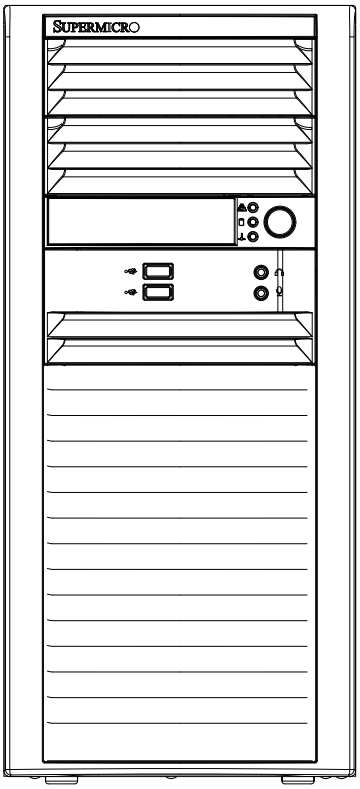
SUPERMICRO®

SuperWorkstation

5037A-T



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperWorkstation 5037A-T. Installation and maintenance should be performed by experienced technicians only.

The SuperWorkstation 5037A-T is a high-end system based on the SC732D2-500B mid-tower chassis and the C7P67 serverboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the system and describes the main features of the C7P67 serverboard and the SC732D2-500B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to setup the SuperWorkstation 5037A-T into a rack and check out the server configuration prior to powering up the system. If your system was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperWorkstation 5037A-T.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the C7P67 serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC732D2-500B chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Chapter 5 Advanced Motherboard Setup

Chapter 6 Advanced Chassis Setup

Chapter 7 BIOS

Chapter 1

Introduction

1-1 Overview

The 5037A-T is a high-end workstation comprised of two main subsystems: the SC732D2-500B mid-tower chassis and the C7P67 single Intel® processor motherboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperWorkstation 5037A-T (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the SuperWorkstation 5037A-T, as listed below:

- One rear exhaust fan (FAN-0124L4)

- Optional:
  One active CPU heatsink (SNK-P0046A4)
  One 12-cm PWM fan (FAN-0124L4)
  One HDD cage for four 2.5" hard drives (MCP-220-73201-0N)

1-2 Motherboard Features

At the heart of the SuperWorkstation 5037A-T lies the C7P67, a single processor motherboard based on the Intel® P67 Express chipset. Below are the main features of the C7P67. (See Figure 1-1 for a block diagram of the chipset).

Processors

The C7P67 supports a single Intel 2nd generation Core i3/i5/i7 processor in an LGA 1155 socket. Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The C7P67 has four DIMM slots that can support up to 32 GB of non-ECC, unbuffered DDR3-1333/1066 SDRAM. See Chapter 5 for details.

SATA

A SATA controller is integrated into the chipset to provide a SATA subsystem that supports RAID 0, 1, 5 and 10 (RAID 5 is not supported with Linux OS). The C7P67 supports four SATA 3.0 and four SATA 2.0 ports.

PCI Expansion Slots

The C7P67 has three PCI-E 2.0 x1, one PCI-E 2.0 x8 (in a x16 slot), one PCI-E 2.0 x16 and three 32-bit PCI slots.

Onboard Controllers/Ports

The color-coded I/O ports include eight USB 2.0 ports, two USB 3.0 ports, a combination PS/2 mouse and keyboard port, two Gb Ethernet LAN ports and six HDA (High Definition Audio) ports.

1-3 Chassis Features

The SC732D2-500B is mid-tower chassis. The following is a general outline of the main features of the chassis.

System Power

The 5037A-T features a single 500W power supply. This power supply unit has been designed to operate at a low noise level to make it ideal for use in a workstation environment.

Hard Drives

The SC732D2-500B chassis was designed to support eight SATA hard drives.

Front Control Panel

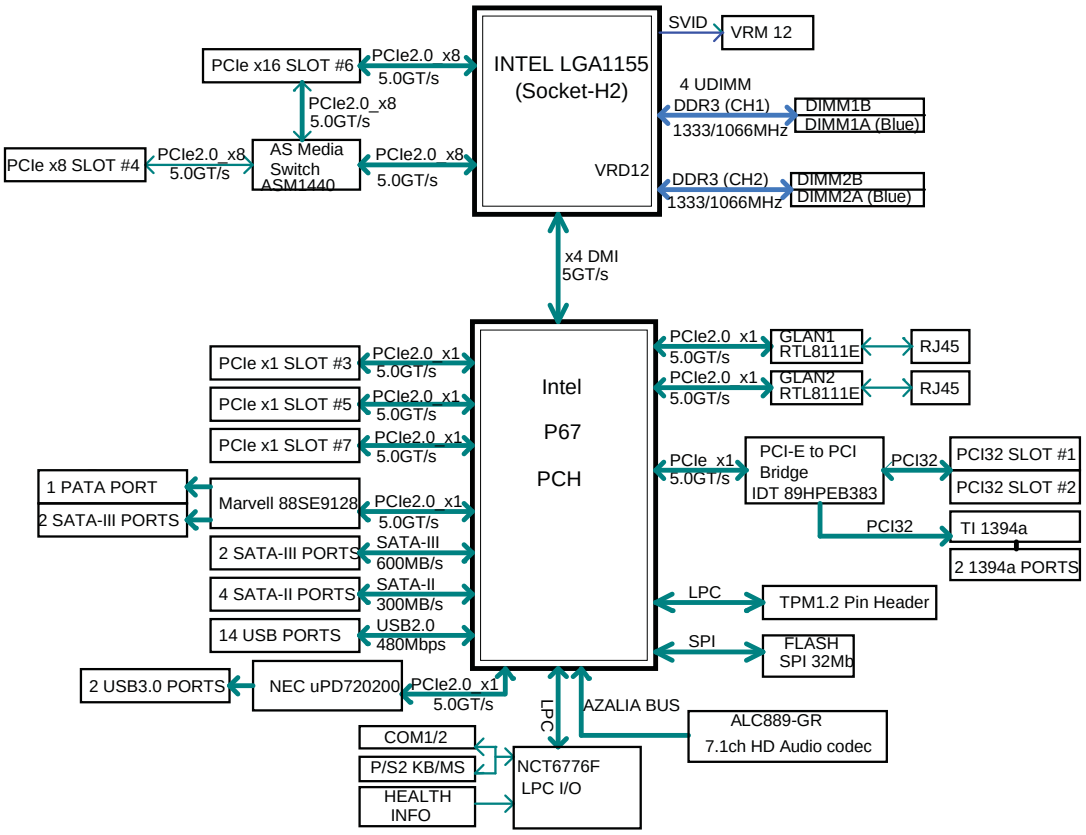
The control panel on the SuperWorkstation 5037A-T includes system monitoring LEDs, the main power button, two USB 2.0 ports and HD/AC97 audio ports. See Chapter 3 for details.

Cooling System

The SC732D2-500B chassis has an innovative "Super Quiet" cooling design that provides sufficient cooling at very low noise level - ideal for a workplace environment. The chassis includes one 12-cm rear exhaust fan and an optional 12-cm front cooling fan.

Figure 1-1. Intel P67 Chipset:
System Block Diagram

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



1-4 Contacting Supermicro

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Notes

Chapter 2

Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperWorkstation 5037A-T up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a serverboard, 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 system was shipped in and note if it was damaged in any way. If the system itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the SuperWorkstation. 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. Be sure to read the Rack and Server Precautions in the next section.

Warnings and Precautions!

- Ensure that the caster wheels on the workstation are locked.
- Review the electrical and general safety precautions in Chapter 4.
- Use a regulating uninterruptible power supply (UPS) to protect the workstation from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot-swap SATA drives to cool before touching them.

- To maintain proper cooling, always keep all chassis panels closed and all SATA carriers installed when not being serviced.

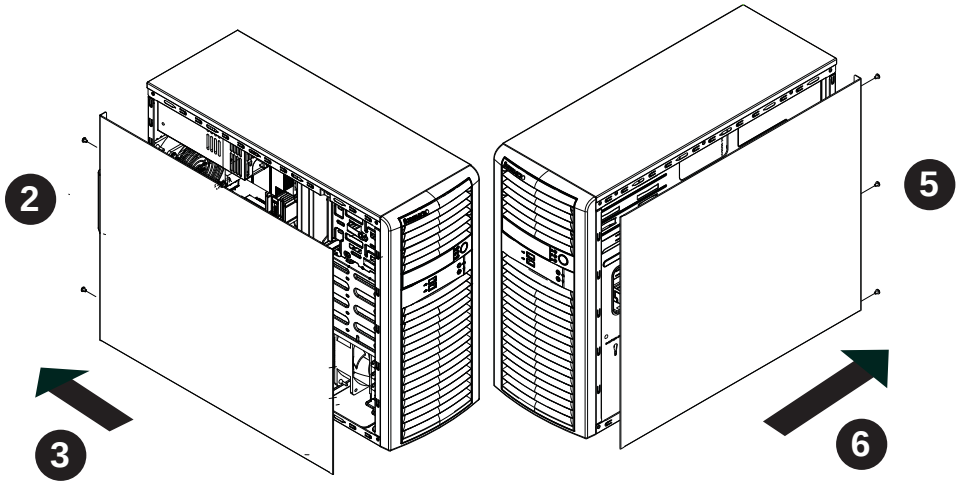
2-3 Accessing the Inside of the System

You may need to access the system periodically to perform maintenance or install components such as hard drives. The SC732 features two removable side covers, allowing easy access to the chassis interior.

Removing the Side Covers

1. Disconnect the chassis from any power souce.
2. Remove the two screws securing the left side cover to the chassis.
3. Slide the left cover toward the rear of the chassis.
4. Lift the left cover from the chassis.
5. Remove the three screws securing the right side cover to the chassis.
6. Slide the right cover toward the rear of the chassis
7. Lift the right cover from the chassis.

Figure 2-1. Removing the Chassis Side Covers



Chapter 3

System Interface

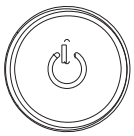
3-1 Overview

The control panel on the 5037A-T has several LEDs and a power button. There are also two LEDs on each hard drive carrier. These LEDs keep you constantly informed of the overall status of the system and the activity and health of specific components.

3-2 Control Panel Button

A single push-button is located on the front of the chassis.

Power



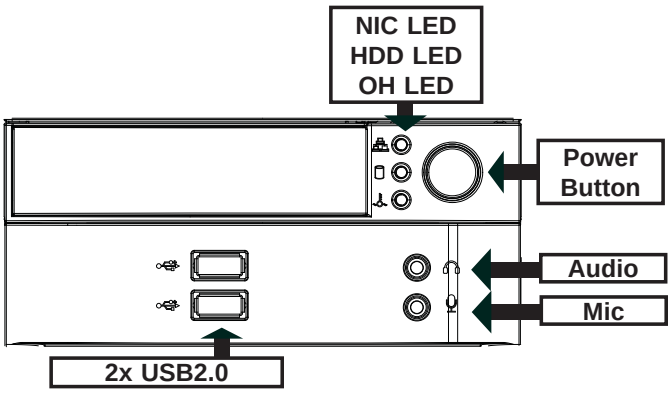
This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Communications Panel Components

The SC732D2 features a front communication panel allowing easy access to the chassis communication ports. The chassis models are equipped as follows:

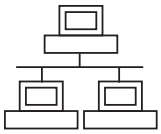
- Two USB 2.0 ports
- Audio port
- Mic port

See diagram on the following page.



3-4 Control Panel LEDs

The control panel located on the front of the SC732 chassis has three 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.



NIC

Indicates network activity on the LAN port(s) when flashing.

HDD

Indicates IDE channel activity on the SATA drive, and/or DVD-ROM drive activity when flashing.

Overheat/Fan Fail

When this LED flashes, it indicates a chassis fan failure. When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

3-4 Drive Carrier LEDs

Note: the LEDs of some drive carriers may not function depending on the number of drives that are supported by the serverboard and/or backplane.

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

- **Red:** The backplane activates the red LED to indicate a drive failure. If one of the hard drives fail, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed hard drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperWorkstation 5037A-T from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives. When disconnecting power, you should first power down the system with the operating system. The unit has more than one power supply cord. Disconnect both power supply cords before servicing to avoid electrical shock.

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

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

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

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

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed 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 (CR2032). 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 SuperWorkstation 5037A-T clean and free of clutter.

- The 5037A-T weighs approximately 39 lbs (17.7 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. Don't use the handles (if installed) to lift the chassis; the handles should only be used to pull the server out of the rack.

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

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

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

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

4-3 ESD Precautions

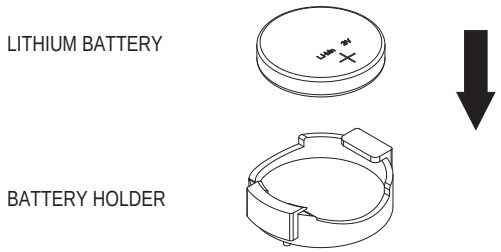
Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient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

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

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the system 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



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to connect the C7P67 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.
- Touch a grounded metal object before removing boards from their 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 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 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 (I-SATA0 ~ I-SATA5)
- Control Panel cable (JF1)

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

Connecting Power Cables

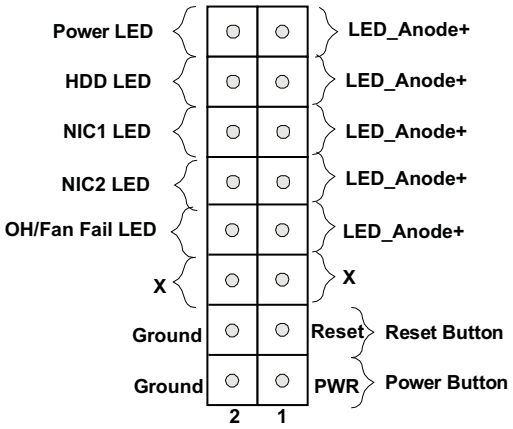
The C7P67 has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, an 8-pin processor power connector (JPW2) must also be connected to your power supply. See Section 5-8 for power connector pin definitions.

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 Section 5-8 for details and pin descriptions.

