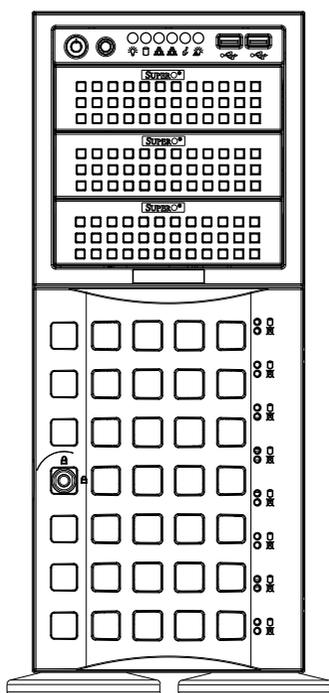


# SUPERO<sup>®</sup>

A+ Server 4022G-6F



USER'S MANUAL

Revision 1.0b

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at [www.supermicro.com](http://www.supermicro.com).**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

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](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)"

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

Manual Revision 1.0b  
Release Date: March 12, 2014

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2014 by Super Micro Computer, Inc.  
All rights reserved.

**Printed in the United States of America**

# 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 A+ Server 4022G-6F. Installation and maintenance should be performed by experienced technicians only.

The A+ Server 4022G-6F is a high-end server based on the SC745TQ-920B 4U tower/rackmountable chassis and the H8DG6-F serverboard.

## Manual Organization

### Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the H8DG6-F serverboard and the SC745TQ-920B chassis.

### Chapter 2: Server Installation

This chapter describes the steps necessary to install the A+ Server 4022G-6F into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

### Chapter 3: System Interface

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

### Chapter 4: Warning Statements for AC Systems

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the A+ Server 4022G-6F.

## **Chapter 5: Advanced Serverboard Setup**

Chapter 5 provides detailed information on the H8DG6-F 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 SC745TQ-920B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA or peripheral drives and when replacing system power supply units and cooling fans.

## **Chapter 7: BIOS**

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

## **Appendix A: BIOS POST Error Codes**

## **Appendix B: Installing Windows**

## **Appendix C: System Specifications**

---

---

# Contents

## **Chapter 1 Introduction**

1-1	Overview .....	1-1
1-2	Serverboard Features .....	1-2
	Processors .....	1-2
	Memory .....	1-2
	SAS .....	1-2
	Serial ATA .....	1-2
	PCI Expansion Slots .....	1-2
	Onboard Controllers/Ports .....	1-3
	Graphics Controller .....	1-3
	Other Features .....	1-3
1-3	Server Chassis Features .....	1-4
	System Power .....	1-4
	Front Control Panel .....	1-4
	I/O Backplane .....	1-4
	Cooling System .....	1-4
1-4	Contacting Supermicro .....	1-5

## **Chapter 2 Server Installation**

2-1	Overview .....	2-1
2-2	Unpacking the System .....	2-1
2-3	Preparing for Setup .....	2-1
	Choosing a Setup Location .....	2-2
2-4	Warnings and Precautions! .....	2-2
	Rack Precautions .....	2-2
	Server Precautions .....	2-2
	Rack Mounting Considerations .....	2-3
	Ambient Operating Temperature .....	2-3
	Reduced Airflow .....	2-3
	Mechanical Loading .....	2-3
	Circuit Overloading .....	2-3
	Reliable Ground .....	2-3

2-5	Installing the System into a Rack .....	2-4
	Identifying the Sections of the Rack Rails .....	2-4
	Installing the Chassis Rails .....	2-5
	Installing the Rack Rails .....	2-6
	Installing the Server into the Rack .....	2-7
2-6	Checking the Serverboard Setup .....	2-8
2-7	Checking the Drive Bay Setup .....	2-9

**Chapter 3 System Interface**

3-1	Overview .....	3-1
3-2	Control Panel Buttons .....	3-2
3-3	Control Panel LEDs .....	3-2
	Overheating .....	3-3
3-4	Drive Carrier LEDs .....	3-4
3-5	Power Supply LEDs .....	3-4

**Chapter 4 Standardized Warning Statements for AC Systems**

4-1	About Standardized Warning Statements .....	4-1
	Warning Definition .....	4-1
	Installation Instructions .....	4-4
	Circuit Breaker .....	4-5
	Power Disconnection Warning .....	4-6
	Equipment Installation .....	4-8
	Restricted Area .....	4-9
	Battery Handling .....	4-10
	Redundant Power Supplies .....	4-12
	Backplane Voltage .....	4-13
	Comply with Local and National Electrical Codes .....	4-14
	Product Disposal .....	4-15
	Hot Swap Fan Warning .....	4-16
	Power Cable and AC Adapter .....	4-18

**Chapter 5 Advanced Serverboard Setup**

5-1	Handling the Serverboard .....	5-1
	Precautions .....	5-1
	Unpacking .....	5-2
5-2	Serverboard Installation .....	5-2
5-3	Connecting Cables .....	5-3
	Connecting Data Cables .....	5-3
	Connecting Power Cables .....	5-3
	Connecting the Control Panel .....	5-3

---

5-4	I/O Ports .....	5-4
5-5	Installing the Processor and Heatsink .....	5-5
	Installing a Passive CPU Heatsink .....	5-7
5-6	Installing Memory .....	5-8
	DIMM Module Population Configuration .....	5-10
5-7	Adding PCI Add-On Cards .....	5-11
5-8	Serverboard Details .....	5-12
	H8DG6-F Quick Reference .....	5-13
5-9	Connector Definitions .....	5-15
5-10	Jumper Settings .....	5-22
	Explanation of Jumpers .....	5-22
5-11	Onboard Indicators .....	5-24
5-12	SAS and SATA Drive Connections .....	5-26
5-13	Enabling SATA RAID .....	5-27
	Serial ATA (SATA) .....	5-27
	Installing the OS/SATA Driver .....	5-27
	Building a Driver Diskette .....	5-27
	Enabling SATA RAID in the BIOS .....	5-28
	Using the Adaptec RAID Utility .....	5-29
	Installing the RAID Driver During OS Installation .....	5-29
5-14	Installing Software .....	5-30
	SuperDoctor III .....	5-31
5-15	Serverboard Battery .....	5-33
<b>Chapter 6 Advanced Chassis Setup</b>		
6-1	Static-Sensitive Devices .....	6-1
	Precautions .....	6-1
6-2	Front Control Panel .....	6-3
	Control Panel Orientation .....	6-3
6-3	Configuring Drives .....	6-5
	Configuring the 5.25" Drive Bays .....	6-5
	Additional Hard Drives .....	6-8
	SAS/SATA Drives .....	6-9
	SAS/SATA Backplane .....	6-10
6-4	Expansion Card Setup .....	6-11
6-5	System Fans .....	6-13
6-6	Power Supply .....	6-15

---

**Chapter 7 BIOS**

7-1	Introduction.....	7-1
7-2	Main Menu .....	7-2
7-3	Advanced Settings Menu .....	7-2
7-4	Security Menu .....	7-15
7-5	Boot Menu.....	7-16
7-6	Exit Menu .....	7-17

**Appendix A BIOS POST Error Codes**

**Appendix B Installing Windows 2003/XP**

**Appendix C System Specifications**

# Chapter 1

## Introduction

### 1-1 Overview

The A+ Server 4022G-6F is a high-end server comprised of two main subsystems: the SC745TQ-920B 4U/tower chassis and the H8DG6-F serverboard. Please refer to our web site for information on operating systems that have been certified for use with the system ([www.supermicro.com](http://www.supermicro.com)).

In addition to the serverboard and chassis, various hardware components have been included with the 4022G-6F, as listed below:

- Two (2) passive CPU heatsinks (SNK-P0043P)
- Three (3) 8-cm system fans (FAN-0074L4)
- Two (2) 8-cm rear exhaust fans (FAN-0082L4)
- One (1) air shroud (MCP-310-48001-0N)
- One (1) 20" front control 16-to-16 pin ribbon cable (CBL-0087)
- Four (4) 200 mm 4-to-4 Pin Middle Fan Power Extension cables (CBL-0087)
- SAS Accessories
  - One (1) SAS backplane (BPN-SAS-743TQ)
  - Two (2) 23 cm IPASS TO 4 SATA cables (CBL-0118L-02)
  - Eight (8) drive carriers (CSE-PT17L-B)
- One rackmount kit (Optional: CSE-PT26)

**Note:** For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <ftp://ftp.supermicro.com>
- Product safety information:  
[http://super-dev/about/policies/safety\\_information.cfm](http://super-dev/about/policies/safety_information.cfm)

For support, email [support@supermicro.com](mailto:support@supermicro.com).

## 1-2 Serverboard Features

At the heart of the A+ SERVER 4022G-6F lies the H8DG6-F, a dual processor serverboard based on the AMD™ Dual SR5690 and one SP5100 chipset. Below are the main features of the H8DG6-F. (See Figure 1-1 for a block diagram of the chipset).

### Processors

The H8DG6-F supports single or dual AMD Opteron 6000 Series processors in AMD Socket G34 type sockets. Please refer to our web site for a complete listing of supported processors ([www.supermicro.com](http://www.supermicro.com)).

### Memory

The H8DG6-F has sixteen single/dual/tri/quad channel 240-pin DIMM sockets that can support up to 128 GB of ECC/Non-ECC UDIMM or up to 512 GB of ECC RDIMM of DDR3-1600/1333/1066 Mhz memory. .

### SAS

An LSI 2008 SAS controller is integrated into the serverboard to support eight SAS2 ports, which are RAID 0, 1 and 10 capable. The SAS drives are hot-swappable units. SAS RAID 5 is also supported with the AOC RAID 5 key (optional) installed on the serverboard.

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

### Serial ATA

An on-chip (SP5100) SATA controller is integrated into the H8DG6-F to provide a six-port, 3 Gb/sec SATA subsystem, which is RAID 0, 1, and 10 supported. The SATA drives are hot-swappable units.

**Note:** You must have RAID set up to enable the hot-swap capability of the SATA drives. Documentation on RAID setup guidelines can be found on our web site.

### PCI Expansion Slots

The H8DG6-F has three PCI Express 2.0 x16 slots, one PCI Express 2.0 x8 slot and two PCI Express 2.0 x4 slots.

## Onboard Controllers/Ports

A floppy drive connector is included on the serverboard. The color-coded I/O ports include one COM port (an additional COM header is located on the serverboard), a VGA port, two USB 2.0 ports (additional USB headers are included on the serverboard), PS/2 mouse and keyboard ports, two gigabit Ethernet ports, two gigabit Ethernet ports and a dedicated IPMI LAN port.

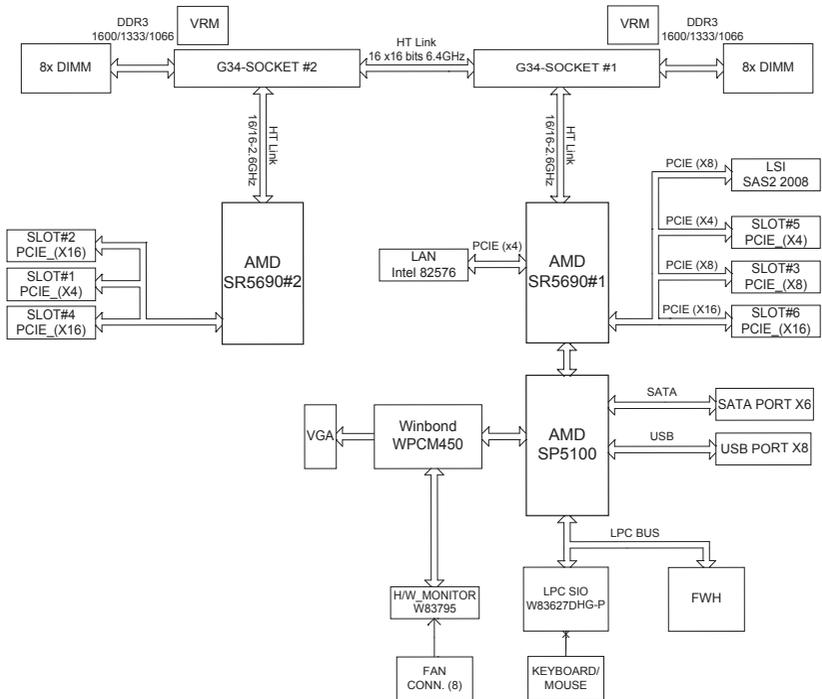
## Graphics Controller

The H8DG6-F features an integrated Matrox G200eW video controller. The G200eW is a 2D/3D/video accelerator chip with a 128-bit core.

## Other Features

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

Figure 1-1. H8DG6-F System Block Diagram



## 1-3 Server Chassis Features

The SC745TQ-920B is an extended ATX form factor chassis that may be used in either a tower or a 4U rackmount configuration. The following is a general outline of the main features.

### System Power

The SC745TQ-920B features a single 920W power supply. Power must be removed from the server before replacing a failed power supply unless a second (optional) 920W power module is installed to provide the system with redundant power.

### Front Control Panel

The control panel provides system monitoring and control. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included. In addition, two USB ports have been incorporated into the control panel to provide front side USB access.

### Rear I/O

The chassis provides seven expansion card slots, one COM port, one VGA port, two USB 2.0 ports, mouse and keyboard ports, two gigabit Ethernet ports and a dedicated IPMI LAN port.

### Cooling System

The chassis has an innovative cooling design that includes three 8-cm hot-plug system cooling fans located in the middle section of the chassis as well as two 8-cm hot-plug exhaust fans located at the rear of the chassis. An air shroud channels the airflow from the system fans to efficiently cool the processor area of the system. The power supply module also includes a cooling fan.

