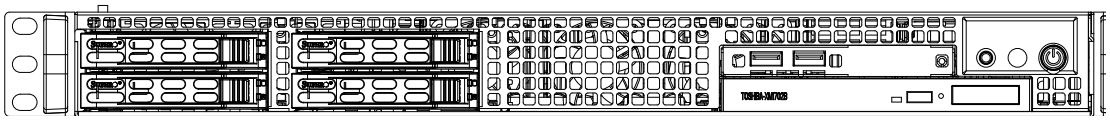
SUPERMICRO®

SUPERSERVER 1015B-3



USER'S MANUAL

Revision 1.0

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WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Manual Revision 1.0
Release Date: October 21, 2008

Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 1015B-3. Installation and maintainance should be performed by experienced technicians only.

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 X7SB3-F motherboard and the SC111TS-560C chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 1015B-3 into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 1015B-3.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the X7SB3-F motherboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC111TS-560C 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA 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: POST Error Beep Codes

Appendix B: System Specifications

Notes

Table of Contents

Notes

Chapter 1

Introduction

1-1 Overview

The Supermicro SuperServer 1015B-3 is a high-end single processor, 1U rackmount server. The 1015B-3 is comprised of two main subsystems: the SC111TS-560C chassis and the X7SB3-F motherboard. Please refer to our web site for information on operating systems that have been certified for use with the 1015B-3.

In addition to the mainboard and chassis, various hardware components may have been included with the 1015B-3, as listed below.

- One CPU heatsink (SNK-P0016P)
- Three (3) 4-cm fans (FAN-0101L4)
- One (1) air shroud (CSE-PT0118L)
- Serial ATA (SATA) Accessories:
  One (1) internal SATA backplane (BPN-SAS-809TQ)
  One (1) SATA cable (CBL-0061L)
  One (1) SGPIO cable (CBL-0157L)
  Four (4) SAS/SATA 2.5" drive carriers (MCP-220-00047-0B)
- One (1) PCI-E x8 slot riser card (CSE-RR1U-E8)
- Rackmount hardware with screws (CSE-PT52)
- One (1) CD containing drivers and utilities
- SuperServer 1015B-3 User's Manual

Note: "B" indicates black.

1-2 Motherboard Features

The X7SB3-F is a single processor motherboard based upon Intel's E3210 chipset. Below are the main features of the X7SB3-F.

Processor

The X7SB3-F supports single Intel® Xeon® 3000 Series/Core 2 LGA775 processors at system bus speeds of 1333, 1066 and 800 MHz. Please refer to the motherboard specifications pages on our web site for updates on supported processors.

Memory

The X7SB3-F has four 240-pin DIMM slots that can support up to 8 GB of unbuffered ECC/non-ECC DDR2-800/667 SDRAM.

Onboard SAS

An onboard LSI 1068E SAS controller in integrated into the X7SB3-F. The hot-swap SAS drives are connected to a backplane that provides power, bus termination and configuration settings.

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, 5 and 10 are supported. Refer to the following ftp site for setup guidelines <ftp://ftp.supermicro.com/driver/SAS/LSI/LSI_SAS_EmbMRAID_SWUG.pdf>.

Onboard SATA

A SATA controller is built in to the ICH9R portion of the chipset to provide support for 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 SATA drives.

PCI Expansion Slots

The X7SB3-F has one PCI-Express x8 slot and one PCI 33 MHz slot. The PCI-E slot may be populated with a riser card (included).

Onboard Controllers/Ports

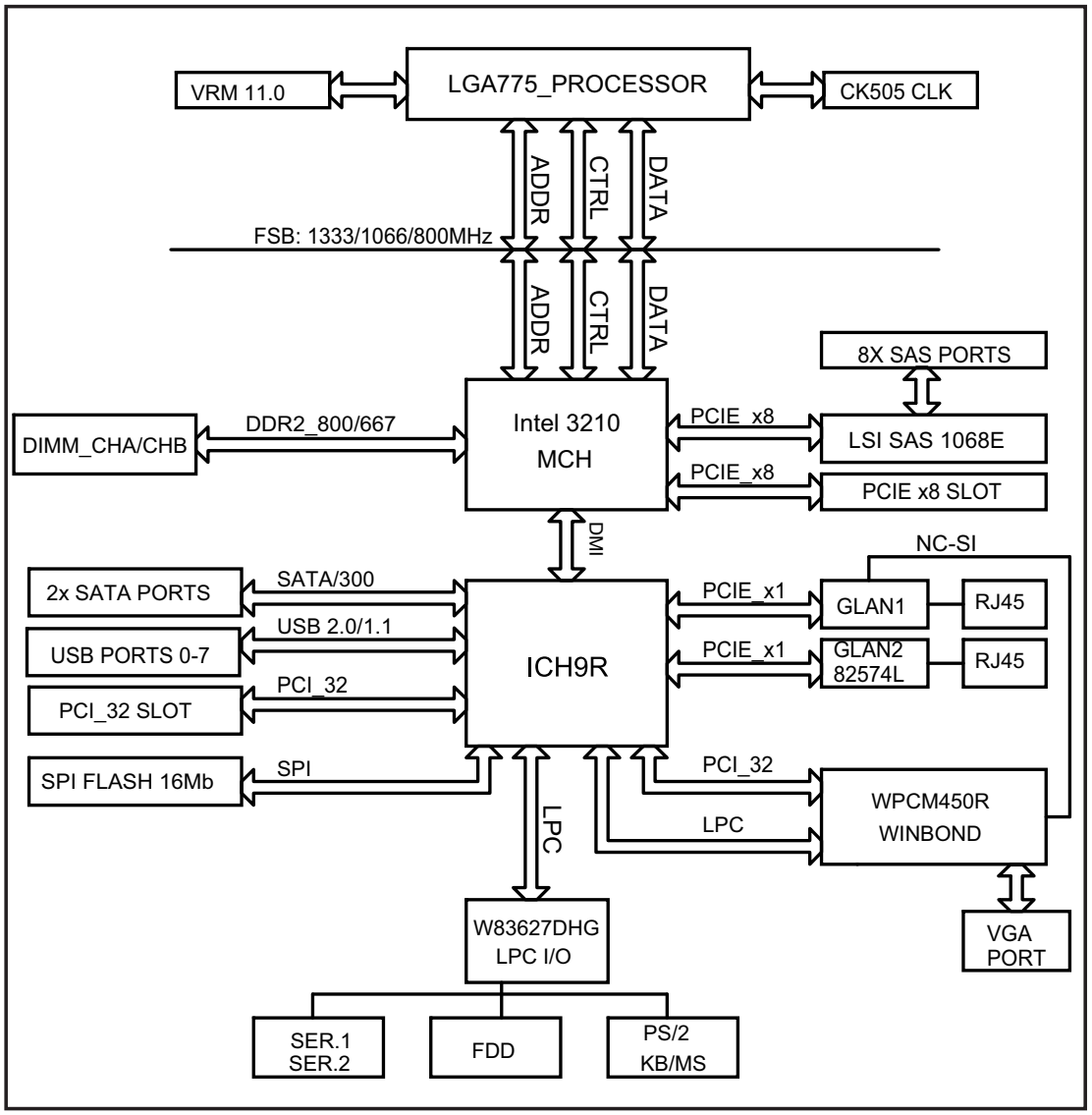
An onboard IDE controller supports one floppy drive and up to two Ultra ATA 100 hard drives or ATAPI devices. Onboard I/O backpanel ports include one COM port, a VGA port, two USB ports, PS/2 mouse and keyboard ports and two Gigabit LAN (NIC) ports.

Other Features

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

Figure 1-1. Intel 3210 Chipset: System Block Diagram

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



1-3 Server Chassis Features

The following is a general outline of the main features of the SC111TS-560C chassis.

System Power

When configured as a SuperServer 1015B-3, the SC111TS-560C chassis includes a single 560W power supply. This is a high-efficiency power supply that has received a "silver level" rating.

SAS/SATA Subsystem

For the 1015B-3, the SC111TS-560C chassis was designed to support four SAS or SATA hard drives in 2.5" bays. These are hot-swappable units.

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

Control Panel

The SC111TS-560C control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and a UID (Universal Information) LED. Also present are a main power button, a system reset button and a UID button.

I/O Backplane

The SC111TS-560C is a 1U rackmount chassis. Its I/O backplane accommodates one standard size PCI card, one COM port (the other is internal), one VGA port, two USB ports, PS/2 mouse and keyboard ports, two Ethernet (LAN) ports and a UID LED.

Cooling System

The SC111TS-560C chassis' revolutionary cooling design has been optimized to provide sufficient cooling for dual CPU configurations. The chassis includes three 4-cm counter-rotating PWM (Pulse Width Modulated) fans located in the middle of the system and an optional fan for the add-on card area. There is a "Fan Speed Control Mode" in BIOS that allows chassis fan speed to be determined by system temperature.

1-4 Contacting Supermicro

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Email:	support@supermicro.com.tw
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Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 1015B-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 1015B-3 system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the 1015B-3 was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the 1015B-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 1015B-3 was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

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

- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

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/SATA drives and power supply modules 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 (Tmra).

Reduced Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

2-4 Installing the System into a Rack

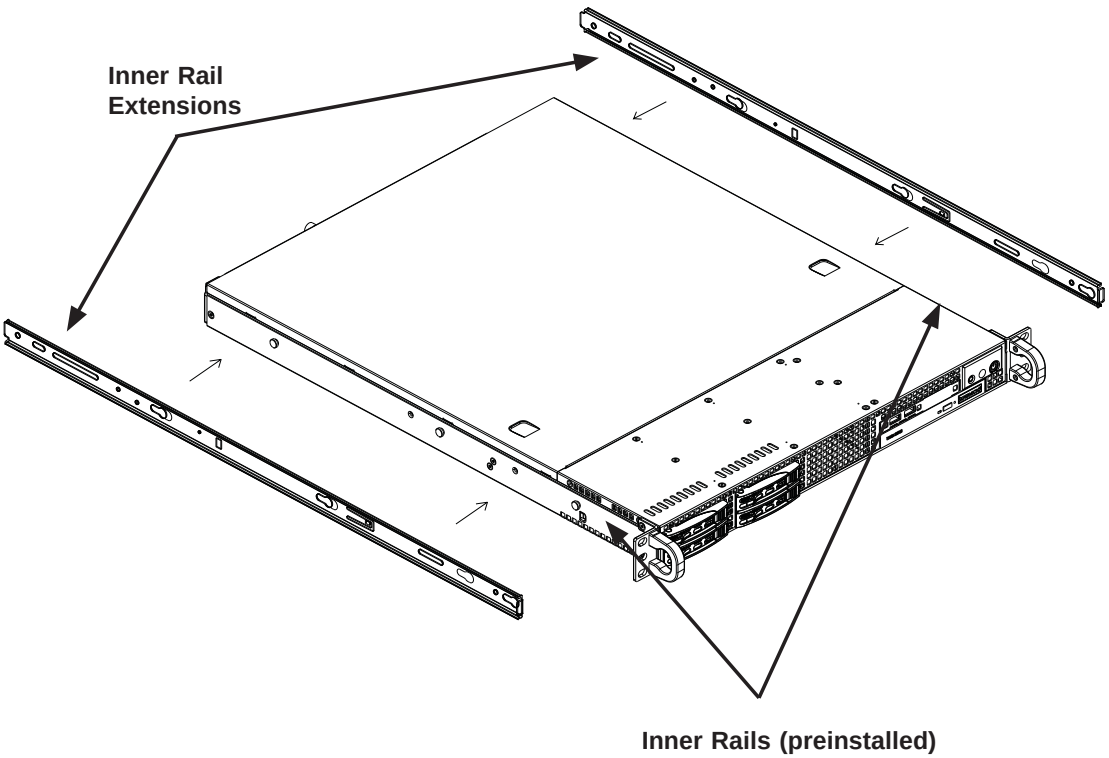
This section provides information on installing the SuperServer 1015B-3 into a rack. If the system has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6. **Note:** This rail will fit a rack between 26" and 33.5" deep.

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 1015B-3 into a rack with the rack rails provided. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

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



Inner Rails

The SC111 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached and do not interfere with normal use of the chassis if you decide not to use a server rack. Attach the inner rail extension to stabilize the chassis within the rack.