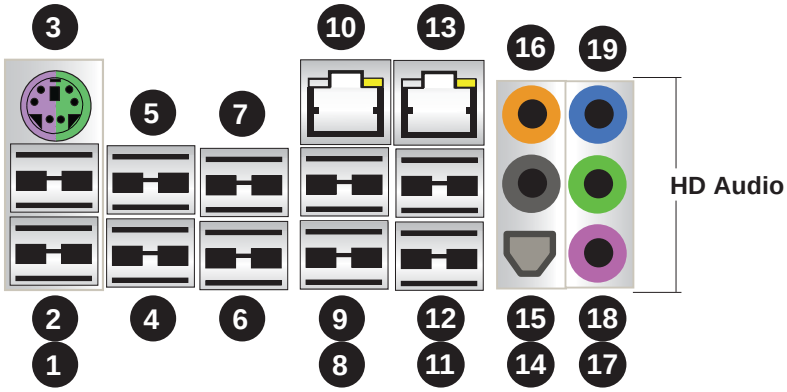
Figure 5-1. Control Panel Header Pins



5-3 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



1. USB 2.0 Port 8	11. USB 2.0 Port 0
2. USB 2.0 Port 9	12. USB 2.0 Port 1
3. Keyboard/Mouse Port	13. LAN2
4. USB 2.0 Port 13	14. SPDIF Out
5. USB 2.0 Port 10	15.Surround Out
6. USB 2.0 Port 11	16. CEN/LFE Out
7. USB 2.0 Port 12	17. Microphone In
8. USB 3.0 Port 0	18. Line Out
9. USB 3.0 Port 1	19. Line In
10. LAN 1	

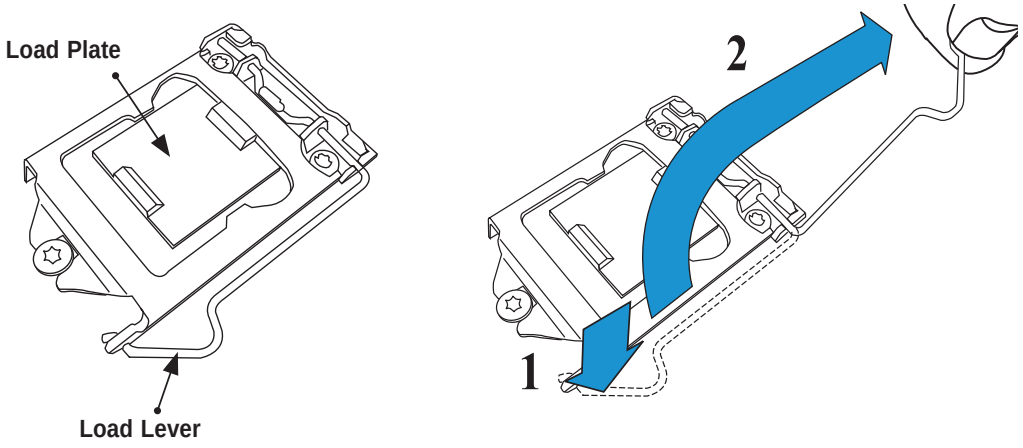
5-4 Processor and Heatsink Installation

Notes:

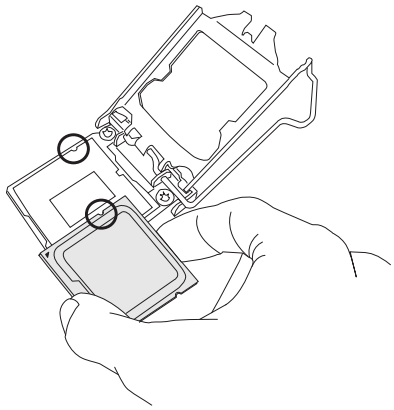
- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing the LGA1155 Processor

1. Press the load lever to release the load plate, which covers the CPU socket, from its locked position.
2. Gently lift the load lever to open the load plate. Remove the plate cap.



3. Use your thumb and your index finger to hold the CPU at the top center edge and the bottom center edge of the CPU.



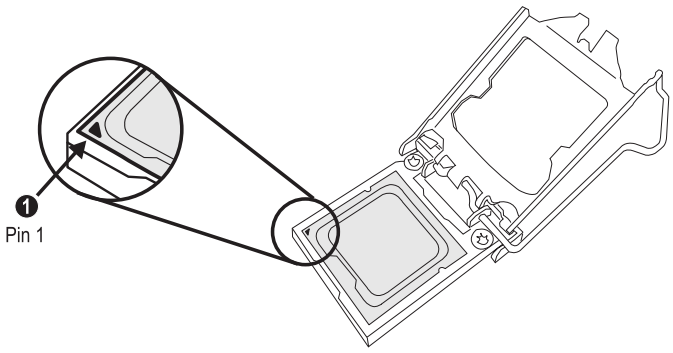
4. Align the CPU key (the semi-circle cutouts) against the socket keys. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.

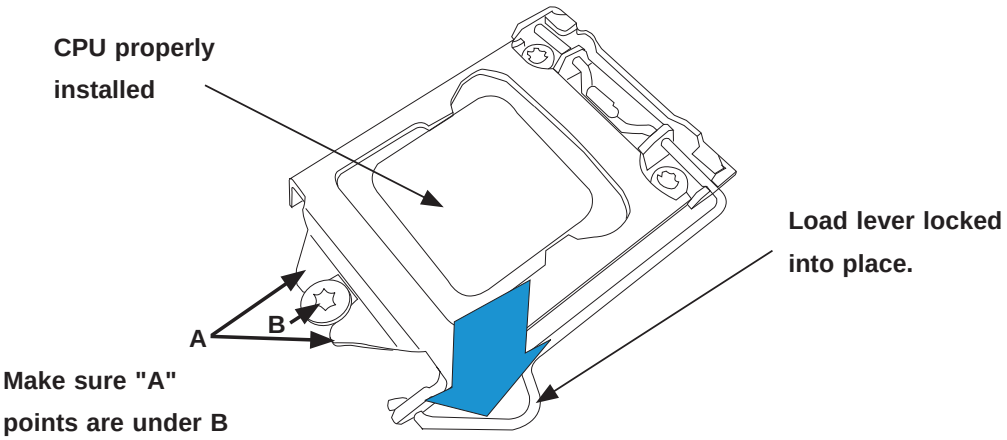
   Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

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

5. Use your thumb to gently push the load lever down to the lever lock.

   Save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.





Warning: The CPU will only seat inside the socket in one direction. Make sure it is properly inserted before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

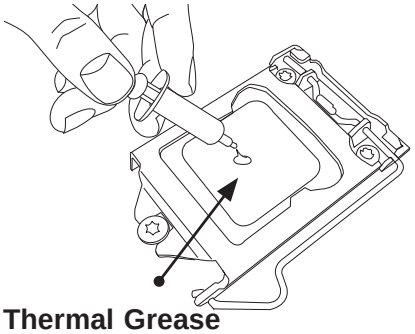
Installing an Active Fan CPU Heatsink

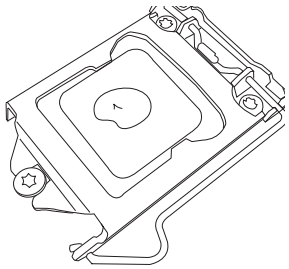
1. Locate the CPU Fan power connector on the motherboard. (Refer to the layout on the right for the CPU Fan location.)

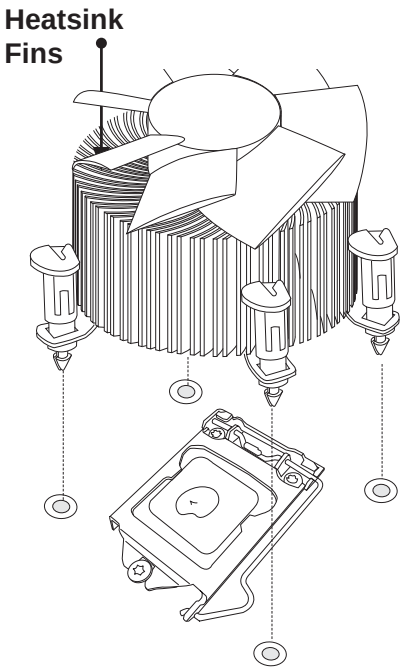
2. Position the heatsink so that the heatsink fan wires are closest to the CPU fan power connector and are not interfered with other components.

3. Inspect the CPU Fan wires to make sure that the wires are routed through the bottom of the heatsink.

4. Remove the thin layer of the protective film from the copper core of the heatsink.







Warning: CPU may overheat if the protective film is not removed from the heatsink.

5. Apply the proper amount of thermal grease on the CPU.

   Note: if your heatsink came with a thermal pad, please ignore this step.

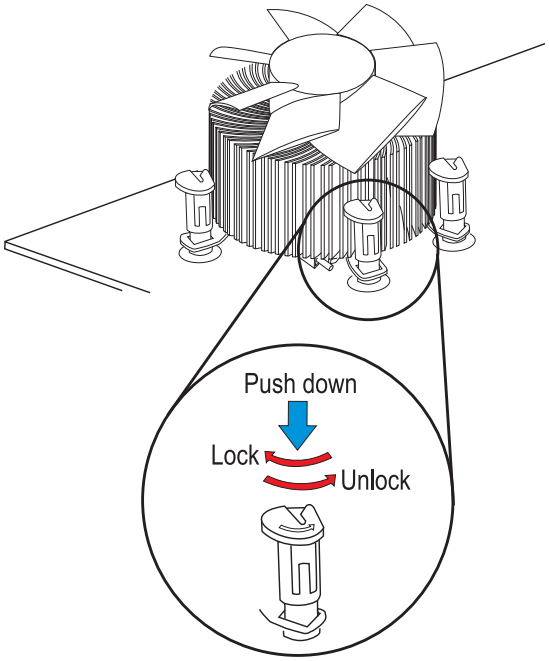
6. If necessary, rearrange the wires to make sure that the wires are not pinched between the heatsink and the CPU. Also make sure to keep clearance between the fan wires and the fins of the heatsink.

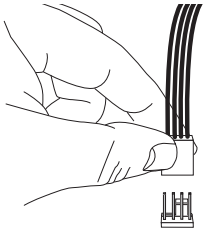
Warning: We do not recommend removing the CPU or the heatsink. However, if you do need to uninstall the heatsink, please follow these instructions to avoid damaging the CPU or the CPU socket.

7. Align the four heatsink fasteners with the mounting holes on the motherboard. Gently push the pairs of diagonal fasteners (#1 & #2, and #3 & #4) into the mounting holes until you hear a click. Also, make sure to orient each fastener so that the narrow end of the groove is pointing outward.

8. Repeat Step 7 to insert all four heatsink fasteners into the mounting holes.

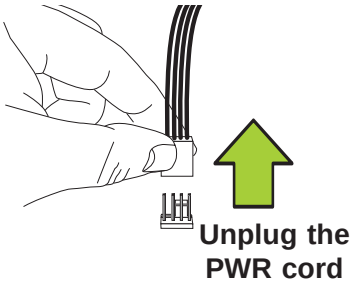
9. Once all four fasteners are securely inserted into the mounting holes, and the heatsink is properly installed on the motherboard, connect the heatsink fan wires to the CPU Fan connector.





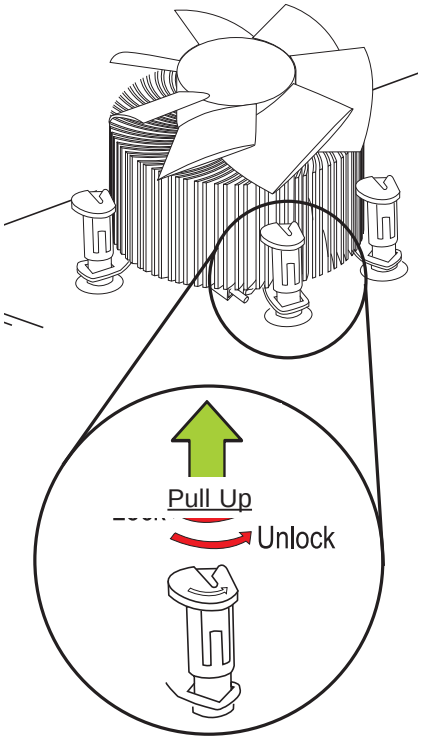
Removing the Heatsink

Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to remove the heatsink and to prevent damage done to the CPU or other components.



Active Heatsink Removal

1. Unplug the power cord from the power supply.
2. Disconnect the heatsink fan wires from the CPU fan header.
3. Use your finger tips to gently press on the fastener cap and turn it counterclockwise to make a 1/4 (90^0) turn, and pull the fastener upward to loosen it.
4. Repeat Step 3 to loosen all fasteners from the mounting holes.
5. With all fasteners loosened, remove the heatsink from the CPU.



5-5 Installing Memory Modules

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.

Installing & Removing DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A. For best performance, please use the memory modules of the same type and speed in the same bank. See the DIMM Installation Chart on the following page.

2. Press down the release tabs on the ends of a memory slot. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.

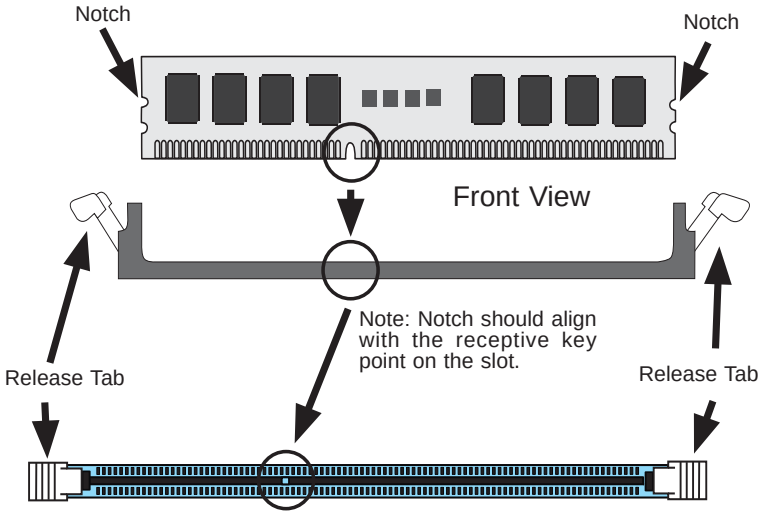
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules.

