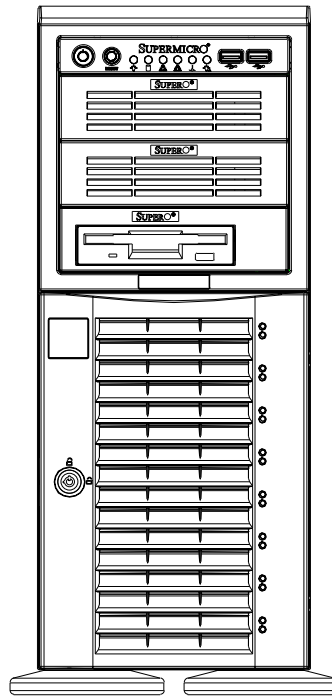


# SUPERO®

## SUPERWORKSTATION 7045A-3



## USER'S MANUAL

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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 SuperWorkstation 7045A-3. Installation and maintenance should be performed by experienced technicians only.

The SuperWorkstation 7045A-3 is a high-end, dual processor workstation based on the SC743TQ-645 4U tower/rackmount chassis and the X7DA3, a dual processor serverboard that supports single or dual Intel® Xeon™ 5100/5000 series processors at a Front Side (System) Bus speed of 1333/1066/667 MHz and up to 32 GB of ECC FBD DDR2-667/533 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 SUPER X7DA3 serverboard and the SC743TQ-645 chassis, which comprise the SuperWorkstation 7045A-3.

#### Chapter 2: Server Installation

This chapter describes the steps necessary to install the system 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 SuperWorkstation 7045A-3.

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

Chapter 5 provides detailed information on the X7DA3 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 SC743TQ-645 server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA 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 Messages**

## **Appendix B: BIOS POST Codes**

## **Appendix C: SAS and Software Installation**

## **Appendix D: System Specifications**

## Notes

# Table of Contents

## Preface

About This Manual .....	iii
Manual Organization .....	iii

## Chapter 1: Introduction

1-1 Overview .....	1-1
1-2 Serverboard Features .....	1-2
1-3 Server Chassis Features .....	1-3
1-4 Contacting Supermicro .....	1-6

## Chapter 2: Quick Setup

2-1 Overview .....	2-1
2-2 Unpacking the System .....	2-1
2-3 Preparing for Setup .....	2-1
2-4 Installing the System into a Rack .....	2-4
2-5 Checking the Serverboard Setup .....	2-8
2-6 Checking the Drive Bay Setup .....	2-9

## Chapter 3: System Interface

3-1 Overview .....	3-1
3-2 Control Panel Buttons .....	3-1
Power .....	3-1
Reset .....	3-1
3-3 Control Panel LEDs .....	3-2
Power .....	3-2
HDD .....	3-2
NIC .....	3-2
Overheat .....	3-2
Power Fail .....	3-3
3-4 SAS Drive Carrier LEDs .....	3-3

## Chapter 4: System Safety

4-1 Electrical Safety Precautions .....	4-1
4-2 General Safety Precautions .....	4-2
4-3 ESD Safety Precautions .....	4-3
4-4 Operating Precautions .....	4-4

---

**Chapter 5: Advanced Serverboard Setup**

5-1	Handling the Serverboard .....	5-1
5-2	Processor and Heatsink Installation .....	5-2
5-3	Connecting Cables .....	5-5
	Connecting Data Cables .....	5-5
	Connecting Power Cables .....	5-5
	Connecting the Control Panel .....	5-6
5-4	I/O Ports .....	5-7
5-5	Installing Memory .....	5-7
5-6	Adding PCI Cards .....	5-9
5-7	Serverboard Details .....	5-9
	X6DA3 Layout .....	5-10
	X6DA3 Quick Reference .....	5-11
5-8	Connector Definitions .....	5-12
	ATX Power Connector .....	5-12
	Secondary Power Connector .....	5-12
	Processor Power Connector .....	5-12
	NMI Button .....	5-12
	Power LED .....	5-12
	HDD LED .....	5-13
	NIC LEDs .....	5-13
	Overheat/Fan Fail LED (OH) .....	5-13
	Power Fail LED .....	5-13
	Reset Button .....	5-14
	Power Button .....	5-14
	Universal Serial Bus Ports (USB0/1) .....	5-14
	Chassis Intrusion .....	5-14
	Serial Ports .....	5-15
	Power Fail Header .....	5-15
	Fan Headers .....	5-15
	Overheat LED .....	5-15
	Universal Serial Bus Headers .....	5-16
	Power LED/Speaker .....	5-16
	ATX PS/2 Keyboard and Mouse Ports .....	5-16
	SGPIO Headers .....	5-16
	Wake-On-LAN .....	5-17
	Wake-On-Ring .....	5-17
	SMB .....	5-17
	SMB Power .....	5-17

---

	AC'97 Audio .....	5-18
	CD Connectors .....	5-18
	Alarm Reset .....	5-18
5-9	Jumper Settings .....	5-19
	Explanation of Jumpers .....	5-19
	CMOS Clear .....	5-19
	JLAN Enable/Disable .....	5-19
	Watch Dog Enable/Disable .....	5-20
	Audio Enable/Disable .....	5-20
	Power Supply Fail Detect Enable/Disable .....	5-20
	Compact Flash Master/Slave .....	5-21
	I <sup>2</sup> C Bus to PCI .....	5-21
	SAS Controller Enable/Disable .....	5-21
5-10	Onboard Indicators .....	5-22
	JLAN1/JLAN2 LEDs .....	5-22
	Onboard Power LED .....	5-22
	SAS Activity LED Indicators .....	5-22
5-11	Parallel Port, Floppy and Hard Drive Connections .....	5-23
	Parallel Port Connector .....	5-23
	Floppy Connector .....	5-24
	SATA Ports .....	5-24
	IDE Connectors .....	5-25
	SAS Ports .....	5-26

## Chapter 6: Advanced Chassis Setup

6-1	Static-Sensitive Devices .....	6-1
6-2	Front Control Panel .....	6-3
6-3	System Fans .....	6-4
	Fan Failure .....	6-4
	Replacing System Fans .....	6-4
6-4	Drive Bay Installation .....	6-6
	SAS/SATA Drives .....	6-6
	Installing Components in the 5.25" Drive Bays .....	6-8
6-5	Power Supply .....	6-9
	Power Supply Failure .....	6-9
	Replacing the Power Supply .....	6-9



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## Chapter 7: BIOS

7-1	Introduction .....	7-1
7-2	Running Setup .....	7-2
7-3	Main BIOS Setup .....	7-2
7-4	Advanced Setup .....	7-7
7-5	Security Settings .....	7-24
7-6	Boot Settings .....	7-25
7-7	Exit .....	7-26

## Appendices

Appendix A:	BIOS POST Messages .....	A-1
Appendix B:	BIOS POST Codes .....	B-1
Appendix C:	SAS and Software Installation .....	C-1
Appendix D:	System Specifications .....	D-1

**Notes**

# Chapter 1

## Introduction

### 1-1 Overview

Supermicro's SuperWorkstation 7045A-3 is a high-end dual processor workstation that can be utilized either in a tower or in a rackmount configuration. The 7045A-3 is comprised of two main subsystems: the SC743TQ-645 high-end server chassis and the X7DA3 dual Intel Xeon™ processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with your workstation.

In addition to the serverboard and chassis, various hardware components have been included with the SuperWorkstation, as listed below:

- One (1) 3.5" floppy drive [FPD-PNSC-02(1)]
- One (1) 9-cm exhaust fan (FAN-0091)
- Four (4) 8-cm hot-swap chassis fans (FAN-0074)
- One (1) air shroud (CSE-PT0123)
- Two (2) 5.25" dummy drive trays
- One (1) front control panel cable (CBL-0087)
- One (1) floppy cable (CBL-040L)
- One (1) I/O shield (MCP-260-00002-00)
- SAS Accessories
  - One (1) SAS backplane (CSE-SAS-743TQ)
  - Four (4) iPass SAS data cables (CBL-0119L-02)
  - Eight (8) hot-swap drive carriers [CSE-PT17(B)]
- Two (2) Xeon passive heatsinks for LGA771 CPU (SNK-P0018)
- Optional: One (1) rackmount kit [CSE-PT26(B)]

## 1-2 Serverboard Features

At the heart of the 7045A-3 lies the X7DA3, a dual processor serverboard based on Intel's 5000X chipset and designed to provide maximum performance. Below are the main features of the X7DA3. (See Figure 1-1 for a block diagram of the 5000X chipset).

### Processors

The X7DA3 supports single or dual LGA771 Intel Xeon 5100/5000 series processors. Please refer to the serverboard description pages on our web site for a complete listing of supported processors (<http://www.supermicro.com>).

### Memory

The X7DA3 has eight 240-pin DIMM slots that can support up to 32 GB of FBD (Fully Buffered DIMM) ECC DDR2-667/533 SDRAM. The memory is an interleaved configuration, which requires modules of the same size and speed to be installed in pairs.

### Serial ATA

An on-chip (ESB2) SATA controller is integrated into the X7DA3 to provide a six-port, 3 Gb/sec Serial ATA subsystem, which is RAID 0, 1, 5 and 10 supported. The SATA 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 Serial ATA drives.

### Onboard SAS

An onboard Adaptec AIC-9410 SAS controller is integrated into the X7DA3, which supports eight SAS hard drives. The SAS drives are connected to a backplane that provides power, bus termination and configuration settings. 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. RAID 0, 1 and 10 are supported.

## PCI Expansion Slots

The X7DA3 has seven PCI expansion slots, which includes one PCI-Express x16 slot, one PCI-Express x4 slot (in a x16 slot), three 64-bit PCI-X slots (including two 133/100 MHz slots and one 100 MHz ZCR slot) and one 32-bit 33 MHz PCI slot.

## Onboard Controllers/Ports

One floppy drive controller and two onboard ATA/100 controllers are provided to support up to four hard drives or ATAPI devices. The color-coded I/O ports include a COM port, a parallel port, four USB 2.0 ports, PS/2 mouse and keyboard ports and Line-In, Line-Out and Mic jacks. Two front side USB ports are also included on the front of the chassis. The X7DA3 also includes two gigabit Ethernet ports.

## 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 SuperWorkstation 7045A-3 is a scaleable server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC743TQ-645 server chassis.

### System Power

The 7045A-3 features a single 645W power supply. This power supply unit has been designed to operate at a low noise level to make it ideal for use in a workstation environment.

### SAS Subsystem

The SC743TQ-645 chassis was designed to support eight SAS hard drives, which are hot-swappable units.

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

## Front Control Panel

The control panel on the SuperWorkstation 7045A-3 provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, overheat condition and power supply failure. A main power button and a system reset button are also included.

**Note:** the power supply fail LED is intended for use with redundant power supply systems and so is not needed for the 7045A-3.

## I/O Backplane

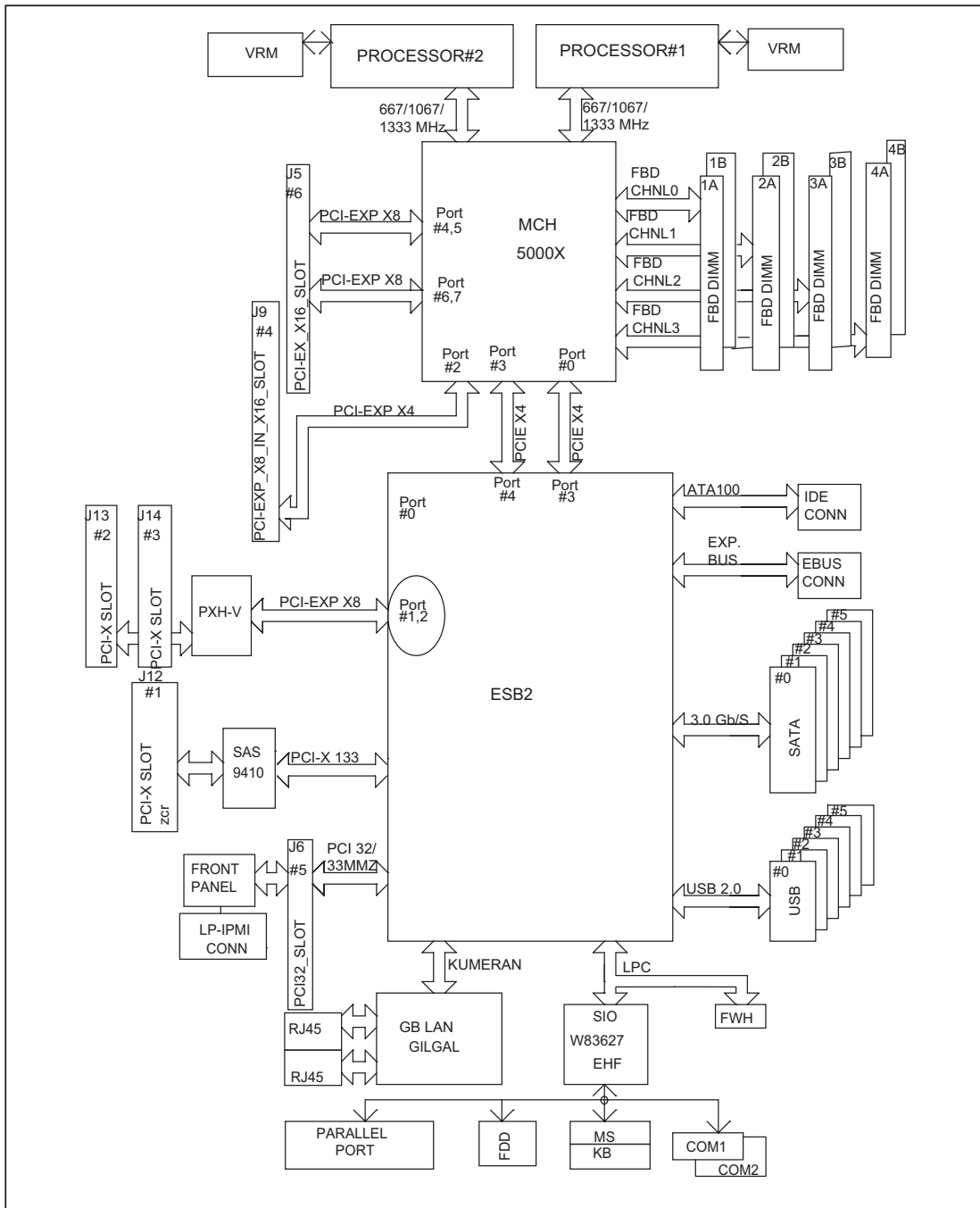
The SC743TQ-645 is an ATX form factor chassis that can be used as a tower or mounted in a 4U rackmount configuration. The I/O backplane provides seven expansion slots, two COM ports, a parallel port, four USB 2.0 ports, PS/2 mouse and keyboard ports, one or two (depending on the serverboard) Gigabit Ethernet port(s) and Line-In, Line-Out and Microphone jacks (see Figure 5-3).

## Cooling System

The SC743TQ-645 chassis has an innovative cooling design that includes four 8-cm hot-plug PWM (Pulse Width Modulation) system cooling fans located in the middle of the chassis. The system cooling fans work with an air shroud to cool the areas where the most heat is generated. A 9-cm chassis exhaust fan (FAN-0091) is also included.

**Figure 1-1. Intel 5000X Chipset:  
System Block Diagram**

Note: This is a general block diagram. Please see Chapter 5 for details.



## 1-4 Contacting Supermicro

### Headquarters

Address: SuperMicro Computer, Inc.  
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Web Site: [www.supermicro.com.tw](http://www.supermicro.com.tw)

Technical Support:

Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

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 SuperWorkstation 7045A-3 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. The SuperWorkstation 7045A-3 may be employed either as a tower or rackmounted as a 4U chassis. If using it in a tower configuration, please read Server Precautions in the next section and then skip ahead to Section 2-5.

### 2-2 Unpacking the System

You should inspect the box the system 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 SuperWorkstation 7045A-3. 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 system was shipped in may include two sets of rail assemblies, two rail mounting brackets and mounting screws needed for installing the system into a rack (optional kit). 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 system to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the system to allow for sufficient airflow and ease in servicing.
- This product is for installation in a Restricted Access Location only (dedicated equipment rooms, service closets, etc.)



