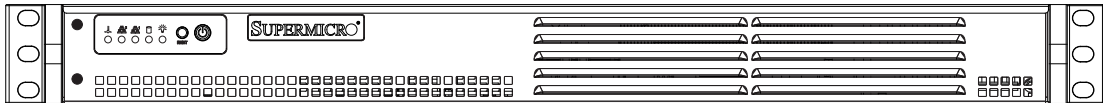


SUPER[®]

SUPERSERVER 5015A-L
SUPERSERVER 5015A-H



USER'S MANUAL

Revision 1.0

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Manual Revision 1.0
Release Date: June 3, 2009

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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 5015A-L/5015A-H. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5015A-L/5015A-H is a single processor 1U mini rackmount server based on the SC502L-200B server chassis and the Intel® Atom™ X7SLA-L/X7SLA-H motherboard.

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 X7SLA-L/X7SLA-H motherboard and the SC502L-260B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5015A-L/5015A-H 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 5015A-L/5015A-H.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the X7SLA-L/X7SLA-H 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 SC502L-200B 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: POST Error Beep Codes

Appendix B: Installing Windows

Appendix C: System Specifications

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Appendix A POST Error Beep Codes

Appendix B Installing Windows

Appendix C System Specifications

Chapter 1

Introduction

1-1 Overview

The Supermicro SuperServer 5015A-L/5015A-H is a single processor, 1U rackmount server. The 5015A-L/5015A-H is comprised of two main subsystems: the SC502L-200B chassis and the X7SLA-L/X7SLA-H motherboard. Please refer to our web site for information on operating systems that have been certified for use with the 5015A-L/5015A-H.

In addition to the mainboard and chassis, various hardware components may have been included with the 5015A-L/5015A-H, as listed below.

- One CPU heatsink (SNK-P0032A4)
- One single 2.5" fixed HDD bracket (MCP-220-00051-0N)
- One dual 2.5" fixed HDD bracket (MCP-220-00044-0N)
- One SATA cable (CBL-0061L)
- One CD containing drivers and utilities
- SuperServer 5015A-L/5015A-H User's Manual

Note: "B" indicates black.

1-2 Motherboard Features

At the heart of the SuperServer 5015A-L/5015A-H lies the X7SLA-L/X7SLA-H, a single processor, low-power motherboard based upon Intel's 945GC chipset. Below are the main features of the X7SLA-L/X7SLA-H.

Processor

The X7SLA-H supports one Intel® Atom™ 330 Dual-core 1.6 GHz processor while the X7SLA-L supports one Intel® Atom™ 230 Single-core 1.6 GHz processor. The processors are embedded into the motherboard.

Memory

The X7SLA-L/X7SLA-H has two 240-pin DIMM slots that can support up to 2 GB of non-ECC DDR2-533/400 SDRAM.

Onboard SATA

A SATA controller is built in to the ICH7R portion of the chipset to provide support for a four port, 3 Gb/sec Serial ATA subsystem.

PCI Expansion Slots

The X7SLA-L/X7SLA-H has one PCI-Express x8 slot, one PCI-Express x4 (in a x8 slot) and one 32-bit PCI slot.

Onboard Controllers/Ports

An onboard IDE controller supports two IDE devices. Onboard I/O backpanel ports include one COM port, a VGA port, PS/2 mouse and keyboard ports, a Gb LAN port and two USB ports. In addition, the X7SLA-H features two Gb LAN ports and an extra internal COM port (header).

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.

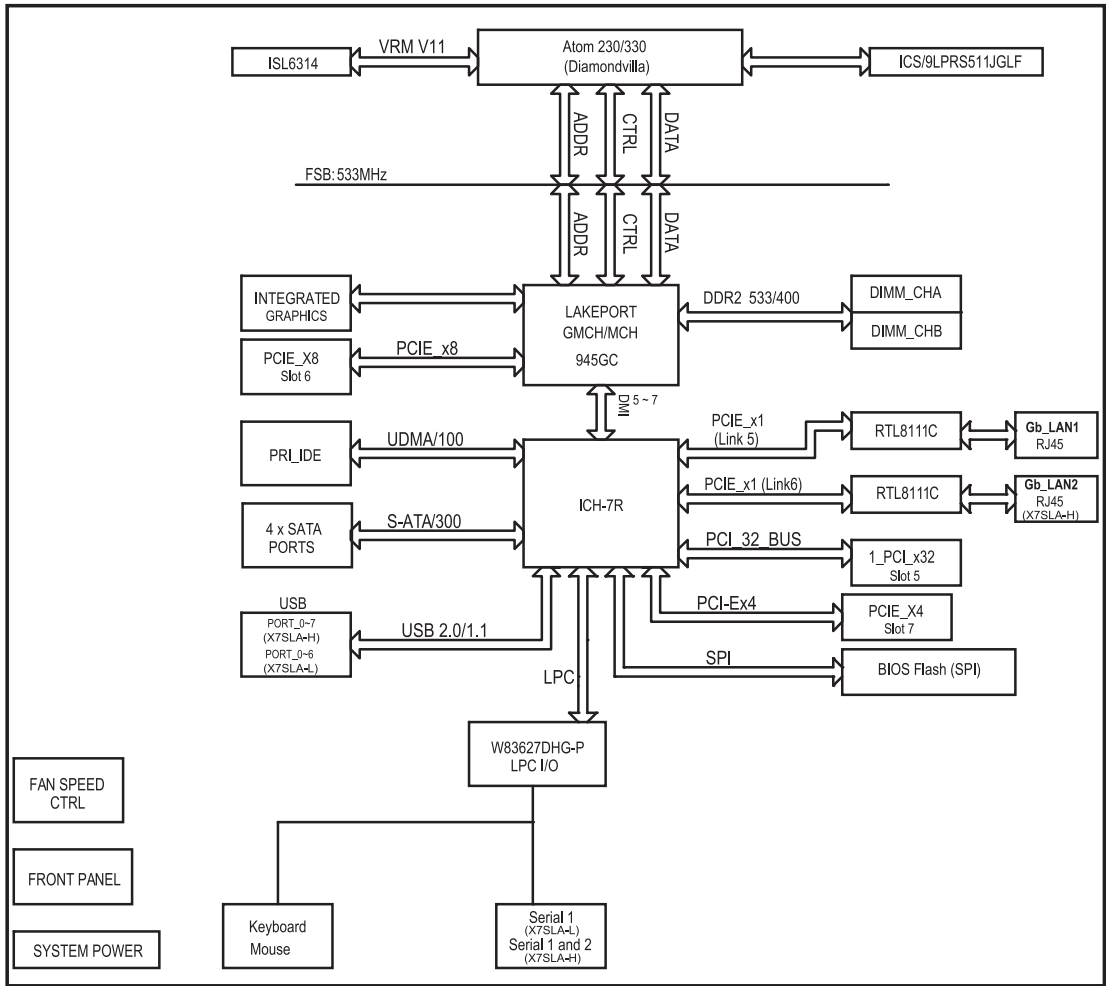


Figure 1-1. Intel 945GC Chipset: System Block Diagram

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

1-3 Server Chassis Features

The following is a general outline of the main features of the SC502L-200B 1U mini rackmount server chassis.

System Power

The SC502L-200B chassis includes a single 200W power supply.

SATA Subsystem

The SC502L-200B chassis was designed to support one 3.5" or two 2.5" internal SATA drives (not hot-swappable). ATA/100 IDE drives can be alternately supported.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the SATA drives (RAID 0, 1, 5 and 10 supported).

Control Panel

The control panel on the SC502L-200B provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat. The control panel also includes a main power button and a system reset button as well as two

Rear I/O Panel

The rear I/O panel on the SC502L-200B provides one COM port, two USB ports, PS/2 mouse and keyboard ports, a graphics port and two Gb Ethernet ports (one on the 5015A-L).

Expansions Cards

The SC502L-200B supports the use of one full-height, half length PCI expansion card.

1-4 Contacting Supermicro

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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

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5015A-L/5015A-H 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 5015A-L/5015A-H 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 5015A-L/5015A-H 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 5015A-L/5015A-H. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box your chassis was shipped in should include four mounting screws, which you will need if you intend to install the system into a rack. 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, etc.).
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.



Warnings and Precautions!



Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In 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 drives to cool before touching them.

- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

Reduced Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

2-4 Rack Mounting Instructions

This section provides information on installing the SC502 chassis into a rack unit. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Installing the Chassis into a Rack

1. Confirm that chassis includes the four mounting screws required to mount the chassis into a rack.
2. Align the thru holes of the chassis with the thru holes of the rack.
3. Insert the mounting screws into the thru holes in the front of the chassis and through the thru holes in the rack.

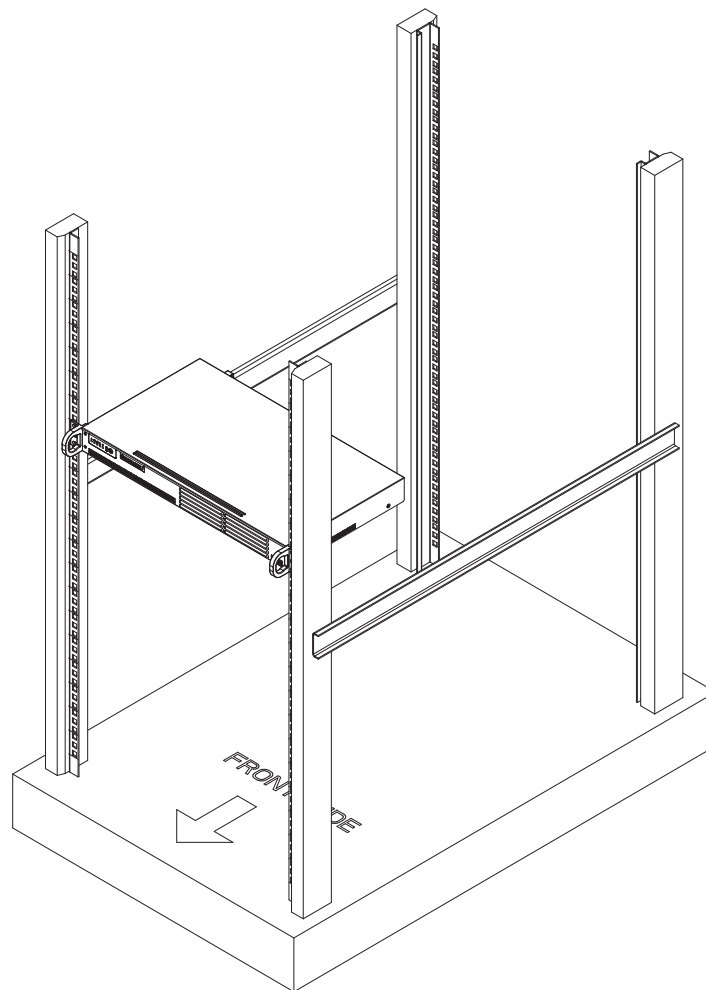


Figure 2-1. Installing the Chassis into a Rack

Installing into a Telco Rack

The SC502 supports Telco Rack installation. The SC502 chassis compact design allows the chassis to be installed into a Telco rack without the use of rails.

