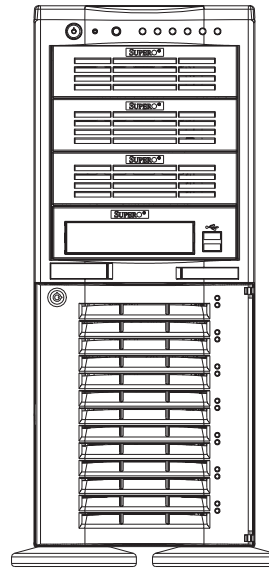
SUPERMICRO®

SUPERSERVER 7042P-8R



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 7042P-8R. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 7042P-8R is a high-end, dual processor 4U tower/rackmountable server based on the SC742S-420 4U rackmount server chassis and the P4DP8-G2, a dual processor motherboard that supports single or dual Intel Xeon® processors of 1.5 to 2.4 GHz and faster at a Front Side (system) Bus speed of 400 MHz and up to 16 GB PC1600 (DDR-200) SDRAM main memory.

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 P4DP8-G2 mainboard and the SC742S-420 chassis, which make up the SuperServer 7042P-8R.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 7042P-8R into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 7042P-8R.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the P4DP8-G2 motherboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC742S-420 server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

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Chapter 1

Introduction to the SuperServer 7042P-8R

1-1 Overview

The Supermicro SuperServer 7042P-8R is a high-end dual processor server that can be utilized either in a tower or in a rackmount configuration. The SuperServer 7042P-8R is comprised of two main subsystems: the SC742S-420 high-end server chassis and the P4DP8-G2 dual Xeon processor mainboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 7042P-8R.

In addition to the mainboard and chassis, various hardware components have been included with the SuperServer 7042P-8R, as listed below:

- Up to two (2) 603-pin Xeon 512K L2 cache processors*
- Two (2) CPU heatsinks* (Fan-042)
- Up to 16 GB ECC registered PC1600 DDR SDRAM main memory*
- One (1) 1.44" floppy drive
- One (1) 5.25" drive bay
- One (1) ATA66 ribbon cable for IDE CD-ROM
- One (1) ATA100 ribbon cable for IDE hard drives
- One (1) USB cable for front side access
- One (1) SCA SCSI backplane
- Seven (7) SCA **1-inch high** SCSI drive carriers
- SCSI Accessories
  One (1) internal 68-pin Ultra320 SCSI cable for SCA SCSI backplane
  One (1) set of SCSI driver diskettes
  One (1) SCSI manual

- One (1) I/O shield

You should also have received a User's Manual and Supermicro diskettes, which contains several drivers and utilities.

** Type and number depends upon the configuration ordered.*

1-2 Server Chassis Features

The SuperServer 7042P-8R is a high-end, scaleable server platform designed with today's most state-of-the-art features. The following is a general outline of the main features of the SC742S-420 server chassis.

System Power

The 7042P-8R features a triple redundant 500W power supply that consists of three separate power supply modules. These modules all share the load and run continuously. If any of the three fail, the remaining two pick up the load and keep the system running without interruption. A failed power supply module will also activate an alarm and illuminates the power fail LED. An alarm reset button is located on the back of the power supply to deactivate the power fail alarm. The power supply modules are all hot-swappable, so you don't have to power down the system to replace a module.

SCSI Subsystem

The SCSI subsystem supports up to 7 80-pin SCA Ultra320 SCSI hard drives. (Any standard 1" drives are supported. SCA = Single Connection Attachment.) The SCSI drives are connected to a single-channel SCA backplane. The SCSI drives are also hot-swap units. A RAID controller card can be used with the SCA backplanes to provide data security.
Note: The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives.

Front Control Panel

The SuperServer 7042P-8R's control panel provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, overheat condition and power supply failure. A main power button, a system reset button and an NMI button are also included.

I/O Backplane

The SC742S-420 is an ATX form factor chassis that can be used as a tower or mounted as a 4U rackmount server. The I/O backplane provides seven motherboard expansion slots, one COM port, one VGA port, a parallel port, two USB ports, PS/2 mouse and keyboard ports and an Ethernet port.

Cooling System

The SC742S-420 chassis has an innovative cooling design that includes two 9-cm hot-plug redundant system cooling fans and one heavy duty 12-cm exhaust fan. The power supply includes both a primary and a secondary fan. All fans operate continuously, except for the secondary power supply fan, which activates only when the primary fails or the temperature becomes too high.

1-3 Mainboard Features

At the heart of the SuperServer 7042P-8R lies the P4DP8-G2, a dual processor motherboard designed to provide maximum performance in cost-effective configurations. Below are the main features of the P4DP8-G2.

Processors

The P4DP8-G2 supports single or dual Intel Xeon 512K L2 cache processors of up to 2.4+ GHz with a 400 MHz FSB. Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/TechSupport.htm).

Memory

The P4DP8-G2 has 8 184-pin DIMM slots that can support up to 16 GB of registered ECC DDR-200 (PC1600) SDRAM. Module sizes of 128MB, 256MB, 512MB 1GB and 2GB may be used to populate the DIMM slots. (DDR-266 is also supported, but only at 200 MHz. The P4DP8-G2 was designed to support 2GB DIMM modules in each slot, but 2GB memory modules have not yet been validated.)

Onboard SCSI

Onboard SCSI is provided with an Adaptec AIC-7902 SCSI chip, which supports dual channel, Ultra320 SCSI at a throughput of 320 MB/sec for each channel. The P4DP8-G2 provides two Ultra320 SCSI ports.

PCI Expansion Slots

The P4DP8-G2 has a total of six PCI-X expansion slots and one SXB (Super Extended Bus) slot. Up to three PCI-X slots may be configured as 64-bit 133 MHz slots. See Chapter 5 for details.

Onboard Controllers/Ports

One floppy drive controller and two onboard ATA/100 controllers, which support up to four hard drives or ATAPI devices are provided. The color-coded I/O ports include a VGA port, one COM port, a parallel port, two USB ports, PS/2 mouse and keyboard ports and two Gb Ethernet ports. Two front side USB ports are also included on the front of the chassis.

Other Features

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

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Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 7042P-8R 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 SuperServer 7042P-8R system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a motherboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components. The 7042P-8R may be employed either as a tower or mounted in a rack as a 4U rackmount chassis. If using it as a server, please read Server Precautions in the next section and then skip ahead to Section 2-5.

2-2 Unpacking the SuperServer 7042P-8R

You should inspect the box the SuperServer 7042P-8R 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 SuperServer 7042P-8R. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 7042P-8R was shipped in may include two sets of rail assemblies, two rail mounting brackets and mounting screws needed for installing the system into a rack (optional kit). Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location:

- Leave enough clearance in front of the system to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the system to allow for sufficient airflow and ease in servicing.

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 SCSI drives and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

2-4 Installing the SuperServer 7042P-8R into a Rack

This section provides information on installing the SuperServer 7042P-8R into a rack unit. If the 7042P-8R has already been mounted into a rack or if you are using it as a tower, you can skip ahead to Sections 2-5 and 2-6. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the 7042P-8R into a rack with the rack rails provided in the rack mount kit. You should also refer to the installation instructions that came with the rack unit you are using.

Identifying the Sections of the Rack Rails:

The 7042P-8R rackmount kit (CSE-PT26 or CSE-PT26B - black) includes two rack rail assemblies. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the 7042P-8R (A), an outer fixed rack rail that secures directly to the rack itself (B) and a sliding rail guide sandwiched between the two, which should remain attached to the fixed rack rail (see Figure 2-1.) The A and B rails must be detached from each other to install. Two chassis handles are also included with the rail kit.

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

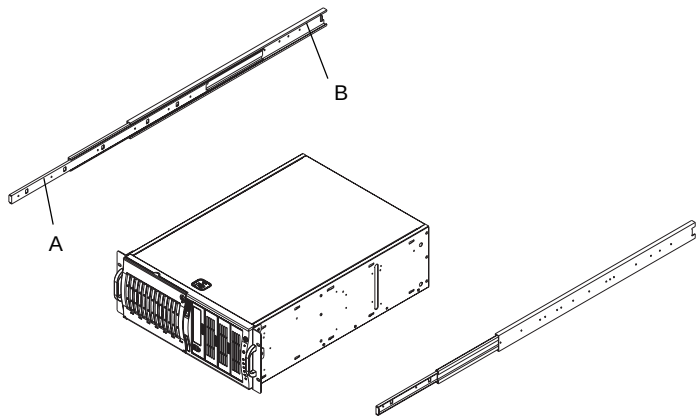


Figure 2-1. Identifying the Sections of the Rack Rails

Installing the Chassis Rails:

You will need to remove the top cover, the top/left cover and the feet to add rack rails to the chassis. First, remove the top/left cover by pushing the release tab in the center of the cover lip while pushing the cover toward the rear of the chassis (see Figure 2-2). After the cover stops, lift it off. Each chassis foot has a single screw. Remove the screw then depress the foot's locking tab from the inside of the chassis to slide the foot off. Next, remove the top cover. You should see a release tab at the middle of the lip. Push this tab toward the chassis edge while pushing the cover toward the front of the chassis. It should then lift right off. You can now attach rack rails to the top and bottom (now the sides) of the chassis. First add the rack handles as shown in Figure 2-3. Then position the fixed chassis rail sections you just removed along the side of the 7042P-8R making sure the screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-4). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

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

Figure 2-2. Removing the Top/Left Cover

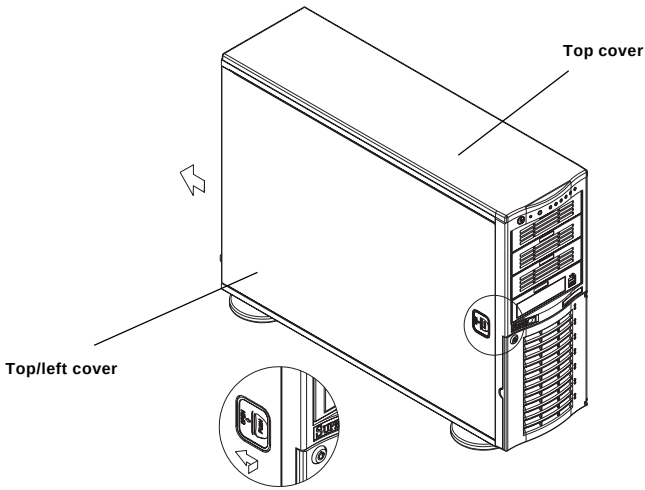
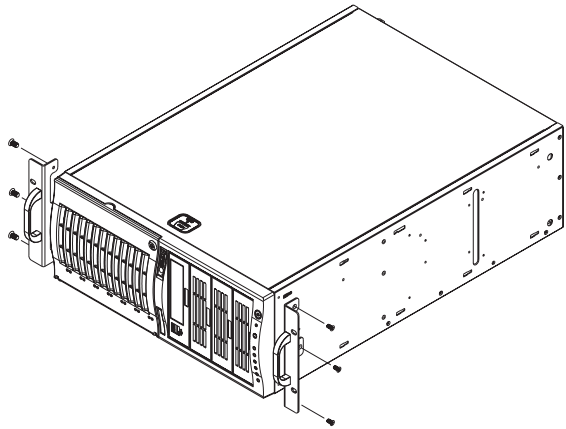