## 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 SAS 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

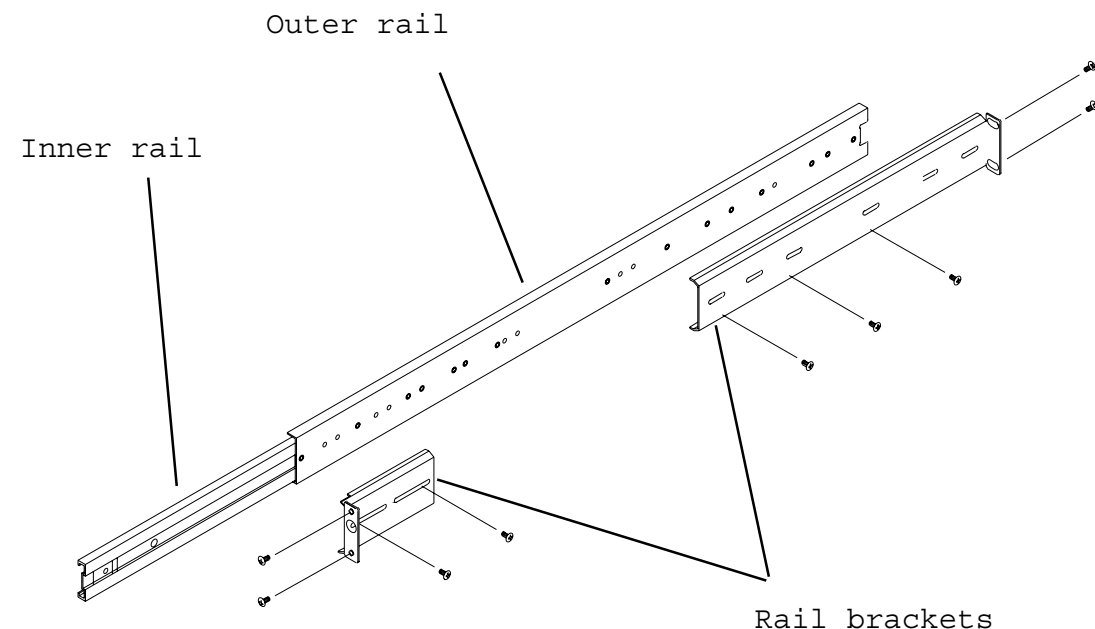
This section provides information on installing the system into a rack unit. Rack installation requires the use of the optional rackmount kit [CSE-PT26(B)]. If the system has already been mounted into a rack or if you are using it as a tower, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the workstation into a rack with the rack rails provided in the rackmount kit. You should also refer to the installation instructions that came with the rack unit you are using.

### Identifying the Sections of the Rack Rails

The optional rackmount kit (CSE-PT26 or CSE-PT26B - black) includes two rack rail assemblies. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the chassis, an outer rack rail that secures directly to the rack itself and two rail brackets, which also attach to the rack (see Figure 2-1.) The inner and outer rails must be detached from each other to install.

To remove the inner chassis rail, 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. Depress the locking tab to pull the inner rail completely out. Do this for both assemblies (one for each side).

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



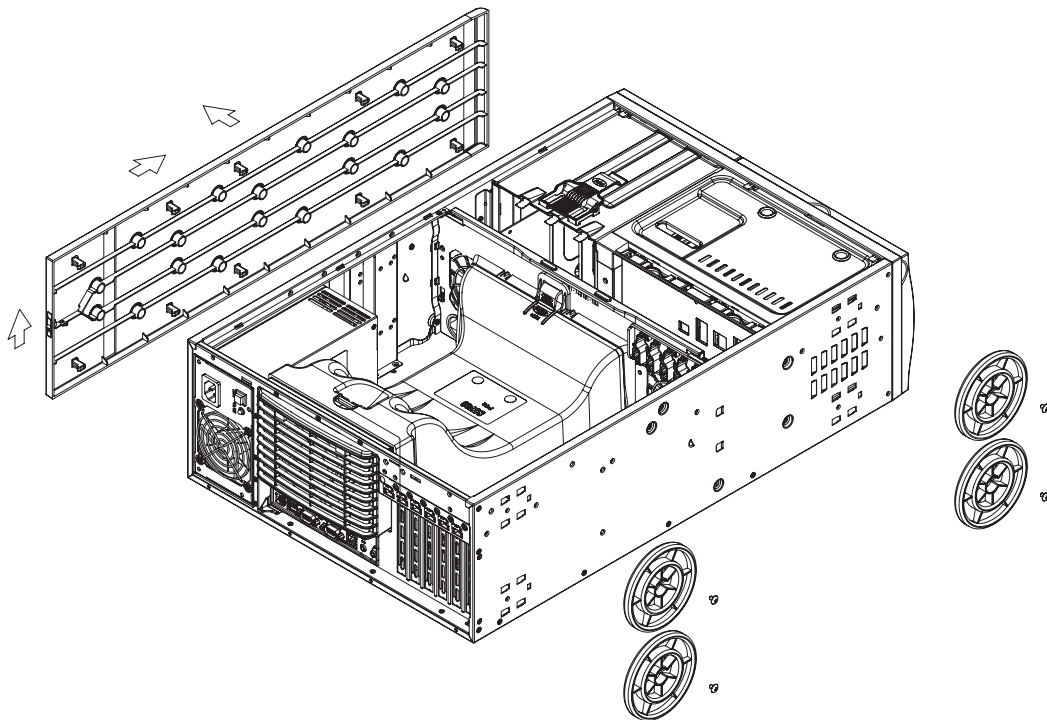
## Installing the Chassis Rails

You will need to remove the top bezel cover and the feet to add rack rails to the chassis. First, remove the top and right covers (top and left covers when standing as a tower chassis) by first removing the screws that secure them to the chassis. Depress the button on the top (side if tower) of the chassis to release the cover and then pull the cover off. Then unscrew the four feet and remove them from the chassis (see Figure 2-2).

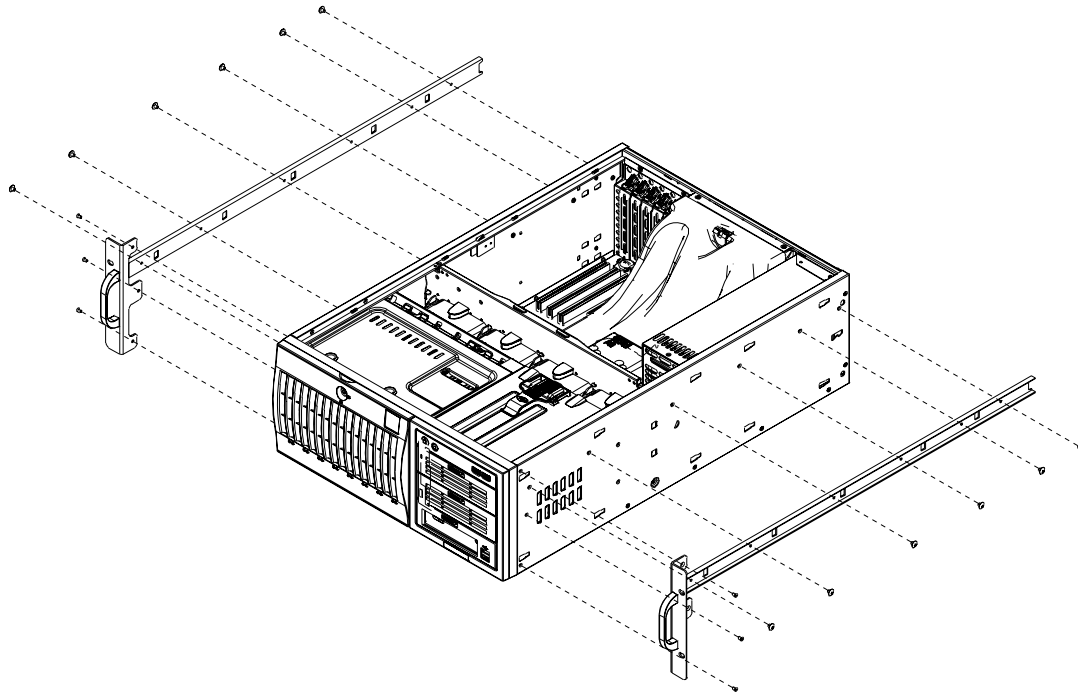
You can now attach rack rails to the top and bottom (now the sides) of the chassis. First add the rack handles. Then position the inner chassis rail sections you just removed along the side of the chassis making sure the screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-3). 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, the 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. Preparing to Install the Chassis Rails**



**Figure 2-3. Installing the Rails to the Chassis**



## **Installing the Rack Rails**

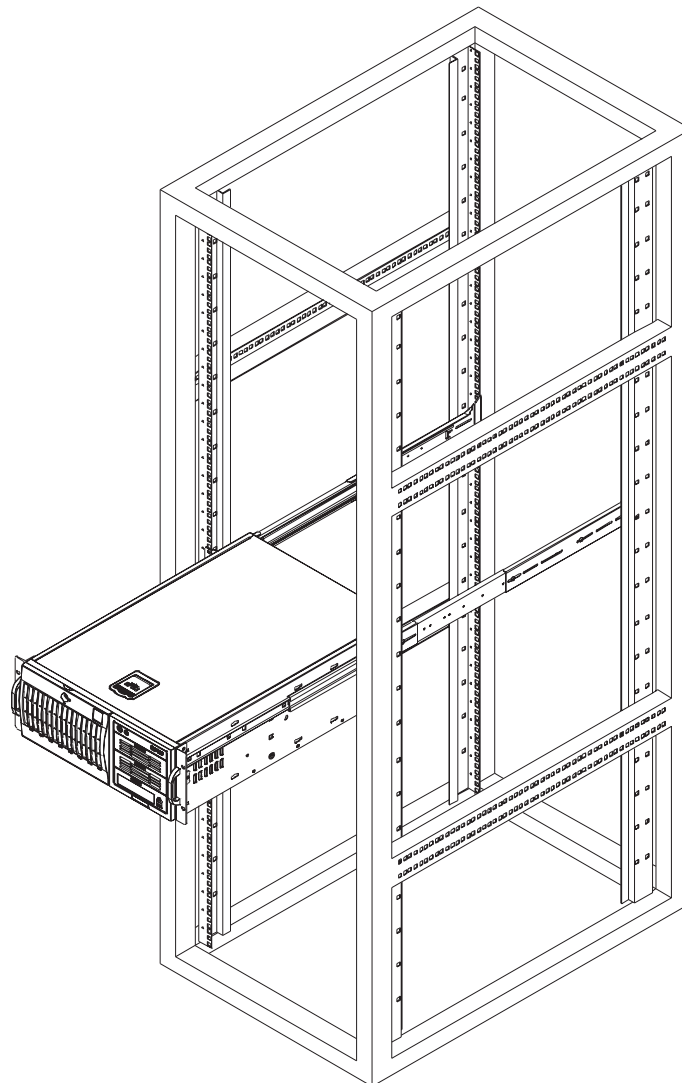
Determine where you want to place the SuperWorkstation 7045A-3 in the rack. ([See Rack and Server Precautions in Section 2-3.](#)) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making both are at the exact same height and with the rail guides facing inward.

## 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. You should have two brackets in the rack mount kit. Install these first keeping in mind that they are left/right specific (marked with "L" and "R"). Then, line 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).

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 (see Figure 2-4).

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



## 2-5 Checking the Serverboard Setup

After setting up the the system, 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)

(If rack mounted, 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".) There are two screws that secure the cover to the chassis - remove these first. Depress the button on the top (side if tower) of the chassis to release the cover. You can then lift the 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 should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

### 3. Check the system memory

Your workstation 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. See Chapter 5 for details on cable connections.



## 2-6 Checking the Drive Bay Setup

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

### 1. Accessing the drive bays

All drives can be accessed from the front of the server. For servicing the DVD-ROM, IDE hard drives and floppy drives, you will need to remove the top/left chassis cover. The SAS disk drives can be installed and removed from the front of the chassis without removing any chassis covers.

### 2. Installing components into the 5.25" drive bays

To install components into the 5.25" drive bays, you must first remove the top/left chassis cover as described in the previous section. Refer to Chapter 6 for details.

### 3. Installing a floppy disk drive

Refer to Chapter 6 if you need to reinstall a floppy disk drive to the system.

### 4. Check the SAS/SATA disk 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.

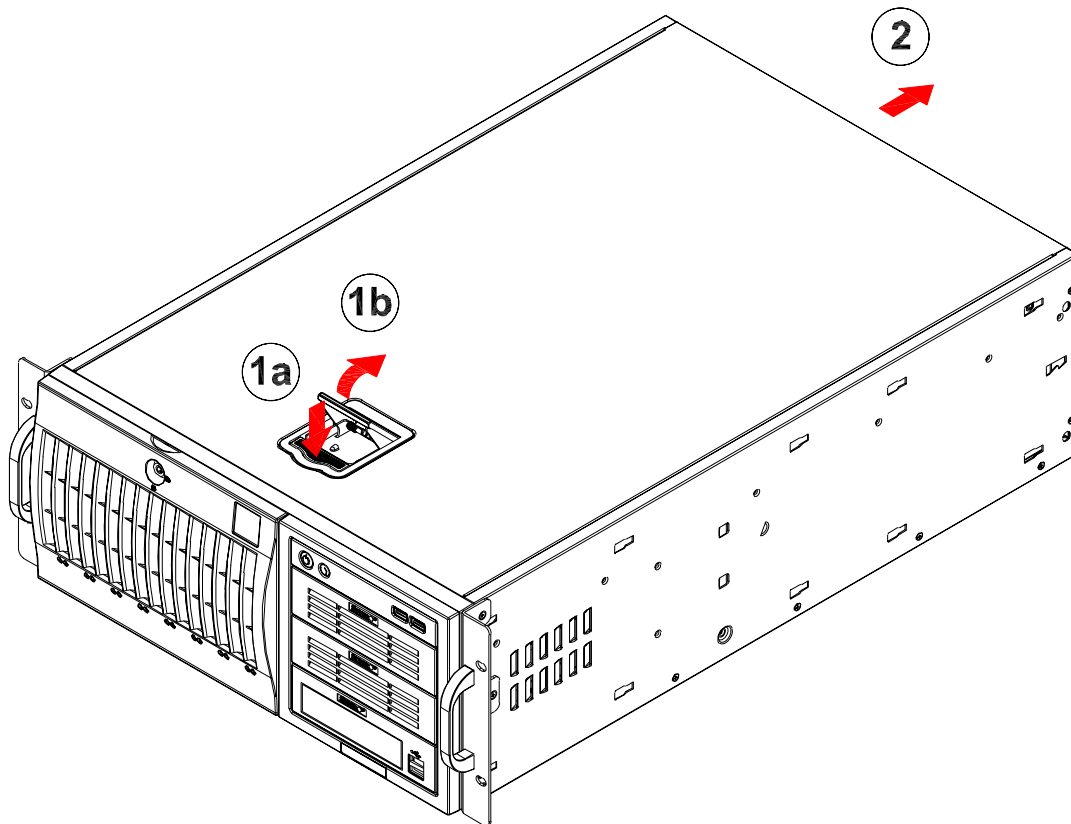
### 5. Check the airflow

Airflow is provided by four hot-swap 8-cm chassis fans working in conjunction with an air shroud. The system component layout was carefully designed to promote sufficient airflow through the chassis. Also 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. Keep this in mind when you reroute them after working on the system.

### 6. Supplying power to the system

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit 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). Finally, depress the power on button on the front of the chassis.

Figure 2-5. Accessing the Inside of the System  
(Rack Configuration shown)



# Chapter 3

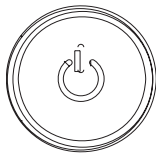
## System Interface

### 3-1 Overview

There are several LEDs on the control panel as well as two for each SAS/SATA drive carrier and the Ethernet ports. These LEDs are to keep you constantly informed of the overall status of the system and the activity and health of specific components. There are also two buttons on the chassis control panel.

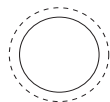
### 3-2 Control Panel Buttons

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



- **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.

RESET



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

### 3-3 Control Panel LEDs

The control panel located on the front of the SC743TQ-645 chassis has six LEDs that 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:** Indicates external power is being supplied to the system's power supply unit. This LED should normally be illuminated when the system is operating.



- **HDD:** Indicates IDE channel activity. On the 7045A-3, this LED indicates SAS/SATA/IDE drive activity when flashing.



- **NIC:** Indicates network activity on LAN1 when flashing.



- **NIC:** Indicates network activity on LAN2 when flashing



- **Overheat:** 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.



- **Power Fail:** Indicates a power supply module has failed. This LED is intended for use with systems that have redundant power supply modules and therefore is not used with the SuperWorkstation 7045A-3.

### 3-4 SAS Drive Carrier LEDs

Each SAS drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SAS drive carrier indicates drive activity. A connection to the SAS SCA backplane enables this LED to blink on and off when that particular drive is being accessed.
- **Red:** A SAF-TE compliant backplane is needed to activate the red LEDs, which indicate a drive failure. Please refer to Chapter 6 for instructions on replacing failed SAS drives.

**Notes**

# Chapter 4

## System Safety

### 4-1 Electrical Safety Precautions



Basic electrical safety precautions should be followed to protect yourself from harm and the SuperWorkstation 7045A-3 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 floppy drives (not necessary for SAS drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cord from the power supply unit.
- 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 backwards, 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.
- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-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 SuperWorkstation 7045A-3 clean and free of clutter.
- The SuperWorkstation 7045A-3 weighs approximately 63 lbs (28.6 kg). 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.
- Place the chassis top/side cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- 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 (if rackmounted) 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:

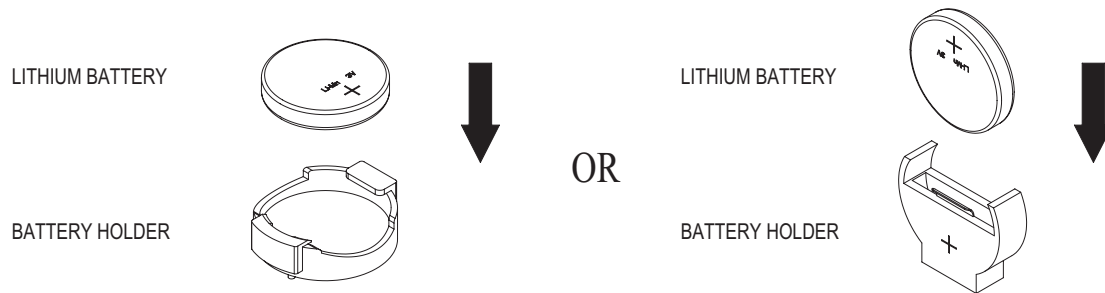
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact 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 all chassis covers are in place when the Super-Workstation 7045A-3 is operating to ensure proper cooling. Out of warranty damage to the 7045A-3 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 processors and heatsinks to the X7DA3 serverboard, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the serverboard to protect and cool the system sufficiently.

