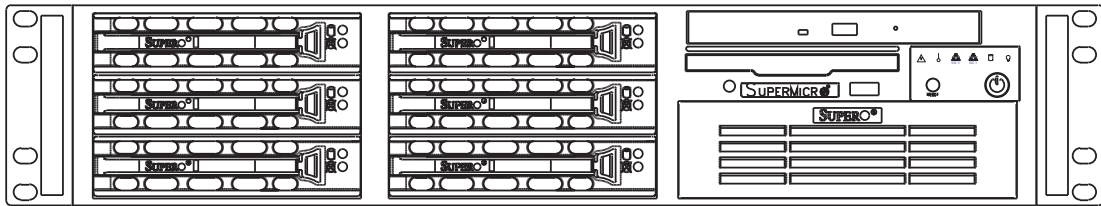


# SUPERO

SUPERSERVER 6024H-32R  
SUPERSERVER 6024H-32



USER'S MANUAL

1.0

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# Preface

## About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6024H-32R/6024H-32. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 6024H-32R/6024H-32 is a high-end server based on the SC823T-R500LP/SC823T-550LP 2U rackmount chassis and the X6DH3-G2, a dual processor serverboard that supports Intel® Xeon™ processors at a Front Side (System) Bus speed of 800 MHz and up to 16/32 GB of registered ECC DDR333/266 SDRAM.

## Manual Organization

### Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X6DH3-G2 serverboard and the SC823T-R500LP/SC823T-550LP chassis, which comprise the SuperServer 6024H-32R/6024H-32.

### Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6024H-32R/6024H-32 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

### Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

## **Chapter 4: System Safety**

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6024H-32R/6024H-32.

## **Chapter 5: Advanced Serverboard Setup**

Chapter 5 provides detailed information on the X6DH3-G2 serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

## **Chapter 6: Advanced Chassis Setup**

Refer to Chapter 6 for detailed information on the SC823T-R500LP/SC823T-550LP server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring hard drives or peripheral drives and when replacing system power supply units and cooling fans.

## **Chapter 7: BIOS**

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

## **Appendix A: BIOS POST Codes**

## **Appendix B: Software Installation**

## **Appendix C: System Specifications**

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# Notes

# Chapter 1

## Introduction

### 1-1 Overview

The SuperServer 6024H-32R/6024H-32 is a high-end server comprised of two main subsystems: the SC823T-R500LP/SC823T-550LP 2U server chassis and the X6DH3-G2 Intel Xeon dual processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 6024H-32R/6024H-32 ([www.supermicro.com](http://www.supermicro.com)).

In addition to the serverboard and chassis, various hardware components have been included with the SuperServer 6024H-32R/6024H-32, as listed below:

- One (1) 3.5" floppy drive [FPD-PNSC-02(01)]
- One (1) slim CD-ROM drive [CDM-TEAC-24(B)]
- Four (4) 8-cm hot-swap chassis fans (FAN-0070)
- One (1) 2U chassis air shroud (CSE-PT47)
- One (1) 5.25" dummy drive tray [CSE-PT41(B)]
- One (1) front control panel cable (CBL-0049)
- Serial Attached SCSI (SAS) Accessories
  - One (1) SAS backplane [CSE-SATA-822]
  - Two (2) SAS data cables (CBL-0118)
  - Six (6) SAS hot-swap drive carriers [CSE-PT17(B)]
- One (1) rackmount kit (CSE-PT025)
- One (1) driver CD (CDR-X6)
- Optional:
  - One (1) front access USB kit [CSE-PT29(B)]
  - Two (2) CPU passive heatsinks (SNK-P0010)

## 1-2 Serverboard Features

At the heart of the SuperServer 6024H-32R/6024H-32 lies the X6DH3-G2, a dual processor serverboard based on the Intel E7520 chipset and designed to provide maximum performance. Below are the main features of the X6DH3-G2. (See Figure 1-1 for a block diagram of the E7520 chipset).

### Processors

The X6DH3-G2 supports single or Intel dual Xeon EM64T type processors at a front side (system) bus speed of 800 MHz. Please refer to the serverboard description pages on our web site for a complete listing of supported processors ([www.supermicro.com](http://www.supermicro.com)).

### Memory

The X6DH3-G2 has eight 240-pin DIMM slots that can support up to 16 GB of dual channel, registered ECC DDR2-400 SDRAM. The memory is an interleaved configuration, which requires modules of the same size and speed to be installed in pairs.

### Serial ATA

The 6300ESB portion of the E7520 chipset includes a SATA Host controller that provides a two-port Serial ATA subsystem. In addition, an Adaptec AIC-9410W controller integrated onboard supports eight SAS or SATA drives, which are RAID 0, 1 and JBOD supported. The SAS drives are hot-swappable units.

**Note:** The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SAS drives.

### PCI Expansion Slots

The X6DH3-G2 has six PCI expansion slots, which includes two x8 PCI-Express slots, one 64-bit 133 MHz PCI-X slot, two 64-bit 100 MHz PCI-X slots and one 32-bit 33 MHz PCI slot. (One 100 MHz PCI slot supports Zero Channel RAID.)

## **Onboard Controllers/Ports**

One floppy drive controller and two onboard ATA/100 controllers are provided to support up to four IDE hard drives or ATAPI devices. The color-coded I/O ports include one COM port (an additional COM header is located on the serverboard), a VGA (monitor) port, a parallel (printer) port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports. Two front side USB ports are also included on the front of the chassis.

## **ATI Graphics Controller**

The X6DH3-G2 features an integrated ATI video controller based on the Rage XL graphics chip.

## **Other Features**

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

# **1-3 Server Chassis Features**

The SuperServer 6024H-32R/6024H-32 is a high-end, scalable server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC823T-R500LP/SC823T-550LP server chassis.

## **System Power**

The SC823T-R500LP features a redundant 500W power supply that consists of two separate power supply modules. Under normal operation, both modules share the load and run continuously. If one fails, the other module will pick up the load and keep the system running without interruption. A failed power supply module will illuminate the power fail LED and set off an onboard alarm. The power supply modules are hot-swappable, so you don't have to power down the system to replace a module.

The SC823T-550LP features a single 550W power supply.

## **SAS/SATA Subsystem**

The SAS/SATA subsystem supports up to six SAS/SATA drives. The SAS/SATA drives are hot-swappable units and are connected to a backplane that provides power and control.

**Note:** The operating system you use must have RAID support to enable the hot-swap capability of the SATA drives.

## **Front Control Panel**

The SuperServer 6024H-32R/6024H-32's control panel provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, overheat/fan fail and (6024H-32R only) power supply failure. A main power button and a system reset button are also included.

## **I/O Backplane**

The SC823T-R500LP/SC823T-550LP is an ATX form factor chassis that is designed to be used in a 2U rackmount configuration. The I/O backplane provides seven low-profile motherboard expansion slots, one COM port, a parallel port, a VGA port, two USB 2.0 ports, PS/2 mouse and keyboard ports and two gigabit Ethernet ports.

## **Cooling System**

The SC823T-R500LP/SC823T-550LP chassis has an innovative cooling design that includes four 8-cm hot-plug system cooling fans located in the middle section of the chassis. An air shroud channels the air flow from these fans to efficiently cool the processor area of the system. The power supply module(s) also includes a cooling fan.



## 1-4 Contacting Supermicro

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Tel: 886-2-8228-1366, ext.132 or 139

# Chapter 2

## Server Installation

### 2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 6024H-32R/6024H-32 up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

### 2-2 Unpacking the System

You should inspect the box the SuperServer 6024H-32R/6024H-32 was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 6024H-32R/6024H-32. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

### 2-3 Preparing for Setup

The box the SuperServer 6024H-32R/6024H-32 was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

## Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).



## Warnings and Precautions!



## Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

## Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SATA drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## **Rack Mounting Considerations**

### **Ambient Operating Temperature**

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature ( $T_{mra}$ ).

### **Reduced Airflow**

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

### **Mechanical Loading**

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

### **Circuit Overloading**

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

### **Reliable Ground**

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

## 2-4 Installing the System into a Rack

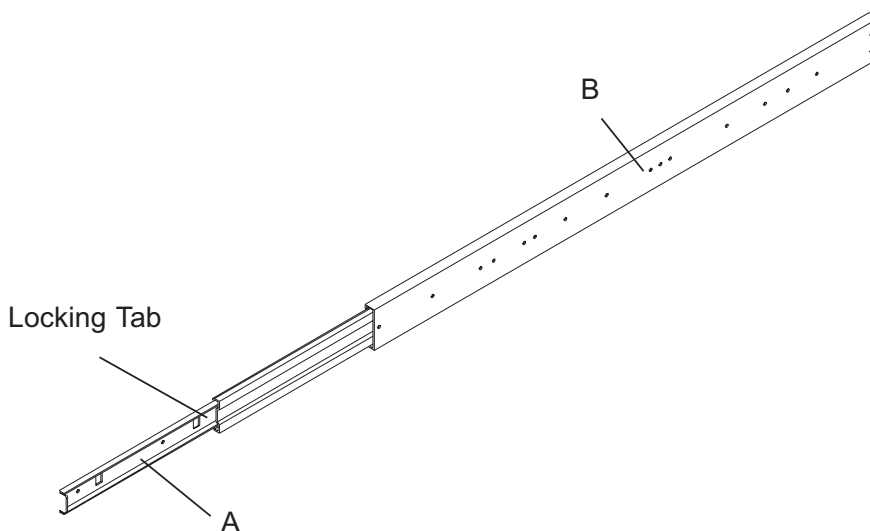
This section provides information on installing the SuperServer 6024H-32R/6024H-32 into a rack unit. If the 6024H-32R/6024H-32 has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the system into a rack with the rack rails provided. You should also refer to the installation instructions that came with the rack unit you are using.

### Identifying the Sections of the Rack Rails

You should have received two rack rail assemblies with the SuperServer 6024H-32R/6024H-32. Each of these assemblies consist of two sections: an inner fixed chassis rail that secures directly to the 6024H-32R/6024H-32 (A) and an outer fixed rack rail that secures directly to the rack itself (B). All screws and hardware mentioned in the installation steps should be included in the hardware kit.

To remove the fixed chassis rail (A), pull it out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail. Then depress the locking tab to pull the inner rail completely out. Do this for both the left and right side rack rail assemblies.

**Figure 2-1. Identifying the Sections of the Rack Rails**

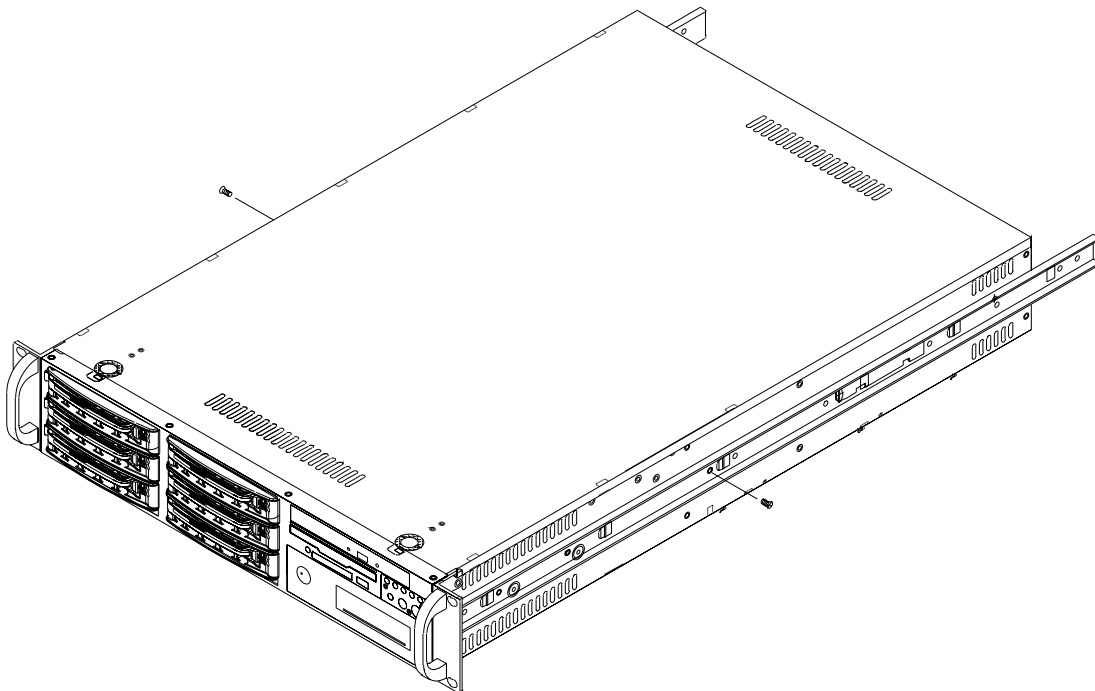


## Installing the Chassis Rails

Position the fixed chassis rail sections you just removed along the side of the 6024H-32R/6024H-32 making sure the screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-2). There should be two screws for each side. Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

**Locking Tabs:** As mentioned, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

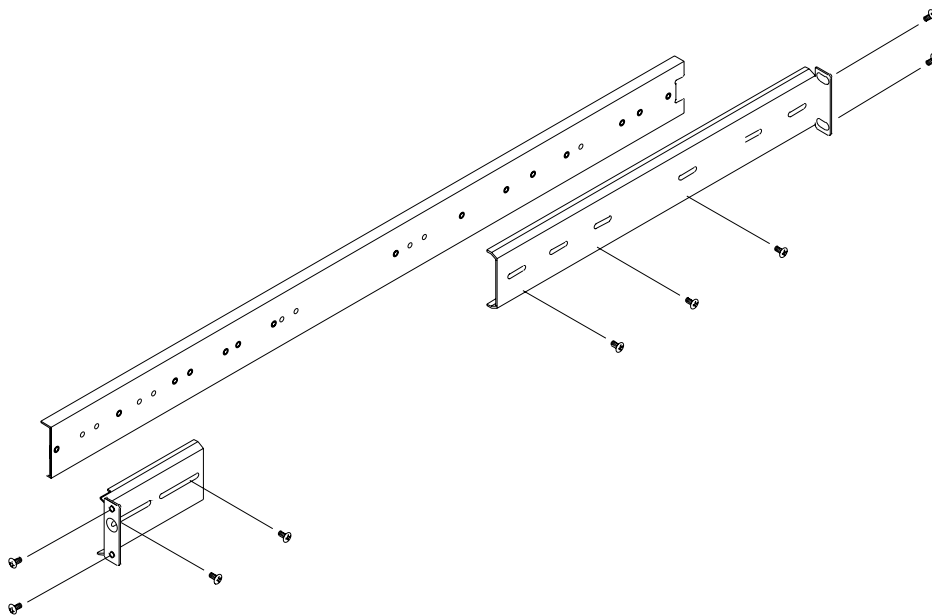
Figure 2-2. Installing Chassis Rails



## Installing the Rack Rails:

Determine where you want to place the SuperServer 6024H-32R/6024H-32 in the rack. (See [Rack and Server Precautions in Section 2-3.](#)) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure both are at the exact same height and with the rail guides facing inward (see Figure 2-3).

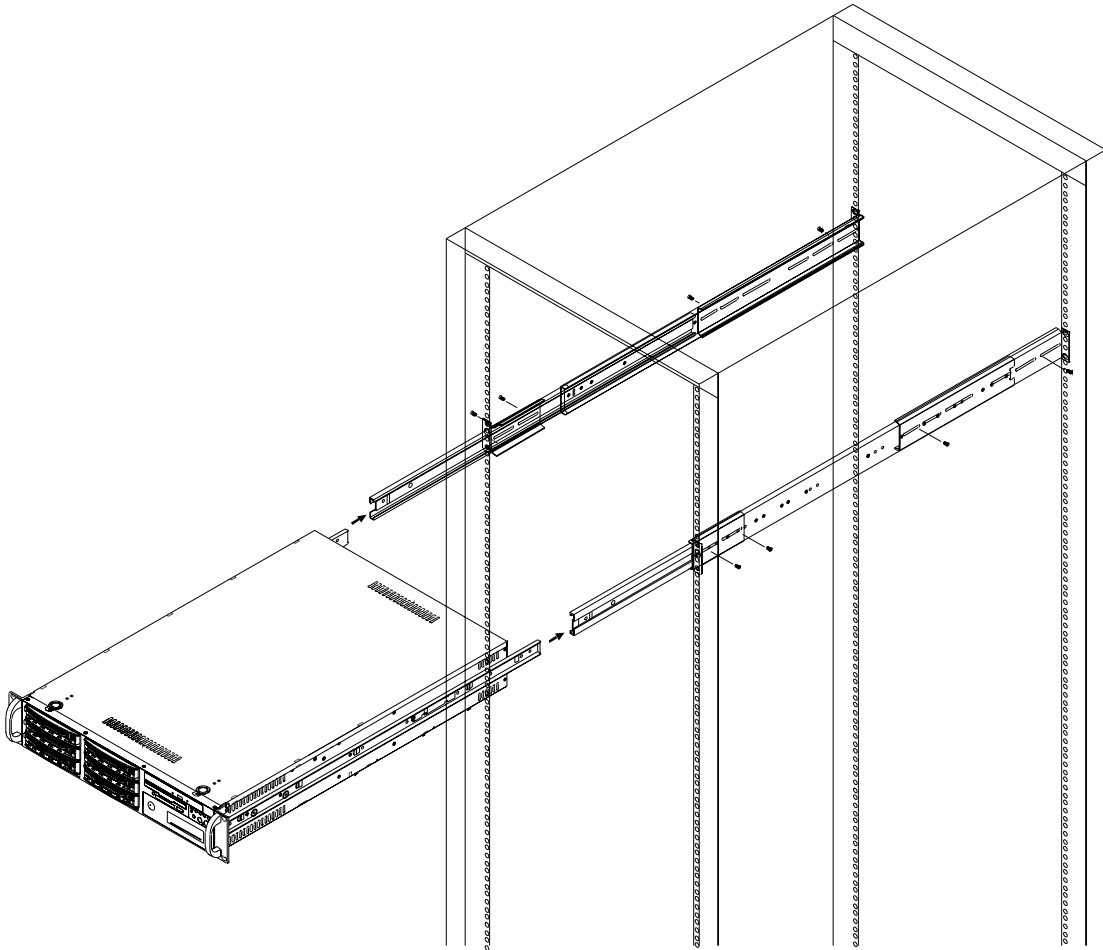
**Figure 2-3. Assembling the Rack Rails**



## Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-4.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

**Figure 2-4. Installing the Server into a Rack**

### Installing the Server into a Telco Rack

If you are installing the SuperServer 6024H-32R/6024H-32 into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accommodate the width of the telco rack.

## 2-5 Checking the Serverboard Setup

After you install the 6024H-32R/6024H-32 in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

### 1. Accessing the inside of the System (see Figure 2-5)

First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover. You can then lift the top cover from the chassis to gain full access to the inside of the server.

### 2. Check the CPUs (processors)

You may have one or two processors already installed into the serverboard. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

### 3. Check the system memory

Your 6024H-32R/6024H-32 server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

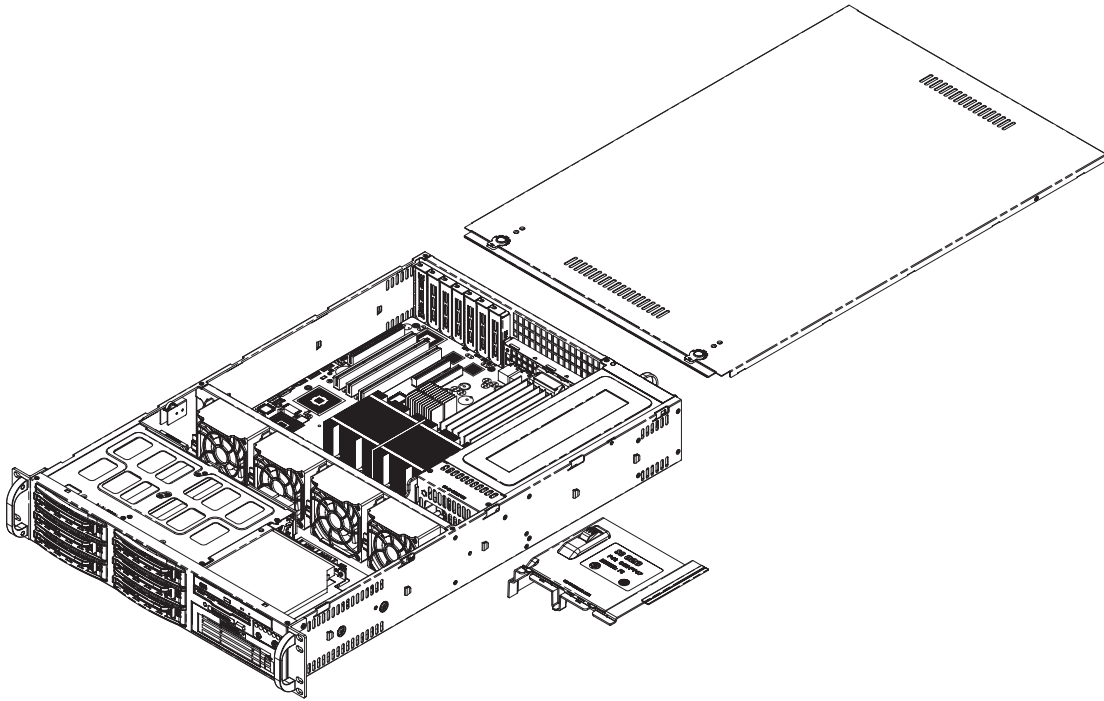
### 4. Installing add-on cards

If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

### 5. Check all cable connections and airflow

Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans. See Chapter 5 for details on cable connections.

**Figure 2-5. Accessing the Inside of the System**



## 2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the Serial ATA drives have been properly installed and all connections have been made.

