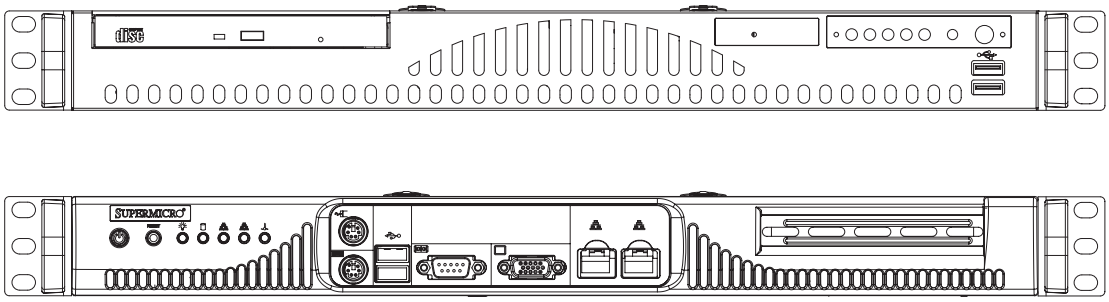
SUPERMICRO®

SUPERSERVER 5015M-MR
SUPERSERVER 5015M-MR+
SUPERSERVER 5015M-MF
SUPERSERVER 5015M-MF+



USER'S MANUAL

Revision 1.0a

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Manual Revision 1.0a

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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 5015M-MR(+)/ 5015M-MF(+). Installation and maintainance should be performed by experienced technicians only.

The SuperServer 5015M-MR(+)/5015M-MF(+) is a high-end single processor mini 1U rackmount server based on the SC512F-260/SC513F-260 1U rackmount server chassis and the Super PDSMi/PDSMi+ motherboard. The PDSMi/PDSMi+ supports a single Intel® processor - please refer to our website for an up-to-date list of supported processors.

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 PDSMi/PDSMi+ motherboard and the SC512F-260/SC513F-260 chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5015M-MR(+)/5015M-MF(+) into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5015M-MR(+)/5015M-MF(+).

Chapter 5: Advanced Motherboard Setup

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

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC512F-260/SC513F-260 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: LED Indicators

Appendix B: BIOS POST Codes

Appendix C: Installing Software and Drivers

Appendix D: System Specifications

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Chapter 1

Introduction

1-1 Overview

The Supermicro SuperServer 5015M-MR(+)/5015M-MF(+) is a single processor, mini 1U rackmount server. The 5015M-MR(+)/5015M-MF(+) is comprised of two main subsystems: the SC512F-260/SC513F-260 chassis and the PDSMi/PDSMi+ motherboard. The PDSMi/PDSMi+ supports a single Intel® processor in an LGA775 type socket and up to 8 GB of DDR2-667/533/400 SDRAM memory. Please refer to our web site for information on operating systems that have been certified for use with the 5015M-MR(+)/5015M-MF(+) (www.supermicro.com) and for details on supported processors.

In addition to the motherboard and chassis, various hardware components may have been included with the 5015M-MR(+)/5015M-MF(+), as listed below.

- One passive CPU heatsink (SNK-P0016)
- Two (2) 56-mm counter-rotating fans (FAN-0087)
- One (1) slim CD-ROM drive, 5015M-MR only [CDM-TEAC-24(B)]
- One (1) SATA cable (CBL-0061)
- One (1) USB cable, 5015M-MR only
- One (1) air shroud for 5015M-MR (CSE-PT95)
- One (1) air shroud for 5015M-MF (CSE-PT96)
- One (1) 64-bit PCI-X slot riser card (CSE-RR1U-Xi)
- Rackmount hardware with screws (CSE-PT8) (optional):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails in a rack/telco rack
- One (1) CD containing drivers and utilities
- SuperServer 5015M-MR(+)/5015M-MF(+) User's Manual

1-2 Motherboard Features

At the heart of the SuperServer 5015M-MR(+)/5015M-MF(+) lies the PDSMi/PDSMi+, a single processor motherboard designed to provide maximum performance. Below are the main features of the PDSMi/PDSMi+. (See Figure 1-1 for a block diagram of the E7230 chipset.)

Processors

The PDSMi/PDSMi+ has an LGA775 ZIF socket that supports a single Intel processor. Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/support).

Memory

The PDSMi/PDSMi+ has four (4) 240-pin DIMM sockets that can support up to 8 GB of unbuffered ECC or non-ECC DDR2-667/533/400 SDRAM modules. (Memory operates in a dual-channel, or interleaved configuration for increased performance.)

Serial ATA

A Serial ATA controller is incorporated into the ICH7R portion of the chipset to provide a four-port Serial ATA subsystem. The Serial ATA drive is not hot-swappable. Note that only one 3.5" SATA drive bay is available on the 5015M-MR(+)/5015M-MF(+) - as an option the 5015M-MF(+) can support two 2.5" SATA drives.

PCI Expansion Slots

The PDSMi/PDSMi+ has one universal PCI-X 133 MHz slot, one PCI-Express x8 slot and one 32-bit, 33 MHz (5V) PCI slot. When incorporated into the 5015M-MR(+)/5015M-MF(+) server system, a riser card is included for use with the PCI-X slot to support one full-size, half-length expansion card. An optional riser card (CSE-RR1U-Ei) can be used to support an 8x PCI-Express card.

Ethernet Ports

Two Intel 82573V PCI-Express gigabit Ethernet controllers are incorporated into the PDSMi/PDSMi+ to support two Gigabit LAN ports.

Onboard Controllers/Ports

An onboard IDE controller supports one floppy drive and up to two Ultra ATA 100 hard drives or ATAPI devices. Onboard I/O backpanel ports include one serial COM port, a VGA (video) port, two USB ports, PS/2 mouse and keyboard ports and two GLAN (RJ45) ports.

Other Features

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

Figure 1-1. Intel E7230 Chipset (PDSMi): System Block Diagram

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

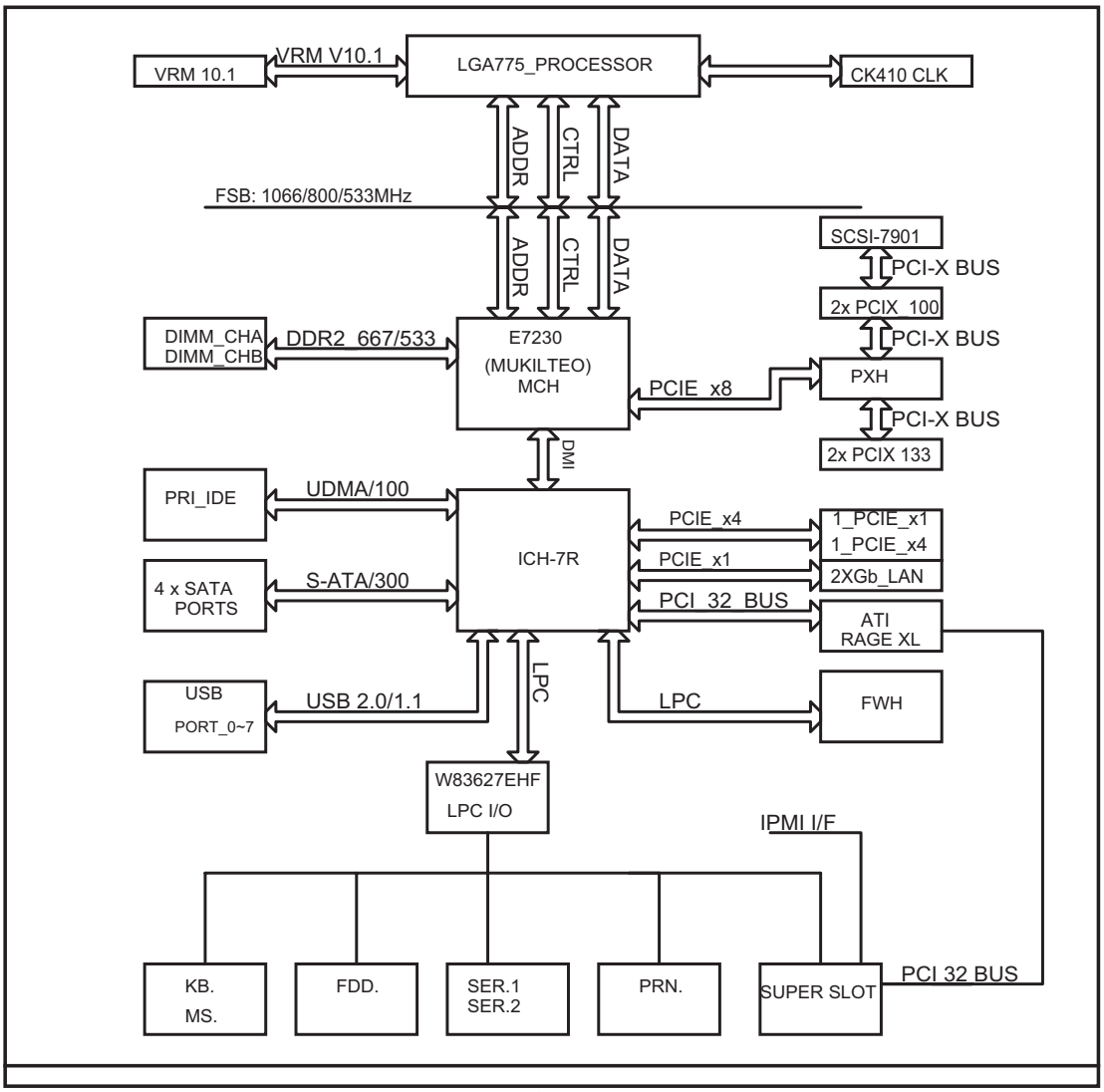
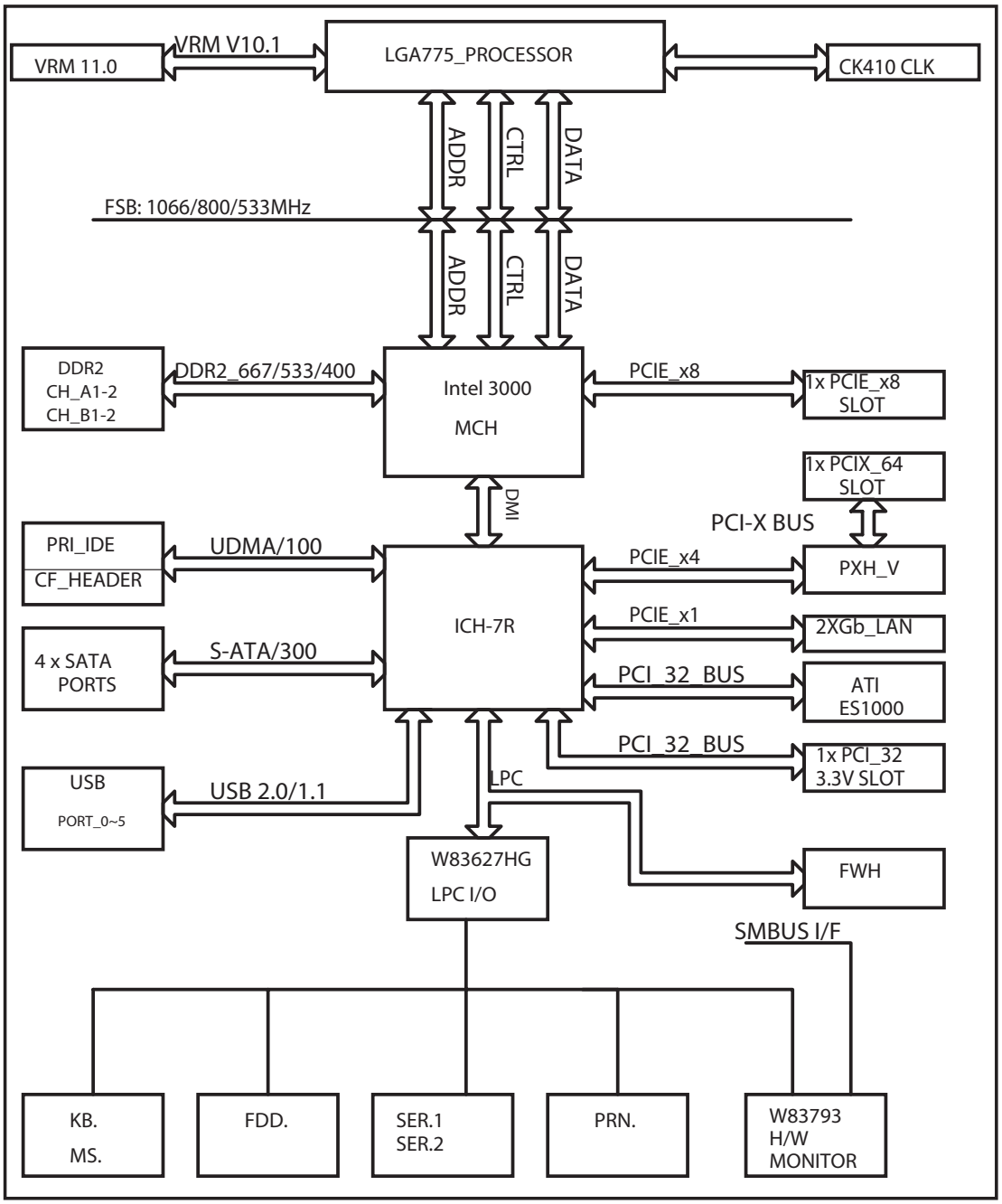


Figure 1-2. Intel E3000 Chipset (PDSMi+): System Block Diagram

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



1-3 Server Chassis Features

The following is a general outline of the main features of the SC512F-260/SC513F-260 chassis.

System Power

When configured as a SuperServer 5015M-MR(+)/5015M-MF(+), the SC512F-260/SC513F-260 chassis includes a single 260W power supply.

Control Panel

The SC512F-260/SC513F-260's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity, overheat warning and fan failure. The control panel also includes a main power button and a system reset button.

Rear I/O Panel [5015M-MR(+)]

The rear I/O panel on the SC512F-2600 provides one motherboard expansion slot, one COM port (another is internal), two USB ports, PS/2 mouse and keyboard ports, a VGA (graphics) port and two Gb Ethernet ports. (See Chapter 6 for diagram.)

Front I/O Panel [5015M-MF(+)]

The front I/O panel on the SC513F-260 provides one motherboard expansion slot, one COM port (another is internal), two USB ports, PS/2 mouse and keyboard ports, a VGA (graphics) port and two Gb Ethernet ports. (See Chapter 6 for diagram.)

Cooling System

The SC512F-260/SC513F-260 chassis has an innovative cooling design that features an air shroud and counter-rotating fans with user-defined fan speed control. Both the 5015M-MR(+) and the 5015M-MF(+) feature two sets of counter-rotating fans.

1-4 Contacting Supermicro

Headquarters

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980 Rock Ave.
San Jose, CA 95131 U.S.A.
Tel: +1 (408) 503-8000
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support@supermicro.com (Technical Support)
Web Site: www.supermicro.com

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Tel: +886-(2) 8226-3990
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Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5015M-MR(+)/5015M-MF(+) up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. This quick setup assumes that your 5015M-MR(+)/5015M-MF(+) system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 5015M-MR(+)/5015M-MF(+) was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 5015M-MR(+)/5015M-MF(+). 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 SuperServer 5015M-MR(+)/5015M-MF(+) does not ship with a rack rail hardware package as the system can be rack mounted without the use of rails. An optional rack rail package is available if you wish to order from Supermicro. Follow the steps in the order given to complete the installation process in a minimal amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

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



Warnings and Precautions!



Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In a 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 power supply units and hot plug Serial ATA drive to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

Reduced Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

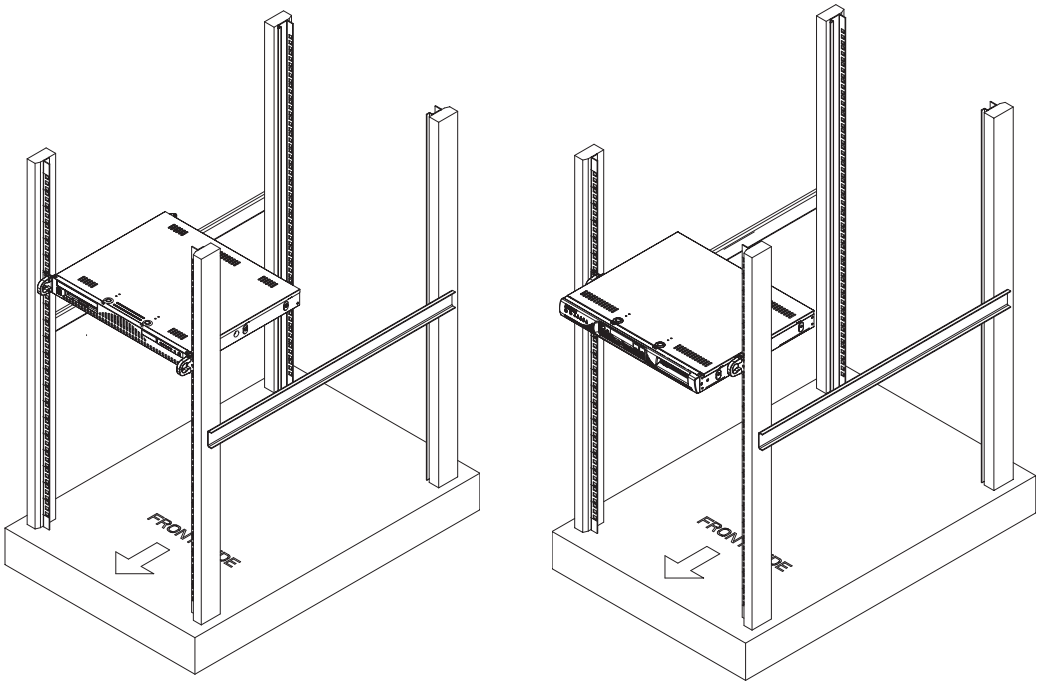
2-4 Installing the System into a Rack
(Rack hardware optional)

This section provides information on installing the SuperServer 5015M-MR(+)/ 5015M-MF(+) into a rack unit. If the system has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6.

Basic Installation Procedure

The 5015M-MR(+)/5015M-MF(+) server comes with two rack mounting brackets, which are located on each side at the front of the chassis. To mount the system into a rack, simply screw these brackets directly to the front of the rack (two screws for each bracket). As Figure 2-1 shows, the brackets can be located at the front of the chassis (left figure) or moved approximately one-third to the rear of the chassis (right figure).

Figure 2-1. Installing the Server into a Rack: Basic



Installing with Rackmount Kit

This section is only for customers that have the optional rack mount kit (CSE-PT8). Each of these assemblies consist of two sections: an inner rail that secures to the chassis and an outer rail that secures directly to the rack itself (see Figure 2-2). This is a guideline for installing the unit into a rack with the optional rack kit. You should also refer to the installation instructions that came with the rack unit you are using. Be aware that there are a variety of rack units on the market, which may mean the assembly procedure will differ slightly.

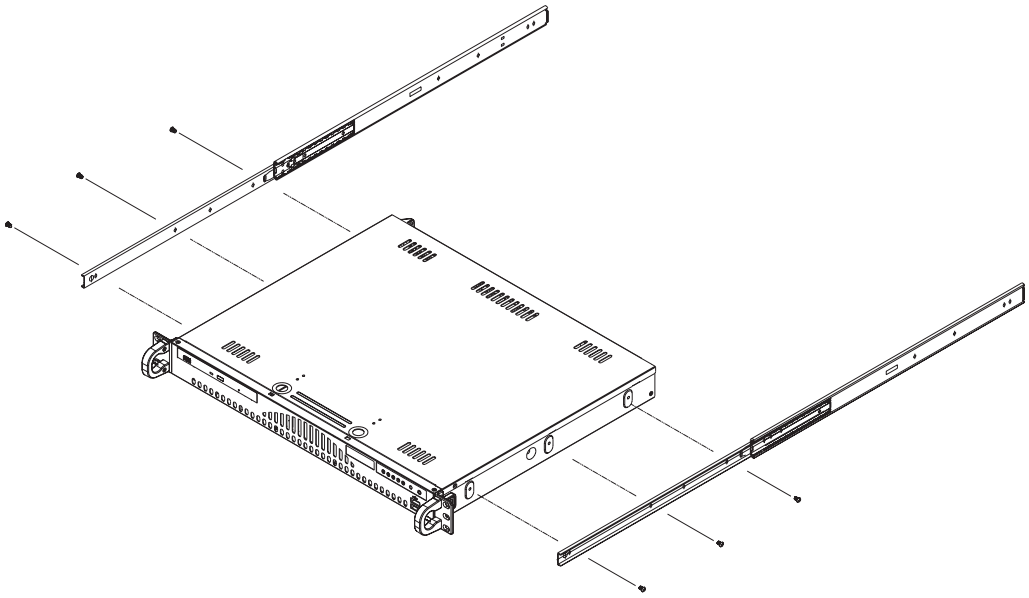
Installing the Chassis Rails

The two rail sections must be detached from each other prior to installation. Do this by depressing the locking tab on the inner rail to release it from its locked position then pull the two rails completely apart. Do this for both the left and right side rack rail assemblies.

Position the fixed chassis rail sections you just removed along the side of the chassis making sure the three screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-2). 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: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-2. Installing Chassis Rails
[5015M-MR(+) shown]



Installing the Rack Rails

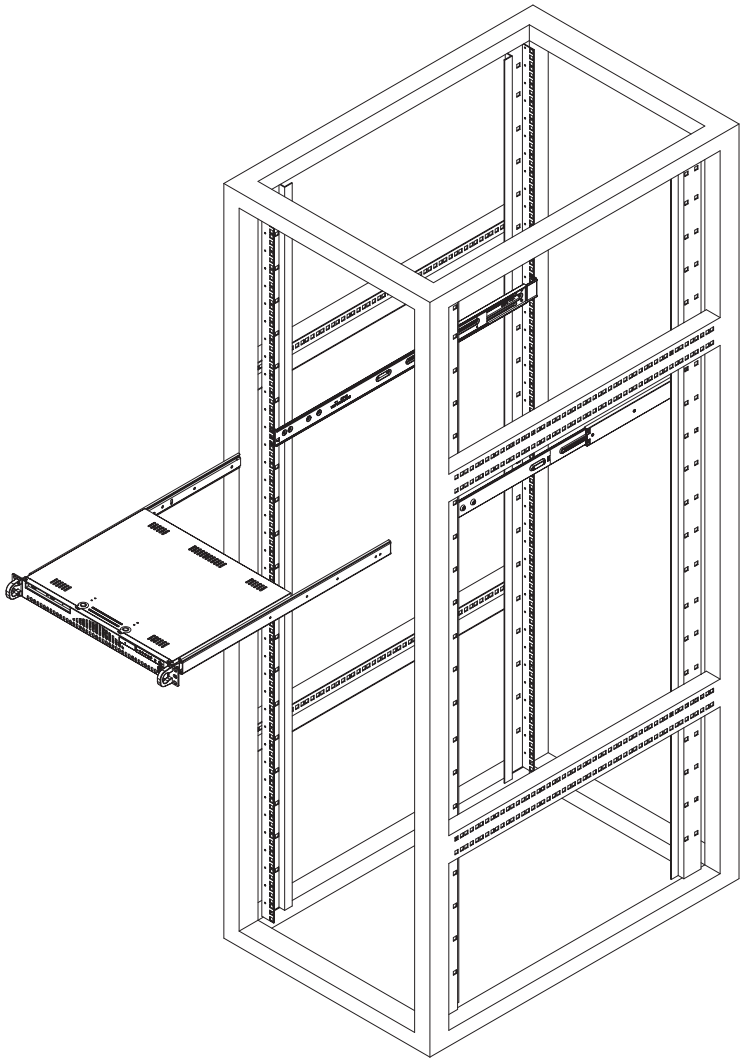
Determine where you want to place the 5015M-MR(+)/5015M-MF(+) in the rack (see Rack and Server Precautions in Section 2-3). Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that 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). See Figure 2-3.

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

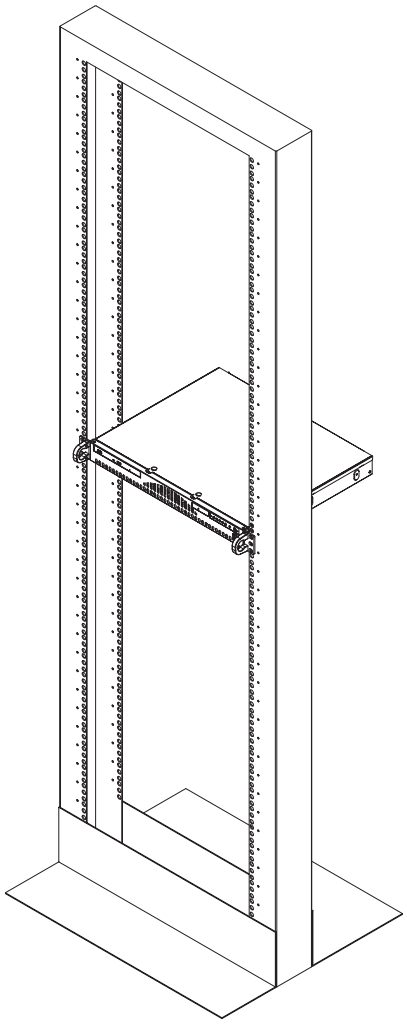
Figure 2-3. Installing the Server into a Rack
[w/ Optional Rackmount Kit, 5015M-MR(+) shown]



Installing the Server into a Telco Rack

If you are installing the SuperServer 5015M-MR(+)/5015M-MF(+) into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accomodate the width of the telco rack.

Figure 2-4. Installing the Server into a Telco Rack: Basic [5015M-MR(+) shown]



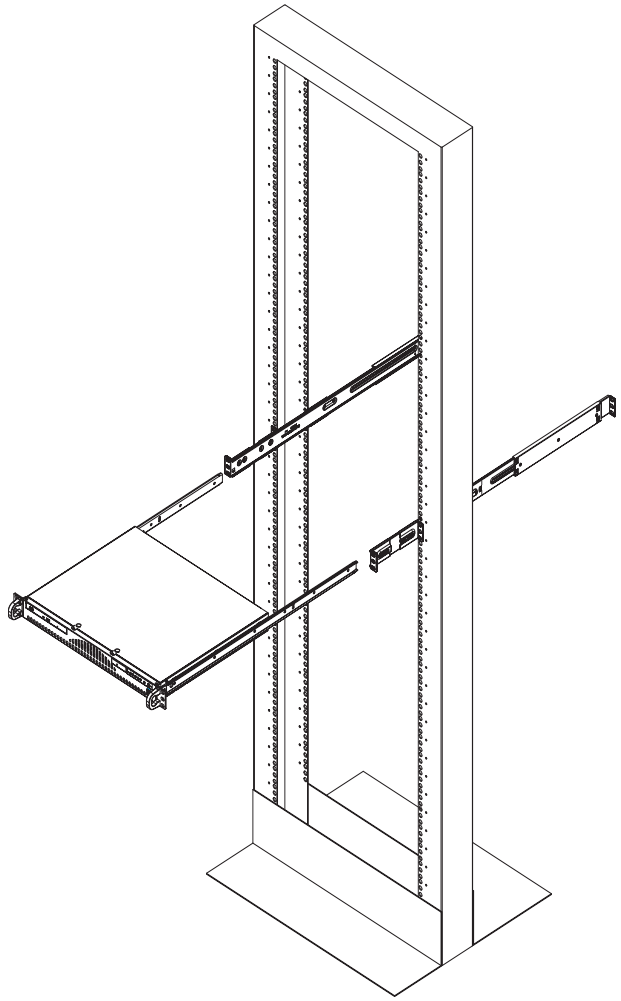
2-5 Checking the Motherboard Setup

After you install the 5015M-MR(+)/5015M-MF(+) in the rack, 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 server (Figure 2-6)

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"). Then, remove the screws from the lips on either side of the chassis top cover (see Figure 2-6 for location). Next, depress the two buttons on the top

Figure 2-5. Installing the Server into a Telco Rack [w/ Optional Rackmount Kit, 5015M-MR(+) shown]



of the chassis to release the top cover while pushing the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

2. Check the CPU (processor)

You may have a processor already installed into the system board. The processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. Check the system memory

Your 5015M-MR(+)/5015M-MF(+) server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

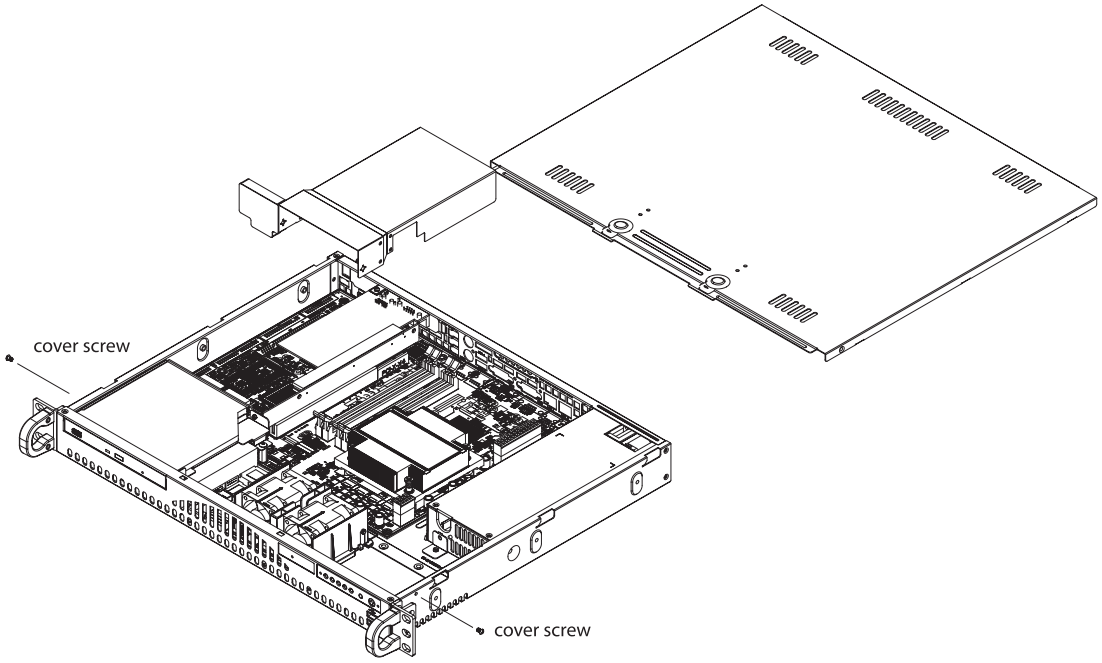
4. Installing add-on cards

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

5. Check all cable connections and airflow

Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections. Also, check that the air shroud is properly installed.

Figure 2-6. Accessing the Inside of the Server [5015M-MR(+) shown]



2-6 Checking the Drive Bay Setup

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

1. Accessing the drive bays

For servicing the Serial ATA, CD-ROM and floppy drives, you will need to remove the top chassis cover. The Serial ATA disk drive is located at the front right side of the chassis.

2. Installing a 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.

3. Check the Serial ATA disk drives

Depending upon your system's configuration, your system may have a Serial ATA hard drive already installed. If you need to install a Serial ATA hard drive, please refer to the appropriate section in Chapter 6.

4. Check the airflow

Airflow is provided by two sets of 4-cm counter-rotating fans. The system component layout was carefully designed to promote sufficient airflow through the small 1U 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 fan.

5. Supplying power to the system

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

Notes

Chapter 3

System Interface

3-1 Overview

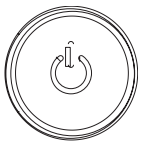
There are several LEDs on the control panel to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

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



- **Reset:** The reset switch reboots the system.



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

3-3 Control Panel LEDs

The control panel located on the front of the SC512F-260/SC513F-260 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



- **Overheat/Fan Fail:** When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the overheat condition exists.



- **NIC2:** Indicates network activity on GLAN2 when flashing .



- **NIC1:** Indicates network activity on GLAN1 when flashing.



- **HDD:** Channel activity for HDDs. This light indicates CD-ROM drive activity when flashing.



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

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions



Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 5015M-MR(+)/5015M-MF(+) 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 floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

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

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

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

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

- Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- CD-ROM Laser: **CAUTION** - this server may have come equipped with a CD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

4-2 General Safety Precautions



Follow these rules to ensure general safety:

- Keep the area around the SuperServer 5015M-MR(+)/5015M-MF(+) clean and free of clutter.