## 1-4 Contacting Supermicro

### Headquarters

Address: Super Micro Computer, Inc.  
980 Rock Ave.  
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: [marketing@supermicro.com](mailto:marketing@supermicro.com) (General Information)  
[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)

Web Site: [www.supermicro.com](http://www.supermicro.com)

### Europe

Address: Super Micro Computer B.V.  
Het Sterrenbeeld 28, 5215 ML  
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: [sales@supermicro.nl](mailto:sales@supermicro.nl) (General Information)  
[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto:rma@supermicro.nl) (Customer Support)

Web Site: [www.supermicro.com](http://www.supermicro.com)

### Asia-Pacific

Address: Super Micro Computer, Inc.  
3F, No. 150, Jian 1st Rd.  
Zhonghe Dist., New Taipei City 235  
Taiwan (R.O.C)

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

Tel: +886-(2)-8226-3990

Web Site: [www.supermicro.com.tw](http://www.supermicro.com.tw)

## Notes

## Chapter 2

# Server Installation

### 2-1 Overview

This chapter provides a quick setup checklist to get your A+ Server 4022G-6F 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 processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

The 4022G-6F may be employed either as a tower or mounted in a rack as a 4U rackmount chassis. If using it as a tower unit, please read the Server Precautions in the next section and then skip ahead to Section 2-5.

### 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 server itself shows damage you should file a damage claim with the carrier who delivered it.

### 2-3 Preparing for Setup

Decide on a suitable location for the A+ Server 4022G-6F. 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.

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

## Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.

## 2-4 Warnings and Precautions

### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.
- Slide/rail-mounted equipment is not to be used as a shelf or workspace.

### Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SATA drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## Rack Mounting Considerations

### ***Ambient Operating Temperature***

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T<sub>mra</sub>).

### ***Reduced Airflow***

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

### ***Mechanical Loading***

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

### ***Circuit Overloading***

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

### ***Reliable Ground***

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



**Warning:** To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

## 2-5 Installing the System into a Rack

This section provides information on installing the system into a rack unit. Rack installation requires the use of the optional rackmount kit. If the system has already been mounted into a rack or if you are using it as a tower, you can skip ahead to Sections 2-5 and 2-6.

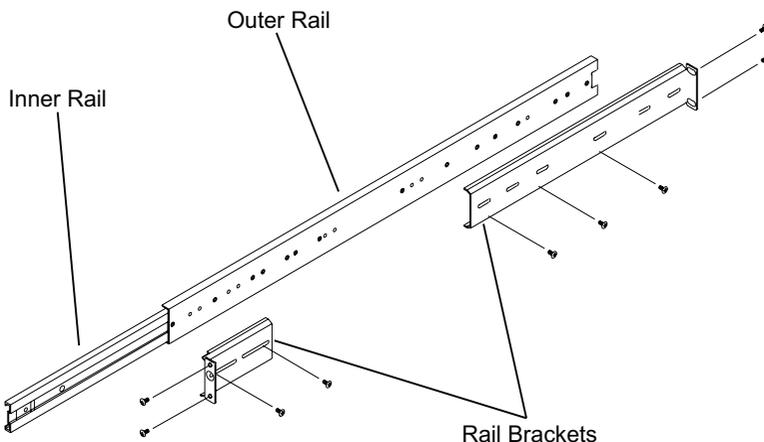
There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. The following is a guideline for installing the server into a rack with the rack rails provided in the rackmount kit. You should also refer to the installation instructions that came with the rack unit you are using.

### Identifying the Sections of the Rack Rails

The optional rackmount kit includes two rack rail assemblies. Each of these assemblies consist of three sections: an inner fixed chassis rail that secures to the chassis, an outer rack rail that secures directly to the rack itself and two rail brackets, which also attach to the rack (see Figure 2-1.) The inner and outer rails must be detached from each other to install.

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

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



## Installing the Chassis Rails

You will need to remove the top cover and the feet to add rack rails to the chassis. First, remove the top and right covers (top and left covers when standing as a tower chassis) by first removing the screws that secure them to the chassis. Depress the button on the top (side if tower) of the chassis to release the cover and then pull the cover off. Then unscrew the four feet and remove them from the chassis (see Figure 2-2).

You can now attach rack rails to the top and bottom (now the sides) of the chassis. First add the rack handles. Then position the inner chassis rail sections you just removed along the side of the chassis making sure the screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-3). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

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

**Figure 2-2. Preparing to Install the Chassis Rails**

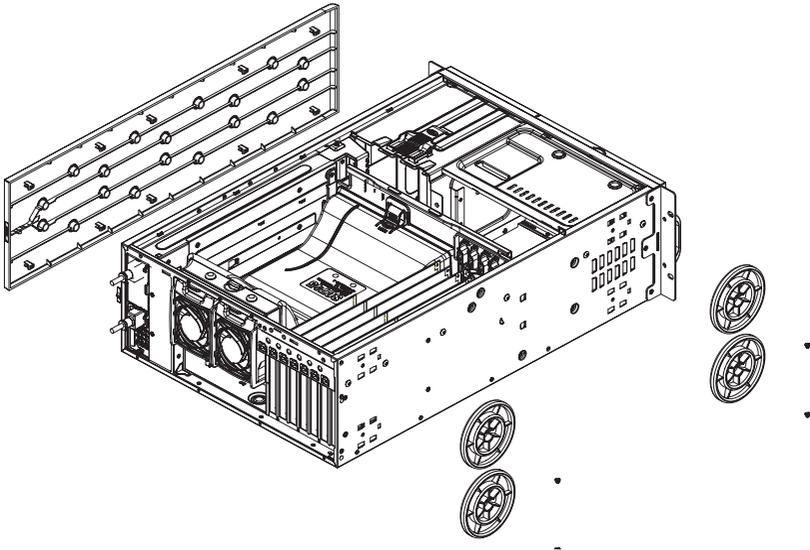
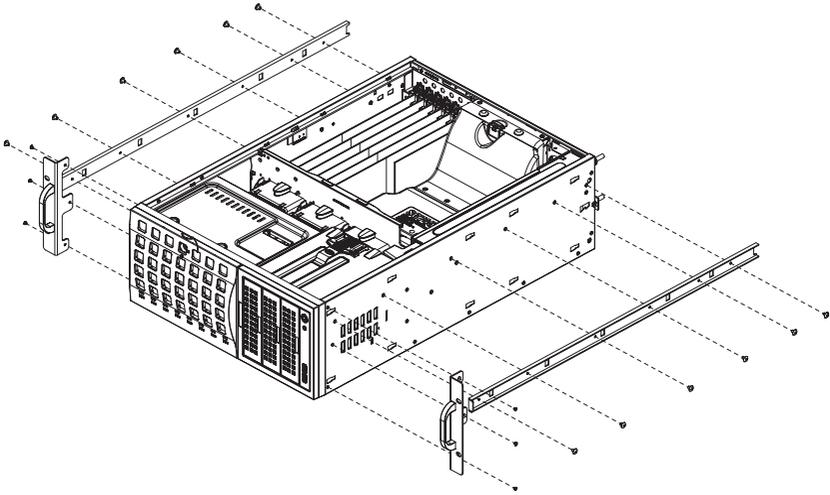


Figure 2-3. Installing the Rails to the Chassis



## Installing the Rack Rails

Determine where you want to place the A+ Server 4022G-6F in the rack. (See [Rack and Server Precautions](#) in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure both are at the exact same height and with the rail guides facing inward.



**Stability hazard.** The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.



**Warning:** Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

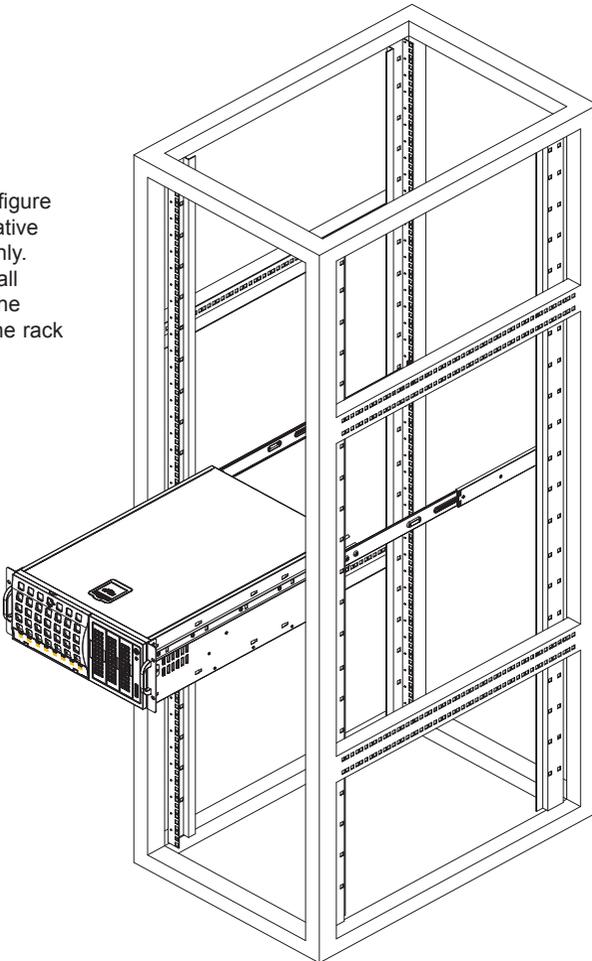
## Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. You should have two brackets in the rack mount kit. Install these first keeping in mind that they are left/right specific (marked with "L" and "R"). Then, line up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting).

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack (see Figure 2-4).

**Figure 2-4. Installing the Server into a Rack**

**Note:** This figure is for illustrative purposes only. Always install servers to the bottom of the rack first.



## 2-6 Checking the Serverboard Setup

After setting up the the system, open the unit to make sure the serverboard is properly installed and all the connections have been made.

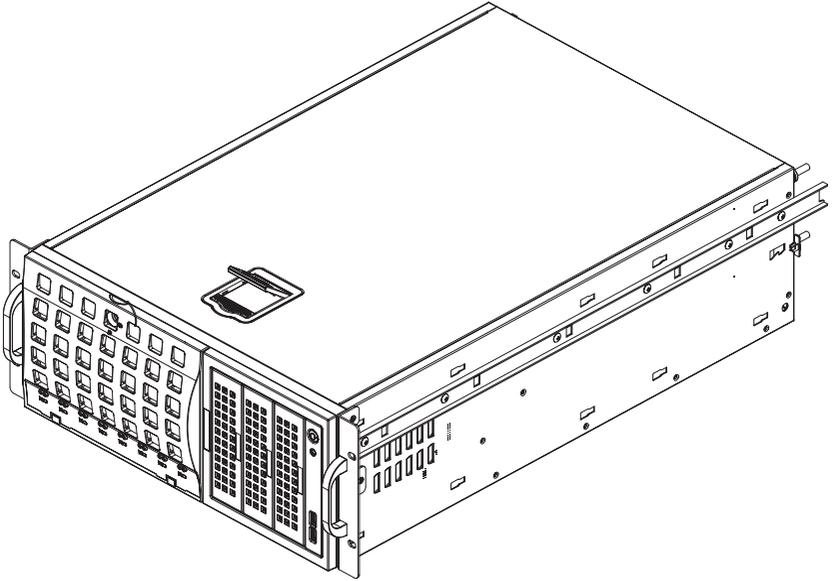
### ***Accessing the Inside of the System***

1. If rack mounted, first release the screws that secure the unit to the rack.
2. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
3. There are two screws that secure the cover to the chassis - remove these first.
4. Locate the latch on the top (side if tower) of the chassis - depress where it says "push" then lift the latch to release the cover.
5. Lift the cover from the chassis to gain full access to the inside of the server. See Figure 2-5.

### ***Checking the Components and Setup***

- You may have one or two processors already installed into the serverboard. Each processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.
- Your server may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.
- If desired, you can install extension cards to the system. See Chapters 5 and 6 for details on installing PCI extension cards.
- Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections.

**Figure 2-5. Accessing the Inside of the System  
(Rack Configuration shown)**



## 2-7 Checking the Drive Bay Setup

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

### ***Checking the Drives***

- All drives can be accessed from the front of the server. Servicing drives in the peripheral drive bays requires removing the chassis cover. The SAS/SATA hard drives can be installed and removed from the front of the chassis without removing any chassis covers.
- To install components into the 5.25" drive bays, such as a DVD drive, refer to Chapter 6 for instructions.
- Your system may have one or more hard disk drives already installed. To install hard drives, refer to Chapter 6.

### ***Checking the Airflow***

- Airflow is provided by three hot-swap 8-cm chassis fans working in conjunction with an air shroud. Two additional 8-cm exhaust fans are also mounted at the rear of the chassis. The system component layout was carefully designed to promote sufficient airflow through the chassis.
- Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans. Keep this in mind when you reroute them after working on the system.

### ***Supplying Power to the System***

Lastly, power up the system.

1. Plug the power cords from the power supplies unit into a high-quality power strip that offers protection from electrical noise and power surges. An uninterruptible power supply (UPS) is recommended.
2. Depress the power button on the control panel on the front of the chassis.

# Chapter 3

## System Interface

### 3-1 Overview

The chassis includes:

- A control panel on the front that houses power buttons and status monitoring lights
- Status lights on externally accessible hard drives
- Status lights for the power supply visible from the back of the chassis

These elements are described in this chapter with possible responses.

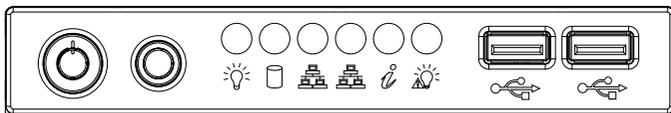


Figure 3-1. Control Panel

## 3-2 Control Panel Buttons

The chassis includes two push-buttons that control power to the system.

### RESET



**Reset:** The reset button is used to reboot the system.



**Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.

## 3-3 Control Panel LEDs

LEDs provide status information about the system.



**Information LED:** Alerts operator of several states, as noted in the table below.

Information LED	
Status	Description
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue	Remote UID is on. Use this function to identify the server from a remote location.



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



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



**HDD:** Indicates IDE channel activity on the hard drive when flashing.



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

## Overheating

There are several possible responses if the system overheats.

### Overheat Temperature Setting

Some backplanes allow the overheat temperature to be set at 45, 50, or 55 by changing a jumper setting. For more information, consult the backplane user manual at [www.supermicro.com](http://www.supermicro.com). (Click Support, then the Manuals link.)

### Responses

#### *If the server overheats:*

1. Use the LEDs to determine the nature of the overheating condition.
2. Confirm that the chassis covers are installed properly.
3. Check the routing of the cables and make sure all fans are present and operating normally.
4. Verify that the heatsinks are installed properly.