Figure 2-3. Installing the Rack Handles



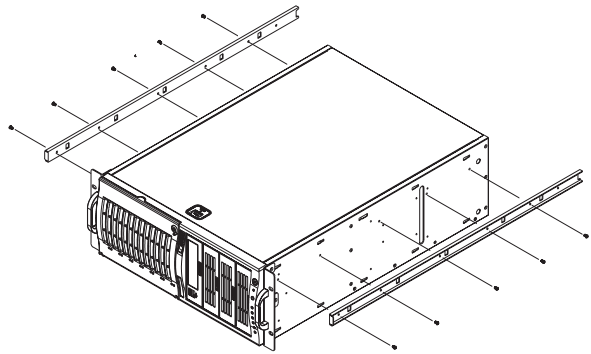


Figure 2-4. Installing the Rails to the Chassis

Installing the Rack Rails:

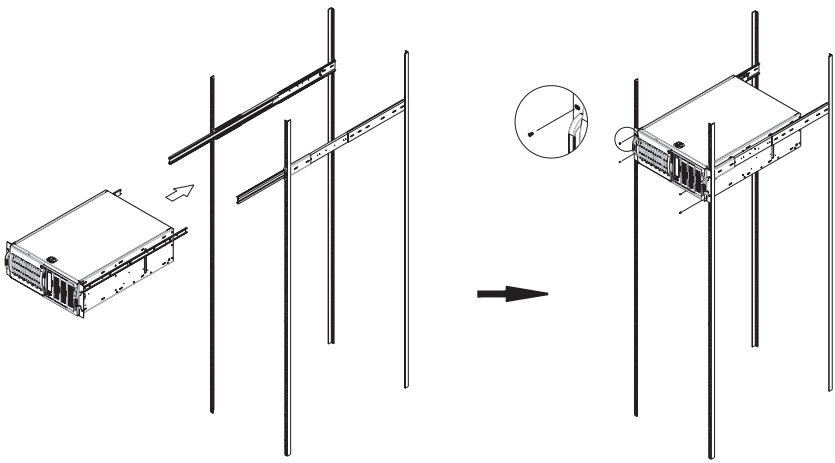
Determine where you want to place the SuperServer 7042P-8R in the rack. (See Rack and Server Precautions in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making both are at the exact same height and with the rail guides facing inward.

Installing the Server into the Rack:

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

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumb-screws that hold the front of the server to the rack (see Figure 2-5).

Figure 2-5. Installing the Server into a Rack



2-5 Checking the Motherboard Setup

After setting up the the 7042P-8R, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

1. Accessing the inside of the 7042P-8R (see Figure 2-6):

(If rack mounted, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").) Depress the two buttons on the top (side if tower) of the chassis to release the cover. There is a large rectangular recess in the middle front of the cover to help you push the cover away from you until it stops. You can then lift the cover from the chassis to gain full access to the inside of the server.

2. Check the CPUs (processors):

You should have one or two processors already installed into the system board. Each processor should have its own heatsink attached. See Section 5-5 for instructions on processor installation.

3. Verify the proper CPU clock ratio setting:

If the CPU speed is not automatically detected you will need to set the correct speed with the BIOS Setup utility. See the CPU Speed and Frequency Ratio settings in BIOS (Chapter 7) to set the processor speed.

4. Check the system memory:

Your 7042P-8R 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 Section 5-6.

5. Installing add-on cards:

If desired, you can install add-on cards to the system. See Section 5-7 for details on installing PCI add-on cards.

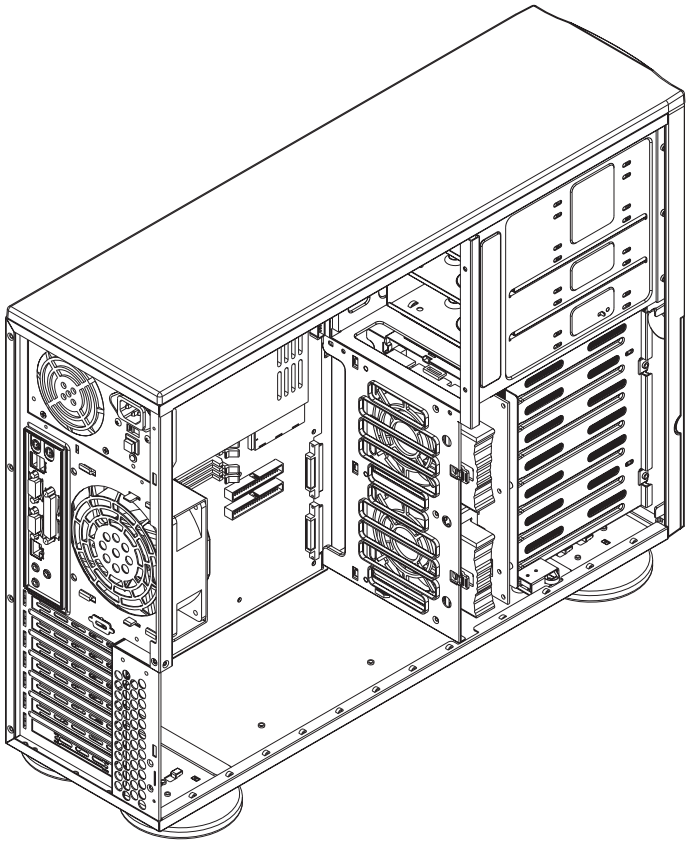


Figure 2-6. Accessing the Inside of the SuperServer 7042P-8R

6. Check all cable connections and airflow:

Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Section 5-3 for details on cable connections.

2-6 Checking the Drive Bay Setup

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

1. Accessing the drive bays:

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

2. Installing components into the 5.25" drive bay:

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

3. Installing CD-ROM and floppy disk drives:

Refer to Chapter 6 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

4. Check the SCSI disk drives:

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

5. Check the airflow:

Airflow is provided by two 9-cm cooling fans and a heavy duty 12-cm

exhaust fan. The system component layout was carefully designed to promote sufficient airflow through the 4U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans. Keep this in mind when you reroute them after working on the system.

6. Supplying power to the system:

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply units into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS). Finally, depress the power on button on the front of the chassis.

Chapter 3

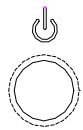
System Interface

3-1 Overview

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

3-2 Control Panel Buttons

There are three push-button buttons located on the front of the chassis. These are (in order from left to right) a power on/off button, an NMI (Non-Maskable Interrupt) button and a reset button.



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

- **NMI:** NMI stands for "non-maskable interrupt". Pressing this button issues a non-maskable interrupt to force the server into a halt state. This is used for diagnostic purposes, and allows you to perform a memory down-load to determine the cause of a problem.

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

3-3 Control Panel LEDs

The control panel located on the front of the SC742S-420 chassis has six LEDs that provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

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

- **HDD:** Indicates IDE channel activity. On the SuperServer 7042P-8R, this LED indicates CD-ROM drive activity when flashing.

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

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

- **Overheat:** Indicates a processor overheat condition. This may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. You should also check to make sure that the chassis covers are installed and that all fans are present and operating normally. Finally, verify that the heatsinks are installed properly (see Section 5-5 and Figure 5-4).

- **Power Fail:** Indicates a power supply module has failed. The remaining two power supply modules will take the load to keep the system running continuously, but the failed module will need to be replaced. You do not need to shut down the system to replace the failed module. Refer to Chapter 6 for details on replacing the power supply module. This LED should be off when the system is operating normally.

3-4 SCSI Drive Carrier LEDs

Each SCSI drive carrier has two LEDs.

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

- **Red:** A SAF-TE compliant backplane is needed to activate the red LEDs, which indicate a drive failure. A SAF-TE compliant SCSI backplane is not included on the 7042P-8R, so these LEDs will always remain off. Please refer to Chapter 6 for instructions on replacing failed SCSI drives.

3-5 LAN (Ethernet) Port LEDs

Each of the two LAN ports (located beside the VGA port) has a yellow and a green LED. The yellow (left) LED indicates activity while the other (right) LED may be green, orange or off to indicate the speed of the connection. See the tables below for the functions associated with these LEDs.

Gb LAN Left LED Indicator

LED Color	Definition
Off	Not Active
Yellow	Active

Gb LAN Right LED Indicator

LED Color	Definition
Off	No Connection
Green	100 MHz
Orange	1 GHz

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 7042P-8R 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 motherboard, memory modules and the CD-ROM and floppy drives. When disconnecting power, you should first power down the system with the operating system and then unplug the power cords of all the power supply units in the system.

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

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

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

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

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed backwards, which will reverse its polarities. The positive side of the battery should be facing up and the negative side should facing the motherboard. 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.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 7042P-8R clean and free of clutter.

- The SuperServer 7042P-8R weighs approximately 54 lbs (24.2 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top/side cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

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

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

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

4-3 ESD Precautions

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

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

- Put the motherboard 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 motherboard.

4-4 Operating Precautions

Care must be taken to assure that all chassis covers are in place when the 7042P-8R is operating to ensure proper cooling. Out of warranty damage to the 7042P-8R system can occur if this practice is not strictly followed.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install processors and heatsinks to the P4DP8-G2 motherboard, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the motherboard to protect and cool the system sufficiently.

5-1 Handling the P4DP8-G2 Motherboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

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

Unpacking

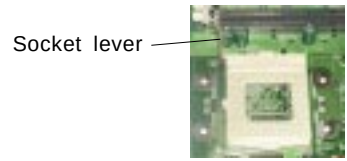
The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

5-2 PGA Processor and Heatsink Installation

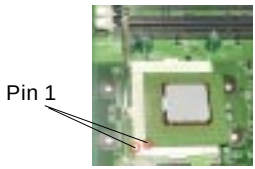
When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

IMPORTANT: Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket **before** you install the heatsink. The P4DP8-G2 can support either one or two Xeon 512KB L2 cache processors of up to 2.4 GHz and faster. If installing one processor only, install it into CPU socket #1.

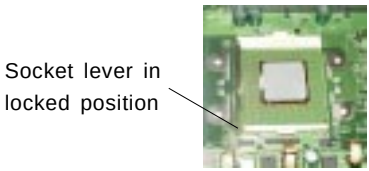
1. Lift the lever on the CPU socket. Lift the lever completely or you will damage the CPU socket when power is applied. (Install a processor into CPU #1 socket first.)



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



3. Press the lever down until you hear it *click* into the locked position. See Figure 5-1 for pictures of the 603-pin CPU socket before and after the processor is installed.