4. Reverse the steps above to remove the DIMM modules from the mother-board.

Figure 5-3. DIMM Installation

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

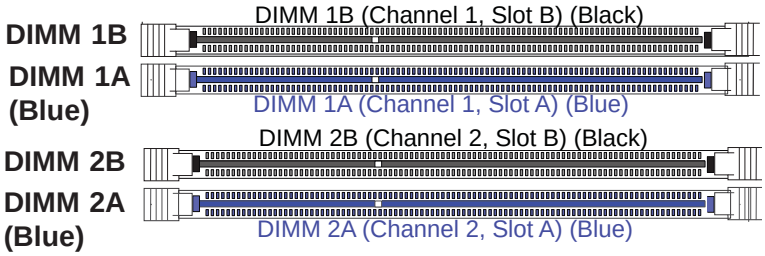
To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Top View of DDR3 Slot

Memory Support

The C7P67 supports up to 32GB of Unbuffered (UDIMM) DDR3 Non-ECC 1333/1066 MHz in 4 memory 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. Please refer to the table below:



Memory Population Guidelines

Please follow the table below when populating the C7P67.

DDR3 Unbuffered Non-ECC (UDIMM) Memory				
DIMM Slots per Channel	**DIMMs Populated per Channel**	**DIMM Type**	**POR Speeds**	**Ranks per DIMM (any combination)**
2	1	Unbuffered DDR3	1066, 1333	Single Rank, Dual Rank
2	2	Unbuffered DDR3	1066, 1333	Single Rank, Dual Rank

Notes

- Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. See the following table for details.

- For Microsoft Windows users: Microsoft implemented a design change in the Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the behavior of Physical Address Extension (PAE) mode which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: http://support.microsoft.com/kb/888137.

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

5-6 Adding PCI Add-On Cards

The 5037A-T can accommodate standard size add-on cards populated in all slots on the C7P67 motherboard.

Installing an Add-on Card

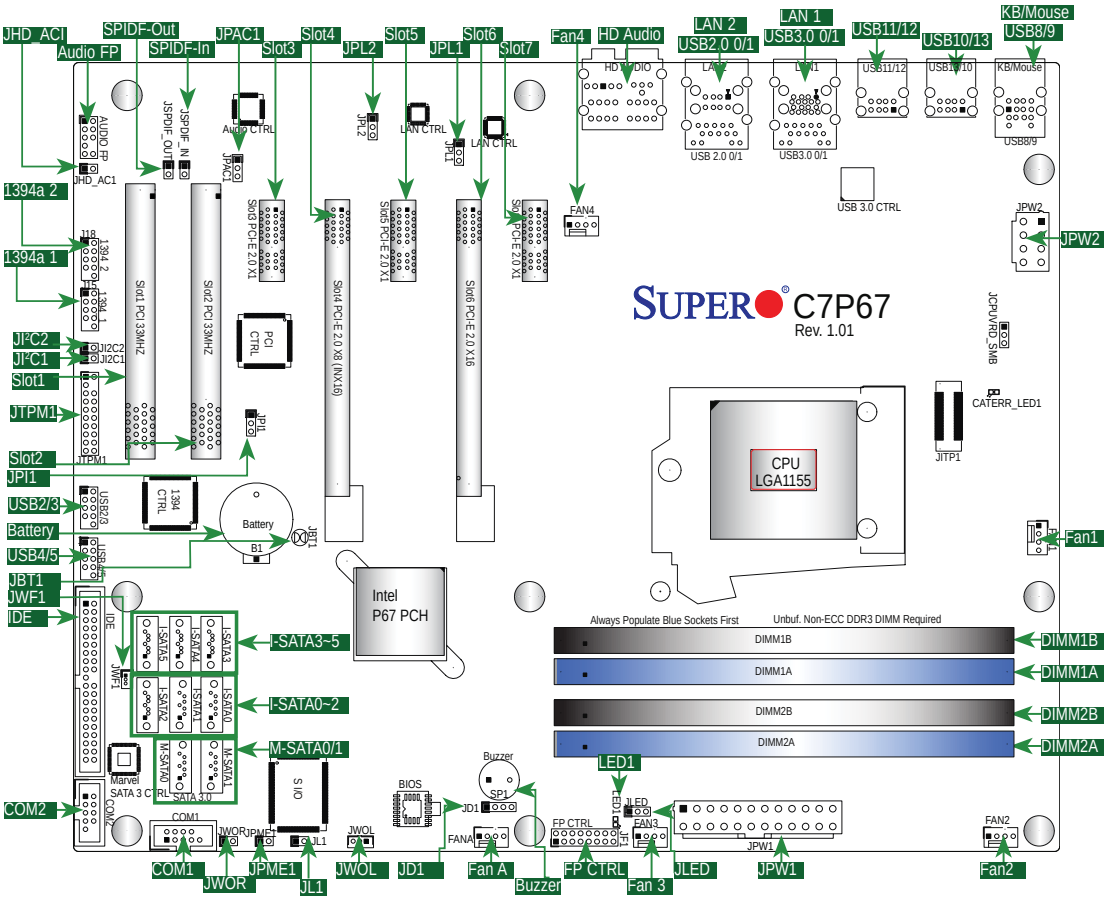
1. Begin by removing the PCI slot shield for the slot you wish to populate.

2. Fully seat the card into the riser card 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 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.

5-7 Motherboard Details

Figure 5-4. C7P67 Layout



C7P67 Jumpers		
Jumper	Description	Default
JBT1	CMOS Clear	(See Section 5-9)
JHD_AC1	High Definition Front Panel Audio/AC 97' FP Audio Select	(See Section 5-9)
JI²C1/JI²C2	SMB to PCI Slots	Off (Enabled)
JPAC1	Audio Enable	Pins 1-2 (Enabled)
JPI1	IEEE 1394 Enable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JPME1	Intel ME Mode Select	Off (Normal)

C7P67 Headers/Connectors	
Connector	Description
Audio_FP	Front Panel Audio Header
HD Audio	High-Definition Audio Connector
B1	Onboard Battery
COM1/COM2	COM1/2 Serial Connection Headers
BIOS	AMI SPI BIOS
Fans 1~4, Fan A	System/CPU Fan Headers (Fan1: CPU Fan)
J15/J18	IEEE 1394_1 (J15)/1394_2 (J18) Headers
JCPUVRD SMB	PWM SMB programming header (for debugging only)
IDE	IDE Connector Header
JD1	Speaker/buzzer (Pins 1-2: Buzzer, Pins 1~4: External Speaker)
JF1	Front Panel Control Header
JL1	Chassis Intrusion Header
JLED	Power LED Indicator Header
JPW1	24-pin ATX Main Power Connector (Required)
JPW2	+12V 8-pin CPU power Connector (Required)
KB/Mouse	Keyboard/Mouse Connectors
LAN1/LAN2	Gigabit (RJ45) Ports (LAN1/2)
JSPDIF_In/JSPDIF_OUT	SPDIF_(Sony/Philips Digital Interface)_In/ SPDIF_Out Headers
JTPM1	Trusted Platform Module (TPM)/80 Port Header
JWF1	SATA DOM (Device_On_Module) Power Connector
JWOL	Wake_On_LAN Header
JWOR	Wake_On-Ring Header
Slot1/Slot2	PCI 33 MHz Slots
Slot3/Slot5/Slot7	PCI-Express 2.0 x1 Slots
Slot4	PCI-Express 2.0 x8 in x16 Slot
Slot6	PCI-Express 2.0 x16 Slot
(I-)SATA (3.0) 0/1, (2.0) 2~5	(Intel) Serial ATA 3.0 Ports 0/1. Serial ATA 2.0 2~5
(M-)SATA (3.0) 0/1	(Marvel) Serial ATA 3.0 Ports 0/1
USB (2.0) 0/1, 8/9, 11/12, 13/10	Backpanel USB 2.0 Ports 0/1, 8/9, 11/12, 13/10
USB (3.0) 0/1	Backpanel USB 3.0 Ports 0/1
USB2/3, USB4/5	Front Accessible USB Connections 2/3, 4/5

C7P67 LED Indicators			
LED	Description	Color/State	Status
LED1	Onboard Standby PWR LED	Green: Solid on	Power On

5-8 Connector Definitions

Main ATX Power Supply Connector

The 24-pin main power connector (JPW1) is used to provide power to the motherboard. The 8-pin CPU PWR connector (JPW2) is also required for the processor. These power connectors meet the SSI EPS 12V specification. See the tables on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)

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

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

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

Required Connection

Power LED

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

Power LED Pin Definitions (JF1)

Pin#	Definition
15	+5V
16	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable here to indicate the status of HDD-related activities, including IDE, SATA activities. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)

Pin#	Definition
13	+5V
14	HD Active

NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on Pins 9 and 10. NIC1 LED and NIC2 LED are 2-pin NIC LED headers. Attach NIC LED cables to NIC1 and NIC2 LED indicators to display network activities. Refer to the table on the right for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)

Pin#	Definition
9/11	Vcc
10/12	Ground

Overheat (OH)/Fan Fail

Connect an LED cable to OH/Fan Fail connections on pins 7 and 8 of JF1 to provide warnings for chassis overheat/fan failure. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)

Pin#	Definition
7	Vcc/Blue UID LED
8	OH/Fan Fail LED

OH/Fan Fail Indicator Status

State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

Reset Button

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

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Button

The Power Button connection is located on pins1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power in the 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	Signal
2	+3V Standby

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the 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

Fan Headers

The C7P67 has five fan headers (Fan 1~Fan 4 and Fan A). These fans are 4-pin fan headers. However, Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans (without fan speed control). A fan speed control setting in the BIOS Hardware Monitoring section allows the BIOS to automatically set fan speeds based on the system temperature. Refer to the table on the right for pin definitions.

Note: Please use all 3-pin fans or all 4-pin fans on a motherboard. Please do not use 3-pin fans and 4-pin fans on the same board.

Fan Header Pin Definitions

Pin#	Definition
1	Ground (Black)
2	2.5A/+12V (Red)
3	Tachometer
4	PWM_Control

Internal Buzzer

The Internal Buzzer (SP1) can be used to provide audible indications for various beep codes. See the table on the right for pin definitions.

Internal Buzzer Pin Definition

Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

Speaker

On the JD1 header, pins 3~4 are used for internal speaker. Close pins 3~4 with a cap to use the onboard speaker. If you wish to use an external speaker, close Pins 1~4 with a cable. See the table on the right for pin definitions.

Speaker Connector Pin Definitions

Pin Setting	Definition
Pins 3~4	Internal Speaker
Pins1~4	External Speaker

IEEE Connection

1394a_1 (J15) and 1394a_2 (J18) provide the IEEE 1394a connections on the motherboard. See the tables on the right for pin definitions.

1394_1 Pin Definitions

Pin#	Definition		Definition
1	PTPA0+	2	PTPA0-
3	GND	4	GND
5	PTPB0+	6	PTPB0-
7	PWR 1394a	8	PWR 1394a
		10	Shield GND

1394_2 Pin Definitions

Pin#	Definition		Definition
1	PTPA1+	2	PTPA1-
3	GND	4	GND
5	PTPB1+	6	PTPB1-
7	PWR 1394a	8	PWR 1394a
		10	Shield GND

Serial Ports

Two COM connections (COM1 & COM2) are located on the motherboard. COM1 is located close to M-SATA ports 0/1. COM2 is located next to the IDE drive to provide additional onboard serial connection support. See the table on the right for pin definitions.

Serial Ports-COM1/COM2 Pin Definitions

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

TPM Header/Port 80

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

TPM/Port 80 Header Pin Definitions

Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

DOM PWR Connector

The Disk-On-Module (DOM) power connector, located at JWF1, provides 5V (Gen1/Gen) power to a solid_state DOM storage device connected to one of the SATA ports. See the table on the right for pin definitions.

DOM PWR Pin Definitions

Pin#	Definition
1	5V
2	Ground
3	Ground

Wake-On-LAN

The Wake-On-LAN header is located at JWOL 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 (JWOL)

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

Wake-On-Ring

The Wake-On-Ring header is located at JWOR. This function allows your computer to wake up when receiving an incoming call to the modem while in the suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and a cable to use this feature.

Wake-On-Ring Pin Definitions

Pin#	Definition
1	Ground
2	Wake-up

SPDIF_In/SPDIF_Out Headers

The SPDIF_In (JSPDIF_In) and SP-DIF_Out (JSPDIF_Out) are located between PCI Slot1 and Slot2. Place caps on these headers to use these features. You will also need the cables to use these features.

SPDIF_In Pin Definitions

Pin#	Definition
1	S/PDIF_In
2	Ground

SPDIF_Out Pin Definitions

Pin#	Definition
1	S/PDIF_Out
2	Ground

S/PDIF_Out Connector

An S/PDIF_Out connector is located next to the Backpanel USB ports on the motherboard. The S/PDIF(Sony/Philips Digital Interface Format) connector is used for transporting stereo digital audio signals. It is commonly used to connect the output of a DVD player to a home theater receiver that supports Dolby Digital or DTS surround sound. The S/PDIF_Out connector includes the top component (S/PDIF_RCA) and the bottom component (S/PDIF). See the tables below for pin definitions.

Overheat/Fan Fail LED (JOH1)

The JOH1 header is used to connect an LED to provide warnings of chassis overheat. This LED will also blink to indicate a fan failure. Refer to the table on right for pin definitions.

Overheat LED Pin Definitions

Pin#	Definition
1	5vDC
2	OH Active

Power Supply I²C Connector

The Power Supply (I²C) connector can be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR Supply I²C Pin Definitions (SMB_PS)

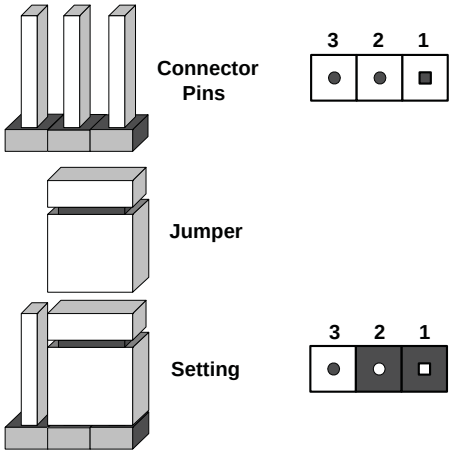
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground

5-9 Jumper Settings

Explanation of Jumpers

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

LAN Port Enable/Disable

Jumpers JPL1/JPL2 enable or disable LAN Port 1/LAN Port 2 on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

GLAN Enable Jumper Settings	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled

PCI Slot SMB Enable

Use Jumpers I^2C1/I^2C2 to enable PCI SMB (System Management Bus) support to improve system management for the PCI slots. See the table on the right for jumper settings.