### 3-4 Drive Carrier LEDs

The chassis includes externally accessible SAS/SATA drives. Each drive carrier displays two status LEDs on the front of the carrier.

- **Green:** When illuminated, this LED indicates drive activity. It blinks on and off when that particular drive is being accessed. This function is controlled by the backplane.
- **Red:** When illuminated, this LED indicates a drive failure. You should be notified by your system management software.

### 3-5 Power Supply LEDs

On the rear of the power supply module, an LED displays the status.

- **Solid Green:** When illuminated, indicates that the power supply is on.
- **Solid Amber:** When illuminated, indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.
- **Blinking Amber:** When blinking, this system power supply temperature has reached 63C. The system will automatically power-down when the power supply temperature reaches 70C and restarts when the power supply temperature goes below 60C.

## Chapter 4

# Standardized Warning Statements for AC Systems

### 4-1 About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our web site at [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm).

#### Warning Definition



#### Warning!

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

#### 警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危險。

您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

此警告符號代表危險。

您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

## Warnung

### WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

### INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES.

### IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS.

## **תקנת הצהרות אזהרה**

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.

יש לקרוא את הנספח במלוואו לפני התקנת או הגדרת הרכיבים במארוזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .  
قبل أن تعمل على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر  
الكهربائية  
وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث  
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

#### BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

## Installation Instructions



### Warning!

Read the installation instructions before connecting the system to the power source.

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前，请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!

Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention

Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

## Circuit Breaker



### Warning!

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

### 警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

### 警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于250V,20A。

### Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

### ¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

### Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :250 V, 20 A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250 V, 20 A

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في المبنى

تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 250V(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

#### Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 220V, 20A.

### Power Disconnection Warning



#### Warning!

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components.

#### 電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシ内部にアクセスするには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

#### 警告

在你打开机箱并安装或移除内部器件前，必须将系统完全断电，并移除电源线。

#### 警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

#### Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du châssis pour installer ou enlever des composants de système.

**אזהרה!**

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

يجب فصل النظام من جميع مصادر الطاقة وإزالة سلك الكهرباء من وحدة امداد الطاقة قبل الوصول إلى المناطق الداخلية للهيكल لتثبيت أو إزالة مكونات الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 새시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

## Equipment Installation



### Warning!

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

### 機器の設置

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

### 警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

### 警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

### Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

### ¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

### Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

### אזהרה!

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

يجب أن يسمح فقط للموظفين المؤهلين والمدربين لتثبيت واستبدال أو خدمة هذا الجهاز

### 경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

## Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

## Restricted Area



### Warning!

This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

### アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

### 警告

此部件应安装在限制进出的场所，限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

### 警告

此裝置僅限安裝於進出管制區域，進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

## Warnung

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

## ¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

## Attention

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

## אזור עם גישה מוגבלת

### אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת כלי אבטחה בלבד (מפתח, מנעול וכד').

تم تخصيص هذه الوحدة لت تركيبها في مناطق محظورة .  
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،  
قفل ومفتاح أو أي وسيلة أخرى للأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어 있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

## Battery Handling



### Warning!

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告

電池更換不當會有爆炸危險。請只使用同類電池或製造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

Warnung

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

¡Advertencia!

Existe peligro de explosión si la batería se reemplaza de manera incorrecta. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

**אזהרה!**

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة استبدال البطارية بطريقة غير صحيحة فعليك استبدال البطارية فقط بنفس النوع أو ما يعادلها كما أوصت به الشركة المصنعة تخلص من البطاريات المستعملة وفقا لتعليمات الشركة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

## Redundant Power Supplies



### Warning!

This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

### 冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。  
ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

### 警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

### 警告

此装置连接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

### Warnung

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein Strom zugeführt wird, müssen alle Verbindungen entfernt werden.

### ¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

### Attention

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

**אם קיים יותר מספק אחד**

**אזהרה!**

ליחידה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة.  
يجب إزالة كافة الاتصالات لعزل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

### Backplane Voltage



**Warning!**

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際にはご注意ください。

警告

当系統正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有很危險的電壓或能量，進行維修時務必小心。

Warnung

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

## מתח בפנל האחורי

אזהרה!  
קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך  
העבודה.

هناك خطر من التيار الكهربائي أو الطاقة الموجودة على اللوحة  
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생  
합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het  
systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

## Comply with Local and National Electrical Codes



### Warning!

Installation of the equipment must comply with local and national electrical codes.

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalación del equipo debe cumplir con las normas de electricidad locales y  
nacionales.

Attention

L'équipement doit être installé conformément aux normes électriques nationales et locales.

**תיאום חוקי החשמל הארצי**

**אזהרה!**

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

**Product Disposal**



**Warning!**

Ultimate disposal of this product should be handled according to all national laws and regulations.

**製品の廃棄**

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

**警告**

本产品的废弃处理应根据所有国家的法律和规章进行。

**警告**

本產品的廢棄處理應根據所有國家的法律和規章進行。

**Warnung**

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

## סילוק המוצר

אזהרה!

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين واللوائح الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

## Hot Swap Fan Warning



### Warning!

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

ファン・ホットスワップの警告

シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告

当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇

**警告**

當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

**Warnung**

Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

**¡Advertencia!**

Los ventiladores podran dar vuelta cuando usted quite el montaje del ventilador del chasis. Mantenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

**Attention**

Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

**אזהרה!**

כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

من الممكن أن تترال المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

**경고!**

새시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

**Waarschuwing**

Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

## Power Cable and AC Adapter



### Warning!

When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices than products designated by Supermicro only.

### 電源コードとACアダプター

製品を設置する場合、提供または指定された接続ケーブル、電源コードとACアダプターを使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSEマークがコードに表記)をSupermicroが指定する製品以外に使用することを禁止しています。

### 警告

安装此产品时,请使用本身提供的或指定的连接线,电源线和电源适配器.使用其它线材或适配器可能会引起故障或火灾.除了Supermicro所指定的产品,电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。(线材上会显示UL/CSA符号)。

### 警告

安装此產品時,請使用本身提供的或指定的連接線,電源線和電源適配器.使用其它線材或適配器可能會引起故障或火災.除了Supermicro所指定的產品,電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。(線材上會顯示UL/CSA符號)。

### Warnung

Bei der Installation des Produkts, die zur Verfügung gestellten oder benannt Anschlusskabel, Stromkabel und Netzteile. Verwendung anderer Kabel und Adapter kann zu einer Fehlfunktion oder ein Brand entstehen. Elektrische Geräte und Material Safety Law verbietet die Verwendung von UL-oder CSA-zertifizierte Kabel, UL oder CSA auf der Code für alle anderen elektrischen Geräte als Produkte von Supermicro nur bezeichnet gezeigt haben.

### ¡Advertencia!

Al instalar el producto, utilice los cables de conexión previstos o designados, los cables y adaptadores de CA. La utilización de otros cables y adaptadores podría ocasionar un mal funcionamiento o un incendio. Aparatos Eléctricos y la Ley de Seguridad del Material prohíbe el uso de UL o CSA cables certificados que tienen UL o CSA se muestra en el código de otros dispositivos eléctricos que los productos designados por Supermicro solamente.

## Attention

Lors de l'installation du produit, utilisez les bables de connection fournis ou désigné. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et de loi sur la sécurité Matériel interdit l'utilisation de UL ou CSA cables certifiés qui ont UL ou CSA indiqué sur le code pour tous les autres appareils électriques que les produits désignés par Supermicro seulement.

## חשמליים ומתאמי AC

## !אזהרה

כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים AC אשר נועדו וסופקו לשם כך. שימוש בכל כבל או מתאם אחר יכול לגרום לתקלה או קצר חשמלי. על פי חוקי שימוש במכשירי חשמל וחוקי בטיחות, קיים איסור להשתמש בכבלים המוסמכים ב- UL או ב- CSA (כשאר מופיע עליהם קוד של UL/CSA) עבור כל מוצר חשמלי אחר שלא צויין על ידי סופרמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية ومحولات التيار المتردد التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro (التي تحمل علامة UL/CSA)

## 경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, AC 어댑터를 사용해야 합니다. 그 밖의 다른 케이블들이나 어댑터들은 고장 또는 화재의 원인이 될 수 있습니다. 전기용품안전법 (Electrical Appliance and Material Safety Law)은 슈퍼마이크로에서 지정한 제품들 외에는 그 밖의 다른 전기 장치들을 위한 UL 또는 CSA에서 인증한 케이블(전선 위에 UL/CSA가 표시)들의 사용을 금지합니다.

## Waarschuwing

Bij het installeren van het product, gebruik de meegeleverde of aangewezen kabels, stroomkabels en adapters. Het gebruik van andere kabels en adapters kan leiden tot een storing of een brand. Elektrisch apparaat en veiligheidsinformatiebladen wet verbiedt het gebruik van UL of CSA gecertificeerde kabels die UL of CSA die op de code voor andere elektrische apparaten dan de producten die door Supermicro alleen.

## Notes

## Chapter 5

### Advanced Serverboard Setup

This chapter covers the steps required to install the H8DG6-F serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

#### 5-1 Handling the Serverboard

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

##### Precautions

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

## Unpacking

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

## 5-2 Serverboard Installation

This section explains the first step of physically mounting the H8DG6-F into the SC745TQ-920B chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

### *Installing to the Chassis*

1. Access the inside of the system by removing the screws from the back lip of the top cover of the chassis, then pull the cover off.
2. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.
3. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.
4. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.
5. Finish by replacing the top cover of the chassis.

**Note:** To avoid damaging the motherboard and its components, do not apply any force greater than 8 inch-lbs. of torque when installing a screw into a mounting hole.

## 5-3 Connecting Cables

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

### Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-12 for connector locations.)

- SAS drive data cables (SAS0 ~ SAS7)
- SATA DVD drive cable (SATA0)
- Control Panel cable (JF1)
- USB cable for front side access (USB2/3)

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

### Connecting Power Cables

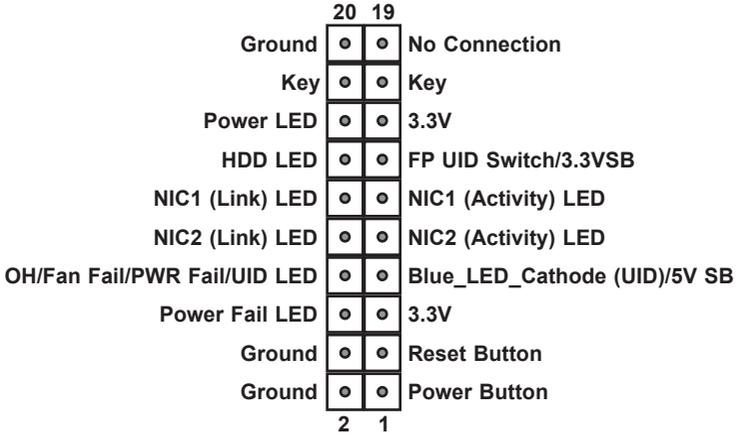
The H8DG6-F has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there are two 8-pin 12V processor power connectors (JPW2 and JPW3) that must be connected to your power supply. See Section 5-9 for power connector pin definitions.

### Connecting the Control Panel

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

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

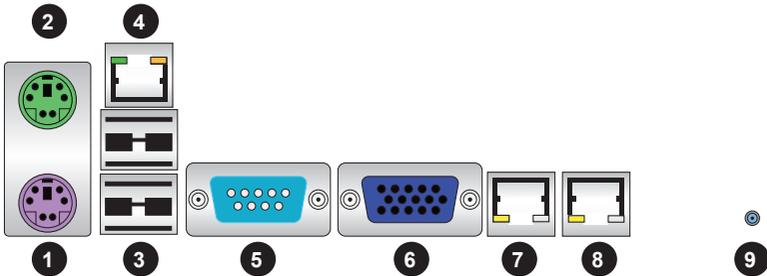
Figure 5-1. Control Panel Header Pins



## 5-4 I/O Ports

The I/O ports are color coded. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



Rear I/O Ports	
1. Keyboard	6. VGA Port
2. PS/2 Mouse	7. LAN1
3. USB0/1	8. LAN2
4. IPMI LAN	9. UID
5. COM1	

## 5-5 Installing the Processor and Heatsink

When handling the processor package, avoid placing direct pressure on the label area of the fan.

### 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 Processors*

1. Begin by removing the cover plate that protects the CPU. Lift the lever on the CPU socket until it points straight up.
2. With the lever raised, lift open the silver CPU retention plate.



3. Use your thumb and your index finger to hold the CPU. Locate and align pin 1 of the CPU socket with pin 1 of the CPU. Both are marked with a triangle.
4. Align pin 1 of the CPU with pin 1 of the socket. Once aligned, carefully place the CPU into the socket. *Do not drop the CPU on the socket, move the CPU horizontally or vertically or rub the CPU against the socket or against any pins of the socket, which may damage the CPU and/or the socket.*
5. With the CPU inserted into the socket, inspect the four corners of the CPU to make sure that it is properly installed and flush with the socket. Then, gently lower the silver CPU retention plate into place.
6. Carefully press the CPU socket lever down until it locks into its retention tab. For a dual-CPU system, repeat these steps to install another CPU into the CPU#2 socket (and into CPU#2, #3 and #4 sockets for a quad-CPU configuration).



Triangle

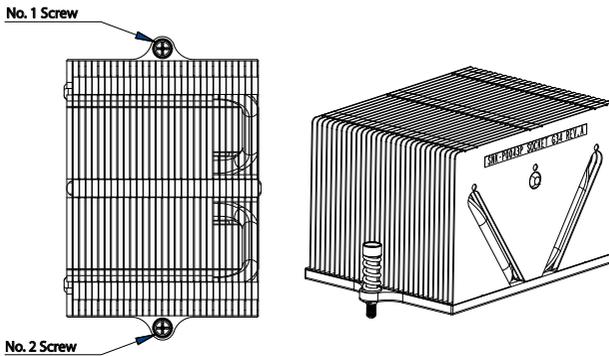


**Note:** in single and dual-CPU configurations, memory must be installed in the DIMM slots associated with the installed CPU(s). Memory is limited to a maximum of 128 for single CPU and 256 GB for dual CPU configurations.

## Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.
2. Place the heatsink directly on top of the CPU so that the heat sink screws are aligned with the mounting holes on the back plate.
3. Make sure the screwdriver torque setting is no more than 5.0 Kgf-cm (4.3 lbf-in) and keep the heat sink direction vertical.
4. Tighten each screw a few turns at a time while alternating between the two until fully tightened.

Figure 5-3. SNK-0043P Heatsink



### Removing the Heatsink

**Warning:** We do not recommend removing the CPU or the heatsink. However, if you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unscrew the heatsink screws from the motherboard a few turns at a time, alternating between the two until the screws can be removed.
2. Gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)
3. Once the CPU is loose, remove the it from the CPU socket.
4. Clean the surface of the CPU and the heatsink, removing the used thermal grease. Reapply the proper amount of thermal grease on the surface before re-installing the CPU and the heatsink.

## 5-6 Installing Memory

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

### *Installing Memory*

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see Figure 2-1).
2. Install to slots CPU1/DIMM1A, CPU1/DIMM2A, CPU1/DIMM3A and CPU1/DIMM4A, etc. Always install in groups of four and in the numerical order of the DIMM slots. See support information below.
3. Gently press down on the memory module until it snaps into place.
4. With four CPUs installed, repeat step 2 to populate the CPU2 DIMM slots. Always install four DIMMs to both CPU DIMM slots for more efficient operation.

**Note:** 1 GB, 2 GB, 4 GB, 8 GB, 16 GB or 32 GB size memory modules are supported. It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the H8DG6-F serverboard.

### **Memory Support**

The H8DG6-F serverboard supports single/dual/tri/quad channel, DDR3-1600/1333/1066 Mhz speed registered ECC/Unbuffered ECC/non-ECC SDRAM.

Populating four adjacent slots at a time with memory modules of the same size and type will result in interleaved (128-bit) memory, which is faster than non-interleaved (64-bit) memory.

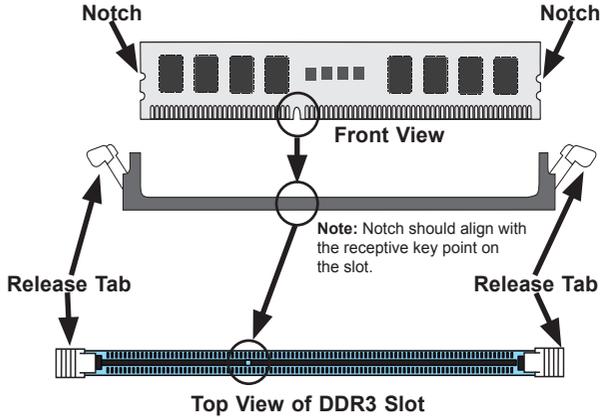
### **Maximum Memory**

The H8DG6-F serverboard supports a maximum of up to 128 GB of ECC/Non-ECC UDIMM or 512 GB of ECC RDIMM in sixteen (16) DIMM slots.

Figure 5-4. Installing DIMM into Slot

**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.



Memory Population for Optimal Performance -For a Motherboard with One CPU (CPU1) Installed									
# DIMMS	CPU	Channel 1		Channel 2		Channel 3		Channel 4	
4 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
8 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B

Memory Population for Optimal Performance -For a Motherboard with Two CPUs (CPU1 & CPU2) Installed									
# DIMMS	CPU	Channel 1		Channel 2		Channel 3		Channel 4	
8 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
	CPU2	P2-1A		P2-2A		P2-3A		P2-4A	
16 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B
	CPU2	P2-1A	P2-1B	P2-2A	P2-2B	P2-3A	P2-3B	P2-4A	P2-4B

## DIMM Module Population Configuration

For memory to work properly, follow the tables below for memory installation:

Per Channel DIMM Populations Options					
DIMM Type	DIMM A	DIMM B	Max. MHz, 1.5V DIMMs	Max. MHz, 1.35V DIMMs	Max. GB/ Channel
Unbuffered DIMM	SR or DR	Empty	1600 MHz	1333 MHz	8 GB
	SR	SR	1600 MHz		8 GB
	DR	DR	1333 MHz		16 GB
Registered DIMM	SR or DR	Empty	1600 MHz	1333 MHz	16 GB
	SR	SR	1600 MHz		16 GB
	DR	DR	1600 MHz		32 GB
	QR	Empty	1333 MHz	1066 MHz	32 GB
	QR	QR	1066 MHz	800 MHz	64 GB
LRDIMM	QR	Empty		1333 MHz	32 GB
	QR	QR		1333 MHz	64 GB

**Note 1:** Due to OS limitations, some operating systems may not show more than 4 GB of memory.

**Note 2:** 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.

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

## 5-7 Adding PCI Extension Cards

The 4022G-6F can accommodate six full-sized PCI-E extension cards.

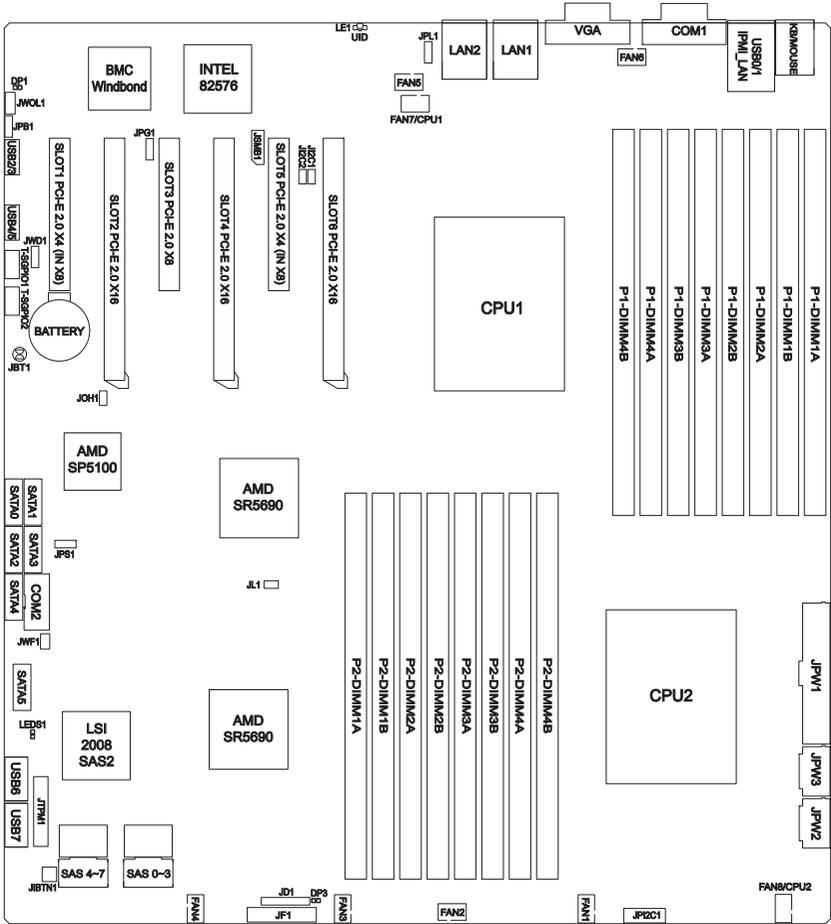
### *Installing an Extension Card*

1. Begin by removing the shield for the PCI slot you wish to populate.
2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card.
3. Secure the top of the card shield to the chassis. The PCI slot shields protect the serverboard and its components from EMI and aids in proper ventilation, so a shield should cover each unused slot.

See Chapter 6 for more detail on the installation procedure.

## 5-8 Serverboard Details

Figure 5-5. H8DG6-F Layout  
(not drawn to scale)



**Note:** jumpers not indicated are for test purposes only and should not have their settings changed.

## H8DG6-F Quick Reference

<b>Jumper</b>	<b>Description</b>	<b>Default Setting</b>
JBT1	CMOS Clear	(See Section 5-10)
J12C1/J12C2	I2C to PCI-E Slot Enable/Disable	Both Open (Disabled)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN 1 Enable/Disable	Pins 1-2 (Enabled)
JPS1	SAS Controller Enable/Disable	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (Reset)

<b>LED</b>	<b>Description</b>
LAN Ports	LEDs for the LAN Ethernet ports
Dedicated IPMI LAN	LEDs for the dedicated IPMI LAN Ethernet port (H8DGi/6-F only)
DP1	LED for BMC Heartbeat
DP3	LED for Serverboard Power-On
LE1	LED for UID Button
LEDS1	SAS2008 Heartbeat LED

<b>Connector</b>	<b>Description</b>
COM1/COM2	COM1 Serial Port/Header
FAN 1-8	Chassis/CPU Fan Headers
IPMI LAN	Dedicated IPMI LAN Port (H8DGi/6-F only)
JD1	Speaker Header
JF1	Front Panel Connector
JIBTN1	RAIDKey for RAID 5 SAS support (optional for H8DG6(-F) only)
JL1	Chassis Intruder Header
JOH1	Overheat Warning Header
JPI2C1	Power I <sup>2</sup> C Header
JPW1	24-pin Main ATX Power Connector
JPW2/3	+12V 8-pin CPU Power Connectors
JTPM1	Trusted Platform Module Header
JSMB1	System Management Bus Header (SMBus)
JWF1	SATA DOM (Disk_On_Module) PWR
JWOL1	Wake-On-LAN Header
LAN1/2	Gigabit Ethernet (RJ45) Ports
PS2 Mouse/Keyboard	PS2 Mouse/Keyboard connectors
SAS0~3, SAS4~7	SAS Ports (H8DG6(-F) only)
SATA0 ~ SATA5	SATA Ports
T-SGPIO1/T-SGPIO2	Serial General Purpose Input/Output Header for SATA
USB0/1, USB2/3, USB4/5, USB6/7	Universal Serial Bus (USB) Ports, Headers and Type-A Ports
VGA	VGA Connector

## 5-9 Connector Definitions

### Power Connectors

A 24-pin main power supply connector (JPW1) and two 8-pin CPU PWR connectors (JPW2/JPW3) on the motherboard. These power connectors meet the SSI EPS 12V specification. In addition to the 24-pin ATX power connector, the 12V 8-pin CPU PWR connector at JPW2 and JPW3 must also be connected to your power supply. See the table on the right for pin definitions.

**Warning:** To prevent damage to the power supply or motherboard, please use a power supply that contains both a 24-pin and 8-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the two 8-pin (JPW2/JPW3) power connectors on the motherboard. Failure in doing so will void the manufacturer warranty on your power supply and motherboard.

### Power Button

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

### Reset Connector

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

ATX Power 24-pin Connector Pin Definitions			
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 PWR Connector Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

#### Required Connection

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

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

### Power Fail LED

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

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	3.3V
6	PWR Fail LED

### HDD/FP UID Switch

The HDD/UID Switch connections are located on pins 7/8 of JF1. Attach a hard-drive LED cable to display HDD or SATA activities. This connection can also be used as a front panel UID (Unit Identifier) switch. The UID LED on Pin 7 of JF1 works in conjunction with this UID Switch. When the user presses and releases the UID switch, the UID LED will be turned on or off to indicate the location of the unit. (Refer to Page 2-11 for more details.)

HDD/UID Switch Pin Definitions (JF1)	
Pin#	Definition
7	UID Signal/3.3V
8	HDD Active

### Overheat (OH)/Fan Fail/PWR Fail/UID LED

Connect an LED cable to pins 13 and 14 of JF1 to use the Overheat/Fan Fail/Power Fail and UID LED connections. The Red LED on pin 14 provides warnings of an overheat, fan failure or power failure. The Blue LED on pin 13 works as the UID LED indicator for the front panel UID switch located on pins 8 of JF1. When Jumper J\_UID\_OW is set to off (default), the Red LED takes precedence over the Blue LED. (See Page 2-19 for details.) Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_UID LEDPin Definitions (JF1)	
Pin#	Definition
13	Blue_LED-Cathode (UID)/5.5V.SB
14	OH/Fan Fail/PWR Fail/UID LED (Red)

OH/Fan Fail/PWR Fail LED Status (Red LED)	
State	Indication
Off	Normal
On	Overheat
Flashing	Fan Fail

### Power LED Connector

The Power LED connector is on pins 15 and 16 of JF1. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	PW_ON
16	Ground

## Serial Ports

The COM1 serial port is located beside the VGA port. Refer to the motherboard layout for the location of the COM2 header. See the table on the right for pin definitions.

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

**Note:** NC indicates no connection.

## Fan Headers

This motherboard has eight fan headers (Fan1 to Fan8). These 4-pin fans headers are backward compatible with 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by the BIOS. See the table on the right for pin definitions

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

## Power LED/Speaker

On the JD1 header, pins 1~3 are used for power LED indication, and pins 4~7 are for the speaker. See the tables on the right for pin definitions. If you wish to use the onboard speaker, you should close pins 6~7 with a jumper. Connect a cable to pins 4~7 of JD1 to use an external speaker.

PWR LED Connector Pin Definitions	
Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

Speaker Connector Pin Definitions	
Pin Setting	Definition
Pins 4~7	External Speaker
Pins 6~7	Internal Speaker

## Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)	
Pin#	Definition
1	Battery voltage
2	Intrusion signal

**Overheat LED**

Connect an LED to the JOH1 header to provide warning of chassis overheating. See the table on the right for pin definitions.

<b>Overheat LED Pin Definitions (JOH1)</b>	
Pin#	Definition
1	3.3V
2	OH Active

**Power SMB (I<sup>2</sup>C) Connector**

The Power System Management Bus (I<sup>2</sup>C) connector (JPI2C1) monitors the power supply, fan and system temperatures. See the table on the right for pin definitions.

<b>Power SMB Pin Definitions (JPI2C1)</b>	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	+3.3V

**Trusted Platform Module Header**

This header is used to connect a Trusted Platform Module (TPM), available separately from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives, disallowing access if the TPM associated with it is not installed in the system. See the table on the right for pin definitions.