### 5-1 Handling the Serverboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the serverboard can cause it to bend if handled improperly, which may result in damage. 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 static discharge.

#### 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 serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

#### 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.

## 5-2 Processor and Heatsink Installation



When handling the processor, avoid placing direct pressure on the label area of the fan. Also, do not place the serverboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

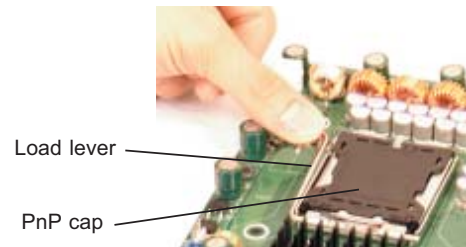
**IMPORTANT!** Always connect the power cord last and remove it first before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket *before* you install the heatsink and fan. The X7DA3 can support either one or two Intel Xeon LGA 771 5100/5000 series processors. If installing one processor only, install it into CPU socket #1.

### Notes:

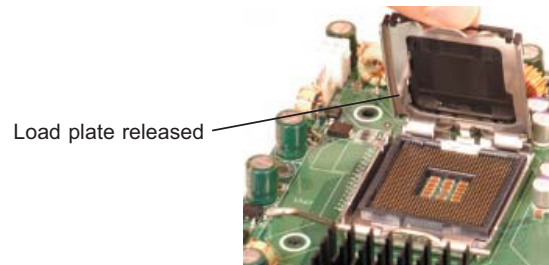
1. Intel's boxed Xeon CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsinks and fans.
2. When purchasing an LGA 771 CPU or when receiving a serverboard with an LGA 771 CPU pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.

### Installing the Processor

1. A black PnP cap is attached to the load plate to protect the CPU socket. Press the load lever down and away from the retention clasp to release the load plate from its locked position.



2. Gently lift the load lever to open the load plate.



3. Use your thumb and your index finger to hold the CPU at opposite sides.

4. Align pin1 of the CPU (the corner marked with a triangle) with the notched corner of the CPU socket.

5. Find the corner of the CPU that has a semi-circle cutout below a gold dot (CPU key). This corner should be aligned with the cutout on the socket (socket key).

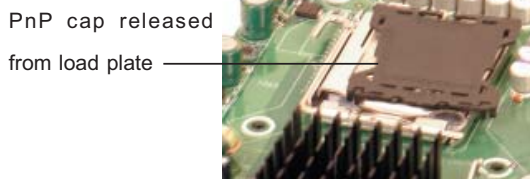
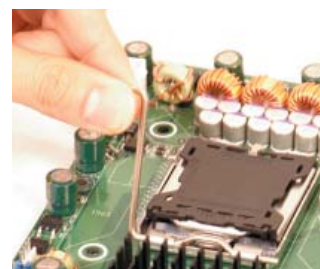
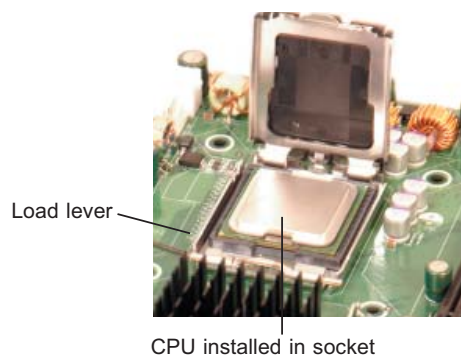
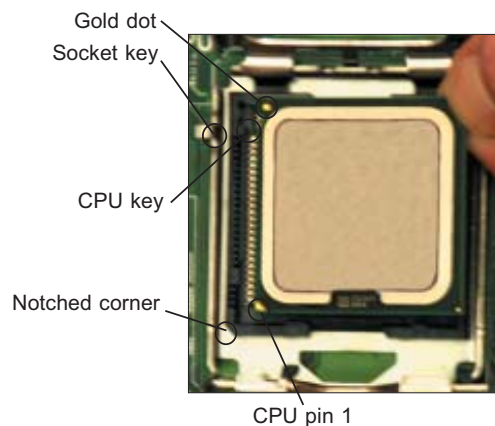
6. Once aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, do not move the CPU horizontally or vertically and do not rub the CPU against any surface or any of the contacts, which may damage the CPU and/or contacts.

7. With the CPU in the socket, inspect the four corners of the CPU to make sure that it is properly installed.

8. Use your thumb to gently push the load lever down until it snaps into the retention clasp.

9. If the CPU is properly installed into the socket, the PnP cap will be automatically released from the load plate when the lever locks. Repeat steps to install a second CPU if desired.

**Warning!** Keep the plastic PnP cap. The serverboard must be shipped with the PnP cap properly installed to protect the CPU socket. Shipment without the PnP cap properly installed will void the warranty.



## Installing the Heatsink

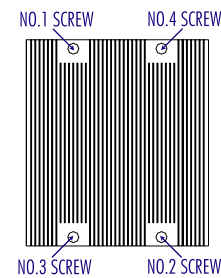
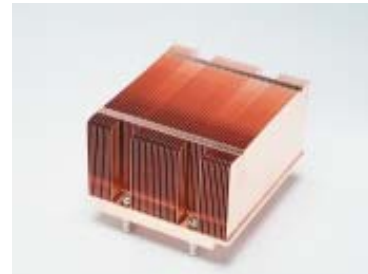
1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the (preinstalled) heatsink retention mechanism.

3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. Do not fully tighten the screws or you may damage the CPU.)

4. Add the two remaining screws then finish the installation by fully tightening all four screws.

CEK Passive Heatsink



## 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 to the CPU or the CPU socket.*

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture above.

2. Hold the heatsink and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the CPU is loosened, remove the heatsink 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.

## 5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the serverboard. 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 in preconfigured systems 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 reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their serverboard connector locations noted) should be connected. See the serverboard layout diagram in this chapter for connector locations.

- Floppy Drive cable (J22)
- Control Panel cable (JF1, see next page)
- SAS cables (SAS0~3, SAS4~7)

### Connecting Power Cables

The X7DA3 has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to the "ATX Power" connector to supply power to the serverboard. See the Connector Definitions section in this chapter for power connector pin definitions.

In addition, your power supply must be connected to the 4-pin Secondary ATX Power connection at JPW2 and the 8-pin processor power connector at JPW3.

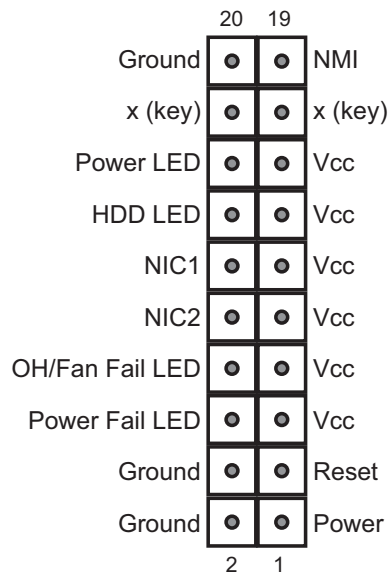
## Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-3 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. The red wire in the ribbon cable plugs into pin 1 of JF1. Connect the other end of the cable to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.

**Figure 5-3. Front Control Panel Header Pins (JF1)**

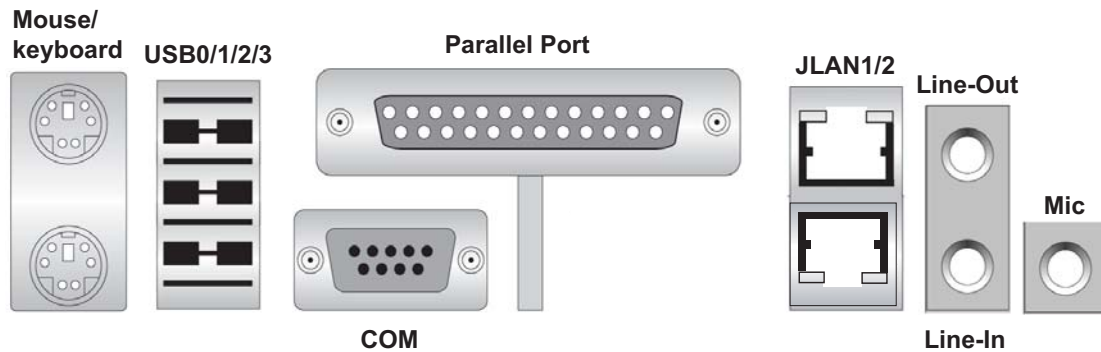




## 5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-4 below for the colors and locations of the various I/O ports.

**Figure 5-4. Rear Panel I/O Ports**



## 5-5 Installing Memory

**Note:** Check the Supermicro web site for recommended memory modules.

---

### **CAUTION!**

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

---

### **DIMM Installation (See Figure 5-5)**

1. Insert the desired number of DIMMs into the memory slots, starting with Bank1. 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. For optimal memory performance, please install four modules at a time. Please refer to the table below.
2. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

### Memory Support

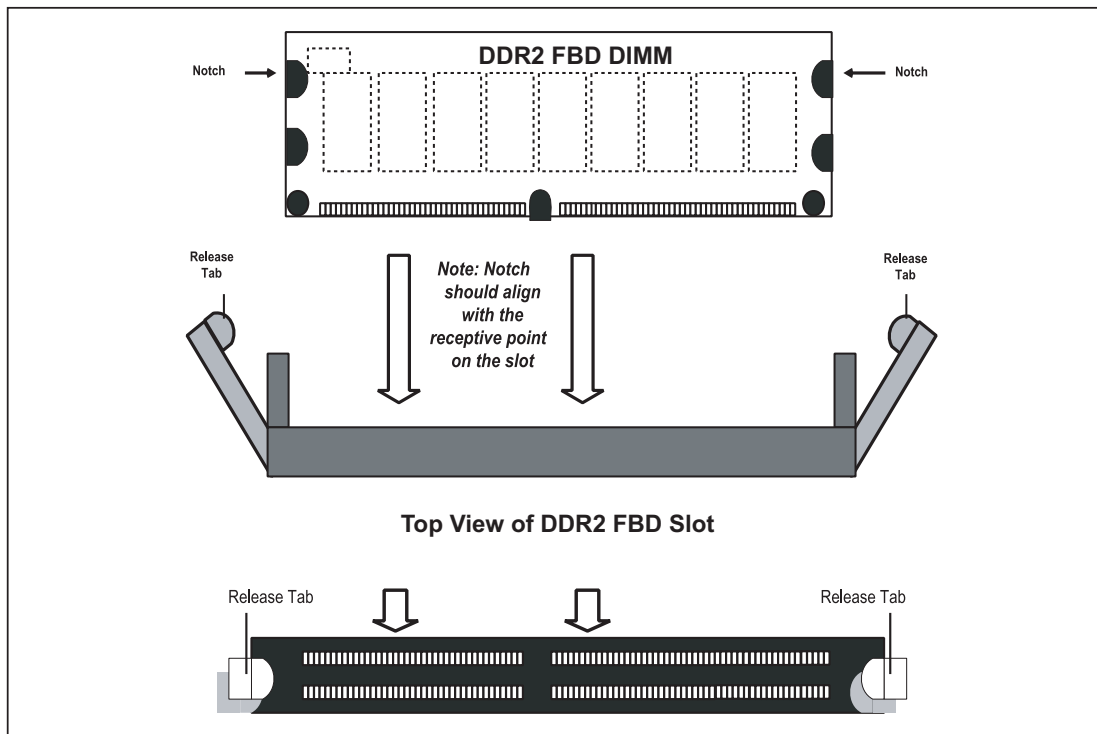
The X7DA3 supports up to 32 GB of ECC FBD Fully Buffered DIMM) DDR2-667/533 in 8 sDIMM slots. Populating slots with a pair (or pairs) of DIMMs that are of the same size and same type in Bank1, Bank2, Bank3 and Bank4 will result in interleaving memory.

Note: Due to the OS limitations, some operating systems may not show more than 4 GB of memory.

Optimized DIMM Population Configurations									
Number of DIMMs	Branch0				Branch1				
	Bank 1 (Channel 0)		Bank 2 (Channel 1)		Bank 3 (Channel 2)		Bank 4 (Channel 3)		
2 DIMMs	1A	-----	2A	-----	-----	-----	-----	-----	-----
4 DIMMs	1A	-----	2A	-----	3A	-----	4A	-----	-----
6 DIMMs	1A	1B	2A	2B	3A	-----	4A	-----	-----
8 DIMMs	1A	1B	2A	2B	3A	3B	4A	4B	-----

**Notes:** i. Slot# specified (ex. "1A") indicates a DIMM slot is populated; "----" indicates a DIMM slot is not populated. ii. Both FBD 533 MHz and 667MHz DIMMs are supported, however, you need to use memory modules of the same speed and of the same type. iii. Interleaved memory is supported when pairs of DIMMs are installed. To optimize performance, install memory to both Branch0 and Branch1. iv. For memory to work properly, you need to follow these restrictions.

Figure 5-5. Installing DIMM into Slot



**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.

## 5-6 Adding PCI Cards

### 1. PCI slots

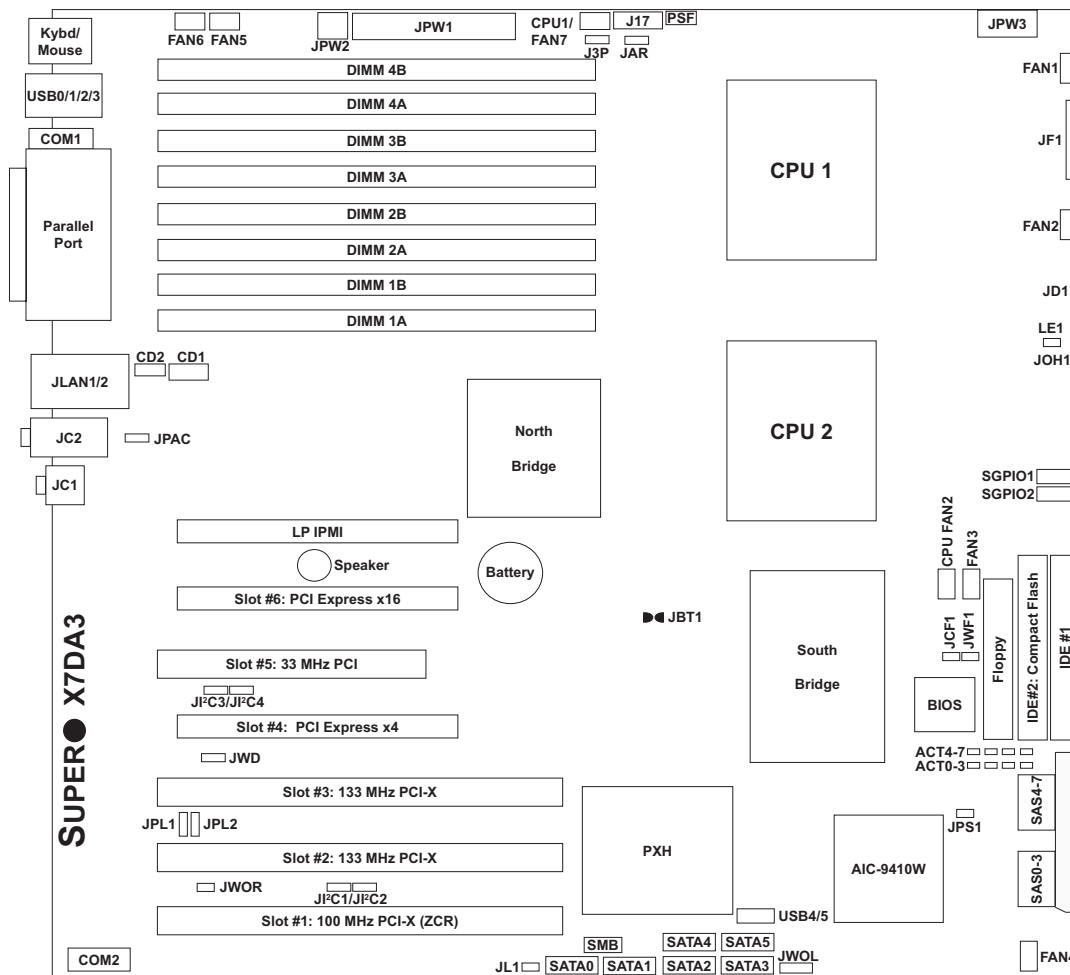
The 7045A-3 can support six PCI expansion cards (one PCI-Express x16 slot, one PCI-Express x4 slot, two 64-bit 133/100 MHz PCI-X slots, one 64-bit 100 MHz slot and one 32-bit 33MHz PCI slot).