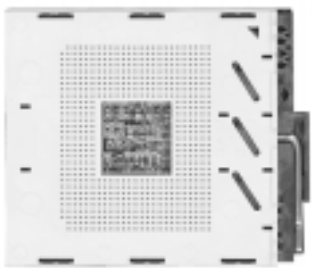
4. Apply the proper amount of thermal compound to the CPU die and place the heatsink on top of the CPU. Make sure the heatsink sits completely flat on the CPU. If it's not completely flat, the space between the two will degrade the heat dissipation function of the heatsink, which may cause the processor to overheat.

5. Secure the heatsink by locking the retention clips into their proper position. When correctly installed, the retention clips should *click* into place and the three black tabs on the CPU retention pieces should protrude fully through the corresponding holes on the retention clips. See Figure 5-2 for a diagram of the heatsink installation procedure.

6. If installing two processors, repeat these steps to install the second processor in the CPU #2 slot.

Figure 5-1. PGA Socket: Empty and with Processor Installed

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



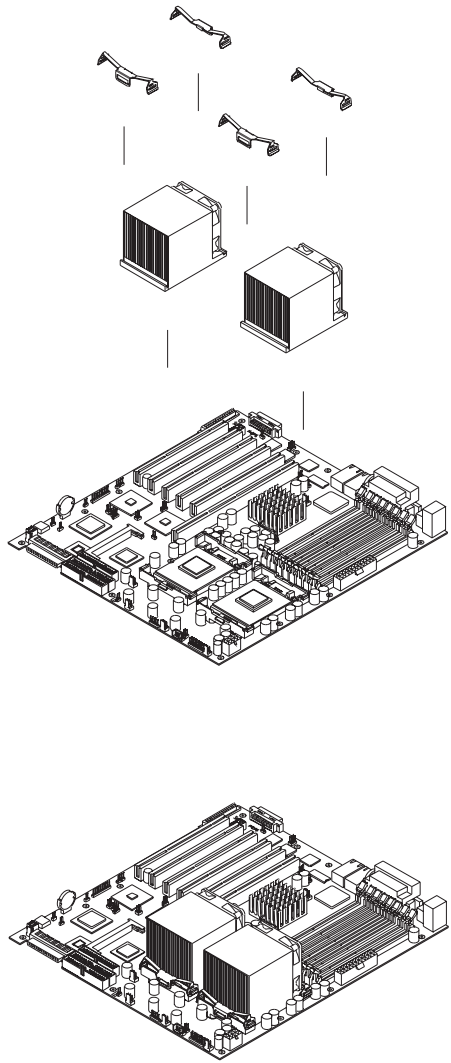


Figure 5-2. Heatsink Installation

5-3 Connecting Cables

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

Connecting Data Cables

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

- IDE Device Cables (J2A and J3A)
- Floppy Drive Cable (JP7)
- Ultra 160/320 LVD SCSI Cables (JA1 and JA2)
- Control Panel Cable (JF2, see next page)

Connecting Power Cables

The P4DP8-G2 has a 24-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. Connect the appropriate connector from the power supply to the "ATX Power" connector to supply power to the motherboard. The Secondary ATX Power Connector (at J15) must also be connected to your power supply. See the Connector Definitions section in this chapter for power connector pin definitions.

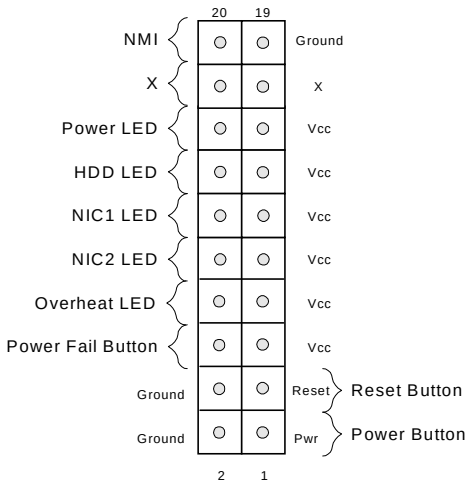
Connecting the Control Panel

JF2 contains header pins for various front control panel connectors. See Figure 5-3 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF2 wires have been bundled into single ribbon cable to simplify their connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF2.

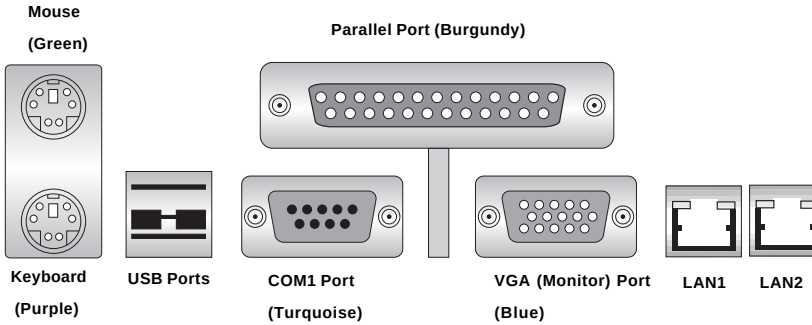
Figure 5-3. P4DP8-G2 Front Control Panel Header Pins



5-4 I/O Ports

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

Figure 5-4. P4DP8-G2 Rear Panel I/O Ports



5-5 Installing Memory

Note: Check the Supermicro web site for recommended memory modules: http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm

CAUTION

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

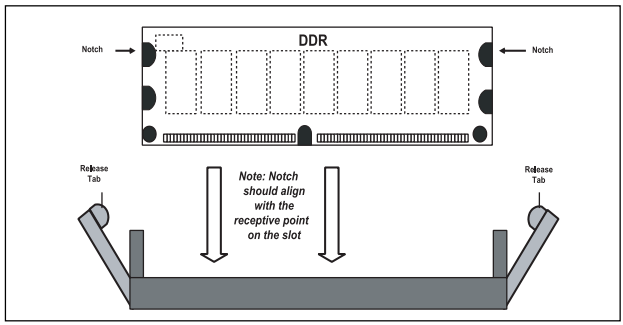
DIMM Installation (See Figure 5-5)

1. Insert the desired number of DIMMs into the memory slots, starting with Bank 1 (DIMM#1A, DIMM#1B). The memory scheme is interleaved so you must install two modules at a time, beginning with Bank 1, then Bank 2.
2. Insert each DIMM module into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support

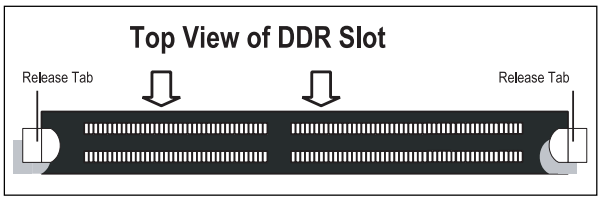
The P4DP8-G2 only supports ECC registered PC1600 (DDR-200) memory. PC2100 (DDR-266) is supported but only at 200 MHz (PC1600 speed). PC100/133 SDRAM is not supported. To maintain server reliability, it is strongly recommended that you do not mix DIMMs of different sizes and (especially) speeds. It is best if all memory modules are completely identical. See Figures 5-5a and 5-5b for installing and removing memory modules.

Figure 5-5a. Side View of DIMM Installation into Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.
To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Figure 5-5b. Top View of DIMM Slot



5-6 Adding PCI Cards

1. PCI slots:

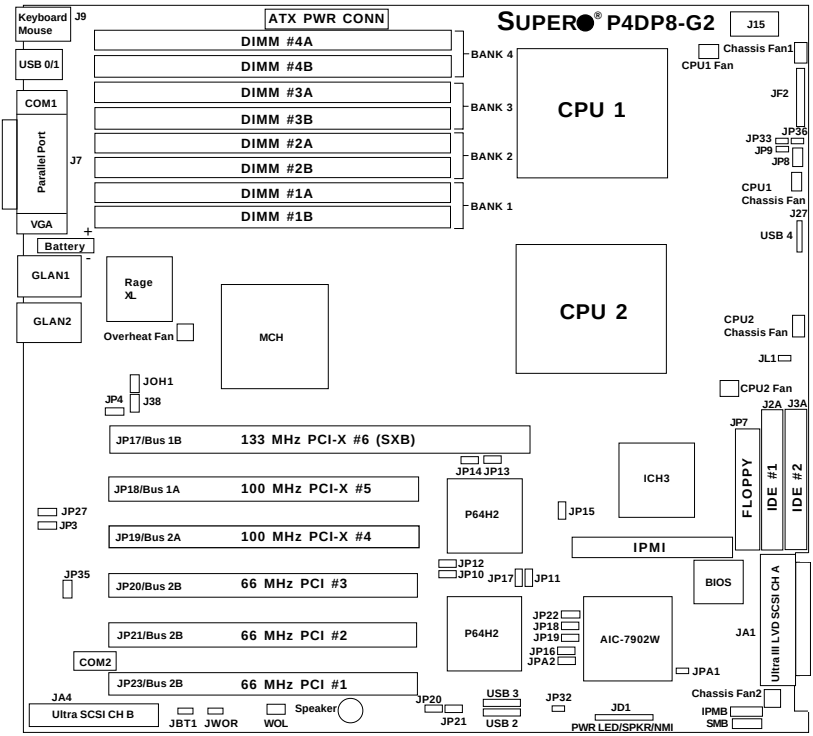
The P4DP8-G2 has two 64-bit, 100 MHz PCI-X, four 64-bit, 66 MHz PCI and one SXB (Super Extended Bus) slots. The SC822S chassis accommodates up to six low profile add-on cards.

2. PCI card installation:

Before installing a PCI add-on card, make sure you install it into a slot that supports the speed of the card (see step 1, above). Begin by swinging the release tab on the I/O backpanel shield out to the left for the PCI slot. Insert the PCI card into the correct slot on the motherboard), pushing down with your thumbs evenly on both sides of the card. Finish by pushing the release tab back to its original (locked) position. Follow this procedure when adding a card to other slots.

5-7 Motherboard Details

Figure 5-7. SUPER P4DP8-G2 Layout
(not drawn to scale)



P4DP8-G2 Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	Pins 1-2 (Normal)
JD1	Speaker Enable	See page 5-21
JD4	GLAN Enable/Disable	Pins 1-2 (Enabled)
JPA1/JPA2	SCSI CH A/B Termination	Open (Enabled)
JP4	VGA Enable/Disable	Pins 1-2 (Enabled)
JP9	Power Fail Alarm En/Disable	Open (Disabled)
JP10-JP21	PCI-X Bus Speed Setting	See page 5-20
JP22	SCSI Enable/Disable	Pins 1-2 (Enabled)
JP33	CPU Chassis/CPU Fan Select	Closed (CPU Fan)
JP38	Thermal Fan Enable/Disable	Open (BIOS Control)

Connector	Description
ATX PWR CONN	Primary ATX Power Connector
DIMM#1A-DIMM#4B	Memory (RAM) Slots
COM1/COM2	COM1/COM2 Serial Port Connector
CPU/CHS/OH FAN	CPU/Chassis/Overheat Fan Headers
J7	Parallel (Printer) Port
J9	PS/2 Keyboard/Mouse Ports
J13/J14	USB2/3 Headers
J15	Secondary ATX Power Connector
J2A/J2B	IDE #1/#2 Hard Disk Drive Connectors
JA1	Ultra320 LVD SCSI CH A Connector
JA4	Ultra320 LVD SCSI CH B Connector
JD1	PWR LED/Speaker/NMI Header
JF2	Front Control Panel Connector
JL1	Chassis Intrusion Header
JOH1	Overheat LED
JP7	Floppy Disk Drive Connector
JP8	Third Power Supply Fail Header
JP32	ACPI/Sleep Button Header
JP35	Keylock Switch Connector
JP36	Alarm Reset Switch
JWOR	Wake-on-Ring Header
GLAN1/2	Gb Ethernet Ports
SCSI LED	SCSI Active LED Header
Speaker	Onboard Speaker Header
USB0/1, 2/3	Universal Serial Bus Ports, Headers
VGA	VGA Display (Monitor) Port
WOL	Wake-on-LAN Header

5-8 Connector Definitions

ATX Power Connection

The power supply connector meets the SSI (Superset ATX) 20-pin specification. Make sure that the orientation of the connector is correct. See the table on the right for pin definitions.