### 1. Accessing the drive bays

All drives are accessible from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top chassis cover. The Serial ATA disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

### 2. CD-ROM and floppy disk drives

A slim CD-ROM and a floppy drive should be preinstalled in your server. Refer to Chapter 6 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

### 3. Check the SAS/SATA drives

Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install SAS/SATA drives, please refer to Chapter 6.

### 4. Check the airflow

Airflow is provided by four 8-cm center chassis cooling fans. An air shroud is also included in the system to maximize airflow. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

### 5. Supplying power to the system

The last thing you must do is to provide input power to the system. Plug the power cord(s) from the power supply unit(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

# Chapter 3

## System Interface

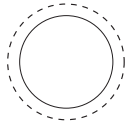
### 3-1 Overview

There are several LEDs on the control panel as well as others on the Serial ATA drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel.

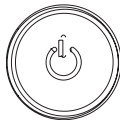
### 3-2 Control Panel Buttons

The two push-buttons located on the front of the chassis are (in order from left to right) a reset button and a power on/off button.

#### RESET



- **RESET:** Use the reset button to reboot the system.



- **POWER:** This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

### 3-3 Control Panel LEDs

The control panel located on the front of the chassis has several LEDs (six on the 6024H-32R and five on the 6024H-32). These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



- **Power Fail (6024H-32R only):** Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.



- **Overheat/Fan Fail:** When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.



- **NIC1:** Indicates network activity on the LAN1 port when flashing.



- **NIC2:** Indicates network activity on the LAN2 port when flashing.



- **HDD:** Indicates IDE channel activity. On the SuperServer 6024H-32R/6024H-32, this LED indicates Serial ATA and/or CD-ROM drive activity when flashing.



- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

### 3-4 SAS/SATA Drive Carrier LEDs

Each SAS/SATA drive carrier has a green LED. When illuminated, this green LED (on the front of the drive carrier) indicates drive activity.

**Note:** The second LED on the SATA carriers is not used.

# Notes

# Chapter 4

## System Safety

### 4-1 Electrical Safety Precautions



Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 6024H-32R/6024H-32 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the CD-ROM and floppy drives. When disconnecting power, you should first power down the system with the operating system and then unplug the power cords of all the power supply units in the system.
- When working around exposed electrical circuits, another person who is 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. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which 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.
- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

## 4-2 General Safety Precautions



Follow these rules to ensure general safety:

- Keep the area around the SuperServer 6024H-32R/6024H-32 clean and free of clutter.
- The SuperServer 6024H-32R/6024H-32 weighs approximately 57/54 lbs (25.6/24.6 kg.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs. Don't use the handles to lift the chassis; the handles should only be used to pull the server out of the rack.
- Place the chassis top 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.
- While working on the system, do not wear loose clothing 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 that can create short circuits and harm you if they come into

contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

### 4-3 ESD Precautions



Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

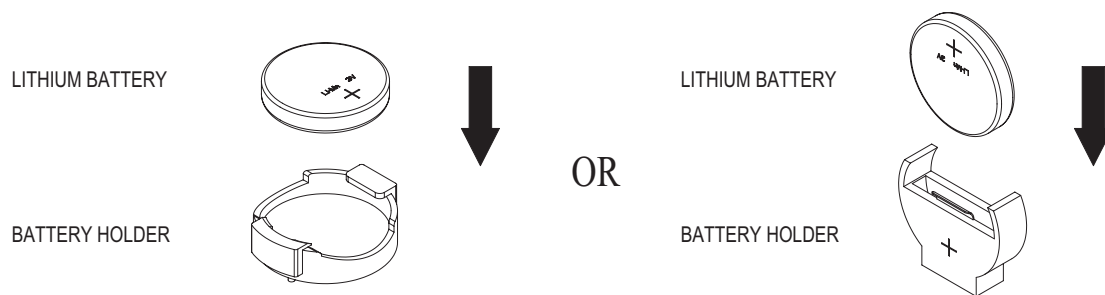
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- 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 serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

## 4-4 Operating Precautions



Care must be taken to assure that the chassis cover is in place when the 6024H-32R/6024H-32 is operating to assure proper cooling. Out of warranty damage to the 6024H-32R/6024H-32 system can occur if this practice is not strictly followed.

**Figure 4-1. Installing the Onboard Battery**



## Chapter 5

# Advanced Serverboard Setup

This chapter covers the steps required to install the X6DH3-G2 serverboard into the SC823T-R500LP/SC823T-550LP chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

### 5-1 Handling the Serverboard

Electric-static discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

#### Precautions

- Use a grounded wrist strap designed to prevent Electric Static Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

## Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

## 5-2 Serverboard Installation

This section explains the first step of physically mounting the X6DH3-G2 into the SC823T-R500LP/SC823T-550LP chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

### 1. Accessing the inside of the system

Remove the screws from the back lip of the top cover of the chassis, then pull the cover off.

### 2. Check compatibility of serverboard ports and I/O shield

The X6DH3-G2 requires a chassis big enough to support a 12" x 13.05" motherboard, such as Supermicro's SC823T-R500LP/SC823T-550LP. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.

### 3. Mounting the serverboard onto the serverboard tray

Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system. Finish by replacing the top cover of the chassis.

## 5-3 Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

### Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the serverboard layout page for connector locations.)

- SAS drive cables (JSM1, JSM2)
- Control Panel cable (JF1)
- Floppy cable (J12)
- CD-ROM drive cable (J6)

### Connecting Power Cables

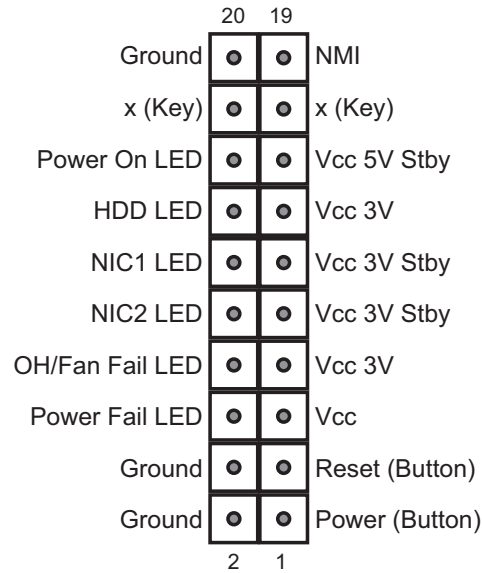
The X6DH3-G2 has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there is an 8-pin processor power connector (J1D1) and a 4-pin auxiliary power connector (J38) that both must be connected to your power supply. See Section 5-9 for power connector pin definitions.

### Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

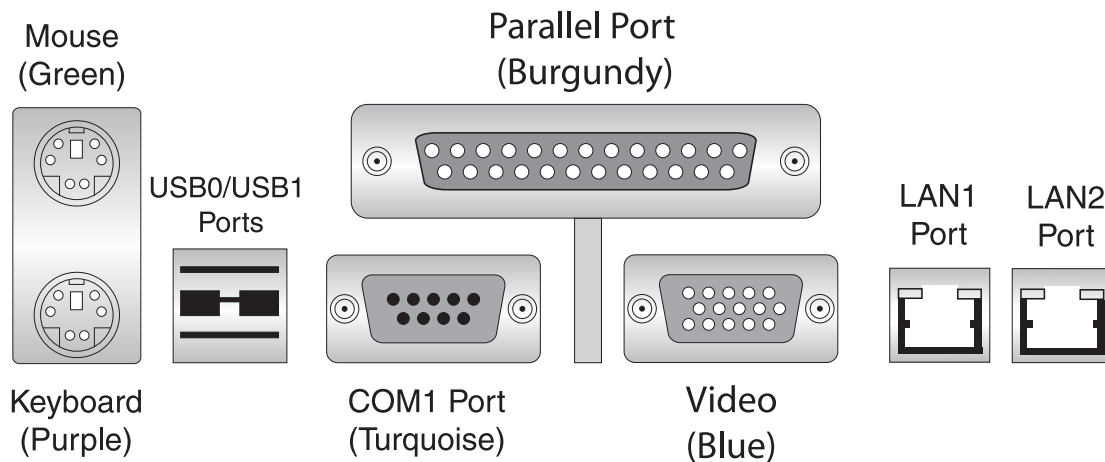
**Figure 5-1. Control Panel Header Pins**



## 5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

**Figure 5-2. I/O Ports**



## 5-5 Installing the Processor and Heatsink

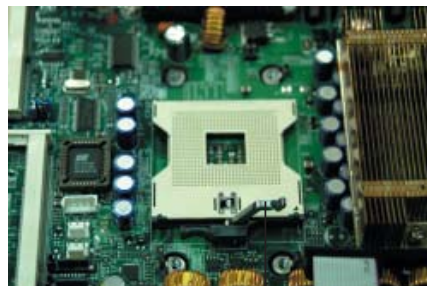


**Avoid placing direct pressure to the top of the processor package. Always remove the power cord first before adding, removing or changing any hardware components.**

The X6DH3-G2 can support single or dual Intel Xeon processors. Intel's boxed CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use a Intel-certified multi-directional heatsink and fan only.

### CPU Installation

1. Lift the lever on the CPU1 socket: Lift the lever completely as shown on the picture on the right; otherwise, you will damage the CPU socket when power is applied. **IMPORTANT:** you must install to CPU1 socket first.



Socket lever

2. Insert the CPU in the socket, making sure that pin 1 of the CPU aligns with pin 1 of the socket (both corners are marked with a triangle). When using only one CPU, install it into CPU socket #1. (Socket #2 is automatically disabled if only one CPU is used.)



Pin 1

3. Press the lever down until you hear a \*click\*, which means the CPU is securely installed in the CPU socket. Repeat these steps if you wish to install a second CPU in the CPU2 socket.

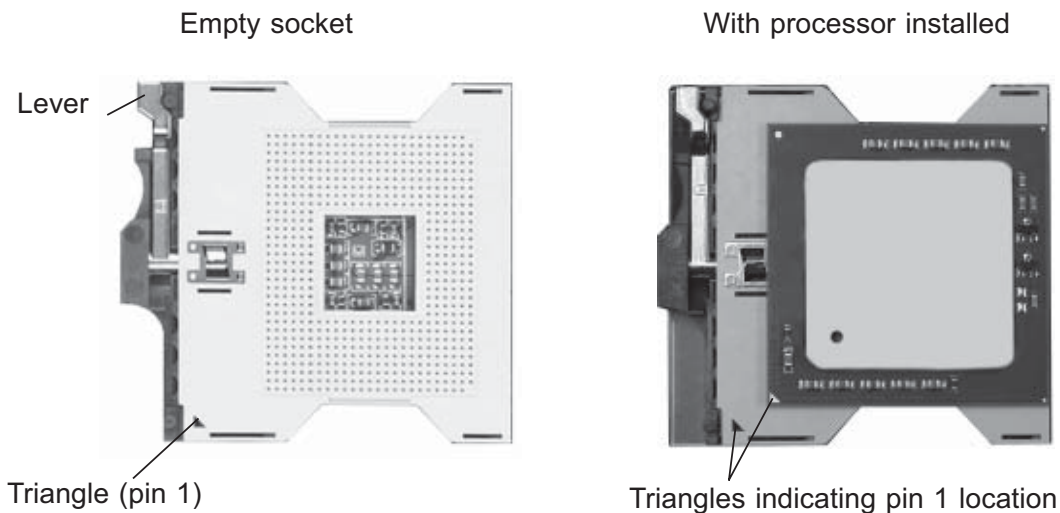


Socket lever in the locked position

**Figure 5-3. CPU Socket: Empty and with Processor Installed**

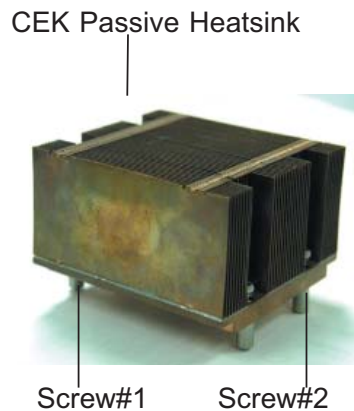


**Warning!** Make sure you lift the lever completely when installing the CPU. If the lever is only partly raised, damage to the socket or CPU may result.

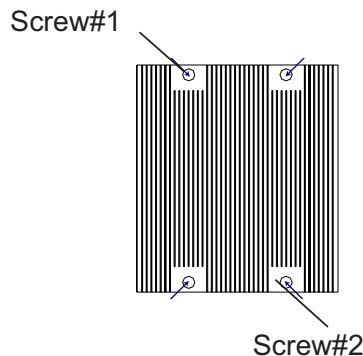


**Installing the Heatsink**

1. Do not apply any thermal grease to the heatsink or the CPU die. The required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.



3. Screw in two diagonal screws (e.g. the #1 and the #2 screws) until just snug; do not fully tighten the screws, which may damage the CPU.
4. Finish the installation by fully tightening all four screws.

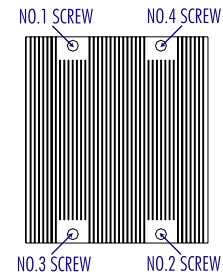


## Removing the Heatsink

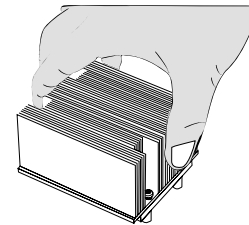


**Warning:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to prevent damage done to the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the drawing on the right.



2. Hold the heatsink as show in the drawing on the right and gently wriggle the it to loosen it from the CPU. Do not use excessive force when wriggling the heatsink.



3. Once the CPU has been loosened, remove it from the CPU socket.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.

## 5-6 Installing Memory



**CAUTION!** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

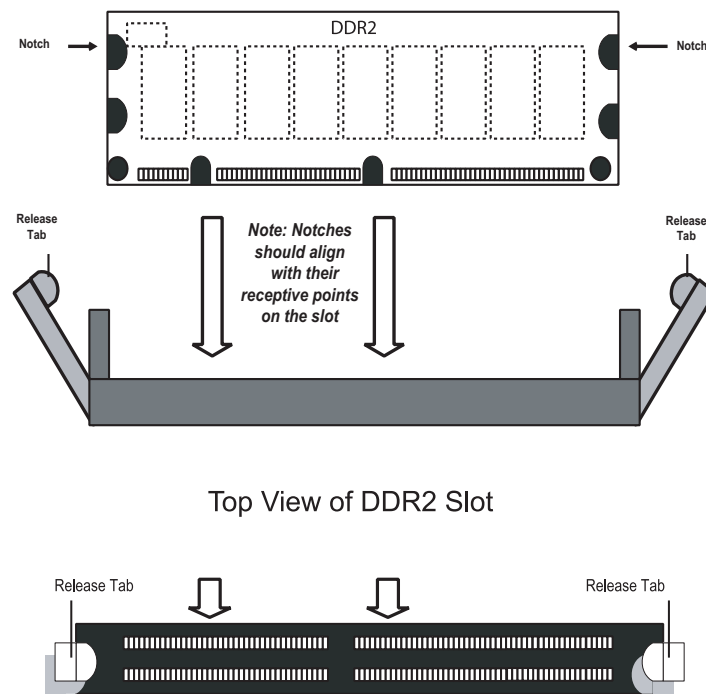
### Memory support

The X6DH3-G2 supports up to 16 GB of registered ECC DDR2-400 SDRAM. The memory scheme is interleaved so you must install two memory modules at a time, beginning with Bank 1, then Bank 2, and so on. You should use DIMMs of the same size, type and speed. Please refer to Supermicro's web site at [www.supermicro.com](http://www.supermicro.com) for memory updates.

### Installing memory modules

1. When adding DIMMs, you must start by populating Bank 1. The memory scheme is interleaved so you must install two modules at a time, beginning with Bank 1, then Bank 2, and so on.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly. See Figure 5-4.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Figure 5-4. DIMM Installation



**To Install:** Insert module vertically and press down until it snaps into place. Pay attention to the bottom notches.

**To Remove:** Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

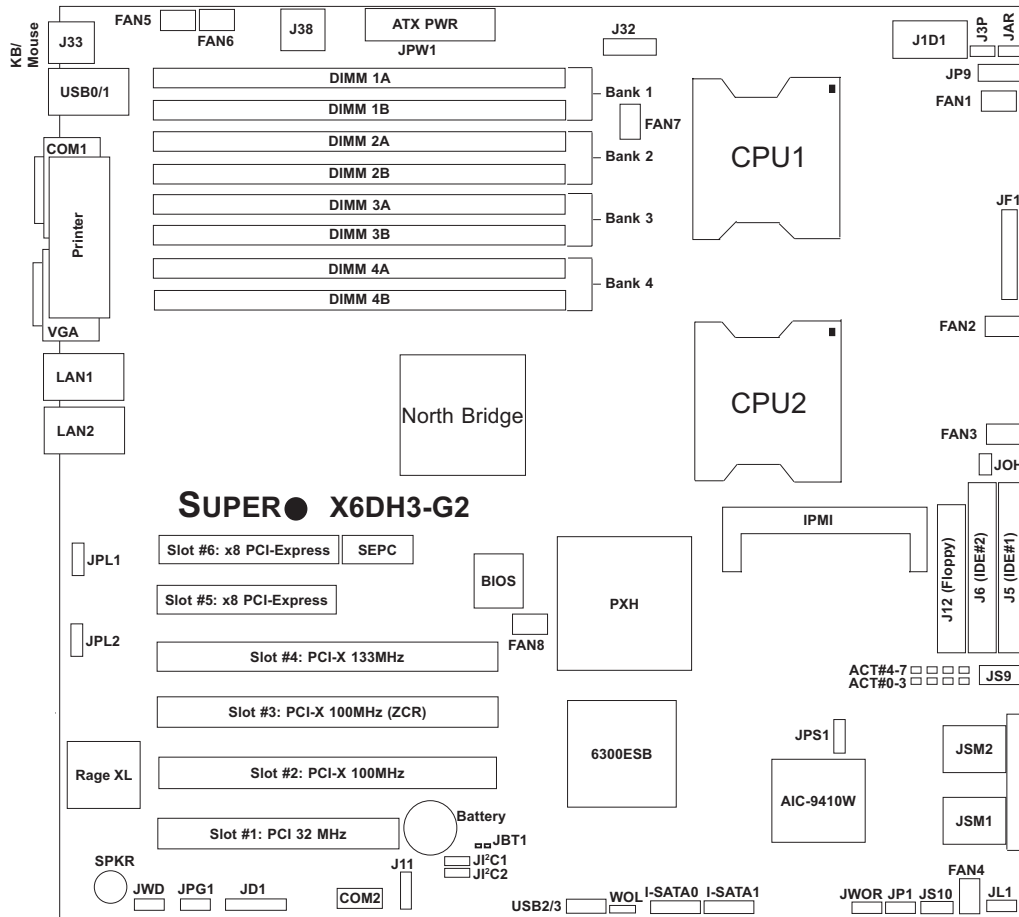
## 5-7 Adding PCI Add-On Cards

The 6024H-32R and 6024H-32 can accommodate all PCI expansion slots on the X6DH3-G2 being populated with low-profile cards.

To install an add-on card, begin by removing the PCI slot shield for the slot you wish to populate. Fully seat the card into the card slot on the serverboard, pushing down with your thumbs evenly on both sides of the card. Finish by using a screw to secure the top of the card shield to the backpanel of the chassis. The PCI slot shields protect the serverboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused PCI-E/PCI-X/PCI slot.

## 5-8 Serverboard Details

Figure 5-5. X6DH3-G2 Layout  
(not drawn to scale)



**Notes:**

Jumpers not indicated are for test purposes only.

The green PCI-X slot supports ZCR (Zero Channel RAID).

## X6DH3-G2 Quick Reference

<b>Jumpers</b>	<b>Description</b>	<b>Default Setting</b>
J3P	3rd Pwr Supply Fail Detect	Open (Disabled)
JAR	Alarm Reset Enable/Disable	Open (Normal)
JBT1	CMOS Clear	See Section 5-10
JI <sup>2</sup> C1/JI <sup>2</sup> C2	I <sup>2</sup> C to PCI Enable/Disable	Closed (Enabled)
JP1	Power Force-On	Open (Disabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Ports Enable/Disable	Pins 1-2 (Enabled)
JPS1	SAS Controller Enable	Pins 1-2 (Enabled)
JWD	Watch Dog Enable	Pins 1-2 (Reset)

<b>Connectors</b>	<b>Description</b>
COM1/COM2	COM1 Port and COM2 Header
Fans 1-8	CPU (Fan1/2) and System (Fan 3-8) Fan Headers
J1D1	12V 8-pin Processor Power Connector (Required)
J5/J6	IDE#1/#2 Connectors
J11	System Management Bus
J12	Floppy Disk Connector
J32	Power Supply SMBus (I <sup>2</sup> C)
J33	PS/2 Keyboard/Mouse Ports
J38	12V 4-pin System Power Connector
JD1	Power LED/Speaker Header
JF1	Front Panel Control Header
JL1	Chassis Intrusion Header
JOH	Overheat LED
JP9	Power Supply Fail LED Header
JPW1	ATX 24-Pin Power Connector
JS9	SAS Activity LED Header
JS10	SAS SMBus (SAS I <sup>2</sup> C) Header
JSM1/JSM2	Adaptec SAS Ports 0-3/4-7
JWOR	Wake-On-Ring Header
IPMI	IPMI Slot
I-SATA 0-1	Serial ATA Ports
LAN1/LAN2	Ethernet RJ45 (Gb LAN) Ports
Printer	Parallel (Printer) Port Connector
USB0/1/2/3	Universal Serial Bus Ports (0/1) and Headers (2/3)
VGA	VGA Connector
WOL	Wake-On-LAN Header

<b>Onboard Indicators</b>	<b>Description</b>
ACT#0-#7	SAS Activity LED Indicators

## 5-9 Connector Definitions

### Main ATX Power Supply Connector

The primary power supply connector (JPW1) meets the SSI (Superset ATX) 24-pin specification. Refer to the table on the right for the pin definitions of the ATX 24-pin power connector. You must also connect the 8-pin (JPW2) processor power connector to your power supply (see below).