Installing the Chassis into a Telco Rack

1. Confirm that chassis includes the four mounting screws required to mount the chassis into a rack
2. Align the thru holes of the chassis with the thru holes of the rack.
3. Insert the mounting screws into the thru holes in the front of the chassis and through the thru holes in the rack

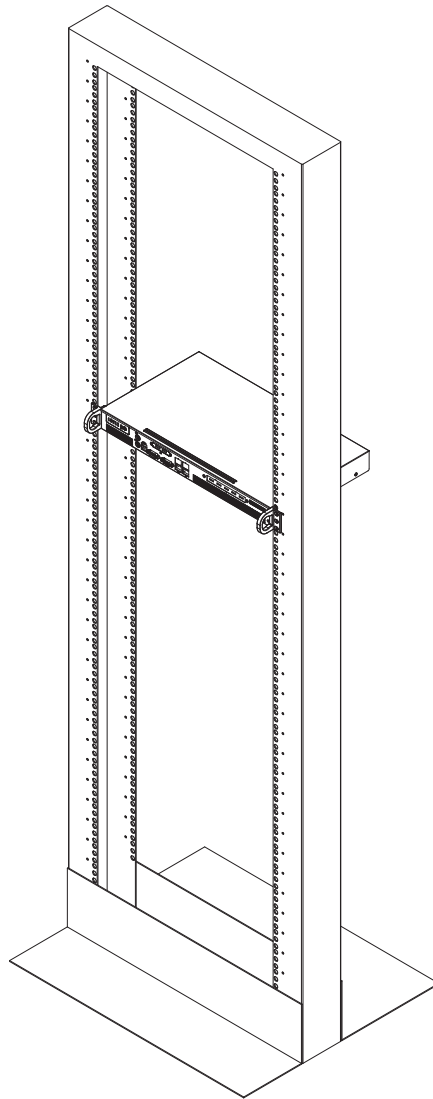


Figure 2-2. Installing the Chassis into a Telco Rack

2-5 Checking the Motherboard Setup

After you install the 5015A-L/5015A-H 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.

Accessing the Inside of the System (Figure 2-5)

1. First, grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
2. Remove the five screws that hold the chassis cover in place. There are two screws on each side of the chassis, and one screw on the back.
3. Once the screws have been removed, lift the cover upward to remove it from the chassis.

Checking the Components

4. Your 5015A-L/5015A-H 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.
5. If desired, you can install an add-on card to the system. See Chapter 5 for details on installing a PCI add-on card.
6. Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections.



Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

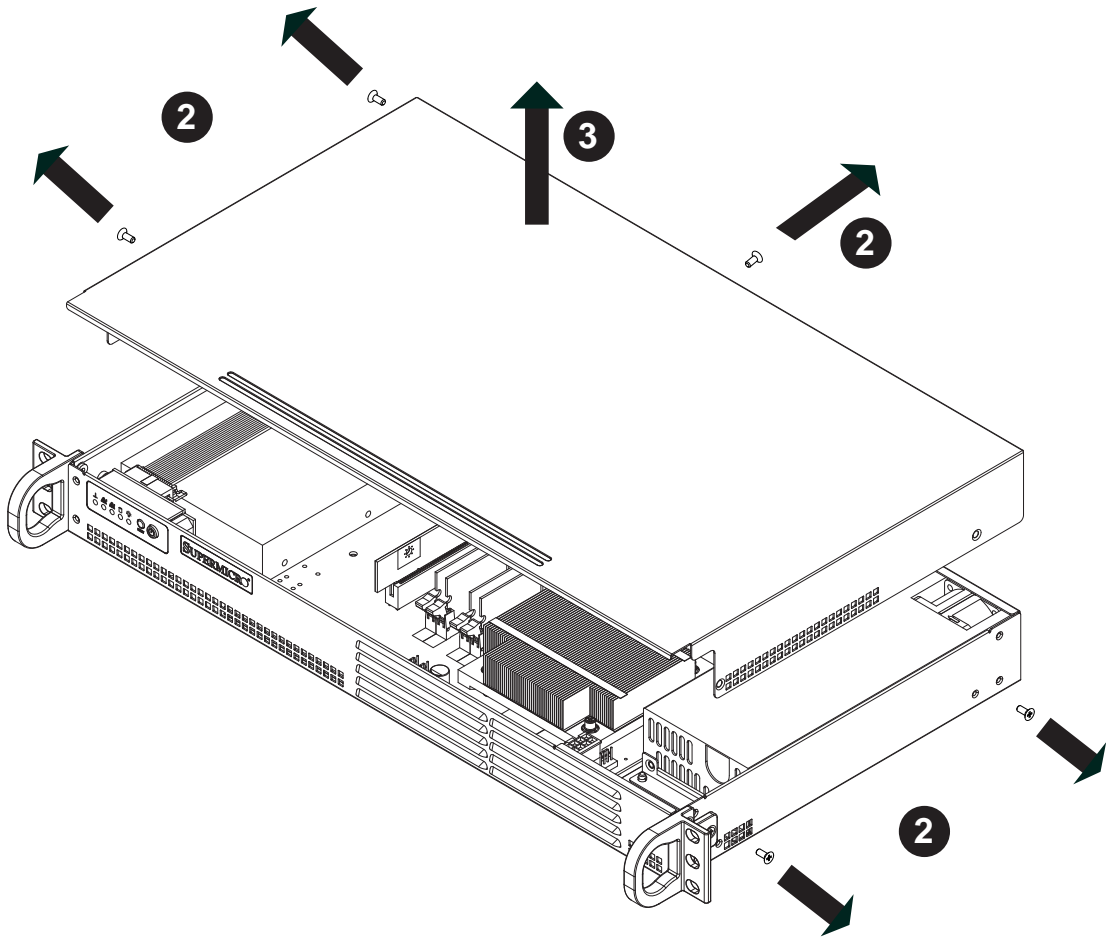


Figure 2-5. Accessing the Inside of the System

2-6 Checking the Drive Bay Setup

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

Checking the Drives

1. Refer to Chapter 6 if you need to reinstall a DVD-ROM drive to the system.
2. Depending upon your system's configuration, your system may have one or two Serial ATA drives already installed. If you need to install Serial ATA drives, please refer to the appropriate section in Chapter 6.

Providing Power

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

Chapter 3

System Interface

3-1 Overview

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

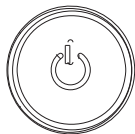
3-2 Control Panel Buttons

There are two push buttons located on the front of the chassis: a reset button and a power on/off button.



Reset Button

The reset button reboots the system.



Power

This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system. If you need to service the system you should unplug the AC power cord after shutting down the server.

3-3 Control Panel LEDs

The control panel located on the front of the 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

When this LED is on 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 on as long as the indicated condition exists.



NIC2

Indicates network activity on LAN2 when flashing .



NIC1

Indicates network activity on LAN1 when flashing.



HDD

Channel activity for all HDDs. This light indicates IDE or SATA 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 5015A-L/5015A-H 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 polarities (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.
- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions



Follow these rules to ensure general safety:

- Keep the area around the 5015A-L/5015A-H clean and free of clutter.
- The 5015A-L/5015A-H weighs approximately 10 lbs (4.5 kg). When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

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

4-3 ESD Precautions



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

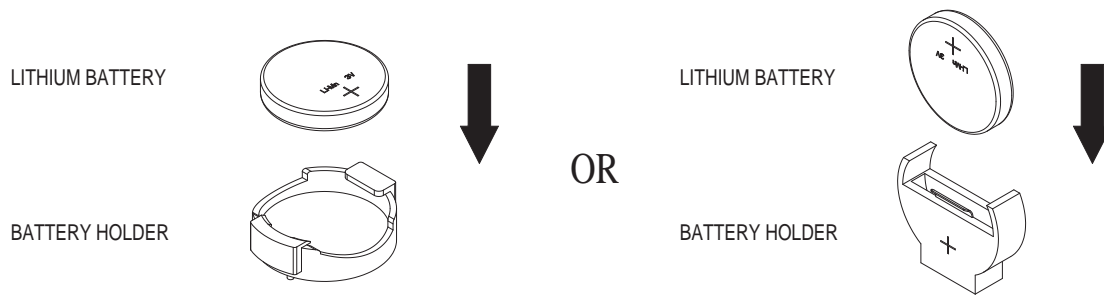
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact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

Figure 4-1. Installing the Onboard Battery



Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to install the X7SLA-L/X7SLA-H 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

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the 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 Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the 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 X7SLA-L/X7SLA-H into the SC502L-200B 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.

Installing to the Chassis

1. Access the inside of the system by removing the screws from the top cover of the chassis, then lift the cover off.
2. 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. Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.
4. 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.
5. Finish by replacing the top cover of the chassis.

Warning: To avoid damaging the motherboard and its components, do not apply any force greater than 8 lbs. per square inch when installing a screw into a mounting hole.

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 cables for the peripherals and control panel and the power cables.