Installing the Inner Rail Extensions (Figure 2-2)

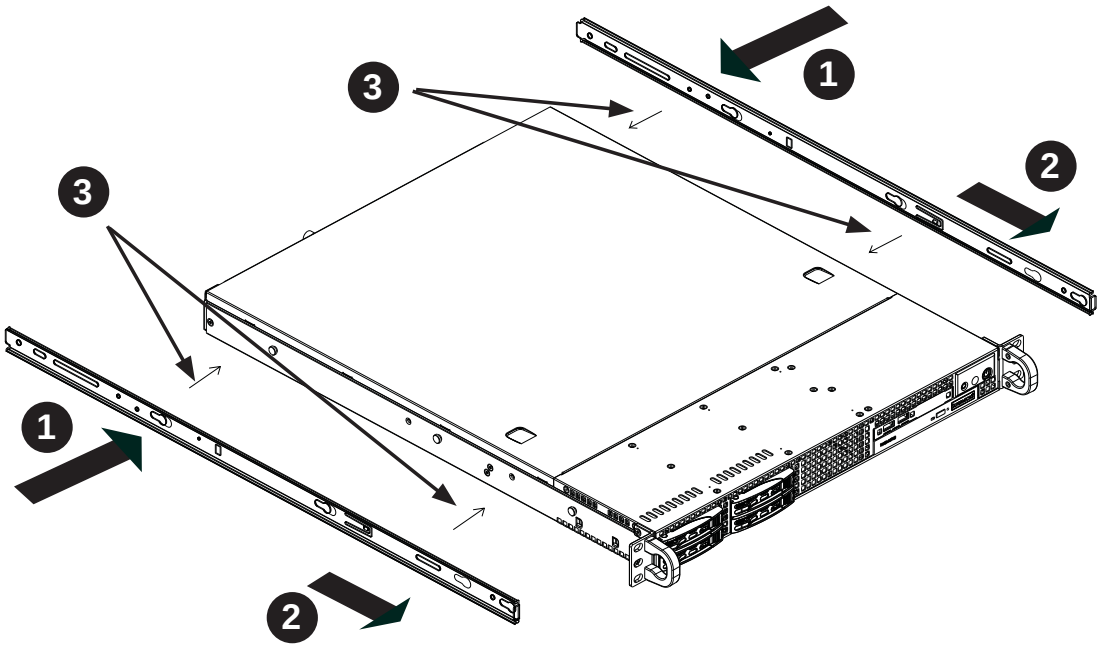
1. Place the inner rack extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.

2. Slide the extension toward the front of the chassis.

3. Secure the chassis with two screws as illustrated.

4. Repeat steps 1-3 for the other inner rail extension.

Figure 2-2. Installing Chassis Rails



Outer Rails

Installing the Outer Rails to the Rack (Figures 2-3 and 2-4)

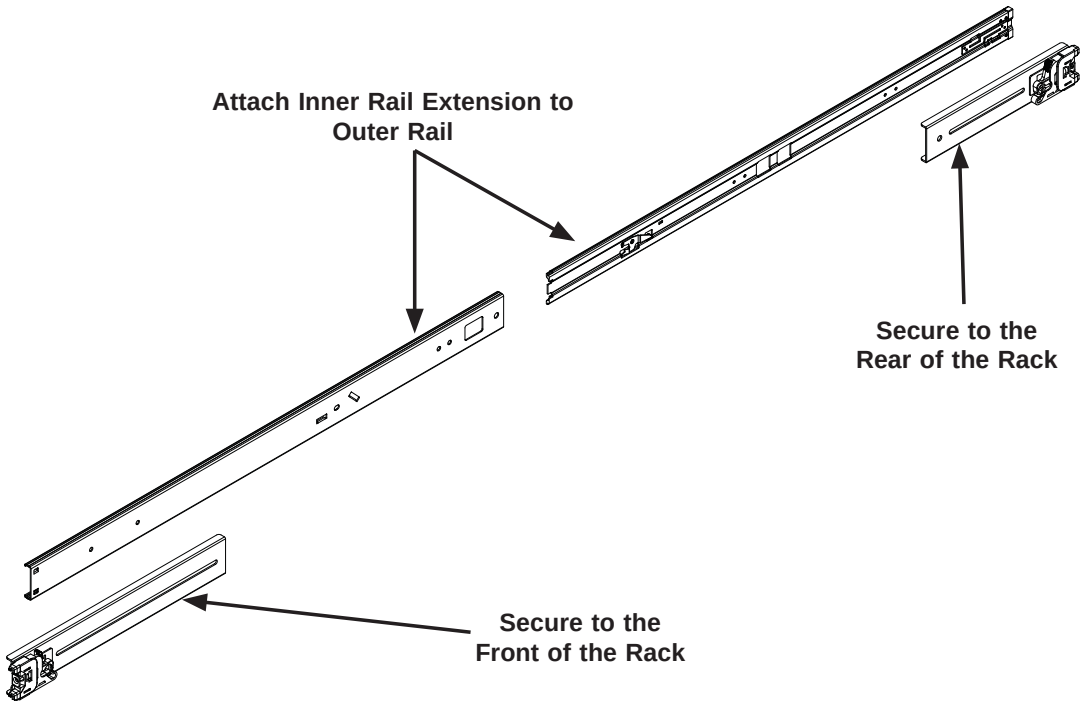
1. Attach the short bracket to the outside of the long bracket. You must align the pins with the slides. Also, both bracket ends must face the same direction.

2. Adjust both the short and long brackets to the proper distance so that the rail fits snugly into the rack.

3. Secure the long bracket to the front side of the outer rail with two M5 screws and the short bracket to the rear side of the outer rail with three M5 screws.

4. Repeat steps 1-4 for the left outer rail.

Figure 2-3. Assembling the Outer Rails



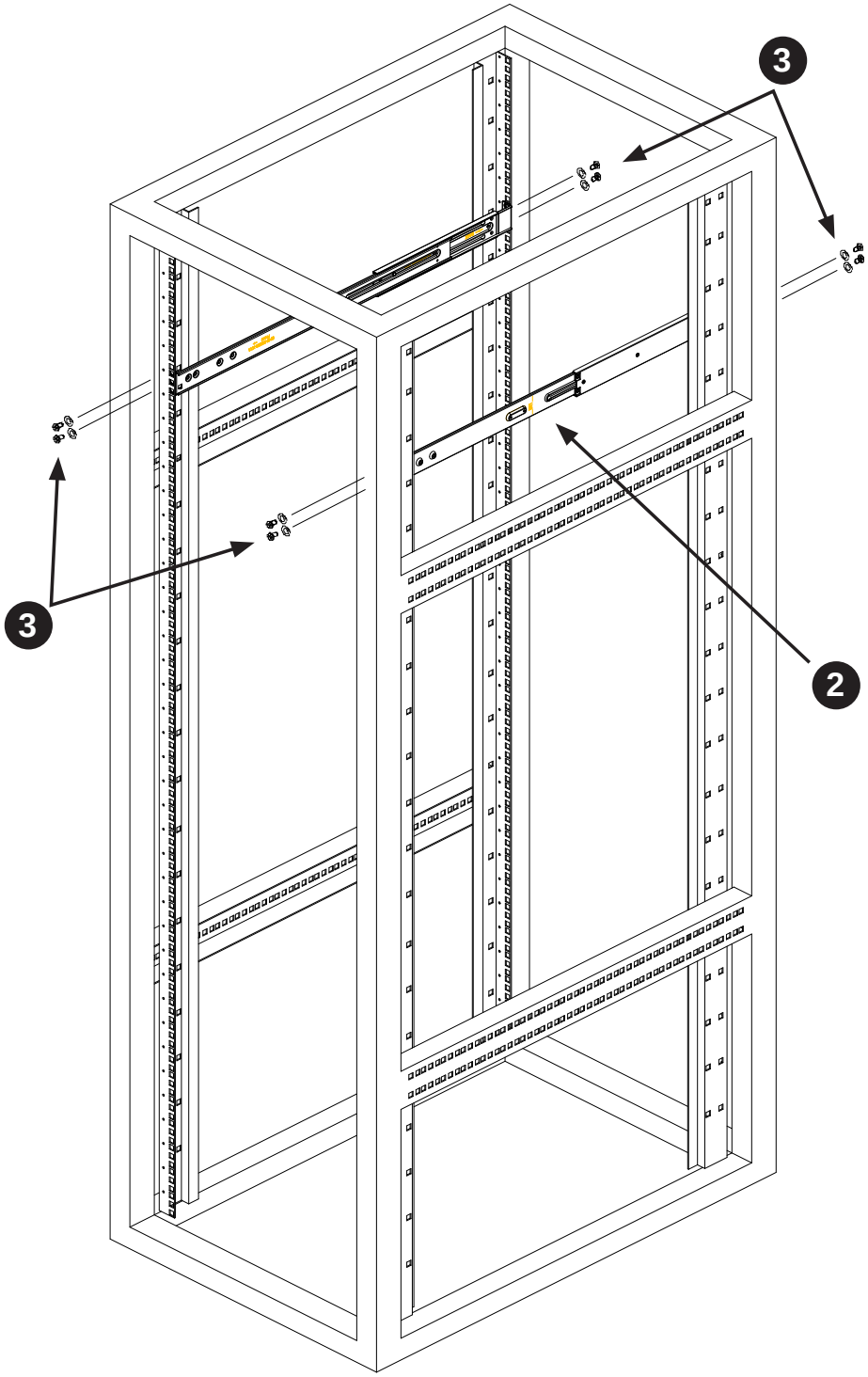


Figure 2-4. Installing the Outer Rails to the Rack

Installing the Chassis into a Rack (Figure 2-5)

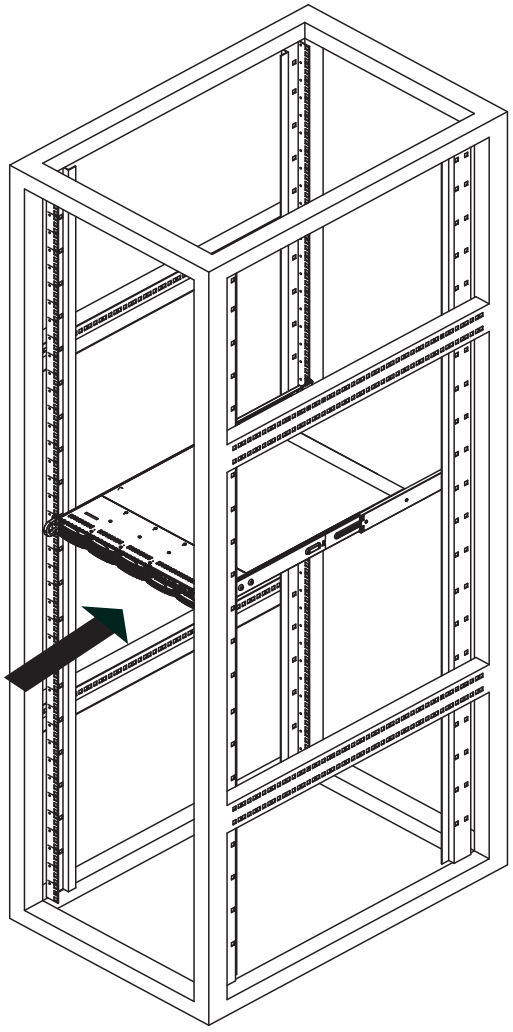
1. Confirm that chassis includes the inner rails and rail extensions . Also, confirm that the outer rails are installed on the rack.

2. Align the chassis rails with the front of the rack rails.

3. 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".

4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

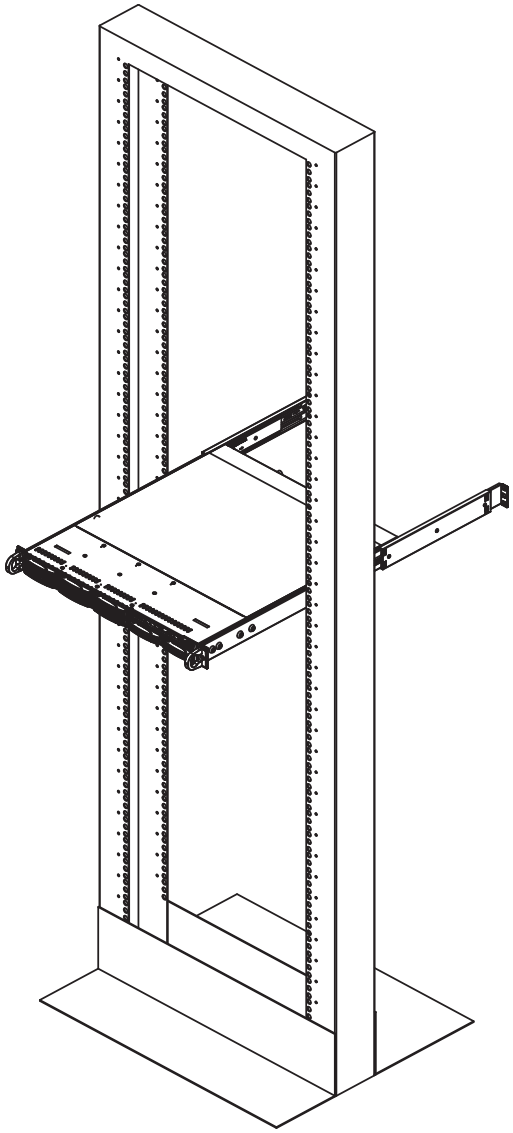
Figure 2-5. Installing the Server into a Rack



Installing the Server into a Telco Rack

To install the SuperServer 1015B-3 into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far follow the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Figure 2-6. Installing the Server into a Telco Rack