- The SuperServer 5015M-MR(+)/5015M-MF(+) weighs approximately 23/16.5 lbs. (10.5/7.5 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 cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

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

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

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

4-3 ESD Precautions



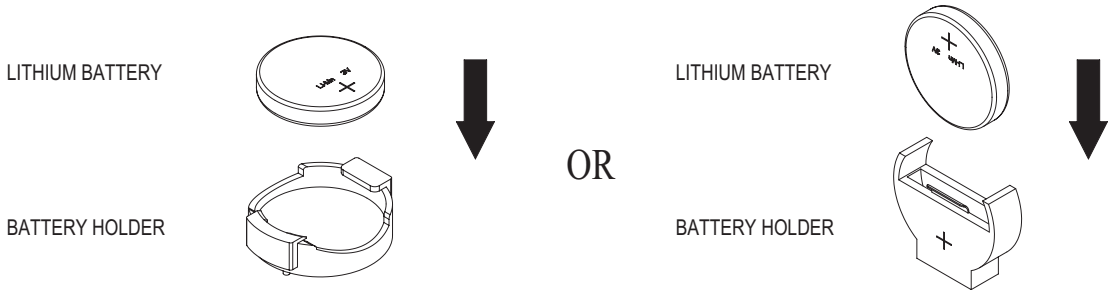
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient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

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the 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 the chassis cover is in place when the 5015M-MR(+)/5015M-MF(+) is operating to assure proper cooling. Out of warranty damage to the 5015M-MR(+)/5015M-MF(+) system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Chapter 5

Advanced Motherboard Setup

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

5-1 Handling the Motherboard

Electric-static discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the 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 electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electric Static Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the 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 to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Motherboard Installation

This section explains the first step of physically mounting the PDSMi/PDSMi+ into the SC512F-260/SC513F-260 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. Accessing the inside of the system

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

2. Check compatibility of motherboard ports and I/O shield

The PDSMi/PDSMi+ requires a chassis big enough to support a 12" x 9.6" motherboard, such as Supermicro's SC512F-260/SC513F-260. Make sure that the I/O ports on the motherboard align properly with their respective holes in the I/O shield at the back of the chassis.

3. Mounting the motherboard onto the motherboard tray

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

5-3 Connecting Cables

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

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-9 for connector locations.)

- SATA drive data cable (SATA#0)
- Control Panel cable (JF1)
- CD-ROM drive cable (J3)
- USB cable (USB5/6)
- COM cable (COM2)

Important! Make sure the SATA cable does not come into contact with the fans.

Connecting Power Cables

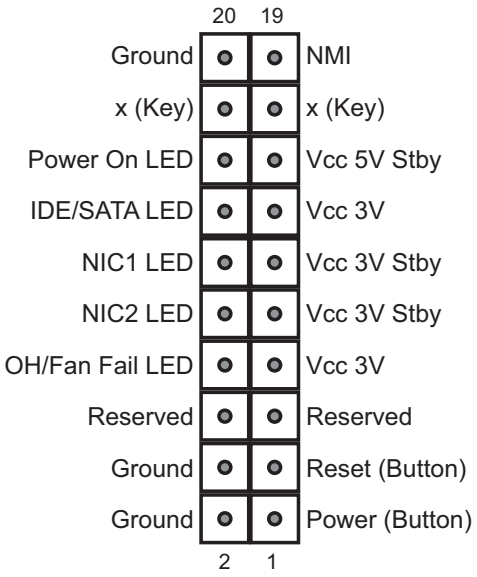
The PDSMi/PDSMi+ has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there is an 8-pin secondary power connector (JPW2) that also must be connected to your power supply (via a 4-pin connector). See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

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

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

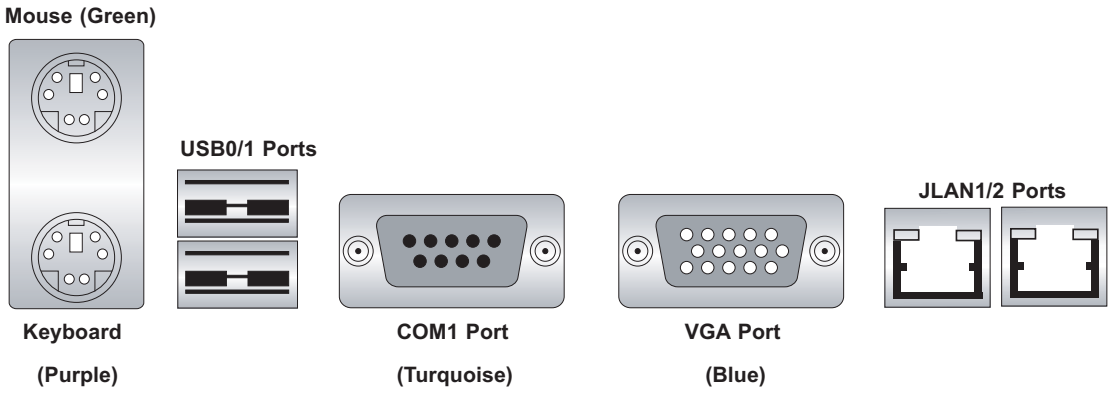
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

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

Figure 5-2. I/O Ports

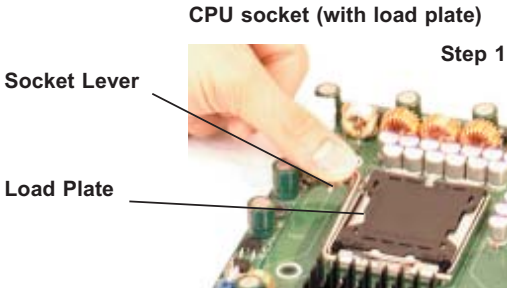


5-5 Installing the Processor and Heatsink

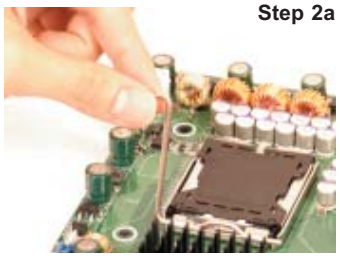
Avoid placing direct pressure to the top of the processor package. Always remove the power cord first before adding, removing or changing any hardware components.

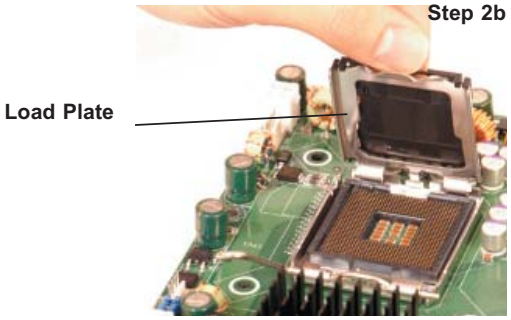
The PDSMi/PDSMi+ has a single LGA775 socket. Please refer to Supermicro's website for supported processors. Intel's boxed CPU package contains a CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use a Intel-certified multi-directional heatsink and fan only. The LGA 775 heatsink and fan comes with a push-pin design and no tool is needed for installation.

1. Press the socket lever to release the load plate that covers the CPU socket from its locking position.

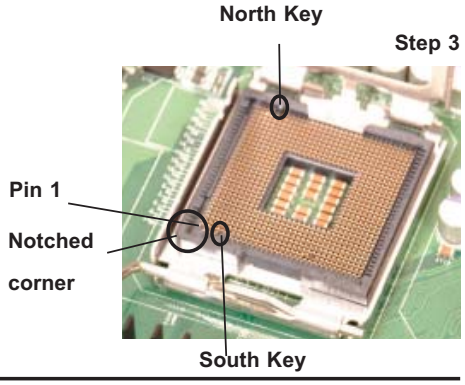


2. Carefully lift the socket lever up to open the load plate.





3. Locate Pin 1 on the CPU socket. (Pin 1 is closest to the notched corner of the housing.) Please note that a North key and a South key (notches) are located at opposite sides of the CPU housing.



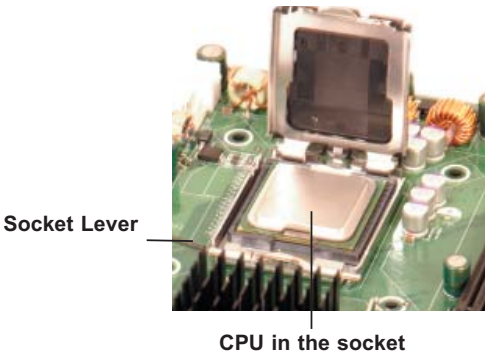
4. Use your thumb and index finger to hold the CPU at the north center and south center edges of the CPU.

Step 4



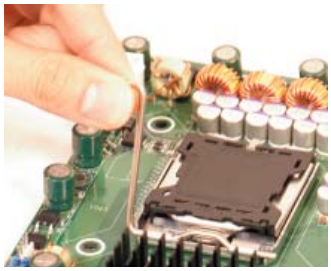
5. Align Pin 1 of the CPU with Pin 1 of the socket. Once aligned, carefully lower the CPU straight down and into the socket. *Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface of the socket or against any pins of the socket, which may damage the CPU and/or the socket.*

Steps 5 & 6



6. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

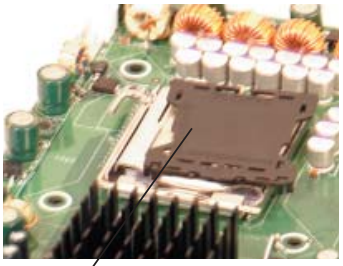
Step 7



7. Use your thumb to gently press the lever down and lock it in the hook.

8. If the CPU is properly installed into the socket, the black plastic cover will be automatically released from the load plate when the lever is pushed into the hook. Remove the cover from the motherboard.

Step 8



Note: Keep the plastic cap. If you need to ship the motherboard, the CPU must have the plastic cap properly installed to protect the CPU pins. Shipping without the CPU plastic cap properly installed will void the warranty.

Installing the Heatsink

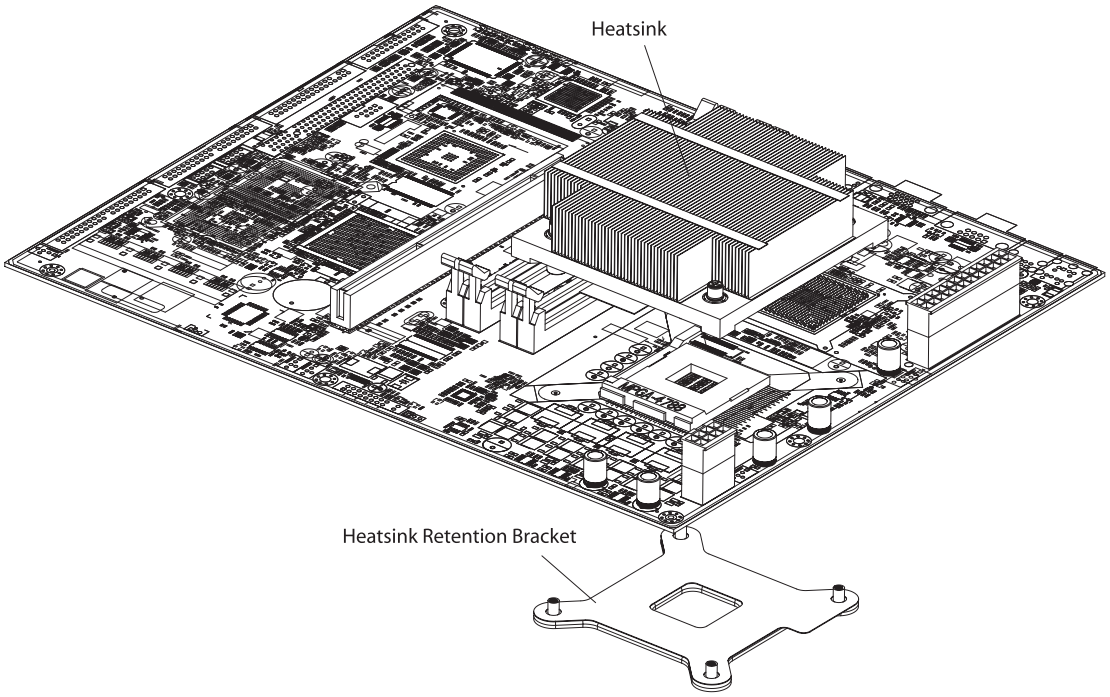
To install the heatsink, do not apply any thermal compound to the heatsink or CPU die - the proper amount has already been applied. See Figure 5-3.

1. The heatsink that came with the system includes a heatsink retention bracket. From the underside of the board, insert the retention bracket into the four holes surrounding the CPU socket on the board.

2. Gently place the heatsink directly on the CPU so that the four mounting holes are aligned with those on the retention mechanism. The heatsink can only be mounted on the CPU in one orientation - two undersides of the heatsink have grooves that must be positioned over two rows of capacitors along the sides of the CPU socket. Make sure the heatsink sits completely flat on the CPU - if not completely flat, the space between the two will degrade the heat dissipation function of the heatsink, which may cause the processor to overheat.

3. Screw in two diagonal screws until just snug (do not fully tighten), then do the same with the remaining two diagonal screws. Finish by fully tightening all four screws.

Figure 5-3. Heatsink Installation



5-6 Installing Memory



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

Memory support

The PDSMi/PDSMi+ supports dual-channel, unbuffered ECC DDR2-667/533/400 SDRAM. Both interleaved and non-interleaved memory configurations are supported, so you may populate any number of DIMM slots. Populating both slots of a bank (DIMM#1A and DIMM#1B and/or DIMM#2A and DIMM#2B) with DIMMs of the same size, type and speed will result in dual-channel, interleaved memory, which is faster than single-channel, non-interleaved memory. Note than when ECC memory is used, it may take 25-40 seconds for the VGA to display.

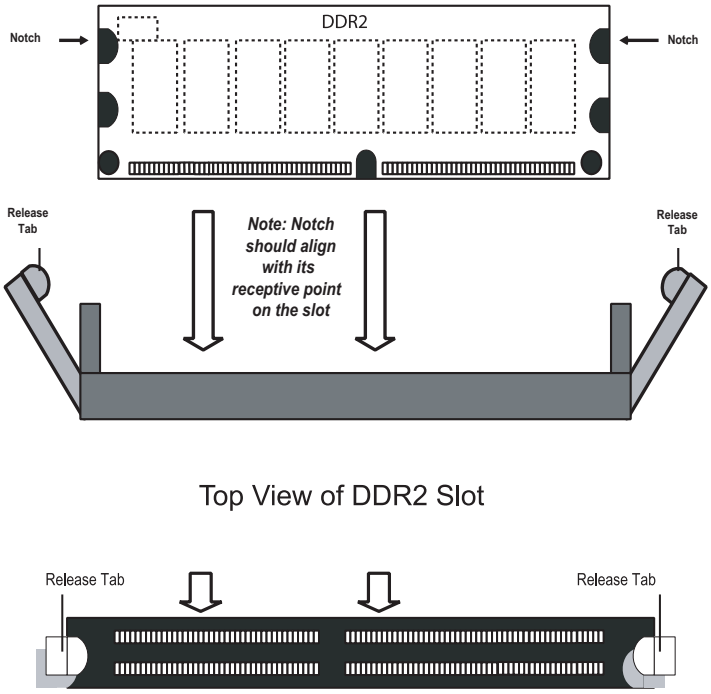
Notes:

1. Due to a chipset limitation, 8GB of memory can only be supported by the following operating systems:
   32-Bit: Windows 2000 Advanced Server, Windows Server 2003 Enterprise Edition
   64-Bit: Windows Server 2003 Standard x64 Edition, Windows XP Professional x64 Edition, Windows Server 2003 Enterprise x64 Edition
2. You may install 2GB DIMMs in each slot; however, only DDR2-533 2GB DIMMs are available for this configuration.
3. Some older versions of DDR2-667 may not match Intel's ODT (On-Die-Temperature) requirement and will be automatically down-graded to run at 533 MHz. If this occurs, contact your memory vendor to check the ODT value.

Installing memory modules

Insert each memory module vertically, paying attention to the notches along the bottom of the module to prevent inserting it incorrectly. Install to the blue slots first. Gently press down on the DIMM module until it snaps into place in the slot (see Figure 5-4).