ATX Power 24-pin Connector Pin Definitions (JPW1)			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

#### Required Connection

### Processor Power Connector

J1D1 must also be connected to the power supply to provide power for the processor. See the table on the right for pin definitions.

+12V 8-pin Power Pin Definitions (J1D1)	
Pins	Definition
1 - 4	Ground
5 - 8	+12V

#### Required Connection

### Auxiliary Power Connector

J38 is a 4-pin auxiliary power connector, which also must be connected to the power supply.

+12V 4-pin Power Pin Definitions (J38)	
Pins	Definition
1 - 2	Ground
3 - 4	+12V

#### Required Connection

### PW\_ON Connector

The PW\_ON connector is on pins 1 and 2 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PW_ON
2	Ground

## Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

## Overheat/Fan Fail LED

Connect an LED to pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

## NIC2 (JLAN2) LED

The LED connections for JLAN2 are on pins 9 and 10 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

## NIC1 (JLAN1) LED

The LED connections for JLAN1 are on pins 11 and 12 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

## IDE/SATA LED

The IDE/SATA LED connection is located on pins 13 and 14 of JF1. This LED is used to display all IDE and SATA activity. See the table on the right for pin definitions.

IDE/SATA LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

## Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1 (use JLED for a 3-pin connector). This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	5V Stby
16	Control

## NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

## Fan Headers

The X6DH3-G2 has four 3-pin (FAN1-4) and four 4-pin (FAN5-8) fan headers. The 4-pin headers include a PWM function. Fan speed is controlled by a Thermal Management setting in BIOS. When using thermal management, use all 3-pin or all 4-pin fans, not both together. See the table on the right for pin definitions.

Fan Header Pin Definitions (FAN1-8)	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

## ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J33. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions (J33)	
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

## Chassis Intrusion

The Chassis Intrusion header is designated JL1. See the board layout for the location of JL1 and the table on the right for pin definitions.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Intrusion Input
2	Ground

## Wake-On-LAN

The Wake-On-LAN header is designated WOL on the motherboard. See the table on the right for pin definitions. You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.

Wake-On-LAN Pin Definitions (WOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

## Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and be "awakened" by an incoming call when in the suspend state. See the table on the right for pin definitions. You must also have a WOR card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR)	
Pin#	Definition
1	Ground (Black)
2	Wake-up

## LAN1/2 (Ethernet Ports)

Two Ethernet ports (designated LAN1 and LAN2) are located beside the COM port on the I/O backplane. These ports accept RJ45 type cables.



### Serial Ports

Two serial ports are included on the serverboard. COM1 is a backpanel port and COM2 is a header located near the PCI#1 slot. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)			
Pin #	Definition	Pin #	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

### Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O backplane (USB0/1) and two additional USB headers (USB2/3) located near the WOL header. The headers can be used to provide front side USB access (cables not included). See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB)			
USB0/1		USB2/3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

### Power LED/Speaker

On the JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker. The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 6-7 with a jumper. See the table on the right for external speaker pin definitions.

Speaker Connector Pin Definitions (JD1)	
Pin #	Definition
4	Speaker data (red wire)
5	No connection
6	Key
7	Speaker data

### Overheat LED

Connect an LED to the JOH header to provide warning of chassis overheating. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH)	
Pin#	Definition
1	12VDC
2	OH Active

## SMB

A System Management Bus header is located at J11. Connect the appropriate cable here to utilize SMB on your system. See the table on the right for pin definitions.

SMB Header Pin Definitions (J11)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

## Power SMB (I<sup>2</sup> C) Connector

Power SMB (I<sup>2</sup> C) Connector (J32), located between the 8-pin PWR Connector and the 24-pin PWR Connector, monitors the status of PWR Supply, Fan and system temperature. See the table on the right for pin definitions.

PWR SMB Pin Definitions (J32)	
Pin#	Definition
1	Clock
2	Data
3	Power Fail
4	Ground
5	+3.3V

## SAS Activity LED Header

The SAS activity LED header (JS9), located by IDE#1 connector, is used to display the activity of the SAS drives. See the table on the right for pin definitions.

SAS Activity LED Pin Definitions (JS9)			
Pin#	Definition	Pin#	Definition
1	SAS0:Act	6	SAS4:Act
2	SAS1:Act	7	SAS5:Act
3	SAS2:Act	8	SAS6:Act
4	SAS3:Act	9	SAS7:Act
5	Common	10	NC

## SAS SMB Bus (I<sup>2</sup>C) Header

A SAS SMB Bus (I<sup>2</sup>C) header (JS10) is located beside the FAN4 header and is used to monitor the status of the power supply System Management Bus for the SAS ports. See the table on the right for pin definitions.

SAS SMB Bus Pin Definitions (JS10)	
Pin#	Definition
1	TWSI_SDA
2	Ground
3	TWSI_SCK

## Power Supply Fail LED Header

Connect the appropriate cable from your power supply to JP9 to provide an LED warning of a power supply failure. This warning signal is passed through the PWR\_LED pin to indicate a power supply failure. See the table on the right for pin definitions.

PWR Supply Fail LED Pin Definitions (JP9)	
Pin#	Definition
1	PWR 1: Fail
2	PWR 2: Fail
3	PWR 3: Fail
4	Signal: Alarm Reset

**Note:** This feature is only available when using redundant Supermicro power supplies.

## Alarm Reset

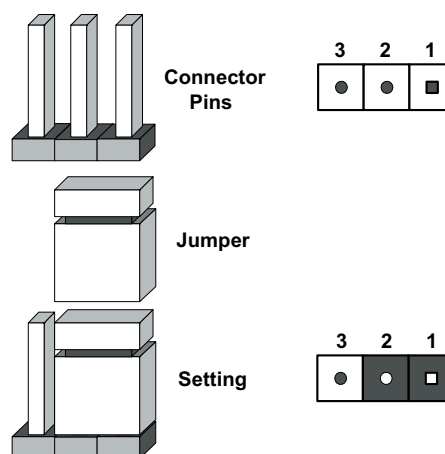
The system will notify you in the event of a power supply failure. This feature assumes that Supermicro redundant power supply units are installed in the chassis. If you only have a single power supply installed, you should not connect anything to this jumper to prevent false alarms. See the table on the right for jumper settings.

Alarm Reset Jumper Settings (JAR)	
Pin#	Definition
1	Ground
2	+5V

## 5-10 Jumper Settings

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.



**Note:** On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.

### CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS. To clear CMOS,

- 1) First power down the system and unplug the power cord(s)
- 2) With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver
- 3) Remove the screwdriver (or shorting device)
- 4) Reconnect the power cord(s) and power on the system.

**Note:** Do not use the PW ON connector to clear CMOS.

### Onboard Speaker

To use the internal (onboard) speaker, place a jumper on pins 6-7 of JD1. If you wish to use an external speaker, connect the speaker header to pins 4 through 7 of JD1.

Onboard Speaker Jumper Settings (JD1)	
Setting	Definition
Jump pins 6-7	Internal Speaker
Connect to 4-7	External Speaker

### Watch Dog Enable/Disable

JWD enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

**Note:** when Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

### LAN1/2 Enable/Disable

Use JPL1 and JPL2 to enable or disable the LAN1 and LAN2 ports, respectively. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 Enable/Disable Jumper Settings (JPL1/JPL2)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

### I<sup>2</sup>C to PCI Enable/Disable

The JI<sup>2</sup>C1/2 pair of jumpers allow you to connect the System Management Bus to the PCI slots. The default setting is closed for both jumpers to enable the connection. Both connectors must have the same setting (JI<sup>2</sup>C1 is for data and JI<sup>2</sup>C2 is for the clock). See the table on right for jumper settings.

I <sup>2</sup> C to PCI Enable/Disable Jumper Settings (JI <sup>2</sup> C1/2)	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

### VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

### System Power Force On

Jumper JP1 allows you to enable or disable the Force Power On function. If enabled, system power will always stay on. If disabled (the normal setting), the user needs to press the power button to power on the system.

System Power Force On Jumper Settings (JP1)	
Jumper Setting	Definition
Closed	Force On
Open	Disabled

### 3rd PWR Supply Fail Detect

The system can notify you in the event of a power supply failure. This feature assumes that three power supply units are installed in the chassis, with one acting as a backup. If you only have one or two power supply units installed, you should disable this (the default setting) with J3P to prevent false alarms.

3rd PWR Supply Fail Detect Jumper Settings (J3P)	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

**Note:** this jumper should be disabled on the 6024H-32R/6024H-32.

### SAS Controller Enable/Disable

JPS1 enables or disables the AIC 9140W Adaptec SAS controller. See the table on the right for jumper settings. The default setting is enabled.

SAS Controller Enable/Disable Jumper Settings (JPS1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

## 5-11 Onboard Indicators

### LAN LEDs

The Ethernet port has two LEDs. The yellow (right) LED indicates activity while the left LED may be green, orange or off to indicate the speed of the connection. See the table on the right for the functions associated with the left LED.

Left LAN LED (Connection Speed)	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

### SAS Activity LEDs

Eight SAS activity LEDs (DS1-DS8) are located near the JSM1/2 ports. These LEDs indicate activity on the SAS ports (0-7). See the table on the right for pin definitions.

SAS Activity LEDs (DS1-DS8)			
DS#	Definition	DS#	Definition
DS1	SAS0 Activity	DS5	SAS4 Activity
DS2	SAS1 Activity	DS6	SAS5 Activity
DS3	SAS2 Activity	DS7	SAS6 Activity
DS4	SAS3 Activity	DS8	SAS7 Activity

## 5-12 Parallel Port and Peripheral Drive Connections

Use the following information to connect the IDE hard disk drive cables.

- A red mark on a wire typically designates the location of pin 1.
- The 80-wire ATA100/66 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this new technology offers. The blue connector connects to the onboard IDE connector interface and the other connector(s) to your hard drive(s). Consult the documentation that came with your disk drive for details on actual jumper locations and settings for the hard disk drive.

### Parallel Port Connector

The parallel port is located above the COM1 and VGA ports. See the table at right for pin definitions.

Parallel (Printer) Port Connector Pin Definitions (Printer)			
Pin#	Definition	Pin #	Definition
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	Write Data
23	PE	24	Write Gate
25	SLCT	26	NC

### IPMI

There is a IPMI Socket on the serverboard labeled IPMI. Refer to the serverboard layout page for location.

## Floppy Connector

The floppy connector is designated J12. See the table at right for pin definitions.

Floppy Drive Connector Pin Definitions (J12)			
Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

## SATA Connectors

There are no jumpers to configure the onboard SATA connectors. See the table on the right for pin definitions.

SATA Connector Pin Definitions (I-SATA0/I-SATA1)	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

## IDE Connector

There are no jumpers to configure the onboard IDE connectors. See the table below for pin definitions.

<b>IDE Drive Connectors Pin Definitions (J5, J6)</b>			
Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

**Notes**

## Chapter 6

### Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC823T-R500LP/SC823T-550LP chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

#### Tools Required

The only tool you will need to install components and perform maintenance is a Philips screwdriver.

#### 6-1 Static-Sensitive Devices

Electricstatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

##### Precautions

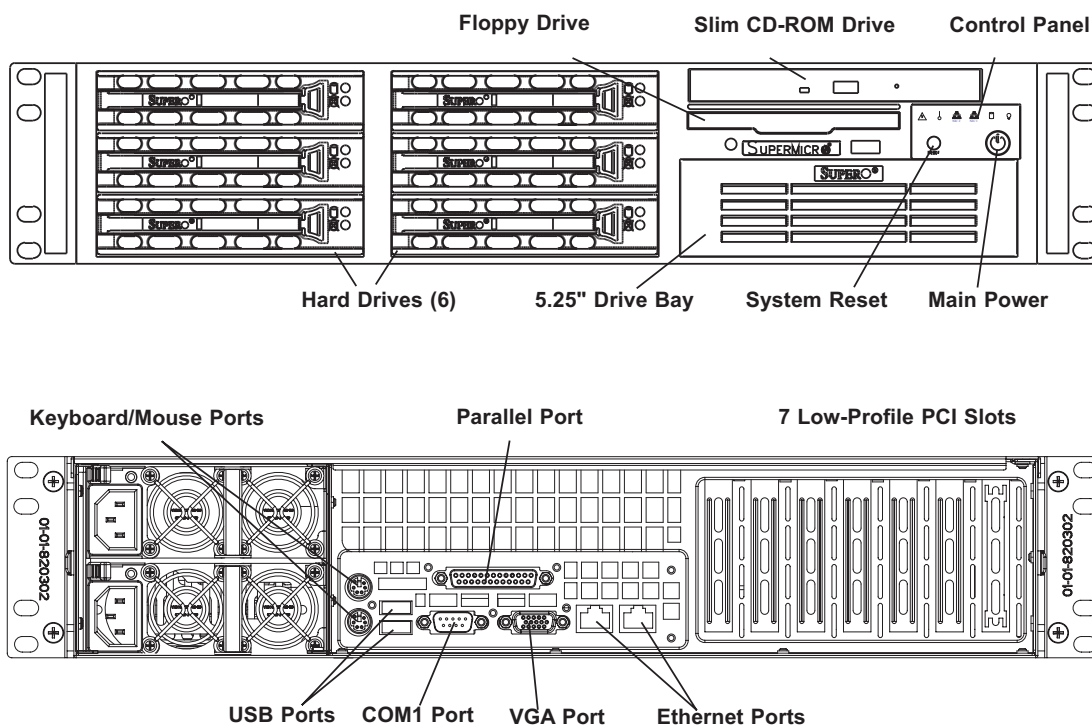
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

##### Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

---

Figure 6-1. Front and Rear Chassis Views



6024H-32R shown: the 6024H-32 is identical but with only a single power supply.

## 6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to JP4 on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both JF1 and JP4. Pull all excess cabling out of the airflow path. The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

## 6-3 System Fans

Four 8-cm fans and an air shroud (which channels the air flow to the processors) provide all the cooling needed for the SuperServer 6024H-32R/6024H-32. It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2.

### System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover (see instructions in Chapter 2) while the system is still running to determine which of the fans has failed.

The hot-plug fan will start to function upon connection to its fan header on the serverboard.

### Replacing System Fans

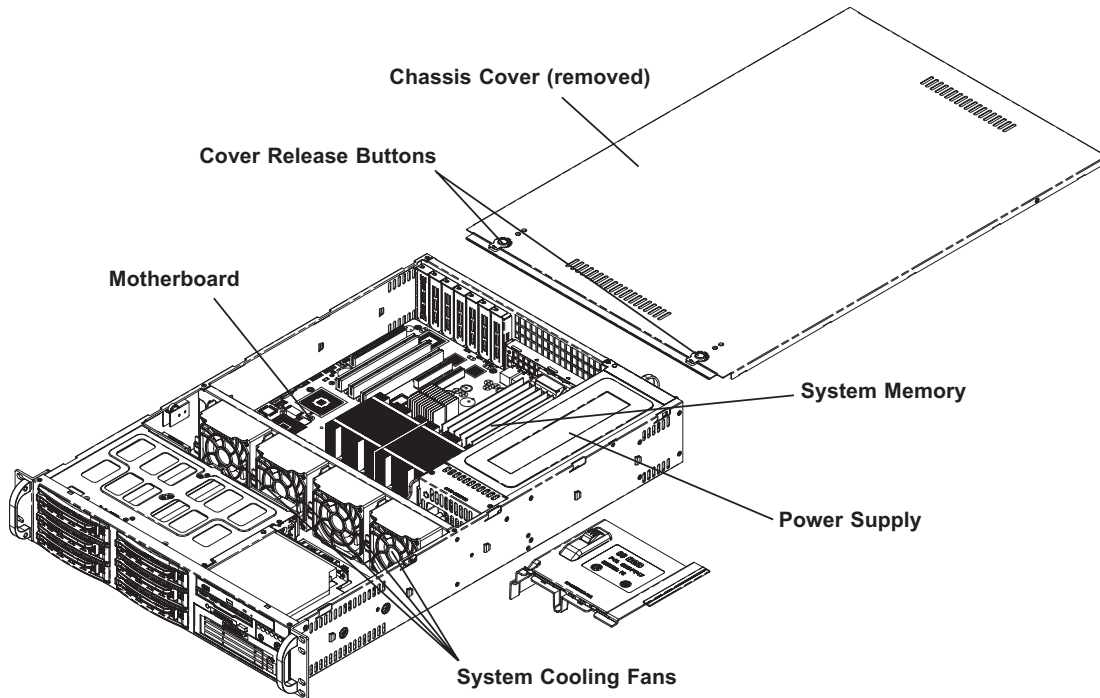
#### 1. Removing a fan

Remove the chassis cover. Press the tabs on the top of the fan housing and move the fan and its housing. System power does not need to be shut down since the fans are all hot-pluggable.

#### 2. Installing a new fan

Replace the failed fan with an identical 8-cm, 12 volt fan (available from Supermicro, p/n FAN-0070). Position the new fan at its proper place in the chassis by fitting the fan with its housing onto the fan mounts in the chassis. A "click" can be heard if the fan (in its housing) is properly installed. If the system power is on, the hot-plug feature will cause the fan to start immediately upon being connected to its header on the serverboard.

Figure 6-2. System Cooling Fans



## 6-4 Drive Bay Installation/Removal

### Accessing the Drive Bays

**SAS/SATA Drives:** You do not need to access the inside of the chassis or remove power to replace or swap SAS/SATA drives. Proceed to the next step for instructions. **Note:** You must use standard 1" high, SAS/SATA drives in the SuperServer 6024H-32R/6024H-32.

**CD-ROM/Floppy Disk Drive:** For installing/removing the CD-ROM or floppy disk drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "CD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

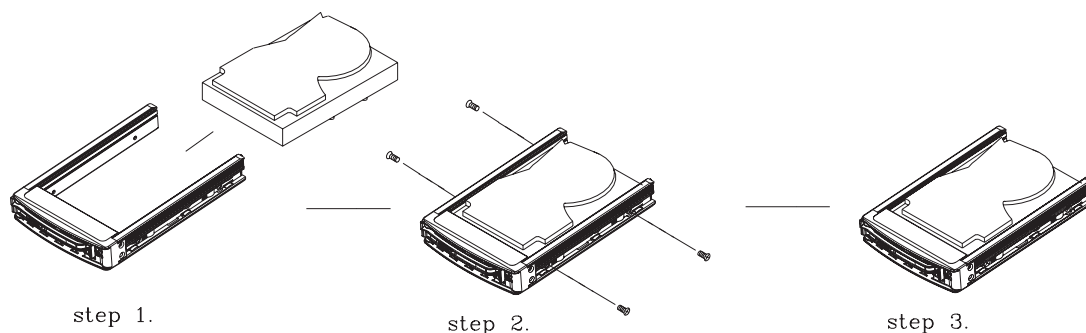
**5.25" Drive Bay:** For installing/removing a component in the 5.25" drive bay, proceed to the "5.25" Drive Bay Installation" section later in this chapter for instructions.

## SAS/SATA Drive Installation

### 1. Mounting a SAS/SATA drive in a drive carrier

The SAS/SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drives. For this reason, even empty carriers without SAS/SATA drives installed must remain in the chassis. To add a new SAS/SATA drive, install a drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier. Secure the drive to the carrier with four screws, as shown in Figure 6-3.

Figure 6-3. Mounting a SAS/SATA Drive in a Carrier



Use caution when working around the SAS/SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.



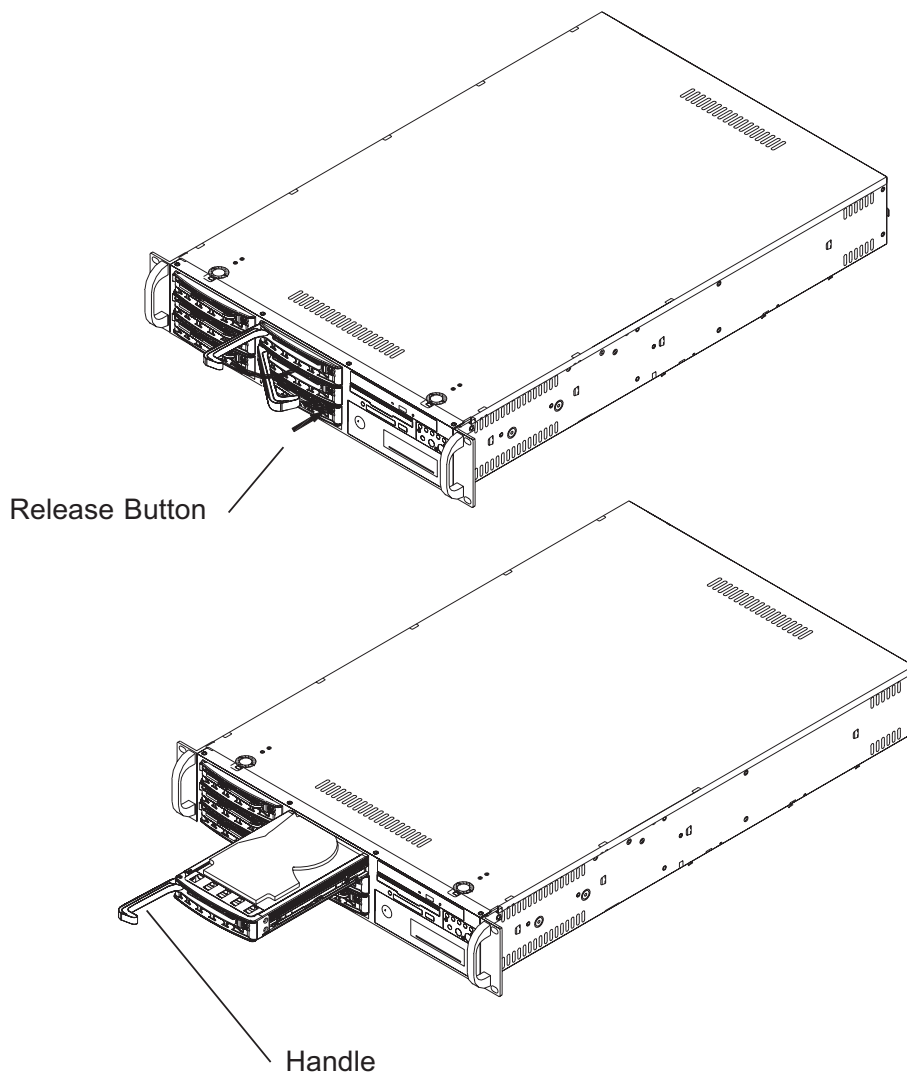
**Important:** Regardless of how many SAS/SATA hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

## 2. Installing/removing hot-swap SAS/SATA drives

The SAS/SATA drive carriers are all easily accessible at the front of the chassis. These hard drives are hot-pluggable, meaning they can be removed and installed without powering down the system. To remove a carrier, push the release button located beside the drive LEDs. Then swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-4).