### 2. PCI card installation

Before installing a PCI add-on card, make sure you install it into a slot that supports the speed of the card (see step 1, above). After gaining access to the inside of the server, determine which slot you wish to populate, then press down on the curved section at the top of the blue tab for that slot. While pressing down, lift the tab to unlock the shield. Insert the expansion card into the correct slot on the serverboard, pushing down with your thumbs evenly on both sides of the card. Lock the card into place by pressing down on the tab. Follow this procedure when adding a card to other slots.

## 5-7 Serverboard Details

Figure 5-6. SUPER X7DA3 Layout  
(not drawn to scale)



**Notes:**

Jumpers not noted are for test purposes only.

IDE#2 is for Compact Flash card use only. To use, enable (close) jumper JCF1 and connect the compact flash power to JWF1.

## X7DA3 Quick Reference

<b><u>Jumper</u></b>	<b><u>Description</u></b>	<b><u>Default Setting</u></b>
J3P	3rd Power Fail Detect	Open (Disabled)
JBT1	CMOS Clear	(See Section 5-9)
JCF1	Compact Flash Master/Slave Select	Closed (Master)
J <sup>I</sup> 2C1/2	I <sup>2</sup> C to PCI Slot #1 Enable/Disable	Both Pins 2-3 (Disabled)
J <sup>I</sup> 2C3/4	I <sup>2</sup> C to PCI Slot #6 Enable/Disable	Both Pins 2-3 (Disabled)
JPS1	SAS Controller Enable/Disable	Pins 1-2 (Enabled)
JPAC	Audio Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	JLAN1/JLAN2 Enable/Disable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

<b><u>Connector</u></b>	<b><u>Description</u></b>
CD1/CD2	CD Audio Output Headers
COM1/COM2	COM1/COM2 Serial Port Connector/Header
FAN 1-8	Fan Headers 1-8
Floppy	Floppy Disk Drive Connector
IDE#1/IDE#2	IDE Hard Drive/Compact Flash Card Connectors
J17	System Management (I <sup>2</sup> C) Power Header
JAR	Alarm Reset Header
JC1, JC2	Microphone Jack, Line-In/Line-Out Jacks
JD1	Power LED (pins1-3)/Speaker (pins 4-7) Header
JF1	Front Control Panel Connector
JL1	Chassis Intrusion Header
JLAN1/2	G-bit Ethernet Ports
JOH1	Overheat LED
JPW1	Primary 24-Pin ATX Power Connector
JPW2	Secondary Power Connector
JPW3	Processor Power Connector
JWF1	Compact Flash Card Power Connector
JWOL	Wake-on-LAN Header
JWOR	Wake-on-Ring Header
LP IPMI (Slot 7)	Low Profile IPMI Connector
PSF	Power Supply Fail Header
SAS0-3, SAS4-7	Serial Attached SCSI Ports
SATA0-SATA5	Serial ATA Ports
SGPIO1/2	Serial General Purpose Input/Output Headers
SMB	System Management Bus Header
USB0/1/2/3	USB Ports
USB4/5	USB Headers

## 5-8 Connector Definitions

### ATX Power Connector

The power supply connector meets the SSI (Superset ATX) 24-pin specification. Make sure that the orientation of the connector is correct. See the table on the right for pin definitions.

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

### Secondary Power Connector

In addition to the Primary ATX power connector (above), the Secondary 12v 8-pin connector (JPW2) must also be connected to your power supply. See the table on the right for pin definitions.

+12V 4-pin Power Pin Definitions (JPW2)	
Pins	Definition
1 & 2	Ground
3 & 4	+12V

### Processor Power Connector

The JPW3 header must also be connected to the power supply to provide power for the processor(s). See the table on the right for pin definitions.

Processor Power Pin Definitions (JPW3)	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

### 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

### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	Vcc
16	Control

## HDD LED

The HDD (IDE Hard Disk Drive) LED connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to display disk activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

## NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

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

## NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

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

## Overheat/Fan Fail LED (OH)

Connect an LED to the OH connection on 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

## Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

Power Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Ground

## Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

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

## Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

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

## Universal Serial Bus Ports

Four Universal Serial Bus ports are located beside the PS/2 keyboard/mouse ports. USB0 is the bottom connector and USB3 is the top connector. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB0/1/2/3)			
USB0		USB1	
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

## Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

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



## Serial Ports

The COM1 serial port is located beside the mouse port. COM2 is a header on the serverboard (see serverboard layout for location). See the table on the right for pin definitions.

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

**Note:** Pin 10 is included on the header but not on the port. NC indicates no connection.

## Power Fail Header

Connect a cable from your power supply to the Power Fail header to provide you with warning of a power supply failure. The warning signal is passed through the PWR\_LED pin to indicate a power failure. See the table on the right for pin definitions.

Power Fail Header Pin Definitions (PSF)	
Pin#	Definition
1	P/S 1 Fail Signal
2	P/S 2 Fail Signal
3	P/S 3 Fail Signal
4	Reset Signal

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

## Fan Headers

The X7DA3 has eight fan headers, designated Fan1 through Fan8. Fan speed is controlled via Thermal Management with a BIOS setting. See the table on the right for pin definitions.

**Note:** All fan headers have four pins. Pins 1-3 of the headers are backward compatible with traditional 3-pin fans.

Fan Header Pin Definitions (Fan1-8)	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

## Overheat LED

Connect an LED to the JOH1 header to provide warning of a chassis overheating condition. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)	
Pin#	Definition
1	+5V
2	OH Active

## Universal Serial Bus Headers

Two additional USB headers are located near the SATA5 header on the serverboard. This header is designated USB4/5 and is included for connection to the USB ports on the front of the chassis. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Universal Serial Bus Headers Pin Definitions (USB4/5)			
USB2		USB3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	N/A

## Power LED/Speaker

On the JDI header, pins 1-3 are for a power LED, pins 4-7 are for the speaker. See the table on the right for speaker pin definitions. Note: 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.

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

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

The ATX PS/2 keyboard and the PS/2 mouse ports are located on the I/O back plane. See the table on the right for pin definitions.

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

## SGPIO Headers

Two SGPIO (Serial General Purpose Input/Output) headers have been included on the X7DA3. These headers support serial link interfaces for the onboard SATA connectors. See the table on the right for pin definitions.

SGPIO Headers Pin Definitions (SGPIO1/SGPIO2)			
Pin#	Definition	Pin	Definition
1	*NC	2	*NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	*NC

## Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this feature. You must also have a LAN card with a Wake-on-LAN connector and cable.

Wake-On-LAN Pin Definitions (JWOL)	
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 "wake-up" by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a WOR card and cable to use this feature.

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

## SMB

The System Management Bus header (for the PCI bus) is located near the SATA ports. Connect the appropriate cable here to utilize SMB on your system. See the table on the right for pin definitions.

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

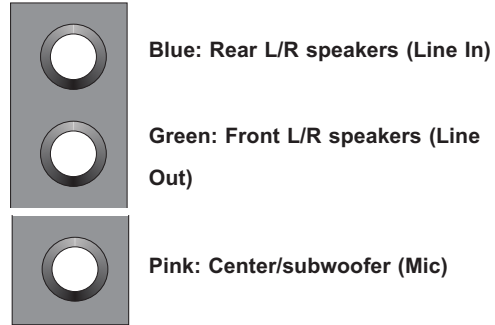
## SMB Power (I<sup>2</sup>C)

The header at J17 is for I<sup>2</sup>C, which may be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

SMB Power (I <sup>2</sup> C) Pin Definitions (J17)	
Pin#	Definition
1	Clock
2	Data
3	Power Fail
4	Ground
5	+3.3V

### AC'97 Audio (JC1, JC2)

AC'97 provides high quality onboard audio. The X7DA3 features 6-channel sound for front L&R, rear L&R, center and subwoofer speakers. This feature is activated with the JPAC jumper. The Line In/Line Out/Mic jacks on the I/O backpanel are used for sound output when AC'97 is enabled (see diagram at right). To activate onboard audio, please enable the JPAC jumper.



### CD Connectors

Two CD connectors (CD1, CD2) are located behind the LAN ports. These have been included for CD audio output. See the tables on the right for pin definitions.

CD1 Pin Definition	
Pin#	Definition
1	Left
2	Ground
3	Ground
4	Right

CD2 Pin Definition	
Pin#	Definition
1	Right
2	Ground
3	Left
4	Ground

### Alarm Reset (JAR)

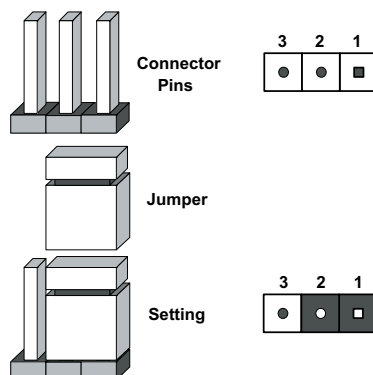
The system will notify you in the event of a power supply failure. This feature assumes that Supermicro redundant power supply units are installed in the chassis. If you only have a single power supply installed, you should not connect anything to this jumper to prevent false alarms. See the table on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

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

## 5-9 Jumper Settings

### Explanation of Jumpers

To modify the operation of the serverboard, 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 diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.



**Note:** On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

### CMOS Clear

JBT1 is used to clear CMOS and 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.

### JLAN Enable/Disable

Change the setting of jumper JPL1 and JPL2 to enable or disable the on-board LAN ports JLAN1 and JLAN2, respectively. See the table on the right for jumper settings. The default setting is enabled

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

## Watch Dog Enable/Disable

JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Pins 1-2 will cause WD to reset the system if an application hangs. Pins 2-3 will generate a non-maskable interrupt signal for the application that is hung up. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

**Note:** When enabled, the user needs to write their own application software to disable the Watch Dog Timer.

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

## Audio Enable/Disable

Use JPAC to enable or disable the AC'97 feature. See the table on the right for jumper settings. The default setting is enabled.

Audio Enable/Disable Jumper Settings (JPAC)	
Pin#	Definition
1-2	Enabled
2-3	Disabled

## Power Supply Fail Detect Enable/Disable

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. See the table on the right for jumper settings.

3rd Power Supply Fail Detect Enable/Disable Jumper Settings (J3P)	
Jumper Setting	Definition
Open	Disabled
Closed	Enabled

## Compact Flash Master/Slave Select

A Compact Flash Master (Primary)/Slave (Secondary) Select jumper is located at JCF1. Close this jumper to enable the use of a compact flash card. For the compact flash card and JCF1 to work properly, you will first need to connect the compact flash card's power cable to JWF1. See the table on the right for jumper settings.

Compact Flash Card Master/Slave Select (JCF1)	
Jumper	Definition
Open	Slave (Secondary)
Closed	Master (Primary)

## I<sup>2</sup>C Bus to PCI

Jumpers JI<sup>2</sup>C1, JI<sup>2</sup>C2, JI<sup>2</sup>C3 and JI<sup>2</sup>C4 allow you to connect specific PCI-X/PCI-Express slots to the System Management (I<sup>2</sup>C) Bus. The default setting for all jumpers is pins 2-3 to disable the connection.

These jumpers must be set in pairs. JI<sup>2</sup>C1 and JI<sup>2</sup>C2 are for PCI-X slot #1 and JI<sup>2</sup>C3 and JI<sup>2</sup>C4 are for PCI-Express slot #6. Each pair of jumpers must be set to the same setting. See the table on the right for jumper settings.

I <sup>2</sup> C Bus to PCI Jumper Settings (JI <sup>2</sup> C1/JI <sup>2</sup> C2/JI <sup>2</sup> C3/JI <sup>2</sup> C4)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

## SAS Controller Enable/Disable

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

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

## 5-10 Onboard Indicators

### JLAN1/JLAN2 LEDs

Each Ethernet port has two LEDs. One LED indicates activity while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

JLAN LED (Connection Speed Indicator)	
LED Color	Definition
Off	No connection or 10 MHz
Green	100 MHz
Amber	1 GHz

### Onboard Power LED

LE1 is a power LED located beside JP1. When this LED is lit, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components.

### Onboard SAS Activity LED Indicators

There are eight SAS activity LEDs on the X7DA3. Act#0 through Act#7 indicate activity for their respective SAS port. See the table on the right.

SAS Activity LEDs (ACT#0 ~ ACT#7)			
Act#	Definition	Act#	Definition
Act#0	SAS0:Act	Act#4	SAS4:Act
Act#1	SAS1:Act	Act#5	SAS5:Act
Act#2	SAS2:Act	Act#6	SAS6:Act
Act#3	SAS3:Act	Act#7	SAS7:Act

**Note:** "Act" indicates activity on the drive.



## 5-11 Parallel Port, Floppy and Hard Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire 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.

### Parallel Port Connector

See the table below for pin definitions of the parallel (printer) port.

Parallel (Printer) Port Connector Pin Definitions			
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

## Floppy Connector

The floppy connector is located near the IDE connectors. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)			
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 Ports

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

SATA Ports Pin Definitions (SATA0 ~ SATA5)	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

## IDE Connectors

There are two IDE connectors: IDE#1 (blue) and IDE#2 (white). IDE#1 is designated as the primary IDE drive. IDE#2 is designated as the secondary IDE drive and is reserved for Compact Flash card use only. See the table below for pin definitions.

**Note:** IDE#2 is reserved for Compact Flash card use only. Do not use it for other devices. If IDE#2 is populated with a Compact Flash card, IDE#1 will only support one device. For the Compact Flash card to work properly, you will first need to connect a power cable to JWF1.

IDE Drive Connectors Pin Definitions (IDE#1/IDE#2)			
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

## SAS Ports

There are eight SAS (Serial Attached SCSI) ports (one port for SAS0-3 and one port for SAS4-7) on the serverboard. See the table on the right for pin definitions.

SAS Port Pin Definitions (SAS0-3 ~ SAS4-7)			
Pin#	Definition	Pin #	Definition
A1	Ground	B1	Ground
A2	RX 0+	B2	TX 0+
A3	RX 0-	B3	TX 0-
A4	Ground	B4	Ground
A5	RX 1+	B5	TX 1+
A6	RX 1-	B6	TX 1-
A7	Ground	B7	Ground
A8	SB7	B8	SB0
A9	SB3	B9	SB1
A10	SB4	B10	SB2
A11	SB5	B11	SB6
A12	Ground	B12	Ground
A13	RX 2+	B13	TX 2+
A14	RX 2-	B14	TX 2-
A15	Ground	B15	Ground
A16	RX 3+	B16	TX 3+
A17	RX 3-	B17	TX 3-
A18	Ground	B18	Ground

## Chapter 6

### Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC743TQ-645 chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows. Refer to Chapter 2 for instructions on installing the system as a 4U rackmount.

#### Tools Required

The only tool you will need is a Philips screwdriver.

#### 6-1 Static-Sensitive Devices

Static electrical discharge 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 static discharge.

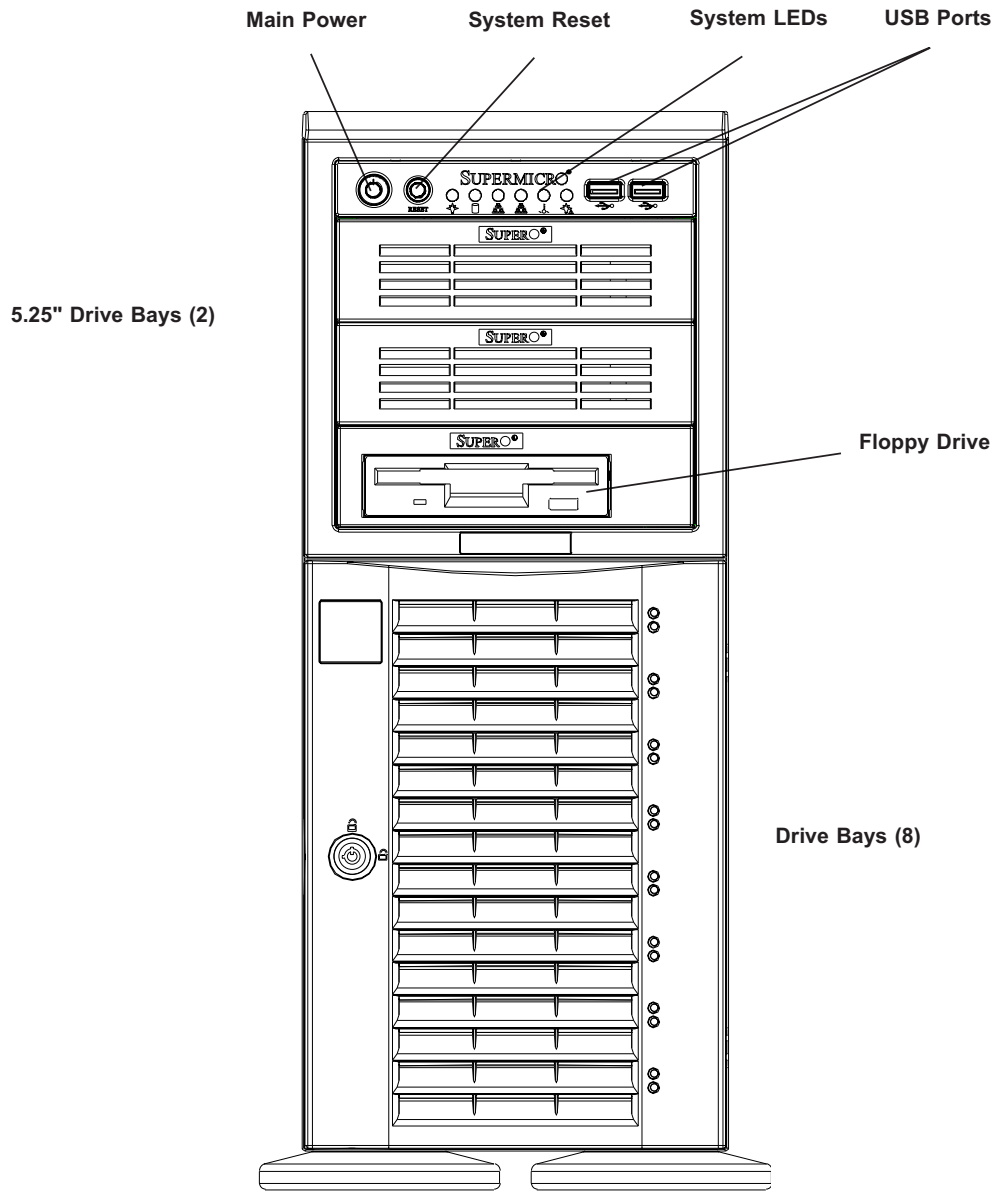
##### Precautions

- 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 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. When unpacking the board, make sure the person handling it is static protected.