Connecting Data Cables

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

- Control Panel cable (JF1)
- COM Port cable (COM2)
- Front USB port cable (USB2/3)

Connecting Power Cables

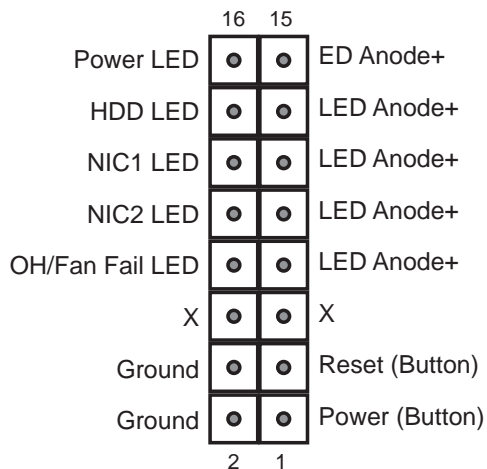
The X7SLA-L/X7SLA-H has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

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

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

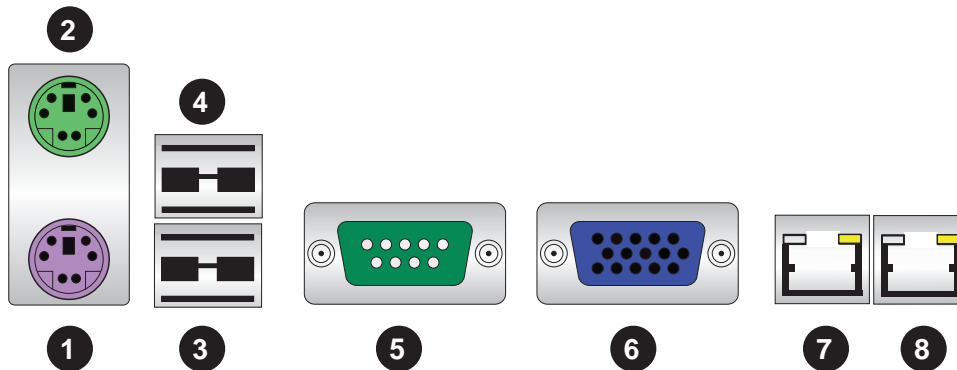
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

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

Figure 5-2. I/O Ports



Rear I/O Ports	
1. Keyboard	5. COM1
2. PS/2 Mouse	6. VGA Port
3. USB0	7. LAN1
4. USB1	8. LAN2*

*X7SLA-H (5015L-H) only.

5-5 Onboard Processor

The Intel Atom processor is soldered directly onto the motherboard. Installing and removing the processor is not required. A small active heatsink (with fan) sits on the processor to keep it cool.

5-6 Installing Memory

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

CAUTION

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

DIMM Installation

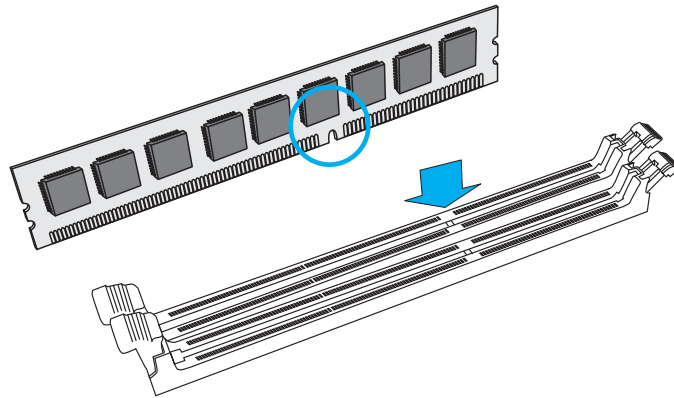
1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A. Insert each DIMM vertically into its slot. Pay attention to the notch along the bottom of the module to prevent incorrect installation.
2. Gently press down on the DIMM module until it snaps into place in the slot. Repeat step 1 to install DIMM1B if needed. See diagrams on the following page.

Memory Support

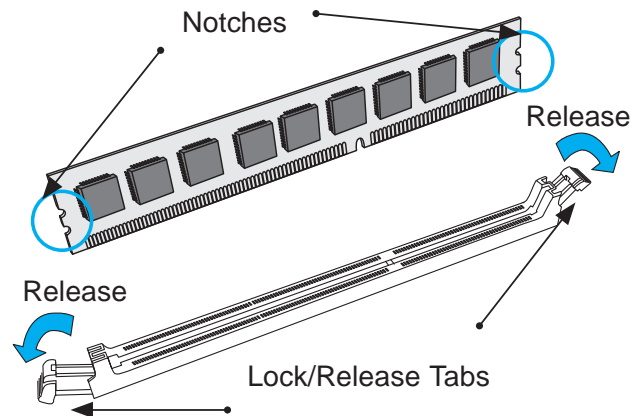
The X7SLA-L/X7SLA-H supports up to 2GB Unbuffered Non-ECC DDR2 533/400 in two DIMM slots. Populating these DIMM modules with a pair of memory modules of the same type and same size will result in interleaved memory, which will improve memory performance.

Figure 5-3. DIMM Installation

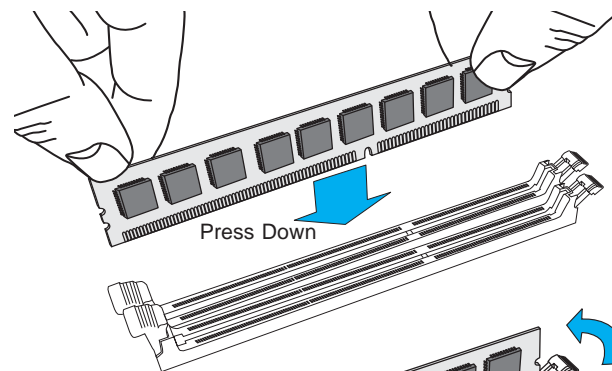
Position the DIMM module's bottom key so it aligns with the receptive point on the slot.



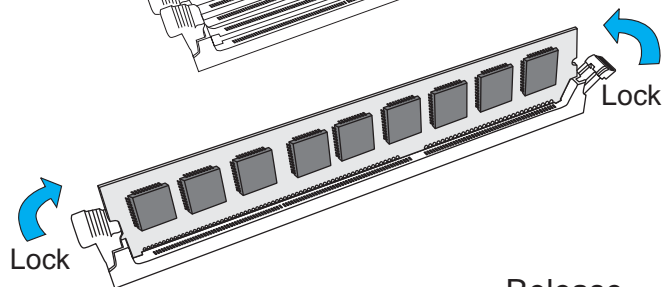
Push the Lock/Release tabs to their Release positions. Make sure that the DIMM module's side notches align with the slot's Lock/Release tabs as it is pressed in.



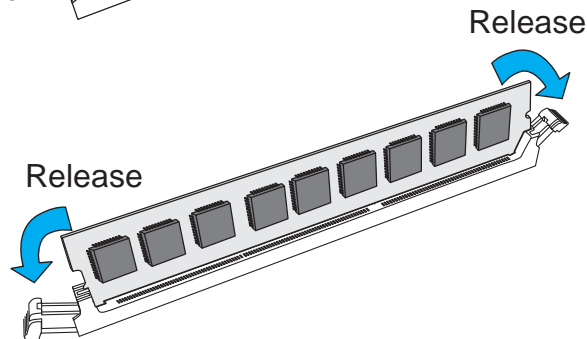
Insert the DIMM module vertically and press down until the module snaps into place.



When the module is properly inserted, the Lock/Release tabs will automatically secure the DIMM module, locking it into place.



To Remove:
Use your thumbs to gently push the Lock/Release tabs near both ends of the module. This should release it from the slot. Pull the DIMM module upwards.



5-7 Adding PCI Expansion Cards

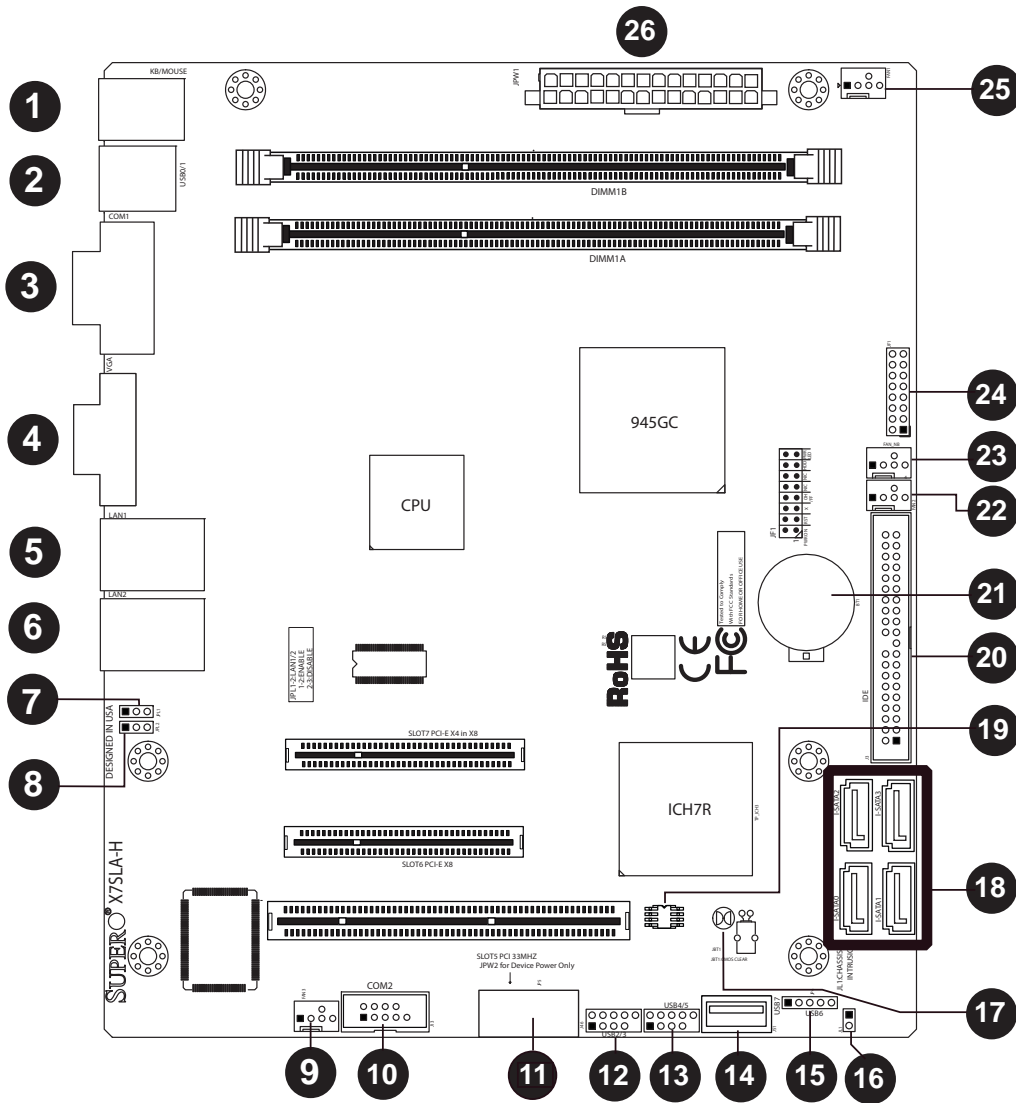
The SC502L-200B chassis can accommodate one full-height, half-length PCI expansion card.