**Note:** Your operating system must have RAID support to enable the hot-plug capability of the SAS/SATA drives.

Figure 6-4. Removing a Serial ATA Drive Carrier



**Important:** All of the SAS/SATA drive carriers must remain in the drive bays to maintain proper cooling airflow.

### **Hard Drive Backplane**

The SAS/SATA drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the Serial ATA drives. The backplane is already preconfigured, so there are no jumpers or switches present on it.

### **Removing the Air Shroud**

Under most circumstances you will not need to remove the air shroud to perform any service on the system. However, if you wish to temporarily remove it (the air shroud should always be in place when the system is operating), please follow this procedure.

Begin by depressing the tabs at the front and rear of the shroud to unlock it, then lift it up and out of the chassis. To reinstall, simply position the air shroud in its proper place and push it in until you hear it click.

## Installing a Component in the 5.25" Drive Bay

A single 5.25" IDE drive bay is located in the front of the chassis. This component is not hot-swappable, meaning system power must be turned off before installing and/or removing it.

To remove the drive carrier, first power down the system and then remove the top cover of the chassis. Unscrew the retention screw at the top center of the drive, then push the drive carrier out from the back until you can grasp and pull it out through the front of the chassis. Attach the component to the carrier if installing. Then reverse the drive carrier removal procedure to install the drive, making sure you screw in the retention screw. Replace the top cover when finished.

## CD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM and floppy drive bays. The 6024H-32R/6024H-32 accommodates only slim type CD-ROM drives. Side mounting brackets are typically needed to mount a slim CD-ROM drive in the 6024H-32R/6024H-32 server.

First, release the retention screws that secure the server unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. You must power down the system before installing or removing floppy or IDE components.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays.

- The floppy disk drive cable has seven twisted wires.
- A color mark on a cable typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

## 6-5 Power Supply

### 6024H-32R

The SuperServer 6024H-32R has a 500 watt redundant power supply consisting of two power modules. Each power supply module has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage.

### Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The PWR Fail LED will illuminate and remain on until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

### Removing/Replacing the Power Supply

You do not need to shut down the system to replace a power supply unit. The redundant feature will keep the system up and running while you replace the failed hot-swap unit. Replace with the same model - SP502-2S (p/n PWS-0049), which can be ordered directly from Supermicro (see Contact Information in the Preface).

#### 1. Removing the power supply

First unplug the power cord from the failed power supply unit. Then depress the locking tab on the power supply unit and pull the unit straight out with the rounded handle.

#### 2. Installing a new power supply

Replace the failed hot-swap unit with another SP502-2S power supply unit (p/n PWS-0049). Simply push the new power supply unit into the power bay until you hear a click. Secure the locking tab on the unit and finish by plugging the AC power cord back into the unit.

## 6024H-32

The SuperServer 6024H-32 has a single 550 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate with a 100v - 240v input voltage.

### Power Supply Failure

If the power supply module fails, the system will shut down and you will need to replace the module. Replacements can be ordered directly from Supermicro (see contact information in the Preface). As the power supply module in the 6024H-T is not cold-swappable, you will need to remove the chassis cover and disconnect all power cables from the power supply unit before removing and replacing the power supply.

### Removing/Replacing the Power Supply

#### 1. Removing the power supply

First unplug the power cord from the power supply module. Remove the cover from the chassis and disconnect all power cables from the motherboard and any components. Then remove the screws that secure the power module to the chassis. Finally, pull the module straight out by the handle.

#### 2. Installing a new power supply

Replace the failed power supply with another SP552-2C power supply module (p/n PWS-0047). Reconnect all power cables from the power supply to the motherboard and components. Replace the chassis cover and reconnect the AC power cord. Finish by depressing the power button on the chassis front control panel to restart the system.

## Chapter 7

# BIOS

### 7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X6DH3-G2. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Supermicro web site <<http://www.supermicro.com>> for any changes to BIOS that may not be reflected in this manual.

**Warning:** Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

#### System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS flash chip stores the system parameters, such type of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the computer is powered-on the computer is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot-up.

#### How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot, see below.

#### Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

## 7-2 Running Setup

*\*Default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section although the screen display is often all you need to understand how to set the options (see on next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

**Press the <Delete> key to enter Setup**

**(\*Note: Please load "System Setup Default" when using the system the first time.)**

## 7-3 Main BIOS Setup

All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus. Items that use submenus are indicated with the ► icon. With the item highlighted, press the <Enter> key to access the submenu.

## Main BIOS Setup Menu

PhoenixBIOS Setup - Copyright 1985-2001 Phoenix Technologies Ltd.		
Main	Advanced	Security Boot Exit
System Time:	[11:42:57]	Item Specific Help  <Tab>, <Shift-Tab>, or <Enter> selects field.
System Date:	[03-17-2004]	
BIOS Date		
Legacy Diskette A:	[1.44/1.25 MB 3½"]	
Parallel ATA:	[Both]	
Serial ATA:	[Enabled]	
SATA RAID Enable	[Disabled]	
Native Mode Operation:	[Auto]	
▶ IDE Channel 0 Master		
▶ IDE Channel 0 Slave		
▶ IDE Channel 1 Master		
▶ IDE Channel 1 Slave		
▶ IDE Channel 2 Master		
▶ IDE Channel 3 Master		
System Memory:	[XXXX KB]	
Extended Memory:	[XXXX KB]	
F1 Help   ↑↓ Select Item   -/+ Change Values   F9 Setup Defaults Esc Exit   ↔ Select Menu   Enter Select ▶ Sub-Menu   F10 Previous Values		

## Main Setup Features

### System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

### System Date

Using the arrow keys, highlight the month, day and year fields and enter the correct data. Press the <Enter> key to save the data.

### BIOS Date

This feature allows BIOS to automatically display the BIOS date.

### Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

### Parallel ATA

This setting allows the user to enable or disable the function of Parallel ATA. The options are Disabled, Channel 0, Channel 1 and **Both**.

## Serial ATA

This setting allows the user to enable or disable the function of Serial ATA. The options are Disabled and **Enabled**.

## Serial ATA RAID Enable

Select Enable to enable Serial ATA RAID Functions. (\*For the Windows OS environment, use the RAID driver if this feature is set to Enabled. If set to **Disabled**, use the Non-RAID driver.)

## Native Mode Operation

Select the native mode for ATA. The options are: Parallel ATA, Serial ATA, Both, and **Auto**.

## ► IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master

These settings allow the user to set the parameters of IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master slots. The items included in the sub-menu are:

### Type

Selects the type of IDE hard drive. The options are **Auto**, (which allows BIOS to automatically determine the hard drive's capacity, number of heads, etc.), a number from 1-39 to select a predetermined type of hard drive, CDROM and ATAPI Removable. The option- "User" will allow the user to enter the parameters of the HDD installed at this connection. The option-"Auto" will allow BIOS to automatically configure the parameters of the HDD installed at the connection. Choose the option 1-39 to select a predetermined HDD type. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

### CHS Format

The following items will be displayed by the BIOS:

**TYPE:** This item displays the type of CPU.v

**Cylinders:** This item indicates the status of Cylinders.

**Heads:** This item indicates the number of headers.

**Sectors:** This item displays the number of sectors.

**Maximum Capacity:** This item displays the maximum storage capacity of the system.

### **LBA Format**

The following items will be displayed by the BIOS:

**Total Sectors:** This item displays the number of total sectors available in the LBA Format.

**Maximum Capacity:** This item displays the maximum capacity in the LBA Format.

### **Multi-Sector Transfer**

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors and 16 Sectors.

### **LBA Mode Control**

This item determines whether Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled**.

### **32 Bit I/O**

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

### **Transfer Mode**

Selects the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

### **Ultra DMA Mode**

Selects Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4 and Mode 5.

### **System Memory**

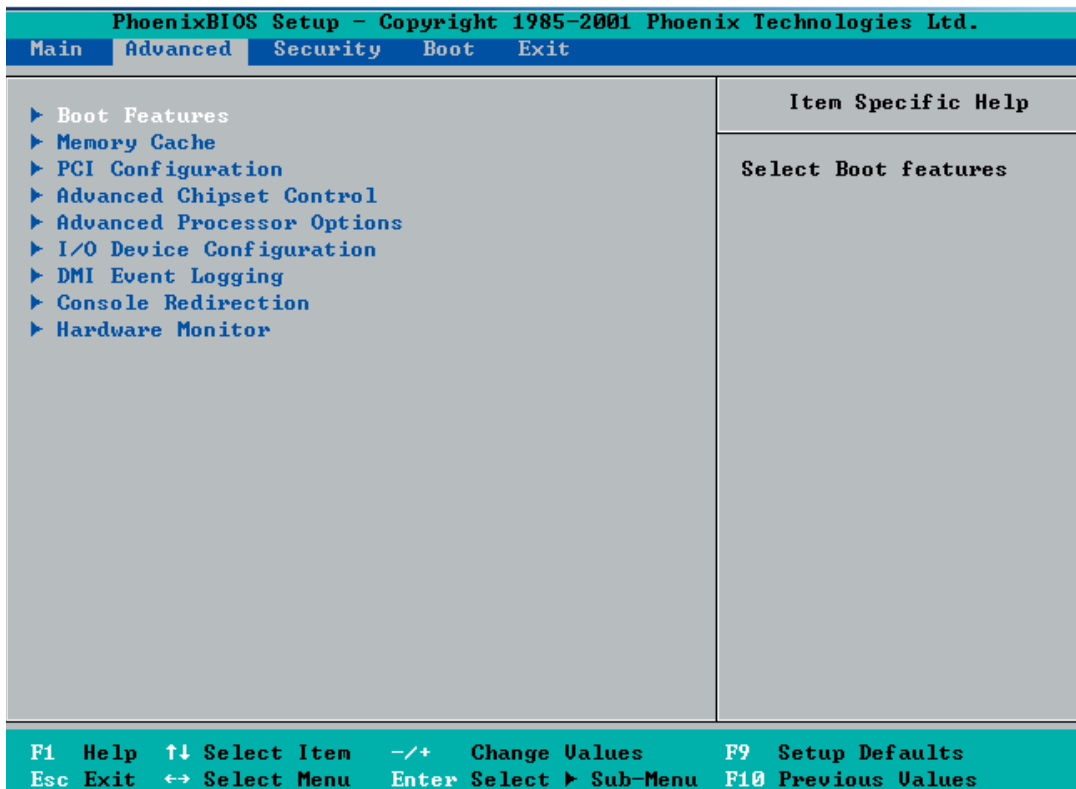
This display informs you how much system memory is recognized as being present in the system.

### **Extended Memory**

This display informs you how much extended memory is recognized as being present in the system.

## 7-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <Enter>. All Advanced BIOS Setup options are described in this section.



### ► Boot Features

Access the submenu to make changes to the following settings.

#### QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

#### Quiet Boot

This setting allows you to **Enable** or Disable the diagnostic screen during boot-up.

#### ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

### **Power Button Behavior**

If set to Instant-Off, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are **instant-off** and 4-sec override.

### **Resume On Modem Ring**

Select On to "wake your system up" when an incoming call is received by your modem. The options are On and **Off**.

### **Power Loss Control**

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are **Last State**, Stay off, and Power On.

### **Watch Dog**

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

### **Summary Screen**

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

### **►Memory Cache**

#### **Cache System BIOS Area**

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable this function, and this area will be reserved for BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

#### **Cache Video BIOS Area**

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS write (cache) its data into this reserved memory area. Select "**Write Protect**" to enable the function and this area will be reserved for Video BIOS ROM access only. Select "Uncached" to disable this function and make this area available for other devices.

#### **Cache Base 0-512K**

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DRAM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU

operations . Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are "Uncached", "Write Through", "Write Protect", and **"Write Back"**.

### **Cache Base 512K-640K**

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DRAM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are "Uncached", "Write Through", "Write Protect", and **"Write Back"**.

### **Cache Extended Memory**

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DRAM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations . Select "Uncached" to disable this function. Select "Write Through" to allow data to be cached into the buffer and written into the system memory at the same time. Select "Write Protect" to prevent data from being written into the base memory area of Block 0-512K. Select "Write Back" to allow CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are "Uncached", "Write Through", "Write Protect", and **"Write Back"**.

### **Discrete MTRR Allocation**

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

---

## ► PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

### **Onboard G-LAN1, G-LAN2 (Gigabit- LAN1/2) OPROM Configure**

Enabling this option provides the capability to boot from G-LAN1 or G-LAN2. The options are **Disabled** and **Enabled**.

### **Reset Configuration Data**

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are **Yes** and **No**.

### **Frequency for Slot#2-Slot#3/MASS (Mass Storage: SAST/SAS)**

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, **PCI 33 MHz** and **PCI 66 MHz**.

### **Frequency for Slot#4**

This option allows the user to change the bus frequency of the devices installed in the slot indicated. The options are **Auto**, **PCI 33 MHz** and **PCI 66 MHz**.

### **► PCI 33MHz Slot #1/PCI-X 100MHz Slot #2/PCI-X 100MHz ZCR Slot #3/PCI-X 133MHz Slot #4/PCI-Exp X8 Slot #5//PCI-Exp X8 Slot #6**

Access the submenu for each of the settings above to make changes to the following:

#### **Option ROM Scan**

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and **Disabled**.

#### **Enable Master**

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and **Disabled**.

#### **Latency Timer**

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater Clock rate. The options are **Default**, **0020h**, **0040h**, **0060h**, **0080h**, **00A0h**, **00C0h**, and **00E0h**. For Unix, Novell and other Operating Systems, please select the option: **other**. If a drive fails after the installation of a new software, you might want to change this setting and try again. Different OS requires different Bus Master clock rate.

#### **Large Disk Access Mode**

This setting determines how large hard drives are to be accessed. The options are **DOS** or **Other** (for Unix, Novell NetWare and other operating systems).

## ► Advanced Chipset Control

Access the submenu to make changes to the following settings.

**\*Warning:** Take Caution when changing the Advanced settings. Incorrect values entered may cause system malfunction. Also, a very high DRAM frequency or incorrect DRAM timing may cause system instability. When this occurs, revert to the default setting.

### Force Compliance Mode

This feature allows you to enable the PCI-Express Compliance Mode. The options are: **Disabled** or Enabled.

### Memory RAS Feature Control

Select this option in order to enable the special feature of DIMM sparing or memory mirroring. The options are Mirroring, Sparing and **Standard**.

### Clock Spectrum Feature

If "Enabled", BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

### Memory Remap Function Control

Select Enabled to re-allocate memory resource for PCI slots. The options are **Enabled** and Disabled.

### Delayed Transaction Discard Timer

Select Enabled to set Discard Timer at 64us for PCI 32 bus use. Select Disabled to set Discard Timer at 32us for PCI 32 bus use. The options are Enabled and **Disabled**.

### DRAM Data Integrity Mode

If enabled, this feature allows the data stored in the DRMA memory to be integrated for faster data processing. The options are 72-bit ECC, 144-bit ECC, **Auto** and Disabled.

### ECC Error Type

This setting lets you select which type of interrupt to be activated as a result of an ECC error. The options are None, NMI (Non-Maskable Interrupt), **SMI** (System Management Interrupt) and SCI (System Control Interrupt.)

### SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit and Both.

### **Enabling Multi-Media Timer**

Select Yes to enable Multi-Media Timer. The options are Yes and **No**.

### **USB Function**

Select Enable to enable the function of USB devices. The options are **Enabled** and Disabled.

### **Legacy USB Support**

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

### **► Advanced Processor Options**

Access the submenu to make changes to the following settings.

### **CPU Speed**

This is a display that indicates the speed of the installed processor.

### **Hyper-Threading Technology**

This setting allows you to **Enable** or Disable the function of hyper-threading. Enabling hyper-threading results in increased CPU performance. (Applicable for the XP systems.)

### **Machine Checking**

Set to Enabled to allow the operating system to debug a system crash after a reset. The options are Disabled and **Enabled**.

### **No Execute Mode Memory Protection**

Enable this feature to enable the functionality of Execute Disable Bit and allow the processor to classify areas in the memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes that will overwhelm the processor or damage the system during an attack. (\*Note: this feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are Disabled and **Enabled**. (**\*Note:** For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.)

### **Adjacent Cache Line Prefetch**

The CPU fetches the cache line for 64 bytes if Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

### **Processor Power Management** (\*Available when supported by the CPU.)

This feature allows the user to determine the processor power management mode. If set to C States only, the processor power will be controlled through CPU power states in the ACPI setting. Select "GV1/GV3 only" to enable the function of DBS (Demand Based Switching) which will allow the user to configure CPU power management in the OS. If set to **Disabled**, C States and GV1/GV3 are disabled. If set to Enabled, C States and GV1/GV3 are Enabled. (**\*Note:** please refer to Intel's [web site for detailed information.](#))

### **►I/O Device Configuration**

Access the submenu to make changes to the following settings.

#### **KBC Clock input**

This setting allows you to set the clock frequency for the Keyboard Clock. The options are 6MHz, 8MHz, **12 MHz** and 16MHz.

#### **Onboard COM1**

This setting allows you to assign control of Onboard COM1. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

##### **Base I/O Address**

Select the base I/O address for COM1. The options are **3F8**, 2F8, 3E8 and 2E8.

##### **Interrupt**

Select the IRQ (interrupt request) for COM1. The options are IRQ3 and **IRQ4**.

#### **Onboard COM2**

This setting allows you to assign control of COM2. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

##### **Mode**

Specify the type of device that will be connected to COM2. The options are **Normal**, and IR (for an infrared device).

**Base I/O Address**

Select the base I/O address for COM2. The options are 3F8, **2F8**, 3E8 and 2E8.

**Interrupt**

Select the IRQ (interrupt request) for COM2. The options are **IRQ3** and IRQ4.

**Parallel Port**

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS-or OS- controlled).

**Base I/O Address**

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

**Interrupt**

Select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

**Mode**

This feature allows you to specify the parallel port mode. The options are Output only, Bi-Directional, EPP and **ECP**.

**DMA Channel**

This item allows you to specify the DMA channel for the parallel port. The options are DMA1 and **DMA3**.

**Floppy Disk Controller**

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

**Base I/O Address**

Select the base I/O address for the parallel port. The options are **Primary** and Secondary.

## ► DMI Event Logging

Access the submenu to make changes to the following settings.

### **Event Log Validity**

This is a display to inform you of the event log validity. It is not a setting.

### **Event Log Capacity**

This is a display to inform you of the event log capacity. It is not a setting.

### **View DMI Event Log**

Highlight this item and press <Enter> to view the contents of the event log.

### **Event Logging**

This setting allows you to **Enable** or Disable event logging.

### **ECC Event Logging**

This setting allows you to **Enable** or Disable ECC event logging.

### **Mark DMI Events as Read**

Highlight this item and press <Enter> to mark the DMI events as read.

### **Clear All DMI Event Logs**

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

## ► Console Redirection

Access the submenu to make changes to the following settings.

### COM Port Address

This item allows you to specify to redirect the console to Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

### BAUD Rate

This item allows you to select the BAUD rate for console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K and 115.2K.

### Console Type

This item allows you to choose from the available options to select the console type for console redirection. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, VT-UTF8.

### Flow Control

This item allows you to choose from the available options to select the flow control for console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

### Console Connection

This item allows you to choose select the console connection: either **Direct** or Via Modem.

### Continue CR after POST

Choose whether to continue with console redirection after the POST routine. The options are On and **Off**.

## ► Hardware Monitor Logic

### ► Hardware Monitoring

Access the submenu to make changes to the following settings:

#### **CPU Temperature Threshold**

This option allows the user to set a CPU temperature threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The options are 75°C, **80°C**, 85°C and 90°C.

Highlight this and hit <Enter> to see monitor data for the following items:

**CPU1 Temperature:** This item displays CPU1 Temperature.

**CPU2 Temperature:** This item displays CPU2 Temperature.

**System Temperature:** This item displays the System Temperature.

#### **Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. If the option is set to "3-pin fan", the fan speed is controlled based upon the CPU die temperature. When the CPU die temperature is higher, the fan speed will be higher as well. If the option is set to "4-pin", the fan speed will be controlled by the Thermal Management Settings pre-configured by the user at this feature. Select "3-pin" if your chassis came with 3-pin fan headers. Select "4-pin" if your chassis came with 4-pin fan headers. Select "Workstation" if your system is used as a Workstation. Select "Server" if your system is used as a Server. Select "Disable" to disable the fan speed control function to allow the onboard fans to run at the full speed (12V) at all time. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server), 5. 4-pin (Workstation).