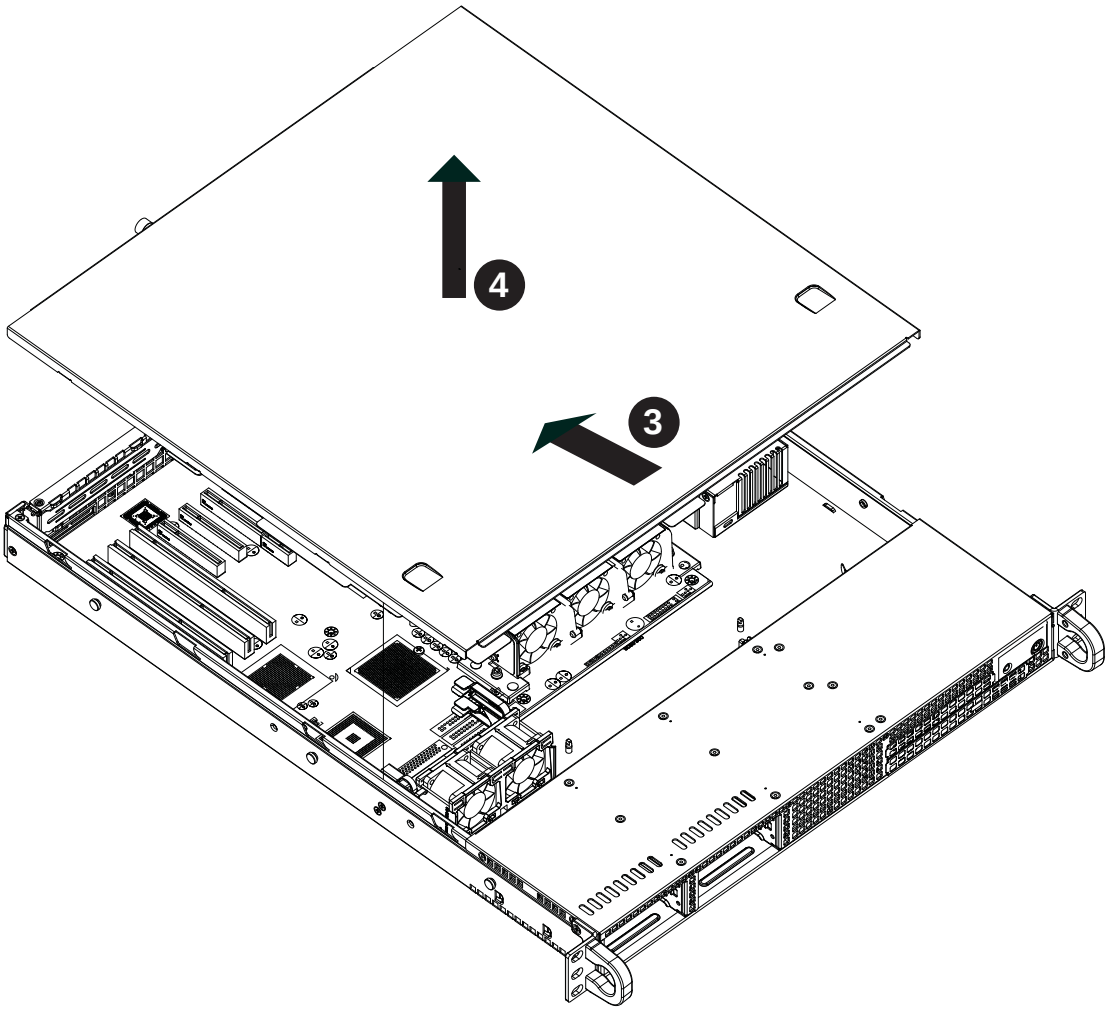
2-5 Checking the Serverboard Setup

After you install the server in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

Removing the Chassis Cover (Figure 2-7)

1. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
2. Remove the screws securing the top cover to the chssis.
3. Slide the cover toward the rear of the chassis.
4. Lift the cover off the chassis.

Figure 2-7: Removing the Chassis Cover



Checking the Components

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

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

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

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections. Also, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the serverboard area of the chassis.

2-6 Checking the Drive Bay Setup

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

Checking the Drives

1. For servicing the hard drives, you will need to remove the top chassis cover.

2. If you need to remove or install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by four 4-cm counter-rotating fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.

2. 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.

Providing Power

1. 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 of-

fers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

2. Finish by depressing the power button on the chassis control panel.

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel to keep you constantly informed of the overall status of the system as well as the three buttons described below.

3-2 Control Panel Buttons

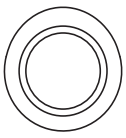
There are three buttons located on the front of the chassis: a reset button, a power on/off button and a UID button.

Reset

Use the reset button to reboot the system.

Power

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



UID

Depressing the UID (unit identifier) button illuminates an LED on both the front and rear of the chassis for easy system location in large stack configurations. The LED will remain on until the button is pushed a second time. Another UID button on the rear of the chassis serves the same function. See the table in Figure 3-1 for descriptions of UID LED states.

3-3 Control Panel LEDs

The control panel located on the front of the SC111TS-560C chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Universal Information LED

When this LED blinks red quickly, it indicates a fan failure and when blinking red slowly a power failure. This LED will be blue when used for UID (Unit Identifier). 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. See the table below for descriptions of the LED states.

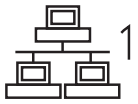
Figure 3-1. Universal Information LED States

Universal Information LED States	
State	Indication
Fast Blinking Red (1x/sec)	Fan Fail
Solid Red	CPU Overheat
Slow Blinking Red (1x/4 sec)	Power Fail
Solid Blue	Local UID Button Depressed
Blinking Blue	IPMI-Activated UID

Note: deactivating the UID LED must be performed in the same way it was activated.

NIC2

Indicates network activity on LAN2 when flashing.



NIC1

Indicates network activity on LAN1 when flashing.

HDD

Indicates IDE channel activity when flashing.

Power

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

3-4 Hard Drive Carrier LEDs

Each hard drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the drive carrier indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED indicates two states. When blinking, it indicates the drive is rebuilding. When solid, it indicates a drive failure. If a drive fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed drives.

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 1015B-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 floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (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.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the 1015B-3 clean and free of clutter.

- The 1015B-3 weighs approximately 35 lbs (15.9 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 cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

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

4-3 ESD Precautions

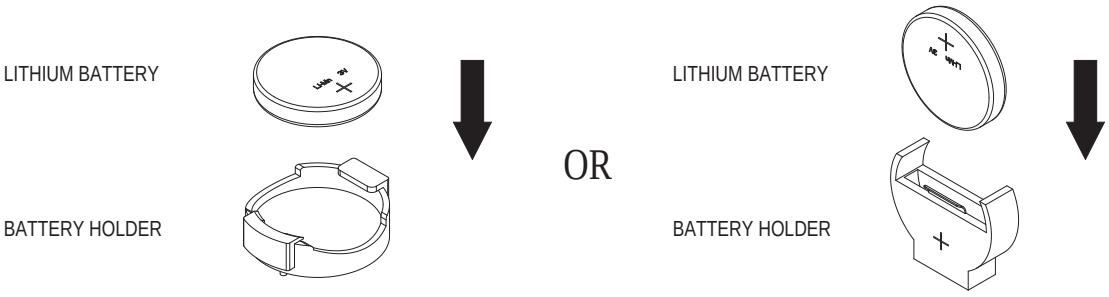
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient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

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

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 1015B-3 is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X7SB3-F serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

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

Precautions

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

Unpacking

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

5-2 Serverboard Installation

This section explains the first step of physically mounting the X7SB3-F into the SC111TS-560C chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

Installing to the Chassis

1. Access the inside of the system by removing the screws from the back lip of the top cover of the chassis, then pull the cover off.

2. The X7SB3-F requires a chassis big enough to support a 12" x 9.6" serverboard, such as Supermicro's SC111TS-560C.

3. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.

4. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.

5. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.

6. Finish by replacing the top cover of the chassis.

5-3 Connecting Cables

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

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-11 for connector locations.)

- Control Panel cable (JF1)
- DVD-ROM drive cable (IDE) (if optional DVD-ROM is included)
- COM Port cable (COM2)
- Front USB port cable (USB4/5)
- SATA or SAS drive data cables (SATA0 ~ SATA3 or SAS0 ~ SAS3))

Important! Make sure the the cables do not come into contact with the fans.

Connecting Power Cables

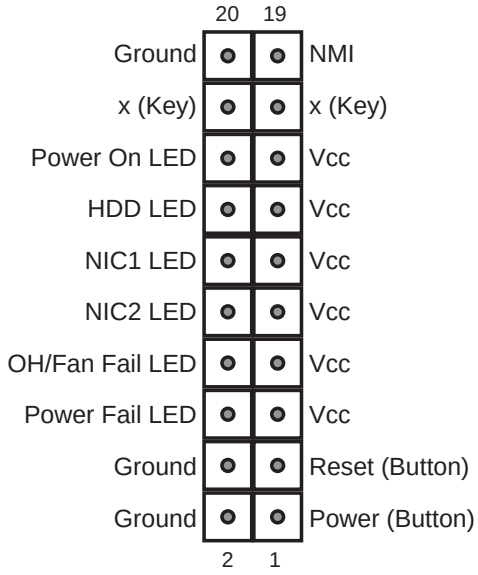
The X7SB3-F has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there is an 8-pin processor power connector (JPW2) that must be connected to your power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

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

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

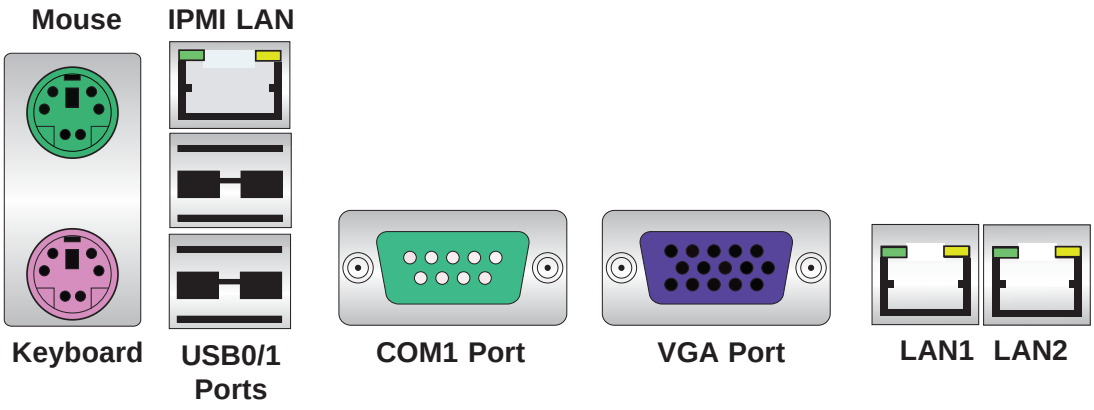
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

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

Figure 5-2. I/O Ports



5-5 Installing the Processors and Heatsinks

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

Notes: Always connect the power cord last and remove it before adding, removing or changing any components. Make sure to install the processor into the CPU socket before you install the CPU heatsink.

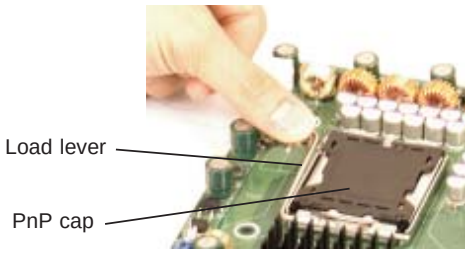
Intel's boxed Xeon CPU package contains the CPU fan and heatsink assembly. If you buy the CPUs separately, use only Intel-certified heatsinks and fans.

Inspect the Xeon 3200 CPU socket and make sure that the CPU plastic cap is in place and none of the socket pins are bent. Otherwise, contact the retailer immediately.

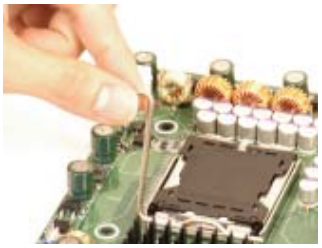
All graphics shown in this manual are for reference only. The components that came with your serverboard may or may not look exactly the same as the pictures shown in this manual.

Installing the CPU

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.

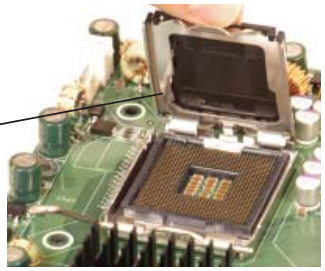


2. Gently lift the load lever to release the load plate.



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).

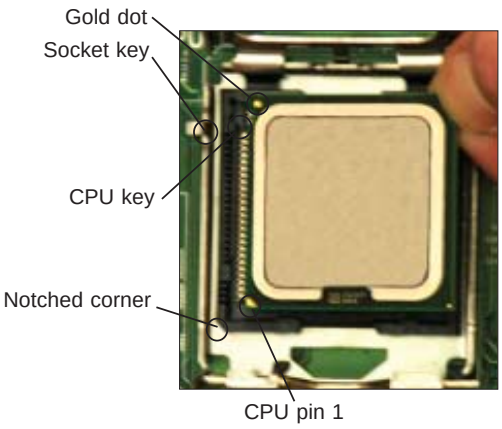
1. Once aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket, do not move the CPU horizontally or vertically and do not rub the CPU against any surface or any of the contacts, which may damage the CPU and/or contacts.