ATX Power Supply 20-pin Connector

Pin Number	Definition	Pin Number	Definition
11	+3.3V	1	+3.3V
12	-12V	2	+3.3V
13	COM	3	COM
14	PS_ON	4	+5V
15	COM	5	COM
16	COM	6	+5V
17	COM	7	COM
18	-5V	8	PW-OK
19	+5V	9	5VSB
20	+5V	10	+12V

PWR_SEC Connection

For high-load configurations, it is recommended that you also provide secondary power to the motherboard with the 8-pin connector at J15. See the table on the right for pin definitions.

8-Pin +12v Power Supply Connector (J15)

Pins	Definition
1 thru 4	Ground
5 thru 8	+12v

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF2. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF2)

Pin Number	Definition
19	Ground
20	Control

Power LED

The Power LED connection is located on pins 15 and 16 of JF2. Refer to the table on the right for pin definitions.

PWR_LED Pin Definitions (JF2)

Pin Number	Definition
15	Vcc
16	Control

HDD LED

The HDD (IDE Hard Disk Drive) LED connection is located on pins 13 and 14 of JF2. Attach the IDE hard drive LED cable to display disk activity. Refer to the table on the right for pin definitions.

HDD LED Pin Definitions (JF2)

Pin Number	Definition
13	Vcc
14	HD Active

NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF2. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF2)

Pin Number	Definition
11	Vcc
12	GND

NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF2. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF2)

Pin Number	Definition
9	Vcc
10	GND

Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF2 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

Overheat (OH) LED Pin Definitions (JF2)

Pin Number	Definition
7	Vcc
8	GND

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF2. Refer to the table on the right for pin definitions. This LED is only for servers that employ redundant power supplies.

Power Fail Button Pin Definitions (JF2)

Pin Number	Definition
5	Vcc
6	GND

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF2. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Pin Definitions (JF2)

Pin Number	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins 1 and 2 of JF2. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see the Power Button Mode setting in BIOS). To turn off the power when set to suspend mode, depress the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Connector Pin Definitions (JF2)

Pin Number	Definition
1	PW_ON
2	Ground

Universal Serial Bus (USB0/1)

Two Universal Serial Bus ports are located beside the PS/2 keyboard/mouse ports. USB0 is the bottom connector and USB1 is the top connector. See the table on the right for pin definitions.

Universal Serial Bus Pin Definitions

USB0		USB1	
Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Extra Universal Serial Bus Headers (FPUSB0/1)

The Front Panel USB0/USB1 headers are located at JD2. These are separate from the ports on the I/O panel. You will need a USB cable (not included) to use either connection. Refer to the table on the right for pin definitions.

Front Panel Universal Serial Bus Pin Definitions

FPUSB0		FPUSB1	
Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Serial Ports

The COM1 serial port is located under the parallel port. See the table on the right for pin definitions. The COM2 connector is a header located near the BIOS chip on the motherboard.

Serial Port Pin Definitions (COM1, COM2)

Pin Number	Definition	Pin Number	Definition
1	DCD	6	CTS
2	DSR	7	DTR
3	Serial In	8	RI
4	RTS	9	Ground
5	Serial Out	10	NC

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J29. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3.)

PS/2 Keyboard and Mouse Port Pin Definitions (J29)

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

Fan Headers

The motherboard has three fan headers. These are designated CPU 1 Chassis Fan, CPU 2 Chassis Fan and Chassis Fan 3. See the table on the right for pin definitions.

Fan Header Pin Definitions

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

Caution: These fan headers are DC power.

GLAN1/2 (Ethernet Ports)

Two Ethernet ports (designated GLAN1 and GLAN2) are located beside the VGA port on the IO backplane. These ports accept RJ45 type cables.

Wake-On-LAN

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

Wake-On-LAN Pin Definitions (WOL)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

Wake-On-Ring

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

Wake-on-Ring Pin Definitions (WOR)

Pin Number	Definition
1	Ground
2	Wake-up

Keylock

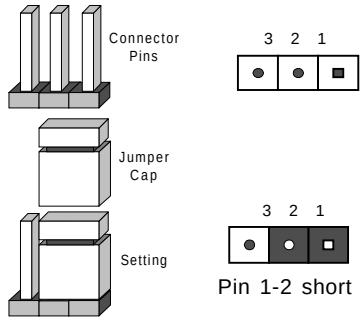
The keyboard lock connection is located on JP35. Utilizing this header allows you to inhibit any actions made on the keyboard, effectively "locking" it.

5-9 Jumper Settings

Explanation of Jumpers

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

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



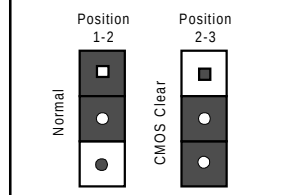
CMOS Clear

Refer to the table on the right for the JBT1 jumper settings to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then use JBT1 to clear CMOS. Replace JBT1 back to the pin 1-2 position before powering up the system again. Do not use the PW_ON connector to clear CMOS.

CMOS Clear Jumper Settings (JBT1)

Jumper Position	Definition
1-2	Normal
2-3	CMOS Clear



GLAN Enable/Disable

Change the setting of jumper JD4 to enable or disable the onboard GLAN ports (GLAN1 and GLAN2) on the motherboard. See the table on the right for jumper settings. The default setting is enabled

GLAN Enable/Disable Jumper Settings (JD4)

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

VGA Enable/Disable

JP4 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 (JP4)

Jumper Position	Definition
1-2	Enabled
2-3	Disabled

Chassis/Overheat Fan Select

JP33 allows you to select to use either the CPU fan or the Chassis fan. The default position is open to select the CPU fan. The CPU Chassis fan is intended for use with Supermicro chassis. See the table on the right for jumper settings.

CPU Chassis/CPU Fan Select Jumper Settings (JP33)

Jumper Position	Definition
Open	CPU
Closed	CPU Chassis

SCSI Enable/Disable

The SCSI Termination jumper at JP22 allows you to enable or disable the onboard SCSI controller. The normal (default) position is on pins 1-2 to enable SCSI termination. See the table on the right for jumper settings.

SCSI Enable/Disable Jumper Settings (JP22)

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

SCSI Termination Enable/ Disable

Jumpers JPA1 and JPA2 allow you to enable or disable termination for the individual SCSI channels. Jumper JPA1 controls SCSI channel A and JPA2 controls SCSI channel B. The normal (default) setting is open to enable (teminate) both SCSI channels. If you wish to connect external SCSI devices, you should disable termination for the channel(s) you will be connecting them to. See the table on the right for jumper settings.

SCSI Channel Termination Enable/Disable Jumper Settings (JPA1, JPA2)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

Watchdog Enable/Disable

The WD jumper (located on JD1) allows you to enableor disable the Watchdog feature. The default position is open to disable the Watchdog timer. When enabled, Watchdog can reboot your PC if an application is "hung up" or the system goes down. See the table on the right for jumper settings.

Watchdog Timer Enable/ Disable Jumper Settings (WD on JD1)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

Thermal Fan Enable/Disable

JP38 allows you to enable or disable the thermal fan. When enabled, the fan will operate continuously. When disabled, it will operate only when a predefined temperature threshold has been exceeded. See the table on the right for jumper settings.

Thermal Fan Enable/Disable Jumper Settings (JP38)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

PCI-X Bus Speed Settings

Jumpers JP10 through JP21 are used to set the speed for the PCI-X buses. The P4DP8-G2 has two P64DH2 PCI Bridge chips, each of which has two buses. Each of the following settings corresponds to a single bus. A maximum of two slots can be used for PCI-X 133 MHz operation.

Slot #6

Refer to the table on the right to set the speed of slot #6 with jumpers JP14, JP15 and JP13.

PCI-X Bus SpeedJumper Settings (for Slot #6)

	JP14	JP15	JP13	Protocol	Max. Freq.
Default setting →	Off	Off	Off	PCI-X	133 MHz
	Off	On	Off	PCI-X	100 MHz
	Off	On	Pins 1-2	PCI-X	66 MHz
	Off	On	Pins 2-3	PCI	66 MHz
	On	On	Pins 2-3	PCI	33 MHz

Slot #5

Refer to the table on the right to set the speed of slot #5 with jumpers JP10, JP11 and JP12.

PCI-X Bus SpeedJumper Settings (for Slot #5)

	JP10	JP11	JP12	Protocol	Max. Freq.
Default setting →	Off	Off	Off	PCI-X	133 MHz
	Off	On	Off	PCI-X	100 MHz
	Off	On	Pins 1-2	PCI-X	66 MHz
	Off	On	Pins 2-3	PCI	66 MHz
	On	On	Pins 2-3	PCI	33 MHz

Slot #4

Refer to the table on the right to set the speed of slot #4 with jumpers JP16, JP17 and JP18.

PCI-X Bus SpeedJumper Settings (for Slot #4)

	JP16	JP17	JP18	Protocol	Max. Freq.
Default setting →	Off	Off	Off	PCI-X	133 MHz
	Off	On	Off	PCI-X	100 MHz
	Off	On	Pins 1-2	PCI-X	66 MHz
	Off	On	Pins 2-3	PCI	66 MHz
	On	On	Pins 2-3	PCI	33 MHz

Slot #1, #2 and #3

Refer to the table on the right to set the speed of slots #1, #2 and #3 with jumpers JP20, JP21 and JP19.

PCI-X Bus SpeedJumper Settings (for Slot #1, #2, #3)

	JP20	JP21*	JP19	Protocol	Max. Freq.
Default setting →	Off	On	Pins 1-2	PCI-X	66 MHz
	Off	On	Pins 2-3	PCI	66 MHz
	On	On	Pins 2-3	PCI	33 MHz

***Note that JP21 is hardwired closed as only 66 and 33 MHz are available for these slots.**

Note: If two cards are used in slots 1 through 4 they will operate as 66 MHz (max.) PCI cards. You may run a single 66 MHz PCI-X card in slots 1-4 only if the other three slots remain empty.