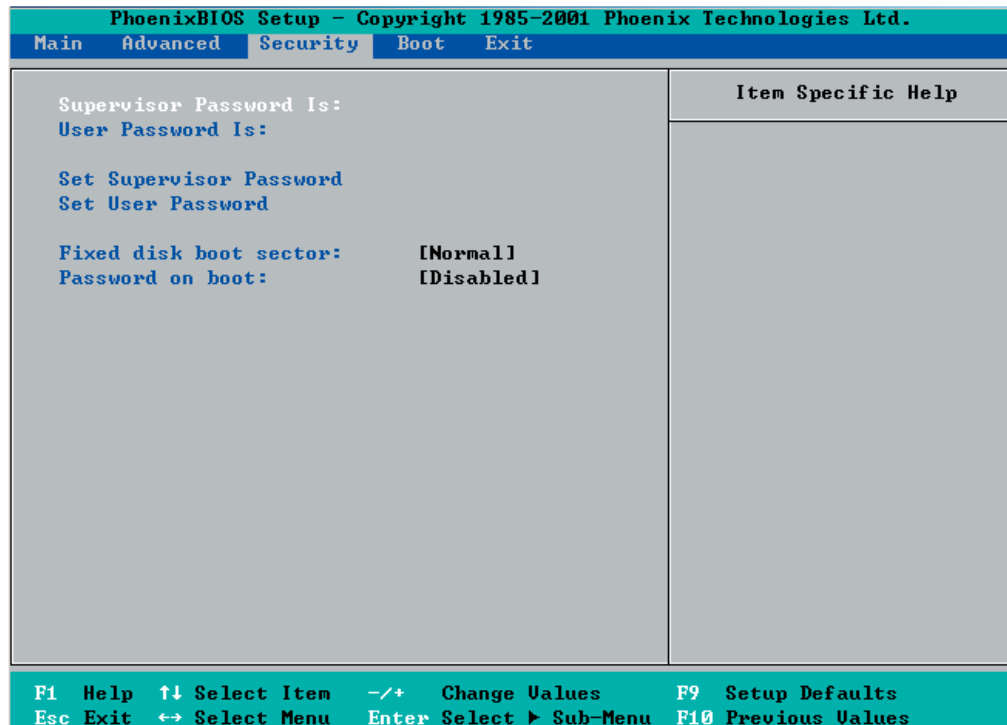
**CHS Fan 1 - CHS FAN8:** If the feature of Auto Fan Control is enabled, BIOS will automatically display the status of the fans indicated in this item.

**Vcore A/Vcore B:** These items display the Voltage status of CPU A and CPU B.

**P3V3:** This item displays the +3.3V voltage status.

## 7-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.



### Supervisor Password Is:

This displays whether a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

### User Password Is:

This displays whether a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

### Set Supervisor Password

When the item "Set Supervisor Password" is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to BIOS.

## Set User Password

When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

## Fixed Disk Boot Sector

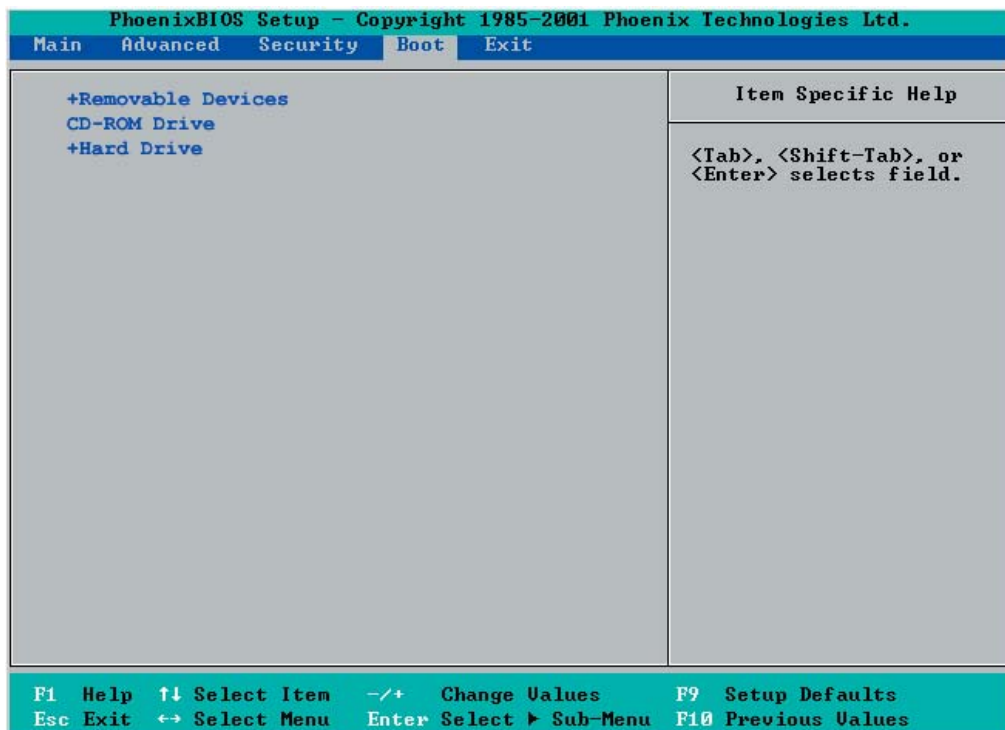
This setting may offer some protection against viruses when set to Write Protect, which protects the boot sector on the hard drive from having a virus written to it. The other option is **Normal**.

## Password on Boot

This setting allows you to require a password to be entered when the system boots up. The options are Enabled (password required) and Disabled (password not required).

## 7-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Highlighting a setting with a + or - will expand or collapse that entry. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.



### +Removable Devices

Highlight and press <Enter> to expand the field. See details on how to change the order and specs of devices in the Item Specific Help window.

### CDROM Drive

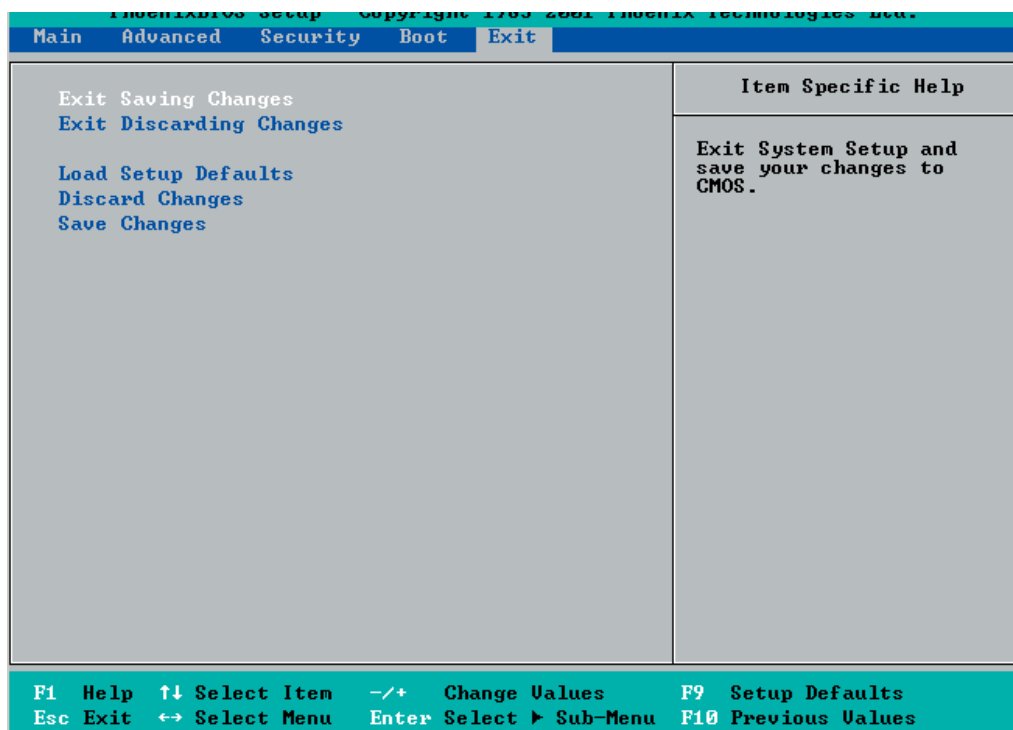
See details on how to change the order and specs of the CDROM drive in the Item Specific Help window.

### +Hard Drive

Highlight and press <Enter> to expand the field. See details on how to change the order and specs of hard drives in the Item Specific Help window.

## 7-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



### **Exit Saving Changes**

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

### **Exit Discarding Changes**

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

### **Load Setup Defaults**

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

### **Discard Changes**

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

### **Save Changes**

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

## Appendix A

### BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

#### Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

- 1 long and two short beeps - video configuration error
- 1 continuous long beep - overheat (Overheat LED will be on)
- 1 long beep and 1 short pause - memory not detected

#### Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to port 80h.

<b>POST Code</b>	<b>Description</b>
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size

<b>POST Code</b>	<b>Description</b>
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line <b>xxxx</b> *
2Eh	1-3-4-3 RAM failure on data bits <b>xxxx</b> * of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache

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<b>POST Code</b>	<b>Description</b>
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs. One long, two short beeps on check-sum failure

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<b>POST Code</b>	<b>Description</b>
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video

---



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<b>POST Code</b>	<b>Description</b>
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

**The following are for boot block in Flash ROM**

<b>POST Code</b>	<b>Description</b>
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (**xxxx**) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the loworder byte of the error. It repeats this sequence continuously.

**Notes**

## Appendix B

### Software Installation

#### B-1 Adaptec Embedded SATA RAID Controller

##### Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface. It uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link which supports SATA Transfer rates from 150MBps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA(PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA can only extend to 40cm long, while Serial ATA cables can extend up to one meter. Overall, Serial ATA provides better functionality than Parallel ATA.

##### Introduction to the Intel 6300ESB I/O Controller Hub

Located in the South Bridge of the Intel E7520 Chipset, the 6300ESB I/O Controller Hub provides the I/O subsystem with access to the rest of the system. It supports a 2-channel Ultra ATA/100 Bus Master IDE controller (PATA) and two Serial ATA (SATA) Host Controllers, which support up to two Serial ATA ports and up to two RAID drives. The 6300ESB I/O Controller Hub supports the following Parallel ATA (PATA) and Serial (SATA) device configurations:

##### ATA Operating Mode

You can select from the following two modes: Combined Mode and Enhanced Mode.

### Combined Mode

In this mode, system BIOS assigns the traditional IRQ 14 and IRQ 15 for the use of HDD. Up to 4 ATA devices are supported by this mode.

Within the Combined Mode, the following three modes are supported:

Non-Combined Mode: Parallel ATA only with a maximum of 4 devices supported

Non-Combined Mode: Serial ATA only with a maximum of 2 devices supported

Combined Mode: SATA devices and PATA with support for 2 devices each (a maximum total of 4 devices). For IDE/SATA configurations, please refer to the table below.

Yes = Present No= Not Present						
Primary Master (PM)	Yes	Yes	No	No	No	No
Primary Slave (PS)	Yes	No	Yes	No	No	No
Secondary Master (SM)	Yes	No	No	Yes	No	No
Secondary Slave (SS)	Yes	No	No	No	Yes	No
SATA Port 0	No	SM	SM	PM	PM	PM
SATA Port 1	No	SS	SS	PS	PS	PS

### Enhanced Mode

In this mode, system BIOS will automatically search for all available IRQs for the HDD. For newer Operating Systems that support Enhanced Mode, such as Windows XP, Windows 2000, and Windows 2003, you can set SATA and PATA to the Enhanced Mode. (The newer Operating Systems can accommodate both Enhanced Mode and Combined Mode and support up to 6 ATA devices.)

Please refer to the "Advanced Chipset Control" under the "Advanced" Setup in the BIOS for the selection of Combined Mode or Enhanced Mode.

## Configuring BIOS settings for the SATA RAID Functions (Enhanced Mode)

1. Press the <Del> key during system bootup to enter the BIOS Setup Utility.

**Note:** If it is the first time to power on the system, we recommend that you load the Optimized Default Settings. If you have already done so, please skip to Step 3.

2. Use the arrow keys to select the "Exit" Menu. Once in the "Exit" Menu, scroll down the menu to select the item- "Load System Default" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings to the BIOS.

3. Use the arrow keys to select the "Main" Menu in the BIOS.

4. Scroll down to "SATA RAID Enable" and press the <Enter> Key to select this option.

5. From this submenu, select "Enable" and press <Enter>.

6. Tap the <Esc> key and scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

7. Once you've exited the BIOS Utility, the system will re-boot.

8. During the system startup, press the <Ctrl> and the <A> keys simultaneously to run the Adaptec RAID Configuration Utility when prompted by the following message:

Press <Ctrl><A> for Adaptec RAID Configuration Utility.

## Adaptec Embedded SATA with HostRAID

Adaptec's Embedded Serial ATA RAID with HostRAID controller adds RAID functionality to the Serial ATA I/O controller by supporting RAID 0 (Striping) or RAID 1 (Mirroring) to enhance the industry's pioneer PCI-to-e host controller products. RAID striping (RAID 0) can greatly improve hard disk I/O performance because of its capability in striping data across multiple drives. RAID mirroring (RAID 1) allows the data to be simultaneously written to two drives, so critical data is always available even if a single hard disk fails. Due to the built-in functionality, the X6DH3-G2 is specially designed to keep pace with the increasing performance demands of computer systems by improving disk I/O throughput and providing data accessibility regardless of a single disk failure. By incorporating the Adaptec Embedded Serial ATA into the motherboard design, Supermicro's X6DH3-G2 offers the user with the benefits of SATARAID without the high costs associated with hardware RAID applications.

**Note:** For Adaptec's RAID Driver Installation Instructions, please refer to the Adaptec RAID Controller User's Guide: "Emb\_SA\_RAID\_UG.pdf" in the CD that came with this motherboard. You can also download a copy of Adaptec's User's Guide from our web site at [www.supermicro.com](http://www.supermicro.com).

## The Adaptec RAID Configuration Utility (ARC)

The Adaptec RAID Configuration Utility is an embedded BIOS utility and includes:

Array Configuration Utility: Use this utility when you want to create, configure and manage arrays.

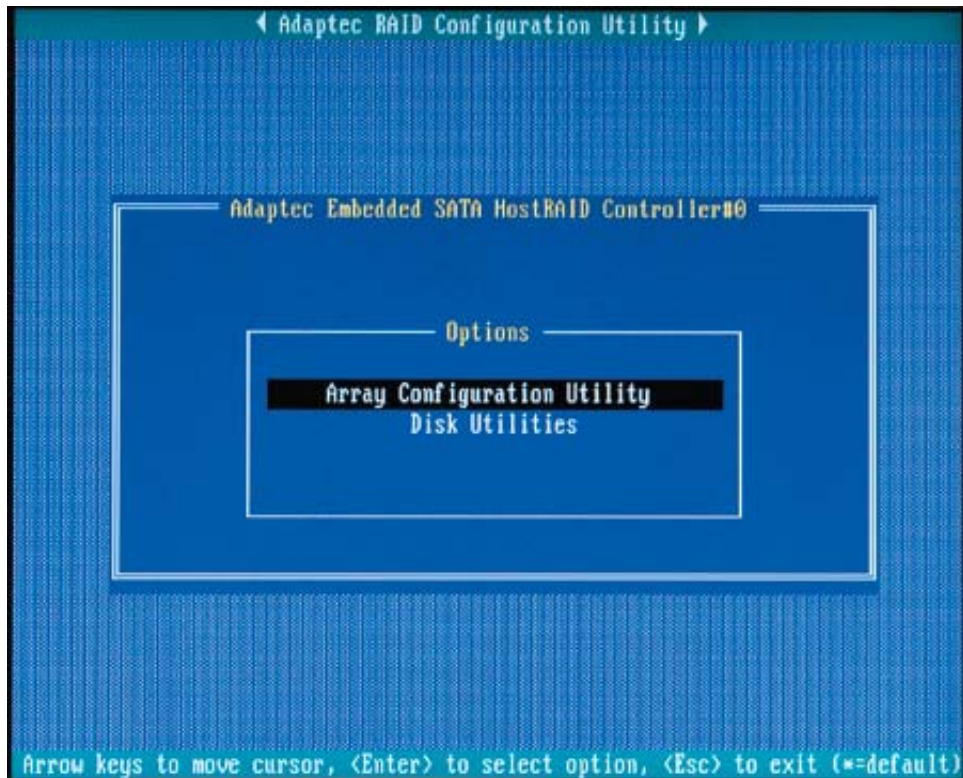
Disk Utilities: Use this option to format or verify disks.

To run the Adaptec RAID Configuration Utility, you will need to enable the RAID function in the system BIOS (refer to Chapter 4 for System BIOS Configurations), and then, press the <Ctrl> and <A> keys simultaneously when prompted to do so during the system startup. (Refer to the previous page for detailed instructions.)

**Note:** To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key.)

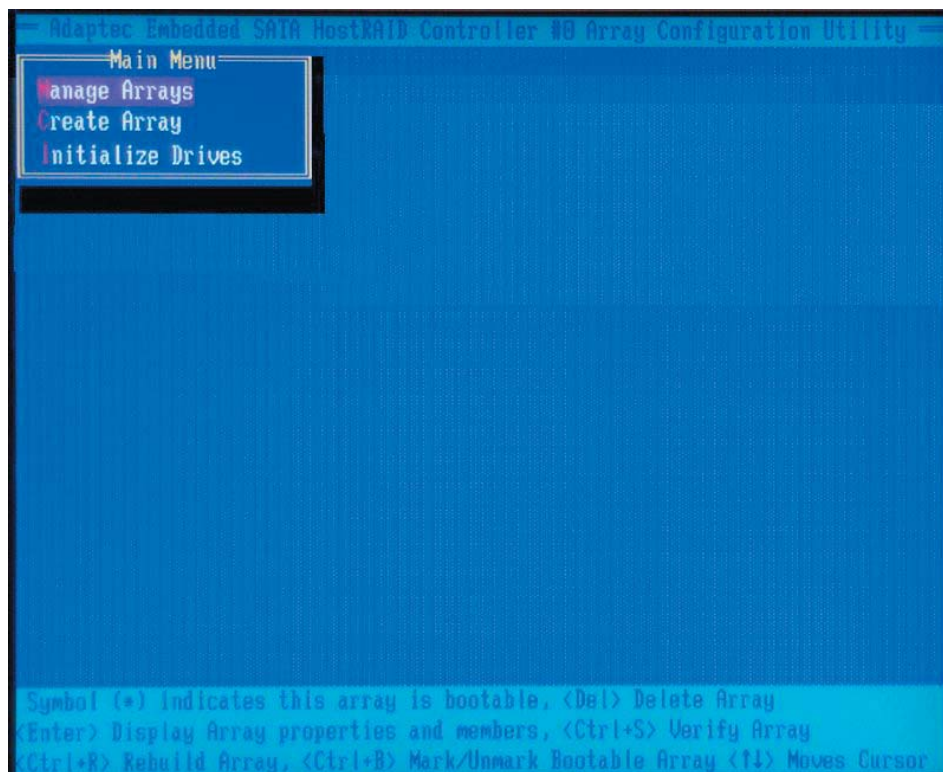
## Using the Array Configuration Utility (ACU)

The Array Configuration Utility (ACU) enables you to create, manage, and delete arrays from the controller's BIOS, add and delete spare drives, and initialize drives. During the system startup, press <Ctrl> and <A> key simultaneously, and the main menu will appear.



## Managing Arrays

Select this option to view array properties and delete arrays. To select this option, use the arrow keys and the <Enter> key to select "Managing Arrays" from the main menu (as shown below).



## Viewing Array Properties

To view the properties of an existing array:

1. At the BIOS prompt, press **Ctrl+A**.
2. From the ARC menu, select **Array Configuration Utility (ACU)**.
3. From the ACU menu, select **Manage Arrays** (as shown on the previous screen.)
4. From the List of Arrays dialog box, select the array you want to view and press **Enter**. The Array Properties dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.
5. Press **Esc** to return to the previous menu.

## Deleting Arrays

*Warning: Back up the data on an array before you delete it to prevent the loss of data. Deleted arrays cannot be restored.*

To delete an existing array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC main menu, select **Array Configuration Utility (ACU)**.
3. From the ACU menu, select **Manage Arrays**.
4. Select the array you wish to delete and press **Delete**.
5. In the Array Properties dialog box, select **Delete** and press **Enter**. The following prompt is displayed:

*Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):*

**RAID 1 only—the following prompt is also displayed:**

*Deleting the partition will result in data loss! Do you also want to delete the partition?(Yes/No):*

6. Press **Yes** to delete the array or partition or **No** to return to the previous menu.
7. Press **Esc** to return to the previous menu.

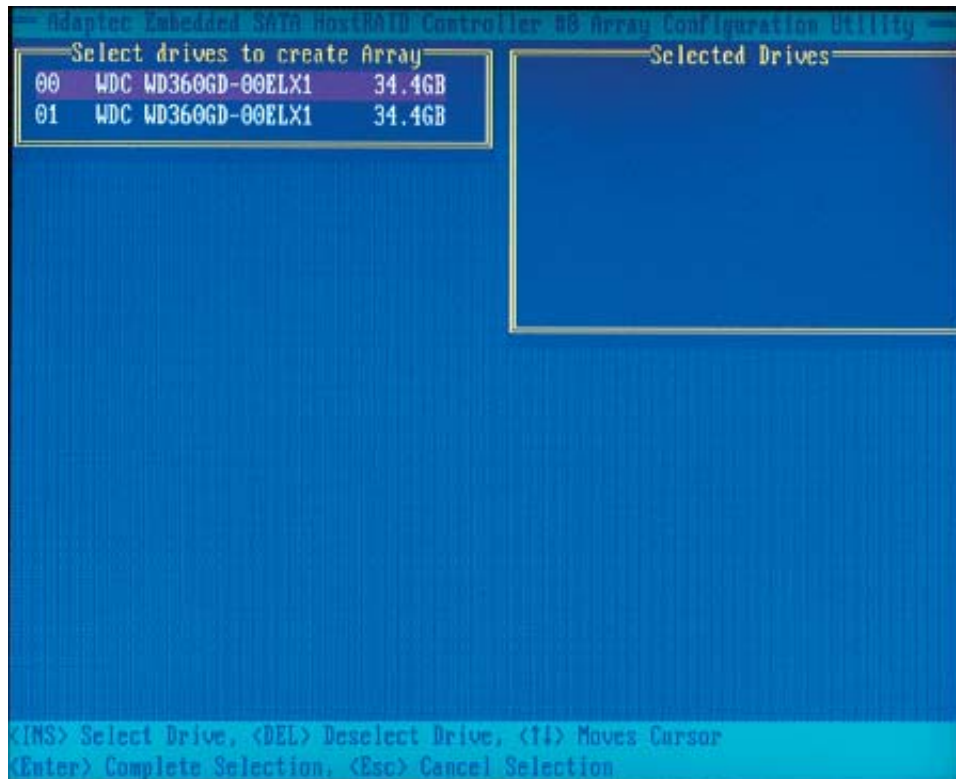
## Creating Arrays

Before creating arrays, make sure the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are un-initialized are shown in gray and cannot be used. See *Initializing Disk Drives*.