Installing an Expansion Card

1. After powering down the system, remove the PCI slot shield.
2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card.
3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shield protects the motherboard and its components from EMI and aid in proper ventilation, so make sure it is always in place.

5-8 Motherboard Details

Figure 5-4. X7SLA-L/X7SLA-H Layout
(not drawn to scale)



Notes

- USB 7, COM2 and LAN2 are available on the X7SLA-H only.
- Jumpers not indicated are for test purposes only.

X7SLA-L/X7SLA-H Quick Reference

Connector	Label	Description	Default Setting
JBT1	#17	CMOS Clear	See Section 5-9
JPL2	#8	GLAN 2 Enable (X7SLA-H only)	Pins 1-2 (Enabled)
JPL1	#7	GLAN 1 Enable	Pins 1-2 (Enabled)

Connector	Label	Description
Battery	#21	Onboard Battery
BIOS	#19	SPI BIOS Chip
COM1	#3	Serial Port 1, Back Panel
COM2	#10	Serial Port 2 internal header (X7SLA-H only)
Fans 1~3	#9, 22, 25	System Cooling Fans 1~3
IDE	#20	IDE Hard Drive Connector
I-SATA 0~3	#18	Internal SATA Connectors
JF1	#24	FP Control Panel Header
JL1	#16	Chassis Intrusion Header
JPW1	#26	ATX 24-pin Power Connector (Required)
JPW2	#11	4-pin Power Connector (for device power only)
KB/Mouse	#1	PS/2 Keyboard/Mouse
LAN1	#5	Ethernet RJ45 (GB LAN) Connector 1
LAN2	#6	Ethernet RJ45 (GB LAN) Connector 2 (X7SLA-H only)
MCH FAN	#23	Chipset Fan
USB 0/1	#2	Back Panel Universal Serial Bus Ports 0/1
USB 2/3, 4/5, 6	#12, 13, 15	Internal USB Ports
USB 7	#14	Internal "Type A" USB Connector (X7SLA-H only)
VGA	#4	Video Graphics Port

5-9 Connector Definitions

Main ATX Power Supply Connector

The 24-pin main power connector (JPW1) is used to provide power to the motherboard. The 4-pin External Power connector (JPW2) is optional for peripheral devices. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions of these connectors.

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

Required Connection

External Power Connector

In addition to the 24-pin main power connector, the 4-pin External Power connector at JP3 is used to provide power to external devices such as hard disks & CD-ROM drives. This power connector supports 12V and 5V devices.

4-Pin External Power Connector Pin Definitions	
Pin	Definition
1	+12V
2	Ground 1
3	Ground 2
4	+5V

Optional Connection

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

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

Reset Button

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

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

Power Fail LED

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

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

Overheat/Fan Fail

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

OH/Fan Fail LED Pin Definitions (JF1)		OH/Fan Fail Indicator Status	
Pin#	Definition	State	Definition
7	Vcc	Off	Normal
8	Ground	On	Overheat
		Flashing	Fan Fail

NIC2 (LAN2) LED

The LED connections for LAN2 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. (LAN2 on 5015A-H only.)

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

NIC1 (LAN1) LED

The LED connections for LAN1 are on pins 11 and 12 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

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

HDD LED Switch

The HDD LED and UID switch connections are located on pins 13 and 14 of JF1. Attach a cable here to indicate disk activity (for any hard drive activities on the system, including Serial ATA and IDE). See the table on the right for pin definitions.

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

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. 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

Fan Headers

The X7SLA-L/X7SLA-H has four fan headers. Fan1~Fan3 are system cooling fans. MCH_FAN is used for the chipset fan. These fans are 4-pin fan headers. However, Pins 1~3 of the fan headers are backward compatible with the traditional 3-pin fans. **Note:** The 5015A-L/5015A-H does not is a fan-less chassis so the FAN1~Fan3 headers are not used.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWM Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

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

PS/2 Keyboard and Mouse Port Pin Definitions (J28)	
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Serial Ports

Two serial ports are included on the motherboard. COM1 is a backpanel port and COM2 is a header located on the corner of the board near USB2. See the table on the right for pin definitions.

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

Chassis Intrusion

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

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

LAN1/2 (Ethernet Ports)

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



Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel. An additional six USB headers are included on the board, which may be used for front side access (cables not included). USB 6 and USB 7 are "Type A" connectors. See the table on the right for pin definitions.

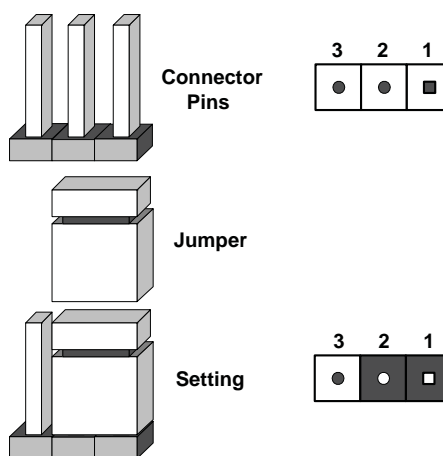
Universal Serial Bus Pin Definitions (USB)			
USB0/1		USB4/5/6/7	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/A	5	Key

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.

LAN1/2 Enable/Disable

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

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

5-11 Onboard Indicators

LAN1/2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each port, one LED indicates activity while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the indication associated with the connection speed LED.

LAN1/2 LED (Connection Speed Indicator)	
LED Color	Definition
Off	No Connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

5-12 IDE and SATA Ports

IDE Connector

An IDE Connector is located close to SATA Ports 0~3 on the motherboard. This 40-pin connector provides support for 3.5" hard drive disks. See the table on the right for pin definitions.

IDE Connector Pin Definitions			
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	SIORDY	28	(PD)
29	SDDACK#	30	Ground
31	IRQ15	32	(NC)
33	Addr1	34	SHDD66DET
35	Addr0	36	Addr2
37	SDCS1#	38	SDCS3#
39	SHDDLED#	40	Ground

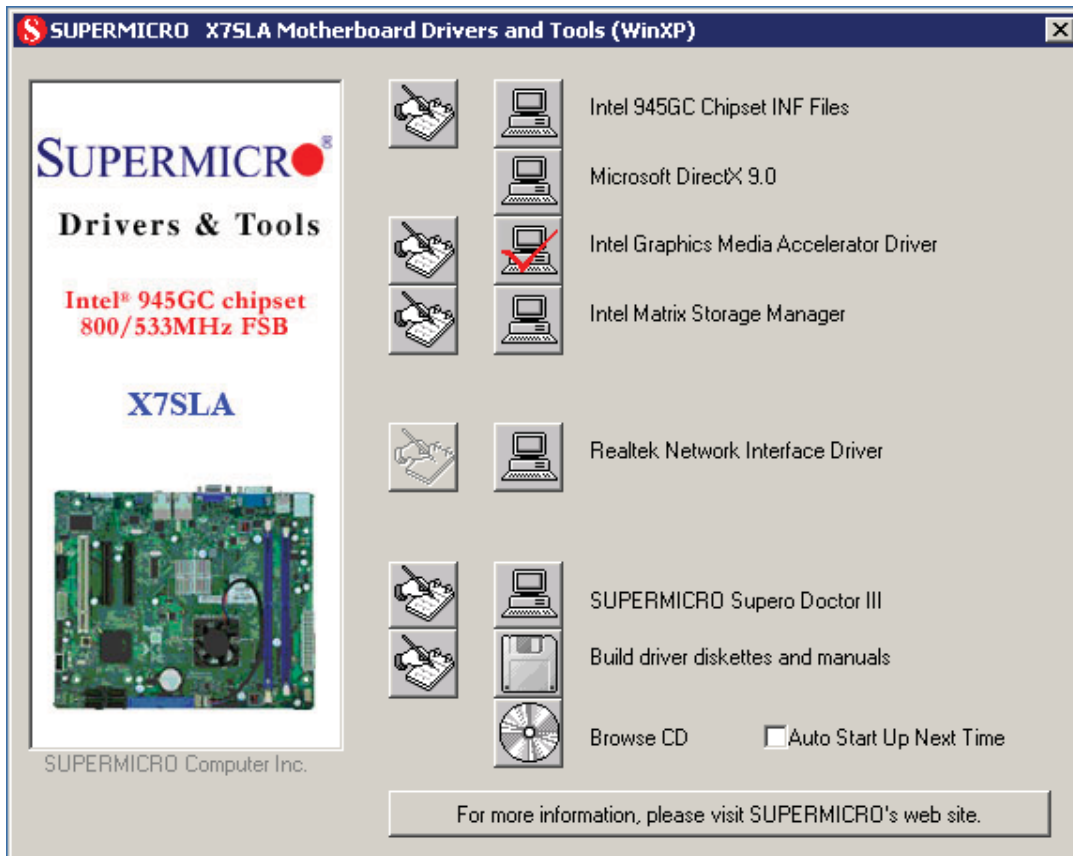
SATA Ports

Four Serial ATA (SATA) connectors (I-SATA 0~3) are located on the motherboard to provide serial link connections. Serial Link connections provide faster data transmission than those of the traditional Parallel ATA. These four SATA connectors are supported by the Intel ICH7R South Bridge. See the table on the right for pin definitions.

