34	PDIAG	Passed Diagnostics
35	DA0	Address 0	36	DA2	Address 2
37	/IDE_CS0	(1F0-1F7)	38	/IDE_CS1	(3F6–3F7)
39	/ACTIVE	Led driver	40	GND	Ground

64-Bit PCI Connectors

The Peripheral Component Interconnect (PCI) 64-bit connector is a 23-pin 3.3 V-style card edge connector. 3.3V indicates PCI signaling levels. The connector is illustrated in Figure 33, with pin assignments listed in Table 11.

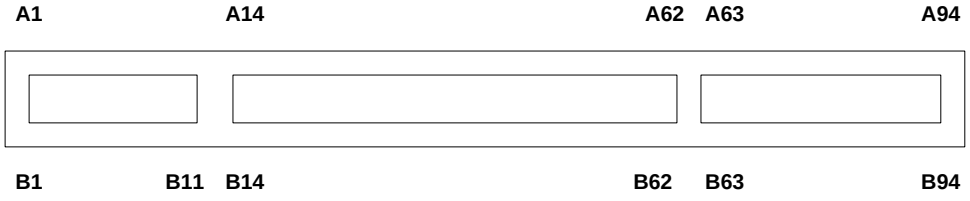


Figure 33. 64-Bit PCI Connector

Table 11. 64-Bit PCI Connector Pin Assignments

Pin	Name	Description	Pin	Name	Description
B1	–12V	–12 VDC	A1	TRST_L	Test Logic Reset
B2	TCK	Test Clock	A2	+12V	+12 VDC
B3	GND	Ground	A3	TMS	Test Mode Select
B4	TDO	Test Data Output	A4	TDI	Test Data Input
B5	+5V	+5 VDC	A5	+5V	+5 VDC
B6	+5V	+5 VDC	A6	INTA_L	Interrupt A
B7	INTB_L	Interrupt B	A7	INTC_L	Interrupt C
B8	INTD_L	Interrupt D	A8	+5V	+5 VDC
B9	PRSNT1_L	Reserved	A9	RESV	Reserved VDC
B10	RESV	Reserved VDC	A10	+5V	+V I/O (+5 V)
B11	PRSNT2_L	Reserved	A11	RESV	Reserved VDC
B12	KEY	Key	A12	KEY	Key
B13	KEY	Key	A13	KEY	Key
B14	RESV	Reserved VDC	A14	RESV	3.3Vaux
B15	GND	Ground	A15	RESET_L	Reset
B16	CLK	Clock	A16	+3.3V	+V I/O (+3.3 V)
B17	GND	Ground	A17	GNT_L	Grant PCI use
B18	REQ_L	Request	A18	GND	Ground
B19	+3.3V	+V I/O (+3.3 V)	A19	PME_L	Power Management Event
B20	AD31	Address/Data 31	A20	AD30	Address/Data 30
B21	AD29	Address/Data 29	A21	+3.3V	+3.3 VDC
B22	GND	Ground	A22	AD28	Address/Data 28
B23	AD27	Address/Data 27	A23	AD26	Address/Data 26
B24	AD25	Address/Data 25	A24	GND	Ground
B25	+3.3V	+3.3VDC	A25	AD24	Address/Data 24
B26	C/BE3_L	Command, Byte Enable 3	A26	IDSEL	Initialization Device Select
B27	AD23	Address/Data 23	A27	+3.3V	+3.3 VDC
B28	GND	Ground	A28	AD22	Address/Data 22
B29	AD21	Address/Data 21	A29	AD20	Address/Data 20
B30	AD19	Address/Data 19	A30	GND	Ground
B31	+3.3V	+3.3 VDC	A31	AD18	Address/Data 18
B32	AD17	Address/Data 17	A32	AD16	Address/Data 16
B33	C/BE2_L	Command, Byte Enable 2	A33	+3.3V	+3.3 VDC
B34	GND13	Ground	A34	FRAME_L	Address or Data phase