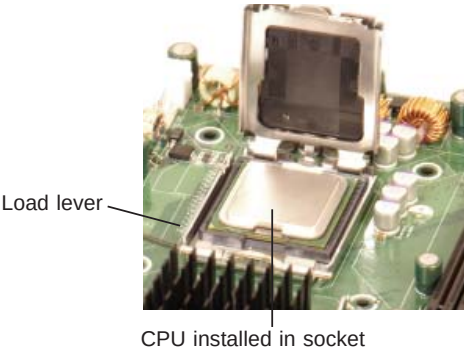
2. With the CPU in the socket, inspect the four corners of the CPU to make sure that it is properly installed.

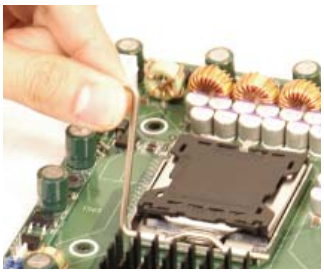
3. Use your thumb to gently push the load lever down until it snaps into the retention clasp.

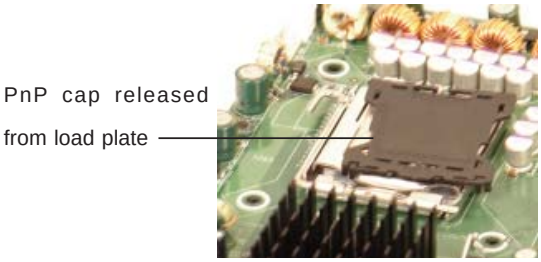
4. If the CPU is properly installed into the socket, the PnP cap will be automatically released from the load plate when the lever locks. Remove the cap. Repeat steps to install a second CPU if desired.

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





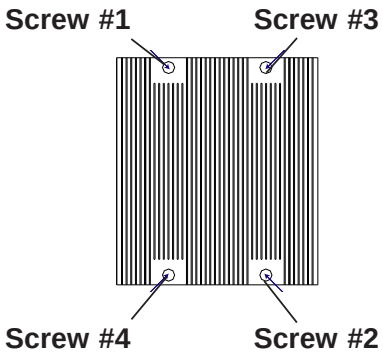




Warning! Make sure you lift the lever completely when installing the CPU; otherwise, damage to the socket or CPU may occur.

Installing the CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.
3. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug (do not over-tighten the screws, which may damage the CPU.)
4. Finish the installation by fully tightening all four screws.



Uninstalling the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. However, if you do need to uninstall the heatsink, please follow these instructions to avoid damaging the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws in the sequence shown in the picture on the right.
2. Hold the heatsink as shown in the picture on the right and gently wriggle to loosen it from the CPU. (Do not use excessive force when doing this!)
3. Once the heatsink is loosened, remove it from the CPU socket.
4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease before you re-install the heatsink.

5-6 Installing Memory

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

Memory Support

The X7SB3-F supports ECC/Non-ECC unbuffered DDR2-800/667 SDRAM. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots. (Populating DIMM1A and DIMM1B and/or DIMM2A and DIMM2B with memory modules of the same size and type will result in two-way interleaved memory, which is faster than single channel, non-interleaved memory.) Note that when ECC memory is used, it may take 25-40 seconds for the VGA to display.)

Installing Memory Modules

1. Insert each DDR2 memory module vertically into its slot, starting with DIMM #1A. Pay attention to the notch along the bottom of the module to prevent inserting the module incorrectly.

2. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules. (See support information below.)

3. To enhance memory performance, install pairs of memory modules of the same type and of the same, beginning with the blue slots (DIMM1A and DIMM1B) and then the black slots (DIMM2A and DIMM2B).

Notes

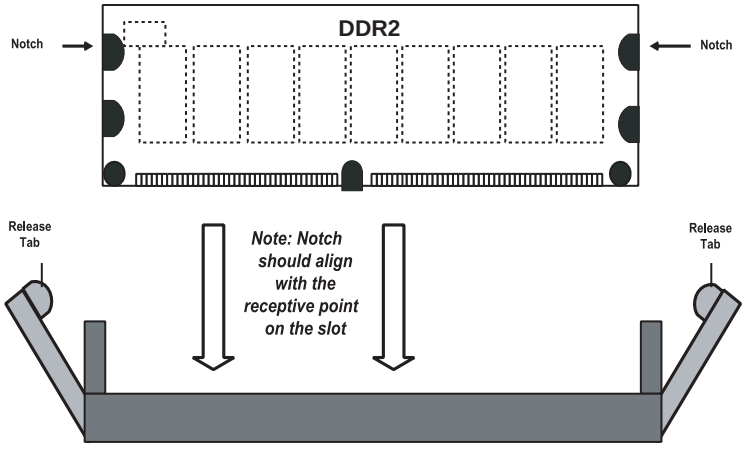
Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the Memory Availability Table below for details.)

Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to System BIOS & OS applications		2.84

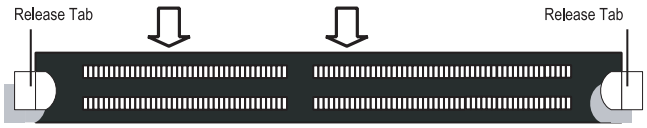
Figure 5-3. DIMM Installation

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



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

Top View of DDR2 Slot



5-7 PCI Expansion Cards

One riser card is used to support an add-on card in the system. The chassis can accommodate one standard size PCI expansion card.

PCI cards are installed into riser cards that have been pre-installed to the system. See configuration list below.

Installing a PCI Expansion Card

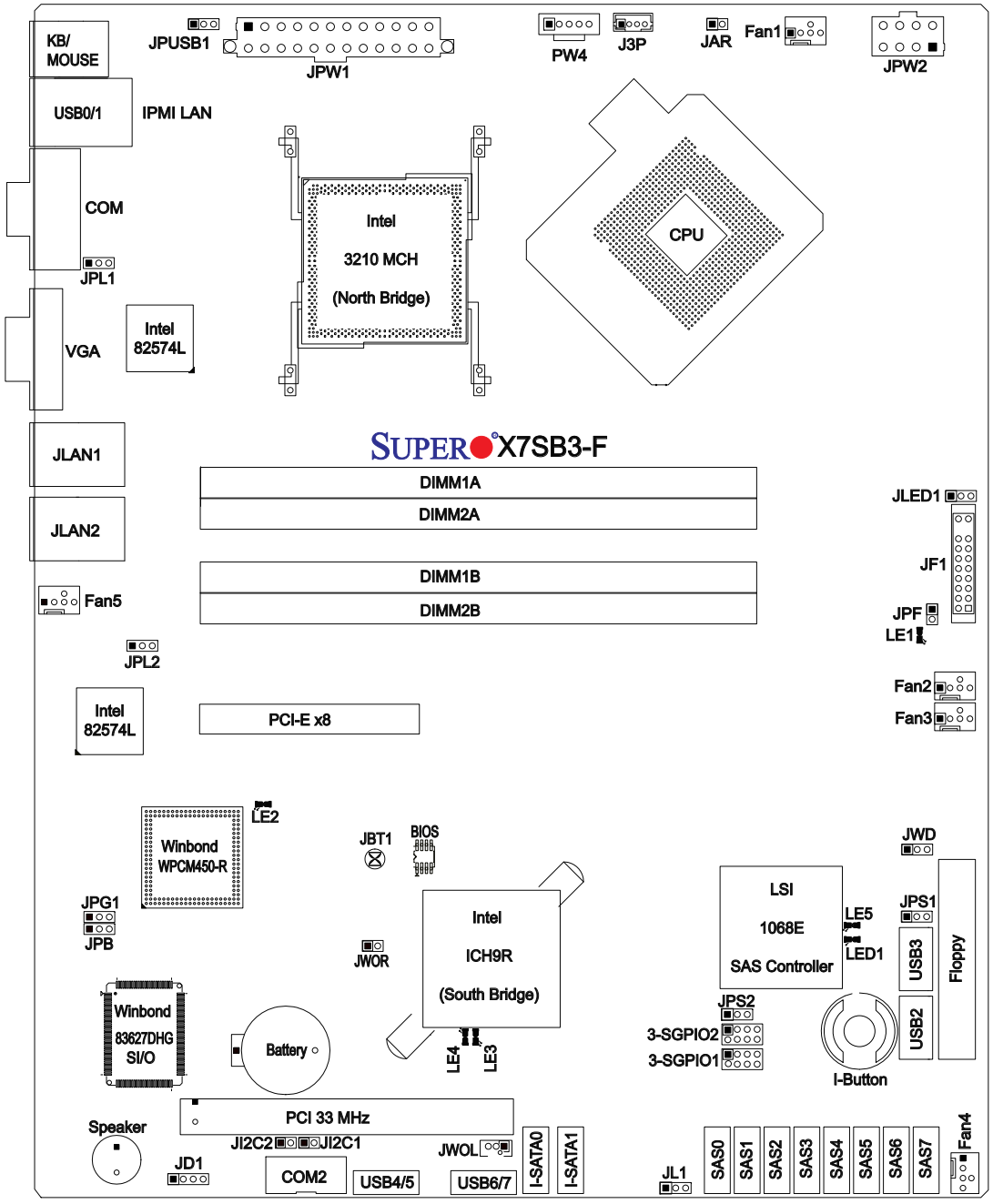
1. Confirm that you have the correct riser card for your chassis model and the add-on card includes a standard bracket.
2. Remove the chassis cover.
3. Install the riser card by sliding card into the appropriate riser card in the motherboard. For more information, see the riser card installation instructions.
4. Choose the PCI slot shield in which to place the add-on card.
5. In that slot, open the PCI slot shield lever and slide the shield sideways.
6. From inside the chassis, remove the PCI slot shield.
7. Slide the add-on card into the riser card and attach the add-on card bracket in place of the PCI slot shield.
8. Secure the add-on card by closing the PCI slot shield lever.
9. Connect cables to the add-on card as necessary.

PCI Slot/Card Configurations

Right Side Riser Card	*Expansion card supported*
RSC-R1UU-E8	1x standard size PCI-E x8 card

5-8 Serverboard Details

Figure 5-4. X7SB3-F Layout
(not drawn to scale)



Notes

Jumpers not indicated are for testing purposes only.

X7SB3-F Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 5-10)
JPB	IPMI Enable/Disable	Pins 2-3 (Disabled)
JPF	Power Force On	Open (Normal)
JI²C1/JI²C2	SMB to PCI Slots	Open (Disabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JPS1	SAS Enabled/Disable	Pins 1-2 (Enabled)
JPS2	SAS RAID Mode Select	Closed (Software RAID)
JPUSB1	Backpanel USB Wake-Up	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
3-SGPIO-1/3-SGPIO-2	Serial General Purpose Input/Output Headers
COM1/COM2	COM1/COM2 Serial Port/Header
FAN 1-5	Chassis/CPU Fan Headers
Floppy	Floppy Disk Drive Connector
I-Button	I-Button Socket
IPMI LAN	IPMI-Dedicated LAN Port
I-SATA0, I-SATA1	SATA Ports
J3P	(Redundant) Power Supply Fail Alarm
JAR	Alarm Reset Header
JD1	Speaker Header
JF1	Front Panel Connector
JL1	Chassis Intrusion Header
JLAN1/JLAN2	Gb Ethernet Ports
JLED1	Power LED Header
JPW1	24-pin Main ATX Power Connector
JPW2	+12V 8-pin Auxiliary Power Connector
JWOL/JWOR	Wake-On-LAN Header/Wake-On-Ring Header
PW4	Power Supply SMBus Connector
SAS0~7	SAS Ports
USB0/1	Universal Serial Bus (USB) Ports
USB2/3, USB4/5/6/7	Onboard USB Ports, Headers

See section 5-11 for descriptions of the onboard LEDs.

5-9 Connector Definitions

Main ATX Power Supply Connector

The primary power supply connector (JPW1) meets the SSI (Superset ATX) 24-pin specification. Refer to the table on the right for the pin definitions of the ATX 24-pin power connector. You must also connect the 8-pin (JPW2/ JPW3) processor power connectors to your power supply (see below).

ATX Power 24-pin Connector Pin Definitions (JPW1)

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

Secondary Power Connector

JPW2 must also be connected to the power supply. See the table on the right for pin definitions.

+12V 8-pin Power Pin Definitions (JPW2)

Pins	Definition
1 - 4	Ground
5 - 8	+12V

Required Connection

Power Button

The power button (from the computer chassis) connects to pins 1 and 2 of JF1. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	Power Signal
2	Ground

Reset Button

The reset button (from the computer chassis) connects to pins 3 and 4 of JF1. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	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.

PWR Fail LED Pin Definitions (JF1)

Pin#	Definition
5	Vcc
6	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

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

NIC2 (JLAN2) LED

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

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

NIC1 (JLAN1) LED

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

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

HDD LED

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

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

Power On LED

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

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

NMI Button

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

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Fan Headers

There are five fan headers on the serverboard, all of which are 4-pin fans (pins 1-3 are backward compatible with traditional 3-pin fans). See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) under the Advanced Section in the BIOS. The default is disabled. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans.