<b>Trusted Platform Module Header Pin Definitions (JTPM1)</b>			
Pin#	Definition	Pin#	Definition
1	LCLK	2	GND
3	LFRAME	4	No Pin
5	LRESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	RSV0	14	RSV1
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN
19	LPCPD	20	RSV2

**JSMB1**

A System Management Bus header for the IPMI slot is located at IPMB for the H8DG6-F/H8DGi-F serverboards. Connect the appropriate cable here to use the IPMB I<sup>2</sup>C connection on your system.

<b>JSMB1 Pin Definitions</b>	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

### Wake-On-LAN

The Wake-On-LAN header is designated JWOL1. See the table on the right for pin definitions. You must have a LAN card with a Wake-On-LAN connector and cable to use the Wake-On-LAN feature.

Wake-On-LAN Pin Definitions (JWOL1)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

### LAN1/2 (Ethernet Ports)

Two Gigabit Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port. Additionally, for the H8DG6/i-F serverboards, there is a dedicated LAN for IPMI on top of the two rear USB ports. These Ethernet ports accept RJ45 type cables.



### ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse are located next to the Back Panel USB Ports 0/1 on the motherboard. See the table at right for pin definitions.

PS/2 Keyboard/Mouse Pin Definitions			
PS2 Keyboard		PS2 Mouse	
Pin#	Definition	Pin#	Definition
1	KB Data	1	Mouse Data
2	No Connection	2	No Connection
3	Ground	3	Ground
4	Mouse/KB VCC (+5V)	4	Mouse/KB VCC (+5V)
5	KB Clock	5	Mouse Clock
6	No Connection	6	No Connection

VCC: with 1.5A PTC (current limit)

### DOM Power Connector

A power connector for SATA DOM (Disk\_On\_Module) is located at JWF1. Connect the appropriate cable here to provide power support for your DOM devices.

DOM PWR Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground

## SGPIO

The T-SGPIO1/ T-SGPIO2 (Serial General Purpose Input/Output) headers provide a bus between the SATA controller and the backplane to provide SATA enclosure management functions. Connect the appropriate cable from the backplane to the T-SGPIO1 header to utilize SATA management functions on your system.

### SGPIO Header Pin Definitions (T-SGPIO1/T-SGPIO2)

Pin#	Definition	Pin #	Definition
1	NC	2	Data
3	Ground	4	Data
5	Load	6	Ground
7	CLK	8	NC

**Note:** NC indicates no connection.

## Unit Identifier Button

There is a Unit Identifier (UID) button on the rear I/O of the board. There is also another UID button located on the control panel. When you push either UID button, both Rear UID and Front Panel UID Indicators will illuminate. Push either button again to turn off both indicators. These UID indicators provide easy identification of a system unit that may be in need of service.

### UID Button Pin Definitions

Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground

## Universal Serial Bus Ports

Two Universal Serial Bus ports (USB 2.0) are located beside the Keyboard and Mouse PS2 ports (USB0/1). Two additional Type A ports (USB6/7) are also included on the motherboard. See the table on the right for pin definitions.

### Universal Serial Bus Ports Pin Definitions (USB 0/1, USB6/7)

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground

## USB Headers

Four USB 2.0 headers (USB2/3 and USB4/5) are also included on the motherboard. These may be connected to provide front side access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

### Universal Serial Bus Headers Pin Definitions (USB2/3, USB4/5)

JUSB2, JUSB3			
Pin #	Definition	Pin #	Definition
1	+5V	2	+5V
3	PO-	4	PO-
5	PO+	6	PO+
7	Ground	8	Ground
9	Key	10	NC

**Note:** NC indicates no connection.

### **Video Connector**

A Video (VGA) connector is located below the COM Port on the IO backplane. This connector is used to provide video and CRT display.

### **JIBTN1 Header**

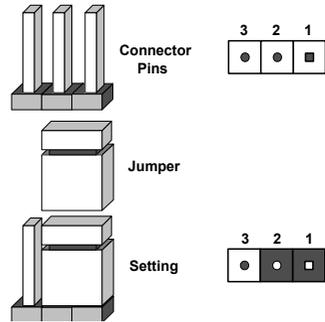
A RAIDKey header (only available on H8DG6/H8DG6-F serverboards), located at JIBTN1, provides RAID function support in order to use RAID 5 SAS support.

## 5-10 Jumper Settings

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

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



### CMOS Clear

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). It is also recommended that you remove the onboard battery from the serverboard.
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 1.** For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

**Note 2.** Be sure to remove the onboard CMOS Battery before you short JBT1 to clear CMOS.

**Note 3.** Clearing CMOS will also clear all passwords.

**Note 4:** Do not use the PW\_ON connector to clear CMOS.

**LAN Enable/Disable**

Change the setting of jumper JPL1 to enable or disable the LAN1/2 Ethernet ports. See the table on the right for jumper settings. The default setting is enabled.

<b>LAN Jumper Settings (JPL1)</b>	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

**SAS Enable/Disable**

JPS1 allows you to enable or disable the SAS controller on the H8DG6/H8DG6-F serverboards. The default position is on pins 1 and 2 to enable SAS. See the table on the right for jumper settings.

<b>SAS Enable/Disable Jumper Settings (JPS1)</b>	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

**VGA Enable/Disable**

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

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

**I2C to PCI-Express Slot**

J12C1/J12C2 allows you to enable the I<sup>2</sup>C bus to communicate with the PCI-Express slot. For the jumpers to work properly, please set both jumpers to the same setting. If enabled, both jumpers must be enabled. If disabled, both jumpers must be disabled. See the table on the right for jumper settings.

<b>I<sup>2</sup>C to PCI-Express Slot Jumper Settings (J12C1/J12C2)</b>	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

**BMC Jumper**

JPB1 is used to enable or disable the BMC (Baseboard Management Control) Chip and the onboard IPMI connection. This jumper is used together with the IPMI settings in the BIOS. The default position is on pins 1 and 2 to Enable BMC. See the table on the right for jumper settings.

<b>BMC Jumper Enable (JPB1) Jumper Settings</b>	
Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

### Watch Dog Enable/Disable

JWD1 enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings (JWD1)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

**Note:** When Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

### USB Wake-Up

JUSB2 jumper allows you to "wake up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. These jumpers are used in conjunction with the USB Wake-Up function in the BIOS. See the table on the right for jumper settings and jumper connections. (the default is Enabled)

Backpanel USB Wake-Up Enable (JUSB2) Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

## 5-11 Onboard Indicators

### LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb LAN port, one LED blinks to indicate activity while the other 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.

LAN LED (Connection Speed Indicator)	
LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

### Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is also included on the H8DG6-F/H8DGi-F serverboards. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table at right for more information.

IPMI LAN Link LED (Left) & Activity LED (Right)		
Color	Status	Definition
Green: Solid	Link (Left)	100 Mb/s
Amber Blinking	Activity (Right)	Active

**BMC Heartbeat LED**

A BMC (Baseboard Management Control) Heartbeat LED is located at DP1 on the motherboard. When DP1 is on, the BMC Controller functions normally. See the tables at right for more information.

<b>BMC Heartbeat (DP1) LED Settings</b>		
Color	Status	Definition
Green	Blinking	BMC: Normal
Off	Off	Not functioning normally

**Power LED**

DP3 is an Onboard Power LED. When this LED is lit, it means power is present on the serverboard. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

<b>Power LED (DP3)</b>	
State	System Status
On	Standby power present on motherboard
Off	No power connected

**SAS2008 Heartbeat LED**

The LEDS1 SAS2008 Heartbeat LED on the H8DG6/H8DG6-F serverboards shows SAS2 activity on the serverboard. See the table to the right for information on this LED.

<b>SAS2008 Heartbeat LED (LEDS1)</b>	
State	System Status
Blinking	SAS Controller is Active
Off	SAS Connector Inactive

**UID LED (LE1)**

A rear UID LED Indicator, located at LE1, works in conjunction with the rear UID switch to provide easy identification for a unit that might be in need of service. Refer to Page 2-13 for further UID details.

## 5-12 SAS and SATA Drive Connections

### SATA Ports

There are no jumpers to configure the SATA ports, which are designated SATA0 through SATA5. See the table on the right for pin definitions.

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

### SAS Ports

There are eight SAS ports that are included only on the H8DG6/H8DG6-F motherboards. See the table on the right for pin definitions.

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

SAS Ports Pin Definitions (SAS0 ~ SAS7)			
Pin#	Definition	Pin #	Definition
1	Ground	2	TXP
3	TXN	4	Ground
5	RXN	6	RXP
7	Ground		

## 5-13 Enabling SATA RAID

Now that the hardware is set up, you must install the operating system and the SATA RAID drivers, if you wish to use RAID with your SATA drives. The installation procedure differs depending on whether you wish to have the operating system installed on a RAID array or on a separate non-RAID drive. See the instructions below for details.

### Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that employs a single cable with a minimum of four wires to create a point-to-point connection between devices. This connection is a serial link that supports a SATA transfer rate from 150 MBps. The serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA) and can extend up to one meter in length, compared to only 40 cm for PATA cables. Overall, SATA provides better functionality than PATA.

### Installing the OS/SATA Driver

Before installing the OS (operating system) and SATA RAID driver, you must decide if you wish to have the operating system installed as part of a bootable RAID array or installed to a separate non-RAID hard drive. If on a separate drive, you may install the driver either during or after the OS installation. If you wish to have the OS on a SATA RAID array, you must follow the procedure below and install the driver during the OS installation.

### *Building a Driver Diskette*

You must first build a driver diskette from Supermicro drivers for your system. Drivers can be found at <ftp://ftp.supermicro.com>. (You will have to create this disk on a computer that is already running and with the OS installed.)

**Note:** Window's Vista, Windows 2008 or later Windows OS systems can use a USB stick instead of a floppy. For older systems, you must have an external USB floppy when building the driver diskette.

### *Building a Driver Diskette*

1. Install your system drives from the FTP website. A display as shown in Figure 5-9 will appear.
2. Click on the icon labeled "Build Driver Diskettes and Manuals" and follow the instructions to create a floppy disk with the drivers on it.
3. Once it's been created, remove the floppy and insert the installation CD for the Windows Operating System you wish to install into the CD-ROM drive of the new system you are about to configure.

## Enabling SATA RAID in the BIOS

Before installing the Windows operating system, you must change some settings in the BIOS. Boot up the system and hit the <Delete> key to enter the BIOS Setup Utility. After the setup utility loads,

1. Use the arrow keys to move to the "Exit" menu. Scroll down using the arrow keys to "Load Optimal Defaults" and press <Enter>. Select "OK" to confirm, then <Enter> to load the default settings.
2. Use the arrow keys to move to the "Advanced" menu, then scroll down to "IDE configuration". On this submenu, scroll down to "OnChip SATA Type" and choose the "RAID" option (Figure 5-6). "RAID Codebase" submenu appears. This setting allows you to select the codebase for your RAID setup. Options are either Adaptec or DotHill.

Figure 5-6. BIOS Setup Screen



3. Press the <Esc> key twice and scroll to the "Exit" menu. Select "Save Changes and Exit" and press <Enter>, then press <Enter> again to verify.
4. After exiting the BIOS Setup Utility, the system reboots. When prompted during the startup, to use the DotHill RAID Utility program press <CTRL+R> (Figure 5-7), or to use the Adaptec RAID Utility program press <CTRL+A> (Figure 5-8).

Figure 5-7. DotHill RAID Utility Program Screen

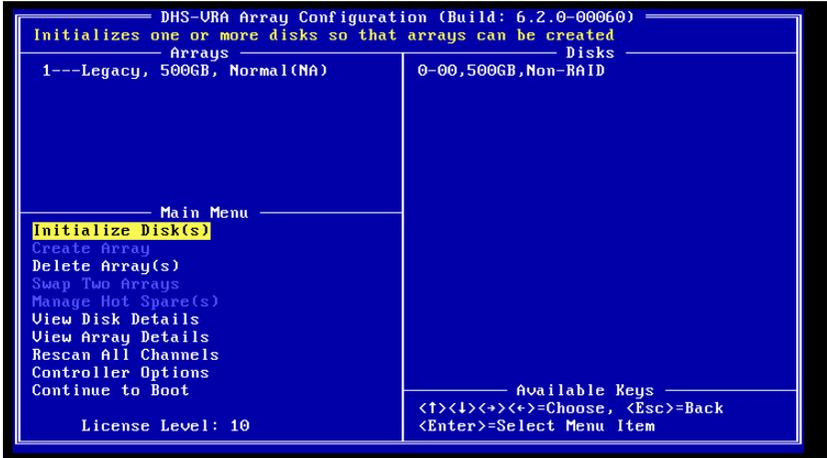
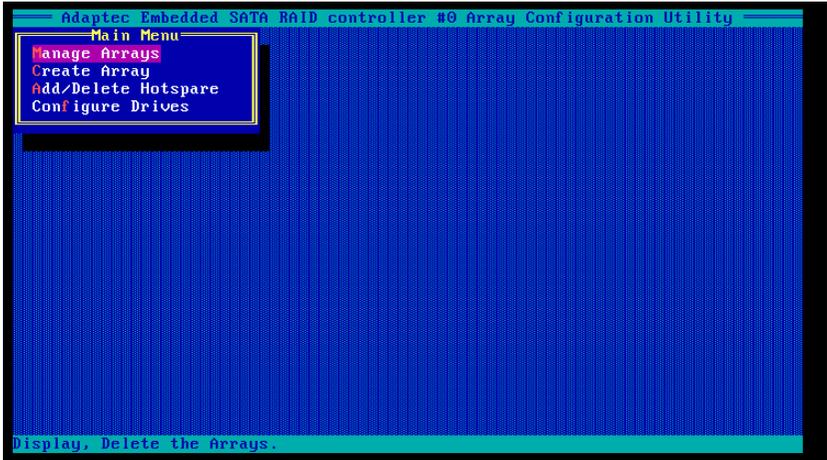


Figure 5-8. Adaptec RAID Utility Program Screen



## Using the DotHill and Adaptec RAID Utility

The RAID Utility program allows you to define the drives you want to include in the RAID array and the mode and type of RAID.