Pin	Name	Description	Pin	Name	Description
B35	IRDY_L	Initiator Ready	A35	GND	Ground
B36	+3.3V	+3.3 VDC	A36	TRDY_L	Target Ready
B37	DEVSEL_L	Device Select	A37	GND	Ground
B38	GND	Ground	A38	STOP_L	Stop Transfer Cycle
B39	LOCK_L	Lock bus	A39	+3.3V	+3.3 VDC
B40	PERR_L	Parity Error	A40	SMBCLK	
B41	+3.3V	+3.3 VDC	A41	SMBDAT	
B42	SERR_L	System Error	A42	GND	Ground
B43	+3.3V	+3.3 VDC	A43	PAR	Parity
B44	C/BE1_L	Command, Byte Enable 1	A44	AD15	Address/Data 15
B45	AD14	Address/Data 14	A45	+3.3V	+3.3 VDC
B46	GND	Ground	A46	AD13	Address/Data 13
B47	AD12	Address/Data 12	A47	AD11	Address/Data 11
B48	AD10	Address/Data 10	A48	GND	Ground
B49	M66EN	66 MHz En	A49	AD9	Address/Data 9
B50	GND	Ground	A50	GND	Ground
B51	GND	Ground	A51	GND	Ground
B52	AD8	Address/Data 8	A52	C/BE0_L	Command, Byte Enable 0
B53	AD7	Address/Data 7	A53	+3.3V	+3.3 VDC
B54	+3.3V	+3.3 VDC	A54	AD6	Address/Data 6
B55	AD5	Address/Data 5	A55	AD4	Address/Data 4
B56	AD3	Address/Data 3	A56	GND	Ground
B57	GND	Ground	A57	AD2	Address/Data 2
B58	AD1	Address/Data 1	A58	AD0	Address/Data 0
B59	+3.3V	+V I/O (+3.3 V)	A59	+3.3V	+V I/O (+3.3 V)
B60	ACK64	Acknowledge 64 bit	A60	REQ64	Request 64 bit
B61	VDD	+5 VDC	A61	VDD	+5 VDC
B62	VDD	+5 VDC	A62	VDD	+5 VDC
	KEY	Key		KEY	Key
	KEY	Key		KEY	Key
B63	RESV	Reserved	A63	GND	Ground
B64	GND	Ground	A64	C/BE7_L	Command, Byte Enable 7
B65	C/BE6_L	Command, Byte Enable 6	A65	C/BE5_L	Command, Byte Enable 5
B66	C/BE4_L	Command, Byte Enable 4	A66	+3.3V	+V I/O (+3.3 V)
B67	GND	Ground	A67	PAR64	Parity_64
B68	AD63	Address/Data 63	A68	AD62	Address/Data 62

Pin	Name	Description	Pin	Name	Description
B69	AD61	Address/Data 61	A69	GND	Ground
B70	+3.3V	+V I/O (+3.3 V)	A70	AD60	Address/Data 60
B71	AD59	Address/Data 59	A71	AD58	Address/Data 58
B72	AD57	Address/Data 57	A72	GND	Ground
B73	GND	Ground	A73	AD56	Address/Data 56
B74	AD55	Address/Data 55	A74	AD54	Address/Data 54
B75	AD53	Address/Data 53	A75	+3.3V	+V I/O (+3.3 V)
B76	GND	Ground	A76	AD52	Address/Data 52
B77	AD51	Address/Data 51	A77	AD50	Address/Data 50
B78	AD49	Address/Data 49	A78	GND	Ground
B79	+3.3V	+V I/O (+3.3 V)	A79	AD48	Address/Data 48
B80	AD47	Address/Data 47	A80	AD46	Address/Data 46
B81	AD45	Address/Data 45	A81	GND	Ground
B82	GND	Ground	A82	AD44	Address/Data 44
B83	AD43	Address/Data 43	A83	AD42	Address/Data 42
B84	AD41	Address/Data 41	A84	+3.3V	+V I/O (+3.3 V)
B85	GND	Ground	A85	AD40	Address/Data 40
B86	AD39	Address/Data 39	A86	AD38	Address/Data 38
B87	AD37	Address/Data 37	A87	GND	Ground
B88	+3.3V	+V I/O (+3.3 V)	A88	AD36	Address/Data 36
B89	AD35	Address/Data 35	A89	AD34	Address/Data 34
B90	AD33	Address/Data 33	A90	GND	Ground
B91	GND	Ground	A91	AD32	Address/Data 32
B92	RSVD	Reserved	A92	RSVD	Reserved
B93	RSVD	Reserved	A93	GND	Ground
B94	GND	Ground	A94	RSVD	Reserved

32-Bit PCI Connectors

The PCI universal 32-bit connector is a 124-pin card edge connector, AMP 145154-4, as illustrated in Figure 34. The pin assignments are listed in Table 12.