Fan Header Pin Definitions (FAN1-5)

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located beside the USB0/1 ports. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions (J28)

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Serial Ports

Two serial ports are included on the serverboard. COM1 is a backpanel port and COM2 is a header located near the PCI slot. 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

Chassis Intrusion

The Chassis Intrusion header is designated JL1. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened

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

Wake-On-LAN

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

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

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

External Speaker/Internal Buzzer

On the JD1 header, pins 1-4 are for an external speaker and pins 3-4 are for the internal speaker. If you wish to use an external speaker, connect it to pins 1-4 to. If you wish to use the onboard speaker, you should close pins 3-4 with a jumper.

Speaker Connector (JD1)	
Pin Setting	Definition
Pins 3-4	Internal Speaker
Pins 1-4	External Speaker

LAN1/2 (Ethernet Ports)

Two Ethernet ports (designated JLAN1 and JLAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel as well as two USB headers and two "Type "A" ports located on the serverboard. The onboard ports/headers can be used to provide front side USB access (cables not included). See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions (USB)

USB0/1		USB4/5/6/7	
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

SGPIO Headers

The SGPIO (Serial General Purpose Input/Output) headers are used to communicate with an enclosure management chip on the backplane. See the table on the right for pin definitions.

SGPIO Header Pin Definitions (3-SGPIO-1/3-SGPIO-2)

Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

Power Supply SMBus Header

A Power SMB header is located at PW4. Connect the appropriate cable here to utilize SMB on your system. See the table on the right for pin definitions.

Power Supply SMB Header Pin Definitions (PW4)

Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

Onboard Power LED

An onboard Power LED header is located at JLED1. This header connects to the control panel header (JF1) to indicate the status of system power. See the table on the right for pin definitions.

Onboard PWR LED Pin Definitions (JLED1)

Pin#	Definition
1	VCC
2	No Connection
3	Connection to PWR LED in JF1

Redundant Power Supply Fail

Connect a cable from your power supply to the header at J3P to provide warning of a redundant power supply failure. This warning signal is passed through the PWR_LED pin to indicate a power failure on the chassis. See the table on the right for pin definitions.

PWR Supply Fail Alarm Pin Definitions (J3P)

Pin#	Definition
1	PWR 1: Fail
2	PWR 2: Fail
3	PWR 3: Fail
4	Signal: Alarm Reset

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

Alarm Reset

If three power supply modules are installed, the system can notify you when any of the three fails. Connect JAR to a micro-switch to enable you to turn off the alarm that is activated when a power module fails. See the table on the right for pin definitions.

Alarm Reset Pin Definitions (JAR)

Pin Setting	Definition
Pin 1	Ground
Pin 2	Alarm Reset

I-Button

The I-Button, located above the LSI chip on the motherboard, is a computer chip enclosed in a durable stainless container to enable RAID 5 under Software RAID mode. See the table on the right for pin definitions.

I-Button Pin Definitions

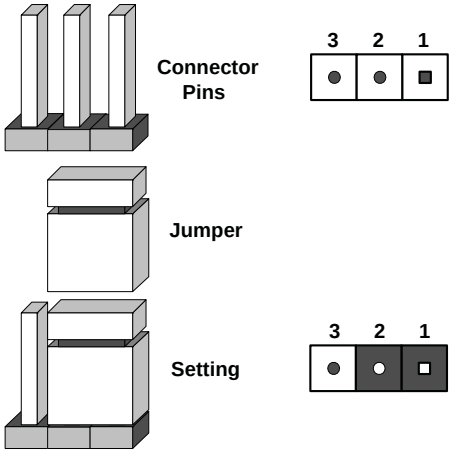
Pin#	Definition
1	Ground
2	GPIO1
3	Ground

5-10 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 serverboard layout pages for jumper locations.

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



CMOS Clear

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

To clear CMOS,

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

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

VGA Enable/Disable

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

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

LAN1/2 Enable/Disable

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

LAN1/2 En/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. Jumping pins 1-2 will cause WD to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. 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 in order to disable the Watch Dog Timer.

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

USB Wake-Up

This jumper allows you to wake up the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. The JPUSB1 jumper is used together with the USB Wake-Up feature in BIOS and both must be enabled to use this feature. See the table on the right for jumper settings. **Notes:** The default setting is enabled. Please be sure to remove all other USB devices from the USB ports whose USB jumpers are set to disabled before the system goes into standby mode.

USB Wake-Up Jumper Settings (JPUSB1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SMBus to PCI Slots

Jumpers JI²C1 and JI²C2 allow you to connect the System Management Bus (I²C) to the PCI-E/PCI slots. The default setting is Open (Disabled.) Both jumpers must be set to the same setting (JI²C1 controls the clock and JI²C2 controls the data). See the table on the right for jumper settings.

SMBus to PCI Slots Jumper Settings (JI²C1/JI²C2)

Jumper Setting	Definition	
JI²C1: Closed	JI²C2:Closed	Enabled
JI²C1: Open	JI²C2: Open	Disabled

Onboard IPMI Enable/Disable

JPB allows you to enable or disable the onboard IPMI connection. This jumper is to be used together with the IPMI settings in the BIOS. If the jumper is set to enabled, enable the IPMI settings in the BIOS as well and vise versa. The default position is on pins 2 and 3 (disabled). See the table on the right for jumper settings.

BMC Enable/Disable Jumper Settings (JPB)

Both Jumpers	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SAS RAID Mode Select

JPS2 allows you to select the SAS RAID mode: either Software RAID or IT RAID. Close this jumper to use Software RAID (default). Set this jumper to open to use the IT RAID mode. Contact Tech. Support at Supermicro for more information. See the table on the right for jumper settings.

SAS RAID Mode Select Jumper Settings (JPS2)

Jumper Settings	Definition
Closed	Software RAID
Open	IT RAID

Note: Contact Supermicro tech support for further instructions.

Power Force On

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

Power Force On Jumper Settings (JPF)

Jumper Setting	Definition
Closed	Force On
Open	Disabled

SAS Enable/Disable

JPS1 allows you to enable or disable SAS ports. The default position is on pins 1 and 2 to enable SAS. See the table on the right for jumper settings.

SAS Enable/Disable Jumper Settings (JPS1)

Jumper Settings	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

5-11 Onboard Indicators

LAN1/2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each port, 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.

GLAN1/2 LED (Connection Speed Indicator)

LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

Onboard Power LED

An Onboard Power LED at LE1 is lit when the system is on. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard Power LED Indicator (LE1)

LED Color	Definition
Off	System Off (power cable not connected
Green	System On

SAS Activity LED

A SAS Activity LED is located at LED1. When LED1 blinks, it indicates activity on a SAS port.

SAS Heartbeat LED

The SAS Heartbeat LED at LE5 indicates the SAS ports are ready for use when blinking.

IPMI Heartbeat LED

The IPMI Heartbeat LED (LE2) indicates IPMI is available and ready for use when blinking.

5-12 Floppy, SATA and SAS Ports

Floppy Drive Connector

The floppy connector is located near the USB2 port and the I-Button. See the table at right 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 (I-SATA0, I-SATA1)

Pin#	Definition	Pin #	Definition
1	Ground	2	TXP
3	TXN	4	Ground
5	RXN	6	RXP
7	Ground		

SAS Ports

There are eight SAS ports included on the motherboard. See the table on the right for pin definitions.

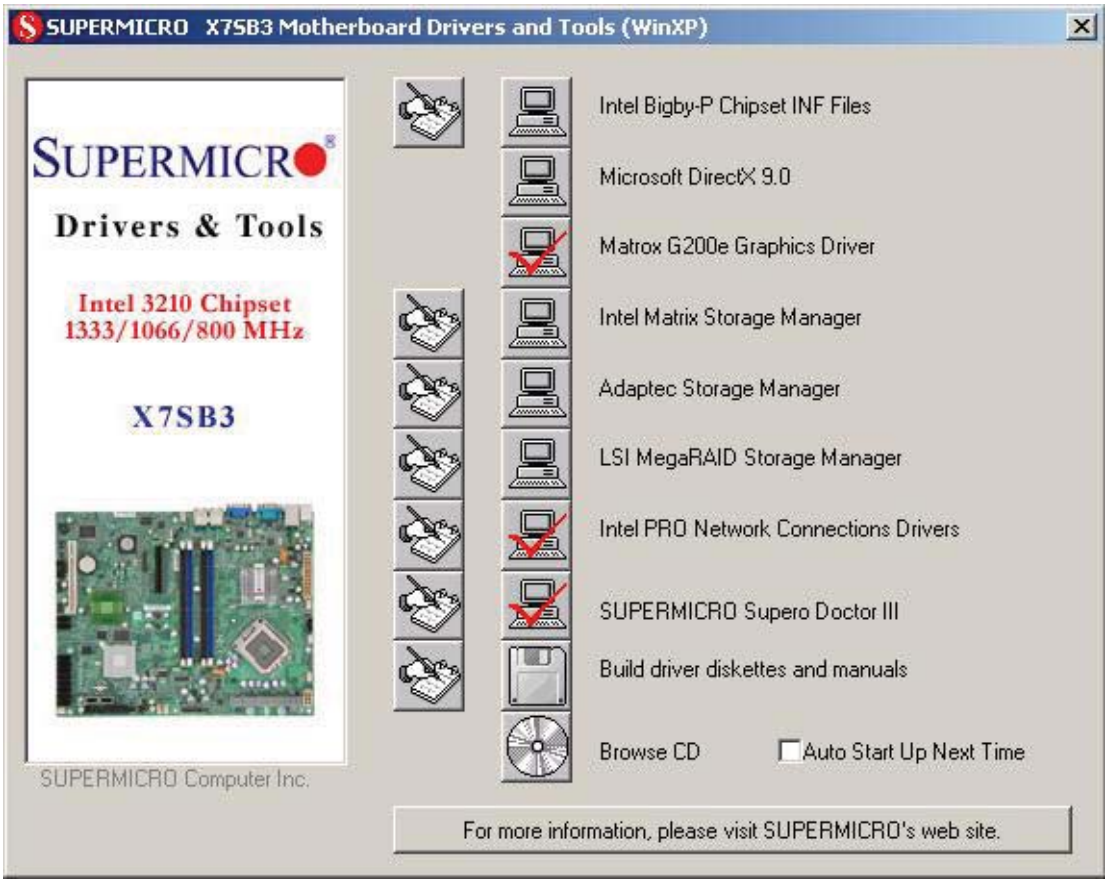
Note: JPS1 must be set correctly to enable the SAS controller.

SAS Ports Pin Definitions (SAS0 ~ SAS7)

Pin#	Definition	Pin #	Definition
1	Ground	2	TXP
3	TXN	4	Ground
5	RXN	6	RXP
7	Ground		

5-13 Installing Software

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



Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

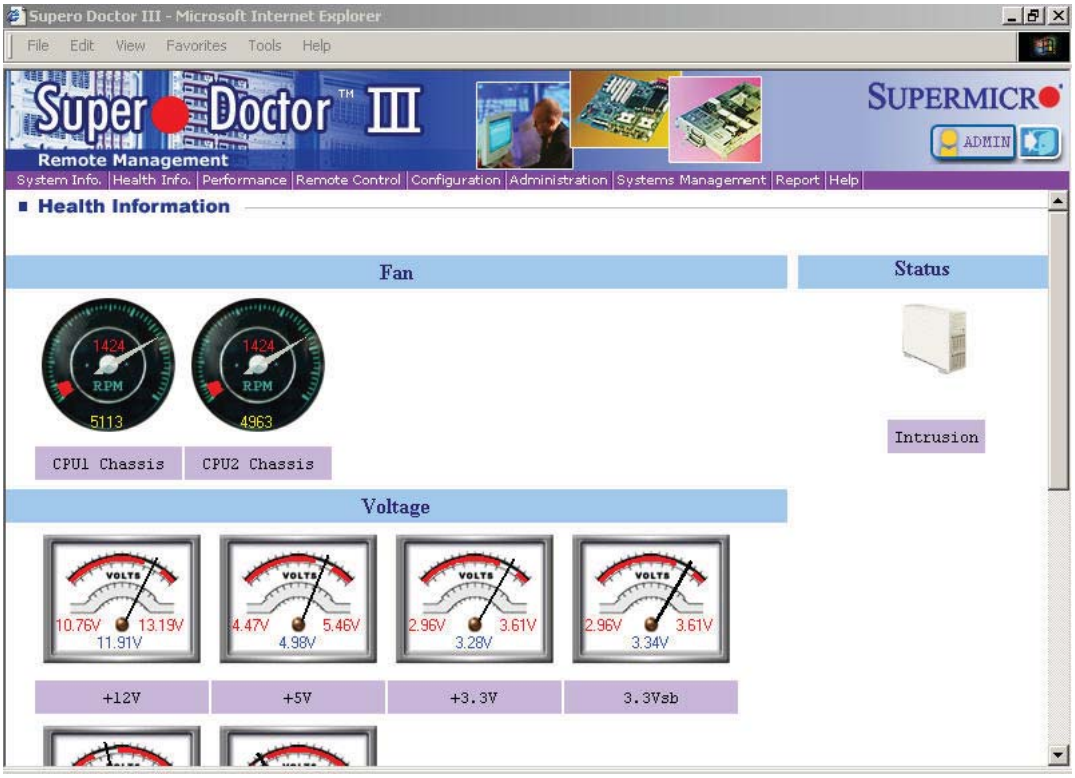
Supero Doctor III

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 CD-ROM 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 and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, as the Super Doctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Supero Doctor III Interface Display Screen (Health Information)



Supero Doctor III Interface Display Screen (Remote Control)

Note: SD III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will recommend using Supero Doctor II.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC111TS-560C chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the next step.