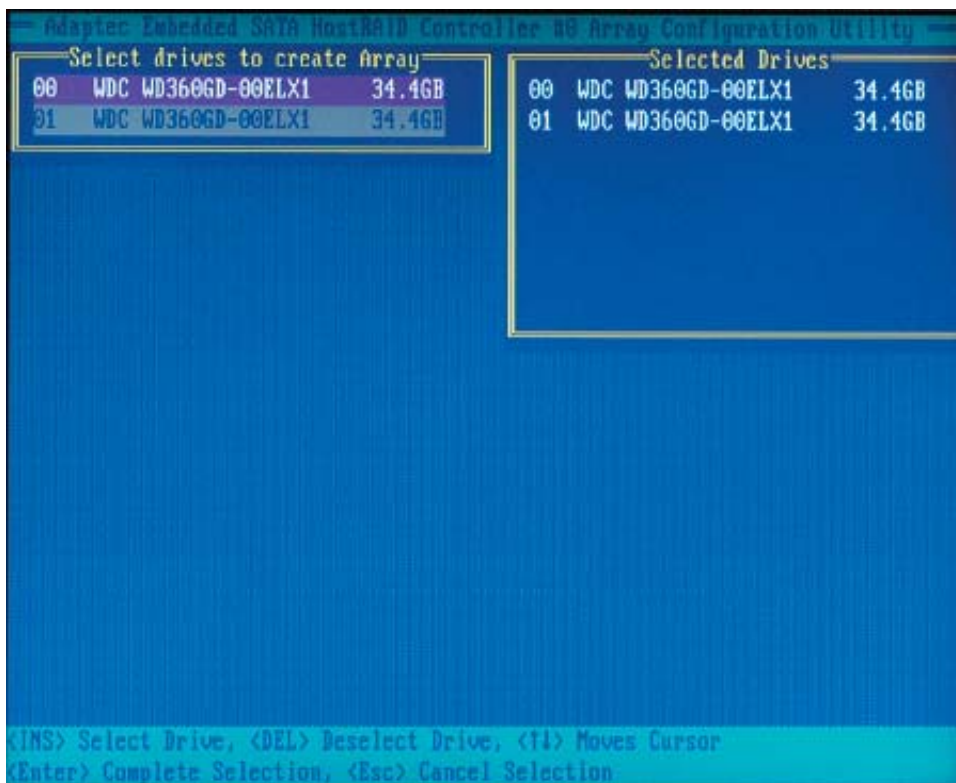
### To create an array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility Main Menu (ACU)** (as shown on the first screen on page B-5).
3. From the ACU menu, select **Create Array**.
4. Select the disks for the new array and press Insert (see screen below).

**Note:** To deselect any disk, highlight the disk and press **Delete**.



5. Press **Enter** when both disks for the new array are selected. The Array Properties menu displays (as the screen shown below).



### Assigning Array Properties

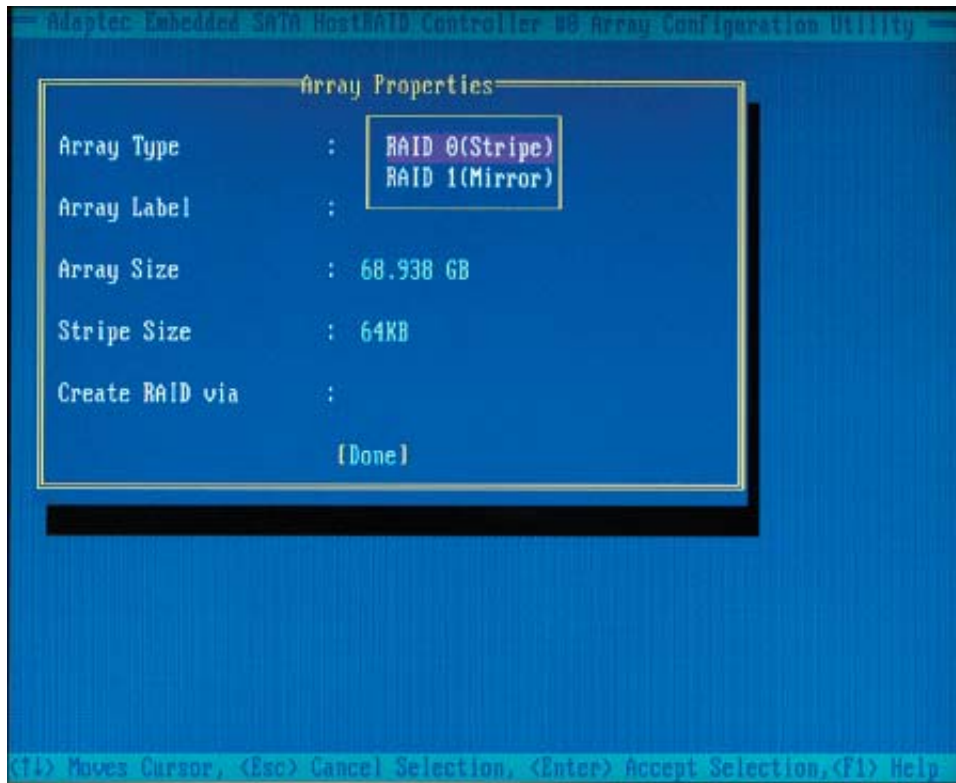
Once you've create a new array, you are ready to assign the properties to the array.

**Caution:** Once the array is created and its properties are assigned, you cannot change the array properties using the ACU. You will need to use the Adaptec Storage Manager - Browser Edition. (Refer to Adaptec's User's Guide in the enclosed CD.)

#### Assigning properties to the new array:

1. In the Array Properties menu (as shown in the screen below), select an array type and press **Enter**. Note that only the available array types: RAID 0, and RAID1, are displayed on the screen. (\*RAID 0 or RAID 1 requires two drives.)
2. Under the item "**Arrays Label**", type in an label and press **Enter**.

**Note:** The label shall not be more than 15 characters.

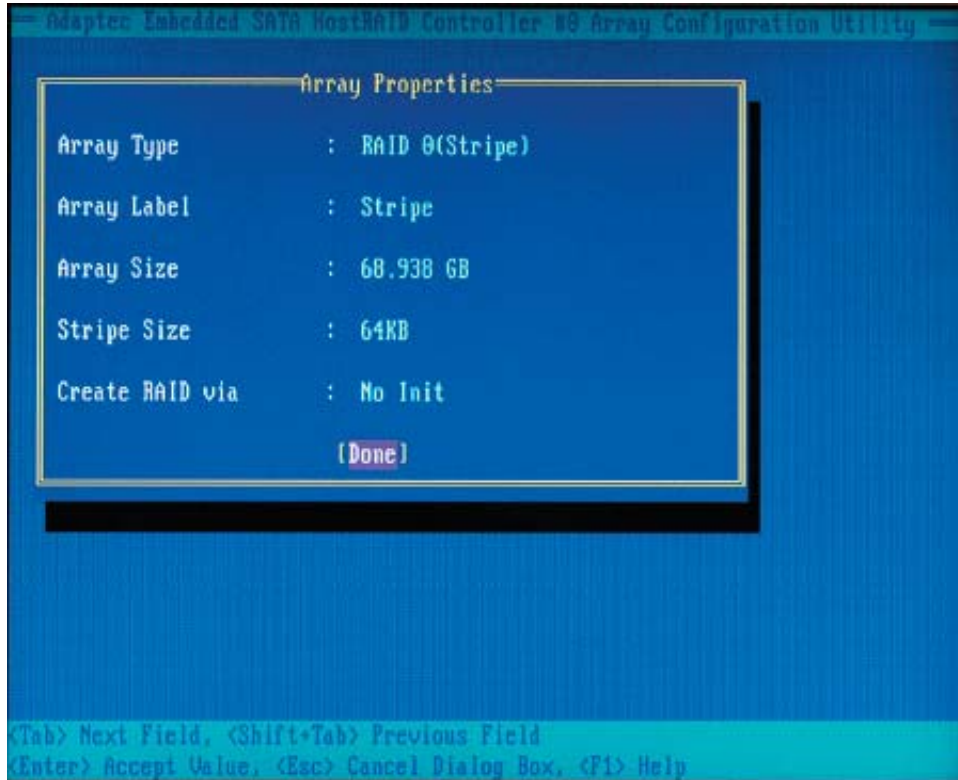


3. For RAID 0, select the desired stripe size. Available stripe sizes are 16, 32, and (the default) 64 KB. It is recommended that you *do not* change the default setting.
4. The item: "**Create RAID via**" allows you to select between the different creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

**Note:** If you select Migrate for RAID 0 or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved, however, the data on the new drive will be lost.

5. When you are finished, press **Done** (as shown on the screen below).

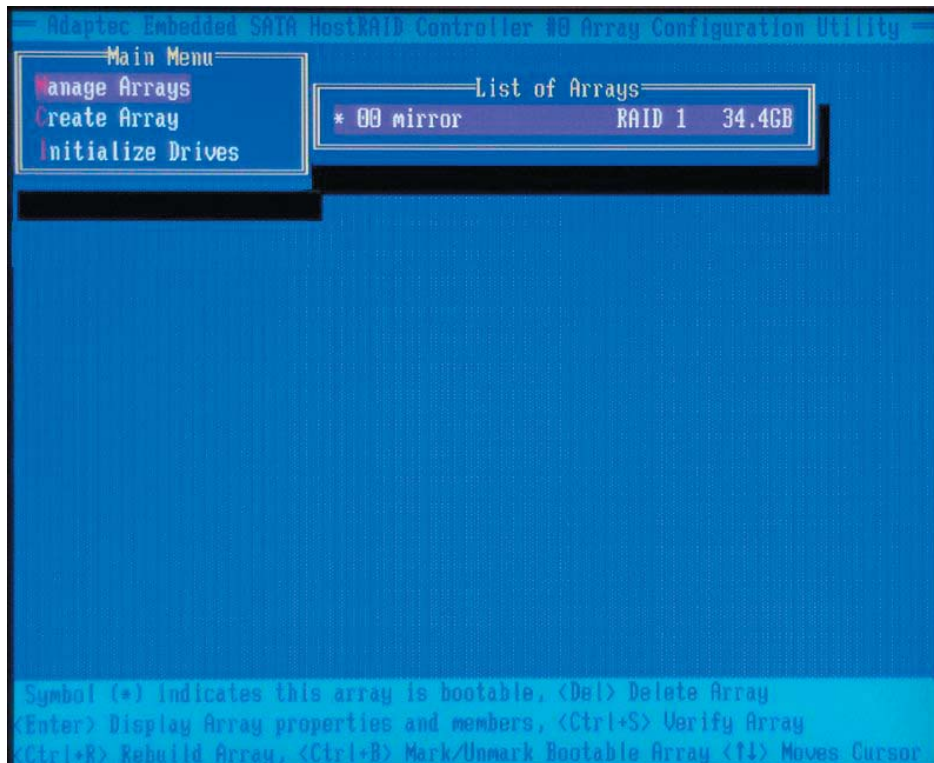
**Notes:**

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.
2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.
3. A RAID 1 created using the Quick Init option may return some data mis-compare if you later run a consistency check. This is normal and is not a cause for concern.
4. The ACU allows you to use drives of different sizes in a RAID. However, during a build operation, only the smaller drive can be selected as the source or first drive.
5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.
6. Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

**Warning:** Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, you will not be able to restart, or to recover the data that was on the source drive.

## Adding a Bootable Array

1. From the Main menu, select **Manage Arrays**.
2. From the List of Arrays, select the array you want to make bootable, and press **Ctrl+B**.
3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" A bootable array will then be created. An asterisk will appear next to the bootable array (as shown in the picture below:)



## Deleting a Bootable Array

1. From the Main menu, select **Manage Arrays**.
2. From the List of Arrays, select the bootable array you want to delete, and press **Ctrl+B**. (A bootable array is an array marked with an asterisk, as shown in the picture above.)
3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" The bootable array will then be deleted and the asterisk will disappear.

**Note:** do not use the delete key to delete a bootable array.

## Initializing Disk Drives

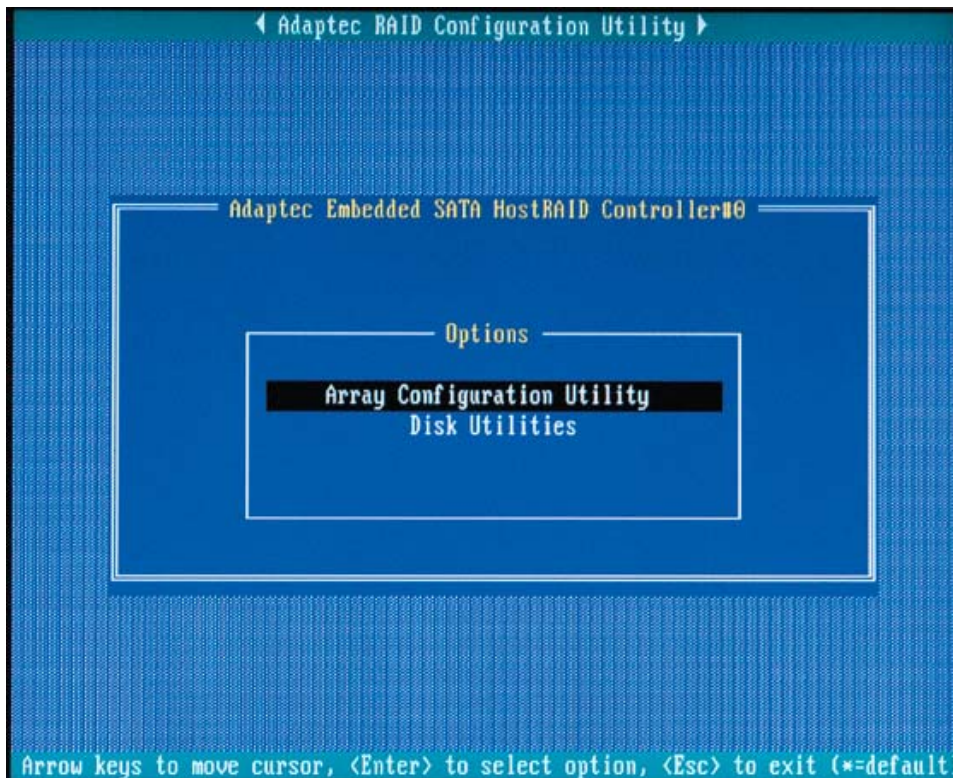
If an installed disk does not appear in the disk selection list for creating a new array or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

**Caution:** Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

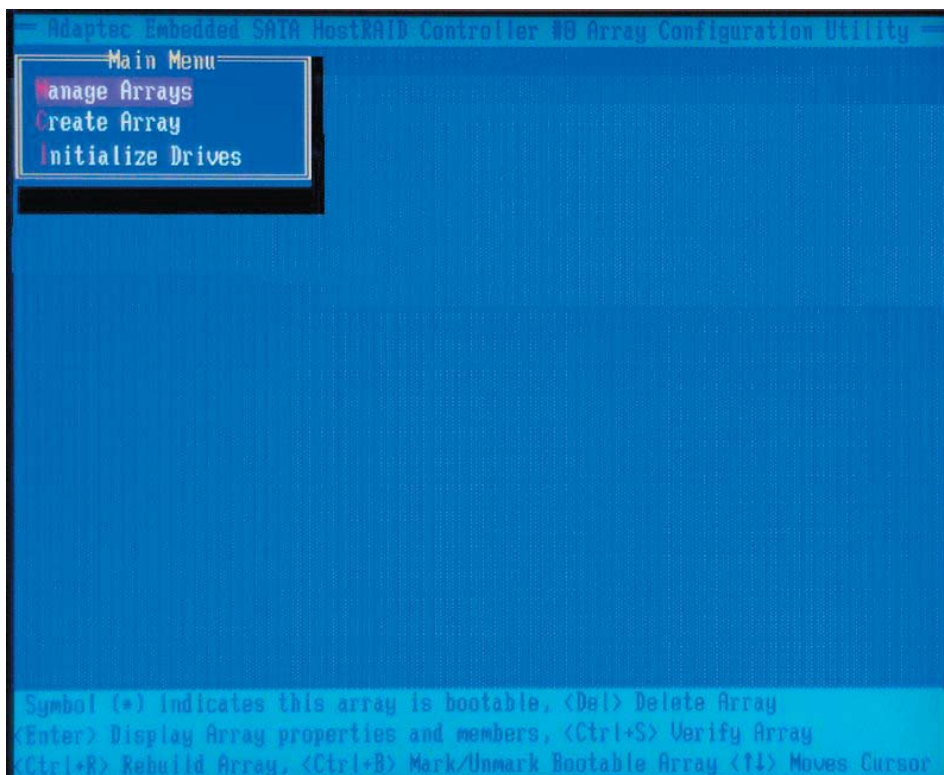
**Do not** initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to [Viewing Array Properties](#).

### To initialize drives:

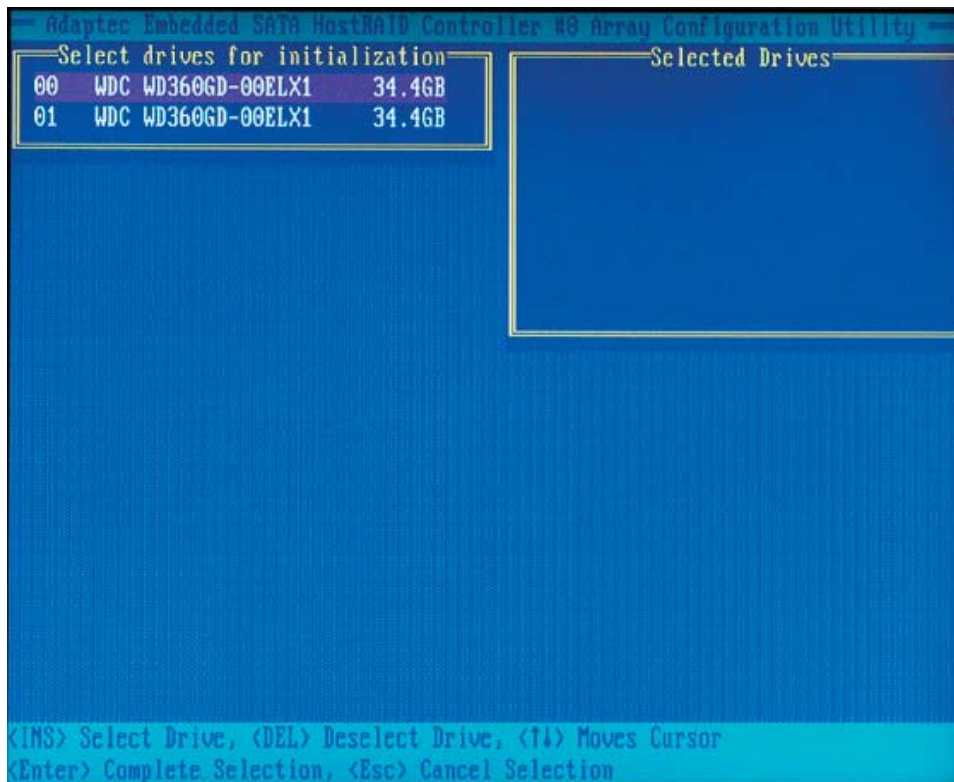
1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility (ACU)** (as shown in the screen below).



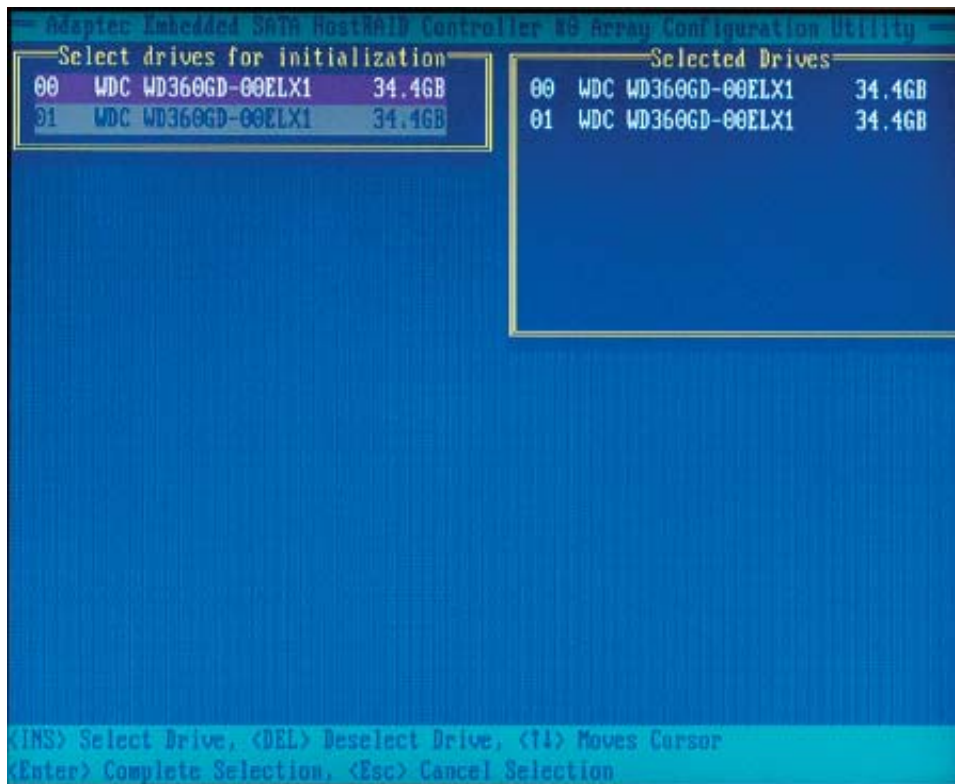
3. Select **Initialize Drives** (as shown in the screen below).