SATA Port Pin Definitions (I-SATA0, I-SATA5)			
Pin#	Definition	Pin #	Definition
1	Ground	2	TXP
3	TXN	4	Ground
5	RXN	6	RXP
7	Ground		

5-13 Installing Software

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



Driver/Tool Installation Display Screen

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

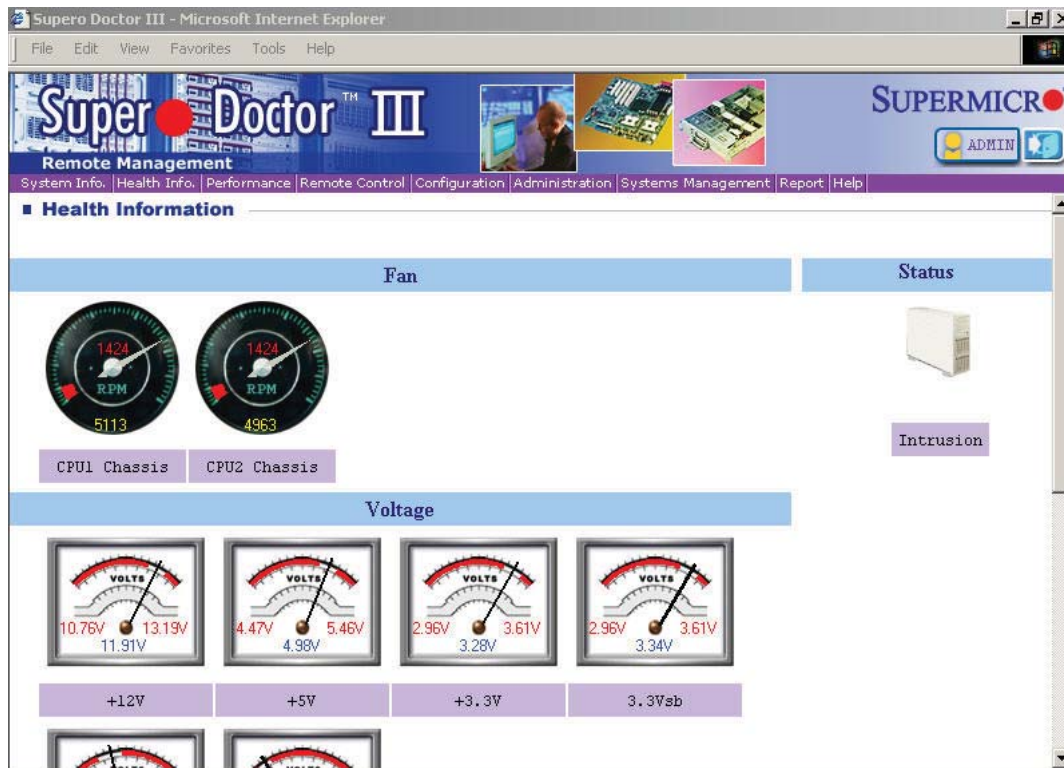
Supero Doctor III

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

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

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

Supero Doctor III Interface Display Screen (Health Information)



Supero Doctor III Interface Display Screen (Remote Control)

Graceful power control

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

Requirements

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

Power control

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

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC502L chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If a step is unnecessary, skip ahead to the step that follows.

Tools Required

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

6-1 Static-Sensitive Devices

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

Precautions

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

Figure 6-1. Chassis Front View

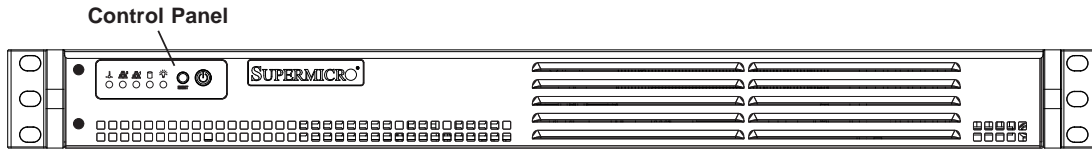
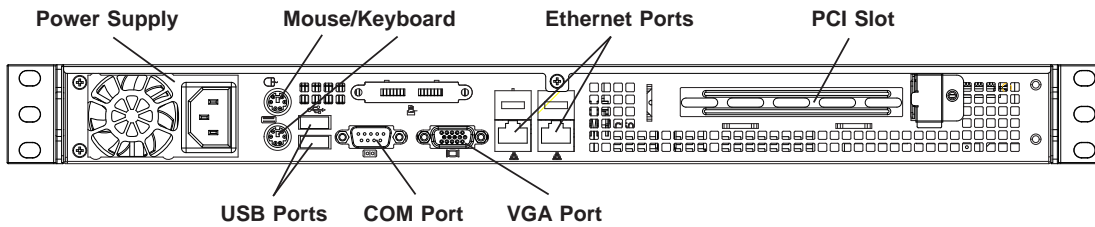


Figure 6-2. Chassis Rear View



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system 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 serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The 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

The SC502L is a fan-less chassis, which results in extremely quiet and energy-efficient operation. The only fan in the system is located on the heatsink for the embedded processor.

6-4 Drive Bay Installation/Removal

Installing a 3.5" SATA Drive (Figure 6-3)

1. Power down the system and unplug the AC power cord.
2. Remove the chassis cover as described on page 2-6.
3. Use screws to secure the drive directly into the left side of the chassis as shown in the figure.

Installing 2.5" SATA Drives (Figure 6-4)

1. Power down the system and unplug the AC power cord.
2. Remove the chassis cover as described on page 2-6.
3. Use screws to secure the drive into the hard drive bracket:
For two drives the bracket is p/n MCP-220-00044-0N.
For one drive the bracket is p/n MCP-220-00051-0N.
4. Use screws to secure the bracket/drive assembly into the left side of the chassis as shown in the figure.

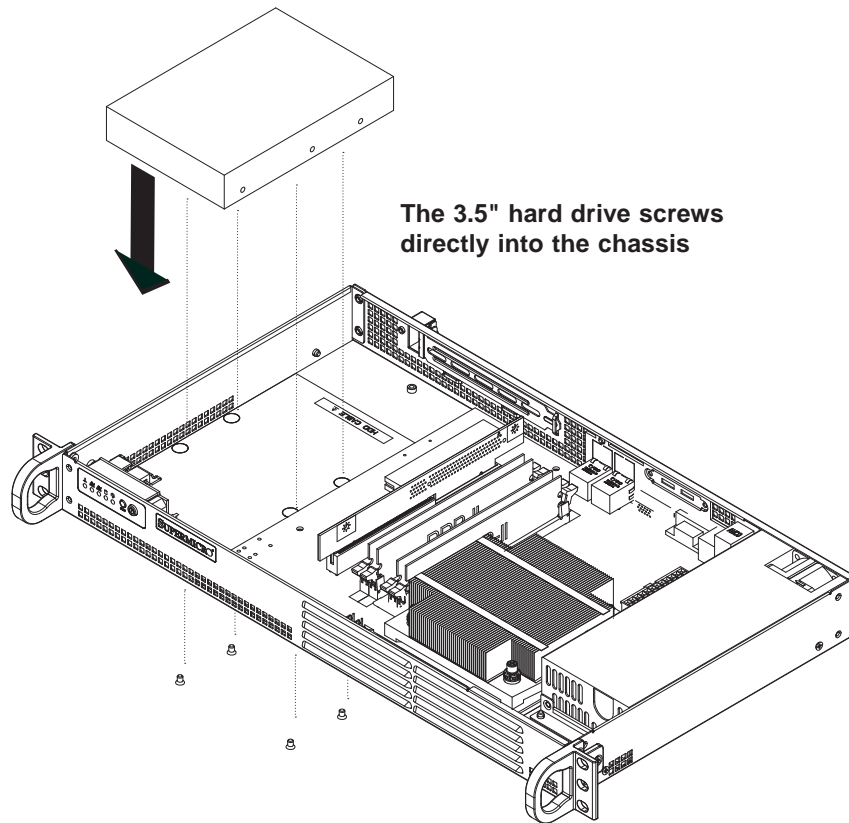


Figure 6-3. Installing a 3.5" Hard Drive

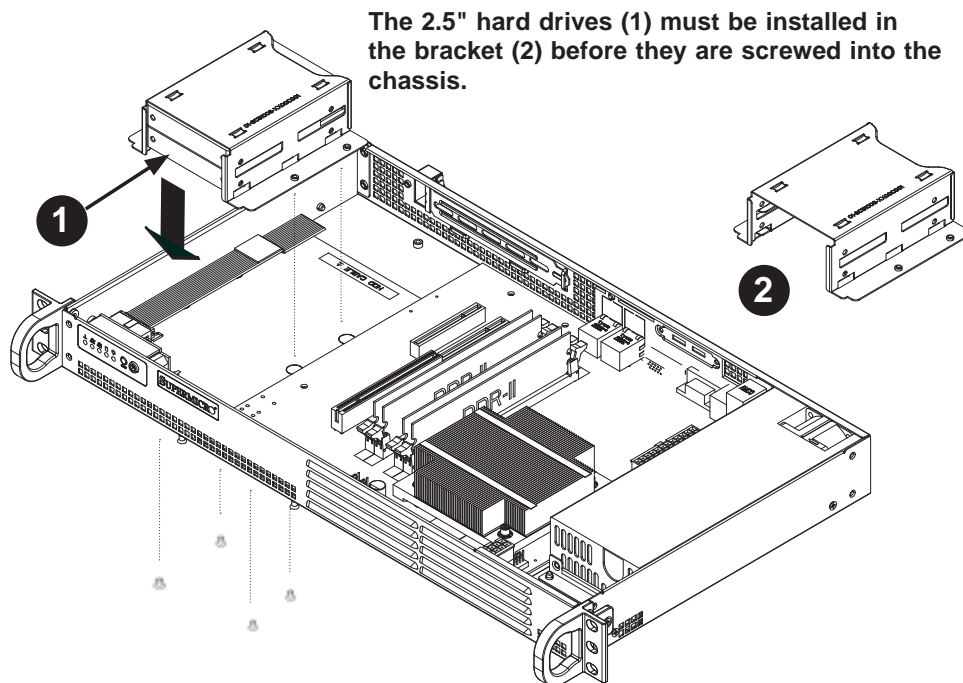


Figure 6-4. Installing 2.5" Hard Drives

6-5 Power Supply

The SC502L-200B chassis has a single 200 watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage.

In the event that the power supply unit fails, the system will shut down and you will need to change the power supply unit. New units can be ordered directly from Supermicro (see contact information in the Preface).

Replacing the Power Supply (Figure 6-5)

1. Power down the system and unplug the AC power cord.
2. Disconnect all wiring from the power supply.
3. Remove the four screws that secure the power supply to the chassis and extend upwards through the mounting thru holes, to hold the power supply in place (two mounting screws are located on the rear of the power supply and two mounting screws are accessed on the underside of the chassis). Set the screws aside for later use.
4. Remove the power supply from the chassis.
5. Align the mounting thru holes on the power supply with the mounting holes in the chassis and reattach the power supply to the chassis using the four screws which were previously set aside
6. Connect the chassis wiring to the power supply.
7. Replace the top cover, reattach the AC power cord and power up the system.