PCI Slot_SMB Enable Jumper Settings

Jumper Setting	Definition
On	Enabled
Off (Default)	Disabled

Audio Enable

JPAC1 allows you to enable or disable the onboard audio support. The default position is on pins 1 and 2 to enable onboard audio connections. See the table on the right for jumper settings.

Audio Enable/Disable Jumper Settings

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

IEEE 1394a Enable

JPI1 allows you to enable or disable the onboard IEEE 1394a support. The default position is on pins 1 and 2 to use 1394_1 and 1394_2 connections. See the table on the right for jumper settings.

1394a Enable/Disable Jumper Settings

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

ME Recovery Enable

Close JPME1 to enable ME (Manufacture Mode) Recovery. See the table on the right for jumper settings.

ME Recovery Jumper Settings

Settings	Definition
On	Enabled
Off	Normal (Default)

HD FP Audio/AC' 97 FP Audio Select

Jumper JHD_AC1 allows the user to select between High-Definition Front Panel Audio and AC' 97 Front Panel Audio support. See the table on the right for jumper settings.

HD Audio/AC' 97 Audio Select Jumper Settings

Settings	Definition
On	AC'97 Audio Front Panel
Off	HD Audio Front Panel (Default)

5-10 Onboard Indicators

LAN1/2 LEDs

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

LAN1/2 LED (Connection Speed Indicator)	
LED Color	Definition
Off	No Connection or 10 MHz
Green	100 MHz
Amber	1 GHz

Onboard Power LED (LE1)

An Onboard Power LED is located at LE1 on the motherboard. When LE1 is on, the AC power cable is connected. Make sure to disconnect the power cable before removing or installing any component. See the table on the right for more details.

Onboard PWR LED Indicator (LE1)	
LED State	Definition
Off	System Off
On	System On or System Off and Power Cable is Connected

5-11 SATA and IDE

SATA Connections

Four Serial ATA (SATA) 3.0 connectors (I-SATA 0/1, M-SATA 0/1) are located on the motherboard. In addition, four SATA 2.0 (I-SATA 2~5) connectors are also included on the board. The SATA 2.0 ports are supported by the Intel P67 PCH chip; while SATA 3.0 ports are supported by Intel PCH and Marvel SATA Controllers. These Serial Link connections provide faster data transmission than legacy Parallel ATA. See the table on the right for pin definitions.

C7P67 SATA Connector Types			
Port#	Connection Type	Port#	Connection Type
I-SATA 0/1, M-SATA 0/1	SATA 3.0	I-SATA 2~5	SATA 2.0

SATA 2.0/3.0 Connector Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

LAN 1/LAN 2 LEDs

Two LAN ports (LAN 1/LAN 2) are located on the I/O backplane of the motherboard. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber, or off to indicate the speed of the connections. See the tables at right for more information.

IDE Connection

An IDE Connector is located on the motherboard. This connector can be used for a Compact Flash card. See the table on the right for pin definitions.

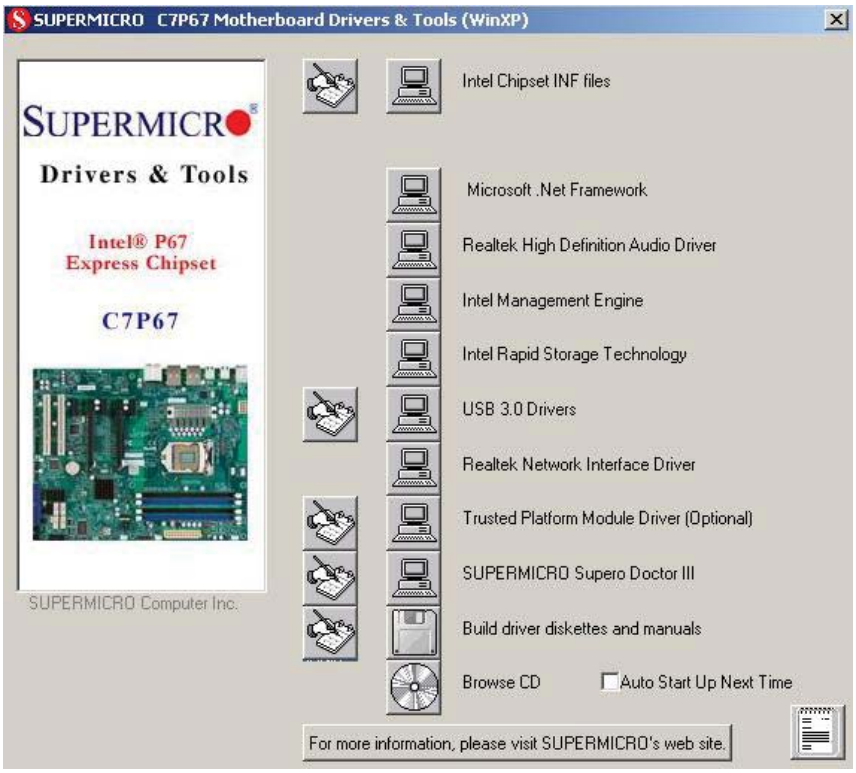
IDE Drive Connector Pin Definitions

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	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

5-12 Installing Drivers

After all the hardware and operating system have been installed, you need to install certain drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-4 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

Figure 5-4. Driver Installation Display Screen



Click the icons showing a hand writing on paper to view the readme files for each item. Click the tabs to the right of these *in order from top to bottom* to install each item one at a time. **After installing each item, you must reboot 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.

SuperDoctor III

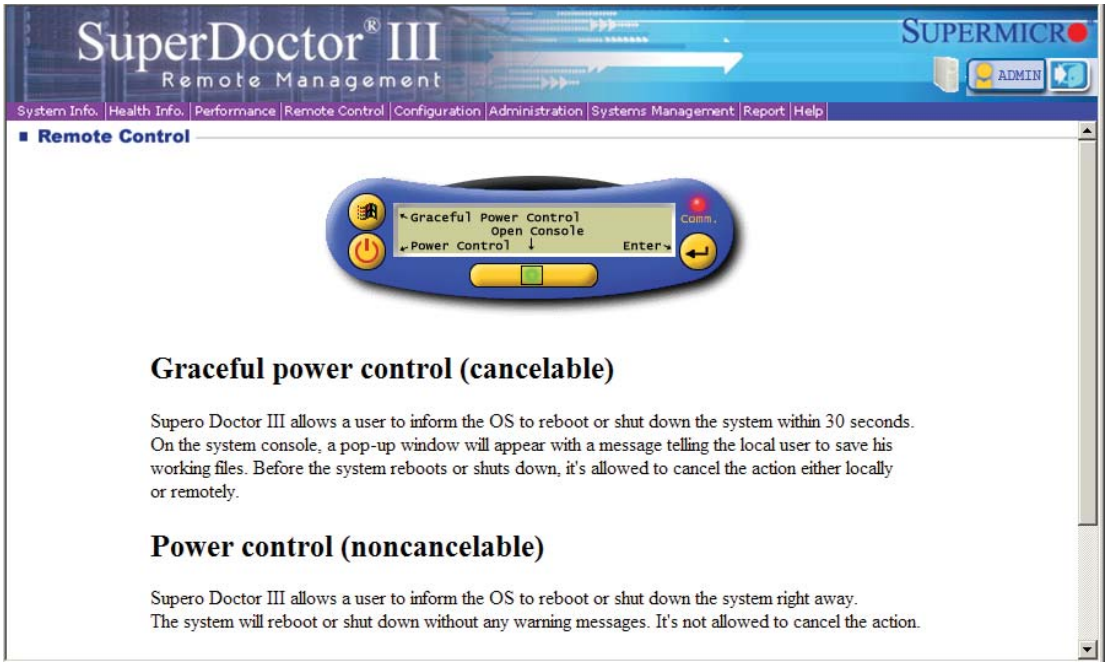
The SuperDoctor® III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program included on the CD-ROM that came with your motherboard allows you to monitor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

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

Note: When SuperDoctor 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 SuperDoctor, as the SuperDoctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor.

SuperDoctor III Interface Display Screen (Health Information)

Supero Doctor III Interface Display Screen (Remote Control)



Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm.

For Linux, we recommend using SuperDoctor II.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC732D2-500B chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need is a Philips screwdriver.

6-1 Static-Sensitive Devices

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

Precautions

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

Unpacking

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

6-2 Accessing the Inside of the System

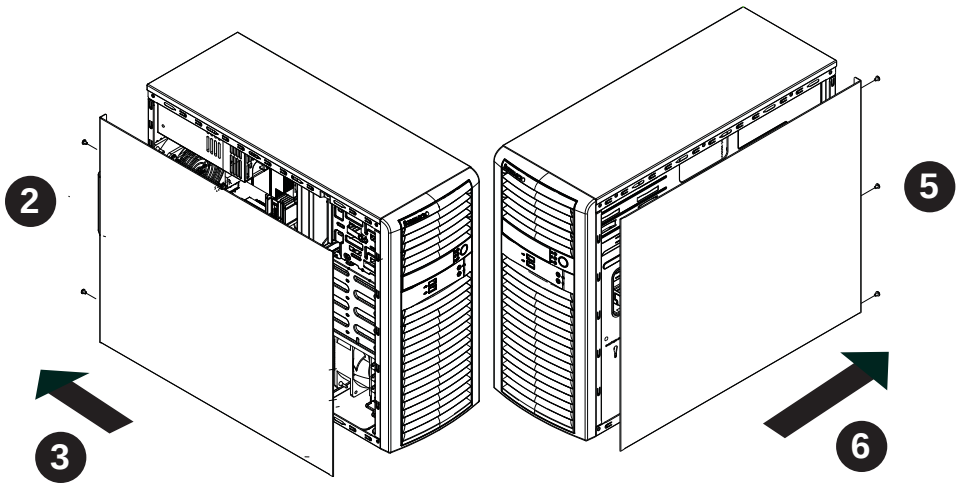


Figure 6-1. Removing the Chassis Side Covers

The SC732 features two removable side covers, allowing easy access to the chassis interior.

Removing the Side Covers

1. Disconnect the chassis from any power souce.
2. Remove the two screws securing the left side cover to the chassis.
3. Slide the left cover toward the rear of the chassis.
4. Lift the left cover from the chassis.
5. Remove the three screws securing the right side cover to the chassis.
6. Slide the right cover toward the rear of the chassis
7. Lift the right cover from the chassis.

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

6-3 Rotating the Hard Drive Cage

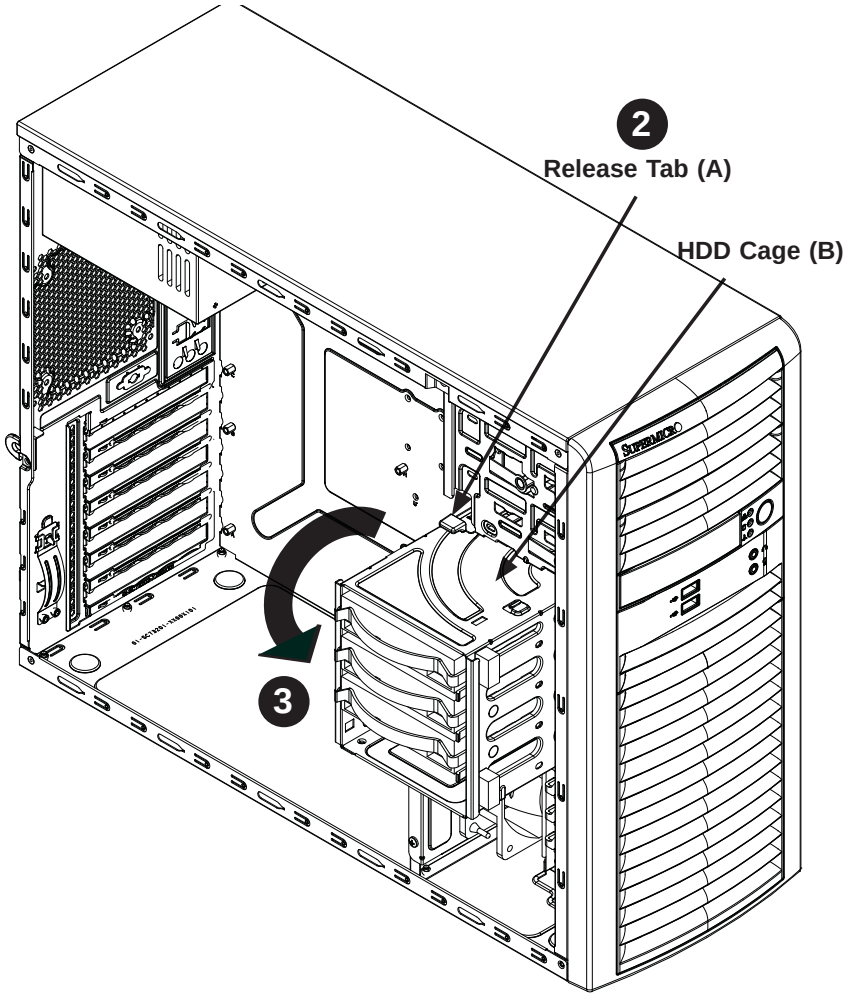


Figure 6-2. Rotating the Hard Drive Cage

In order to access and install components in the chassis interior, it is necessary to rotate the hard drive cage (B). This will provide sufficient room to install and configure the chassis components.