Speaker Enable/Disable

On the JD1 header, add a jumper to pins 6-7 to enable the onboard speaker. If you wish to use an external speaker, remove it to disable the onboard speaker.

5-10 Onboard Indicators

GLAN LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On the rear of each Gb LAN port, a yellow LED indicates activity while the other LED may be green, orange or off to indicate the speed of the connection. See the table at right for descriptions.

GLAN Right LED Indicator

LED Color	Definition
Off	No Connection
Green	100 MHz
Orange	1 GHz

5-11 Parallel Port, Floppy/Hard Drive and SCSI Connections

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

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

Parallel Port Connector

The parallel port is located on J7. See the table on the right for pin definitions.

Parallel (Printer) Port Pin Definitions (J7)

Pin Number	Function	Pin Number	Function
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

Floppy Connector

The floppy connector is located on JP7. See the table on the right for pin definitions.

Floppy Connector Pin Definitions (JP7)

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

IDE Connectors

There are no jumpers to configure the onboard IDE#1 and #2 connectors (J2A and J3A, respectively). See the table on the right for pin definitions.

IDE Connector Pin Definitions (J2A, J3A)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

Ultra320 SCSI Connectors

Refer to the table on the right for the pin definitions of the Ultra320 SCSI connectors located at JA1 and JA2.

68-pin Ultra320 SCSI Connectors (JA1, JA2, JA4)

Connector Contact Number	Signal Names	Connector Contact Number	Signal Names
1	+DB(12)	35	-DB(12)
2	+DB(13)	36	-DB(13)
3	+DB(14)	37	-DB(14)
4	+DB(15)	38	-DB(15)
5	+DB(P1)	39	-DB(P1)
6	+DB(0)	40	-DB(0)
7	+DB(1)	41	-DB(1)
8	+DB(2)	42	-DB(2)
9	+DB(3)	43	-DB(3)
10	+DB(4)	44	-DB(4)
11	+DB(5)	45	-DB(5)
12	+DB(6)	46	-DB(6)
13	+DB(7)	47	-DB(7)
14	+DB(P)	48	-DB(P)
15	GROUND	49	GROUND
16	DIFFSENS	50	GROUND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	GROUND	54	GROUND
21	+ATN	55	-ATN
22	GROUND	56	GROUND
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB(8)	65	-DB(8)
32	+DB(9)	66	-DB(9)
33	+DB(10)	67	-DB(10)
34	+DB(11)	68	-DB(11)

5-12 Installing Software Drivers

After all the hardware has been installed you must install the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-8 should appear. (If this display does not appear, double click on the "My Computer" icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

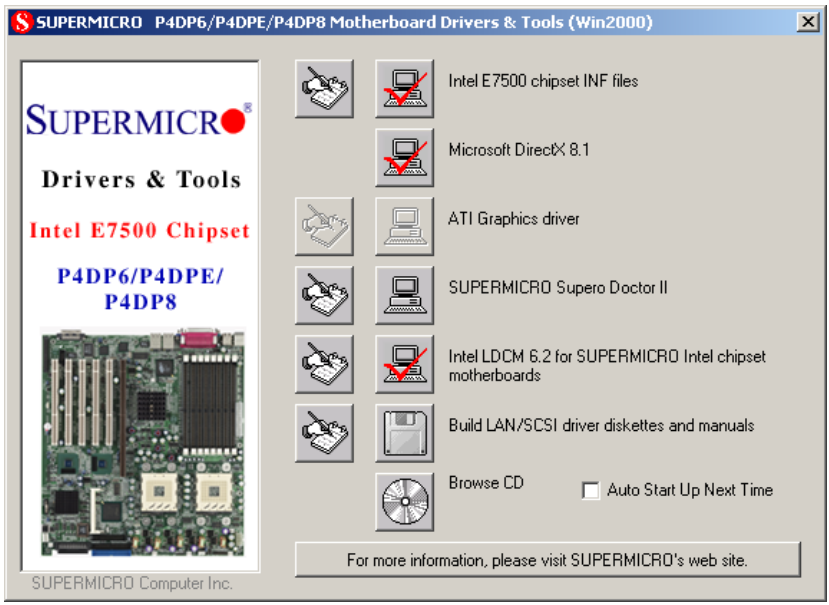


Figure 5-8 Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC742S-420 chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows. Refer to Chapter 2 for instructions on installing the system as a 4U rackmount.

Tools Required

The only tool you will need is a Philips screwdriver.

6-1 Static-Sensitive Devices

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

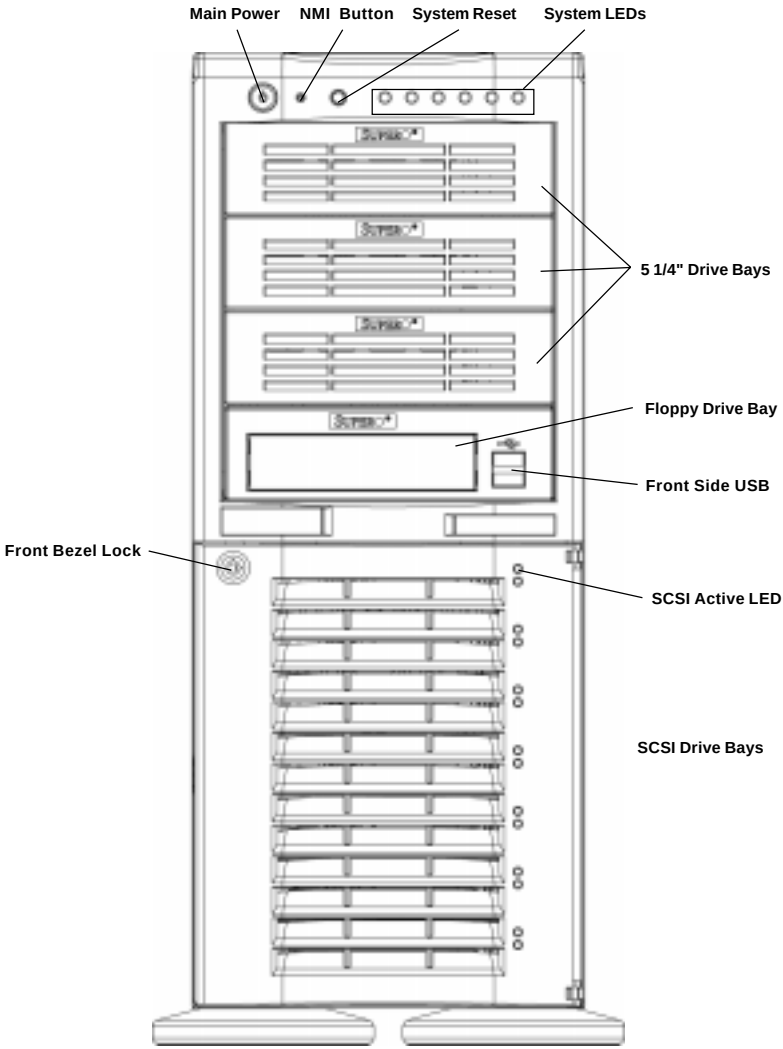
Precautions

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

Unpacking

The motherboard is shipped in antistatic packaging. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Front View



6-2 Front Control Panel

The front control panel must be connected to the JF2 connector on the motherboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify this connection. Connect the cable from JF2 on the motherboard (making sure the red wire plugs into pin 1) to the appropriate comnnector on the front control panel PCB (printed circuit board). Pull all excess cabling over to the control panel side of the chassis. The LEDs inform you of system status - see Figure 6-2 for details. Figure 6-3 shows the connections, jumpers and indicators located on the front control panel PCB. See Chapter 5 for details on JF2.

Figure 6-2. Front Control Panel LEDs

Power  Indicates power is being supplied to the system.

HDD  Indicates IDE hard disk/CD-ROM drive activity.

NIC1  **1** Indicates network activity on LAN Port 1 (Mb LAN).

NIC2  **2** Indicates network activity on LAN Port 2 (Gb LAN).

Overheat  Indicates an overheat condition in either one of the processors.

Power Fail  Indicates a power supply failure.

6-3 System Fans

Two 9-cm chassis cooling fans are located between the motherboard and the SCSI drive bays. These are used to provide cool air intake for the system. A heavy duty 12-cm exhaust fan at the rear of the chassis pulls the cooling air through the system and expels the hot air. The power supply has two fans; a primary and a secondary.

Fan Failure

Under normal operation, the two chassis fans, the exhaust fan and the primary power supply fan run continuously. If the primary power supply fan fails, the power fail LED on the front control panel will illuminate, an alarm will sound and the secondary power supply fan will activate. You can disable the alarm with the reset button on the back of the power supply. The system can operate with only one power supply fan, but you should replace the power supply as soon as possible. The two chassis cooling fans are hot-swappable - you can replace them without powering down the system (the exhaust fan is not hot-swappable).

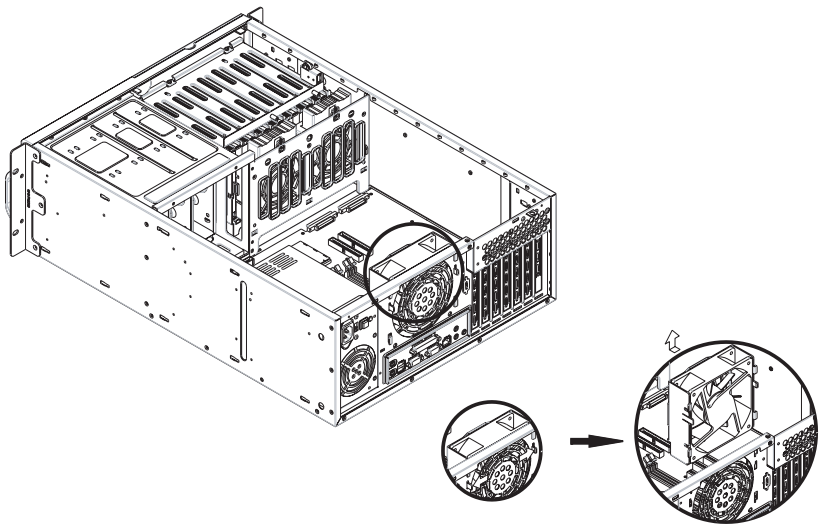
Replacing System Fans

1. Identifying the failed fan:
Inspect the back of the chassis to see if the 12-cm exhaust fan has failed. You must power down the system to replace this fan. To replace a failed chassis cooling fan, you must first remove the top/left chassis cover. Remove the two screws from the back lip of the top/left cover. Push in the release tab on the cover and push the cover toward the rear of the chassis until it stops (after moving about ½ inch). Then lift the cover up and off the chassis and see which fan has failed.

2. Removing a hot-plug fan housing:
Depress the locking tab on a chassis cooling fan and pull the unit straight out by the handle. The fan wiring for these two fans has been designed to detach automatically. The 12-cm exhaust fan is also in a housing that can be removed from the chassis (not hot-swappable - see Figure 6-3).