Figure 5-4. DIMM Installation



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

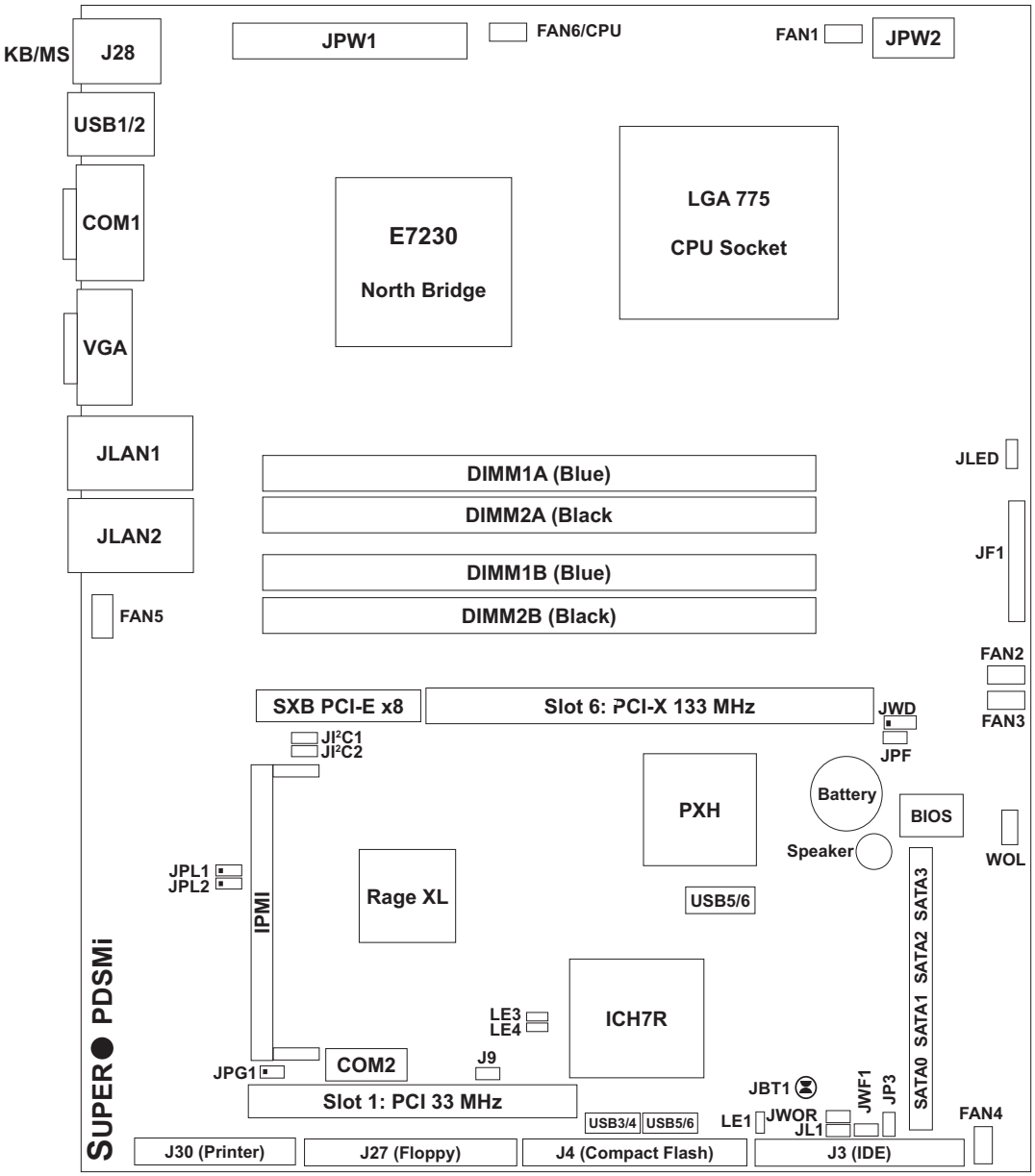
5-7 Adding PCI Add-On Cards

The 5015M-MR(+)/5015M-MF(+) can accommodate either one PCI-X 133 MHz (full or half length) card or (with the optional CSE-RR1U-ELi riser card) one PCI-Express x8 card.

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

5-8 Motherboard Details

Figure 5-5. PDSMi/PDSMi+ Layout
(not drawn to scale)



Notes: Jumpers not indicated are for test purposes only.
The PDSMi and PDSMi+ are identical except for the chipset, the onboard VGA chip (PDSMi: ATI Rage XL, PDSMi+: ATI ES1000), hardware monitor chip and processor support (refer to our website for details on supported processors).

PDSMi/PDSMi+ Quick Reference

Jumpers	Description	Default Setting
J9	Int./Ext. Speaker	Pins 3-4 (Internal Spkr)
JBT1	CMOS Clear	See Section 5-10
JI²C1/JI²C2	I²C Bus to PCI	Open (Disabled)
JP3	Compact Flash Master/Slave	Closed (Master)
JPF	Power Force-On	Open (Disabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	JLAN 1 Enable/Disable	Open (Enabled)
JPL2	JLAN 2 Enable/Disable	Pins 1-2 (Enabled)
JWD	Watch Dog Enable/Disable	Pins 1-2 (Reset)

Connectors	Description
COM1/COM2	COM1 Port and COM2 Header
Fans 1-5	CPU and System Fan Headers (Fan6 = CPU Fan)
IPMI	IPMI 2.0 Socket
J3	IDE Connector
J4	Compact Flash Card Connector
J27	Floppy Disk Connector
J28	PS/2 Keyboard/Mouse Ports
J30	Parallel (Printer) Port Connector
JF1	Front Panel Control Header
JL1	Chassis Intrusion Header
JLAN1/JLAN2	Ethernet RJ45 (Gb LAN) Ports
JLED	PWR LED
JPW1	ATX 24-Pin Power Connector
JPW2	12V 8-pin Power Connector (Required)
JWOR	Wake-On-Ring Header
I-SATA 0-3	Serial ATA Headers
Speaker	Onboard Speaker (Buzzer)
USB1/2	USB (Universal Serial Bus) Ports 1/2
USB3/4, USB5/6	USB3/4 and USB5/6 Headers
VGA	VGA Connector
WOL	Wake-On-LAN Header

Onboard Indicator	Description
LE1	Onboard +5V Standby PWR warning LED Indicator
LE3/LE4	BIOS POST Code Indicators (See Appendix A)

5-9 Connector Definitions

Main ATX Power Supply Connector

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

ATX Power 24-pin Connector Pin Definitions (JPW1)

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

Processor Power Connector

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

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

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

Required Connection

PW_ON Connector

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

Power Button Pin Definitions (JF1)

Pin#	Definition
1	PW_ON
2	Ground

Reset Connector

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

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Overheat LED (OH)

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

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

NIC2 (JLAN2) LED

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

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

NIC1 (JLAN1) LED

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

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

IDE/SATA LED

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

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

Power On LED

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

Power LED Pin Definitions (JF1)

Pin#	Definition
15	5V Stby
16	Control

NMI Button

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

NMI Button Pin Definitions (JF1)

Pin#	Definition
19	Control
20	Ground

Fan Headers

There are five fan headers on the motherboard, which are designated Fan1 through FAN6/CPU. Connect the fan on your CPU heatsink to the FAN6/CPU header. See the table on the right for pin definitions.

Fan Header Pin Definitions (FAN1-6)

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

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J28. The mouse port is above the keyboard port. See the table on the right for pin definitions.

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

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

Chassis Intrusion

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

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

Wake-On-LAN

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

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

Wake-On-Ring

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

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

JLAN1/2 (Ethernet Ports)

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



Serial Ports

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

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Power LED

The Power LED header is located on JLED. This header provides LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JLED)

Pin#	Definition
1	Anode
2	Key
3	Cathode

Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel and four additional USB headers located on the motherboard. The headers can be used to provide front side USB access (cables not included). See the table on the right for pin definitions.

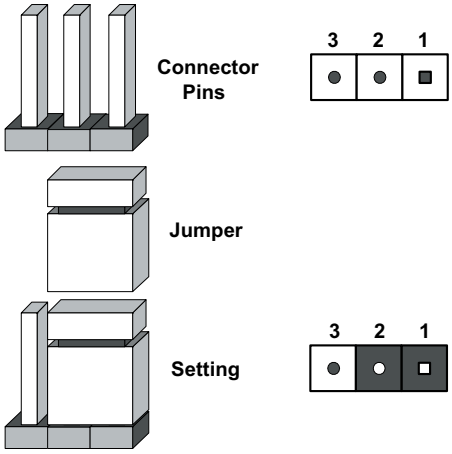
Universal Serial Bus Pin Definitions (USB)

USB1/2		USB3/4/5/6	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

5-10 Jumper Settings

Explanation of Jumpers

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



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

CMOS Clear

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

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

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

Speaker Connector

To use the internal (onboard) speaker, place a jumper on pins 3-4 of J9. If you wish to use an external speaker, connect the speaker header to all four pins of J9.

Speaker Jumper Pin Definitions (J9)	
Setting	Definition
Jump pins 3-4	Internal Speaker
Connect to 1-4	External Speaker

JLAN1 Enable/Disable

Change the setting of jumper JPL1 to enable or disable the JLAN1 Ethernet port on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

JLAN1 Enable/Disable Jumper Settings (JPL1)	
Jumper Setting	Definition
Open	Enabled
Pins 2-3	Disabled

JLAN2 Enable/Disable

Change the setting of jumper JPL2 to enable or disable the JLAN2 Ethernet port on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

JLAN2 Enable/Disable Jumper Settings (JPL2)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

I^2C Bus to PCI

Jumpers JI^2C1 and JI^2C2 allow you to connect the PCI/PCI-X slots to the System Management (I^2C) Bus. The default setting is "Open" to disable the connection. Both jumpers must be set to the same setting. See the table on the right for jumper settings.

I^2C Bus to PCI Jumper Settings (JI^2C1/JI^2C2)	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

System Power Force On

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

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

VGA Enable/Disable

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

VGA Enable/Disable Jumper Settings (JPG1)

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

Watch Dog Enable/Disable

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

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

Watch Dog Jumper Settings (JWD)

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Compact Flash Master/Slave

The JP3 jumper allows you to assign either master or slave status to the compact flash card, which plugs into the J4 connector. See the table on the right for jumper settings.

Compact Flash Master/Slave Jumper Settings (JP3)

Jumper Setting	Definition
Closed	Master
Open	Slave

5-11 Onboard Indicators

LAN LEDs

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

JLAN Left LED (Connection Speed Indicator	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

+5V Standby Power Indicator

When illuminated, the LE1 LED indicates that power from the power supply is being supplied to the serverboard. LE1 should normally be illuminated when the system is powered up and in operating mode. See the table on the right for LED states.

Power On Indicator LED (LE1)	
State	System Status
On	Power present on serverboard
Off	No power present on serverboard

BIOS POST Code Indicators

LE3 and LE4 provide POST code information. Please refer to Appendix A for details.

5-12 Parallel Port and Peripheral Drive Connections

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

- A red mark on a wire typically designates the location of pin 1.

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

Parallel Port Connector

The parallel port is a header on the motherboard near PCI slot. See the table at right for pin definitions.

Parallel (Printer) Port Connector Pin Definitions (J30)

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

IPMI Socket

The IPMI 2.0 socket on the serverboard is included for the use of an IPMI (Intelligent Management Platform Interface) card.

Floppy Connector

The floppy connector is located near PCI- slot. See the table at right for pin definitions.

Floppy Drive Connector Pin Definitions (J27)

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

SATA Connectors

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

SATA Connector Pin Definitions (I-SATA0-3)

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

IDE Connector

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

IDE Drive Connectors
Pin Definitions (J3)

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

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC512F-260/SC513F-260 chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required

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

6-1 Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD 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 to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Chassis Views: 5015M-MR(+)

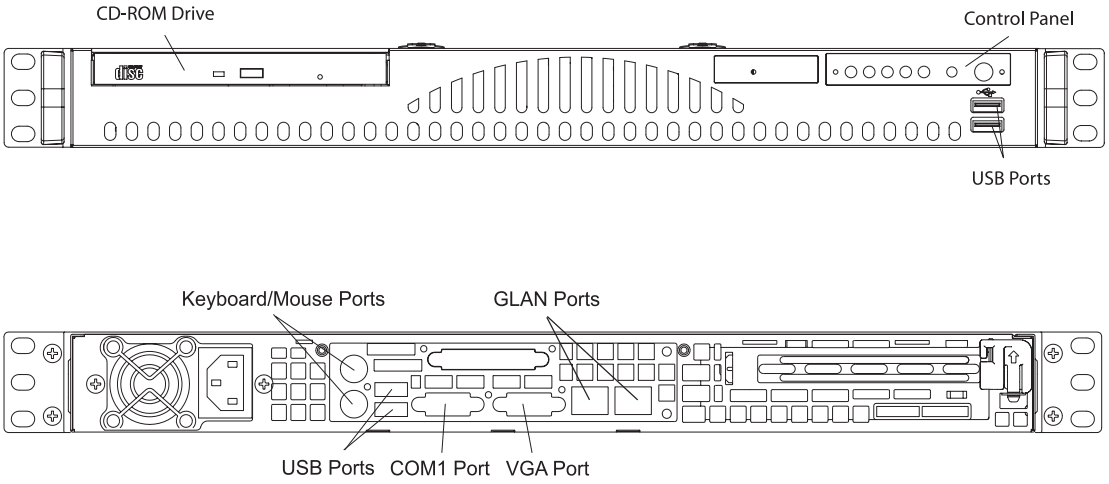
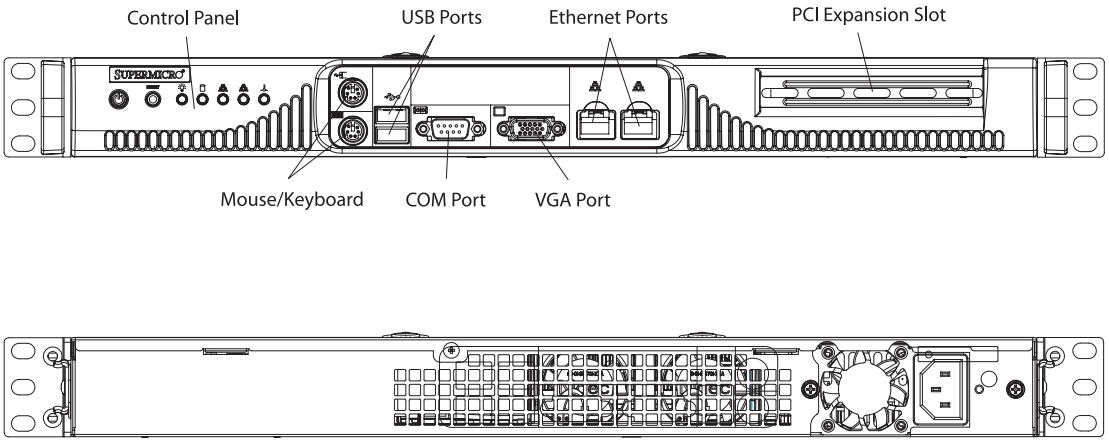


Figure 6-2. Chassis Views: 5015M-MF(+)



6-2 Control Panel

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

6-3 System Fans

Both systems use 4-cm counter-rotating fans to provide cooling. The 5015M-MR(+) and the 5015M-MF(+) both have two sets of these fans. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels. These fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by a setting in BIOS (see Chapter 7). Each fan in a set has its own separate tachometer.

It is very important that the chassis top cover is properly installed for the airflow to circulate properly through the chassis and cool the components.

System Fan Failure

If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will blink on and off. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover while the system is still running to determine which of the two fan units has failed. Then power down the system before replacing a fan. Removing the power cord(s) is also recommended as a safety precaution.

Replacing System Cooling Fans

1. Removing a fan

With the system powered down, first remove the chassis cover (refer to page 6-7). Grasp the failed fan unit and lift it out of the chassis. See Figure 6-3a and 6-3b.