Rotating the Hard Drive Cage

1. Disconnect the chassis from any power source.

2. Lift the release tab (A).

3. Rotate the hard disk drive cage (B) outward.

6-4 Removing and Installing 3.5" Hard Drives

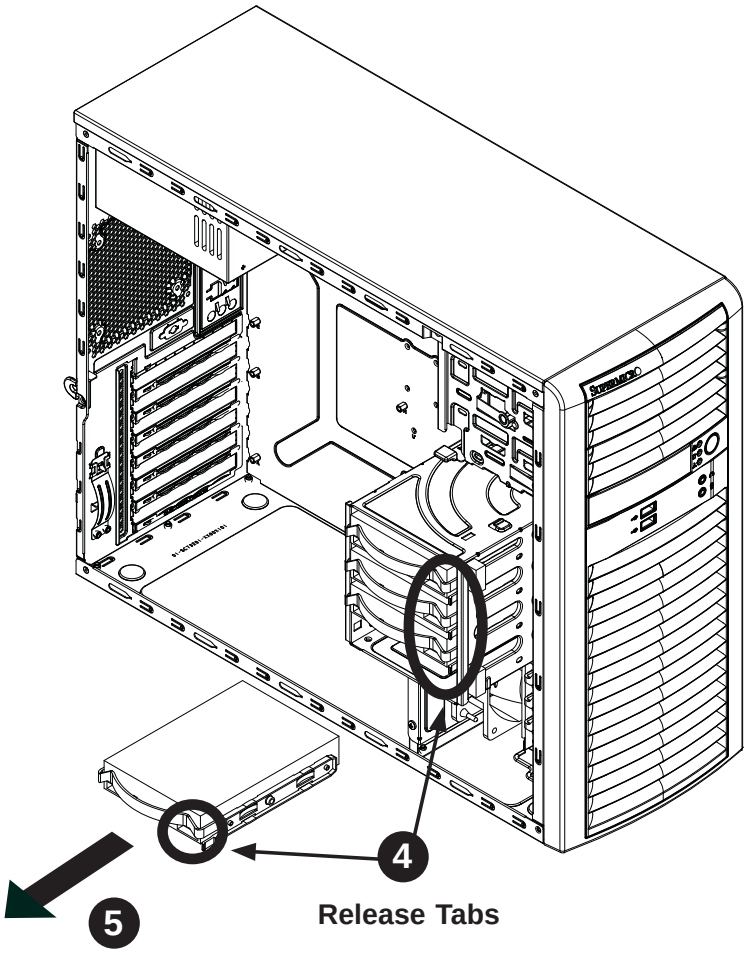


Figure 6-3. Removing a Hard Drive Carrier from the Hard Drive Cage

The SC732 chassis must be powered-down before hard drives can be removed from the hard drive carriers.

Removing and Installing 3.5" Hard Drives

1. Disconnect the chassis from any power source.
2. Rotate the hard drive cage outward 90 degrees as described in section 6-3.
3. Disconnect all of the cables from the hard drive.
4. Press the release tab on the side of the hard drive carrier that is to be removed from the hard drive cage.
5. Gently slide the hard drive carrier out of the hard drive cage.

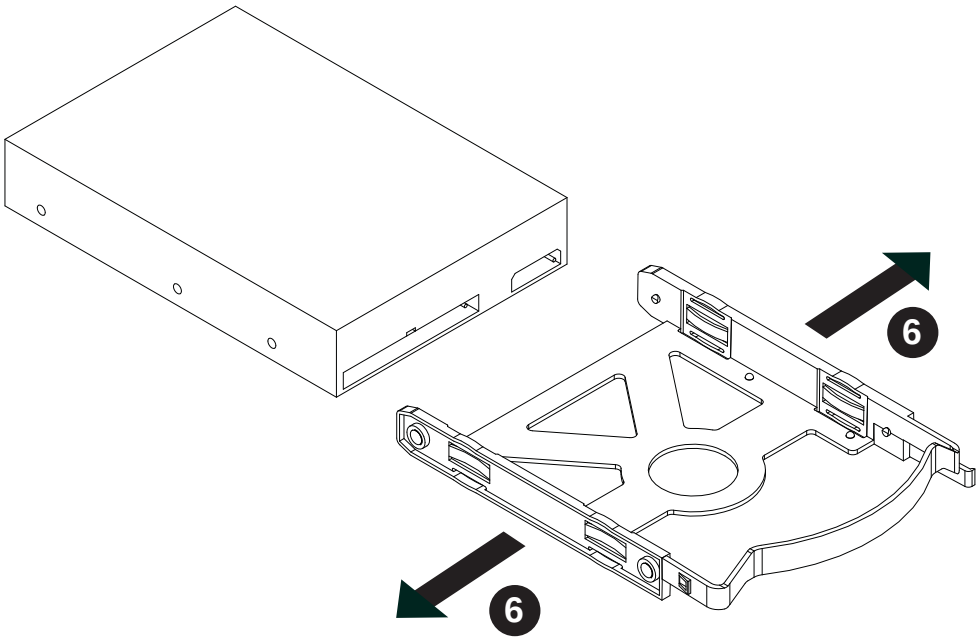


Figure 6-4. Removing a 3.5" Hard Drive from a Hard Drive Carrier

6. If a hard drive is already present, remove it by carefully pulling the sides of the hard drive carrier outward.

7. Remove the hard drive from the hard drive carrier.

Warning: Only enterprise level HDDs are recommended for use in this chassis.

8. Insert the new hard drive into the hard drive carrier.

9. Insert the hard drive carrier into the hard drive cage, sliding it towards the back of the the hard drive cage until it clicks into a locked position.

10. If desired, each hard drive carrier may be secured to the exterior of the hard drive cage using one optional screw.

11. Rotate the hard drive cage 90 degrees inward, returning it to the closed, operational position in the chassis.

12. Connect the related cables to the hard drives.

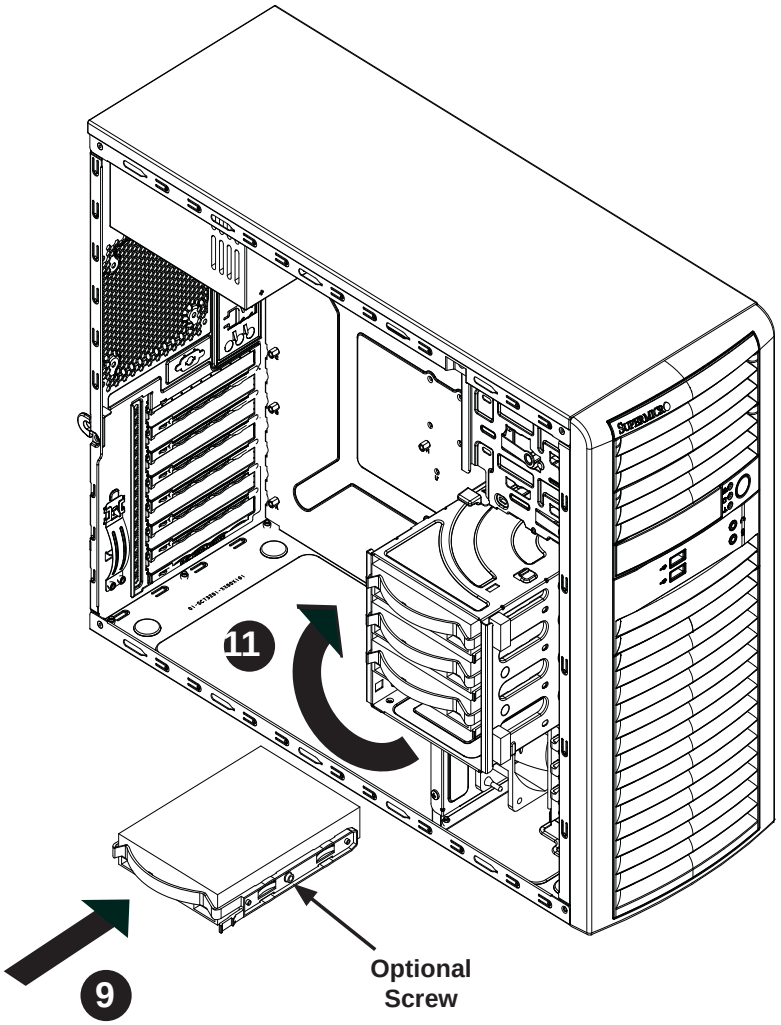


Figure 6-5. Installing a Hard Drive Carrier into the Hard Drive Cage

6-5 Removing and Installing 2.5" Hard Drives

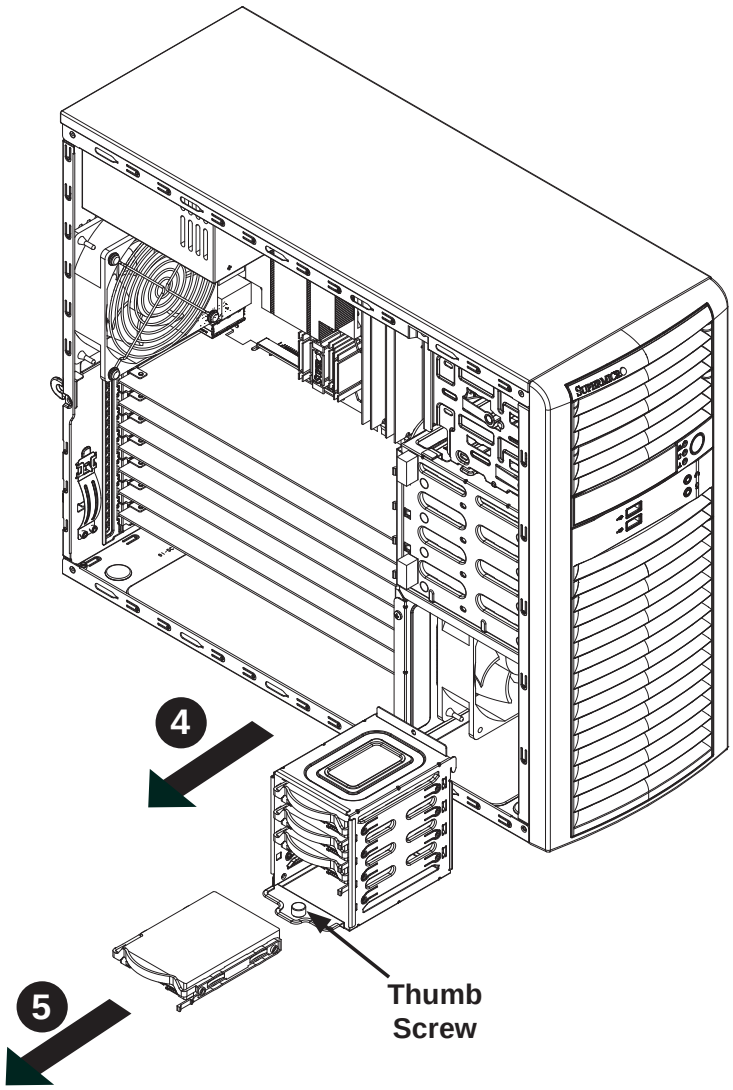


Figure 6-6. Removing a 2.5" Hard Drive

The SC732 chassis must be powered-down before hard drives can be removed from the hard drive carriers.

Removing and Installing 2.5" Hard Drives

1. Disconnect the chassis from any power source.
2. Loosen the thumb screw securing the 2.5" hard drive cage to the chassis.
3. Disconnect all cables from the hard drive.
4. Slide the 2.5" hard drive cage out of the chassis.

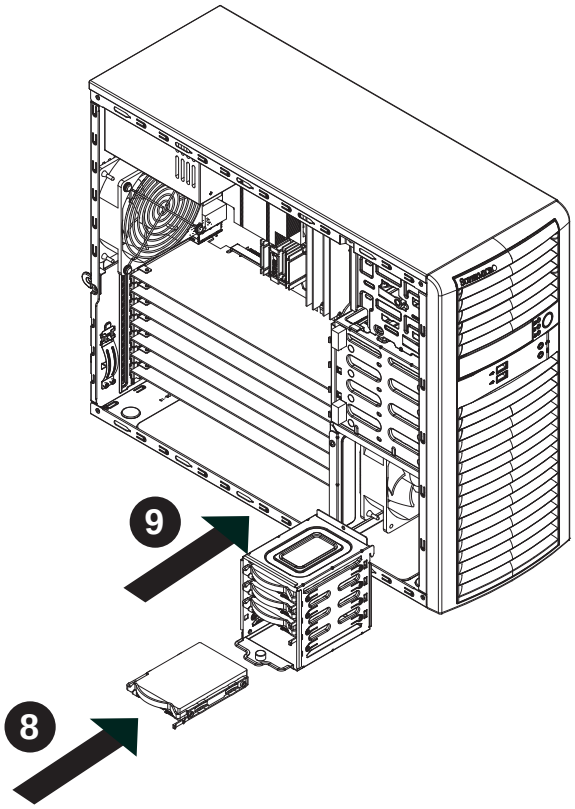


Figure 6-7. Installing 2.5" Hard Drives

5. If a hard drive is already present, remove it by carefully pulling the sides of the hard drive carrier outward.

6. Remove the hard drive from the hard drive carrier.

7. Insert the new hard drive into the hard drive carrier.

8. Insert the hard drive carrier into the hard drive cage, sliding it towards the back of the the hard drive cage until it clicks into a locked position.

9. Slide the 2.5" hard drive cage back into the chassis and tighten the thumb screw to secure the cage.

10. Connect the related cables to the hard drive

Warning: Only enterprise level HDDs are recommended for use in this chassis.

6-6 Installing a 3.5" Device

The SC732D chassis has one 3.5" device slot, which supports an optional device, such as an all-in-one card reader.

Installing a 3.5" Device

1. Remove the front bezel from the chassis by lifting it upwards from the bottom, and pulling off the front of the chassis.