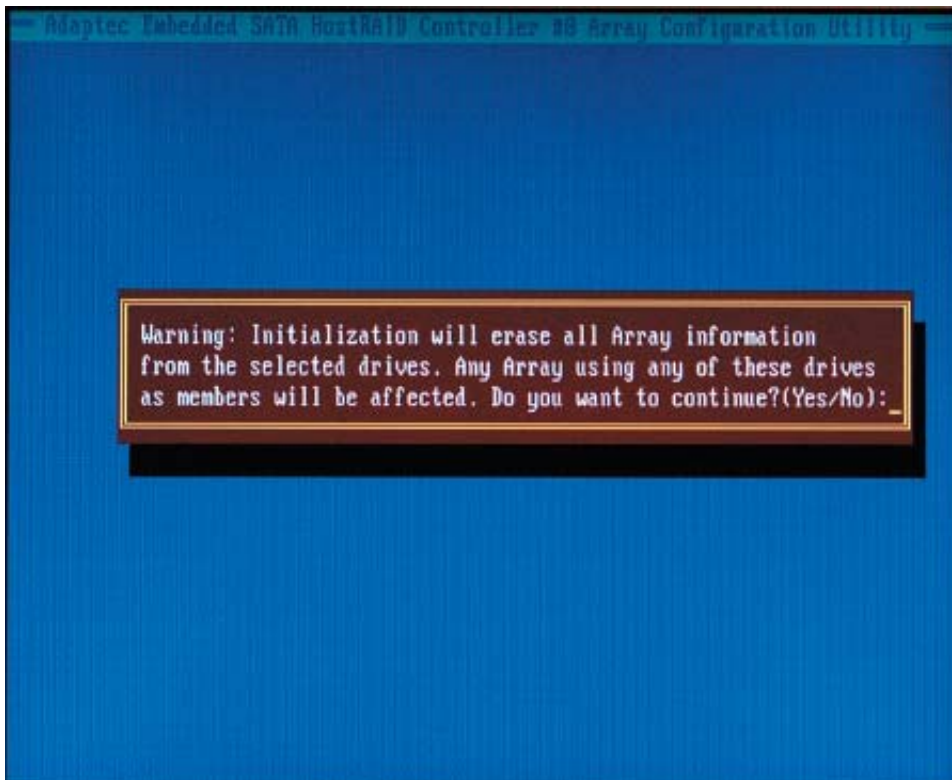
4. Use the up and down arrow keys to select the disk you wish to initialize and press **Insert** (as shown in the screen below).



5. Repeat [Step 4](#) so that both drives to be initialized are selected (as shown in the screen below).



6. Press **Enter**, then read the warning message.



7. Make sure you have selected the correct disk drives to initialize, then type Y to continue.

## Rebuilding Arrays

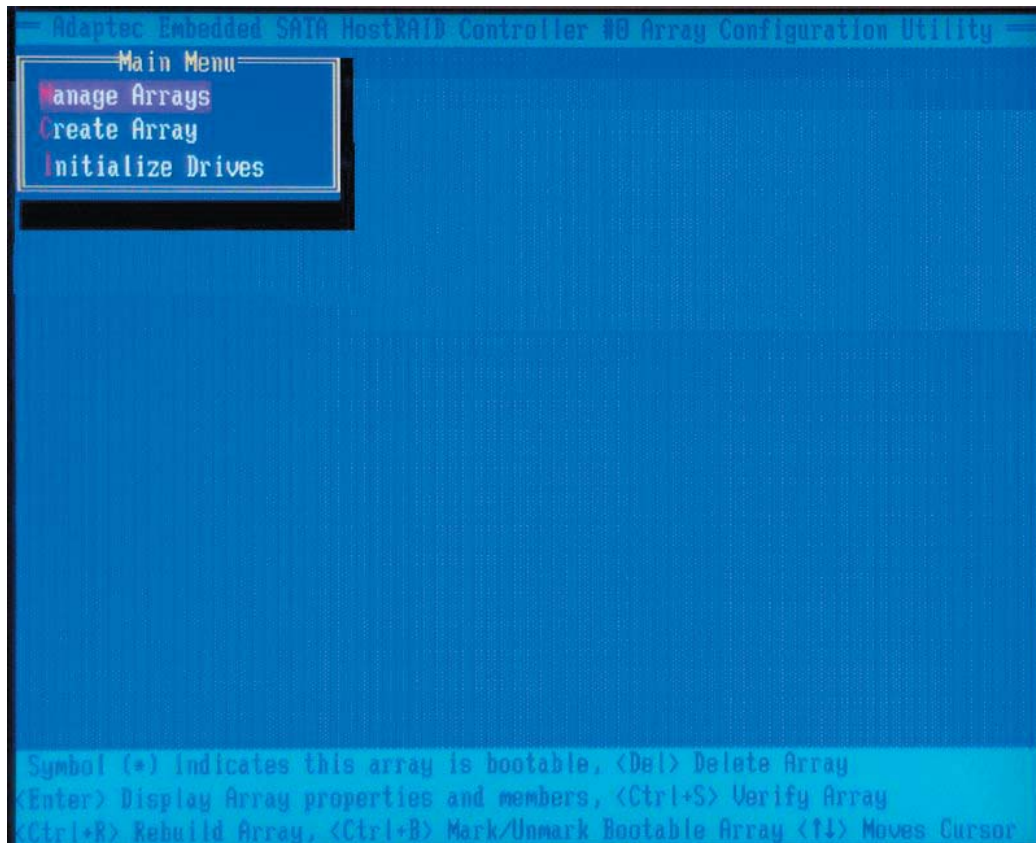
**Note:** Rebuilding applies to Fault Tolerant arrays (RAID 1) only.

If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to get the array to optimal status. For a critical array Rebuild operation, the optimal drive is the source drive.

**Note:** If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

### To Rebuild an array:

1. From the Main Menu, select **Manage Arrays** (as shown in the screen below). From the List of Arrays, select the array you want to rebuild.
2. Press **Ctrl+R** to rebuild.



## Adaptec Embedded SAS/SATA with HostRAID Controller

The onboard Adaptec AIC-9140W SAS controller supports two ports. Each port supports up to four SAS/SATA drives.

The SAS cable (CBL-097) can only be used with backplanes that support both SAS and SATA.

If a Supermicro chassis is used, the backplane must be rev. 2.0 or above, which comes with gold trim.

If you want to use this motherboard with a Supermicro SAS Mobile Rack, such as CSE-M28E1, be sure to use cable CBL-0116. (Cable CBL-0116 is a cross-over cable, and is not provided with this motherboard.)

## Using the Adaptec RAID Configuration Utility (ARC)

The onboard SAS Controller is enabled by default. To disable it, please set jumper JPS1 to pins 2-3. (See Chapter 5 for details and jumper location.)

Upon detecting the SAS Controller BIOS, please make sure that the Adapter WWN address is listed. This is a 16-digit number. If this number is not shown, you will not be able to use the controller.

Once the WWN address is listed, press the <Ctrl> and <A> keys simultaneously when prompted to access the Adaptec SAS RAID BIOS. **Note:** To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key.

The Adaptec RAID Configuration Utility is an embedded BIOS Utility, including:

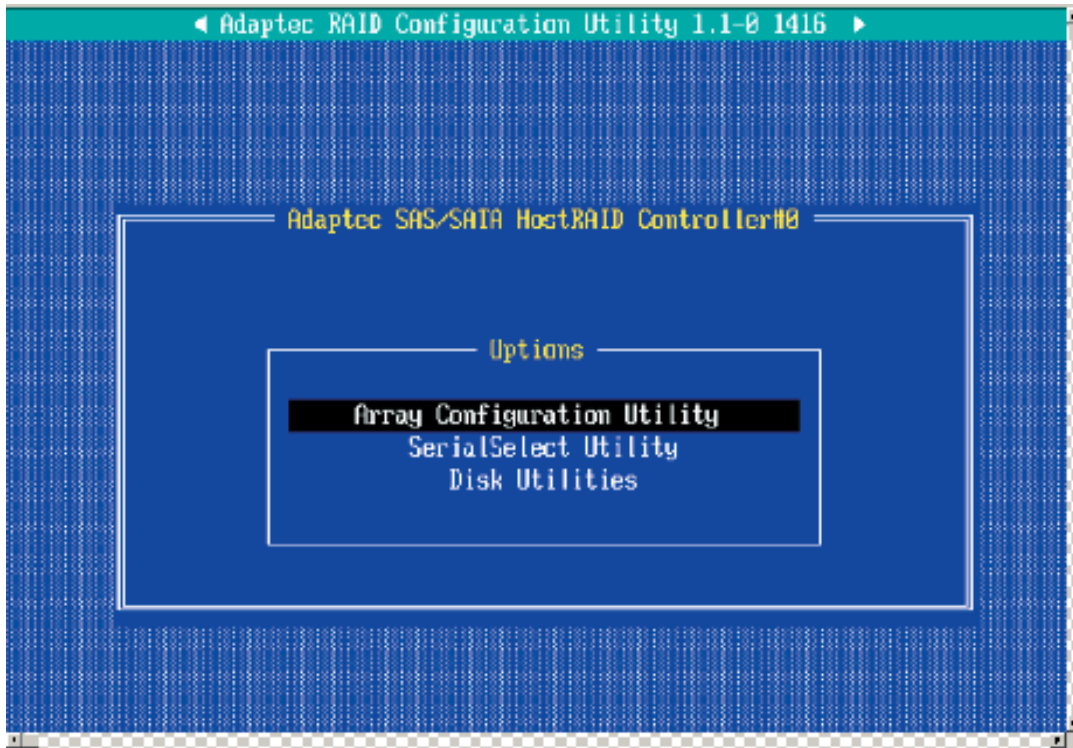
Array Configuration Utility: Use this utility when you want to create, configure and manage arrays.

SerialSelect Utility: Use this option to configure SAS/SATA RAID drives.

Disk Utilities: Use this option to format or verify disks.

## B-2. Using the Array Configuration Utility (ACU)

The Array Configuration Utility (ACU) enables you to create, manage, and delete arrays from the controller's BIOS, add and delete spare drives, and initialize drives. During the system startup, press <Ctrl> and <A> key simultaneously, and the main menu will appear.



### Managing Arrays

Select this option to view array properties and delete arrays. The following sections describe the operations of "Managing Arrays".

To select this option, use the arrow keys and the <enter> key to select "Managing Arrays" from the main menu.

### Viewing Array Properties

To view the properties of an existing array:

1. At the BIOS prompt, press **Ctrl+A**.
2. From the ARC menu, select **Array Configuration Utility (ACU)**.
3. From the ACU menu, select **Manage Arrays** (as shown on the previous screen.)
4. From the List of Arrays dialog box, select the array you want to view and press **Enter**.

The Array Properties dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.

5. Press **Esc** to return to the previous menu.

## Deleting Arrays

*Warning: Back up the data on an array before you delete it to prevent the loss of data. Deleted arrays cannot be restored.*

To delete an existing array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC main menu, select **Array Configuration Utility (ACU)**.
3. From the ACU menu, select **Manage Arrays**.
4. Select the array you wish to delete and press **Delete**.
5. In the Array Properties dialog box, select **Delete** and press **Enter**. The following prompt is displayed: *Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):*  
**RAID 1 only—the following prompt is also displayed:** *Deleting the partition will result in data loss! Do you also want to delete the partition? (Yes/No):*
6. Press **Yes** to delete the array or partition or **No** to return to the previous menu.
7. Press **Esc** to return to the previous menu.

## Creating Arrays

Before creating arrays, make sure the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are un-initialized are shown in gray and cannot be used. See [Initializing Disk Drives](#).

### To create an array:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility Main Menu (ACU)** (as shown on the first screen on the previous page).
3. From the ACU menu, select **Create Array**.
4. Select the disks for the new array and press **Insert**.

**Note:** To deselect any disk, highlight the disk and press **Delete**.

5. Press **Enter** when both disks for the new array are selected. The Array Properties menu displays.

## Assigning Array Properties

Once you've create a new array, you are ready to assign the properties to the array.

**Caution:** Once the array is created and its properties are assigned, you cannot change the array properties using the ACU. You will need to use the Adaptec Storage Manager - Browser Edition. (Refer to Adaptec's User's Guide in the enclosed CD.)

### Assigning properties to the new array:

1. In the Array Properties menu, select an array type and press **Enter**. Note that only the available array types: RAID 0, and RAID1, are displayed on the screen. (RAID 0 or RAID 1 requires two drives.)
2. Under the item "**Arrays Label**", type in a label and press **Enter**. **Note:** The label shall not be more than 15 characters.
3. For RAID 0, select the desired stripe size. **Note:** Available stripe sizes are 16, 32, and (the default) 64 KB. It is recommended that you *do not* change the default setting.
4. The item "**Create RAID via**" allows you to select between the different creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

RAID Level	Create Via	When Appropriate
RAID 0	No Init	Creating a RAID 0 on new drives
RAID 0	Migrate*	Creating a RAID 0 from one new drive and one drive with data you wish to preserve
RAID 1	Build 1	Anytime you wish to create a RAID 1, but especially if you have data on one drive you wish to preserve
RAID 1	Clear	Creating a RAID 1 on new drives, or when you want to ensure that the array contains no data after creation
RAID 1	Quick	Fastest way to create a RAID 1
RAID 1	Init	When using new drives

**Note:** If you select Migrate for RAID 0 or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.

5. When you are finished, press **Done**.

### Notes

1. Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.
2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.
3. A RAID 1 created using the Quick Init option may return some data mis-compares if you later run a consistency check. This is normal and is not a cause for concern.

4. The ACU allows you to use drives of different sizes in a RAID . However, during a build operation, only the smaller drive can be selected as the source or first drive.
5. When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.
6. Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

**Warning:** Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, you will not be able to restart, or to recover the data that was on the source drive.

### **Adding a Bootable Array**

1. From the Main menu, select **Manage Arrays**.
2. From the List of Arrays, select the array you want to make bootable, and press **Ctrl+B**.
3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" A bootable array will then be created. An asterisk will appear next to the bootable array.

### **Deleting a Bootable Array**

1. From the Main menu, select **Manage Arrays**.
2. From the List of Arrays, select the bootable array you want to delete, and press **Ctrl+B**. (A bootable array is the array marked with an asterisk.)
3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" A bootable array will then be deleted and the asterisk will disappear.

**Note:** do not use the delete key to delete a bootable array.

## Initializing Disk Drives

If an installed disk does not appear in the disk selection list for creating a new array or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

**Caution:** Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

**Do not** initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to [Viewing Array Properties](#).

### To initialize drives:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. From the ARC menu, select **Array Configuration Utility (ACU)**.
3. Select **Initialize Drives**.
4. Use the up and down arrow keys to highlight the disk you wish to initialize and press **Insert**.
5. Repeat [Step 4](#) so that both drives to be initialized are selected.
6. Press **Enter**.
7. Read the warning message displayed in the screen.
8. Make sure that you have selected the correct disk drives to initialize. If correct, type Y to continue.

## Rebuilding Arrays

**Note:** rebuilding applies to Fault Tolerant arrays (RAID 1) only.

If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to get the array to optimal status. For a critical array Rebuild operation, the optimal drive is the source drive.

**Note:** If no spare array exists and a hard disk drive fails, you need to create a spare before you can rebuild an array.

### To Rebuild an array:

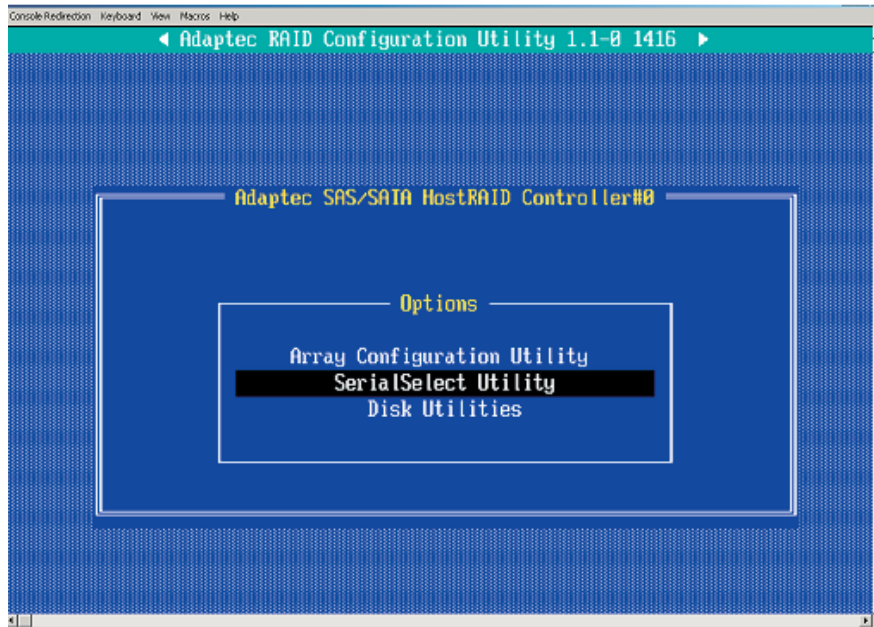
1. From the Main Menu, select **Manage Arrays**. From the List of Arrays, select the array you want to Rebuild.
2. Press **Ctrl+R** to Rebuild.

## Using the SerialSelect Utility to Configure SAS Settings

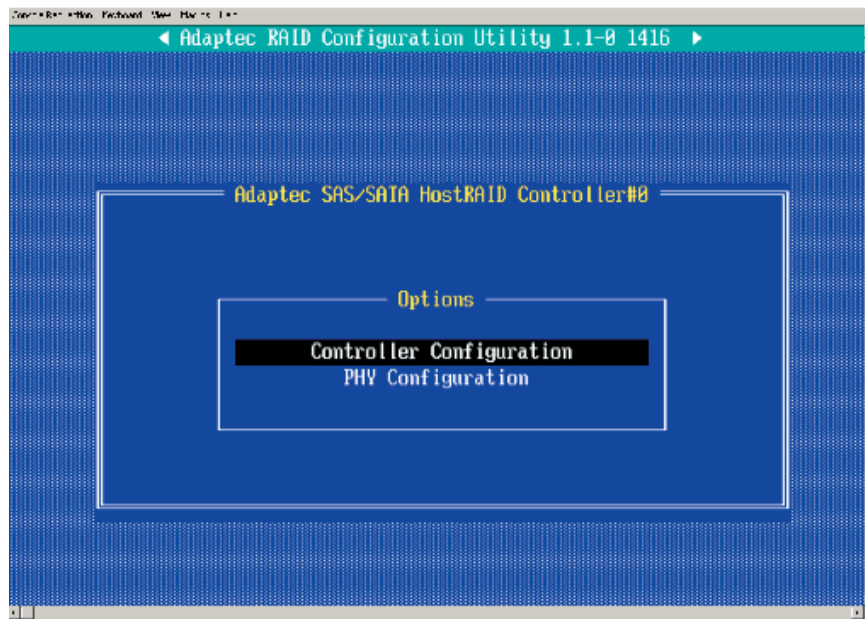
The SerialSelect Utility enables you to configure SAS disk drive settings.

### To access the SAS utilities:

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility (as shown below).

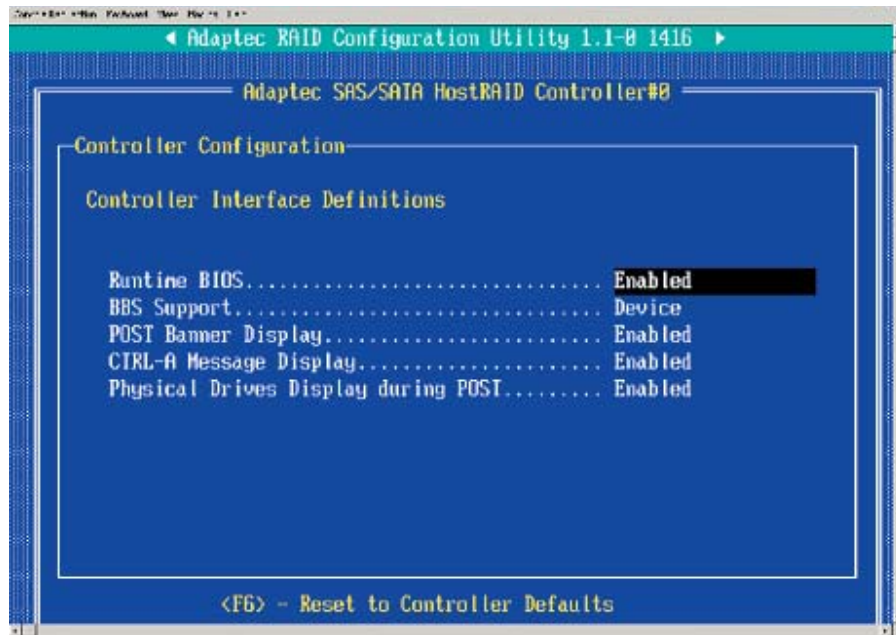


2. Use the arrow keys to select "SerialSelect Utility" and press <Enter> to access the Controller Configuration submenu.



## Setting Controller Configuration:

3. Select "Controller Configuration" and press <Enter> to access the submenu as shown below.



4. Use the arrow keys to select an item. Then press <Enter> and the arrow keys to configure the setting for the item selected.