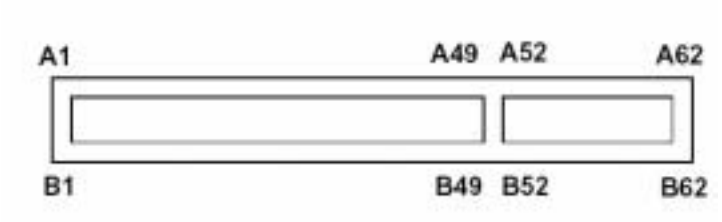


Figure 34. 32-Bit PCI Connector

Table 12. 32-Bit PCI Connector Pin Assignments

Pin	Name	Description	Pin	Name	Description
B1	–12V	–12 VDC	A1	TRST_L	Test Logic Reset
B2	TCK	Test Clock	A2	+12V	+12 VDC
B3	GND	Ground	A3	TMS	Test Mode Select
B4	TDO	Test Data Output	A4	TDI	Test Data Input
B5	+5V	+5 VDC	A5	+5V	+5 VDC
B6	+5V	+5 VDC	A6	INTA_L	Interrupt A
B7	INTB_L	Interrupt B	A7	INTC_L	Interrupt C
B8	INTD_L	Interrupt D	A8	+5V	+5 VDC
B9	PRSNT1_L	Reserved	A9	RESV	Reserved VDC
B10	RESV	Reserved VDC	A10	+5V	+V I/O (+5 V)
B11	PRSNT2_L	Reserved	A11	RESV	Reserved VDC
B12	GND	Ground	A12	GND	Ground
B13	GND	Ground	A13	GND	Ground
B14	RESV	Reserved VDC	A14	RESV	Reserved VDC
B15	GND	Ground	A15	RESET_L	Reset
B16	CLK	Clock	A16	+5V	+V I/O (+5 V)
B17	GND	Ground	A17	GNT_L	Grant PCI use
B18	REQ_L	Request	A18	GND	Ground
B19	+5V	+V I/O (+5 V)	A19	PME_L	Power Management Event
B20	AD31	Address/Data 31	A20	AD30	Address/Data 30
B21	AD29	Address/Data 29	A21	+3.3V	+3.3 VDC
B22	GND	Ground	A22	AD28	Address/Data 28
B23	AD27	Address/Data 27	A23	AD26	Address/Data 26
B24	AD25	Address/Data 25	A24	GND	Ground
B25	+3.3V	+3.3VDC	A25	AD24	Address/Data 24
B26	C/BE3_L	Command, Byte Enable 3	A26	IDSEL	Initialization Device Select
B27	AD23	Address/Data 23	A27	+3.3V	+3.3 VDC

Pin	Name	Description	Pin	Name	Description
B28	GND	Ground	A28	AD22	Address/Data 22
B29	AD21	Address/Data 21	A29	AD20	Address/Data 20
B30	AD19	Address/Data 19	A30	GND	Ground
B31	+3.3V	+3.3 VDC	A31	AD18	Address/Data 18
B32	AD17	Address/Data 17	A32	AD16	Address/Data 16
B33	C/BE2_L	Command, Byte Enable 2	A33	+3.3V	+3.3 VDC
B34	GND13	Ground	A34	FRAME_L	Address or Data phase
B35	IRDY_L	Initiator Ready	A35	GND	Ground
B36	+3.3V	+3.3 VDC	A36	TRDY_L	Target Ready
B37	DEVSEL_L	Device Select	A37	GND	Ground
B38	GND	Ground	A38	STOP_L	Stop Transfer Cycle
B39	LOCK_L	Lock bus	A39	+3.3V	+3.3 VDC
B40	PERR_L	Parity Error	A40	SMBCLK	
B41	+3.3V	+3.3 VDC	A41	SMBDAT	
B42	SERR_L	System Error	A42	GND	Ground
B43	+3.3V	+3.3 VDC	A43	PAR	Parity
B44	C/BE1_L	Command, Byte Enable 1	A44	AD15	Address/Data 15
B45	AD14	Address/Data 14	A45	+3.3V	+3.3 VDC
B46	GND	Ground	A46	AD13	Address/Data 13
B47	AD12	Address/Data 12	A47	AD11	Address/Data 11
B48	AD10	Address/Data 10	A48	GND	Ground
B49	GND	Ground	A49	AD9	Address/Data 9
B50	(KEY)		A50	(KEY)	
B51	(KEY)		A51	(KEY)	
B52	AD8	Address/Data 8	A52	C/BE0_L	Command, Byte Enable 0
B53	AD7	Address/Data 7	A53	+3.3V	+3.3 VDC
B54	+3.3V	+3.3 VDC	A54	AD6	Address/Data 6
B55	AD5	Address/Data 5	A55	AD4	Address/Data 4
B56	AD3	Address/Data 3	A56	GND	Ground
B57	GND	Ground	A57	AD2	Address/Data 2
B58	AD1	Address/Data 1	A58	AD0	Address/Data 0
B59	VDD	+5 VDC	A59	+5V	+V I/O (+5 V)
B60	ACK64	Acknowledge 64 bit	A60	REQ64	Request 64 bit
B61	VDD	+5 VDC	A61	VDD	+5 VDC
B62	VDD	+5 VDC	A62	VDD	+5 VDC