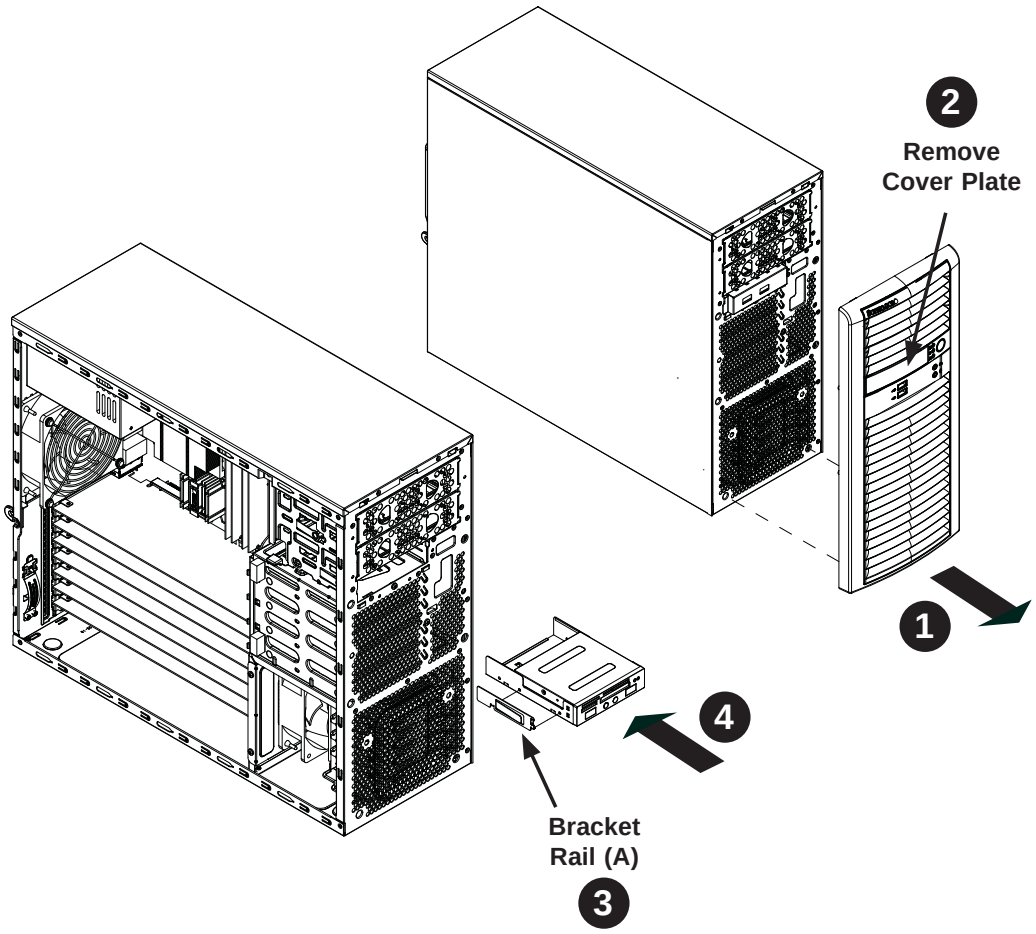
2. Remove the cover plate from the 3.5" device slot on the front of the chassis.

3. Install the bracket rail (A) onto one side of the 3.5" device, by inserting the pins of the bracket into the mounting holes on the sides of the optical device.

4. Slide the 3.5" device into the chassis.

5. See Section 6-8: Installing the Front Bezel.

Figure 6-8. Installing a 3.5" Device



6-7 Installing System Fans

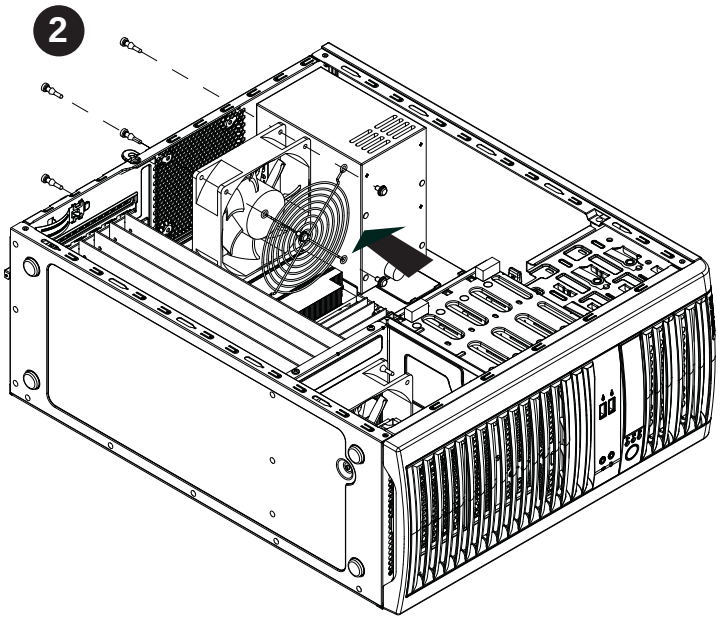


Figure 6-9. Installing the Rear Exhaust Fan

Installing the Rear Exhaust Fan

1. Disconnect all power to the chassis.

2. Insert the four rubber pins through mounting holes in the rear of the chassis and through the mounting holes in the rear fan.

3. Pull the rubber pins through the mounting holes of the fan to secure the fan to the chassis.

4. Connect the fan cable to the motherboard.

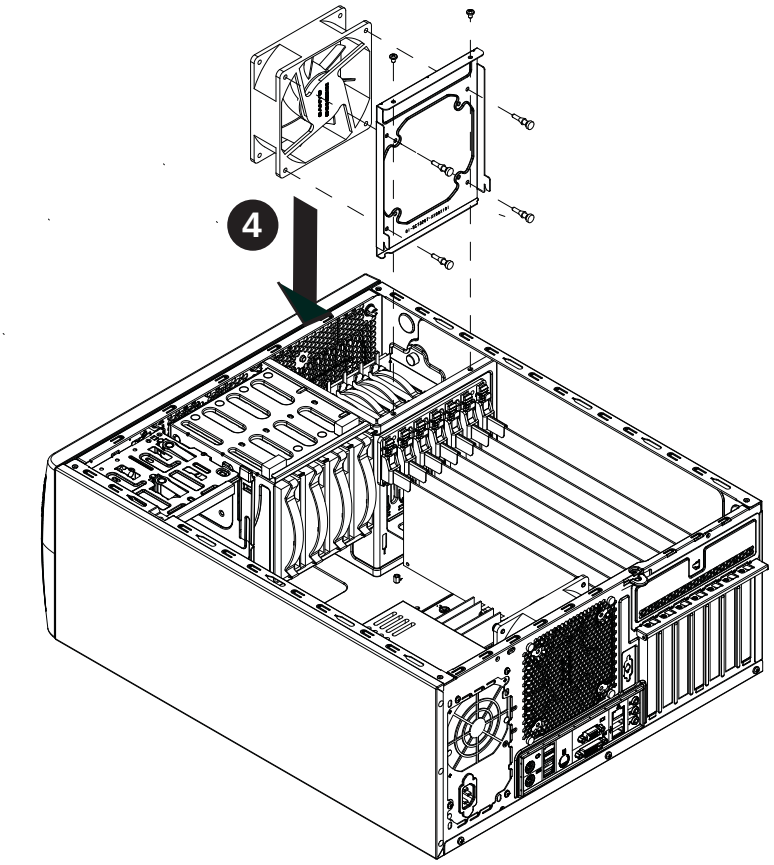


Figure 6-10. Installing the Front Cooling Fan (Optional)

Installing the Front Cooling Fan (Optional)

1. Disconnect all power to the chassis.

2. Insert the four rubber pins through the front fan bracket and into the mounting holes in the front fan.

3. Pull the rubber pins through the mounting holes of the system fan to secure the fan to the chassis.

4. Lower the fan into the chassis, aligning the holes at the top of the front fan bracket with the holes in the chassis.

5. Secure the fan to the chassis using the two screws provided.

6. Connect the fan cable to the motherboard.

6-8 Installing the Front Bezel

Front Bezel Installation

1. Insert the tabs on the front bezel into the mounting holes on the front of the chassis.

2. Ensure that the cover fits snugly.

This completes the installation of basic components in the SC732 chassis

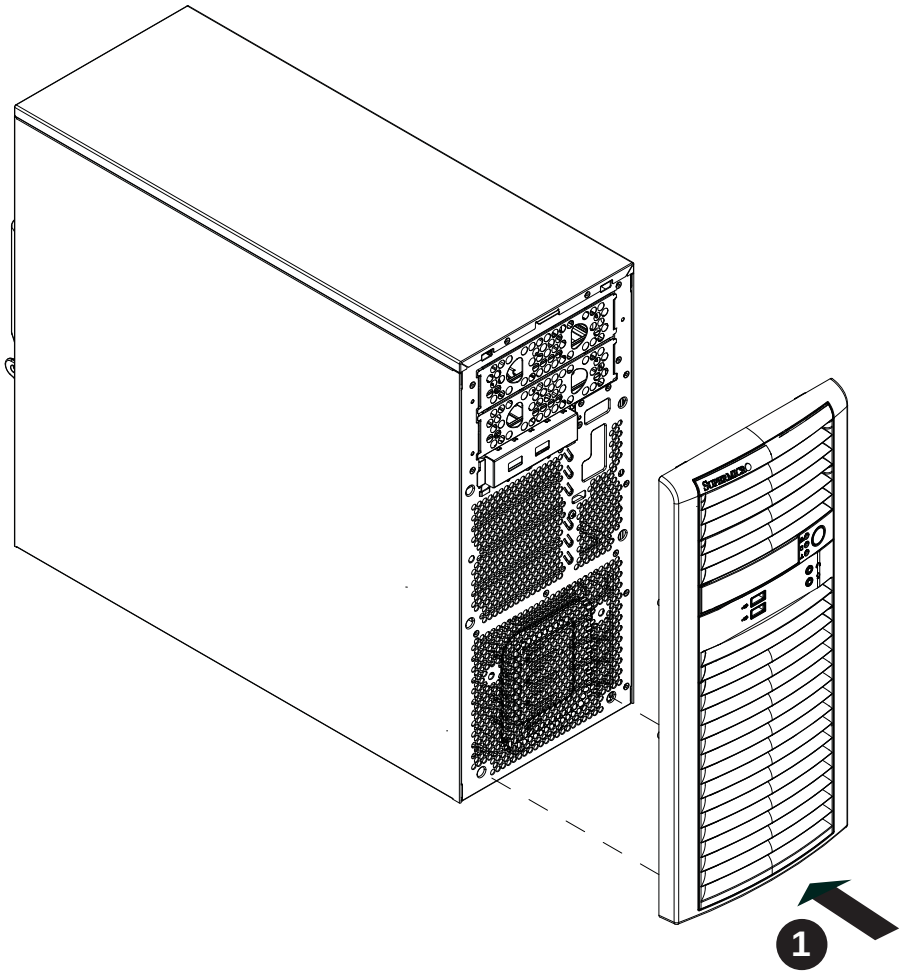


Figure 6-11. Installing the Front Bezel

6-9 Power Supply

The SC732 chassis includes a 900 Watt power supply. In the unlikely event that it becomes necessary to replace the power supply, follow the instructions below.

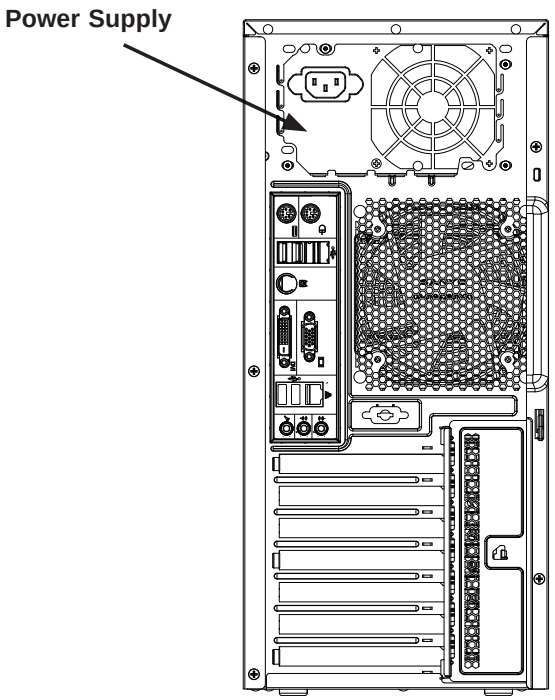


Figure 6-12. Removing the Power Supply

Changing the Power Supply

1. Disconnect the chassis from any power source.
2. Disconnect the motherboard cables.
3. Remove the screws securing the power supply to the chassis, which are located on the rear of the chassis. Set these screws aside for later use.
4. Gently lift the power supply out of the chassis.
5. Replace the failed power supply with an identical power supply model.
6. Secure the new power supply using the screws previously set aside.
7. Plug the AC power cord back into the module and power-up the system.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the C7P67. 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.

Note: For AMI BIOS Recovery, please refer to the UEFI BIOS Recovery Instructions listed in Appendix C.

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 <Del> at the appropriate time during system boot.

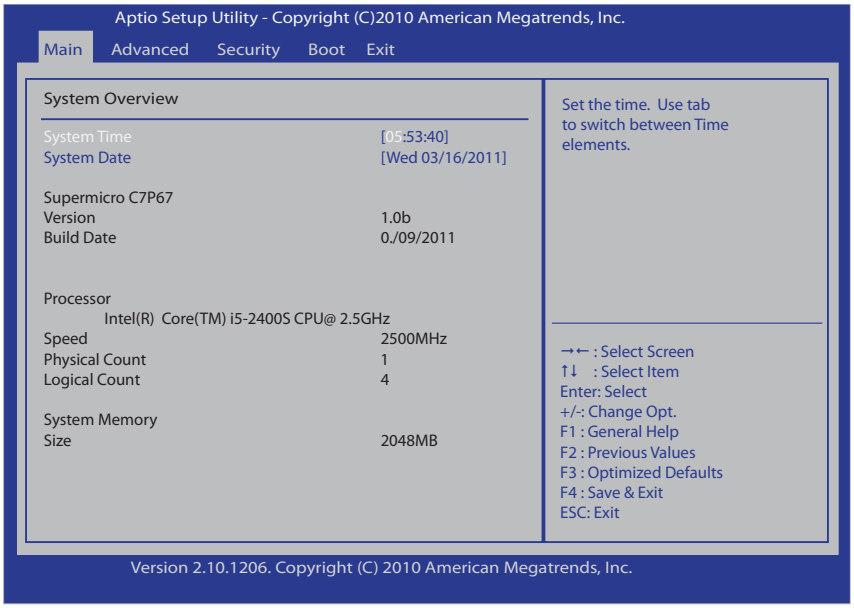
How to Start the Setup Utility

Normally, the only visible Power-On Self-Test (POST) 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 upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid 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 Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Key in new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in 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.

The following BIOS items will also displayed:

- **Supermicro C7P67**
- **Version:** This item displays the BIOS revision used in your system.
- **Build Date:** This item displays the date when this BIOS was completed.