2. Installing a new fan

Replace the failed fan with an identical 4-cm, 12 volt fan (available from Supermicro: p/n FAN-0087). Push the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans. Reposition the fan housing back over the two mounting posts in the chassis, then reconnect the fan wires to the same chassis fan headers you removed them from. Power up the system and check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

Figure 6-3a. System Cooling Fans (5015M-MR(+))

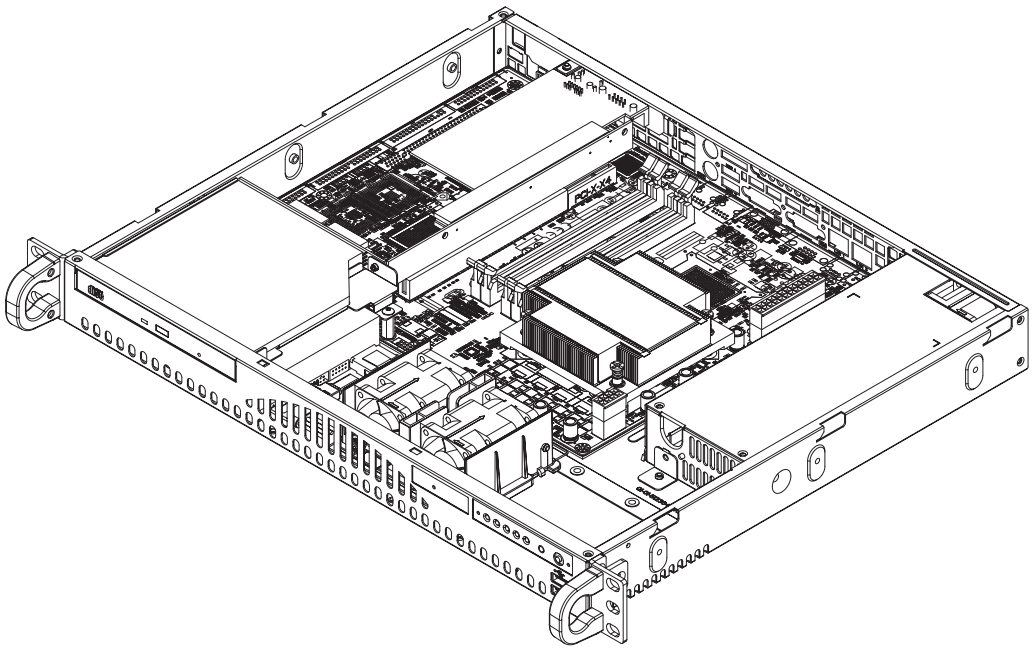
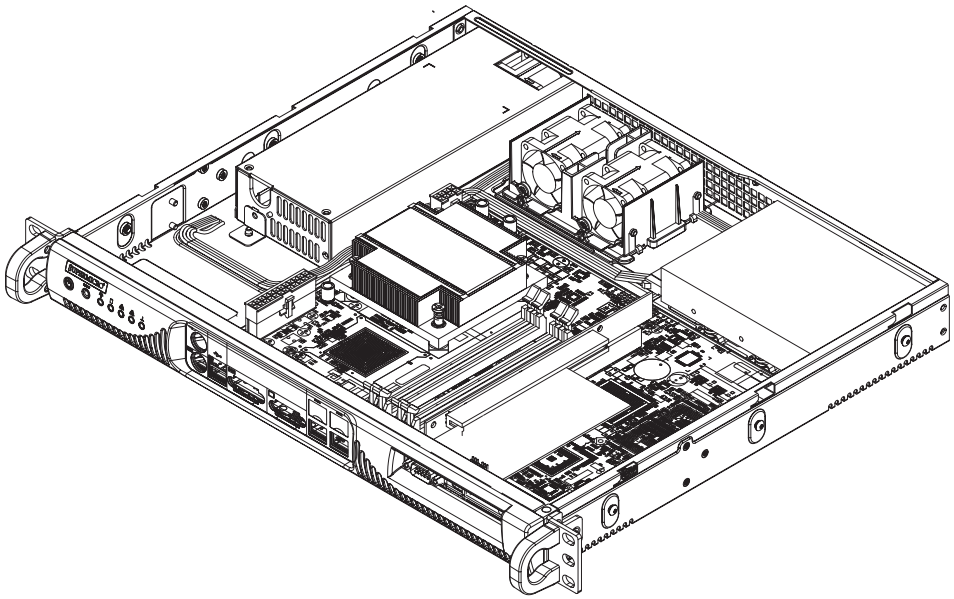


Figure 6-3b. System Cooling Fans (5015M-MF(+))



6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

CD-ROM/Serial ATA Drives: For installing or removing the CD-ROM or Serial ATA drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Note that the 5015M-MF(+) does not include a CD-ROM drive.

Note: Only a "slim" CD-ROM will fit in the 5015M-MR(+).

Serial ATA Drive Installation

The SATA drive is not hot-swappable, meaning system power must be turned off before installing or removing.

To install or remove the drive, first power down the system and then remove the top cover of the chassis as described on page 6-7. Unscrew the retention screw at the top center of the drive, then push the drive tray out from the back until you can grasp and pull it out through the front of the chassis. Remove the drive from the drive tray.

To add a new SATA drive, install a drive into the tray with the printed circuit board side facing down and so that the mounting holes align with those in the tray. Secure the drive to the tray with the four screws. Replace the top cover when finished. See Figure 6-4.

CD-ROM Drive Installation (5015M-MR(+))

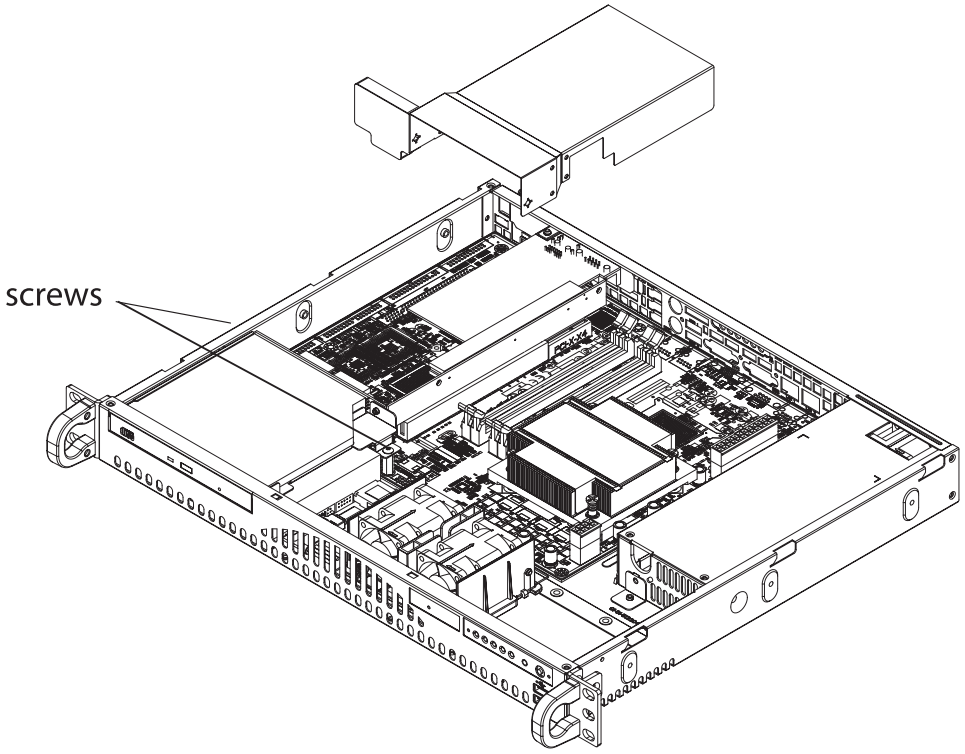
The top cover of the chassis must be opened to gain full access to the CD-ROM drive bay. The CD-ROM must have a "slim" profile to fit into the 5015M-MR(+). If you cannot remove the top cover with the system remaining in the rack, follow the procedure below.

First, shutdown the system and disconnect all cables from the back of the server chassis. Make sure the system is supported from underneath then remove the front bracket screws that secure the unit to the rack. Carefully lift the server out of the rack.

Open the cover by following the procedure described on page 6-7. You must power down the system before installing or removing CD-ROM or Serial ATA drives. Remove the two screws that secure the CD-ROM drive to the chassis and then lift the drive out of the chassis. See Figure 6-4.

Note: A red mark on a wire typically designates the location of pin 1.

Figure 6-4. Removing the SATA/CD-ROM/ Drive (5015M-MR(+) only)



6-5 Power Supply

The SuperServer 5015M-MR(+)/5015M-MF(+) has a single 260 watt power supply. This power supply has the capability of operating at 100 - 240 input volts. Power down the system and then unplug the AC power cord to completely remove power from the system before removing the power supply.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (PWS-0055 - see contact infomation in Chapter 1).

Replacing the Power Supply

1. Accessing the inside of the system

To replace a power supply, you must first remove the top chassis cover. To do so, first release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, remove the screws from the lips on either side of the cover then depress the two buttons on the cover to release it. Push the cover away from you then lift it from the chassis to gain full access to the inside of the server (see Figure 2-6).

2. Removing the power supply

First unplug the power cord from the system. To remove the failed power unit, remove the two screws on the back of the power supply and a third from the front of the power supply, which secures it to the bottom of the chassis. You can then lift the unit straight out of the chassis. (The power cord should have already been removed.)

3. Installing a new power supply

Replace the failed unit with another unit of the same wattage. It is highly recommended to replace it with the exact same power supply. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit and the third at the front. Then reconnect the power cord, replace the chassis top cover and push the unit back into the rack. Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

Notes

Chapter 7

BIOS

7-1 Introduction

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

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

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

System BIOS

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

How To Change the Configuration Data

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

Starting the Setup Utility

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

7-2 Running Setup

Default settings are in bold text unless otherwise noted.

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

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

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

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

Note: Please load "System Setup Default" when using the system the first time.

7-3 Main BIOS Setup

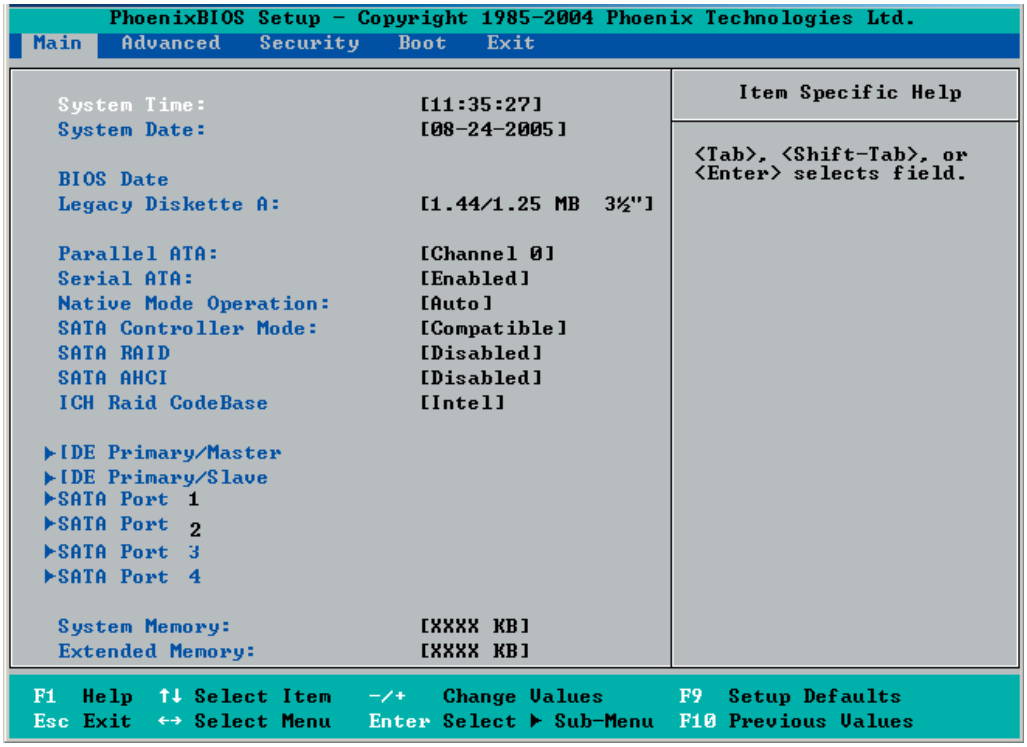
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

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.

After entering the submenu, 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 <Tab>, <Shift-Tab>, or <Enter> to select a field.

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.

BIOS Date

This feature allows BIOS to automatically display the BIOS date.

Legacy Diskette A

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

Parallel ATA

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

Serial ATA

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

Native Mode Operation

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

SATA Controller Mode

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

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

Serial ATA (SATA) RAID

Select Enable to enable Serial ATA RAID Functions. (*For the Windows OS environment, use the RAID driver if this feature is set to Enabled. If set to **Disabled**, use the Non-RAID driver. When this feature--SATA RAID is set to Enabled, the next item-"SATA AHCI Enable" will not be available.) The options are Enabled and **Disabled** (*Default).

*If this feature is set to "Enhanced", the following feature will be available:

SATA AHCI

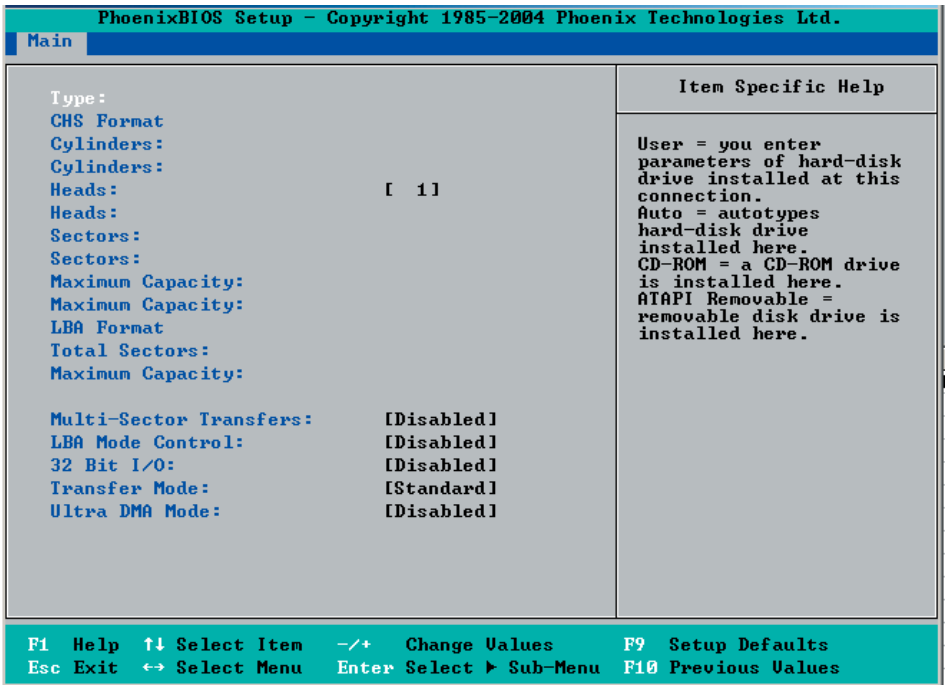
Select Enable to enable the function of Serial ATA Advanced Host Interface. (Proceed with caution when using this function. This feature is for advanced programmers only.) The options are Enabled and **Disabled**.

ICH RAID CodeBase

Select Intel to enable Intel's ICH RAID Controller for the Windows OS. Select Adaptec to enable Adaptec's RAID Controller for the Linux OS. The options are **Intel** and Adaptec.

▶ Primary IDE Master/Slave, Secondary IDE Master/Slave, or Primary IDE Master/Slave, SATA Port 1, SATA Port 2,SATA Port 3, SATA Port 4

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

CHS Format

The following items will be displayed by the BIOS:

TYPE: This item displays the type of CPU.

Cylinders: This item indicates the status of Cylinders.

Headers: This item indicates the number of headers.

Sectors: This item displays the number of sectors.

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

LBA Format

The following items will be displayed by the BIOS:

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

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

Multi-Sector Transfer

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

LBA Mode Control

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

32 Bit I/O

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

Transfer Mode

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

Ultra DMA Mode

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

System Memory

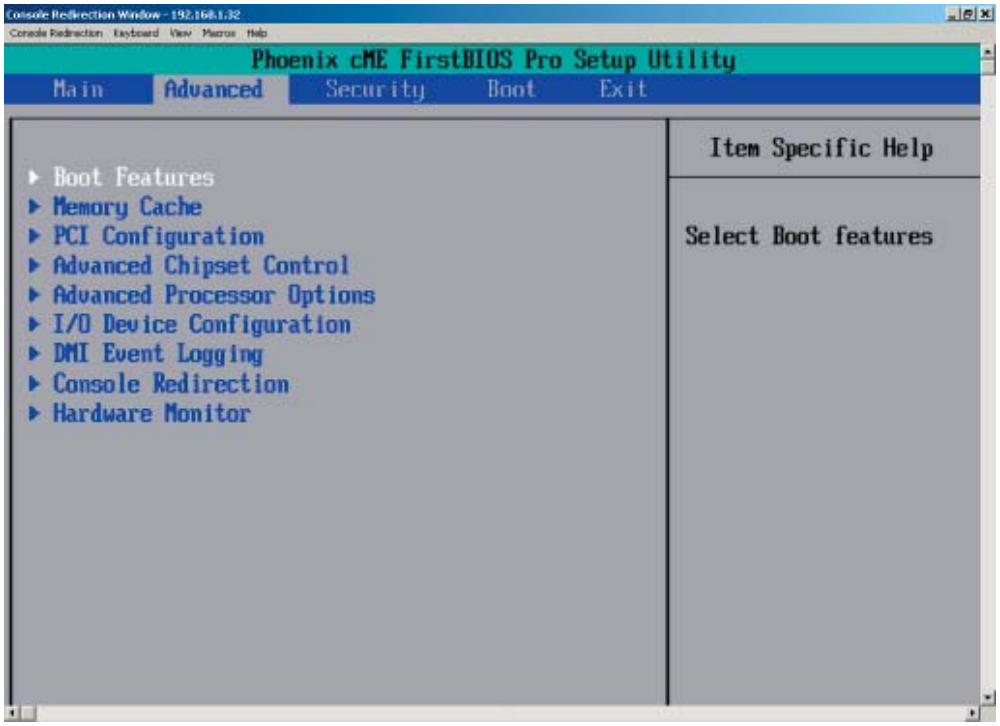
This display informs you how much system memory is detected in the system.