3. Installing a new system fan:
Replace the failed fan with an identical one (available from Supermicro). After the new fan has been installed, reassemble the fan housing and plug the housing back into its slot. You should hear it click into place when fully inserted. Check that the fan is working properly. Finish by replacing the top/left side chassis panel.

Figure 6-3. Removing the 12-cm Exhaust Fan



6-4 Drive Bay Installation

A bezel covers the front of the chassis but does not need to be removed to access the SCSI drives. If you wish to remove the bezel piece, push on the three tabs on the inside left side lip of the front chassis cover. Then slightly swing out the same (left) side of the cover - about ½ inch only. Remove by pushing on the open side of the cover to remove it from the chassis (do not try to swing or pull it straight out after opening the left side.

SCSI Drives

After unlocking the SCSI drive bay door swing it open to access the SCSI drives. SCSI drive IDs are preconfigured as 0 through 6 in order from bottom to top (or from left to right if rackmounted). **Note:** You must use standard 1" high, 80-pin SCA SCSI drives in the SuperServer 7042M-6.

Use extreme caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the airflow holes in the SCSI backplane.

1. Installing/removing hot-plug SCSI drives:

The seven SCSI drive carriers are all easily accessible at the front of the chassis. The SCSI drives are hot-pluggable, meaning they can be removed and installed without powering down the system. To remove a carrier, first open the front bezel then push the release button located beside the drive LEDs. Swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-4). **Note:** Your operating system must have RAID support to enable the hot-plug capability of the SCSI drives.

2. Mounting a SCSI drive in a drive carrier:

The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also work to promote proper airflow for the system. For this reason, even carriers without SCSI drives must remain in the server. If you need to add a new SCSI drive, insert the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier. Secure the drive to the carrier with four screws. (See Figure 6-5.)

Figure 6-4. Removing a SCSI Drive Carrier

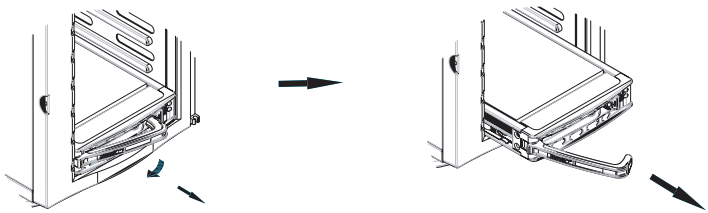
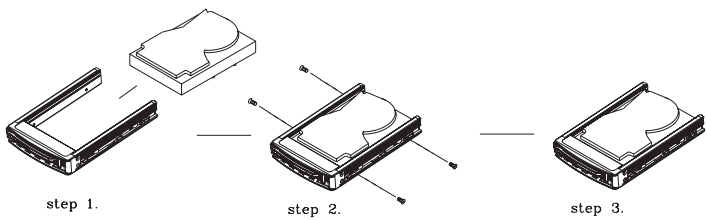


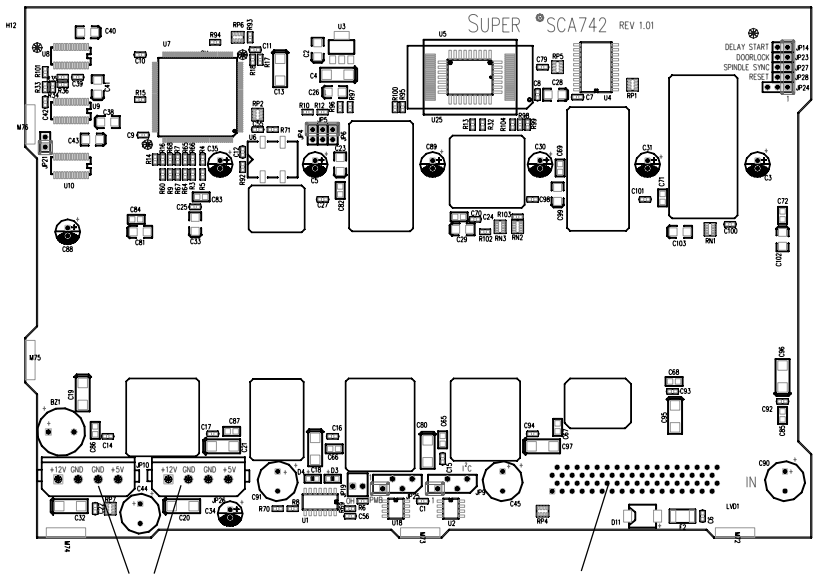
Figure 6-5. Mounting a SCSI Drive in a Carrier



3. SCSI backplane:

All seven SCSI drives plug into the SCSI backplane (p/n SCA742), which provides Ultra160 single channel operation. There are no jumpers on the SCSI backplane. A ribbon cable from JA1 on the motherboard should be connected to the LVD1 connector on the SCSI backplane (this is SCSI channel A). There are also two power connectors on the backplane - both should be connected. See Figure 6-6 for the locations of backplane connectors - the reverse side of the backplane has seven connectors that the SCSI drives plug into when inserted with a SCSI drive carrier.

Figure 6-6. SCA742 SCSI Backplane



Always route SCSI power and ribbon cables so that they do not impede airflow or interfere with running fans.

<u>Important:</u> Regardless of how many SCSI hard drives are installed, all 7 SCSI drive carriers must remain in the drive bays to promote proper airflow.

Installing Components in the 5 1/4" Drive Bays

1. Drive bay configuration

The 7042P-8R has four 5 1/4" drive bays above the SCSI drive bays. Components such as a floppy drive, IDE hard drives, CD-ROM drives or additional SCSI drives (that can fit into a standard IDE drive bay) can be installed in these 5 1/4" drive bays. SCSI drives installed here should be connected to the JA2 (SCSI channel B) connector on the motherboard.

2. Mounting components in the drive bays

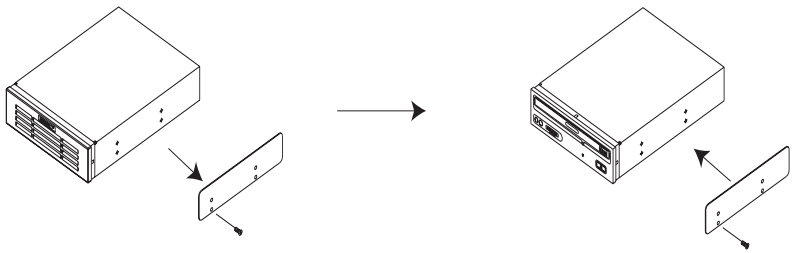
First power down the system and then remove the top/left chassis cover to access the drive components. With the cover off, remove the two or four screws that secure the drive carrier to the chassis (one side only) then push the entire empty drive carrier out from the back.

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

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

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

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



6-5 Power Supply

The 7042P-8R has a triple redundant 500 watt redundant cooling power supply that consists of three 250W power modules. All three modules are active and share the load of the system (up to 500W max.). If any of the three modules fail, the other two will continue to provide up to 500W of power and allow the system to continue running without interruption. The power supply modules have an auto-switching capability that enable them to automatically sense and operate with either 100 or 240 volt inputs. The power modules are PFC (Power Factor Correction) compliant.

Power Supply Failure

If any of the three power supply modules fail, an audible alarm will activate to notify you of a power failure. Disable the alarm by pressing the alarm reset switch on the back of the power supply. The PWR Fail LED and the LED on the back of the power supply will also illuminate and remain on (until the failed unit has been replaced).

Replacing the Power Supply

1. Accessing the power supply:
You do not need to power down the system to replace a power module. Remove the left/top chassis cover to access the power supply for removal.

2. Removing the power supply:
First, unplug the power cord from the failed power supply module. Then remove the power supply connectors going to the motherboard and the SCSI backplane. Finally, remove the screws that secure the unit to the mounting brackets in the chassis and then pull the unit completely out.

3. Installing a new power supply:
Replace the failed unit with another unit having the exact same part number (SC742S-420). Gently but firmly push the new unit all the way into the open bay. Secure it to the mounting brackets in the chassis with the screws provided. Connect the two power cables to the SCSI backplane, two to the motherboard (ATX PWR CONN and J15 connectors) and also the power fail cable to JP8. Finish by replacing the chassis left/top cover and then restoring power to the system.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the PhoenixBIOS™ Setup utility for the P4DP8-G2. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

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

System BIOS

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

How To Change the Configuration Data

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

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

7-2 Running Setup

Default settings are in bold text unless otherwise noted.

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

When you first power on the computer, the PhoenixBIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

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

Press the <Delete> key to enter Setup

7-3 Main BIOS Setup

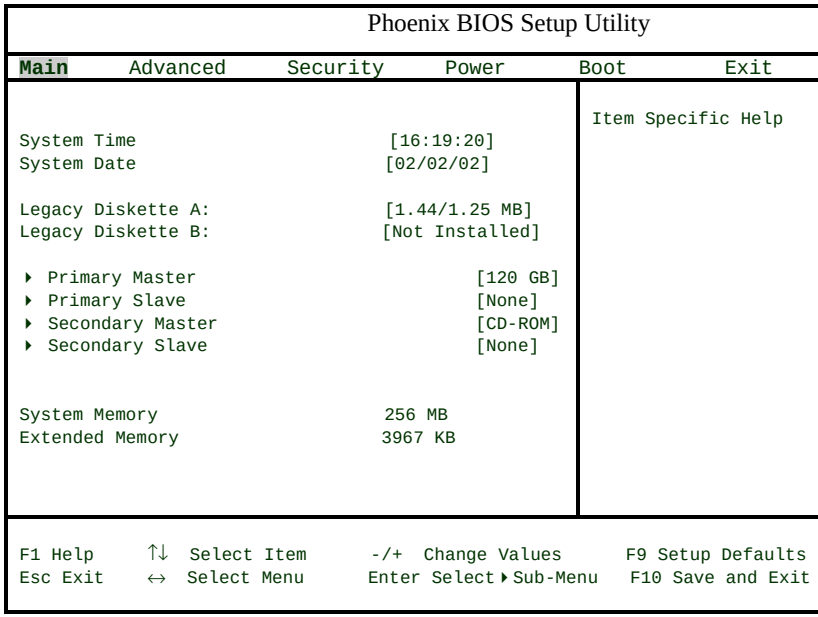
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

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

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶ icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu



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

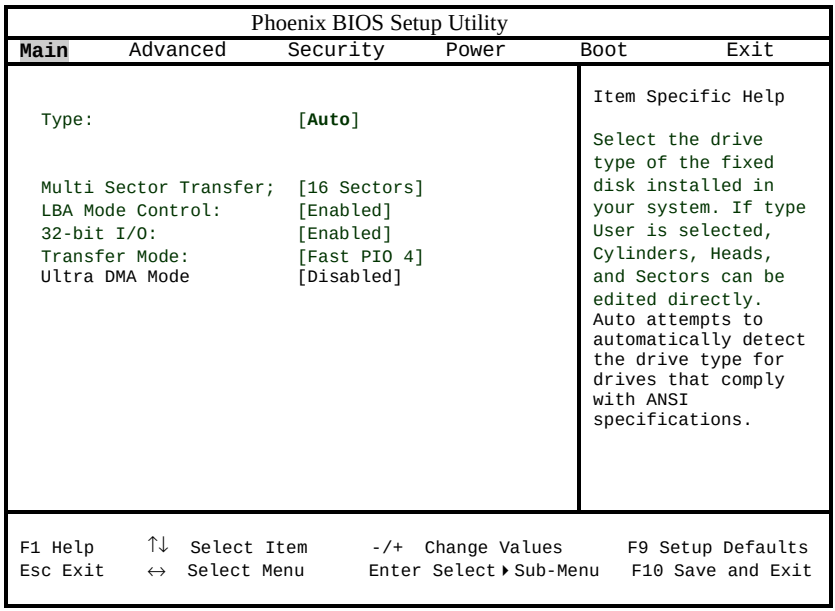
This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

Legacy Diskette B

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

▶Primary Master/Primary Slave/Secondary Master/Secondary Slave

These settings allow the user to set the parameters of the IDE Primary Master/Slave and IDE Secondary Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:



Type

Selects the type of IDE hard drive. The options are **Auto** (allows BIOS to automatically determine the hard drive's capacity, number of heads, etc.), a number from 1-39 to select a predetermined type of hard drive, CD-ROM and ATAPI Removable.