## Installing the RAID Driver During OS Installation

You may also use the procedure below to install the RAID driver during the Windows OS installation:

1. With the Windows OS installation CD-ROM in the CD drive, restart the system.
2. Press <Enter> again to continue with the Windows setup.
3. When you see the prompt, hit the <F6> key to enter Windows setup.
4. Eventually a blue screen will appear with a message that begins "Windows could not determine the type of one or more storage devices . . ." When you see the screen, hit the <S> key to "Specify Additional Device", then insert the driver diskette you just created into the floppy drive.
5. Highlight "Manufacturer Supplied Hardware Support Disk" and hit the <Enter> key.
6. Highlight the first "Adaptec RAID" driver shown and press the <Enter> key to install it.

## 5-14 Installing Software

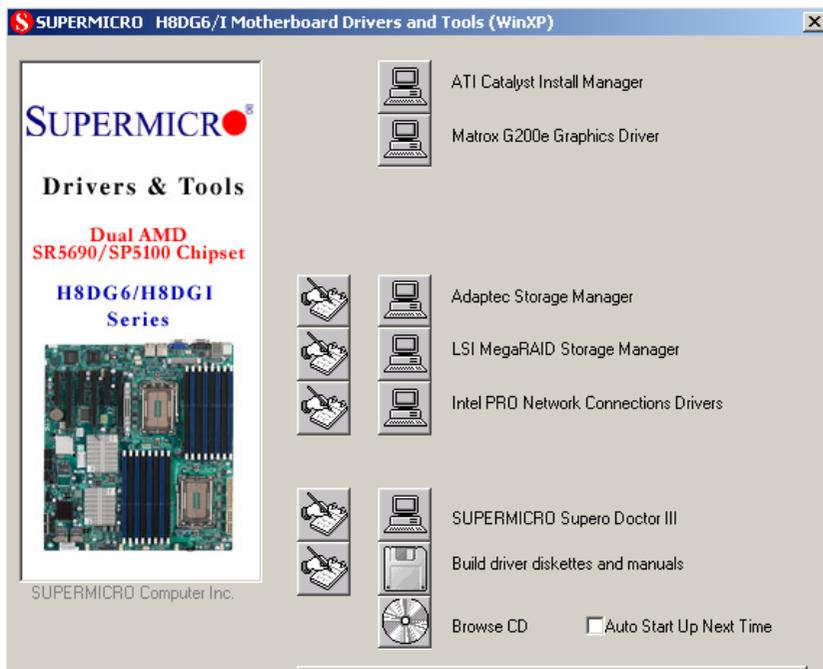
The Supermicro ftp site contains drivers and utilities for your system at <ftp://ftp.supermicro.com>. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR\_Images directory and locate the ISO file for your motherboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at <http://www.supermicro.com/products/>. Find the product page for your motherboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-9 should appear.

Figure 5-9. Driver/Tool Installation Display Screen



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

### SuperDoctor III

The SuperDoctor® III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program 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 figures below for examples of the SuperDoctor III interface.

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

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

Figure 5-10. SuperDoctor III Interface Display Screen (Health Information)



Figure 5-11. SuperDoctor III Interface Display Screen (Remote Control)

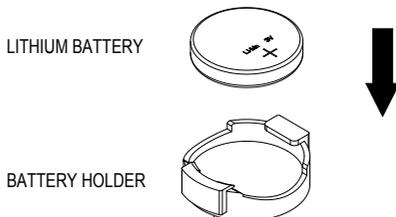


**Note:** The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at <http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm>. For Linux, we recommend that you use the SuperDoctor II application instead.

## 5-15 Serverboard Battery

**Caution:** There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 5-12). 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.

**Figure 5-12. 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.

## Notes

## Chapter 6

# Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC745TQ-920B chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows. Refer to Chapter 2 for instructions on installing the system as a 4U rackmount.

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

### 6-1 Static-Sensitive Devices

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

#### Precautions

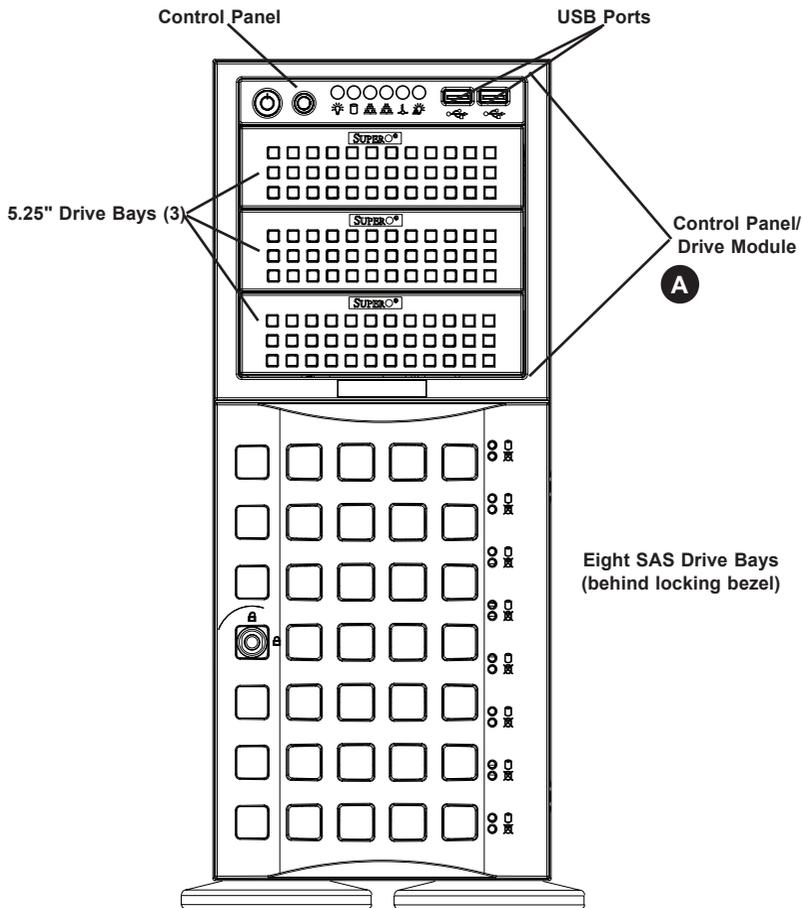
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid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

---

Figure 6-1. Chassis Front View



## 6-2 Front Control Panel

The front control panel LEDs help monitor the system status. See Chapter 3 for details on the LEDs and buttons.

The control panel connects to the JF1 connector on the serverboard to provide system status indications. The red wire in the ribbon cable plugs into pin 1 on both connectors. Details on JF1 can be found in Chapter 5. Pull all excess cable out of the airflow path.

### Control Panel Orientation

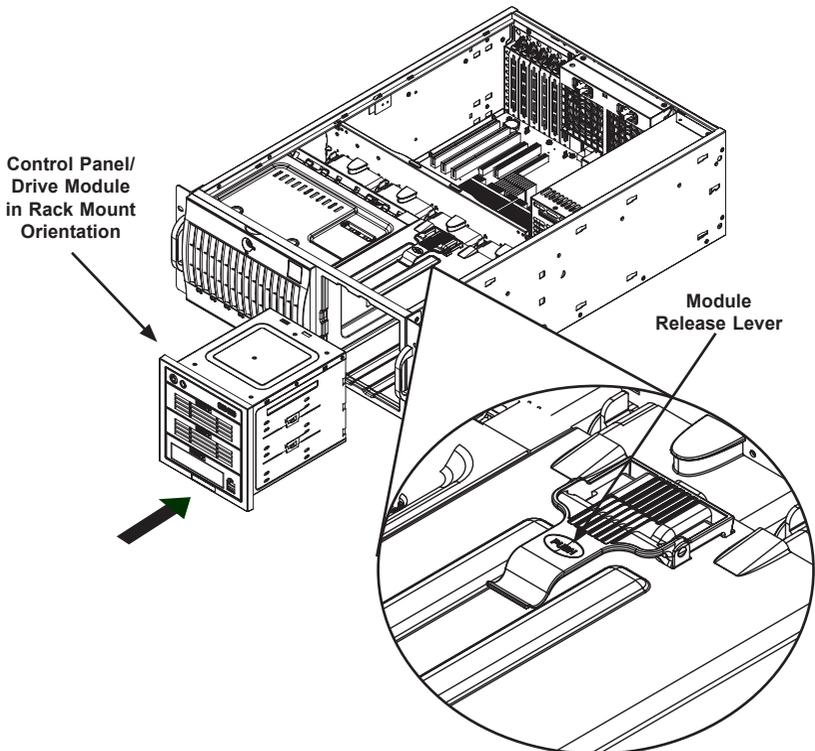
The server can be configured for either tower or server rack orientation. It is shipped in tower mode and can be immediately used as desktop server. To use it in a rack, rotate the module that contains the control panel and the three drive trays (marked as 'A' in Figure 6-1) 90 degrees.

### ***Rotating the Control Panel/Drive Module for Rack Mounting***

1. Open the chassis cover.
2. Locate the control panel/drive module and disconnect any cables from the module to any component in the chassis.
3. Push the module release lever to unlock the module. (Figure 6-2)
4. Grasp the external edges of the module and pull the unit from the chassis.
5. Rotate the module 90 degrees so that the control panel is on top.
6. Reinsert the module into the chassis and reconnect the cables.

**Caution:** Use caution when working around the backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

**Figure 6-2. Rotating the Control Panel/Drive Module**



## 6-3 Configuring Drives

The default configuration includes three full size drive trays for removable media drives or hard disk drives, and a storage module with eight hard disk drives.

### Configuring the 5.25" Drive Bays

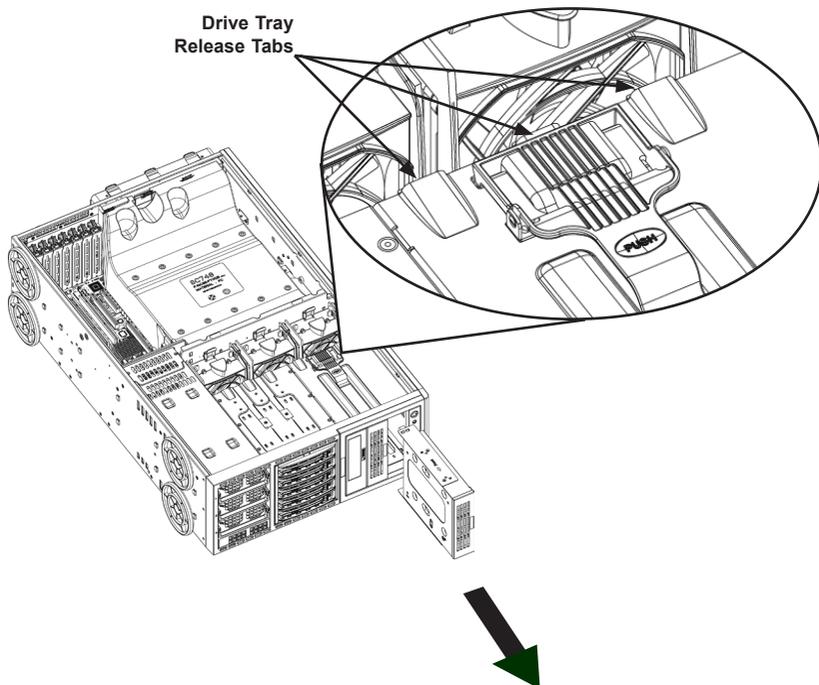
The control panel/drive module includes three 5.25" drive bays under the front control panel. It can be set up in a variety of configurations to suit the user's needs.

- Three peripheral drives, such as CD, DVD, or floppy
- Additional fixed hard drives in an individual bay
- A combination of the above
- A mobile rack with five additional 3.5" hot-swappable hard drives

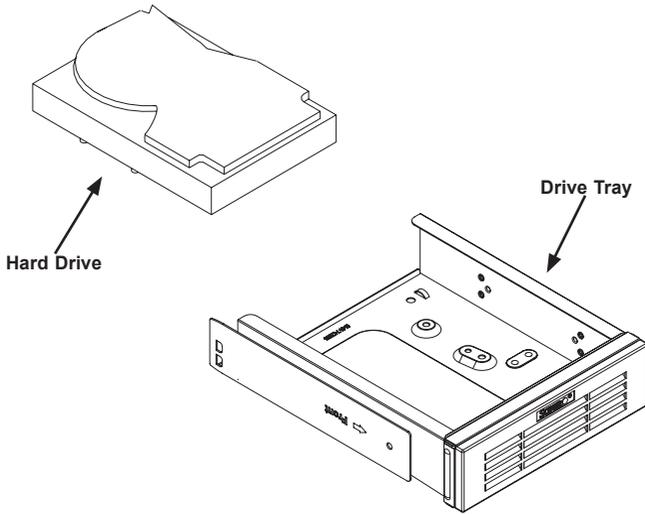
#### *Installing a Hard Drive into a Drive Tray*

1. Open the chassis cover.
2. Locate the drive tray and pull the tray release tab for the slot.
3. Push the drive tray toward the front of the chassis (Figure 6-3).

**Figure 6-3. Remove Drive Tray**



**Figure 6-4. Add a Hard Drive to the Drive Tray**



1. Place the hard drive in the drive tray. The hard drive may not completely fill the tray (Figure 6-5).
2. Secure the hard drive to the tray with four screws from the bottom.
3. Slide the drive tray into the chassis until the tray clicks into place.

**Note:** Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at <http://www.supermicro.com/products/info/files/storage/SAS-CompList.pdf>

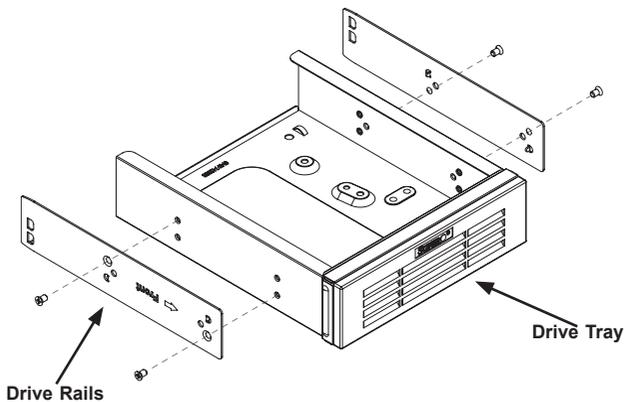
**Caution:** When the server is operating, all the drive trays should remain in the drive bays to maintain proper cooling airflow.