Figure 6-1. Chassis Front View



## 6-2 Front Control Panel

The front control panel must be connected to the JF1 connector on the serverboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify this connection. Connect the cable from JF1 on the serverboard (making sure the red wire plugs into pin 1) to the appropriate connector on the front control panel PCB (printed circuit board). Pull all excess cabling over to the control panel side of the chassis. The LEDs on the control panel inform you of system status - see Figure 6-2 for details. See Chapter 5 for details on JF1.

**Figure 6-2. Front Control Panel LEDs**

<b>Power</b>		Indicates power is being supplied to the system.
<b>HDD</b>		Indicates IDE device and hard drive activity. On the 7045A-3, this LED indicates SAS/SATA hard drive activity when flashing.
<b>NIC</b>		Indicates network activity on GLAN port 1.
<b>NIC</b>		Indicates network activity on GLAN port 2.
<b>Overheat</b>		When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition (see Chapter 3 for details).
<b>Power Fail</b>		Non-applicable (for redundant power supply systems only).

## 6-3 System Fans

Four 8-cm chassis cooling fans (located in the center of the chassis) provide cooling airflow. The chassis is fitted with an air shroud to concentrate the flow of cooling air over the areas of highest generated heat. The fans should all be connected to headers on the serverboard (see Chapter 5). The power supply module also has a cooling fan.

### Fan Failure

Under normal operation, all four chassis fans and the power supply fan run continuously. The four chassis cooling fans (not the power supply fan) are hot-swappable and can be replaced without powering down the system.

### Replacing System Fans

#### 1. Identifying the failed fan

To locate and replace a failed chassis fan, begin by removing the top/left chassis cover (see Chapter 2 for details on removing the cover).

#### 2. Removing a hot-plug fan housing

Depress the locking tab on a chassis cooling fan and pull the unit straight out by the handle (see Figure 6-3). The fan wiring for these fans has been designed to detach automatically.

#### 3. Installing a new system fan

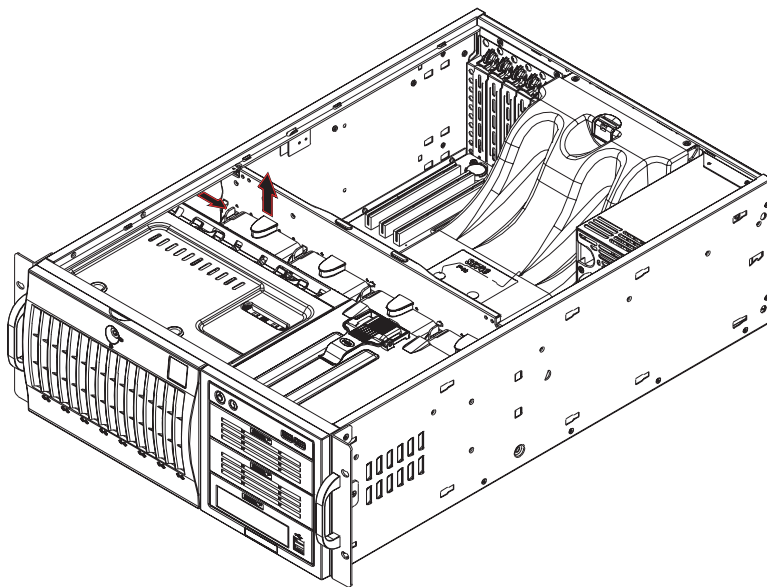
Replace the failed fan with an identical one (available from Supermicro). Install and reassemble it in the fan housing then plug the housing back into its slot; it should click into place when fully inserted. Check that the fan is working properly and replace the top/left side chassis panel.

### Removing the air shroud:

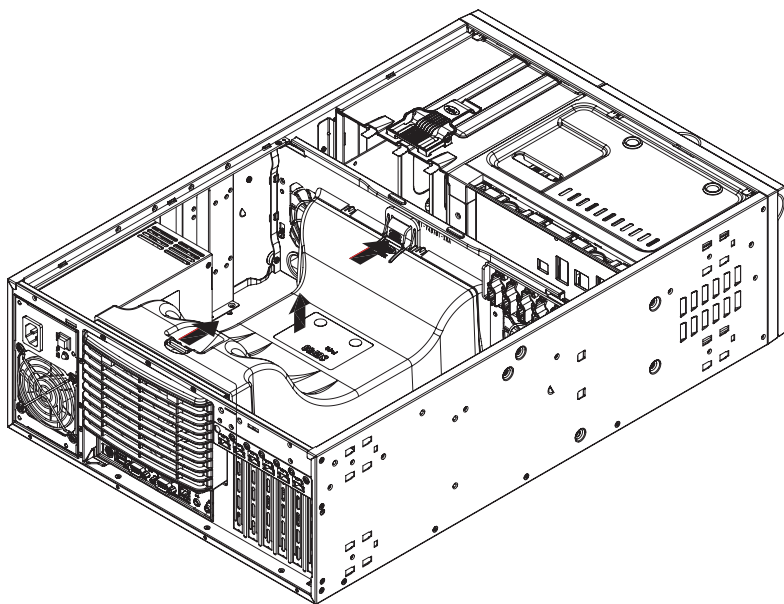
Under most circumstances you will not need to remove the air shroud to perform any service on the system. However, if you wish to temporarily remove it (the air shroud should always be in place when the system is operating), please follow this procedure. Begin by depressing the tabs at the front and rear of the shroud to unlock it, then lift it up and out of the chassis (see Figure 6-4). To reinstall, simply position the air shroud in its proper place and push it in until you hear it click.



**Figure 6-3. Removing a Chassis Fan**



**Figure 6-4. Removing the Air Shroud**



## 6-4 Drive Bay Installation

### SAS/SATA Drives

Eight SAS/SATA drives may be housed in the SC743TQ-645 chassis. The SAS/SATA drive IDs are preconfigured as 0 through 7 in order from right to left (or from bottom to top if rackmounted).

**Note:** You must use standard SAS/SATA drives in the SuperWorkstation 7045A-3.



Use extreme 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 airflow.

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

The SAS/SATA drive carriers are all easily accessible at the front of the chassis. These drives are hot-swappable, meaning they can be removed and installed without powering down the system. To remove a carrier, first push the release button located beside the drive LEDs. Swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

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

#### 2. 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 work to promote proper airflow for the system. For this reason, even carriers without drives must remain in the server. If you need to add a new SAS/SATA drive, insert the 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. (See Figure 6-6.)

Figure 6-5. Removing a SAS/SATA Drive Carrier

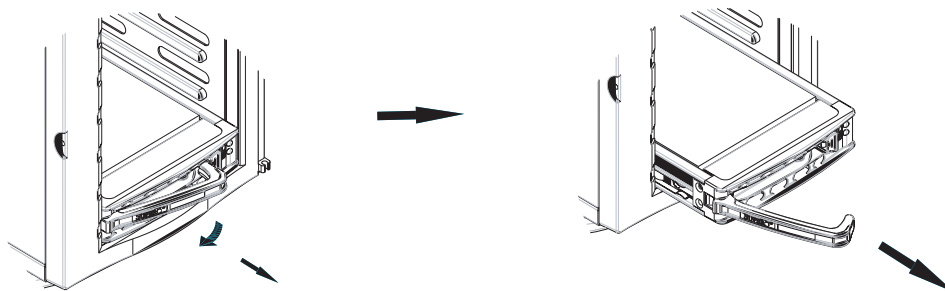
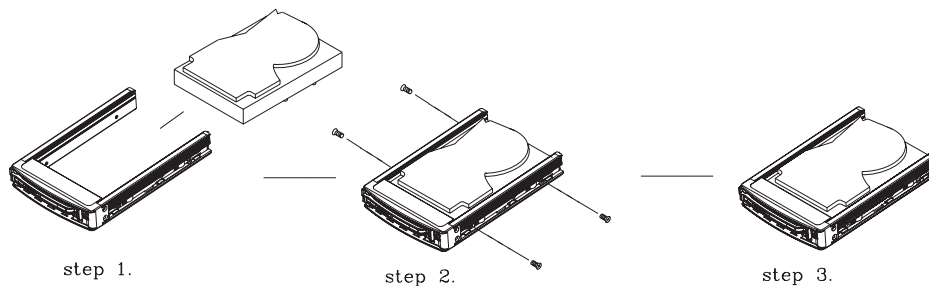


Figure 6-6. Mounting a SAS/SATA Drive in a Carrier



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

### 3. SAS/SATA backplane

All SAS/SATA drives plug into a backplane that provides SAS/SATA operation for all installed drives. A ribbon cable from JA1 on the serverboard should be connected to the IN connector on the SAS/SATA backplane. There is also a power connector on the backplane that must be connected.

## Installing Components in the 5.25" Drive Bays

### 1. Drive bay configuration

The 7045A-3 has two 5.25" drive bays. Components such as an extra floppy drive, IDE hard drives or CD-ROM drives can be installed in these 5.25" drive bays.

### 2. Mounting components in the drive bays

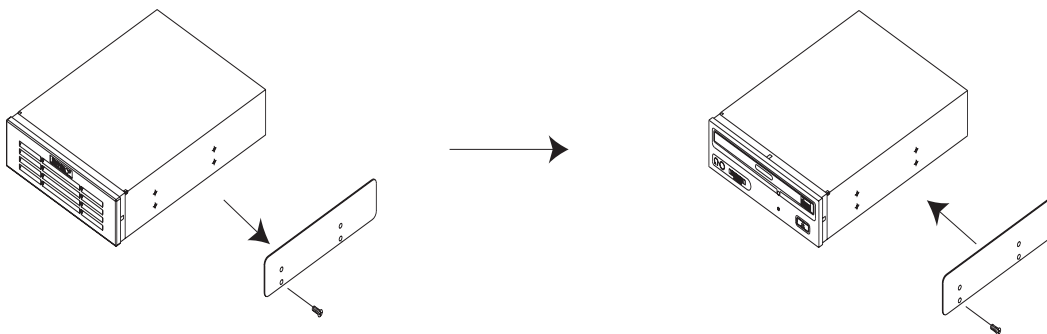
First power down the system and then remove the top/left chassis cover to access the drive components. With the cover off, remove the two or four screws that secure the drive carrier to the chassis (one side only) then push the entire empty drive carrier out from the back.

Adding a CD-ROM drive: remove the guide plate from right side of the empty drive carrier and screw it into the right side of the CD-ROM drive using the holes provided (see Figure 6-7). Then slide the CD-ROM into the bay and secure it to the chassis with the drive carrier screws you first removed. Attach the power and data cables to the drive. Replace the top/left chassis cover before restoring power to the system.

Adding an IDE or floppy drive: to add one of these drives, install it into one of the removed empty drive carriers with the printed circuit board side toward the carrier so that the drive's mounting holes align with those in the carrier. Secure the drive to the carrier with four screws then slide the assembly into the bay and secure it to the chassis with the drive carrier screws you first removed. Attach the power and data cables to the drive. Replace the top/left chassis cover before restoring power to the system.

**Note:** A red wire typically designates the location of pin 1. You should keep the drive carriers inserted in any unused drive bays to reduce EMI and noise and to facilitate the airflow through the chassis.

**Figure 6-7. Adding a Component Without a Drive Carrier**



## 6-5 Power Supply

The SuperWorkstation 7045A-3 has a single 645 watt power supply. This power unit is equipped with low-noise technology, making the system ideal for workstation environments.

The power supply has an auto-switching capability that enable it to automatically sense and operate with 100 or 240 volt inputs. The power module is PFC (Power Factor Correction) compliant.

### Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the unit. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). As there is only one power supply unit in the 7045A-3, power must be completely removed from the server before removing and replacing the power supply unit for whatever reason.

### Replacing the Power Supply

#### 1. Accessing the power supply

For safety reasons, you will need to remove power from the system when replacing the power supply on the 7045A-3. The power supply can be removed from the back of the chassis; access to the inside is unnecessary.

#### 2. Removing the power supply

First, unplug the power cord from the failed power supply. Then press the locking tab on the module and pull the unit completely out.

#### 3. Installing a new power supply module

Replace the failed unit with another unit of the same input voltage, output voltage and wattage. It is highly recommended to replace it with exactly the same model power supply (PWS-0060). Gently but firmly push the new unit all the way into the open bay. Secure it to the chassis using the locking tab. Plug the power cord back into the new power supply. Finish by depressing the power button on the chassis front control panel.

**Notes**

# Chapter 7

## BIOS

### 7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DA3. 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 the BIOS that may not be reflected in this manual.

#### 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 stores the system parameters, types 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 CMOS logic, enabling it to retain system parameters. Each time the computer is powered on the computer is configured with the values stored in the CMOS logic 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.



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

## 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 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**

## 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 1985-2004 Phoenix Technologies Ltd.		
Main	Advanced	Security Boot Exit
System Time:	[10:13:15]	Item Specific Help
System Date:	[05-17-2006]	
BIOS Date		<Tab>, <Shift-Tab>, or <Enter> selects field.
Legacy Diskette A:	[1.44/1.25 MB 3½"]	
▶ IDE Channel 0 Master		
IDE Channel 0 Slave		
▶ IDE Channel 1 Master		
IDE Channel 1 Slave		
SATA Port 2		
SATA Port 3		
Parallel ATA:	[Channel 0]	
Serial ATA:	[Enabled]	
Native Mode Operation:	[Auto]	
SATA Controller Mode Option:	[Compatible]	
SATA RAID Enable	[Disabled]	
ICH Raid CodeBase	[Intell]	
SATA AHCI Enable	[Disabled]	
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

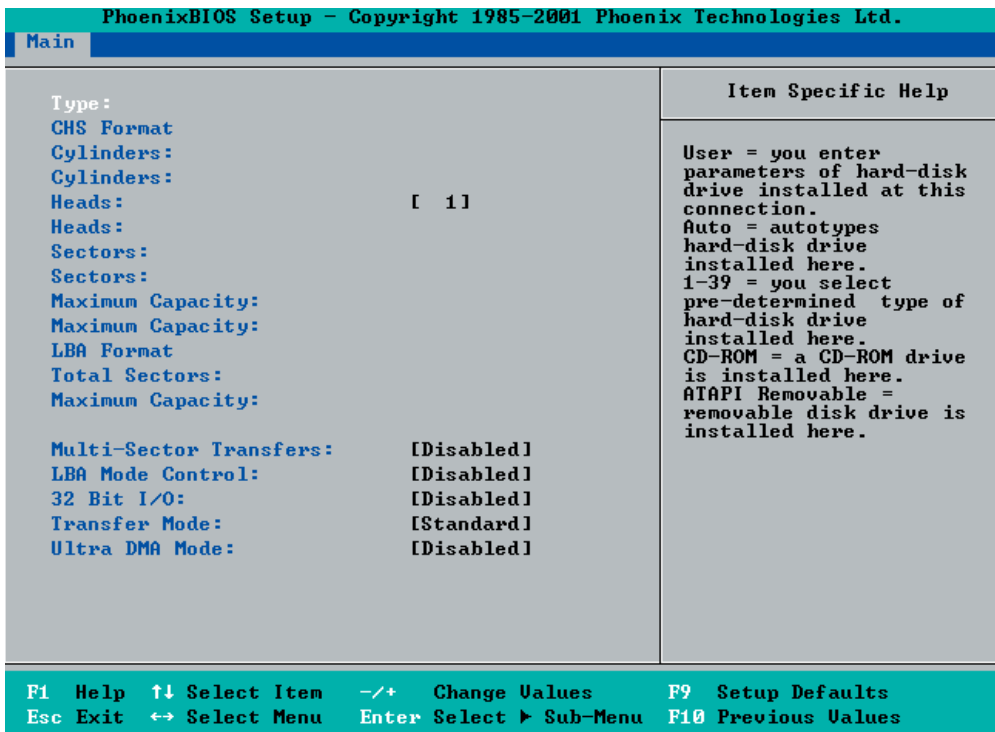
The item displays the date that the BIOS was built.