Processor

The AMI BIOS will automatically display the status of the processor used in your system:

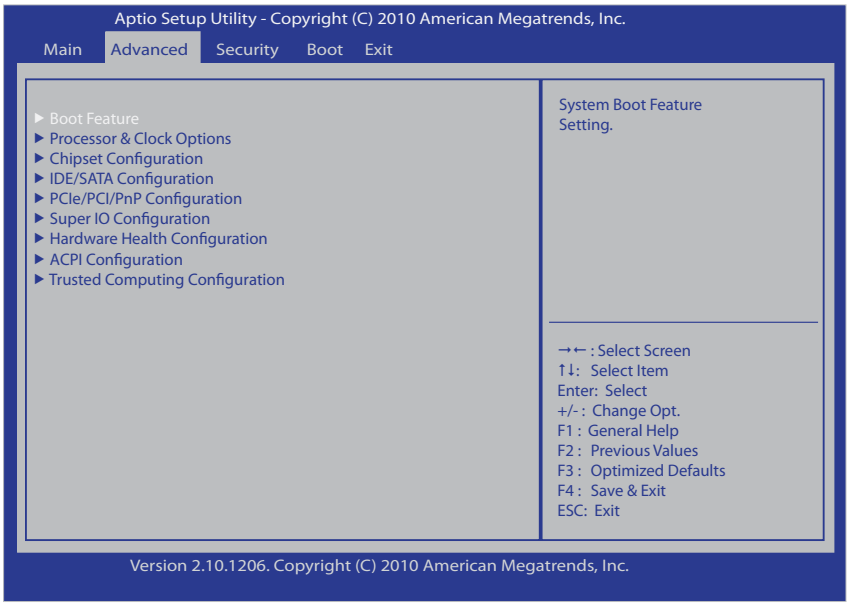
- **CPU Type:** This item displays the type of CPU used in the motherboard.
- **Speed:** This item displays the speed of the CPU detected by the BIOS.
- **Physical Count:** This item displays the number of processors installed in your system as detected by the BIOS.
- **Logical Count:** This item displays the number of CPU Cores installed in your system as detected by the BIOS.

System Memory

- **Size:** This displays the size of memory available in the system.

7-3 Advanced Setup Configurations

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



▶Boot Feature

Quiet Boot

This option allows the user to select the bootup screen display 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.

AddOn ROM Display Mode

Use this feature to configure Option ROM mode settings. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for the Numlock key. Select On to enable the Num-Lock key at bootup. The options are Off and **On**.

Wait For 'F1' If Error

This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

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 bootup 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 adap-

tors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

Power Configuration

Power Button Function

If this item is set to Instant_Off, the system will power off immediately as soon as the user presses the power button. If set to 4_Second_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_Second_Override.

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 outage. Select Power-On for the system power to be turned on after a power outage. Select Last State to allow the system to resume its last power state before a power outage. The options are Power-On, Power-Off and **Last State**.

▶Processor & Clock Options

Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect DRAM timing setting may cause system to become unstable. When this occurs, revert the item to the manufacture default setting.

This submenu displays the status of the processor used in the motherboard and allows the user to configure the Processor and Clock settings.

- **Type of the CPU**: This item displays the CPU type for the motherboard.
- **Frequency**: This item displays the CPU frequency for the motherboard.
- **CPUID**: This item displays the CPUID for the motherboard.
- **Microcode Revision**: This item displays the CPUID for the motherboard.
- **Cache L1**: This item displays the size of Cache L1 of the CPU for the motherboard.
- **Cache L2**: This item displays the size of Cache L2 of the CPU for the motherboard.
- **Cache L3**: This item displays the size of Cache L3 of the CPU for the motherboard.

- **Ratio Status**: This item displays the status of the CPU ratio.
- **Ratio Actual Value**: This item displays the actual value of the CPU ratio.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

If this feature set to Enabled, the CPU prefetches both cache lines for 128 bytes as comprised. If this feature is set to Disabled, the CPU prefetches the cache line for 64 bytes. The options are **Enabled** and Disabled

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

> **Note**: If there is any change to this setting, you will need to reboot the system for the change to take effect. Please refer to Intel's website for detailed information.

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

Select Enabled to enable Execute Disable Bit support 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.)

Intel® AES-NI

Select Enabled to enable Advanced Encryption Standard support for the processor. The options are **Disabled** and Enabled**.**

Active Processor Cores

Set to Enabled to use a processor's Second Core and beyond. (Refer to Intel's website for more information.) The options are **All,** 1 and 2.

Power Technology

Use the features below to select system power management settings. Select Energy Efficient to minimize power use. Select Custom to customize power use settings. The options are Disabled, **Energy Efficient** and Custom. When this item is set to Custom, the following items will display:

EIST

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disabled and **Enabled**.

P-STATE Coordination

This feature selects the type of coordination for the P-State of the processor. P-State is a processor operational state that reduces the processor's voltage and frequency. This makes the processor more energy efficient, resulting in further energy gains. The options are **HW_ALL**, SW_ALL and SW-ANY.

CPU C3 Report

Select Enabled for the CPU to report C3 (ACPI C2) state to the operating system. The options are **Disabled** and Enabled.

CPU C6 Report

Select Enabled for the CPU to report C6 (ACPI C3) state to the operating system. The options are Disabled and **Enabled**.

Package C-State limit

Select Auto for the AMI BIOS to automatically set the limit on the C-State package register. The options are **C0**, C1, C6, C7 and No Limit.

▶Turbo Boost Technology

TurboMode

Select Enabled to allow processor cores to run faster than the frequency marked in the manufacture specifications. The options are Disabled and **Enabled.**

Factory Long-Duration Power Limit

This feature displays the power limit set by the manufacturer for long-term power use.

Long-Duration Power Limit

This feature displays the current limit setting for long-term power use.

Factory Long-Duration Maintained

This feature displays the long-term power maintenance setting set by the manufacturer.

Long-Duration Maintained

This feature displays the long-term power maintenance setting currently set for this system.

Recommended Short-Duration Power Limit

This feature displays the power limit recommended by the manufacturer for short-term power use. The default setting is 1.25* Long Duration (that means, 1.25 times the value of Long-Duration Power Limit indicated above.)

Short-Duration Power Limit

This feature displays the power limit set by the manufacturer for short-term power use.

Base Frequency

This feature displays the status of based frequency of the system.

1-Core Ratio Limit/2-Core Ratio Limit/3-Core Ratio Limit/4-Core Ratio Limit

This increases (multiplies) a processor's core 1 clock speed in relation to the bus speed of a processor specified by the user. Press "+" or "-" on your keyboard to change this value.

▶Chipset Configuration

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

▶CPU Bridge Configuration

The following CPU Bridge submenu items are listed below.

- **CPU Revision:** This item displays the CPU revision used in the system.
- **Current CPU1 Memory Frequency:** This item displays the status of current CPU1 memory frequency.
- **Memory Type:** This item displays the memory type used in the system.
- **Memory Reference Code Revision:** This item displays the revision number of the memory reference code of the CPU used in the system.

Memory Frequency

Use this feature to force the system memory to run at a different frequency from the frequency specified by the memory module. The options are **Auto**, Force DDR-800, Force DDR-1066, Force DDR-1333 and Force DDR-1600.

Performance Tuner

This feature allows the user to the BIOS settings to improve CPU performance.

Intel Extreme Memory Profile (X.M.P)

Select Enable to support Intel Extreme Memory Profile technology to improve CPU performance. The options are **Disabled** and Enabled.

▶DRAM Timing

This feature allows the user to set aggressive DRAM timing settings to improve system performance.

DRAM CAS Latency (tCL)

This item displays the DRAM CAS (Column Address Strobe) Latency time, which is the time delay between the moment when the memory controller tells a memory module to access a column address on the module and the moment when the data of the column address becomes available for output. Generally, memory modules with lower latency performs better than those with higher latency. The range of DRAM CAS latency is between 0~12ns, and the step (increment) is 1ns. The default setting is **Auto**.

DRAM RAS to CAS Delay (tRCD)

This item displays the delay time needed from Row Address Strobe (RAS) to Column Address Strobe (CAS). It is the number of clock cycles needed from the moment when the computer defines the row and column block of a memory module to the moment when read and write actually takes place in the same memory block. Generally, the shorter the DRAM RAS-to-CAS Delay is the better the memory performance is. The range of DRAM RAS-to-CAS Delay is between 0~12ns, and the step (increment) is 1ns. The default setting is **Auto**.

DRAM RAS Precharge Delay (tRP)

This item displays the delay time (or the number of clock cycles) needed for the system to disengage from a open row of a memory module to start accessing the next row on the same memory module. This stands for ROW Precharge time. Generally, the shorter the DRAM RAS Precharge Delay is the better the memory performance is. The range of DRAM RAS Precharge Delay is between 0~12ns, and the step (increment) is 1ns. The default setting is **Auto**.

DRAM Active to Precharge Delay (tRAS)

This item displays the minimum number of clock cycles needed for the system to access a certain row of data in a memory module between the time when data request is made and the time when the precharge command is completed. The range of DRAM Active to Precharge Delay is between 0~34ns, and the step (increment) is 1ns. The default setting is **Auto**.

▶System Voltage

This feature displays system voltage settings.

Memory Voltage (mv)

This item displays the status of the memory voltage. The range of the memory voltage is between 1.500v~1.800v, and the step (increment) is 0.010v. The default setting is **1.500v**.

Processor I/O Voltage (mv)

This item displays the status of the processor I/O voltage. The range of the processor I/O voltage is between 1.050v~1.110v, and the step (increment) is 0.010v. The default setting is **1.050v**.

PCH Voltage (mv)

This item displays the status of the PCH voltage. The range of the PCH voltage is between 1.050v~1.110v, and the step (increment) is 0.020v. The default setting is **1.050v**.

▶System Agent Configuration

The following System Agent submenu items are listed below.

- **System Agent Revision:** This item displays the revision number of the System Agent chip used in this system.

VT-d

Select Enabled to enable Intel Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

PCI Express Port

Select Enabled to enable onboard PCI-Express support. Select Auto for the system to automatically enable PCI-E support when a PCI-E device is detected

and to disable PCI-E support when no PCI-E device is detected. The options are Enabled, Disabled, and **Auto**.

PEG Force Gen1

Select Enabled to downgrade PCI-Express connections to support PCI-E Generation 1 devices. The options are **Disabled** and Enabled.

Detect Non-Compliance Device

Select Enabled for the system to automatically detect if a non-compliance PCI-Express device, which is not compatible to onboard PCI-E support, has been installed in a PCI-E slot. The options are **Disabled** and Enabled.

▶South Bridge Configuration

The following South Bridge submenu items are listed below.

- **South Bridge Revision:** This item displays the revision number of the South Bridge chip used in this system.

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 detected on the motherboard, and vise versa. The options are Disabled, **Enabled** and Auto.

Port60h/64h Emulation

Select Enabled to enable 60h/64h emulation for complete USB keyboard support for operating systems that are not compatible with USB devices. The options are **Enabled** and Disabled.

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**.

Azalia HD Audio

Select Enabled to support Azalia High-Definition Audio devices. The options are Disabled and **Enabled**.

Frontside Audio Mode

Use this feature to select the audio mode for the front-side audio devices. The options are **HD Audio** and AC'97.

Deep Sx

Use this feature to configure the power state of the system when it is in the deep sleep state. Please note that the deep S4/S5 state is supported in DC only for mobile systems. The deep S4/S5 state is supported in AC only for desktop systems. The options are **Disabled**, Enabled in S5, and Enabled in S4 and S5.

▶Onboard Chip Configuration

This submenu allows the user to configure Onboard Chip settings.

USB 3.0 Legacy Support

Select Enabled to support USB 3.0 Expansible_Host_Controller_Interface (XHCI). The options are **Disabled** and Enabled. If this feature is set to Enabled, the following item will display:

XHCI Hand-off

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

▶IDE /SATA Configuration

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

SATA Mode

This feature allows the user to configure the SATA mode for a drive specified. The options are **IDE Mode,** AHCI Mode, RAID Mode and Disabled.

- When the option-IDE Mode is select, the following items will display:

  Serial-ATA Controller 0

  This feature allows the user to set the serial_link mode for SATA Controller 0. The options are Disabled, Enhanced and **Compatible**.

  Serial-ATA Controller 1

  This feature allows the user to set the serial_link mode for SATA Controller 1. The options are Disabled and **Enhanced**.

  SATA Port0~ SATA Port5

  The AMI BIOS will automatically display the status of a SATA port if a device is detected in the SATA port specified.

- When the option-AHCI (Advanced Host Controller Interface) Mode is select, the following items will display:

  Aggressive Link Power Management

  Select Enabled to support Aggressive Link Power Management to provide a Cougar Point B0 or newer chip with advanced power functionality support. The options are Disabled and **Enabled**.

  SATA Port0~ SATA Port4

  The AMI BIOS will automatically detect the presence of a device installed in a SATA port specified by a user, and displays the following items for configuration if a device is present.

  Staggered Spin-up

  Select Enabled for the AHCI Controller to support Staggered Spin-up, which will allow system devices to spin-up one at a time to prevent sudden, excessive power-consumption, resulting in a power shortage. The options are Enabled and **Disabled.**

Hot-Plug

Select Enabled to enable hot-plug support for a SATA device installed in a SATA port specified by the user. The options are Enabled and **Disabled.**

- When the option-RAID Mode is selected, the following items will appear.

SATA Port0~ SATA Port5

The AMI BIOS will automatically detect the presence of a device installed in a SATA port specified by a user, and displays the following items for configuration.

Hot-Plug

Select Enabled to enable hot-plug support for a SATA device installed in a SATA port specified by the user. The options are Enabled and **Disabled.**

▶PCIe/PCI/PnP Configuration

This feature allows the user to configure the PCIe (PCI-Express)/PCI/PnP (Play and Plug) settings for the following items:

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.

Active State Power Management

Select Enabled to enable Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus in order to maximize power-saving and transaction speeds. The options are Enabled and **Disabled**.

PCIe (PCI Express) Max Read Request Size

Use the arrow key to select the maximum Read Request Size for the onboard PCI-E devices. Select Auto for the system to automatically set the maximum Read Request Size for the PCI-E devices. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes,

PCI Slot 1 Option ROM/PCI Slot 2 Option ROM/PCIe Slot 3 Option ROM/ PCIe Slot 4 Option ROM/PCIe Slot 5 Option ROM/PCIe Slot 7 Option ROM

Select Enabled to boot the system from a network device installed in a PCI or a PCI -E slot specified by the user. The options are Disabled and **Enabled.**

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable LAN OPROM for PXE. This is to boot computers using a network interface. The options are **Disabled** and Enabled.