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

6-1 Static-Sensitive Devices

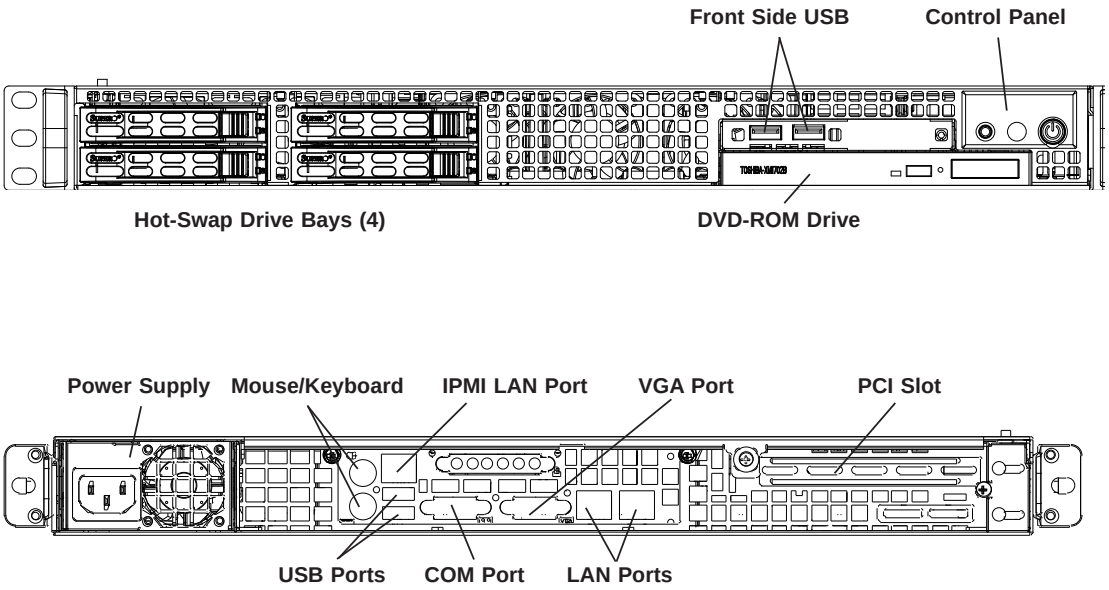
Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully.

The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the 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.

Figure 6-1. Chassis: Front and Rear Views



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the appropriate header on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons. Details on JF1 can be found in "Chapter 5: Advanced Serverboard Installation."

6-3 System Cooling

Three 4-cm counter-rotating fans provide the cooling for the system. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels. The SC111 chassis provides two additional open fan housings, where two more fans may be added for the add-on card area.

It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

The SC111 chassis includes three pre-installed fans. Two additional open slots are available so that two more fans may be installed (optional).

Replacing a System Fan (Figure 6-2)

1. Open the chassis while the system is running to determine which fan has failed. Never run the server for an extended period of time with the chassis open.

2. Turn off the power to the system and unplug the power cord.

3. Remove the failed fan's wiring from the fan header on the serverboard.

4. Lift the failed fan from the chassis and pull it completely out.

5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.

6. Reconnect the fan wires to the same chassis fan header as the previous fan.

7. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off.

8. Finish by replacing the chassis cover.

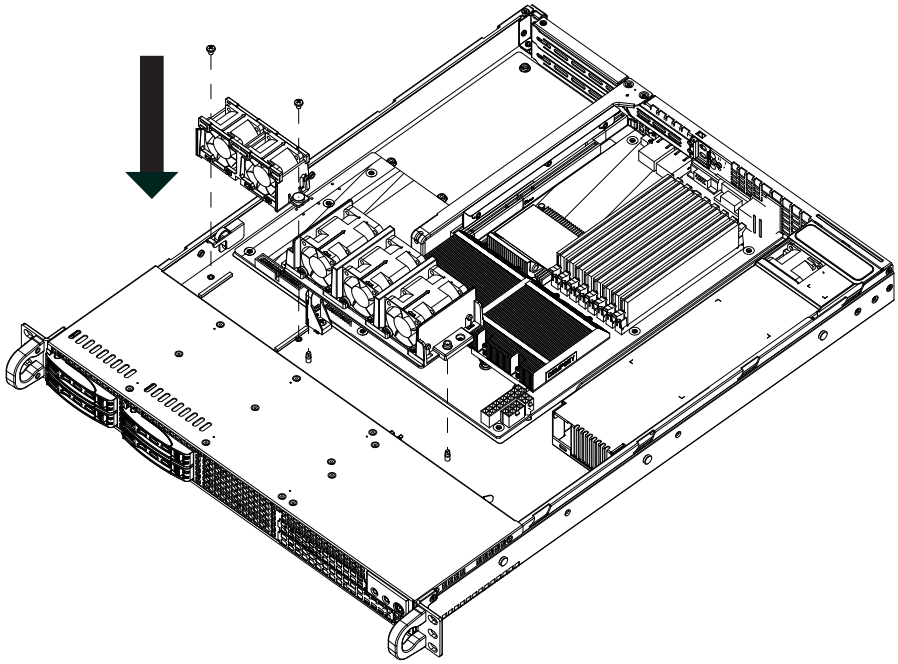


Figure 6-2: Replacing a System Fan
(shown with optional fan installed)

6-4 SAS/SATA Drive Bay Installation/Removal

Accessing the Drive Bays

Hard Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace hard drives. Proceed to the next section for instructions.

DVD-ROM Drive: For installing/removing the optional DVD-ROM drive, you will need to gain access to the inside of the system by removing the top cover of the chassis. Proceed to the "DVD-ROM Drive Installation" section later in this chapter for instructions.

Note: Only a "slim" DVD-ROM drive will fit into the 1015B-3.

Hard Drive Installation

The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays. For this reason, even empty carriers without drives installed must remain in the chassis.

Installing a Hard Drive into a Drive Carrier (Figure 6-3)

1. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

2. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked “SATA” to aid in correct installation.

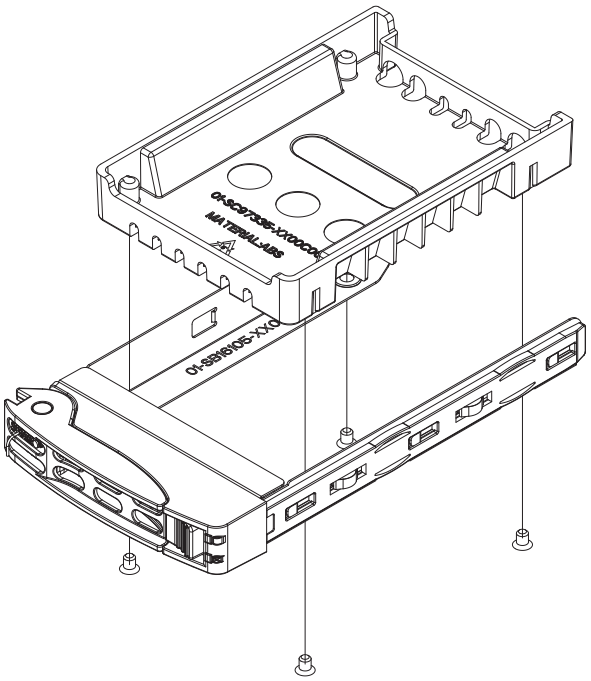
3. Secure the drive to the carrier with four screws as illustrated below.

4. Insert the drive carrier into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.

5. Push the handle in until it clicks into its locked position

Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drives empty.

Figure 6-3: Installing a Hard Drive into a Carrier



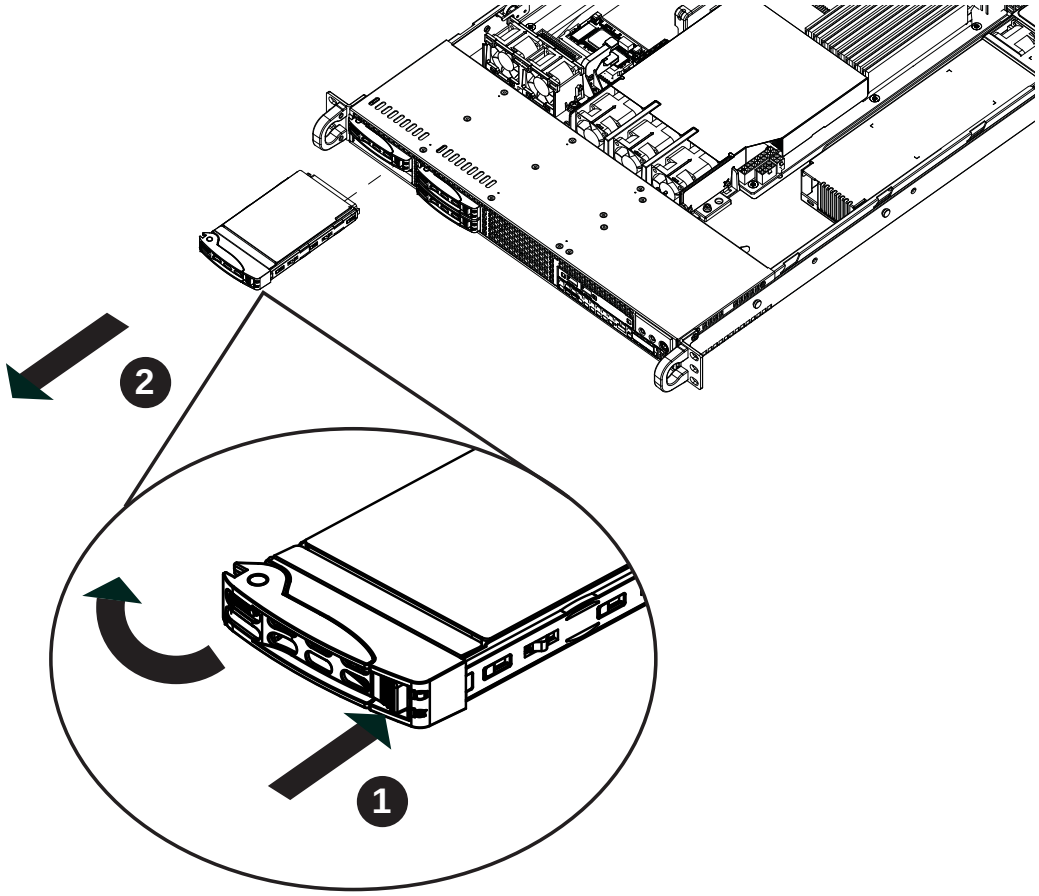
Removing a Hard Drive (Figure 6-4)

1. To remove a carrier, push the release button located beside the drive LEDs.

2. Swing the handle fully out and use it to pull the unit straight out.

Note: Your operating system must have RAID support to enable the hot-plug capability of the hard drives.

Figure 6-4. Removing a Hard Drive



DVD Drive Installation

An optional DVD-ROM may be installed into the SC111 chassis.

Installing or Replacing a DVD-ROM Drive (Figure 6-5)

1. Power down the system and if necessary, remove the server from the rack and the front bezel from the chassis.

2. Remove the chassis cover.

3. Unplug the drives power and data cables from the serverboard and/or back-plane.

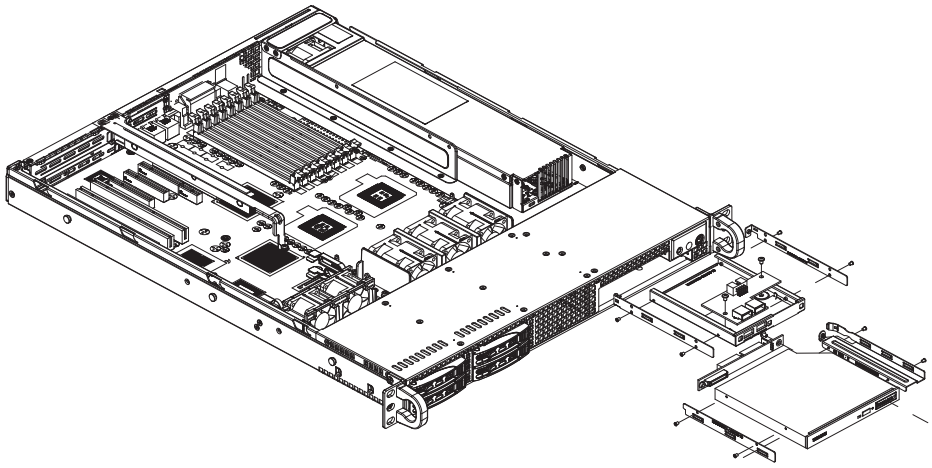
4. If you are adding a new drive: Remove the mini-bezel (grate) from the drive bay The bezel can be removed by pulling out the hard drive beneath the DVD-ROM, then pulling the mini-bezel forward.
   If you are replacing a drive: Locate the locking tab at the rear (left hand side when viewed from the front) of the DVD-ROM drive. Push the tab toward the drive and push the drive unit out the front of the chassis.