### 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.

## ► IDE Channel 0 Master/Slave, SATA Port0, SATA Port1, SATA Port2, SATA Port3

These settings allow the user to set the parameters of IDE Channel 0 Master/Slave, SATA Port0, SATA Port1, SATA Port2, SATA Port3 slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:



### Type

Selects the type of IDE hard drive. The options are **Auto**, (which allows the 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 the 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 IDE or SATA drive.

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

**Headers:** 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 the 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

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

### Ultra DMA Mode

This option allows the user to select Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

### **Parallel ATA**

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

### **Serial ATA**

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

### **Native Mode Operation**

Select Serial ATA for SATA or select "Auto" (Native Mode) for ATA. The options are: Serial ATA and **Auto**.

### **SATA Controller Mode**

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native IDE Mode. (**Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.**)

When the SATA Controller Mode is set to "Enhanced", the following items will display:

### **Serial ATA (SATA) 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. When this item is set to Enabled, the item: "ICH RAID Code Base" will be available for you to select either Intel or Adaptec Host RAID firmware to be activated. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

### **ICH RAID Code Base**

Select Intel to enable Intel's SATA RAID firmware. Select Adaptec to use Adaptec's HostRAID firmware. The options are **Intel** and Adaptec.

### **SATA AHCI**

Select Enable to enable the function of Serial ATA Advanced Host Interface. (Take caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

### **System Memory**

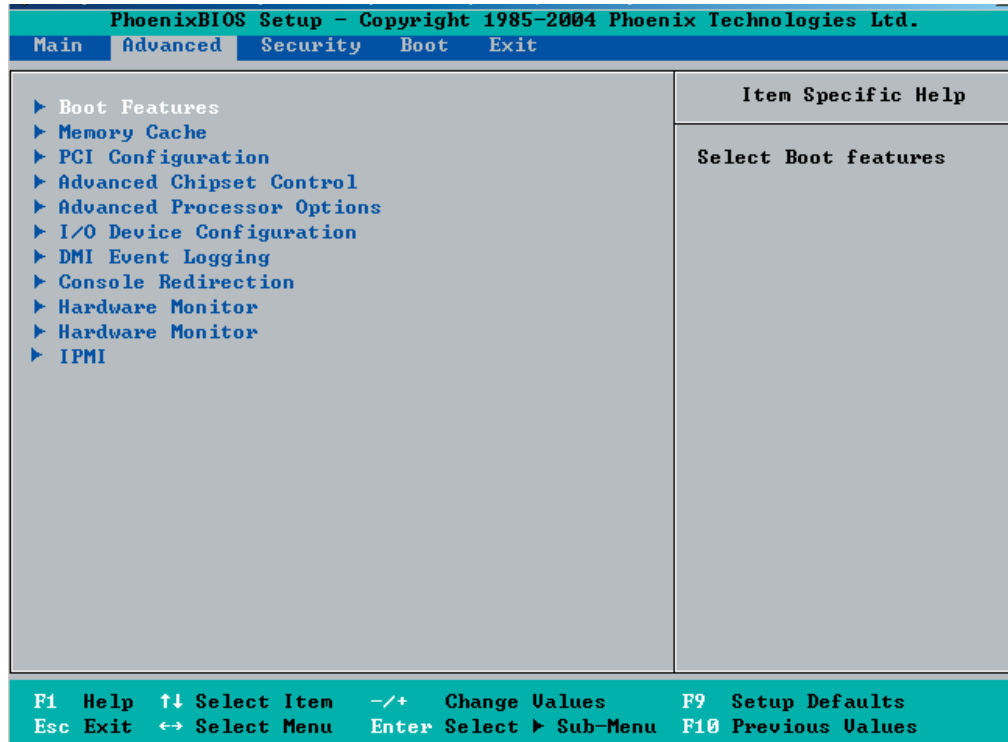
This display informs you how much system memory is recognized as being present in the system.

### **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>.



### ► Boot Features

Access the submenu to make changes to the following settings.

#### Quick Boot 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 graphic logo screen during boot-up.

#### POST Errors

Select **Enabled** to temporarily halt system boot and display POST (Power-On-Self Testing) error messages when errors occur during bootup. Select **Disable** to continue with system boot even when an error occurs. The options are **Enabled** and Disabled.

### **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**.

### **ACPI Sleep Mode**

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system when the system goes into the sleep mode. The options are **S1** and **S3**.

### **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 **Stay Off**, **Power On**, and **Last State**.

### **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 DROM (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 DROM (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 512K-640K. 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 DROM (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 GLAN1/Onboard GLAN2 (Gigabit- LAN) OPROM Configure**

Enabling this option provides the capability to boot from GLAN. The options are **Disabled** and Enabled.

#### **IPMI 3rd LAN OPROM Configure (Available if the 3rd LAN on an IPMI card is detected.)**

Select **Enable** to allow the user to boot from the 3rd LAN on an IPMI card. The options are **Enabled** and Disabled.

#### **Onboard MASS Storage OPROM Configure (Available if an onboard MASS Storage Controller is detected.)**

Select **Enable** to allow the user to boot from a onboard mass storage device. The options are **Enabled** and Disabled.

### **PCI-Exp. I/O Performance**

Some add-on cards perform faster with the coalesce feature, which limits the payload size to 128 Bytes; while others, with a payload size of 256 Bytes which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are Payload (256 Bytes) and **Coalesce Enabled (128 Bytes)**.

### **PCI Parity Error Forwarding**

The feature allows SERR and PERR errors detected in PCI slots to be sent (forwarded) to the BIOS DMI Event Log for the user to review. The options are Enabled and **Disabled**.

### **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 PCI-X#1, Mass (Mass Storage)**

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, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

### **► Slot#1 PCI-X100 MHz ZCR, Slot#2 PCI-X 133MHz, Slot#3 PCI-X 133MHz, Slot#4 PCI-E x4, Slot#5 PCI-33MHz and Slot#6 PCI-E x16**

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, Novelle 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. A different OS requires a 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, Novelle 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.

### 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.

### 4GB PCI Hole Granularity

This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

### Memory Branch Mode

This option determines how the two memory branches operate. System address space can either be interleaved between the two branches or Sequential from one branch to another. Mirror mode allows data correction by maintaining two copies of data in two branches. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Interleave**, Sequential, Mirroring, and Single Channel 0.

**Branch 0 Rank Sparing/Branch 1 Rank Sparing**

Select **enable** to enable the sparing feature for Branch 0 or Branch 1 of memory bus. The options are Enabled and **Disabled**.

**Branch 0 Rank Interleaving/Branch 1 Rank Interleaving**

Select enable to enable the functions of Memory Interleaving for Branch 0 Rank or Branch 1 Rank. The options for Memory Interleaving are 1:1, 2:1 and **4:1**.

**Enhanced x8 Detection**

Select **Enabled** to enable Enhanced x8 DRAM UC Error Detection. The options are Disabled and **Enabled**.

**High Temperature DRAM Operation**

When set to Enabled, the BIOS will refer to the SPD table to set the maximum DRAM temperature. If disabled, the BIOS will set the maximum DRAM temperature based on a predefined value. The options are Enabled and **Disabled**.

**AMB Thermal Sensor**

Select Enabled to enable the thermal sensor embedded in the Advanced Memory Buffer on a fully buffered memory module for thermal monitoring. The options are **Disabled** and Enabled.

**Thermal Throttle**

Select Enabled to enable the function of closed-loop thermal throttling on the fully buffered (FBD) memory modules. In the closed-loop thermal environment, thermal throttling will be activated when the temperature of the FBD DIMM device exceeds a predefined threshold. The options are Enabled and **Disabled**.

**Global Activation Throttle**

Select Enabled to enable the function of open-loop global thermal throttling on the fully buffered (FBD) memory modules and allow global thermal throttling to become active when the number of activate control exceeds a predefined number. The options are Enabled and **Disabled**.

**Snoop Filter**

Select Enabled to eliminate snoop traffic to the graphics port to greatly improve system performance when running graphics intensive applications. The options are **Enabled** and Disabled.

**Crystal Beach Features**

This feature cooperates with Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (Note: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For the X7DA3, the TOE device is built inside the ESB 2 South Bridge chip.) The options are **Enabled** and Disabled.

### **Route Port 80h Cycles to**

This feature allows the user to decide which bus to send debug information to. The options are Disabled, PCI and **LPC**.

### **Clock Spectrum Feature**

If Enabled, the 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**.

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

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for the OS use. The options are Yes and **No**.

### **USB Function**

Select Enabled to enable the function of USB devices specified. The settings 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.

### **Frequency Ratio (Available when supported by the CPU.)**

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default**, x12, x13, x14, x15, x16, x17 and x18. (**Note:** The settings can be different, depending on the CPU speed.)

### **Hyper-threading (Available when supported by the CPU.)**

Set to Enabled to use the Hyper-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

### **Core-Multi-Processing (Available when supported by the CPU.)**

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled**.

### **Machine Checking (Available when supported by the CPU.)**

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

### **C1 Enhanced Mode (Available when supported by the CPU.)**

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (Note: please refer to Intel's web site for detailed information.)

### **Execute Disable Bit (Available when supported by the CPU and the OS.)**

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in 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 to 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 (Available when supported by the CPU.)**

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are Disabled and **Enabled**.

### **Hardware Prefetch (Available when supported by the CPU.)**

Set to this option to **enabled** to enable the hardware components that are used in conjunction with software programs to prefetch data in order to shorten execution cycles and maximize data processing efficiency. The options are Disabled and **Enabled**.

### **Intel <R> Virtualization Technology (Available when supported by the CPU.)**

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. (Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site for detailed information.

### **Intel EIST Support (Available when supported by the CPU.)**

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. 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 select clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz**, and 16MHz.

### Serial Port A

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

#### Base I/O Address

This setting allows you to select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8, and 2E8.

#### Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

### Serial Port B

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

#### Mode

This setting allows you to set the type of device that will be connected to serial port B. The options are **Normal** and IR (for an infrared device).

#### Base I/O Address

This setting allows you to select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

#### Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port B. 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

This setting allows you to 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**

This setting allows you to 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+, and 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

**Note:** The Phoenix BIOS will automatically detect the type of CPU(s) and hardware monitoring chip used on the motherboard and will display the Hardware Monitoring Screen accordingly. Your Hardware Monitoring Screen may look like the one shown on this page, on P. 4-19, or on P. 4-20, depending on the type of CPU(s) and HW Monitoring chip you are using.

### 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 70°C, 75°C, **80°C** and 85°C.

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

**CPU1 Temperature/CPU1 Second Core**

**CPU2 Temperature/CPU2 Second Core**

**PECI Agent 1 Temperature**

**PECI Agent 2 Temperature**

**PECI Agent 3 Temperature**

**PECI Agent 4 Temperature**

### System Temperature

**Fan1-Fan8 Speeds:** If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

### Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If set to "Server", the fan speed will be set to optimize server performance. If the option is set to "Workstation", the fan speed is set to optimize workstation performance. Select "Quiet" for the fans to operate as quiet as possible. 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. Server, 2. Workstation, 3. Quiet, 4. **Disable** (Fans run at the full speed.)

### Voltage Monitoring

The following items will be monitored and displayed:

Vcore A  
Vcore B  
-12V  
P1V5  
+3.3V  
+12V  
5Vsb  
5VDD  
P\_VTT  
Vbat



---

**► Hardware Monitor Logic (See the Note on Page 4-18.)****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 70°C, 75°C, **80°C** and 85°C.

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

**CPU1 Temperature****CPU1 Second Core****CPU2 Temperature****CPU2 Second Core****PECI Agent 1 Temperature****PECI Agent 2 Temperature****PECI Agent 3 Temperature****PECI Agent 4 Temperature****System Temperature**

**Fan1-Fan8 Speeds:** If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If set to "Server", the fan speed will be set to optimize server performance. If the option is set to "Workstation", the fan speed is set to optimize workstation performance. Select "Quiet" for the fans to operate as quiet as possible. 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. Server, 2. Workstation, 3. Quiet, 4. **Disable** (Fans run at the full speed.)

**Voltage Monitoring**

The following items will be monitored and displayed:

P12V\_VR0

P12V\_VR1

FSB VTT

PXH Vcore

ES2B Vcore

CPU1Vcore

CPU2Vcore

P3V3

**► Hardware Monitor Logic (See the Note on Page 4-18.)****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 hardcode default setting is **72°C**.

**Temperature Monitoring**

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

**CPU1 Temperature****CPU1 Second Core****CPU2 Temperature****CPU2 Second Core****PECI Agent 1 Temperature****PECI Agent 2 Temperature****PECI Agent 3 Temperature****PECI Agent 4 Temperature****System Temperature**

**Fan1-Fan8 Speeds:** If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

**Fan Speed Control Modes**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If set to "Server", the fan speed will be set to optimize server performance. If the option is set to "Workstation", the fan speed is set to optimize workstation performance. Select "Quiet" for the fans to operate as quiet as possible. 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. Server, 2. Workstation, 3. Quiet, 4. **Disable** (Fans run at the full speed.)

**Voltage Monitoring**

The following items will be monitored and displayed:

Vcore A:

Vcore B:

-12V

P1V2\_NIC\_SEN

+3.3V

+12V

5Vsb

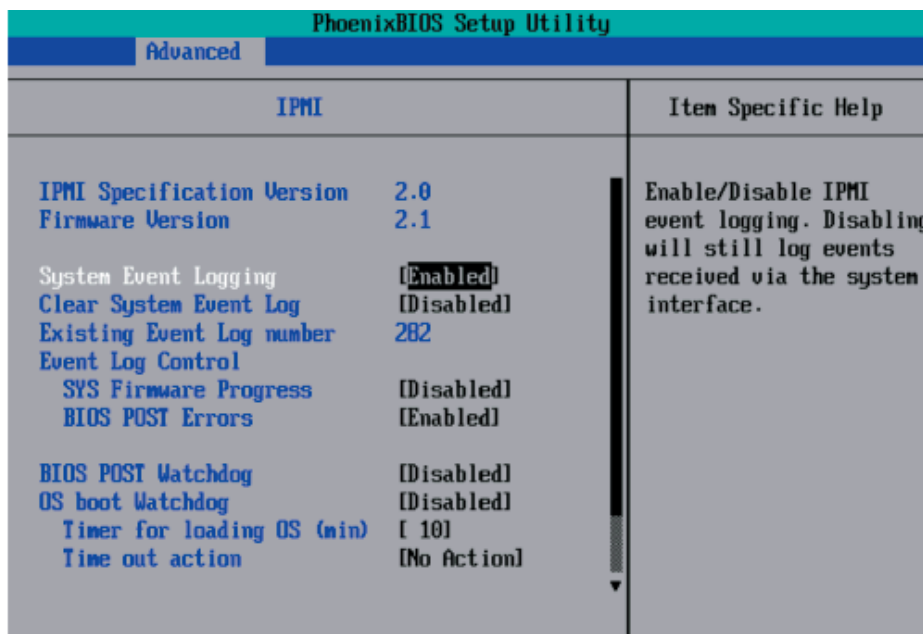
5VDD

P\_VTT

Vbat

---

► **IPMI (The option is available only when an IPMI card is installed in the system.)**



**IPMI Specification Version:** This item displays the current IPMI Version.

**Firmware Version:** This item displays the current Firmware Version.

### System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and **Disabled**.

### Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are **Enabled** and **Disabled**.

### Existing Event Log Number

This item displays the number of the existing event log.

### Event Log Control

#### System Firmware Progress

Enabling this function to log POST progress. The options are **Enabled** and **Disabled**.

#### BIOS POST Errors

Enabling this function to log POST errors. The options are **Enabled** and **Disabled**.

### BIOS POST Watch Dog

Set to **Enabled** to enable POST Watch Dog. The options are **Enabled** and **Disabled**.

## OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and Disabled.

## Timer for Loading OS (Minutes)

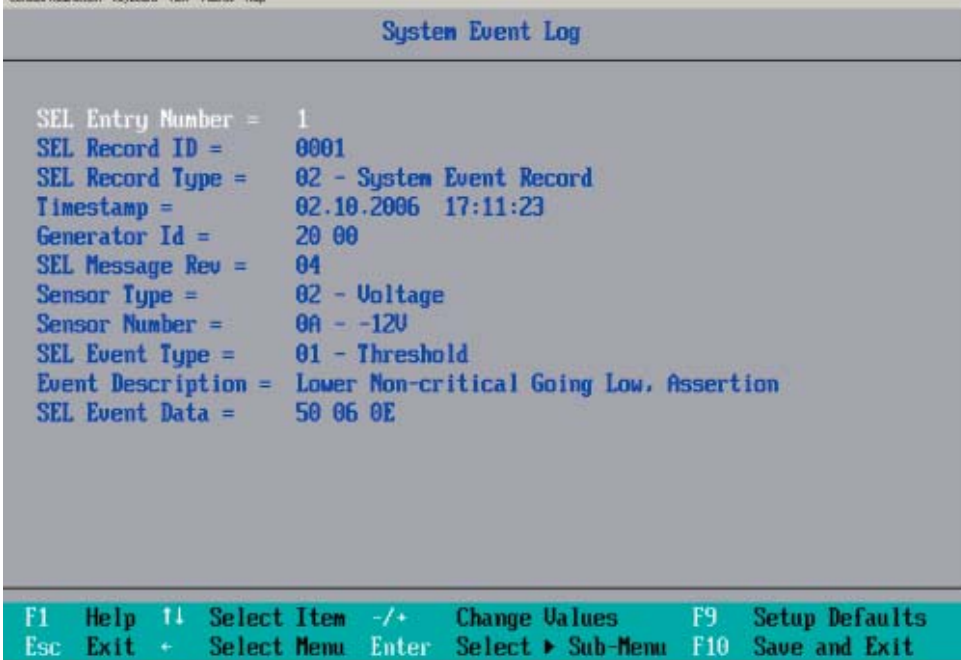
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

## Time Out Option

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action**, **Reset**, **Power Off** and **Power Cycles**.