▶Super IO Device Configuration

Serial Port1/Serial Port2

Select Enabled to enable COM Port1 or COM Port2. The options are **Enabled** and Disabled. If this feature is set to Enabled, the following item will display:

Serial Port 1 Setting/Serial Port 2 Setting

This feature allows the user to set the address and IRQ setting to optimize IO performance for the device installed in COM Port 1 or COM Port 2. The options for Serial Port 1 are **Auto**, IO=3F8h, IRQ=4; IO=3F8h, IRQ=4, 10, 11; IO=2F8h, IRQ=3, 10, 11; IO=3E8h, IRQ=4, 10, 11; and IO=2E8h, IRQ=3, 10, 11. The options for Serial Port2 are **Auto**, IO=2F8h, IRQ=3; IO=3F8h, IRQ=4, 10, 11; IO=2F8h, IRQ=3, 10, 11; IO=3E8h, IRQ=4, 10, 11; and IO=2E8h, IRQ=3, 10, 11.

▶Hardware Health Configuration

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

Fan Speed Control Mode

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 correlated. When the CPU on-die temperature increases, the fan speed will also increase for proper system cooling. Select "Full Speed" to allow the onboard fans to run at full speed for maximum cooling. The Full Speed setting is recommended for special system configuration or debugging. Select "Optimal" for better system cooling. The Optimal setting is recommended for high-power-consuming and high-density systems. Select "Standard" for the onboard fans to run at a speed that will balance the needs between system cooling and power saving. The Standard setting is recommended for regular systems with normal hardware configuration. The Options are: Full Speed, Optimal and **Standard**.

CPU Temperature/System Temperature/Peripheral Temperature

This feature displays current temperature readings for the CPU, the system and the peripheral devices.

The following items will be displayed for your reference only:

CPU Temperature

The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C). The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems.

Notes: 1. The system may shut down if it continues for a long period to prevent damage to the CPU.

2. The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature/Peripheral Temperature: The system temperature and the peripheral temperature will be displayed (in degrees in Celsius and Fahrenheit) as it is detected by the BIOS.

Fan 1 Speed~ Fan 4 Speed, Fan A Speed

This feature displays the fan speed readings from Fan1~Fan 4 and Fan A.

Voltage Monitoring

This feature displays the voltage readings for the items below.

Vcore, 12V, V_DIMM, 5Vcc, VTT_CPU, AVcc, 3.3Vcc, VSB and VBAT.

▶ACPI Configuration

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

High Precision Event Timer

Select Enabled to activate the High Precision 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 Instruction embedded in the CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

Suspend Mode

This feature allows the user to select the highest ACPI (Advanced Configuration and Power Interface) sleep state for the system when the user presses the Suspend button. The options are Suspend Disabled, S1 (POS), and **S3 (STR).**

PS2 KB/MS Wake Up

This feature allows the user to select PS2 Keyboard/Mouse Wake-Up settings. Select Force Enable to force the keyboard and the mouse to become active whenever a signal is received. Select Force Disable to force the keyboard and the mouse to remain inactive even when a signal is received. Select S1 or S5 to allow the operating system to determine when to wake the onboard keyboard and the mouth. The options are Force Disable, Force Enable, **S1 (OS Control)**, and S5 (OS Control)**.**

▶Trusted Computing (Available when an Onboard TPM Module is detected)

This feature allows the user to configure Trusting Computing settings.

TPM Support

Select Enabled to enable TPM (Trusted Platform Module) support for system security and data integrity. The options are **Disabled** and Enabled. If this option is set to Enabled, the following items will display.

TPM State

Select Enabled to display the status of TPM support for this system. The options are **Disabled** and Enabled. Please note that a system reboot is needed before a change on the TPM state to take effect.

Pending TPM Operation

This feature is used to schedule a TPM operation that is pending. Select "Enable Take Ownership" to allow the pending TPM operation to take precedence over other operations in the queue and be processed and executed immediately. If the option "Disable Take Ownership" is selected, the pending TPM operation will not take precedence over other operations and will be processed based on the order that are placed in the queue. Select the option "TPM Clear" to delete all pending TPM operations from the queue. If the option "None" is displayed, there is no pending TPM operation in the queue. Please note that a system reboot is needed for any change on the feature to become effective. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Current TPM Status Information

This feature displays the current status of the TPM items listed below.

TPM Enabled Status

This item indicates if TPM support is enabled or not in this system.

TPM Active Status

This item indicates if TPM support is active or not in this system.

TPM Owner State

This feature lists the status of the TPM Owner.

▶Intel TXT (LT) Configuration (Available when Secure Mode Extension (SMX), Virtual Technology (VT) and VT-d are enabled)

This feature allows the user to configure Intel Trusted Execution Technology Settings. (Please refer to the sections: Processor & Clock and System Agent in the Advanced submenu for VT and VT_d configuration.)

Secure Mode Extension (SMX)

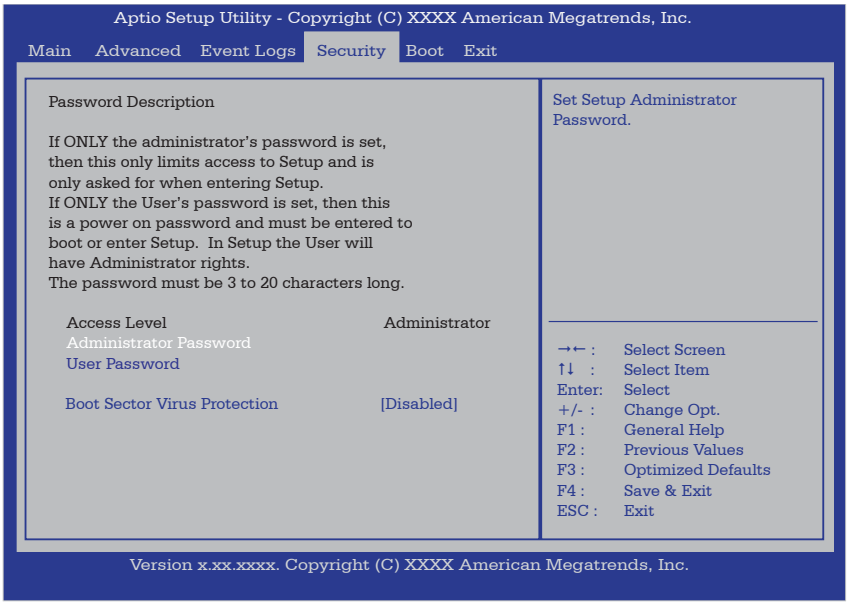
This item indicates if SMX is enabled or not.

Intel TXT (LT) Support

This item indicates if Intel TXT (LT) is enabled or not.

7-4 Security

Use this section to configure the privilege level of the user when accessing the system or the Setup Utility.



Access Level

This item displays the access level of the current user.

Administrator Password

If "Administrator Password" is selected for the system, the user can enter the system and the BIOS Setup utility during system boot. While in the BIOS Setup utility, the user is granted with "Administrator Rights" and is allowed to change configuration settings in the Setup utility. This will allow the user to function as the system administrator and change critical BIOS settings.

User Password

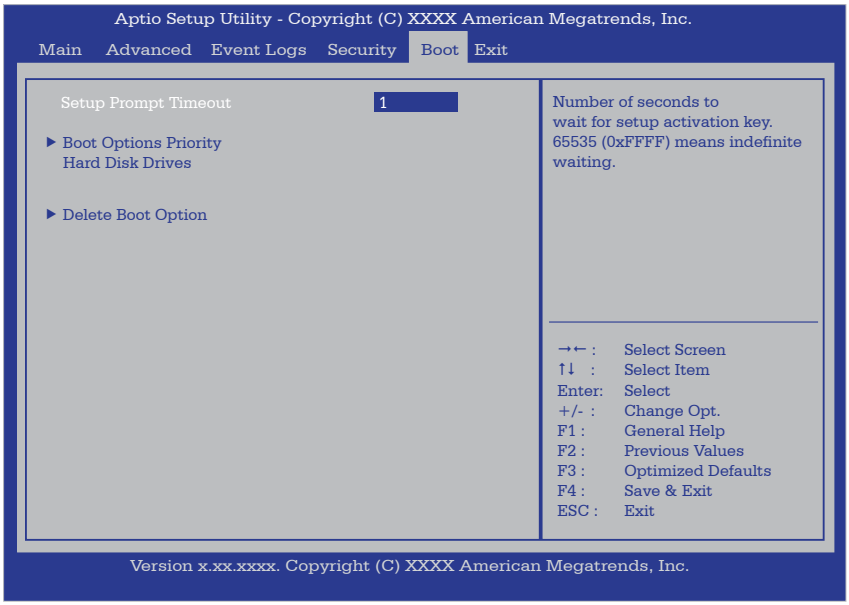
If User Password is selected for the system, a password is needed for a user to enter the system at bootup or to enter the BIOS Setup utility. While in the BIOS Setup utility, the user is only allowed to view BIOS items without making changes to the BIOS settings.

Boot Sector Virus Protection

If this feature is 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:



Setup Prompt Timeout

This feature allows the user to specify how many seconds the system shall wait for the BIOS setup activation key to complete the tasks before the system resumes the normal operation. The default setting is **1 Second**.

▶Boot Options Priority

Boot Options Priority

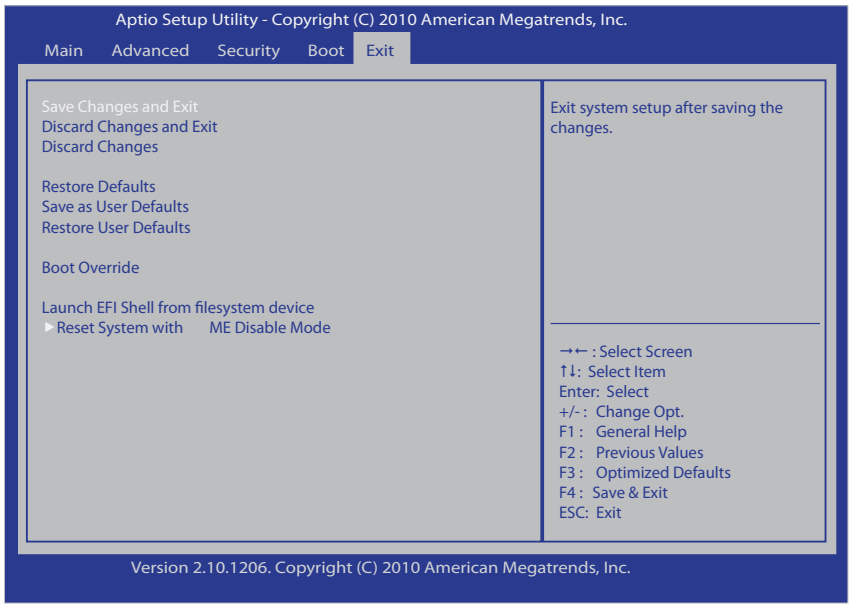
Use this feature to set the system boot sequence. If Built-in EFI (Extensible Firmware Interface) Shell is selected, the Built-in EFI Shell will become the first component to boot. The options are **Disabled** and Built-in EFI Shell. Boot Options Priority

▶ Delete Boot Option

Use this feature to remove an EFI boot option from the boot order.

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

After completing the system configuration changes, select this feature and press <Yes> in the dialog box to save the changes you've made and reboot the system. The new system settings will take effect after the system reboot.

Discard Changes and Exit

Select this feature and press <Yes> in the dialog box to quit the BIOS Setup without making any permanent changes to the system configuration settings.

Discard Changes

Select Discard Changes and press <Yes> in the dialog box to discard any changes you've made and return to the Setup Utility.

Restore Defaults

Select this feature and press <Yes> in the dialog box for the AMI BIOS to automatically load Optimal Defaults that are preset by the manufacturer to the BIOS Settings. The Optimal settings are designed for maximum system performance, but they may not work best for some computer applications.

Save as User Defaults

Select this feature and press <Yes> in the dialog box for the AMI BIOS to save the default settings that you've selected as the "User Defaults" for future use.

Boot Override

Launch EFI Shell from Filesystem Device

Select this feature and press <Yes> in the dialog box for the AMI BIOS to save the changes you've made on the built-in EFI (Extensible Firmware Interface) Shell settings and reboot the system. This system will then attempt to launch the EFI Shell application (Shellx64.efi) from one of the file system devices that is available.

▶Reset System with ME Disabled Mode

Select this feature and press <Enter> to reboot the system without enabling the Management Engine mode.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue with bootup. The error messages normally appear on the screen.

Fatal errors will not allow the system to continue to bootup. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

BIOS Error Beep Codes

Beep Code/LED	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 long beeps + 2 short beeps	Display memory read/write error	Video adapter missing or with faulty memory
1 continuous beep	System overheat	System overheat

Notes

Appendix B

System Specifications

Processors
Single Intel 2nd generation Core i3/i5/i7 processor in an LGA 1155 socket

Note: Please refer to our web site for a complete listing of supported processors.

Chipset
Intel P67

BIOS
32 Mb AMI SPI Flash EEPROM

Memory Capacity
Four DIMM slots that can support up to 32 GB of non-ECC, unbuffered DDR3-1333/1066 SDRAM

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

SATA Controller
Intel on-chip controller for eight-port SATA 3.0/2.0 (RAID supported)

Drive Bays
Eight hot-swap drive bays to house eight SATA drives

Peripheral Drive Bays
Two 5.25" drive bays

Expansion Slots
Supports the use of eight standard size PCI add-on cards: three PCI-E 2.0 x1, one PCI-E 2.0 x8 (in a x16 slot), one PCI-E 2.0 x16 and three 32-bit PCI slots

Serverboard
C7P67 (Extended ATX form factor)
Dimensions: 9.6" x 12" (244 x 305 mm)

Chassis
SC732D2-500B Form Factor: mid tower
Dimensions (as tower): (WxHxD) 7.6 x 16.7 x 20.7 in. (193 x 424 x 526 mm)

Weight
Gross (Bare Bone): 39 lbs (17.7 kg.)

System Cooling
One 12-cm low-noise exhaust fan
One 12-cm low-noise cooling fan (optional)

System Input Requirements
AC Input Voltage: 100-240 VAC
Rated Input Current: 7A (115V) to 3.5A (240V)
Rated Input Frequency: 50/60 Hz

Power Supply
Rated Output Power: 500W (Part# PWS-502-PQ)
Rated Output Voltages: +3.3V (15A), +5V (20A), +12V (17A), -12V (0.5A), +5Vsb (3A))

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: 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

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The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.