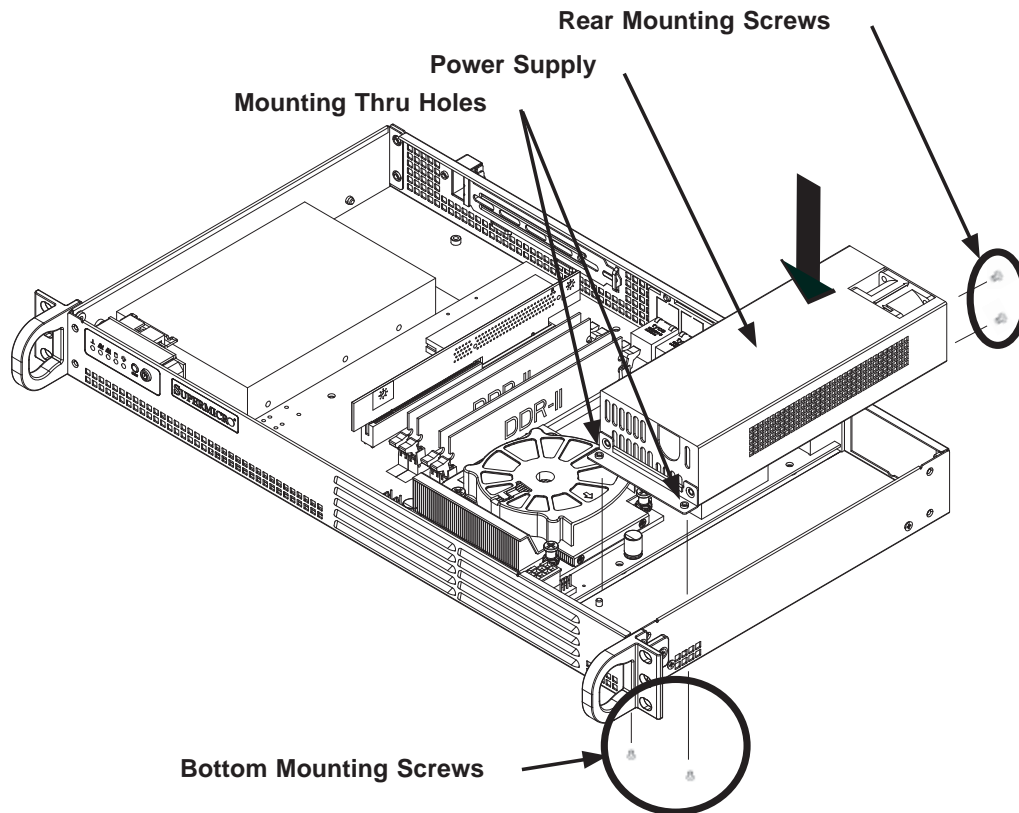


Figure 6-5. Installing the Power Supply

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X7SLA-L/X7SLA-H. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.



Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note:** the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called hot keys. Most of the AMI BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.




Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing during system boot.

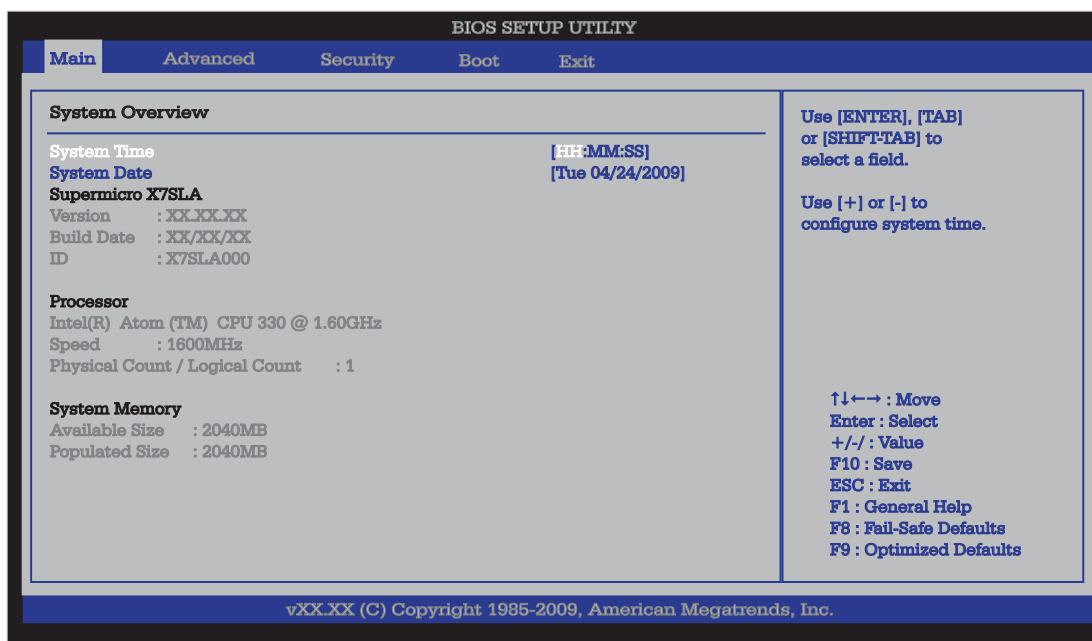
Starting the Setup Utility

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 AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

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

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview: The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro X7SLA

Version : XX.XX.XX

Build Date : MM/DD/YY

ID : XXXXXXXXProcessor

The AMI BIOS automatically displays the status of processor as shown below:

Intel (R) Atom (TM) CPU XXX @ XX.XXGHz

Speed :XXXXMHz

Physical Count / Logical Count :1

System Memory

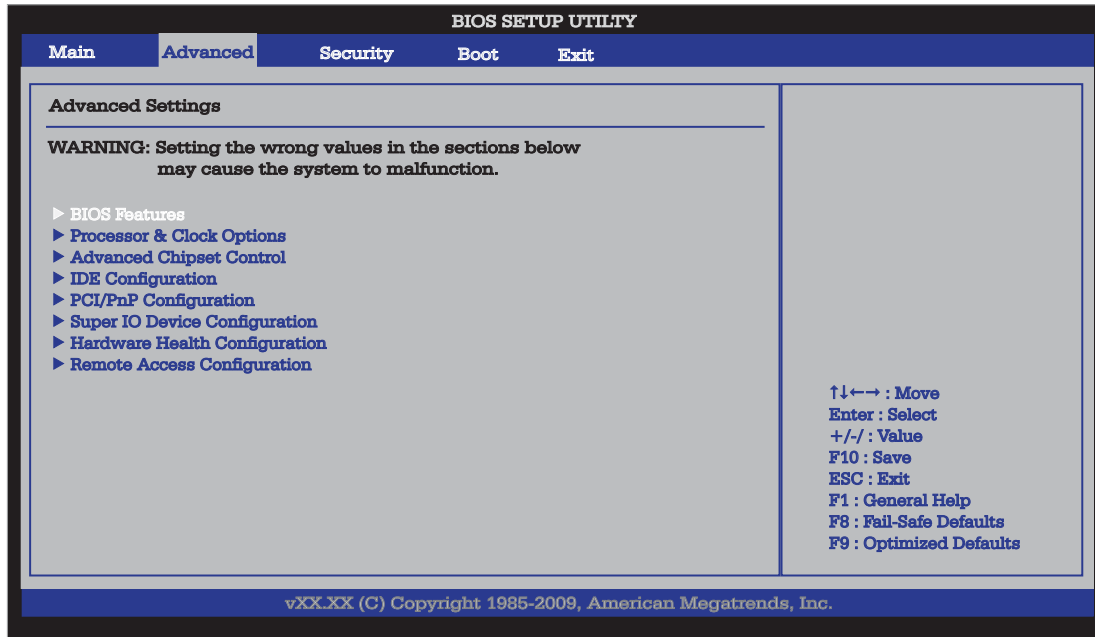
Available Size displays the size of memory available in the system. Populated Size displays the total size of memory detected in the system. Both are displayed in Megabytes (MB).

Available Size :XXXXMB

Populated Size :XXXXMB

7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:



▶ BIOS Features

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system boot. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

Wait for 'F1' If Error

If set to Enabled, the system will wait for the user to press F1 before displaying a message when an error occurs. The options are **Enabled** and Disabled.

High Performance Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruc-

tion embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are Enabled and **Disabled**.

► **ACPI Configuration**

Use this feature to configure ACPI (Advanced Configuration and Power Interface) power management settings for your system.

ACPI Aware OS

Select Yes to enable ACPI support for the OS. Disable this feature if ACPI is not supported by your OS. The options are **Yes** and No.

Suspend Mode

This option is used to select the ACPI State that is used for system suspend. The options are S1 (POS), S3 (STR) and **Auto**.

S1 (POS) - All processor caches are erased, and stops executing instructions. Power to the CPU(s) and RAM is maintained, but RAM is refreshed.

S3 (STR) - The CPU has no power and the power supply goes on reduced power mode. However, main memory (RAM) is still powered.

ACPI Version Feature

This feature allows the user to select the ACPI Version for the system. The options are ACPI 1.0, **ACPI 2.0**, and ACPI 3.0.

USB Device Wakeup

Select Enable to "wake-up" the system via a USB device when the system is in S3 or S4 State. The options are Enabled and **Disabled**.

PS2 KB/MS Wake Up

Select Enable to "wake-up" the system using either the PS2 keyboard or mouse (if equipped) when the system is in S3 (Sleep) or S4 (Hibernate) state. The options are Enabled and **Disabled**.

Watch Dog Function

Select Enable to enable Watch Dog Timer and allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled**.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to

resume its last state before a power loss. The options are Power-On, Power-Off and **Last State**.

Power Button Function

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

MPS Revision

This feature allows the user to specify the version of the Multi-Processor Specification (MPS) the motherboard is using. The options are **1.4** and 1.1.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are Enabled and **Disabled**.

► Processor & Clock Options



Warning! When you first enter the Advanced Setup screen, the Setup Warning will be displayed. Follow the instructions given on the screen to set the correct value for each item to make sure that the system functions properly.

Execute-Disable Bit Capability (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Hyper-Threading

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

► Advanced Chipset Control

The items included in the Advanced Settings submenu are listed below:

► NorthBridge Configuration

This feature allows the user to configure the settings for the Intel 945GC North-Bridge.