5. To load the default settings, press <F6>.

Note: The default setting for each item is listed below:

Runtime BIOS: Enabled

BBS Support: Device

POST Banner Display: Enabled

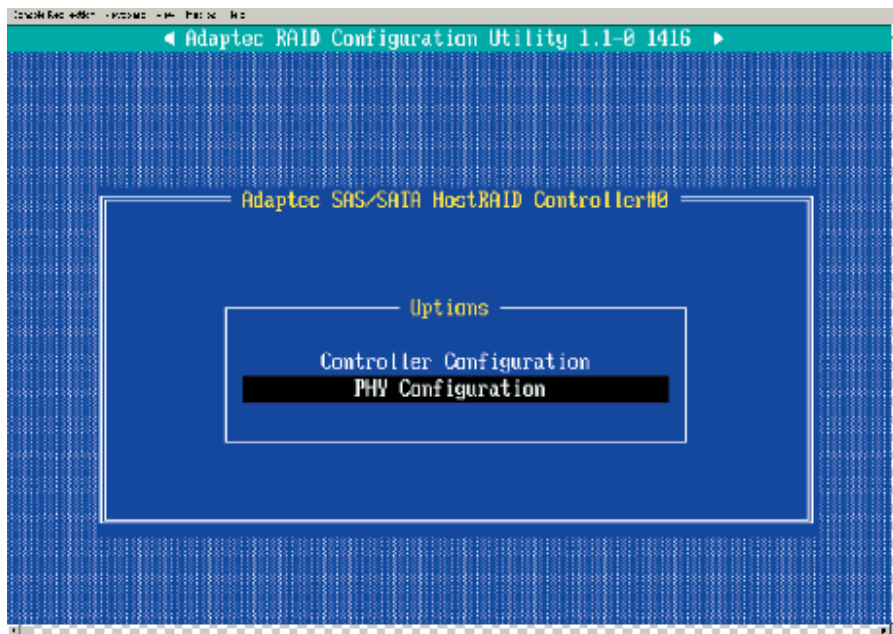
CTRL-A Message Display: Enabled

Physical Drives Display during POST: Enabled

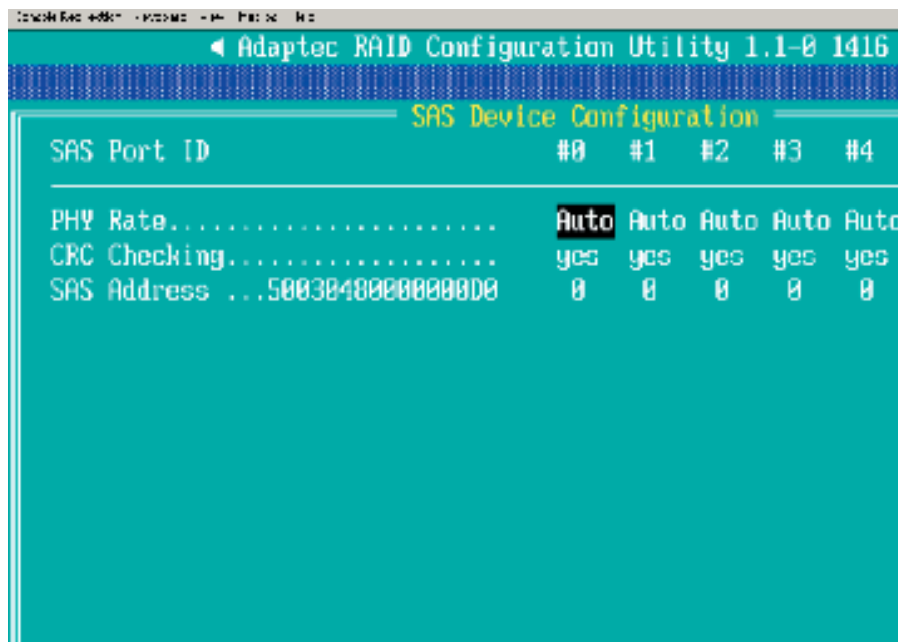
6. Press <Esc> to return to the previous menu and to exit the utility.

### Setting the Physical Configuration:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.
2. Use the arrow keys to select "SerialSelect Utility" and press <Enter> to access the Physical Configuration submenu, as shown below.



3. Select "Physical Configuration" and press <Enter> to access the SAS Device Configuration submenu, as shown below.



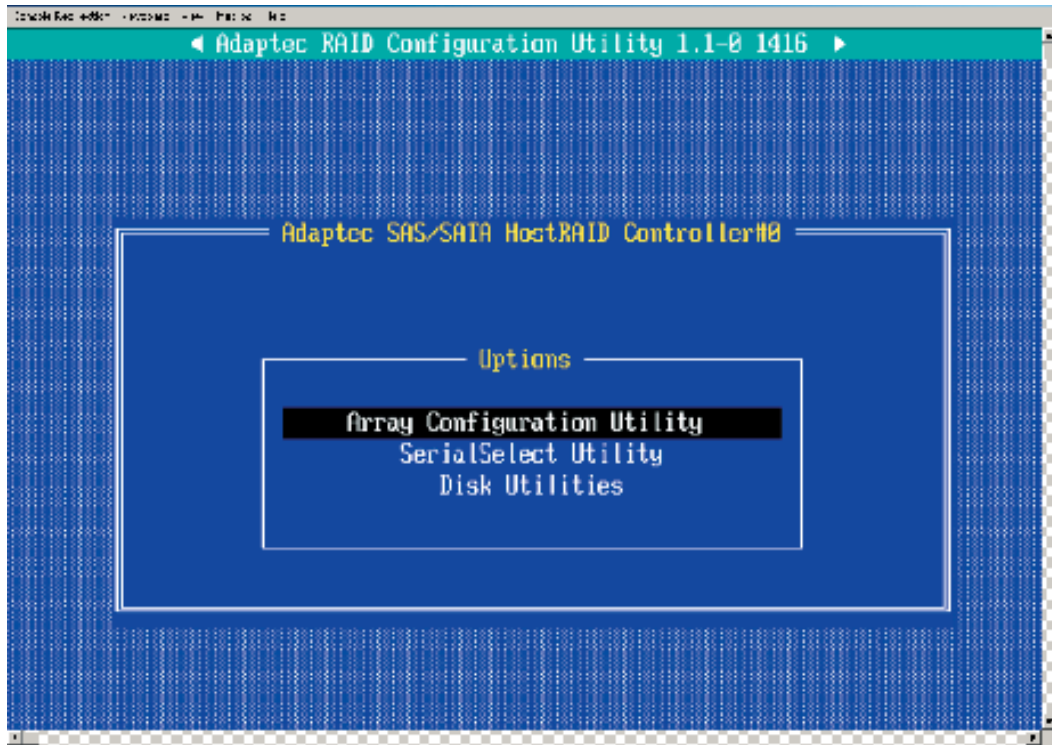
4. Use the arrow keys to select an item. Then, press <Enter> and the arrow keys to configure the item selected.
5. To load default settings, press <F6>.

## Using the Disk Utilities

The Disk Utilities enable you to format or verify the media of your Serial ATA hard disks.

### To access the disk utilities:

1. Turn on your computer and press **Ctrl+A** when prompted to access the ARC utility.



2. From the ARC menu, select **Disk Utilities** from the screen as shown above and press Enter.

3. When the submenu appears, select the desired disk and press **Enter**

### The following options are available:

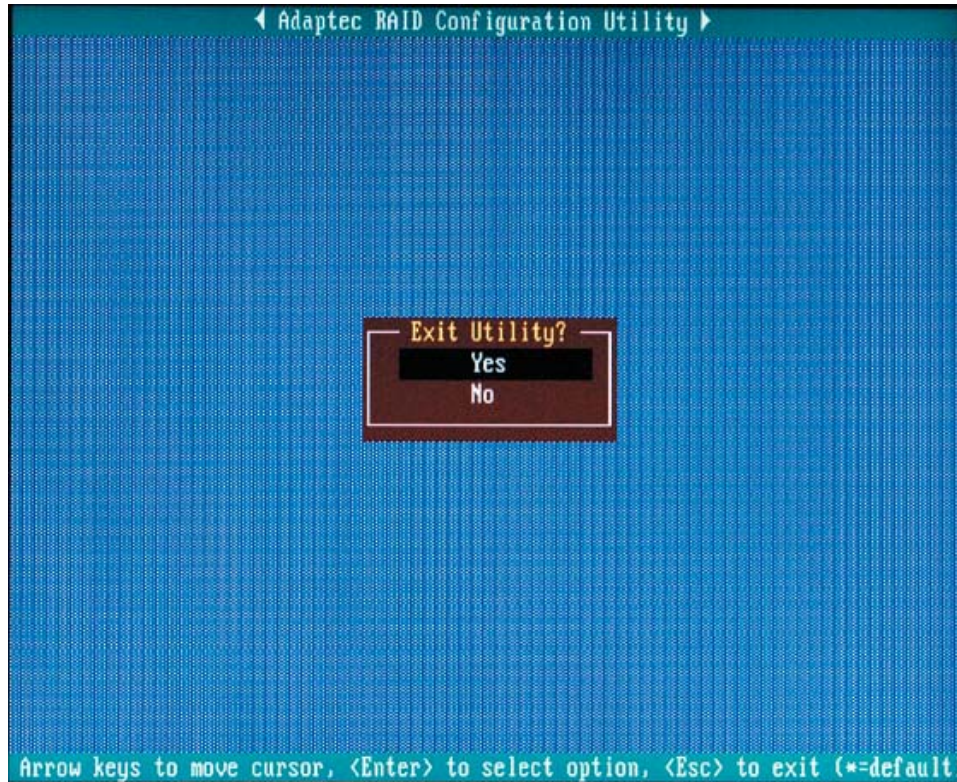
1. **Format Disk**—Simulates a low-level format of the hard drive by writing zeros to the entire disk. **Note:** Serial ATA drives are low-level formatted at the factory and do not need to be low-level formatted again.

**Caution:** Formatting disk erases all data on the drive. Be sure to back up your data before performing this operation.

2. **Verify Disk Media**—Scans the media of a disk drive for defects.

## Exiting the Adaptec RAID Configuration Utility

1. Once you have completed RAID array configurations, press **ESC** to exit. The screen below will appear.
2. Press **Yes** to exit the Utility.



For more information regarding Adaptec RAID Utility, please refer to Adaptec's User's Guide in the CD included in your shipping package. You can also download a copy of Adaptec User's Guide from our web site at: [www.supermicro.com](http://www.supermicro.com).

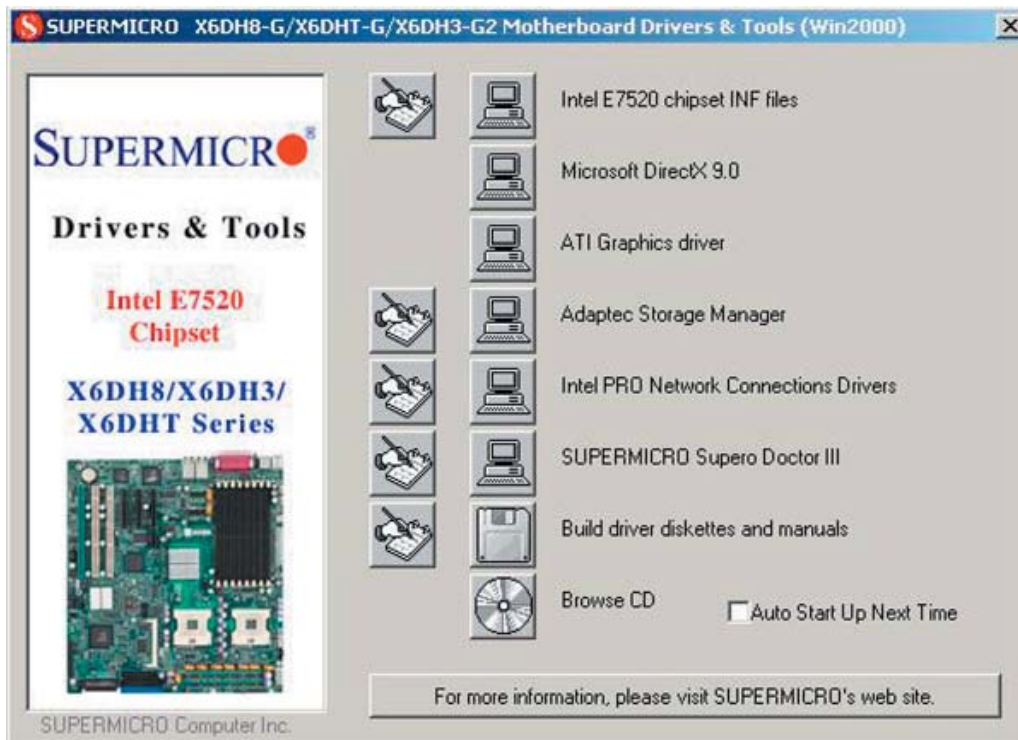
### **B-3 Installing the 6300ESB/SAS Driver and the OS**

- a. Insert Supermicro's bootable CD that came with the package into the CD Drive during the system reboot, and the screen: "Super Micro Driver Diskette Maker" will appear.
- b. From the list displayed on the screen, choose the item: "Intel 6300 ESB/ICH5R Driver by 3rd Party (Adaptec)" or "SAS" and press <ENTER>.
- c. From the next screen displayed, choose the OS driver you want to install and press <Enter>.
- d. Insert a formatted diskette into drive A: and press <Enter> as prompted.
- e. Exit the program after the process is completed. Then, reboot the system.
- f. Insert Microsoft Windows OS Setup CD in the CD Driver, and the system will start to boot up from CD.
- g. Press the <F6> key when the message-"Press F6 if you need to install a third party SCSI or RAID driver" displays.
- h. When the Windows OS Setup screen appears, press "S" to specify additional device(s).
- i. Insert the driver diskette-"Adaptec Embedded Serial ATA Raid Controller Driver" into Drive A: and press the <Enter> key.
- j. Choose Adaptec Embedded Host Serial ATA Raid Controller from the list indicated in the Windows OS Setup Screen, and press the <Enter> key.
- k. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.
- l. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files, and, then, continue the Windows OS installation.
- m. After Windows OS Installation is completed, the system will automatically reboot.

## B-4 Installing Other Software Programs and Drivers

### Installing Drivers

After you've installed the Windows operating system, a screen as shown below will appear. You are now ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



#### Driver/Tool Installation Display Screen

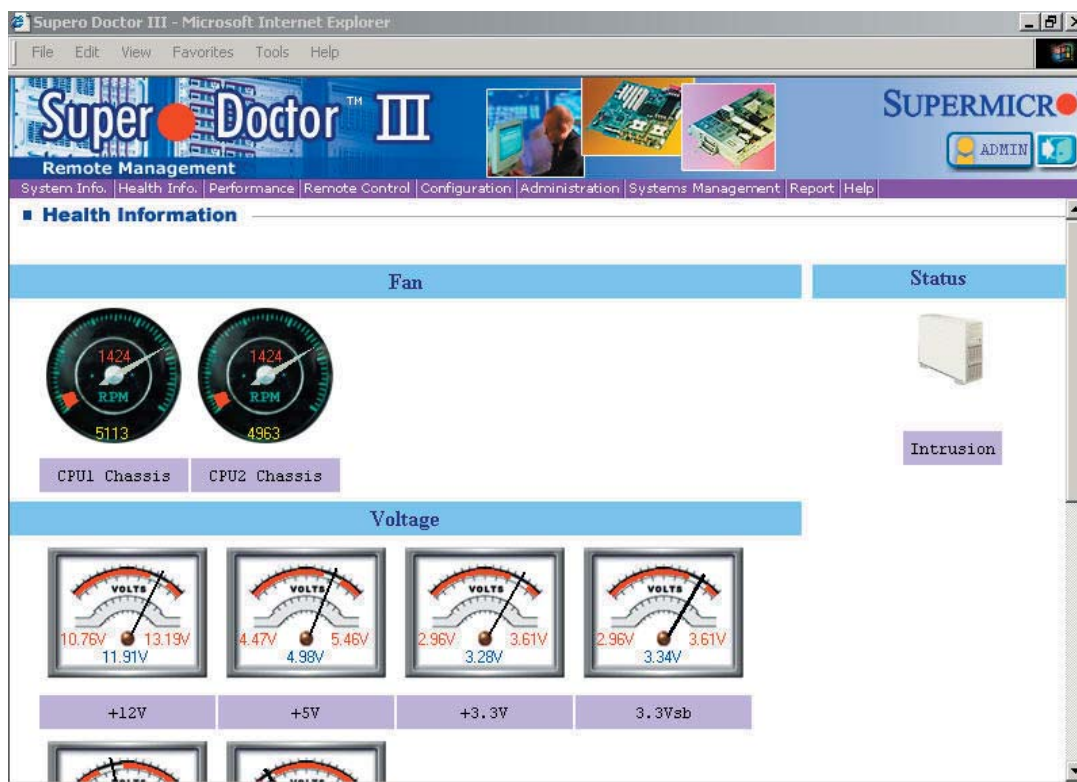
**Note:** Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** You should install everything here except for the Supero Doctor utility, Intel LDCM and the LAN/SCSI driver diskettes, which are optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

**Please refer to the Adaptec User's Guide for the installation of Adaptec's Serial ATA RAID Controller Driver. Adaptec's User's Guide is included in the CD. You can also download a copy of the user's guide from our web site.**

## Supero Doctor III

The Supero Doctor III program is a web-based management tool that supports remote management capability and includes remote and local management tools. The local management is called SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figure below for a display of the Supero Doctor III interface.

Supero Doctor III Interface Display Screen-I (Health Information)



## Supero Doctor III Interface Display Screen-II (Remote Control)



**Graceful power control**

Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.

**Requirements**

Keep Supero SD3Service Daemon running at all times on this system.  
Provide TCP/IP connectivity.

**Power control**

### Notes:

SuperoDoctor III rev. 1.0 can be downloaded from our web site at [ftp://ftp.supermicro.com/utility/Supero\\_Doctor\\_III/](ftp://ftp.supermicro.com/utility/Supero_Doctor_III/). You can also download the SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will still recommend Supero Doctor II.

For detailed information on Adaptec's SCSI SATA RAID utility, please refer to the CDs that came with your motherboard.

## Appendix C

# System Specifications

### Processors

Single or dual 604-pin Intel® Xeon™ EM64T processors at a front side (system) bus speed of 800 MHz.

**Note:** Please refer to our web site for a complete listing of supported processors

### Chipset

Intel E7520 chipset

### BIOS

8 Mb Phoenix® Flash ROM

### Memory Capacity

Eight 240-pin DIMM sockets supporting up to 16 GB of registered ECC, dual channel DDR2-400 SDRAM

**Note:** Interleaved memory - requires memory to be installed two at a time. See the memory section in Chapter 5 for details.

### SAS Controller

Adaptec AIC-9410W controller for 8-port SAS subsystem

### Serial ATA Controller

Intel 6300ESB on-chip controller for 2-port Serial ATA (RAID 0,1 and JBOD supported)

### Hard Drive Bays

Six (6) hot-swap drive bays to house standard SAS/SATA drives

### Peripheral Drives/Bays

One (1) 3.5" floppy drive

One (1) slim CD-ROM drive

One (1) 5.25" drive bay

### **Expansion Slots**

The use of one 133 MHz PCI-X, one 100 MHz PCI-X, two 8x PCI-Express and one PCI add-on cards (all low-profile) is supported

### **Serverboard**

Model: X6DH3-G2 (Extended ATX)

Dimensions: 12" x 13.05" (305 x 332 mm)

### **Chassis:**

6024H-32R: SC823T-R500LP (2U rackmount)

6024H-32: SC823T-550LP (2U rackmount)

Dimensions: (WxHxD) 16.8 x 3.5 x 25.6 in. (426 x 89 x 650 mm)

### **Weight**

6024H-32R Gross (Bare Bone): 57 lbs. (25.9 kg.)

6024H-32 Gross (Bare Bone): 53 lbs. (24.1 kg.)

### **System Cooling**

Four (4) 8-cm, 6300 rpm chassis cooling fans (hot-swappable) (fan speed controlled by BIOS setting)

### **System Input Requirements (6024H-32R)**

AC Input Voltage: 100-240 VAC

Rated Input Current: 10A max.

Rated Input Frequency: 50-60 Hz

### **System Input Requirements (6024H-32)**

AC Input Voltage: 100-240 VAC

Rated Input Current: 9A (115V) to 3.5A (230V)

Rated Input Frequency: 50-60 Hz

### **Power Supply (6024H-32R)**

Rated Output Power: 500W (Model# SP502-2S, Part# PWS-0049)

Rated Output Voltages: +3.3V (21A), +5V (30A), +12Vall (39A), -12V (1.0A), +5Vsb (2.0A)

### **Power Supply (6024H-32)**

Rated Output Power: 550W (Model# SP552-2C, Part# PWS-0047)

Rated Output Voltages: +3.3V (30A), +5V (35A), -5V (0.8A), +12Vall (42A),  
-12V (1.0A), +5Vsb (2.0A)

### **Operating Environment**

Operating Temperature: 10° to 35° C (50° to 95° F)

Non-Operating Temperature: -40° to 70° C (-40° to 158° F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-Operating Relative Humidity: 5 to 95% (non-condensing)

### **Regulatory Compliance**

Electromagnetic Emissions:

FCC Class B, EN 55022 Class B, EN 61000-3-2/-3-3, CISPR 22 Class B

Electromagnetic Immunity:

EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4,  
EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety:

EN 60950/IEC 60950-Compliant

UL Listed (USA)

CUL Listed (Canada)

TUV Certified (Germany)

CE Marking (Europe)

**Notes**