Extended Memory

This display informs you how much extended memory is detected in the system.

7-4 Advanced Setup

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



▶Boot Features

Access the submenu to make changes to the following settings.

Quick Boot Mode

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

Quiet Boot

Set to Enabled to display the Diagnostic Screen during POST. The settings are **Enabled** and Disabled.

ACPI Mode

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

Power Button Behavior

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

Resume On Modem Ring

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

Power Loss Control

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

Watch Dog

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

Summary Screen

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

▶Memory Cache

Cache Memory

Set to enabled to set the state of Cache Memory. The options are **Enabled** and Disabled.

Cache System BIOS Area

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

Cache Video BIOS Area

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

Cache Base 0-512K

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

Cache Base 512K-640K

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

Cache Extended Memory

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

Discrete MTRR Allocation

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

▶PCI Configuration

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

Onboard GLAN1/GLAN2 (Gigabit- LAN)

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

Reset Configuration Data

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

Frequency for PCIX

This option allows the user to change the bus frequency for the devices installed in the slots indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

▶Slot 1 PCI 32-bit/Slot 2 PCI-X 133 MHz

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

Option ROM Scan

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

Enable Master

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

Latency Timer

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

Large Disk Access Mode

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

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.



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

Clock Spectrum Feature

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

ECC Conditions

This setting specifies the ECC Error conditions that will be treated as "ECC Error Events" by the system. The options are None, Single Bit, **Multiple Bit** and Both. (Note: This item is available when it is supported by the memory.)

ECC Error Handler

This setting allows you to select the type of interrupt to be activated as a result of an ECC error. The options are None, NMI (Non-Maskable Interrupt), **SMI** (System Management Interrupt) and SCI (System Control Interrupt.) (Note: This item is available when it is supported by the memory.)

Onboard GLANs

This feature allows the user to enable this function to allow the BIOS to disable Gigabit LAN. The options are: **Enabled** and Disabled.

Route Port 80h Cycles to

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

USB Function

If set to Enabled to enable the USB function when the user keys in a value to a USB item. The options are **Enabled** and Disabled.

Legacy USB Support

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

▶Advanced Processor Options

Access the submenu to make changes to the following settings:

CPU Speed

The feature allows the BIOS to display the CPU Speed.

Frequency Ratio

This feature allows the user to select the ration for the internal frequency multiplier of the CPU. The options are **Default**, X14, X15, and X16.

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

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

Single Logical Processor Mode (Available when supported by the CPU.)

This feature allows the user to select the Processor Operation Mode. Set to **Disabled** to allow the processor to operate in the "single core" mode. Set to Enabled to allow the processor to operate in the "multi-core" (dual-core) mode.

Machine Checking

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

L3 Cache (Available when supported by the CPU.)

Set to **Enabled** to enable L3 cache in the CPU to enhance system performance. The options are Disabled and **Enabled**.

Thermal Management 2 (Available when supported by the CPU.)

If enabled, this feature allows you to select between Thermal Manager 1 and Thermal Manager 2. Set to **Disable** to activate the function of TM1, allowing the CPU to regulate its power consumption based upon the modulation of the CPU Internal clock when the CPU temperature reaches a pre-defined overheat threshold. Set to Enable to activate the function of TM2, which will allow the CPU to reduce its power consumption by lowering the CPU frequency and the CPU voltage when the CPU temperature reaches a pre-defined overheat threshold.
Note: refer to Intel's web site for detailed information.

Adjacent Cache Line Prefetch

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

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

Set to Enabled to enable the Enhanced Halt State. The options are Enabled and **Disabled**. **Note:** refer to Intel's web site for detailed information.

No Execute Mode Memory Protection

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

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

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

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock input

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

Serial Port A

This setting allows you to decide how Serial Port A is controlled. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Base I/O Address

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

Interrupt

Set the Interrupt for Serial Port A. The options are IRQ3 and **IRQ4.**

Serial Port B

This setting allows you to decide how Serial Port B is controlled. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Mode

This feature allows the user to set the mode for Serial Port B. The options are **Normal** and IR.

Base I/O Address

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

Interrupt

Set the Interrupt for Serial Port B. The options are **IRQ3** and IRQ4.

Parallel Port

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

Base I/O Address

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

Interrupt

Set the Interrupt for the Parallel Port. The options are IRQ5 and **IRQ7**.

Mode

This feature allows the user to set the mode for the Parallel Port. The options are Output Only, Bi-Directional, EPP and **ECP**.

DMA Channel

This feature allows the user to select the DMA Channel for the Parallel Port. The options are DMA1 and **DMA3**.

Floppy Disk Controller

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

Base I/O Address

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

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

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

Event Log Capacity

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

View DMI Event Log

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

Event Logging

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

ECC Event Logging

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

Mark DMI Events as Read

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

Clear All DMI Event Logs

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

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

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

BAUD Rate

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

Console Type

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

Flow Control

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

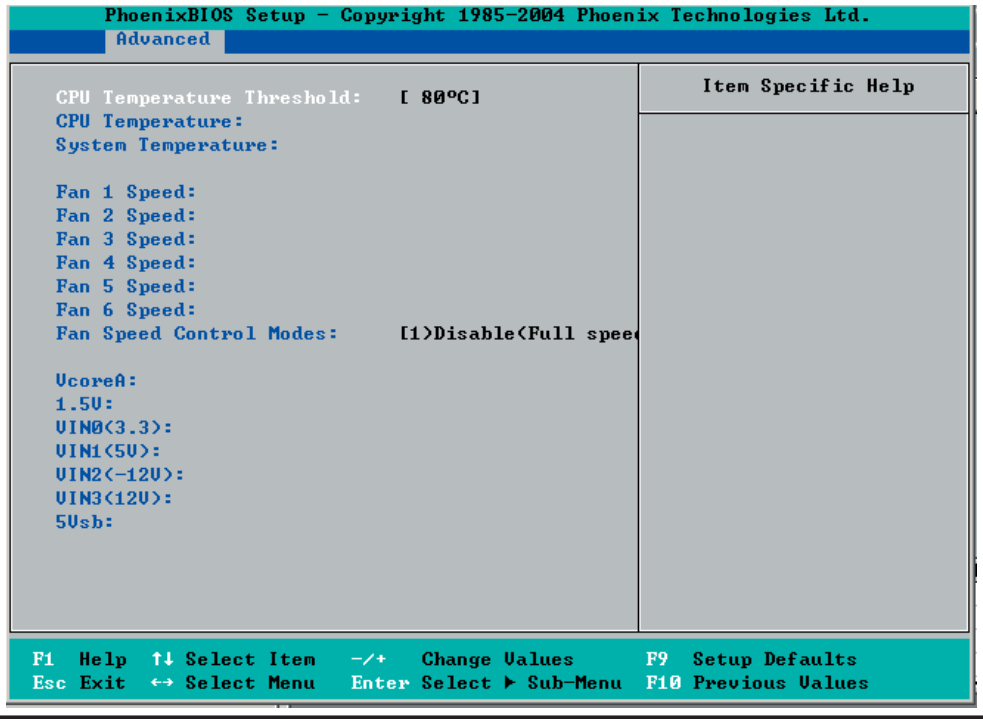
Console Connection

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

Continue CR after POST

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

▶Hardware Monitoring



Serial Port B

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

Mode

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

Base I/O Address

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

Parallel Port

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

Base I/O Address

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

Interrupt

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

Mode

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

PCI-E Express Jitter Tolerance

This feature allows the user to set the PCI-E Jitter Tolerance Level. The options are: **4** to 12.

PCI-E Port A Device 2/PCI-E Port B Device 4

If enabled, the feature allows you to set the device selected to be compliant with the PCI-Express Compliance 1.0 Mode. The options are: Disabled, Enabled and **Auto**.

▶Hardware Monitor Logic

CPU Temperature Threshold

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

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

CPU Temperature

System Temperature

Fan 1 Speed - FAN 6 Speed: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

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

The Voltage status of the following items will be displayed:

VcoreA

1.5V

Vin0 (3.3V)

Vin1 (5V)

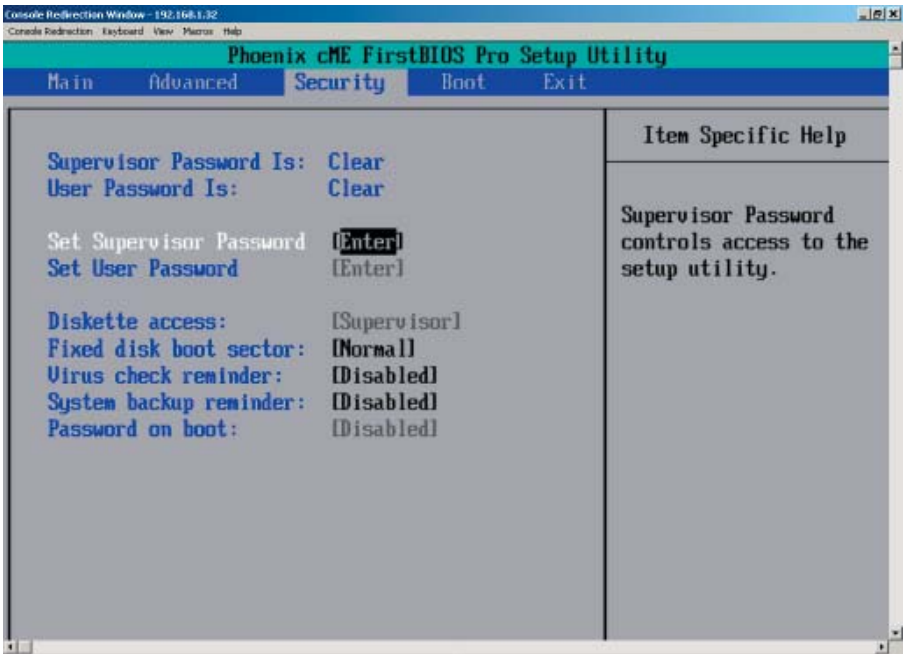
Vin2 (-12V)

Vin3 (12V)

5V Standby

7-5 Security

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



Supervisor Password Is:

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

User Password Is:

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

Set Supervisor Password

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

Set User Password

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

Fixed Disk Boot Sector

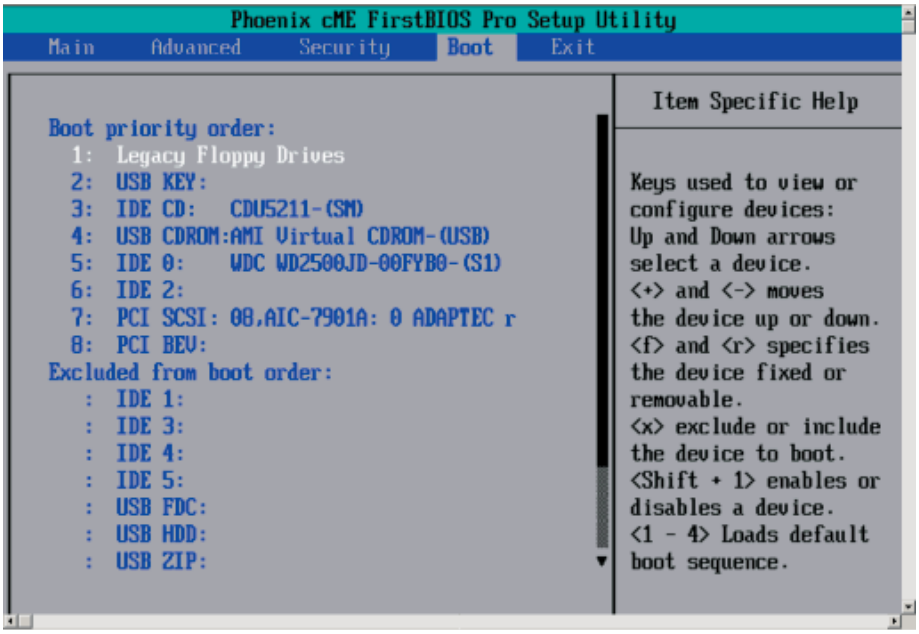
This setting may offer some protection against viruses when set to Write Protect, which protects the boot sector on the hard drive from having a virus written to it. The other option is **Normal**.

Password on Boot

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

7-6 Boot

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

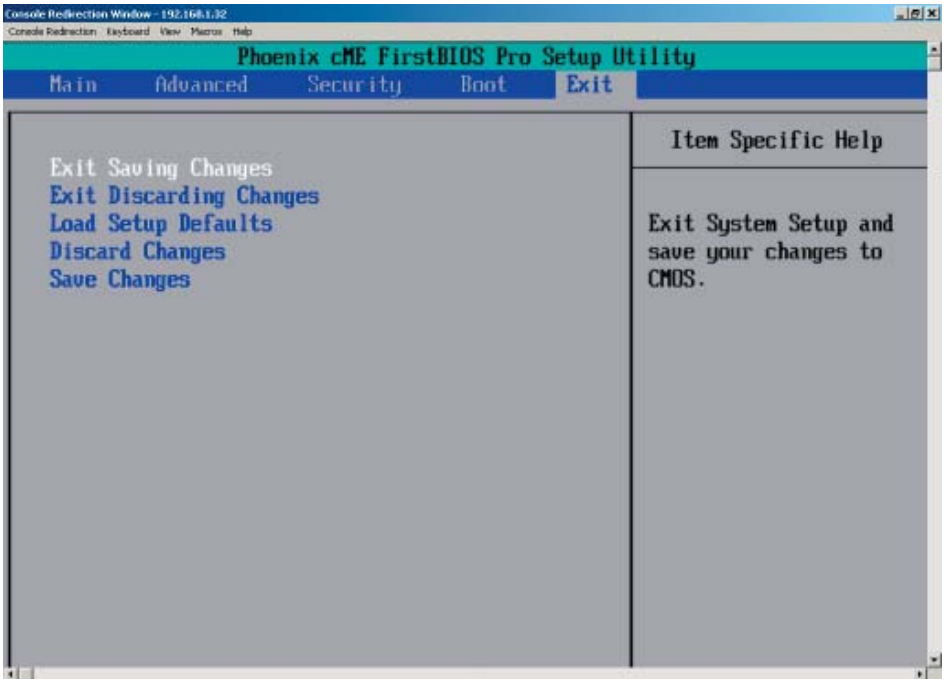


Boot Priority Order/Excluded from Boot Order.

Use the Up and Down Arrow Keys to select a device. Use <+> and <-> keys to move the device up or down. Use the <f> key or the <r> key to specify the devices. You can also use the keys indicated above to specify the priority of the boot order for a device or move a item from the category of "Excluded from Boot Order" to the category of "Boot Priority Order" and vise versa. Please refer to the window of "Item Specific Help" for details.

7-7 Exit

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



Exit Saving Changes

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

Exit Discarding Changes

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

Load Setup Defaults

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

Discard Changes

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

Save Changes

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

Notes

Appendix A

LED Indicators

LEDs on the motherboard include a 5V standby power LED and two LEDs used to display POST codes. See the tables below for explanations of the messages associated with these LEDs.

A-1 LE1: 5V Standby Power LED

5V Power Standby LED (LE1)	
State	Action
On (Standby power present on motherboard)	Turn off system before removing or installing components

A-2 LE3/LE4: BIOS POST Code Indicators

BIOS POST Code Indicators (LE3/LE4)		
LE3 State	LE4 State	Definition
Green (on)	Yellow (on)	PWR-ON to POST
Green (flashing)	Yellow (flashing)	ECC memory testing
Green (on)	Yellow (flashing)	PCI bus initializing
Green (flashing)	Yellow (on)	VGA initializing
Off	Off	System normal (after POST)

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 - overheat (Overheat LED will be on)
1 long beep and 1 short pause - memory not detected

Terminal POST Errors

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

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

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
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size

POST Code	Description
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
59h	Initialize POST display service
5Ah	Display prompt “Press F2 to enter SETUP”
5Bh	Disable CPU cache

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

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

POST Code	Description
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

Software Installation

After all the hardware has been installed, you must first configure Intel's ICH7R SATA RAID before you install the Windows Operating System and other software drivers.