DRAM Frequency

This feature allows the user to select the DRAM Frequency setting. The options are **Auto (Auto-detect)**, 400 MHz and 533 MHz.

Configure DRAM Timing by SPD

Select Enable to allow the BIOS to read the SPD (Serial Presence Detect) chip which is built in the memory module in order to get the exact memory specifications. The options are **Enabled** and Disabled.

Memory Hole

Use the feature to allocate memory resource reserved for use of PCI devices. If set to 15 MB~16MB, the reserved memory will be placed in the location around 15 MB~16 MB. The options are **Disabled** and 15 MB~ 16 MB.

Initiate Graphic Adapter

Use the feature to select the graphics controller to be used as the primary boot device. The options are IGD, PCI/IGD, PCI/PEG, PEG/IGD, and **PEG/PCI**.

Internal Graphics Device Mode Select

Use the feature to set the amount of system memory to be used by the Internal Graphics Devices. The options are Disabled, Enabled, 1 MB and **Enabled, 8 MB**.

PEG Port Configuration

PEG Port

Use the feature to configure the PEG Port. The Default setting is **Auto** to allow the PEG Port to be automatically detected and configured by the BIOS. The options are **Auto** and Disabled.

PEG Force x1

If set to Enabled, PEG will be configured to x1 setting by the BIOS. The options are Enabled, and **Disabled**.

► Video Function Configuration

DVMT Mode Select

This option allows the user to set the DVMT mode. The options are Fixed Mode, **DVMT Mode** and the COMBO mode.

DVMT/Fixed Memory

This option allows the user to set the amount of memory to be used for operation in the DVMT/Fixed Mode. The options are 64 MB, **128 MB** and Maximum DVMT.

Boot Display Device

This option allows the user to select the boot display device. The options are **CRT on Port 0**, LFP on Port2, and CRT-Port 0 & LFP-Port 2.

USB Functions

This feature allows the user to enable or disable the onboard USB ports. The options are Disabled and **Enabled**.

USB 2.0 Controller

Select Enabled to activate the onboard USB 2.0 controller. The options are **Enabled** and Disabled.

► USB Configuration

This feature allows the user to configure USB settings for the motherboard.

Legacy USB Support

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vice versa. The settings are Disabled, Enabled and **Auto**.

USB 2.0 Controller Mode

This setting allows you to select the USB 2.0 Controller mode. The options are **Hi-Speed** (480 Mbps) and Full Speed (12 Mbps).

BIOS EHCI Hand-Off

Select Enabled to enable BIOS Enhanced Host Controller Interface support to provide a workaround solution for an operating system that does not have EHCI Hand-Off support. When enabled, the EHCI Interface will be changed from the BIOS-controlled to the OS-controlled. The options are Disabled and **Enabled**.

Clock-Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled. If this feature is set to Enabled, the following items will display:

►IDE Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE Devices and displays the following items:

ATA/IDE Configuration

This feature allows the user to configure ATA/IDE settings. The options are Disabled and **Enhanced**.

Configure SATA as

Please choose IDE if the installed hard disk(s) are to be configured as independent devices and will be used normally.

Choose RAID if you have more than one drive installed and will be used in a Redundant Array (RAID) configuration.



Note: Please use the Intel Matrix Storage Manager (option ROM) to configure your RAID by pressing and holding down <Ctrl> and pressing <I> (the "i" key) during POST. For a downloadable PDF manual, please visit Supermicro's website at: <http://www.supermicro.com/support/manuals/> and click "HostRAID - Setup for Intel ICH7R / ICH9R" under RAID Installation Guides.

Select AHCI for advanced SATA features such as hot-plugging and native command queueing. Note: Take caution when using AHCI, as your operating system may need drivers to match this configuration. This feature is for technicians only.

The options are **IDE**, RAID and AHCI.

Configure SATA Channels

The options are **Before PATA** and Behind PATA.

Primary IDE Master/Slave, Secondary IDE Master/Slave and Third IDE Master/Slave

These settings allow the user to set the parameters of Primary IDE Master/Slave, Secondary IDE Master/Slave and Third IDE Master/Slave slots. Hit <Enter> to

activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are:

Type

Select the type of device connected to the system. The options are Not Installed, **Auto**, CD/DVD and ARMD.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs.

Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs.

Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs.

Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs.

Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999.

For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

DMA Mode

Select **Auto** to allow the BIOS to automatically detect IDE DMA mode when the IDE disk drive support cannot be determined.

Select **SWDMA0** to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MBs.

Select **SWDMA1** to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MBs.

Select **SWDMA2** to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MBs.

Select **MWDMA0** to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MBs.

Select **MWDMA1** to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MBs.

Select **MWDMA2** to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MBs.

Select **UDMA0** to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MBs. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2.

Select **UDMA1** to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MBs.

Select **UDMA2** to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MBs.

Select **UDMA3** to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 66.6 MBs.

Select **UDMA4** to allow the BIOS to use Ultra DMA mode 4 . It has a data transfer rate of 100 MBs.

The options are **Auto**, **SWDMA_n**, **MWDMA_n**, and **UDMA_n**.

S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select **Auto** to allow the AMI BIOS to automatically detect hard disk drive support. Select **Disabled** to prevent the AMI BIOS from using the S.M.A.R.T. Select **Enabled** to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are **Disabled**, **Enabled**, and **Auto**.

32-Bit Data Transfer

Select Enabled to enable 32-Bit data transfer. The options are **Enabled** and Disabled.

Hard Disk Write Protect

Select Enabled to use the feature of Hard Disk Write Protect to prevent data from being written to HDD. The options are Enabled or **Disabled**.

IDE Detect Time Out

Use this feature to set the time-out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and **35**.

► PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

Clear NVRAM

Select Yes to clear NVRAM during system boot. The options are Yes and **No**.

Plug & Play OS

Select Yes to allow the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

Allocate IRQ to PCI VGA

Select Yes to allow the system to give the VGA adapter card an interrupt address. The options are **Yes** and No.

Palette Snooping

Select Enabled to inform the onboard PCI devices that an ISA graphics device is installed in the system in order for the graphics card to function properly. The options are Enabled and **Disabled**.

PCI IDE Bus Master

Select Enabled to allow the BIOS to use the PCI bus master to read from and write to the onboard IDE drives. The options are **Enabled** and Disabled.

PCI Slot 5, PCIE X8 Slot6, PCIE X4 Slot7

Select Yes to enable OPROM for a PCI slot as specified. The options are **Yes** (to enable OPROM for the slot specified) and No.

Load Onboard LAN 1 Option ROM/ Load Onboard LAN 2 Option ROM

Select Enabled to load the onboard LAN Option ROM for the LAN port as specified. The options are Enabled and **Disabled**.

► Super IO Configuration**Serial Port1 Address/ Serial Port2 Address**

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3. The options for Serial Port2 are Disabled, **2F8/IRQ3**, 3E8/IRQ4, and 2E8/IRQ3.

Serial Port 2 Mode

Use this feature to configure Serial Port 2 mode. The options are **Normal**, IrDA and ASK IR.

► Hardware Health Configuration

This feature allows the user to monitor Hardware Health of the system and review the status of each item when displayed.

CPU Temperature

This feature displays the processor's absolute temperature (i.e., 34°C).

System Temperature

This feature displays the system's absolute temperature (i.e., 34°C).

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa.

Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select “Disabled, (Full Speed @12V)” to disable the fan speed control function and allow the onboard fans to constantly run at the full speed (12V). The Options are **Disabled**, 4-Pin (Server), 4-Pin (Workstation) and 4-Pin (Super Quiet)].

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.



Warning: Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.

The options are:

The **Default Alarm:** Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5°C above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling.

The **Early Alarm:** Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

This screen also displays Voltage Monitoring information:

Vcore, +3.3Vcc, 12V, VDIMM, 5V, Chipset 1.5V, 3.3Vsb, and Vbatt.



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

► Remote Access Configuration

Remote Access

This feature allows the user to enable the function of Remote Access. The options are **Disabled** and Enabled.

If the item Remote Access is set to Enabled, the following items will display:

Serial Port Number

This feature allows the user decide which serial port to be used for Console Redirection. The options are COM 1, and COM 2.

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are 115200 8, n 1; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None**, Hardware, and Software.

Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power_On_Self_Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and **Always**.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection. The options are **ANSI**, VT100, and VT-UTF8.

VT-UTF8 Combo Key Support

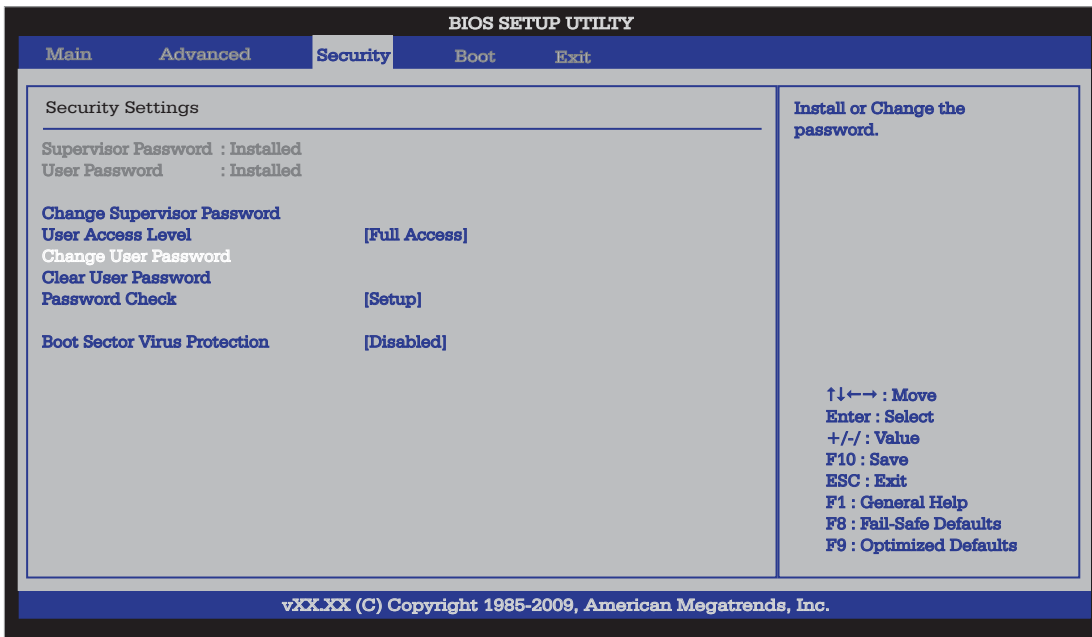
A terminal keyboard definition that provides a way to send commands from a remote console. Available options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature defines the length of time in seconds to display memory information. The options are **No Delay**, Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

7-4 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.