5. Insert the new drive unit in the slot until the tab locks in place.

6. Reconnect the data and power cables.

7. Replace the chassis cover (replace the server in the rack, if necessary) and power up the system.

Figure 6-5. Installing a DVD-ROM Drive



6-5 Power Supply

The SuperServer 1015B-3 has a high-efficiency 560 watt power supply, which is auto-switching capable. This enables it to automatically sense and operate with a 100V to 240V input voltage.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the unit (p/n PWS-562-1H). Replacement units can be ordered directly from Supermicro (see contact information in the Preface). As there is only one power supply unit in the SC111 chassis, power must be completely removed from the server before removing and replacing the power supply unit for whatever reason.

Replacing the Power Supply

Removing the power supply

1. First power down the system and unplug the AC power cord from the server.

2. Remove the top chassis cover by releasing the retention screws that secure the module to the rack, then grasp the two handles on either side and pull the module straight out until it locks (you will hear a "click").

3. Next, depress the two buttons on the top of the chassis to release the top cover and push it away from you.

4. Lift the top cover from the chassis to gain full access to the inside of the server.

5. To remove the failed power module, remove the two screws along the top inside edge of the power supply, which secure it to the chassis.

6. After pulling the module back past the lip at the rear of the chassis, you can then lift the module straight out of the chassis. (The power cord should have already been removed.)

Installing a New Power Supply

1. Replace the failed power supply with another identical power supply module.

2. Carefully insert the new module into position in the chassis and secure it with the two screws you removed previously.

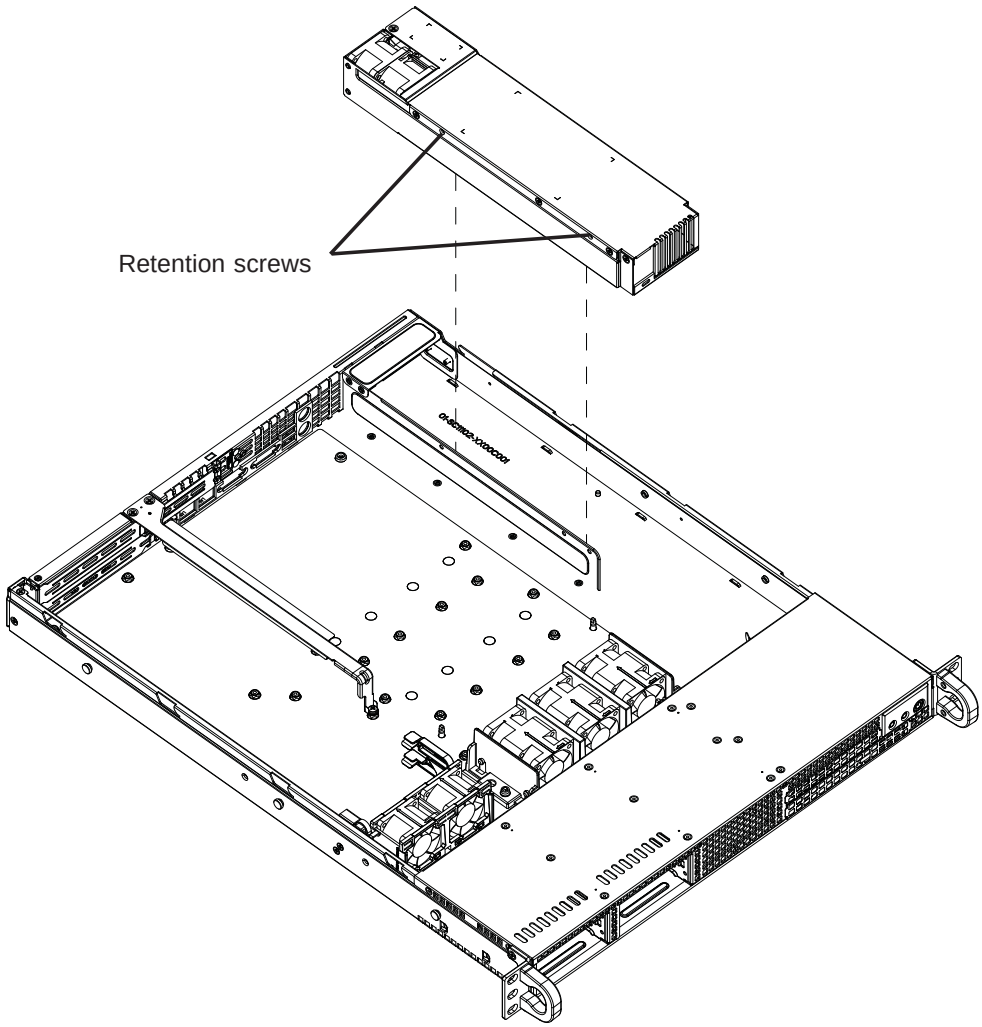
3. Make sure the power switch on the power supply is in the off position.

4. Reconnect the power cord.

5. Replace the chassis top cover and push the module back into the rack.

6. Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

Figure 6-6. Removing/Replacing the Power Supply



Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7SB3-F. 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

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 when 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. 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. Beginning with Section 7-3, detailed descriptions are given for each parameter setting in the Setup utility.

7-2 Running Setup

Default settings are in bold text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (See the 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 displays below.

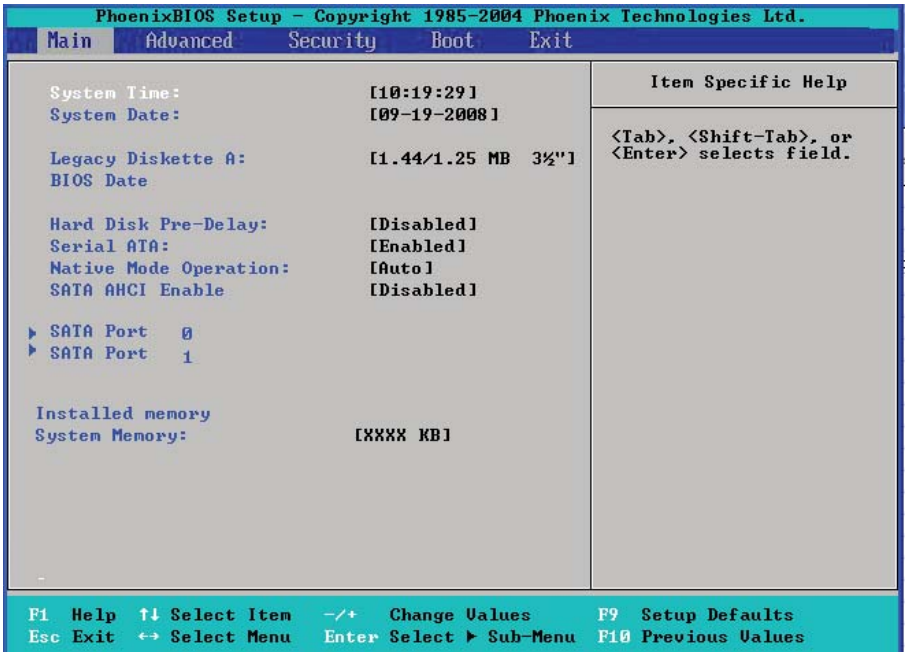
Use the Up/Down arrow keys to move between the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the BIOS 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.

Warning: To prevent possible boot failure, do not shut down or reset the system while updating the BIOS.

Main BIOS Setup Menu



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.

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 2.88 MB 3.5 in.

BIOS Date

The item displays the date that this version of BIOS was built.

Hard Disk Pre-Delay

This setting allows the user to add a delay before a hard drive is accessed by the BIOS for the first time. This delay will allow the time needed for the hard drive to be properly initialized before it is accessed by the BIOS to prevent a possible boot failure. The options are: **Disabled**, 3 Seconds, 6 Seconds, 9 Seconds, 15 Seconds, 21 Seconds, and 30 Seconds.

Serial ATA

This setting allows the user to enable or disable Serial ATA connections. 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 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 Enhanced AHCI mode is available when the Windows XP-SP1 OS and the IAA Driver is used.) The options are Enabled and **Disabled**.

▶ SATA Port0 and SATA Port1

These settings allow the user to set the parameters of the drive indicated above. Hit <Enter> to activate the following sub-menu screen for detailed options of the items. Set the correct configurations accordingly. The items included in the sub-menu are:

Type

This feature allows the user to select the type of a drive specified. Select **Auto to** allow the BIOS to automatically set the capacity of the drive specified. Select User to allow the user to enter the parameters of the drive installed at this connection. 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:

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 Transfers

This item allows the user to specify the number of sectors per block to be used for 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 Primary Master device via the LBA mode. The options are Enabled and **Disabled.**

32-Bit I/O

Select Enable to enable the function of 32-bit IDE 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 configure the Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

Installed Memory

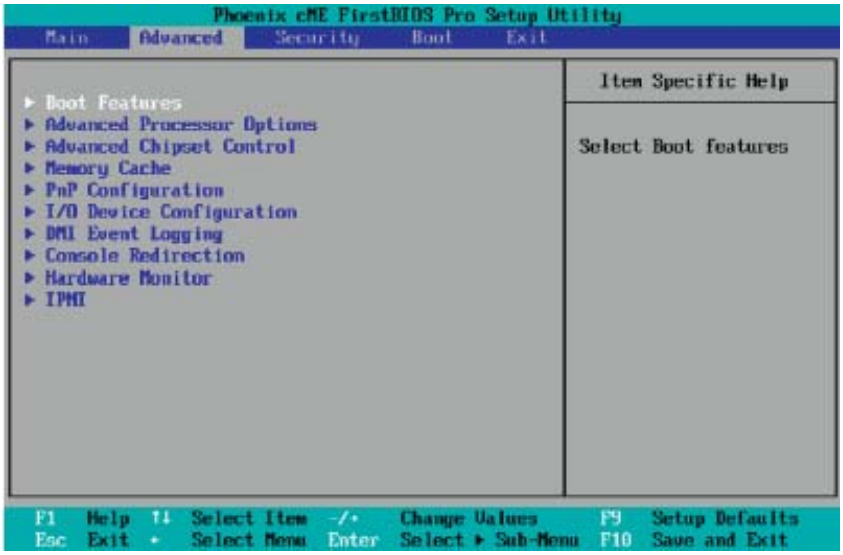
This feature informs you how much memory has been installed in the system as detected by the BIOS.

System Memory

This feature informs you how much system memory has been detected by the BIOS.

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 submenus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following settings.

Quiet Boot

This setting allows you to **Enable** or Disable the graphic logo screen display at bootup.

QuickBoot Mode

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

POST Errors

Select **Enabled** to stop the POST routine and allow the system to display error messages when an error occurs at bootup. The options are **Enabled** and Disabled.

ACPI Mode

Select **Yes** to use the ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to **Instant-off**, the system will power on or power off immediately as soon as the user hits the power button. If set to 4-seconds, the system will power on or

power off when the user presses the key for 4 seconds and longer. The options are **Instant-off** and 4-seconds.

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**.

Resume On PME#

Select On to “wake your system up” from the PME#. The options are **On** and Off.

PS2 Keyboard (KB)/Mouse Wake Up

Select Enable to “wake your system up” from the S3, S4 or S5 state. If this feature is set enabled, you will also need to enable the JPWAKE jumper by closing pins 1-2. (Please refer to Page 1-5 and Chapter 2 for more details). The default setting is **Disabled**.

USB Wake Up

Select Enable to “wake your system up” via a USB device. If this feature is set enabled, you will also need to enable the JPUSB1 jumper by closing pins 1-2. (Please refer to Page 1-4 and Chapter 2 for more details). The default setting is **Disabled**.

Power Loss Control

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

Watch Dog

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

Extended Shadow RAM

Select Enabled to enable Extended Shadow RAM and allow the contents stored in ROM to be directly copied into extended memory for faster operation. Take caution when using this feature. If the system hangs, reset the setting for this item and reboot the system. 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.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display to indicate the speed of the CPU installed on the motherboard.

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** and x9.

Frequency High Ratio (Available when supported by the CPU)

The feature allows the user to set the internal frequency multiplier support for the Intel Speedstep CPU. Please note that the system might hang if a wrong frequency that is not supported by the CPU is selected. When this occurs, clear the CMOS and re-configure this setting to recover the system. The default setting is **x12**.

Hyperthreading (Available when supported by the CPU)

Set to **Enabled** to use the Hyperthreading 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**.

Compatible FPU Code (Available when supported by the CPU)

Set to Enabled to keep the content of the last instruction Operating Code (OPCode) in the floating point (FP) state. The options are **Disabled** and Enabled.