If you do not wish to configure onboard SATA RAID functions, please go directly to Section C-4 for Operating System & Other Software Installation.

C-1 Introduction to Serial ATA and Parallel ATA

To configure the SATA RAID functions, you must first use the Intel ICH7R SATA RAID Utility program to configure the RAID Level that you desire before installing the Windows XP/2000/2003 operating system and other software drivers. (The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard.) Note that the current version of the ICH7R SATA RAID Utility can only support Windows XP/2000/2003 Operating Systems.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link, which supports transfer rates up to 3Gbps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA are limited to a length of 40cm, while Serial ATA cables can be up to one meter in length. Overall, SATA provides better functionality than PATA.

Introduction to Intel ICH7R Serial RAID

Located in the South Bridge of the E7230 Mukilteo chipset, the I/O Controller Hub (ICH7R) provides the I/O subsystem with access to the rest of the system. It supports a 2-channel UltraATA/100 Bus Master IDE controller (PATA) and four Serial ATA (SATA) ports. The ICH7R supports the following PATA and SATA device configurations: Legacy mode and Native mode.

RAID Configurations

The following types of RAID configurations are supported:

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

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

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

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

Intel Matrix Storage

The Intel Matrix Storage, supported by the ICH7R, allows the user to create RAID 0 and RAID1 set by using only two identical hard disk drives. The Intel Matrix Storage Technology creates two partitions on each hard disk drive and generate a virtual RAID0 and RAID1sets. It also allows you the change the HDD partition size without any data.

Configuring BIOS settings for SATA RAID Functions (Native Mode)

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

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

2. Use the arrow keys to select the "Exit" Settings. Once in the "Exit" settings, Scroll down to select "Load Optimized Default Settings" and press the <Enter> key. Select "OK" to confirm the selection. Press the <Enter> key to load the default settings for the BIOS.

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

4. Scroll down to "SATA Control Mode" and press the <Enter> key to select "Enhanced"

5. Scroll down to "SATA RAID Enabled" and press <Enter>. Then, select "Enabled."
6. Scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

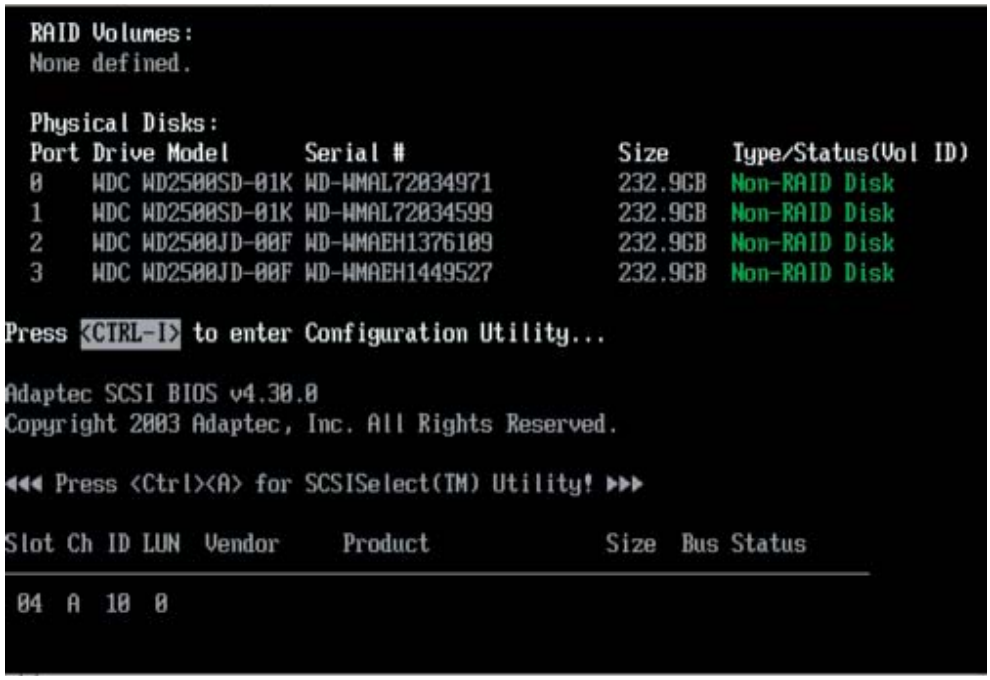
7. Once you've exited the BIOS Utility, the system will re-boot.

8. During the system boot-up, press the <Ctrl> and <I> keys simultaneously to run the Intel RAID Configuration Utility when prompted by the following message: *Press <Ctrl> <I> for* Intel *RAID Configuration Utility*.

Using the Intel ICH7R SATA RAID Utility Program

1. Creating, Deleting and Resetting RAID Volumes:

a. After the system exits from the BIOS Setup Utility, the system will automatically reboot. The following screen appears after Power-On Self Test.

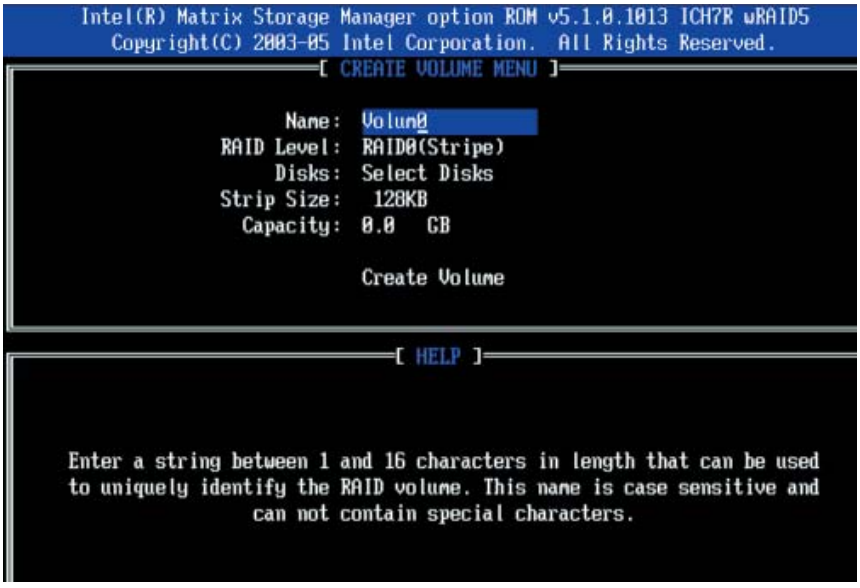


b. When you see the above screen, press the <Ctrl> and the <I> keys simultaneously to have the main menu of the SATA RAID Utility appear:

Note: All graphics and screen shots shown in the manual are for reference only. The screen shots shown in the manual do not imply Supernicro's endorsement or non-endorsement on any 3rd party's product. Your screens may or many not look exactly the same as the graphics shown in this manual.

Creating a RAID 0 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:



b. Specify a name for the **RAID 0** set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select **RAID 0 (Stripe)** and hit <Enter>.

d. When the Disks item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (*See Note on Page C-3) displays:



e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

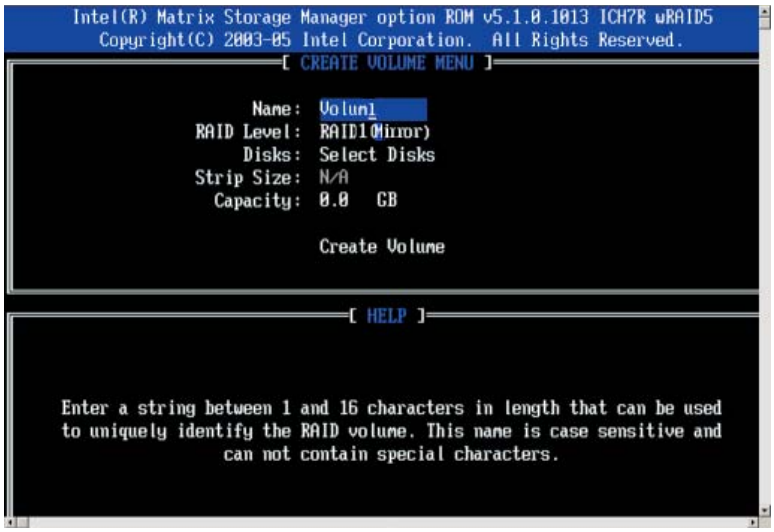
f. Use the <Up Arrow>, <Down Arrow> keys to selet the stripe size, ranged from 4 KB to 128 KB for the RAID 0 array, and hit <Enter>. (*Note: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size.The default stripe size is 128 KB.)

g. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

h. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 1 Volume:

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:



b. Specify a name for the **RAID 1** set and press the <Tab> key or the <Enter> key to go to the next field. (You can use the <Esc> key to select the previous menu.)

c. When RAID Level item is highlighted, press the <Up Arrow>, <Down Arrow> keys to select **RAID 1 (Mirror)** and hit <Enter>.

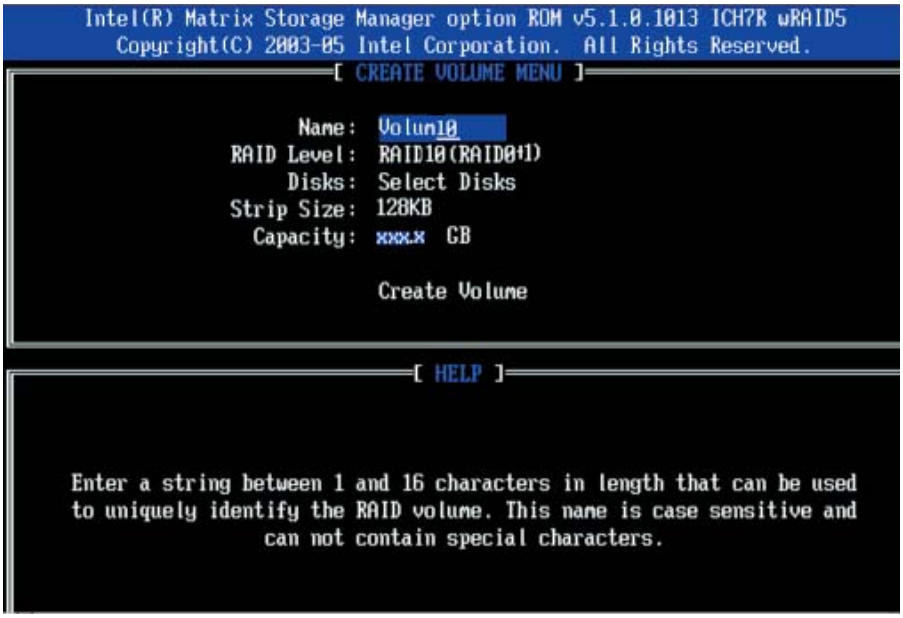
d. When the Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

e. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

f. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 10 (RAID 1+ RAID 0):

a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:



b. Specify a name for the **RAID 10** set and press <Enter>.

c. When RAID Level item is highlighted, use the <Up Arrow>, <Down Arrow> keys to select **RAID 10 (RAID1 + RAID0)** and hit <Enter>.

d. When the Stripe Size is highlighted, use the <Up Arrow>, <Down Arrow> keys to select the stripe size from 4 KB to 128 KB for your RAID 10 and hit <Enter>. The default setting is 6 4KB. (*Note: For a server, please use a lower stripe size, and for a multimedia system, use a higher stripe size.)

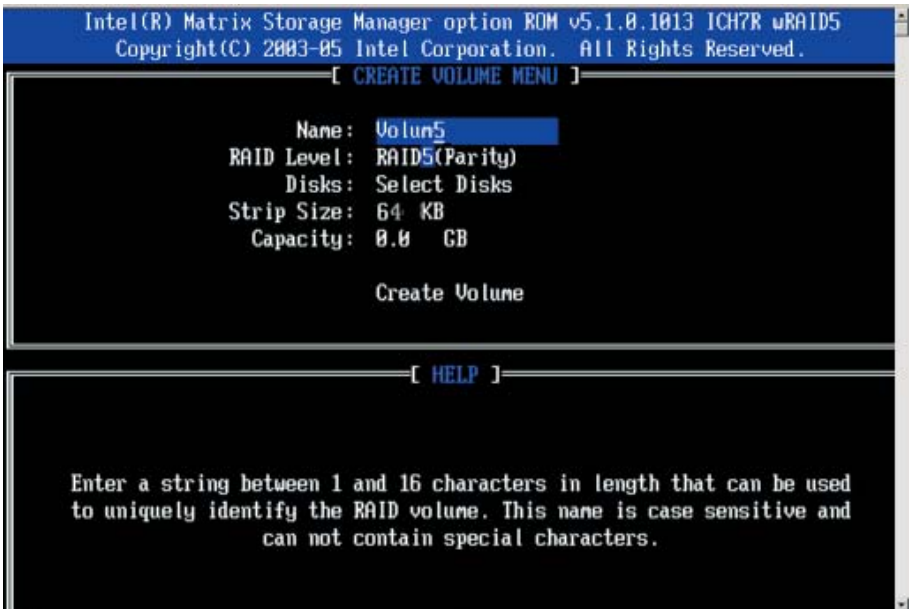
e. When the RAID Volume Capacity item is highlighted, enter your RAID volume capacity and hit <Enter>. The default setting is the maximum capacity allowed.

f. Press <Enter> when the Create Volume item is highlighted. A warning message displays.

g. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Creating a RAID 5 Set (Parity):

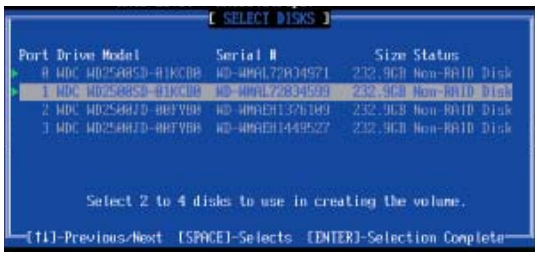
a. Select "Create RAID Volume" from the main menu and press the <Enter> key. The following screen will appear:



b. Specify a name for the **RAID 5** set and press <Enter>.

c. When the Raid Level is highlighted, use the <Up Arrow>, <Down Arrow> keys to select **RAID 5 (Parity)** and hit <Enter>.

d. When the Disk item is highlighted, press <Enter> to select the HDD to configure as RAID. The following pop-up screen (see note on page C-3) displays:



e. Use the <Up Arrow>, <Down Arrow> keys to highlight a drive and press <Space> to select it. A triangle appears to confirm the selection of the drive.

f. Use the <Up Arrow>, <Down Arrow> keys to select the stripe size, ranged from 4 KB to 128 KB for the RAID 5 array, and hit <Enter>. (Use a lower stripe size for servers and higher stripe size for multimedia systems. Default stripe size is 128 KB.)

g. Enter your desired RAID volume capacity and press <Enter> when the capacity item is highlighted. The default setting is the maximum capacity allowed.

h. Press Enter when the Create Volume item is highlighted. A warning message displays.

i. When asked "Are you sure you want to create this volume (Y/N), press "Y" to create the RAID volume, or type "N" to go back to the Create Volume menu.

Deleting RAID Volume:



Warning: Be sure to back up your data before deleting a RAID set. You will lose all data on the disk drives when deleting a RAID set.

a. From the main menu, select item2-Delete RAID Volume, and press <Enter>.

b. Use the <Up Arrow>, <Down Arrow> keys to select the RAID set you want to delete and press <Del>. A Warning message displays.

c. When asked "Are you sure you want to delete this volume (Y/N), press "Y" to delete the RAID volume, or type "N" to go back to the Delete Volume menu.

Resetting to Non-RAID and Resetting a RAID HDD

Warning: Be cautious when you reset a RAID volume HDD to non-RAID or Resetting a RAID HDD. Resetting a RAID volume HDD or Restting a RAID HDD will reformat the HDD and delete all internal RAID structure on the drive.

a. From the main menu, select item3-Reset Disks to Non- RAID, and press <Enter>. The following screen will appear:



b. Use the <Up Arrow>, <Down Arrow> keys to highlight the RAID set drive to reset and press <Space> to select.

c. Press <Enter> to reset the RAID set drive. A Warning message displays.

d. Press "Y" to reset the drive, or type "N" to go back to the main menu.

Exiting the Intel Matrix Storage Manager Utility:

a. From the main menu, select item4-Exit, and press <Enter>. A warning message will appear.

b. Press "Y" to reset the drive, or type "N" to go back to the main menu.