## ► System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.



```
System Event Log

SEL Entry Number = 1
SEL Record ID = 0001
SEL Record Type = 02 - System Event Record
Timestamp = 02.10.2006 17:11:23
Generator Id = 20 00
SEL Message Rev = 04
Sensor Type = 02 - Voltage
Sensor Number = 0A - -12V
SEL Event Type = 01 - Threshold
Event Description = Lower Non-critical Going Low, Assertion
SEL Event Data = 50 06 0E

F1 Help ↑ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit
```

## ► Realtime Sensor Data

This feature displays information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.

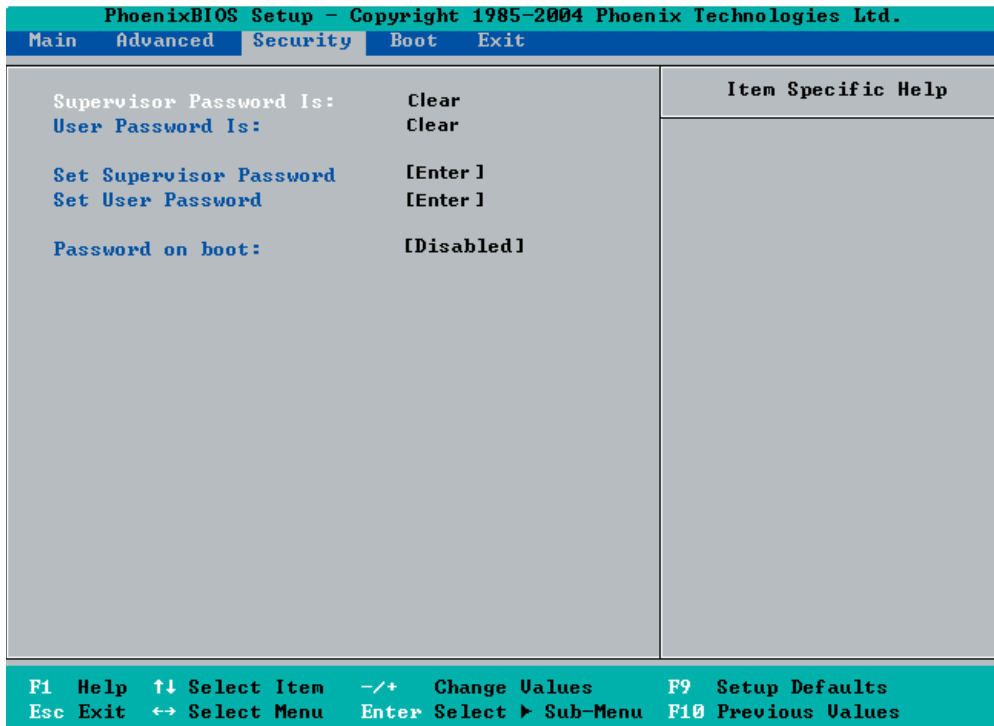
Realtime Sensor Data					
Sensor Type	Sensor Name	Sensor Data	Sensor Units	Lower Limit	Upper Limit
Temp					
	CPU1 CoreA	48.00	degrees C	0.00	75.00
	CPU1 CoreB	54.00	degrees C	0.00	75.00
	CPU2 CoreA	47.00	degrees C	0.00	75.00
	CPU2 CoreB	46.00	degrees C	0.00	75.00
	System	44.00	degrees C	0.00	75.00
Voltage					
	CPU1 Core	1.13	Volts	0.97	1.47
	CPU2 Core	1.16	Volts	0.97	1.47
	3.3V	3.30	Volts	2.95	3.62

F1	Help	↑	Select Item	-/+	Change Values	F9	Setup Defaults
Esc	Exit	←	Select Menu	Enter	Select ▶ Sub-Menu	F10	Save and Exit

## 7-5 Security Settings

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 the BIOS.

### Set User Password

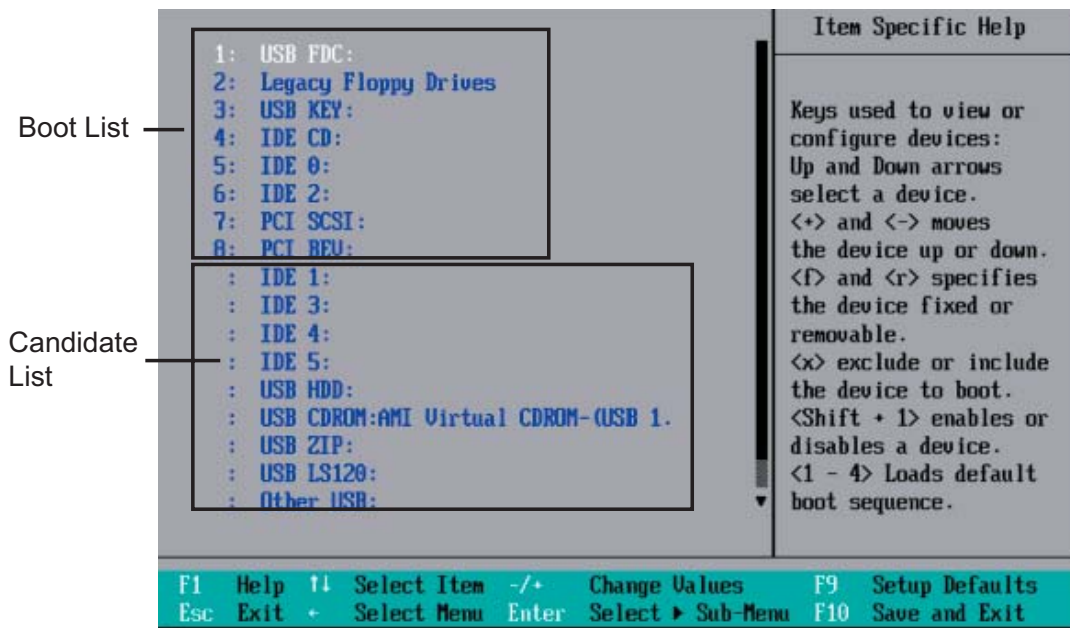
When the item "Set User Password" is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

## 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 Settings

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. 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.

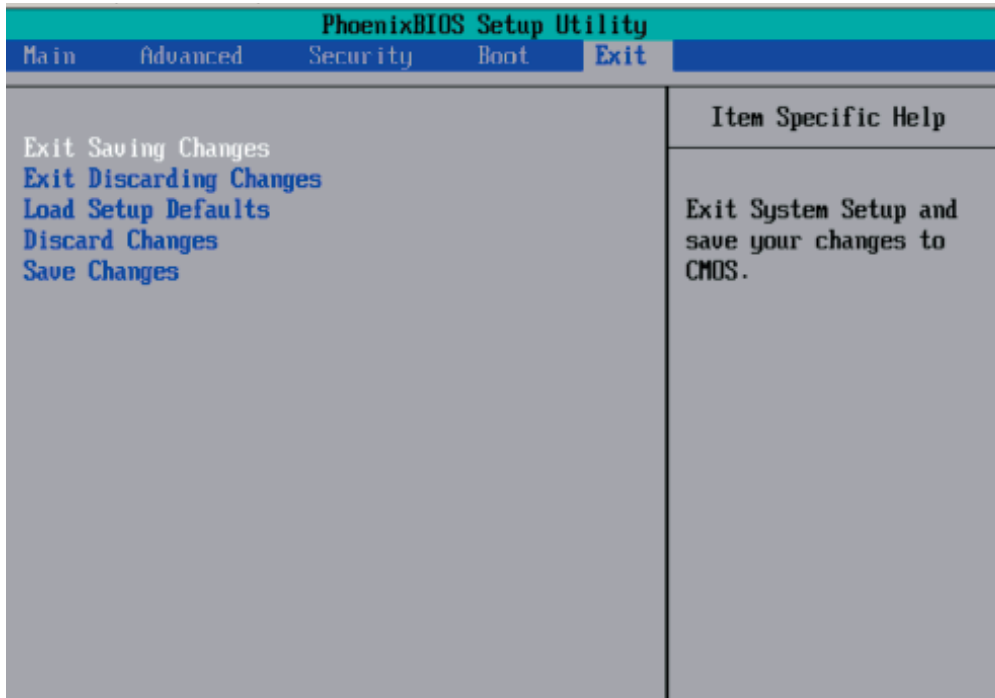


### Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

## 7-7 Exit

Choose Exit 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 Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

**Failure Fixed Disk**

Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

**Stuck key**

Stuck key on keyboard.

**Keyboard error**

Keyboard not working.

**Keyboard Controller Failed**

Keyboard controller failed test. May require replacing keyboard controller.

**Keyboard locked - Unlock key switch**

Unlock the system to proceed.

**Monitor type does not match CMOS - Run SETUP**

Monitor type not correctly identified in Setup

**Shadow Ram Failed at offset: nnnn**

Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

**System RAM Failed at offset: nnnn**

System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

**Extended RAM Failed at offset: nnnn**

Extended memory not working or not configured properly at offset **nnnn**.

**System battery is dead - Replace and run SETUP**

The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

**System CMOS checksum bad - Default configuration used**

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

**System timer error**

The timer test failed. Requires repair of system board.

**Real time clock error**

Real-Time Clock fails BIOS hardware test. May require board repair.

**Check date and time settings**

BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

**Previous boot incomplete - Default configuration used**

Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

**Memory Size found by POST differed from CMOS**

Memory size found by POST differed from CMOS.

**Diskette drive A error**

**Diskette drive B error**

Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

**Incorrect Drive A type - run SETUP**

Type of floppy drive A: not correctly identified in Setup.

**Incorrect Drive B type - run SETUP**

Type of floppy drive B: not correctly identified in Setup.

**System cache error - Cache disabled**

RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

**CPU ID:**

CPU socket number for Multi-Processor error.

**EISA CMOS not writeable**

ServerBIOS2 test error: Cannot write to EISA CMOS.

**DMA Test Failed**

ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

**Software NMI Failed**

ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

**Fail-Safe Timer NMI Failed**

ServerBIOS2 test error: Fail-Safe Timer takes too long.

**device Address Conflict**

Address conflict for specified **device**.

**Allocation Error for: device**

Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device.

**CD ROM Drive**

CD ROM Drive identified.

**Entering SETUP ...**

Starting Setup program

**Failing Bits: nnnn**

The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

**Fixed Disk n**

Fixed disk **n** (0-3) identified.

**Invalid System Configuration Data**

Problem with NVRAM (CMOS) data.

**I/O device IRQ conflict**

I/O device IRQ conflict error.

**PS/2 Mouse Boot Summary Screen:**

PS/2 Mouse installed.

**nnnn kB Extended RAM Passed**

Where **nnnn** is the amount of RAM in kilobytes successfully tested.

**nnnn Cache SRAM Passed**

Where **nnnn** is the amount of system cache in kilobytes successfully tested.

**nnnn kB Shadow RAM Passed**

Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

**nnnn kB System RAM Passed**

Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

**One or more I2O Block Storage Devices were excluded from the Setup Boot Menu**

There was not enough room in the IPL table to display all installed I2O block-storage devices.

**Operating system not found**

Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

**Parity Check 1 nnnn**

Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

**Parity Check 2 nnnn**

Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**.

**Press <F1> to resume, <F2> to Setup, <F3> for previous**

Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

**Press <F2> to enter Setup**

Optional message displayed during POST. Can be turned off in Setup.

**PS/2 Mouse:**

PS/2 mouse identified.

**Run the I2O Configuration Utility**

One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

**System BIOS shadowed**

System BIOS copied to shadow RAM.

**UMB upper limit segment address: *nnnn***

Displays the address *nnnn* of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

**Video BIOS shadowed**

Video BIOS successfully copied to shadow RAM.

**Notes**

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## Appendix B

### 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 a 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 - no memory 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



---

<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 checksum failure

---

<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
A Eh	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

<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 C

## SAS and Software Installation

### C-1 Enabling SAS RAID

After the hardware is set up, you should install the operating system and the SAS RAID drivers, you may wish to configure a RAID array with your SAS drives. This section gives an outline of the Adaptec SAS Utility program and instructions for creating a RAID array on your system.

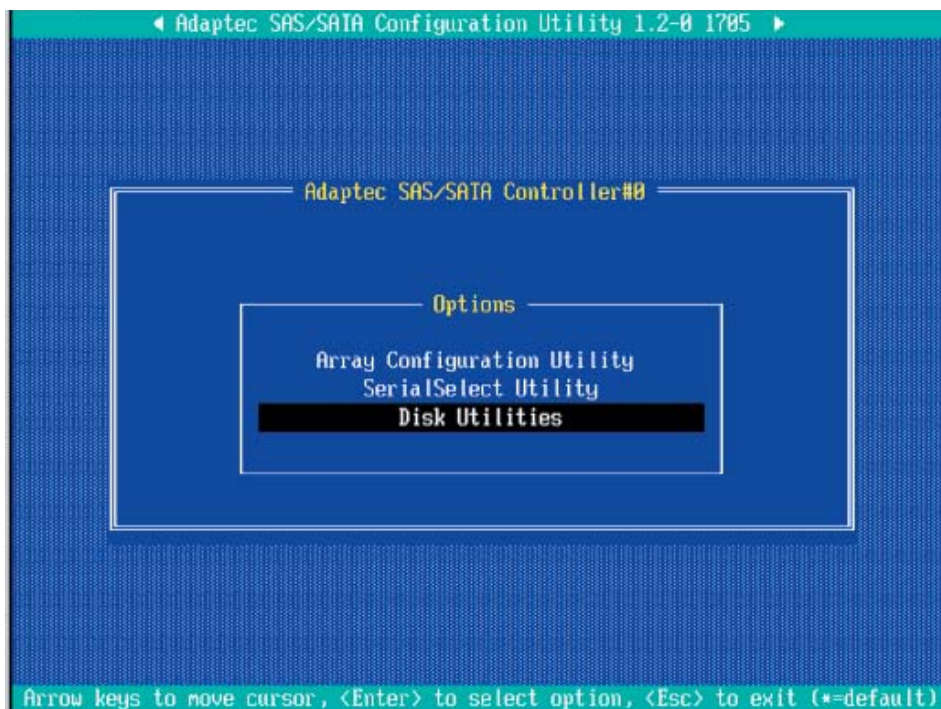
#### Serial Attached SCSI (SAS)

Serial Attached SCSI (SAS) is a physical storage technology that employs a serial transmission of data with SCSI protocol. Serial transmission results in the use of much thinner cables than those used for (parallel) SCSI data transmission. This serial link supports a transfer rate from 3 Gb/sec.

#### Enabling SAS RAID

Before entering the SAS utility, you must enable SAS with the onboard jumper (see Chapter 1). After setting the SAS jumper to "enabled", power up the system and hit the <Ctrl> + <A> keys on boot up to enter the utility. You should then see the main screen as shown in Figure C-1.

Figure C-1. SAS Configuration Utility: Main Menu



## RAID Configurations

There are several types of RAID configurations (all may not be supported):

RAID 0 (Data Striping): this writes data in parallel, interleaved ("striped") sections of two hard drives. Data transfer rate is doubled over using a single disk.

RAID1 (Data Mirroring): an identical data image from one drive is copied to another drive. The second drive must be the same size or larger than the first drive.

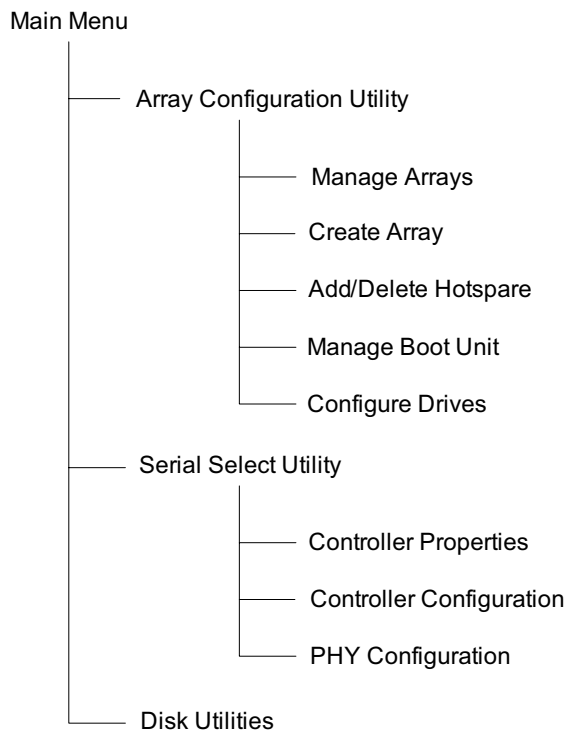
RAID 10 (Striping & Mirroring): RAID 0 and 1 schemes are combined (without parity information) to get the benefits of both.