Thermal Management 2 (Available when supported by the CPU)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

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.**

Set Maximum Ext. CPUID=3

When set to Enabled, the Maximum Extended CPUID will be set to 3. The options are **Disabled** and Enabled.

Echo TPR

Set to **Enabled** to prevent xTPR messages from being sent to the system. The options are Disabled and **Enabled**.

C1 Enhanced Mode (Available when supported by the CPU)

Set to Enabled to enable the 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.)

Intel <R> Virtualization Technology (Available if 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.

No Execute Mode Memory Protection (Available if supported by the CPU and the OS.)

Set to **Enabled** to enable Execute Disable Bit and allow the processor to classify areas in the memory slot 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 and damage the system during an attack.

Note: this feature is available when your OS and your CPU support the functionality of Execute Disable Bit. The options are Disabled and **Enabled**.

Enhanced Intel Speed Step Support (Available if supported by the CPU)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allow the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled (-C States, GV1/GV3 are enabled), **GV1/GV3 Only** (C States: Disabled), C-States Only (-G1/G3: Disabled), and Disabled (-C States, GV1/GV3 are disabled).

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take caution when changing the Advanced settings. An incorrect setting, a very high DRAM frequency, or an incorrect DRAM timing may make the system to become unstable. When this occurs, reset the setting to the default setting.

Clock Spectrum Feature

When set to 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**.

Memory Remapping

Select Enable to use the functionality of Memory Remapping above 4GB. The settings are **Enabled** and Disabled.

Enable VT-d

Select Enable to enable the functionality of the Intel Virtualization Technology for Direct I/O support, which offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

High Precision Event Time

Select Yes to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options for this feature are Yes and **No**.

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.

Legacy USB Support

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

USB Host Controller

Select Enabled to enable the USB Host Controller. The settings are **Enabled** and Disabled.

▶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 to 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 to write (cache) 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 of 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 the 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 of 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2 or 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 the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data pro-

cessing 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 or 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 extended memory area above 1 MB. Select Write Back to allow the 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**.

▶PnP Configuration

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

▶PCI 32 Slot/PCI-Express x8 Slot

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

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 the Bus Master. A high-priority, high-throughout 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**.**

▶Onboard SAS/LAN1/LAN2

Access the submenu to make changes to the following settings for the slots indicated above:

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 the Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For the 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**.**

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

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

Serial Port A

This setting allows you to decide how Serial Port A will be controlled. 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 decide how Serial Port B will be controlled. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

This setting allows you to set the type of a 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 decide how the parallel port will be controlled. 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 decide how the floppy disk controller will be controlled. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

▶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.

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 which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set 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 set console redirection type. The options are VT100, VT100/8bit, PC-ANSI/7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

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

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

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

▶Hardware Monitoring

Highlight an item and hit <Enter> to see the status of the item:

CPU Temperature/TControl/CPU1 Temperature/System Temperature

Fan1 - Fan 6

If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fan as specified.

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. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select 3-pin if your chassis uses 3-pin fans. Select 4-pin if your chassis uses 4-pin fans. Select “Disable” to disable the fan speed control function and allow the onboard fans to constantly run at the full speed (12V). The Options are: 1. **Full Speed @12V,** 2. Optimized Server w/3-pin, 3. Optimized Workstation w/3-pin, 4. Optimized Server w/4-pin, and 5. Optimized Workstation w/4-pin.

Voltage Monitoring

The following items will be monitored and displayed:

VcoreA, -12V/+12V, V_DIMM, +3.3V/+3.3Vsb, Vbatt.

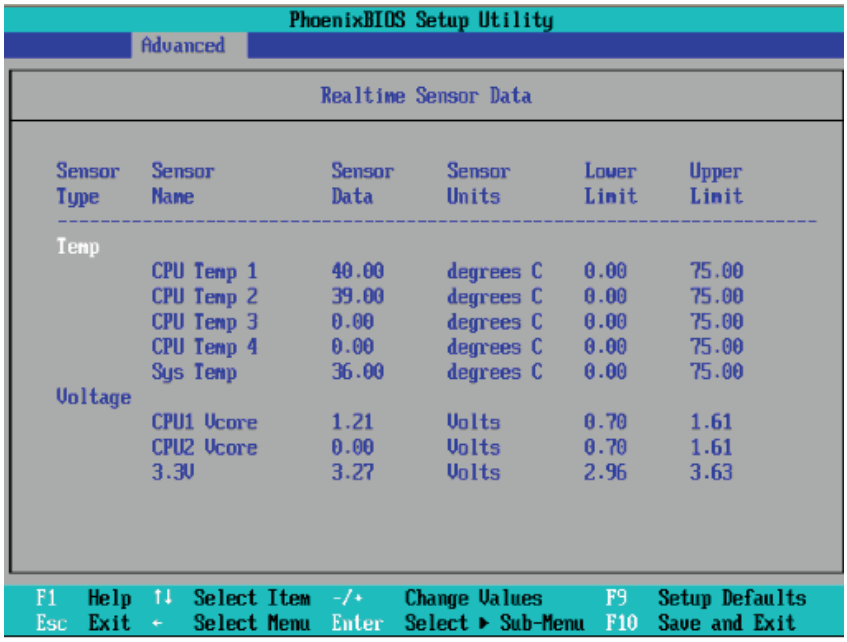
Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Firmware Version

This item displays the current Firmware Version.

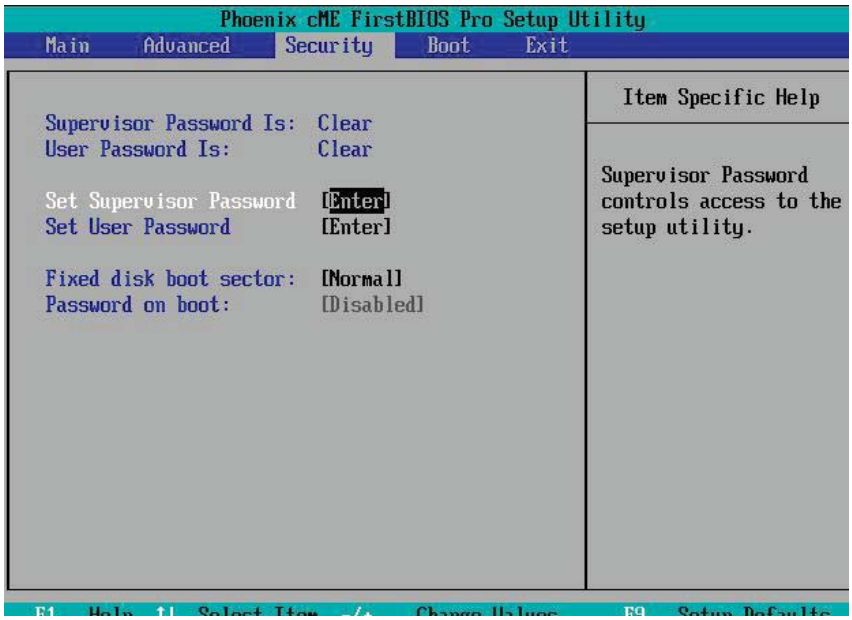
▶Realtime Sensor Data

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



7-5 Security Settings

Choose the Security menu 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 item indicates if 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 item indicates if 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.

Fixed Disk Boot Sector

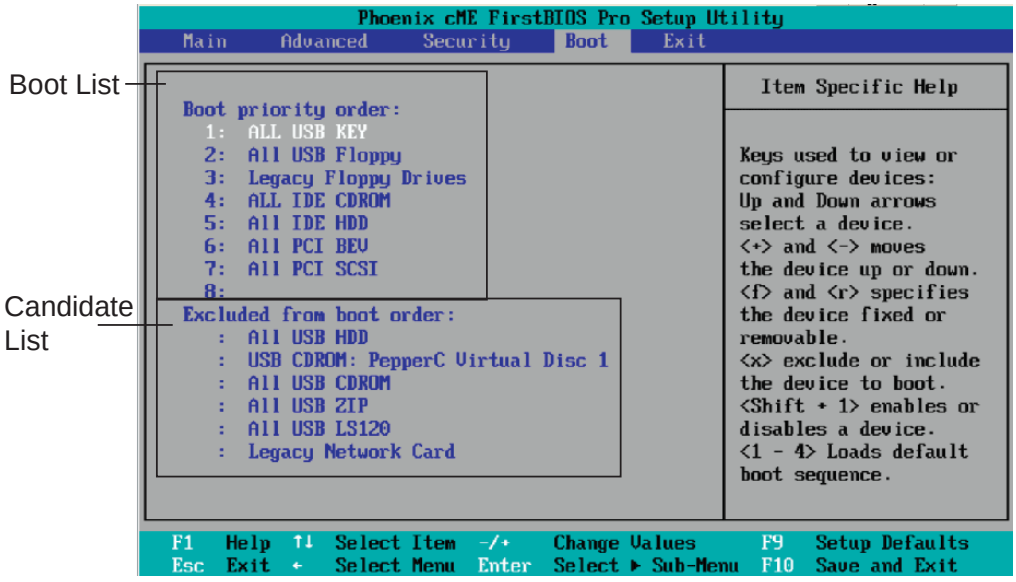
Select **Normal** to enable Write-Protect the boot sector on the hard drives to protect against viruses.

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.

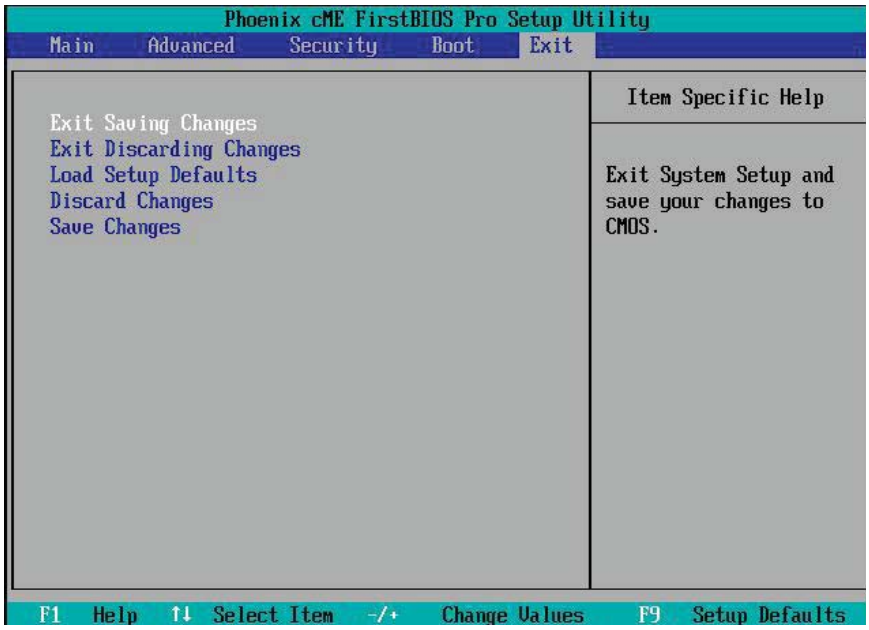


Boot Priority Order/Excluded from Boot Orders

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



Exit Saving Changes

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

Save Changes

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

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

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 repetitive long beep - no memory detected

1 continuous beep/Front Panel Overheat LED On - Motherboard Overheating

Notes

Appendix B

System Specifications

Processors
Single Intel Xeon 3000 Series LGA775 processors at system bus speeds of 1333, 1066 and 800 MHz

Note: Please refer to the motherboard specifications pages on our web site for updates on supported processors.

Chipset
Intel 3210/ICH9R chipset

BIOS
16 Mb Phoenix® Flash ROM

Memory Capacity
Four 240-pin DIMM slots that can support up to 8 GB of unbuffered ECC/non-ECC DDR2-800/667 SDRAM

Note: See the memory section in Chapter 5 for details.

SATA Controller
On-chip (ICH9R) 3 Gb/s Intel SATA controller

Drive Bays
Four (4) 2.5" drive bays to house four SAS or SATA drives

PCI Expansion Slots
One PCI-E x8 slot
One 33 MHz PCI slot

Motherboard
Model: X7SB3-F
Form Factor: ATX
Dimensions: 12 x 9.6 in (305 x 244 mm)

Chassis

Model: SC111TS-560C (1U Rackmount)

Dimensions: (WxHxD) 16.8 x 1.7 x 21.95 in. (427 x 43 x 558 mm)

Note: please visit our web site for information on supported operating systems

Weight

Gross Weight: 33 lbs. (15 kg.)

System Cooling

Three (3) 4-cm high performance fans

System Input Requirements

AC Input Voltage: 100-240 VAC

Rated Input Current: 6.5A (115V) to 2.6A (230V)

Rated Input Frequency: 50-60 Hz

Power Supply

Rated Output Power: 560W (Model# PWS-562-1H20)

Rated Output Voltages: +5V (20A), +3.3V (20A), +12V (46.5A), +5Vsb (4A), -12V (0.5A)

Operating Environment

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

Non-operating Temperature: -40º to 70º C (-40º to 158º F)

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

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

Regulatory Compliance

Electromagnetic Emissions:

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

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)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

(continued from front)

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