Multi-Sector Transfers

Select the number of transfer sectors. Options are 2, 4, 6, 8 and **16 Sectors**.

LBA Mode Control

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

32-bit I/O

Selects 32-bit I/O operation. Options are Enabled and **Disabled**.

Transfer Mode

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

Ultra DMA Mode

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

System Memory

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

Extended Memory

7-4 Advanced Setup

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

```
                                Phoenix BIOS Setup Utility
Main      Advanced      Security      Power      Boot      Exit

                                                  Item Specific Help
Quick Boot Mode                    [Enabled]
Quiet Boot                         [Disabled]

▸PCI/PnP Configuration
▸Cache Memory
▸I/O Device Configuration
▸Advanced Chipset Control
▸Advanced Processor Options
▸DMI Event Logging
▸Console Redirection

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

Quick Boot Mode

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

Quiet Boot

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

▶PCI/PnP Configuration

Access the submenu to make changes to the following settings.

Onboard LAN1 OPROM Configure

Enabling this option provides the ability to boot from LAN1. The options are Enabled and **Disabled**.

Onboard LAN2 OPROM Configure

Enabling this option provides the ability to boot from LAN2. The options are Enabled and **Disabled**.

Legacy USB Support

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

Installed OS

This setting allows you to choose which operating system you are using to run the system. Options are Other, Win95, Win98, WinMe and Win2000.

NT4 Installation Workaround

When enabled, this setting provides a workaround for the absent floppy drive during NT4 installation. Options are Enabled and **Disabled**.

Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data area. Options are Yes and **No**.

▶PCI Slot Configuration

PCI/PCIX Frequency (Slot 1-3)

Use this setting to change the speed of PCI/PCIX slots 1 though 3. Options are **Auto**, 33 MHz, 66 MHz, 100 MHz and 133 MHz.

PCI/PCIX Frequency (Slot 4)

Use this setting to change the speed of PCI/PCIX slot 4. Options are **Auto**, 33 MHz, 66 MHz, 100 MHz and 133 MHz.

PCI/PCIX Frequency (Slot 5)

Use this setting to change the speed of PCI/PCIX slot 5. Options are **Auto**, 33 MHz, 66 MHz, 100 MHz and 133 MHz.

PCI/PCIX Frequency (Slot 6)

Use this setting to change the speed of PCI/PCIX slot 6. Options are **Auto**, 33 MHz, 66 MHz, 100 MHz and 133 MHz.

▶PCI Device, Slot #1 - Slot#6

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

Option ROM Scan

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

Enable Master

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

Latency Timer

This setting allows you to enable the Latency Timer. Options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h and 00E0h.

Large Disk Access Mode

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

Local Bus IDE Adapter

Use this setting to enable the integrated local bus IDE adapter. Options are Disable, Primary, Secondary and **Both**.

▶Cache Memory

Access the submenu for this item to specify one of the following actions for various sections of cache memory: Uncache, Write Protect, Write Back, Write Through or Disable. See the "Item Specific Help" window for details.

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

Power Loss Control

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

Watch Dog

This setting is for enabling the Watch Dog feature. The options are Enabled and **Disabled**.

KBC Clock Input

Use this setting to set the clock frequency for the keyboard. Options are 6 MHz, 8 MHz and **12 MHz**.

Serial Port A

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

Base I/O Address

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

Interrupt

Select the IRQ (interrupt request) for serial port A. Options are IRQ3 and **IRQ4**.

Serial Port B

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

Mode

Specify the type of device that will be connected to serial port B. Options are **Normal** and IR (for an infrared device).

Base I/O Address

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

Interrupt

Select the IRQ (interrupt request) for serial port B. Options are **IRQ3** and IRQ4.

Parallel Port

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

Base I/O Address

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

Interrupt

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

Mode

Specify the parallel port mode. Options are Output Only, Bi-directional, EPP and **ECP**.

DMA Channel

Specify the DMA channel. Options are DMA1 and **DMA3**.

Floppy Disk Controller

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

Base I/O Address

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

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Enable Memory Gap

This setting allows you to turn off system RAM to free up address space. The options for this setting are **Disabled** and Extended.

ECC Configuration

This setting lets you enable or disable ECC (Error Correction and Checking). The options are **ECC** and Disabled.

ECC Error Type

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

SERR Signal Condition

This setting specifies the conditions required to qualify as an ECC error. Options are **None**, Single Bit, Multiple Bit and Both.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

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

Frequency Ratio

This setting allows you to specify the value of tthe internal frequency multiplier of the processor, which is used to determine the processor speed. Options are x8, x16, x17, x18, x19, x20, x21, x22, x23 and x24.

Fast String Operations

This setting allows you to **Enable** or Disable fast string operations.

Compatible FPU Code

This setting allows you to Enable or **Disable** the compatible FPU code.

Split Lock Operations

This setting allows you to **Enable** or Disable split lock operations.

Hyper-threading

This setting allows you to **Enable** or Disable hyper-threading. Enabling hyper-threading results in increased CPU performance.

L3 Cache

This setting allows you to Enable or **Disable** the L3 cache.

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display, not a setting, informing you of the event log validity.

Event Log Capacity

This is a display, not a setting, informing you of the event log capacity.

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.

Event Logging

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

Mark DMI Events as Read

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

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

Specifies to redirect the console to On-board COMA or On-board COMB. This setting can also be **Disabled**.

BAUD Rate

Select the BAUD rate for console redirection.

Console Type

Choose from the available options to select the console type for console redirection.

Flow Control

Choose from the available options to select the flow control for console redirection.

Console Connection

Select the console connection: either Direct or Via Modem.

Continue CR after POST

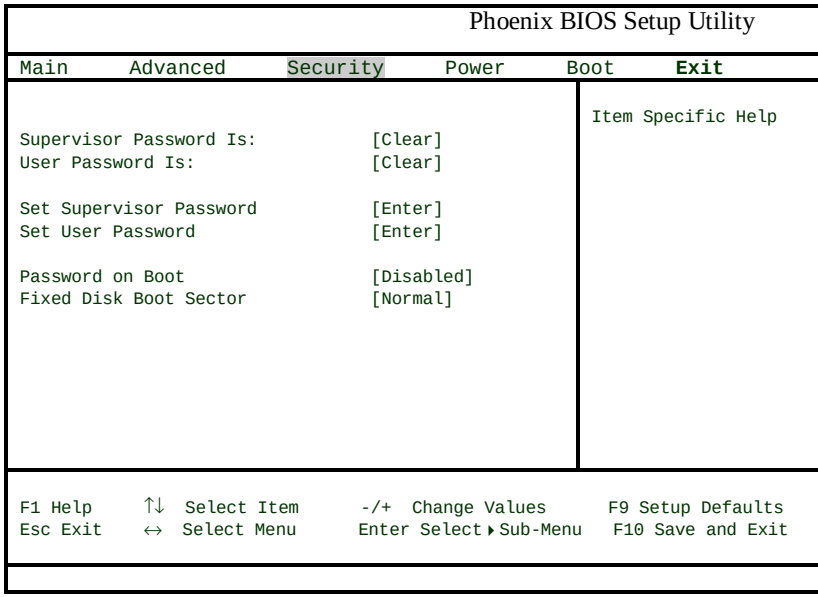
Choose whether to continue with console redirection after the POST routine. Options are On and **Off**.

of Video Pages to Support

Choose the number of video pages to allocate for redirection when video hardware is not available. Options are **1**, 2, 3, 4, 5, 6, 7 and 8.

7-5 Security

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



Supervisor Password Is:

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

User Password Is:

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

Set Supervisor Password

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

Set User Password

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

Password on Boot

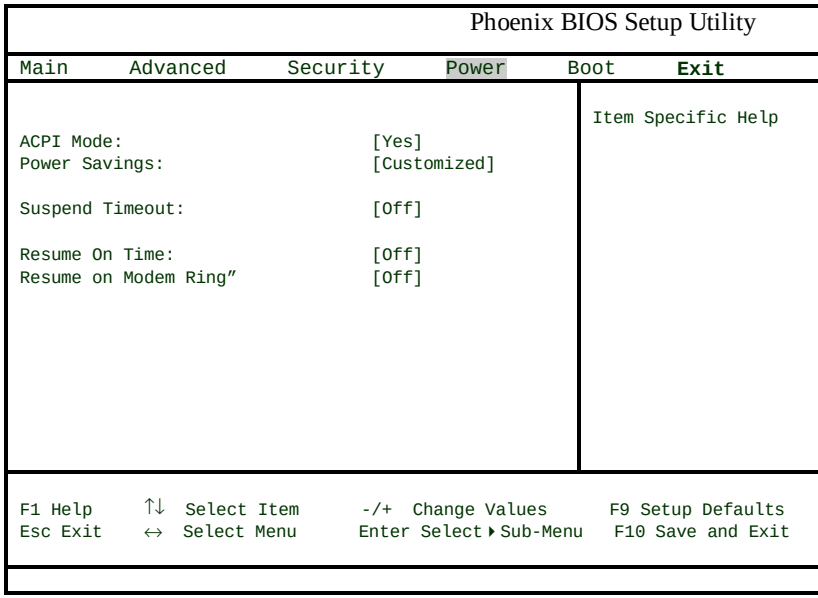
This setting allows you to require a password to be entered when the system boots up. Options are Enabled (password required) and Disabled (password not required).

Fixed Disk Boot Sector

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

7-6 Power

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



ACPI Mode

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

Power Savings

This setting sets the degree of power saving for the system. The options are Disabled, **Customized**, Maximum Power Savings and Maximum Performance. Customized allows you to alter the other two modes.

Suspend Timeout

Use this setting to specify the period of system inactivity to transpire before entering the suspend state. Options are **Off**, 5 min, 10 min, 15 min, 20 min, 30 min, 40 min and 60 min.

Resume on Time

Select either **Off** or On, which will wake the system up at the time specified in the next setting.

Resume Time

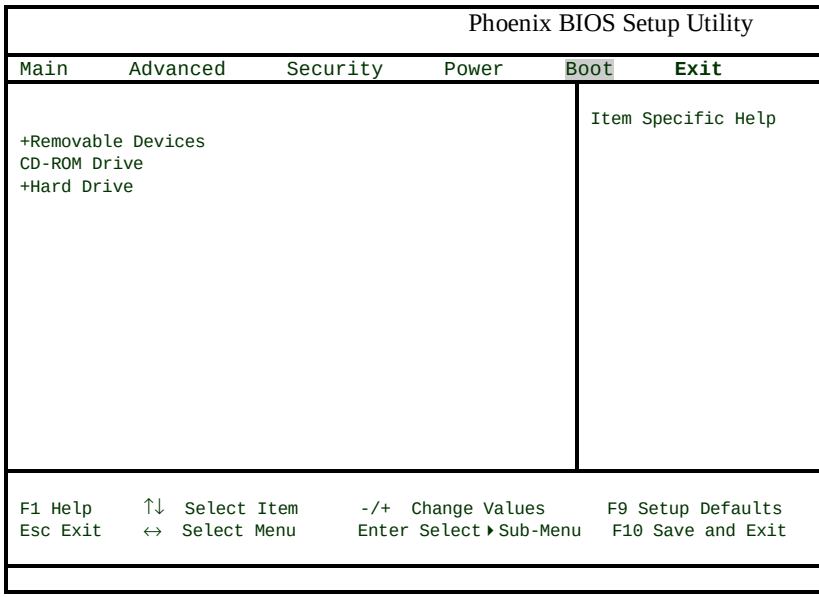
Use this setting to specify the time you want the system to wake up (the above setting must be set to On). Enter the time with the number keys.

Resume on Modem Ring

Use this setting to enable or disable the WOR (Wake-on Ring) feature. Options are On and **Off**.

7-7 Boot

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



+Removable Devices

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

CD-ROM Drive

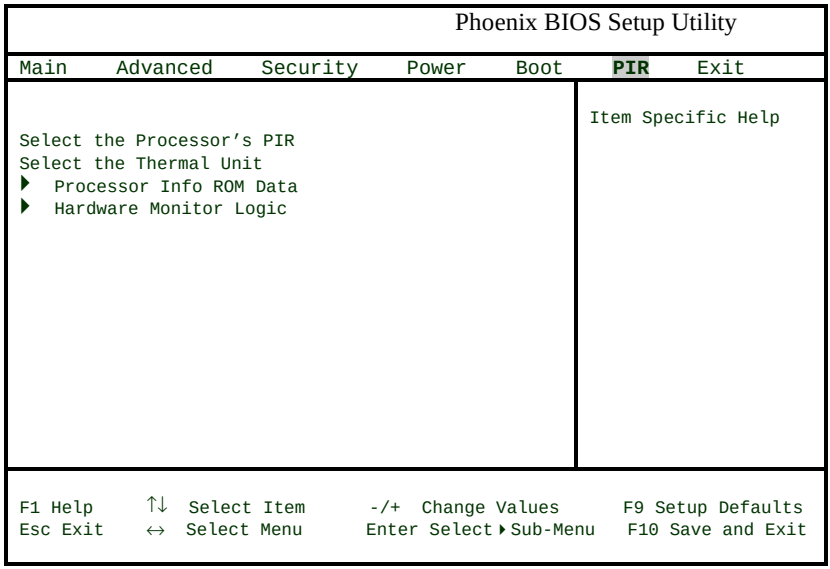
See details on how to change the order and specs of the CD-ROM drive in the Item Specific Help window.

+Hard Drive

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

7-8 PIR

Choose PIR from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>. PIR stands for "Processor Info ROM", which allows BIOS to read certain information from the processors. Options for PIR settings are displayed by highlighting the setting option using the arrow keys and pressing <Enter>. All PIR BIOS Setup options are described in this section.



Select the Processor's PIR

Selects the processor PIR. Options are **A0h/A1h**, A2h/A3h, A4h/A5h, A6h/A7h, A8h/A8h, AAh/ABh, ACh/ADh and AEh/AFh.

Select the Thermal Unit

Selects the thermal unit. Options are **30h/31h**, 32h/33h, 34h/35h, 52h/53h, 54h/55h, 56h/57h, 98h/99h, 9Ah/9Bh and 9Ch/9Dh.

▶Processor Info ROM Data

Highlight this and hit <Enter> to see PIR data on the following items:

Header Info

Processor Data

Processor Core Data

L3 Cache Data

Package Data

Part Number Data

Thermal Reference Data

Feature Data

Other Data

OEM Data

▶Hardware Monitor Logic

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

CPU1 Temperature

CPU2 Temperature

System Temperature

CPU Fan1/CPU1 Chassis Fan

CPU Fan2/CPU2 Chassis Fan

Chassis Fan 1

Chassis Fan 2

Processor Vcore

3.3V Standby

3.3V Vcc

5V Vcc

12V Vcc

1.8V Vcc

-12V Vcc

7-9 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.