### Adding Peripheral Drives to the Drive Bays

Replace a drive tray with a peripheral drive.

1. Open the chassis cover.
2. Locate the release tab for the drive tray where you want to place the peripheral drive (Figure 6-4).
3. Push the drive tray toward the front of the chassis.

**Figure 6-5. Removing Rails from the Drive Tray**



4. Remove the rails from the drive tray by removing two screws from each side. (Figure 6-5)
5. Attach the rails to a DVD drive, CD drive, floppy drive, or other peripheral. The rails should fit any standard sized peripheral.
6. Slide the drive into the chassis until it clicks into place.

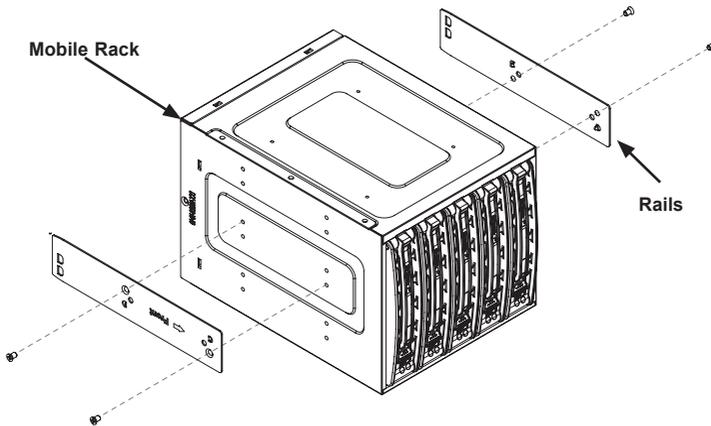
## Additional Hard Drives

The SC745 chassis accepts a CSE-M35BP Supermicro mobile rack in place of the three bays just under the control panel. This configuration yields a total of thirteen hot-swap hard drives and no peripheral drives.

### *Installing the M35 Mobile Rack*

1. Open the chassis cover.
2. Press the drive tray release tabs (Figure 6-5).
3. Push all three drive trays forward and out of the chassis

**Figure 6-6. Add Rails to the Mobile Rack**  
(Two shown as an example; install six.)



4. Remove the six drive tray rails (Figure 6-6).
5. Install all six rails onto the mobile rack. Each rail requires two screws. Make sure the arrow on the rail points toward the front of the chassis (Figure 6-6).
6. Slide the mobile rack into the chassis.

## SAS/SATA Drives

A total of eight SAS or SATA drives may be housed in the SC745 chassis. The drive IDs are preconfigured as 0 through 7 in order from bottom to top (or from left to right if rackmounted). A bezel covers the drive area but does not need to be removed to access the drives; simply swing open the bezel. If you wish to remove the bezel piece, push on the three tabs on the inside of the left lip of the front chassis cover. Then slightly swing out the same (left) side of the cover – about ½ inch only. Remove by pushing on the open side of the cover to remove it from the chassis (do not try to swing or pull it straight out after opening the left side).

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These drives are hot-swappable, meaning they can be removed and installed without powering down the system. The carriers also work to promote proper airflow for the system. For this reason, even carriers without drives must remain in the server.

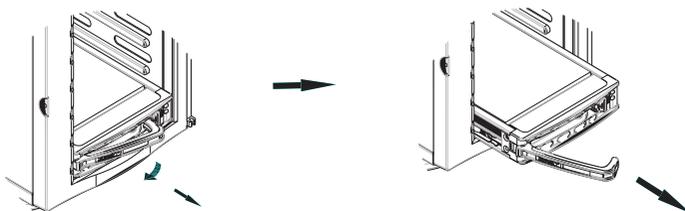
**Note:** Your operating system must have RAID support to enable the hot-swap capability of the drives.

**Note:** Enterprise level hard disk drives are recommended. For information on recommended HDDs, visit the Supermicro Web site at <http://www.supermicro.com/products/nfo/storage.cfm>.

### Removing a SAS/SATA Drive

1. To remove a carrier, first open the front bezel.
2. Push the release button located beside the drive LEDs.
3. Swing the handle fully out and then use it to pull the unit straight out.

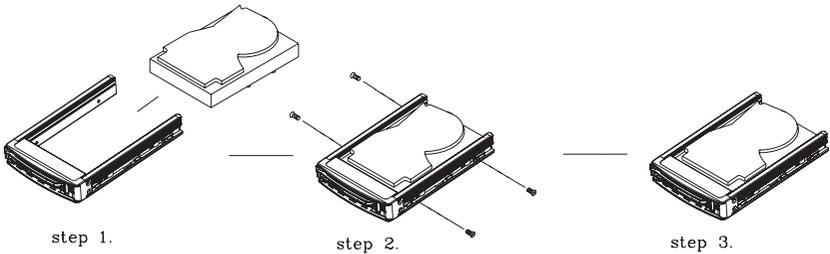
**Figure 6-7. Removing a Drive Carrier**



### **Mounting a SAS/SATA Drive in a Drive Carrier**

1. Insert the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.
2. Secure the drive to the carrier with four screws.

**Figure 6-8. Mounting a Drive in a Carrier**



**Caution:** Use caution when working around the SAS/SATA backplane. Do not touch the backplane with any metal objects and make sure no cables touch the backplane or obstruct the airflow holes.

### **SAS/SATA Backplane**

The SAS/SATA drives plug into a backplane. Two cables must be connected from the serverboard to the appropriate connectors on the backplane to support eight SAS or SATA drives. You cannot cascade the backplane.

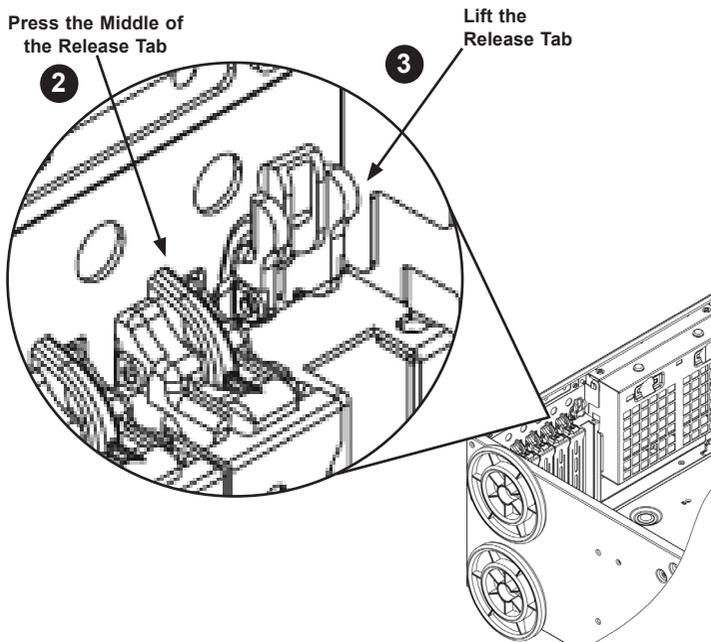
## 6-4 Expansion Card Setup

After motherboard installation, you can install PCI-E expansion cards.

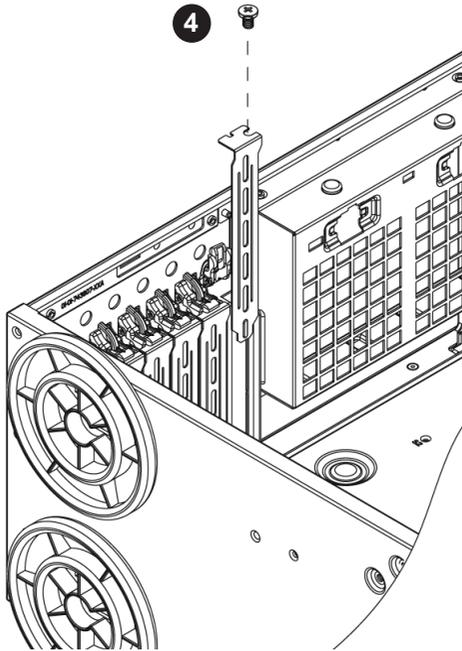
### *Installing Expansion Cards*

1. Locate the release tab on the top of the PCI shield.
2. Gently apply pressure in the middle of the release tab to unlock the PCI Slot shielded.
3. Pull the release tab upward (Figure 6-9).

**Figure 6-9. Expansion Card Port**



**Figure 6-10. Remove PCI Card Slot Shield**



4. Remove the screw holding the shield in place and pull the bracket from the chassis (Figure 6-10).
5. Install your PCI expansion card. Push the card into the serverboard expansion slot while aligning the card shield with the PCI slot opening in the rear of the chassis.
6. Push the release tab down until it locks into place with an audible click.
7. Secure the PCI shield with the screw previously removed from the chassis.

## 6-6 System Fans

Three 8-cm chassis cooling fans located in the center of the chassis provide cooling airflow while two 8-cm exhaust fans expel hot air from the chassis. The chassis is also fitted with an air shroud to concentrate the flow of cooling air over the areas of highest generated heat. The fans should all be connected to headers on the serverboard (see Chapter 5). Each power supply module also has a cooling fan.

Under normal operation, all three chassis fans, both exhaust fans and the power supply fans run continuously. The chassis fans and the exhaust fans are hot-swappable and can be replaced without powering down the system.

### ***Replacing Chassis Cooling Fans***

1. First, remove the top/left chassis cover (see Chapter 2 for details on removing the cover) to locate the fan that has stopped working.
2. Depress the locking tab on the failed fan: on a chassis fan, push the tab on the side of the housing inward, on the exhaust fan push down on the colored tab. With the tab depressed, pull the unit straight out (see Figure 6-11). The wiring for these fans has been designed to detach automatically.
3. Replace the failed fan with an identical one. Install it in the same position and orientation as the one you removed; it should click into place when fully inserted. Check that the fan is working then replace the top/left side chassis panel.

### ***Removing the Air Shroud***

Under most circumstances you will not need to remove the air shroud to perform any service on the system. However, if you wish to temporarily remove it (the air shroud should always be in place when the system is operating), please follow this procedure.

1. Begin by depressing the tabs at the front and rear of the shroud to unlock it.
2. Lift the air shroud up and out of the chassis (see Figure 6-12).
3. To reinstall, simply position the air shroud in its proper place and push it in until you hear it click.

Figure 6-11. Removing a Chassis Fan

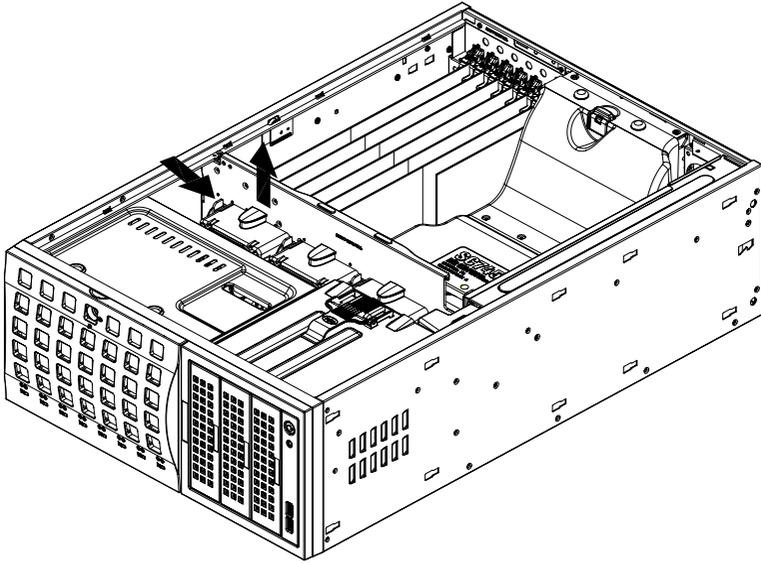
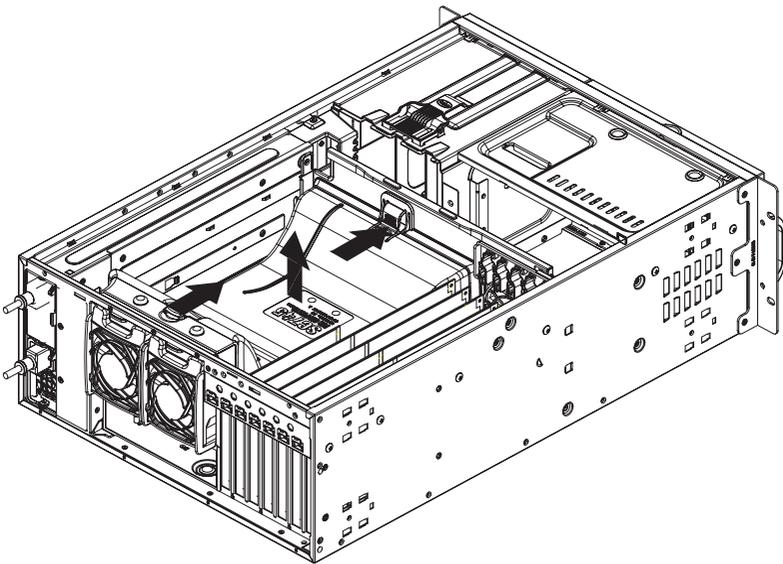


Figure 6-12. Removing the Air Shroud



## 6-7 Power Supply

The A+ Server 4022G-6F has a single 920 watt power supply module. The power supply has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage. An amber light is illuminated on the power supply when the power is off. A green light indicates that the power supply is operating.

A second, identical power supply module may be installed to provide redundant power. With redundant power, the system does not need to be shut down when replacing a failed power supply module.

If necessary, replace the power supply unit with an identical model which may be ordered directly from Supermicro.

### ***Replacing the Power Supply***

1. If necessary, power down the system.
2. Unplug the AC power cord from the power supply module.
3. Remove the screws that secure the module to the chassis then pull it completely out.
4. Replace the failed unit with another unit of the exact same part number (see Appendix C).
5. Gently but firmly push the new unit all the way into the open bay.
6. Secure it to the chassis using the screws you previously removed.
7. Finish by replacing the chassis cover, plugging in the AC power cord, and powering up.