RAID 5: both data and parity information are striped and mirrored across three or more hard drives.

## SAS Controller Utility

You are now in the SAS Controller Utility program. In this utility, you can create, configure, manage and delete RAID arrays. Navigating through the utility is done by using the arrow keys on your keyboard to move between fields. The <Enter> key is used to select a highlighted field and the <Esc> key to move back to a previous menu. Note the commands available to you at the bottom of each screen. Figure C-2 is a tree diagram of the various screens included in the utility.

**Figure C-2. Tree Diagram of SAS Utility**



## Creating a RAID Array

To create a RAID array, perform the following steps:

1. From the main menu, use the up and down arrow keys to highlight *Array Configuration Utility* and press <Enter>. The screen shown in Figure C-3 appears.
2. Use the up and down arrow keys to select Create Array then hit the <Enter> key. (Selections can also be made by hitting the key of the letter corresponding to the red letter in the desired item, in the case the <C> key.)
3. The screen shown in Figure C-3 appears. On the left are the SAS drives detected in your system. Use the up and down arrow keys to highlight the drives you want to become part of the RAID array and press the <Insert> key to add them to the array. Repeat until all the drives you want in the array have been selected.

**Figure C-3. Array Configuration Utility Screen**

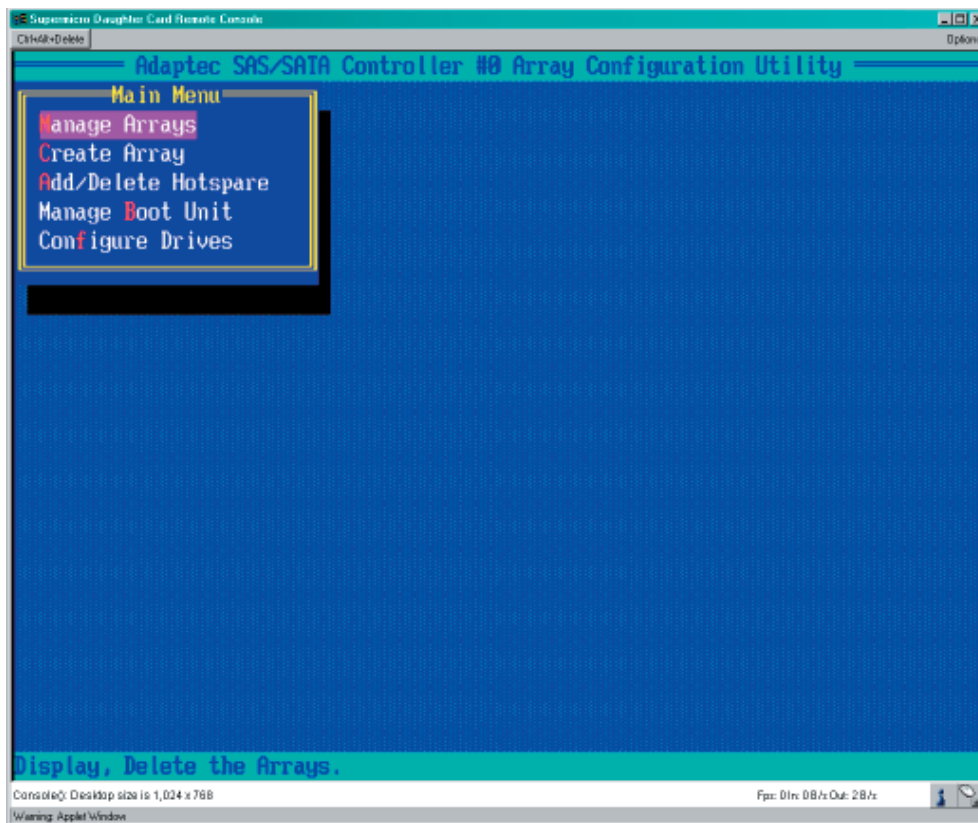
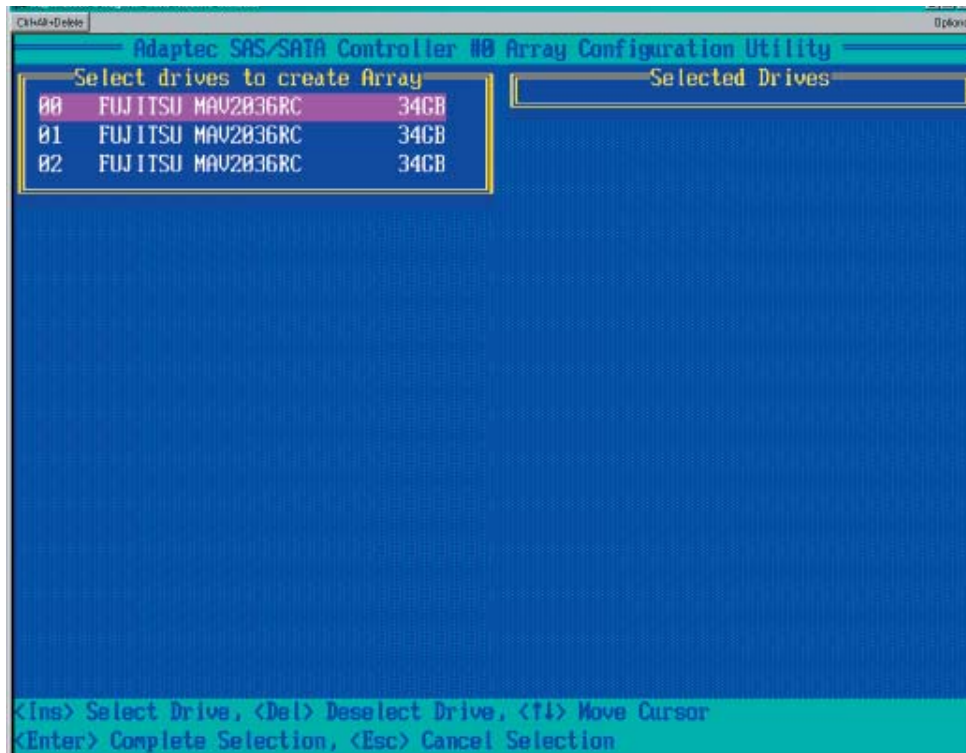


Figure C-4. Creating an Array



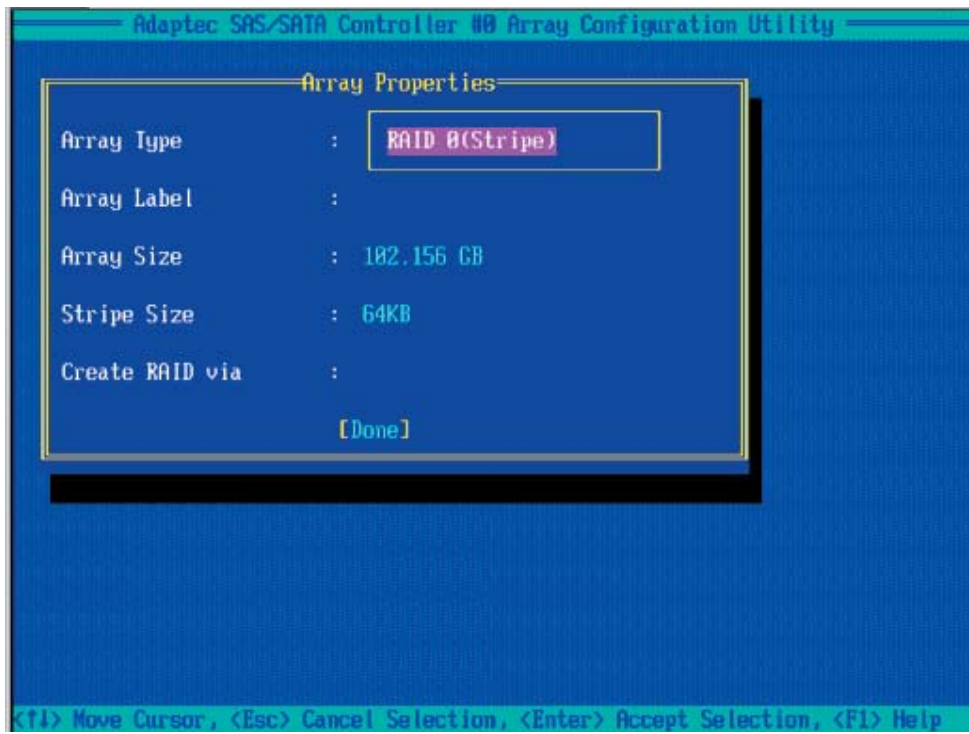
4. Once all drives have been selected for the RAID array, you will be prompted to select the RAID properties, including the type of RAID to be used, label, array size and stripe size (see Figure C-5). When the properties have been defined, highlight *Done* and press the <Enter> key.

### Additional Functions

The tree diagram in Figure C-2 gives you an overview of the functions included in the SAS Controller Utility. Refer to this tree to help you navigate through the menus for the function you wish to perform.



Figure C-5. Assigning Array Properties



## C-2 Installing the Operating System and other Software

After all the hardware has been installed, you must first install the operating system and then other software drivers. The necessary drivers are all included on the Supermicro CDs that came packaged with your motherboard.

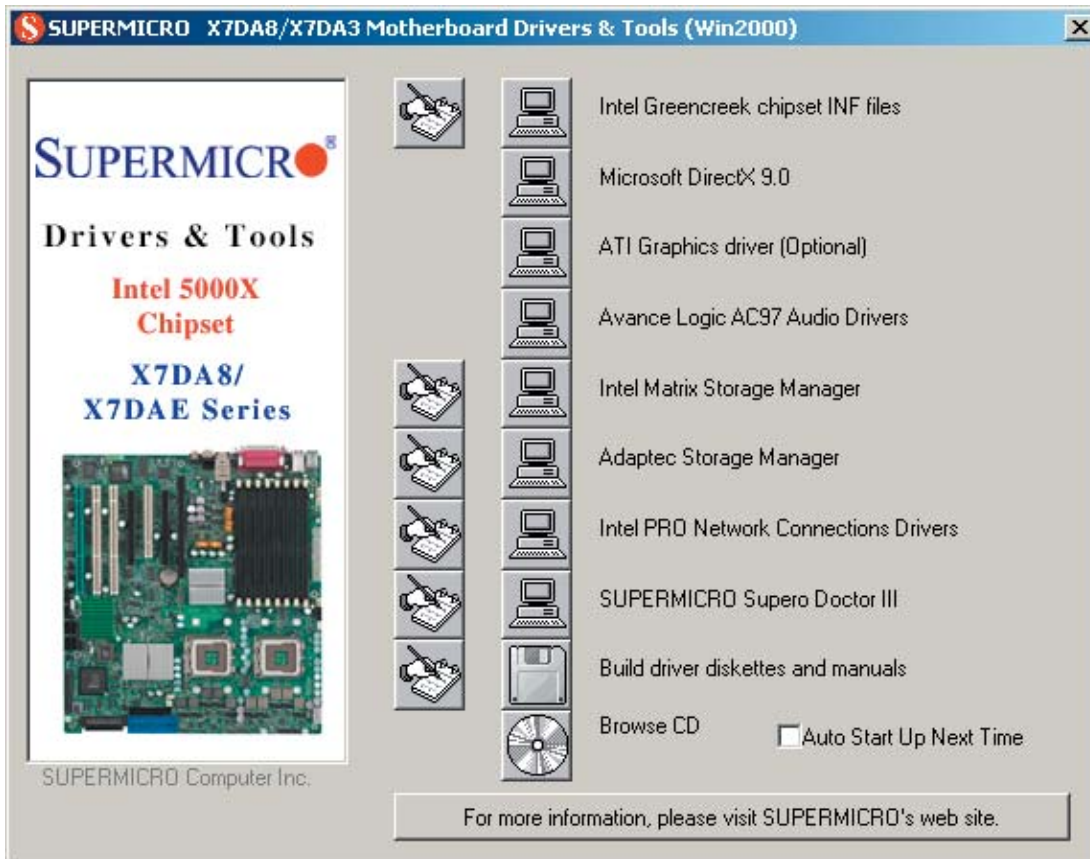


Figure C-6. Driver Installation Screen

**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 SUPER Doctor utility, which is optional. The bottom icon with a CD on it allows you to view the entire contents of the CD.

## Supero Doctor III

The Supero Doctor III program is a Web base management tool that supports remote management capability. It 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.

**Note:** The default User Name/Password for SuperDoctor III is ADMIN / ADMIN.

Figure C-7. Supero Doctor III: Health Information Screen

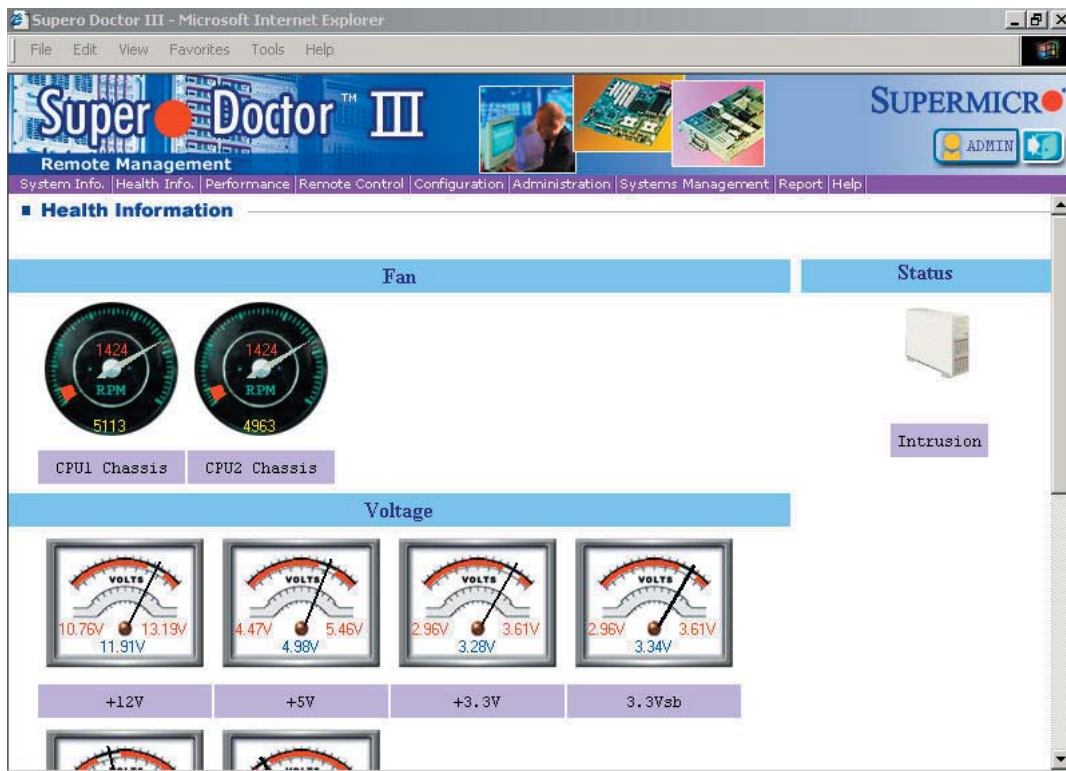


Figure C-8. Supero Doctor III: Remote Control Screen



**Note:** SD III Software Revision 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 SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will still recommend Supero Doctor II.

## Appendix D

### System Specifications

#### Processors

Single or dual 771-pin Intel® Xeon™ processors at a front side (system) bus speed of 1333/1066 MHz. (Please refer to the support section of our web site for a complete listing of supported processors: (<http://www.supermicro.com>)).

#### Chipset

Intel 5000X chipset

#### BIOS

8 MB Phoenix® Flash ROM

#### Memory Capacity

Eight 240-pin DIMM sockets supporting up to 32 GB of FBD (Fully Buffered DIMM) ECC DDR2-667/533 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 9410 controller for 8-port SAS (RAID 0, 1 and 10 supported)

#### SAS Drive Bays

Eight (8) hot-swap drive bays to house eight (8) SAS drives

#### Peripheral Drives/Bays

One (1) 3.5" floppy drive

Two (2) 5.25" drive bays

#### Expansion Slots

Six total: one PCI-Express x16 slot, one PCI-Express x4 slot (in a x16 slot), three 64-bit PCI-X slots (two 133/100 MHz slots and one 100 MHz ZCR slot) and one 32-bit 33MHz PCI slot

### **Serverboard**

Model: X7DA3

Form Factor: Extended ATX

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

### **Chassis**

Model: SC743TQ-645

Form Factor: tower/4U rackmount

Dimensions: (WxHxD as 4U) 6.94" x 17.125 x 24.125 in. (17.6 x 435 x 612.8 mm)

### **Weight**

Gross (Bare Bone): 63 lbs. (28.6 kg.)

### **System Cooling**

Four (4) hot-swap 8-cm chassis PWM cooling fans

One (1) 9-cm PWM exhaust fan

### **System Input Requirements**

AC Input Voltage: 100-240 VAC

Rated Input Current: 11A @ 90V

Rated Input Frequency: 50 to 60 Hz

### **Power Supply**

Rated Output Power: 645W (Model# SP645-PS, Part# PWS-0060)

Rated Output Voltages: +12Vtotal (46A), +5V (30A), +3.3V (30A), +5Vsb (4.0A), -12V (0.6A)

### **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**