```
                                Phoenix BIOS Setup Utility
Main    Advanced    Security    Power    Boot    PIR    Exit

                                                  Item Specific Help
Exit Saving Changes
Exit Discarding Changes
Load Setup Defaults
Discard Changes
Save Changes

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

Exit Saving Changes

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

Exit Discarding Changes

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

Load Setup Defaults

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

Discard Changes

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

Save Changes

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

Notes

Appendix A

BIOS POST Messages

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

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

Stuck key
Stuck key on keyboard.

Keyboard error
Keyboard not working.

Keyboard Controller Failed
Keyboard controller failed test. May require replacing keyboard controller.

Keyboard locked - Unlock key switch
Unlock the system to proceed.

Monitor type does not match CMOS - Run SETUP
Monitor type not correctly identified in Setup

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

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

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

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

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

System timer error
The timer test failed. Requires repair of system board.

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

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

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

Memory Size found by POST differed from CMOS
Memory size found by POST differed from CMOS.

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

Incorrect Drive A type - run SETUP
Type of floppy drive A: not correctly identified in Setup.

Incorrect Drive B type - run SETUP
Type of floppy drive B: not correctly identified in Setup.

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

CPU ID:
CPU socket number for Multi-Processor error.

EISA CMOS not writeable
ServerBIOS2 test error: Cannot write to EISA CMOS.

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

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

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

device Address Conflict
Address conflict for specified **device.**

Allocation Error for: device
Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

CD ROM Drive
CD ROM Drive identified.

Entering SETUP ...
Starting Setup program

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

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

Invalid System Configuration Data
Problem with NVRAM (CMOS) data.

I/O device IRQ conflict
I/O device IRQ conflict error.

PS/2 Mouse Boot Summary Screen:
PS/2 Mouse installed.

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

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

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

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

One or more I2O Block Storage Devices were excluded from the Setup Boot Menu
There was not enough room in the IPL table to display all installed I2O block-storage devices.

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

Parity Check 1 nnnn
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.** Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

Parity Check 2 nnnn
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????.**

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

Press <F2> to enter Setup
Optional message displayed during POST. Can be turned off in Setup.

PS/2 Mouse:
PS/2 mouse identified.

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

System BIOS shadowed
System BIOS copied to shadow RAM.

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

Video BIOS shadowed
Video BIOS successfully copied to shadow RAM.

Notes

Appendix B

BIOS POST Codes

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

Recoverable POST Errors

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

1 long and two short beeps - video configuration error
1 continuous long beep - no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen.
The following is a list of codes that may be written to port 80h.

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

POST Code	Description
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh
22h	1-3-1-3 Test 8742 Keyboard Controller
24h	Set ES segment register to 4 GB
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line ***xxxx****
2Eh	1-3-4-3 RAM failure on data bits ***xxxx**** of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts

POST Code	Description
59h	Initialize POST display service
5Ah	Display prompt “Press F2 to enter SETUP”
5Bh	Disable CPU cache
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register

POST Code	Description
97h	Fix up Multi Processor table
98h	1-2 Search for option ROMs. One long, two short beeps on checksum failure
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard

POST Code	Description
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for boot block in Flash ROM

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

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

Notes

Appendix C

System Specifications

Processors

Single or dual 603-pin Intel® Xeon™ processors to 2.40 GHz+ at a front side (system) bus speed of 400 MHz.

Note: Please refer to the support section of our web site for a complete listing of supported processors. (http://www.supermicro.com/TechSupport.htm)

Chipset

Intel E7500 (Plumas) chipset

BIOS

4 Mb Phoenix® Flash ROM

Memory Capacity

Eight 184-pin DDR DIMM sockets supporting up to 16 GB of registered ECC DDR-200 (PC1600) SDRAM

Note: Interleaved memory - requires memory to be installed two at a time. PC2100 memory modules are supported but only at 200 MHz. See the memory section in Chapter 5 for details.

SCSI Controller

Adaptec AIC-7902 for Ultra320 onboard SCSI

Peripheral Drives/Bays

One (1) 3.5" floppy drive
Three (3) 5 1/4" drive bays
Seven (7) 3.5 x 1" drive bays (for SCSI drives)

Expansion Slots

Chassis: Seven (7) I/O chassis slots
Motherboard: total of six (6) PCI-X slots including one (1) SXB (Super Extended Bus) slot

Power Supply

Type: 3 x 250W with +3.3V, +5V, +12V, -5V and -12V main DC outputs and a 5V standby output
Input Voltage: 100-240VAC (w/ ± 10% tolerance - units are auto-switching capable)
Input Frequency: 50/60 hz
Maximum Output: +5V and +3.3V: 200W total
+5V, +3.3V and -12V: 400W max.

System Cooling

Two (2) 9-cm chassis cooling fans (hot-swappable)
One (1) 12-cm exhaust fan (not hot-swappable)

Operating Environment

Operating Temperature Range: 0 to 35 degrees C
Humidity Range: 5-90%, non-condensing

Motherboard

Model: P4DP8-G2
Form Factor: Extended ATX
Dimensions: 12 x 13.05 in (304.8 x 331.5 mm) SC742S-420 chassis:

Chassis

Model: SC742S-420
Form Factor: 4U rackmount/tower
Dimensions: (WxHxD as 4U) 6.94" x 17.125 x 24.125 in. (17.6 x 435 x 612.8 mm)

Operating Systems Supported

Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

Weight

Net (Bare Bone): ~40 lbs. (~18 kg.)
Gross (Bare Bone): ~54 lbs. (~24.5 kg.)

Regulations: FCC Class B, CE, UL/CUL, TUV