Change Supervisor Password:

Use this feature to set a supervisor password. It secures the system from unauthorized use by restricting access to persons only with the proper supervisor-level password. Select this feature and press <Enter>, and then type in the Supervisor Password.

User Access Level

This feature appears when the Supervisor Password is set. Use this to assign an access level for a user. The options are: No Access, View Only, Limited, and **Full Access**.

Change User Password:

Use this feature to set a user password. It secures the system from unauthorized use by restricting access to persons only with the proper user-level password. Select this feature and press <Enter>, and then type in the User Password.

Clear User Password

This feature appears when the User Password is set. Select this to clear the User Password.

Password Check

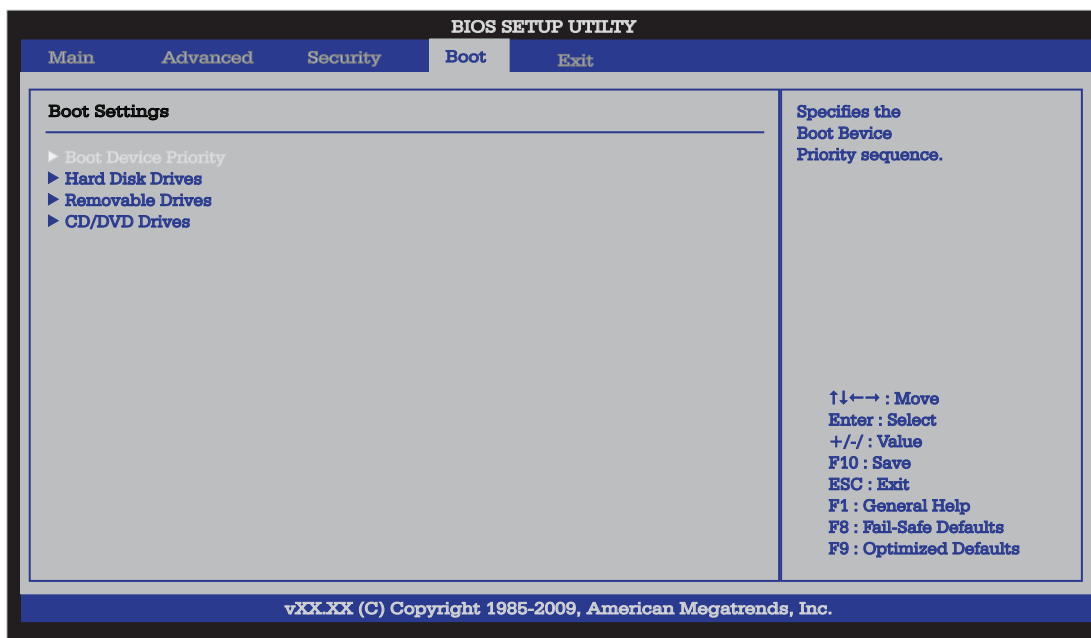
Use this feature to set when the system prompts for a password. Choosing Setup will ask the user a password when entering the BIOS Setup, while selecting Always will prompt for a password during BIOS Setup and each system boot. The options are **Setup** and Always.

Boot Sector Virus Protection

When Enabled, the AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-5 Boot Configuration

Use this feature to configure Boot Settings:



► Boot Device Priority

This feature allows the user to specify the sequence of priority for the Boot Device. The settings are 1st boot device, 2nd boot device, 3rd boot device, and Disabled.

- 1st boot device - 1st Floppy Drive
- 2nd boot device - [CD/DVD: XXXXXXXXXXXX]
- 3rd boot device - [SATA: XXXXXXXXXXXX]

► Hard Disk Drives

This feature allows the user to specify the boot sequence from available Hard Disk Drives. The options are 1st boot device, and Disabled.

- 1st Drive - [SATA: XXXXXXXXXXXXX]

► Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.

- 1st Drive
- 2nd boot device - [USB: XXXXXXXXXXXXX]

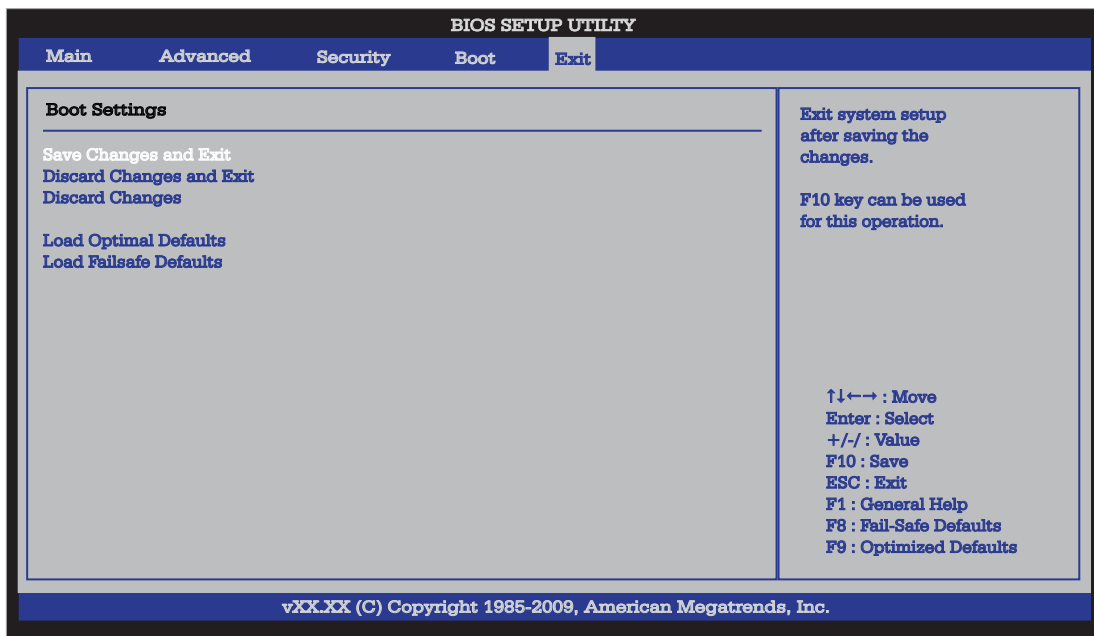
► CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD Drives. The settings are 1st boot device and Disabled.

- 1st Drive - [CD/DVD: XXXXXXXXXXXXX]

7-6 Exit Options

Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

Notes

Appendix A

POST Error Beep Codes

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

Recoverable POST Error Beep Codes

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

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with the front panel Overheat LED on - system overheat

8 short beeps - display memory read/write error

Notes

Appendix B

Installing Windows

After all hardware has been installed, you must first configure Intel South Bridge RAID settings before you install the OS and other software drivers. Please note that the ICH7R Driver does not support the Windows 2000 OS.

B-1 Installing Windows XP/2000/2003

1. Turn on the system and insert the Microsoft Windows XP/2000/2003 Setup CD in the CD or DVD drive.
2. Reboot the system.
3. The system will perform the POST and search for a bootable drive.
4. When prompted by the system asking whether you wish to boot from the CD, press the space bar on your keyboard.
5. The Windows OS Setup screen will display. Windows OS Setup will automatically load all Windows-supplied device drivers and then continue with the Windows XP/2000/2003 installation.
6. You will be asked to enter the disk partition where the Operating System is to be installed (please see Warning below), and to enter the date/time, and the Windows Activation Key.
7. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.
8. Insert the Supermicro Setup CD that came with your motherboard into the CD drive during system boot, and the main screen will display. Follow the on-screen instructions.

Note: To install the Linux Operating System, please refer to the OS Installation Guides posted on our web site at www.supermicro.com/support/manuals. For other Operating System platforms, please follow your software provider's instructions.



Warning: You will lose all data residing in a disk drive partition when it is deleted or reformatted.

B-2 Installing Windows XP/2003 for RAID Systems

1. Insert Microsoft's Windows XP/2003 Setup CD in the CD Driver, and the system will start booting up from CD.
2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.
3. When the Windows XP/2003 Setup screen appears, press "S" to specify additional device(s).
4. Insert the driver diskette-"Intel AA RAID XP/2003 Driver for ICH7R" into Drive A: and press the <Enter> key.
5. Choose the Intel(R) ICH7R *SATA RAID Controller* from the list indicated in the XP/2003 Setup Screen, and press the <Enter> key.
6. 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.
7. From the Windows XP/2003 Setup screen, press the <Enter> key. The XP/2003 Setup will automatically load all device files and then, continue the Windows XP/2003 installation.
8. After the Windows XP/2003 OS Installation is completed, the system will automatically reboot.

Appendix C

System Specifications

Processors

5015A-L: embedded Intel® Atom™ 230 single-core 1.6 GHz processor

5015A-H: embedded Intel® Atom™ 330 dual-core 1.6 GHz processor

Chipset

Intel 945GC/ICH7R chipset

BIOS

4 Mb AMI SPI Flash ROM

Memory Capacity

Two 240-pin DIMM slots that can support up to 2 GB of unbuffered non-ECC DDR2-533/400 SDRAM

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

SATA Controller

On-chip (ICH7R) 3 Gb/s Intel SATA controller

Hard Drive Support

Up to two internal 2.5" drives or one internal 3.5" drive

PCI Expansion Slots

One PCI-E x8 slot

Motherboard

5015A-L: X7SLA-L (Flex ATX)

5015A-H: X7SLA-H (Flex ATX)

Dimensions: 9 x 7.5 in (229 x 191 mm)

Chassis

SC502L-200B (mini 1U Rackmount)

Dimensions (both): (WxHxD) 17.2 x 1.7 x 9.8 in. (437 x 43 x 249 mm)

Weight

Gross Weight: 10 lbs. (4.5 kg.)

System Input Requirements

AC Input Voltage: 100-240 VAC (auto-range)

Rated Input Current: 3A max.

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 200W (Part# PWS-202-1H)

Rated Output Voltages: +3.3V (8A), +5V (8A), +12V (16A), -12V (0.5A),
+5Vsb (2A)

Operating Environment

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

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

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

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

Regulatory Compliance

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

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

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

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

Notes

(continued from front)

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