C-2 Installing the Windows XP/2000/2003 for systems with RAID Functions

New Operating System-Windows XP/2000/2003 Installation

a. Insert Microsoft Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

b. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

c. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

d. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ICH7R into Drive A: and press the <Enter> key.

e. Choose Intel(R)82801GR/GH *SATA RAID Controller* from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

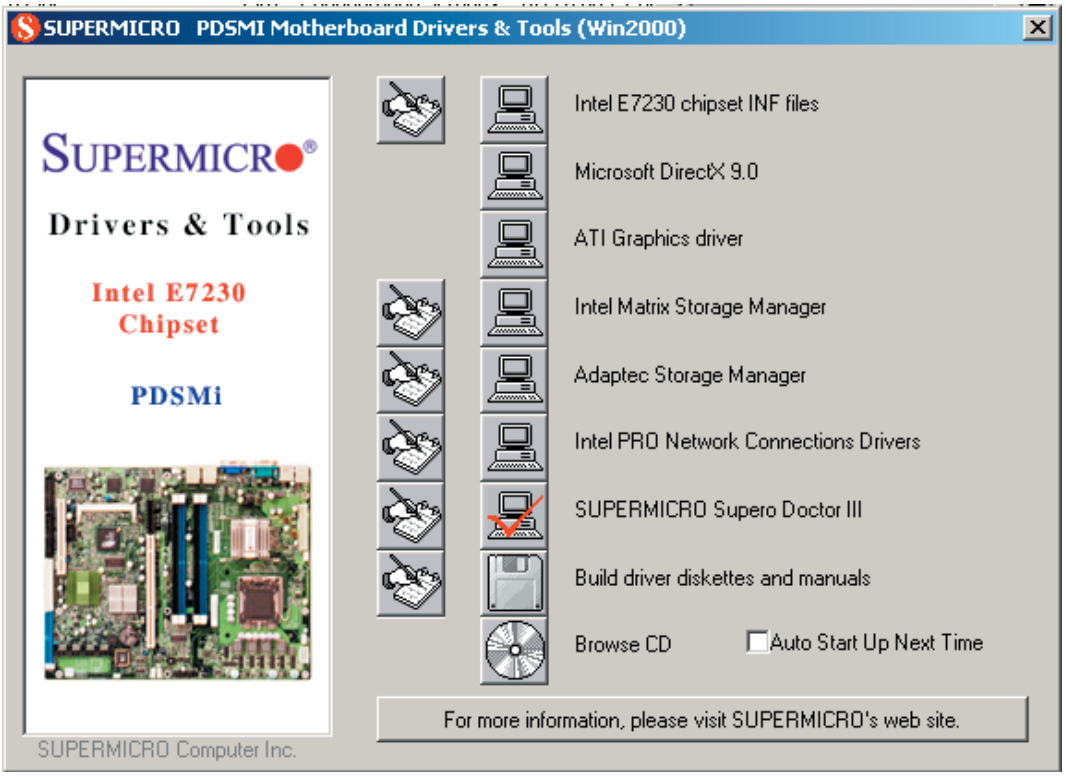
f. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

g. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

h. After Windows XP/2000/2003 Installation is completed, the system will automatically reboot.

i. Insert Supermicro CD that came with the package into the CD Drive during system reboot, and the following screen will appear:

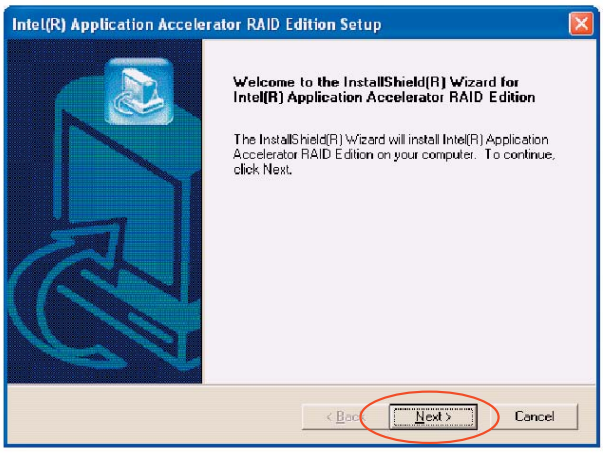
Note: the current version of the ICH7R SATA RAID Utility can only support Windows XP/2000/2003 Operating System.



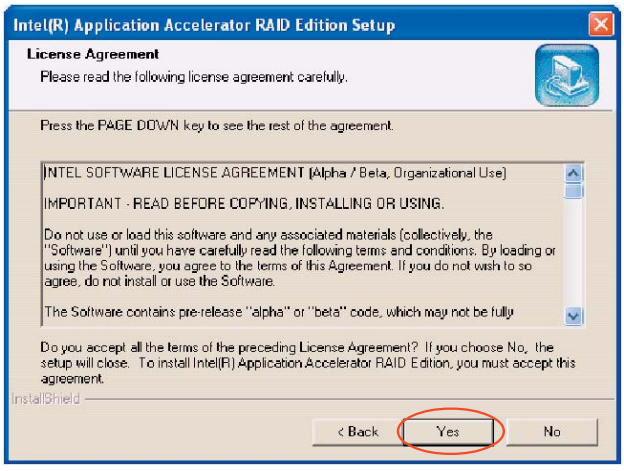
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on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

C-3 Installing Intel Application Accelerator Utility

a. When the above screen appears, click on the icon marked "Application Accelerator RAID Edition" on the screen, and the following screen will appear:

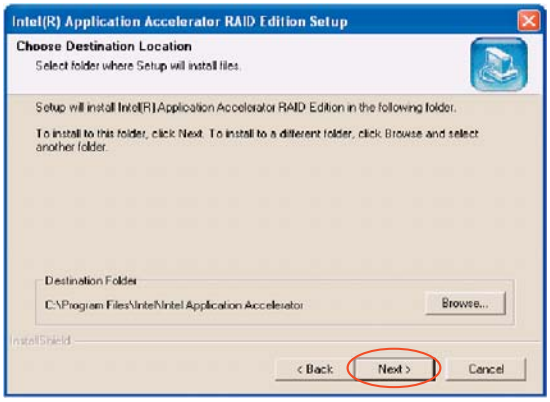


b. When the above screen appears, click "Next" on the screen, and the following screen will appear:

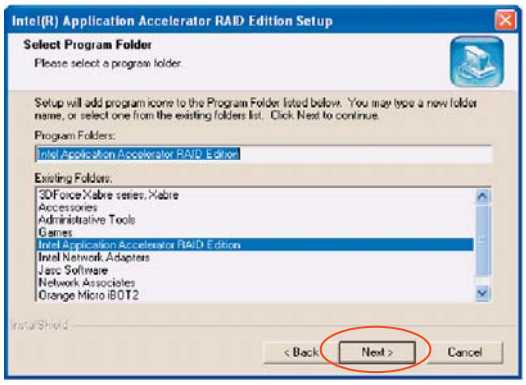


c. After reading the License Agreement, click "Yes" on the screen, and the following screen will appear:

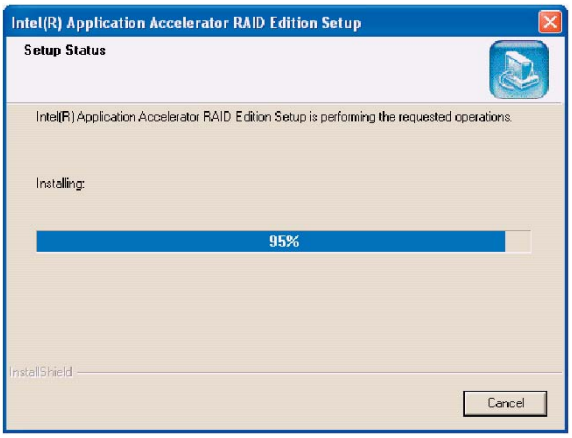
d. Specify the folder that you want the program to be installed in and then, click "Next" to begin the installation process.



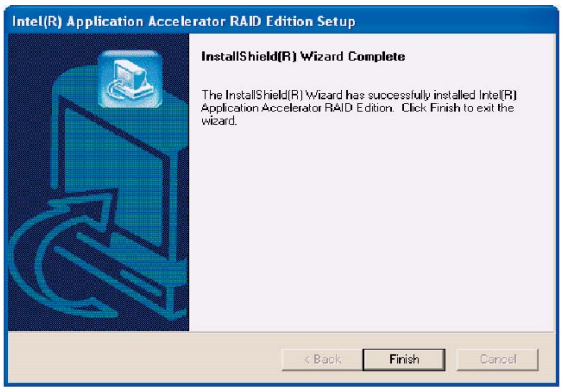
e. Specify a program folder where you want the Setup to add the program icon as shown in the following screen and click "Next".



f. The following screen will appear to display the status of the Intel Application Accelerator RAID Edition Installation.



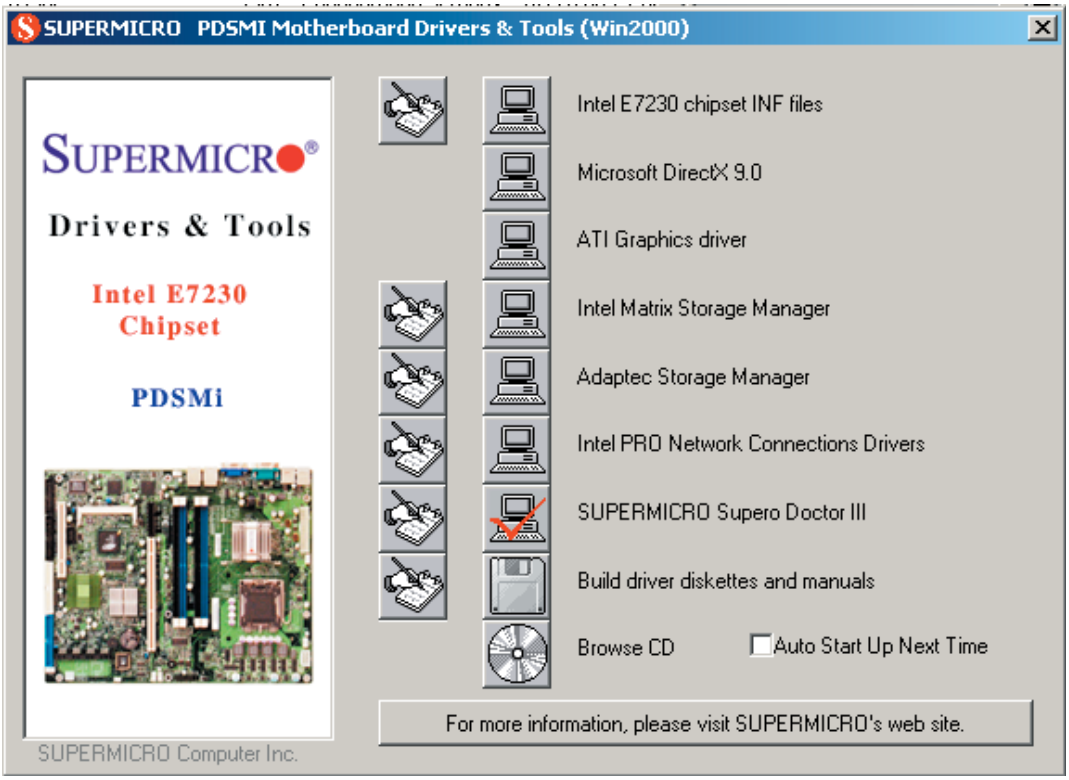
g. Once the Application Accelerator RAID Edition installation is completed, the following screen will appear. Click "Finish" and the system will reboot.



Note: Once the XP/2000/2003 Operating System is installed, please read the "Readme text files" for the instructions to use the SATA RAID Utility in the Windows XP/2000/2003 OS environment.

C-4 Installing the Operating System and other Software Programs

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



Driver/Tool Installation Display Screen

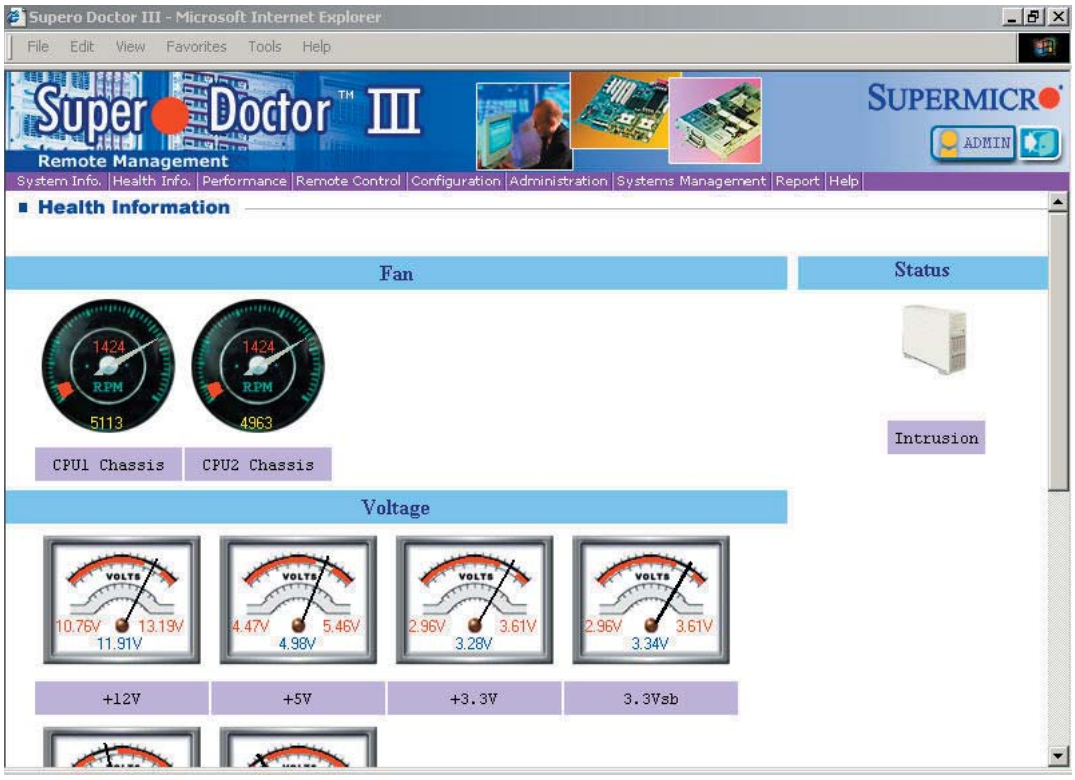
Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on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

Supero Doctor III

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

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

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



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



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

Notes

Appendix D

System Specifications

Processors

Single Intel processor

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

Chipset

5015M-MR/5015M-MF: Intel E7230
5015M-MR+/5015M-MF+: Intel E3000

BIOS

8 Mb Phoenix® Flash ROM

Memory Capacity

Four 240-pin DIMM sockets supporting up to 8 GB of unbuffered ECC or non-ECC DDR2-667/533/400 SDRAM

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

SATA Controller

Intel ICH7R on-chip controller

SATA/IDE Drive Bays

5015M-MR/5015M-MR+: one (1) 3.5" fixed drive bay
5015M-MF/5015M-MF+: one (1) 3.5" fixed drive bay or two (2) 2.5" fixed drive bays (optional)

Peripheral Drive Bays [5015M-MR(+) only]

One (1) slim CD-ROM drive

Expansion Slots
Standard: one PCI-X 133 MHz slot with CSE-RR1U-Xi riser card
Optional: one PCI-Express x8 slot with CSE-RR1U-ELi riser card

Motherboard
Model: PDSMi/PDSMi+
Form Factor: ATX
Dimensions: 12 x 9.6 in (305 x 244 mm)

System Input Requirements
AC Input Voltage: 100-240V AC auto-range
Rated Input Current: 4A max
Rated Input Frequency: 50 to 60 Hz

Power Supply
Rated Output Power: 260W (Model# SP262-1S, Part# PWS-0055)
Rated Output Voltages: +3.3V (15A), +5V (25A), +12V (18A), -12V (1A), +5Vsb (2A)

BTU Rating
1372 BTUs/hr (for rated output power of 260W)

Chassis
5015M-MR(+)
Model: SC512F-260
Form Factor: Mini 1U rackmount
Dimensions: (WxHxD) 16.7 x 1.7 x 14 in. (424 x 44 x 356 mm)

5015M-MF(+)
Model: SC513F-260
Form Factor: Mini 1U rackmount
Dimensions: (WxHxD) 16.7 x 1.7 x 14 in. (424 x 44 x 356 mm)

Weight [5015M-MR(+)/5015M-MF(+)]
Gross (Bare Bone): 23/16.5 lbs. (10.5/7.5 kg.)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

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

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

Safety:
EN 60950/IEC 60950-Compliant, UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)

Notes