## Notes

## Chapter 7

# BIOS

### 7-1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the H8DG6-F serverboard. The 16 Mb AMI BIOS® is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our web site for any changes to BIOS that may not be reflected in this manual.

#### Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the 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 screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. 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 that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ►" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

## 7-2 Main Menu

When you first enter AMI BIOS Setup Utility, you will see the Main Menu screen. You can always return to the Main Menu by selecting the **Main** tab on the top of the screen with the arrow keys.

The Main Menu screen provides you with a system overview, which includes the version, built date and ID of the AMIBIOS, the type, speed and number of the processors in the system and the amount of memory installed in the system.

### System Time/System Date

You can edit this field to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in DAY/MM/DD/YYYY format. The time is entered in HH:MM:SS format. Please note that time is in a 24-hour format. For example, 5:30 A.M. appears as 05:30:00 and 5:30 P.M. as 17:30:00.

## 7-3 Advanced Settings Menu

### ► Boot Feature

#### Quick Boot

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

#### Quiet Boot

If Disabled, normal POST messages will be displayed on boot-up. If **Enabled**, this display the OEM logo instead of POST messages.

#### Add On ROM Display Mode

This option sets the display mode for Option ROM. The options are **Force BIOS** or Keep Current.

#### Bootup Num Lock

This option selects the power-on state for the NUM lock to either **On** or Off.

#### PS/2 Mouse Support

Use this option to select support for the PS/2 mouse. Options are Disabled, Enabled or **Auto**.

**Wait for F1 if Error**

This setting controls the system response when an error is detected during the boot sequence. When enabled, BIOS will stop the boot sequence when an error is detected, at which point you will need to press the F1 button to re-enter the BIOS setup menu. The options are **Enabled** and Disabled.

**Hit 'DEL' Message Display**

Use this option to **Enable** or Disable the "Press DEL to run setup" message in POST.

**Interrupt 19 Capture**

Select Enabled to allow ROMs to trap Interrupt 19. The options are **Enabled** and Disabled.

**Watch Dog Function**

Allows system to restart when system is inactive more than 5-minutes. The options are Enabled and **Disabled**.

**Power Button Function**

This sets the function of the power button when you turn off the system. Options include 4-second Override and **Instant Off**.

**Restore on AC Power Loss**

This sets the action that occurs when an AC power loss occurs. Options include Power Off, Power On and **Last State**.

**► Processor and Clock Options****CPU Configuration**

This displays static information on the Module Version, Physical Count and Logical Count for the system's processor(s) and clock.

**CPU Information**

The information for the installed processor includes Revision, Cache L1/L2/L3, Speed, NB CLK, Able to Change Frequency and uCode Patch Level.

**GART Error Reporting**

This option should remain disabled for normal operation. The driver developer may enable this option for testing purposes. Options are Enabled or **Disabled**.

### **Microcode Update**

This setting **Enables** or Disables microcode updating.

### **Secure Virtual Machine Mode**

This setting is used to **Enable** or Disable SVM.

### **Power Now**

This setting is used to **Enable** or Disable the AMD Power Now feature.

### **Power Cap**

This option can decide the highest P-state in the OS. Options include **P-state 0** through P-state 4.

### **CPU Down Core Mode**

This option sets down core support for the CPU. Options include **Disabled**, 1 Core through  $n$  Cores in odd numbered increments. The value  $n$  is depend on the core per CPU node.

### **C1E Support**

This option specifies C1E support. Options include **Enabled** and Disabled.

### **Clock Speed Spectrum**

This option enables or **disables** spread spectrum modulation.

## **► Advanced Chipset Control**

### **Chipset Version Information**

The top of the Advanced Chipset Settings screen contains static version information for the installed chipsets on the serverboard.

## **► NorthBridge Configuration**

### **► Memory Configuration**

#### **Bank Interleaving**

Select Auto to automatically enable a bank-interleaving memory scheme when this function is supported by the processor. The options are **Auto** and Disabled.

**Node Interleaving**

This option enables node memory interleaving. Options include Auto or **Disabled**.

**Channel Interleaving**

This option enables channel memory interleaving. Options include **Auto** or Disabled.

**CS Sparing**

This setting will reserve a spare memory rank in each node when enabled. Options are Enabled and **Disabled**.

**Bank Swizzle Mode**

This setting **Enables** or Disables the bank swizzle mode.

**► ECC Configuration****ECC Mode**

This submenu affects the DRAM scrub rate based on its setting. Options include Disabled, **Basic**, Good, Super, Max and User. Selecting User activates the other options for user setting.

**DRAM ECC Enable**

This setting allows hardware to report and correct memory errors automatically, maintaining system integrity. Options are **Enabled** or Disabled. This option is only active if ECC Mode above is set to *User*.

**► DRAM Timing Configuration****DRAM Timing Config**

This option allows you to set the DRAM timing configuration for the system. Options include **Auto** or Manual.

**IOMMU**

This setting is used to enable or disable or set the GART size in systems without AGP. Options include Enabled and **Disabled**.

### **Memory Timing Parameters**

This selects the which node's timing parameters to display. The only selection for this option is CPU Node 0.

### **Clock Speed Information**

Clock speed information for memory is displayed under this Northbridge Chipset Configuration page. This information includes Memory CLK, CAS Latency (Tcl), RAS/CAS Delay (Trcd), Row Precharge Time (Trp), Min Active RAS (Tras), RAS/RAS Delay (Trrd), Row Cycle (Trc), Read to Precharge (Trtp), Write Recover Time (Twr) and Memory Type.

## **► NorthBridge Configuration**

### **OHCI/EHCI HC Device Functions**

These settings allow you to either **Enable** or Disable functions for OHCI or EHCI bus devices.

### **USB 2.0 Controller Mode**

Use this setting to configure the USB 2.0 Controller in either Hi-Speed (480 Mps) or Full Speed (12 Mps) mode. Options include **Enabled** (Hi-Speed Mode) or Disabled (Full Speed Mode).

### **Legacy USB Support**

Select "Enabled" to enable the support for USB Legacy. Disable Legacy support if there are no USB devices installed in the system. "Auto" disabled Legacy support if no USB devices are connected. The options are Disabled, Enabled and **Auto**.

## **► IDE Configuration**

### **Onboard PCI IDE Controller**

This setting allows you to **Enable** or Disable the PCI IDE controller.

### **OnChip SATA Channel**

This setting allows you to **Enable** or Disable the OnChip SATA channel.

### **OnChip SATA Type**

Use this setting to set the OnChip SATA type. Options include **Native IDE**, RAID, AMD\_AHCI and Legacy IDE.

### **RAID Codebase**

This submenu appears when you choose "RAID" from the "OnChip SATA Type" setting above. This setting allows you to select the codebase for your RAID setup. Options are either Adaptec or **DotHill**.

### **SATA IDE Combined Mode**

This setting allows you to **Enable** or Disable the SATA IDE combined mode.

### **PATA Channel Configuration**

This allows you to set PATA channel configuration. Options include **SATA as Primary** or SATA as secondary.

## **► Primary/Secondary/Third/Fourth IDE Master/Slave**

### **LBA/Large Mode**

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are Disabled and **Auto**.

### **Block (Multi-Sector Transfer)**

Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.

Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allow the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

### **PIO Mode**

PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined. Select 0 to allow BIOS to use PIO mode 0, which has a data transfer rate of 3.3 MBs. Select 1 to allow BIOS to use PIO mode 1, which has a data transfer rate of 5.2 MBs. Select 2 to allow BIOS to use PIO mode 2, which has a data transfer rate of 8.3 MBs. Select 3 to allow BIOS to use PIO mode 3, which has a data transfer rate of 11.1 MBs. Select 4 to allow BIOS to use PIO mode 4, which has a data transfer rate of 16.6 MBs. This setting

generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

### **DMA Mode**

Selects the DMA Mode. Options are **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MDWDMA1, MWDMA2, UDMA0, UDMA1, UDMA2, UDMA3, UDMA4 and UDMA5. (SWDMA=Single Word DMA, MWDMA=Multi Word DMA, UDMA=UltraDMA.)

### **S.M.A.R.T.**

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

### **32-Bit Data Transfer**

Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to deactivate the function. The options are **Enabled** and Disabled.

### **IDE Detect Timeout (Sec)**

Use the +/- keys to adjust and select the time out for detecting ATA/ATAPI devices. The default value is **35**.

## **► PCI/PnP Configuration**

### **Clear NVRAM**

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

### **Plug & Play O/S**

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

### **PCI Latency Timer**

This option sets the latency of all PCI devices on the PCI bus. Select a value to set the PCI latency in PCI clock cycles. Options are 32, **64**, 96, 128, 160, 192, 224 and 248.

**PCI IDE Busmaster**

Use this setting to **Enable** or Disable BIOS enabled uses of PCI Busmastering for reading or writing to IDE drives.

**ROM Scan Ordering**

This setting determines which kind of option ROM activates prior to another. Options include **Onboard First** and Addon First.

**PCIe x4 Slot 1/PCIe x16 Slot 2/PCIe x8 Slot 3/PCIe x16 Slot 4/PCIe x4 Slot 5/PCIe x16 Slot 6**

These settings **Enable** or Disable the specified PCIe slot in your system.

**Onboard LAN Option ROM Select**

This setting allows you to select the onboard LAN option ROM for iSCSI or **PXE**.

**Note:** You must enable **ONLY** LAN1 when the iSCSI support option is specified.

**Load Onboard LAN 1 Option ROM**

This option allows you to **Enable** or Disable the onboard LAN 1 option ROM.

**Load Onboard LAN 2 Option ROM**

This option allows you to Enable or **Disable** the onboard LAN 2 option ROM.

**Boots Graphic Adapter Priority**

This option specifies the priority for the graphic adapter for either Onboard VGA or **Offboard VGA**.

**► SuperIO Device Configuration****Serial 1 Address**

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

**Serial 2 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 2. Select "Disabled" to prevent the serial port from accessing any

system resources. When this option is set to "Disabled", the serial port physically becomes unavailable. Select "2F8/IRQ3" to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address. Options include Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2F8/IRQ3.

## ► Remote Access Configuration

### Remote Access

Use this option to **Enable** or Disable Remote Access in your system. If enabled, the settings below will appear.

### Serial Port Number

Use this setting to select the serial port for console redirection. Options include COM1, COM2 and **COM3\***. The displayed base address and IRQ for the serial port changes to reflect the selection you make.

**Note:** Make sure the selected port is enabled.

### Serial Port Mode

Selects the serial port settings to use. Options are (**115200 8, n, 1**), (57600 8, n, 1), (38400 8, n, 1), (19200 8, n, 1) and (09600 8, n, 1).

### Flow Control

Selects the flow control to be used for console redirection. Options are **None**, Hardware and Software.

### Redirection After BIOS POST

Options are Disable (no redirection after BIOS POST), Boot Loader (redirection during POST and during boot loader) and **Always** (redirection always active). Note that some OS's may not work with this set to Always.

### Terminal Type

Selects the type of the target terminal. Options are **ANSI**, VT100 and VT-UTF8.

### VT-UTF8 Combo Key Support

Allows you to **Enable** or Disable VT-UTF8 combination key support for ANSI/VT100 terminals.

### Sredir Memory Display Delay

Use this setting to set the delay in seconds to display memory information. Options are **No Delay**, 1 sec, 2 secs and 4 secs.

## ► Hardware Health Configuration

### CPU Overheat Alarm

This setting allows you to specify the type of alarm for CPU overheating. Options include The Early Alarm and **The Default Alarm**.

### Fan Speed Control Modes

This feature allows the user to determine how the system will control the speed of the onboard fans. The options are Full Speed/FS (Max Cooling), Performance/PF (Better Cooling), **Balanced/BL** (Balance between performance and energy saving), Energy Saving/ES (Lower Power and Noise).

Other items in the submenu are systems monitor displays for the following information:

CPU 1 Temperature, CPU 2 Temperature, NB Temperature, VRD 1 Temperature, VRD 2 Temperature, System Temperature, Air Temperature, Fan 1-8 Reading, CPU 1 VCore, CPU 2 VCore, CPU 1 Mem VTT, CPU 2 Mem VTT, CPU 1 Mem, CPU 2 Mem, 1.1V, 1.8V, 5V +12V, 3.3 Vcc, 3.3 VSB, VBAT and HT Voltage.

### *CPU Temperature Display (CTD)*

CPU Temperature descriptions are defined as:

Low → [Tctl Value = Lowest Value, Tctl Value = -45]

Medium → [Tctl Value = -46, Tctl Value = 60]

High → [Tctl Value = -61 and Above]

Note: Only CPU temperature (Low, Medium, High) and system temperature (RT1) are required to be displayed in BIOS and in-system monitoring software. Other Motherboard components such as memory, chipset, SAS and 10Gb controllers, and others are not required to display temperatures. For debugging and testing purposes, BIOS and system monitoring software can show motherboard components' temperatures (such as memory, chipset, SAS and 10Gb controllers). However for SMC1 standard release version BIOS and system monitoring software, motherboard components' temperatures are NOT required to be displayed.

### *CPU Overheating Alarm (COA)*

CPU Overheating Alarm (COA) has “**Early Alarm**” and “**Default Alarm**” (default) options in the BIOS, and is required to be implemented in all fan speed control modes.

The **Early Alarm** is enabled when the Tctl value = 65, and is disabled when the Tctl value drops from 65 to 62.

The **Default Alarm** (default setting) is enabled when the Tctl value = 70, and is disabled when the Tctl value drops from 70 to 67.

When COA (either Early or Default Alarm) is *enabled*, the following actions are required to be executed:

- System overheating LED is required to be ON and to solid red.
- Onboard buzzer or speaker is required to be ON and to be a continuous sound.
- All system fans are required to be operated at full speed.
- System monitoring software (such as Super Doctor and IPMI if available) is required to report and record CPU overheating events in the event logs.

When COA (either Early or Default Alarm) is *disabled*, the following actions are required to be executed:

- System overheating LED is required to be OFF.
- Onboard buzzer or speaker is required to be OFF.
- All system fans are required to be returned to a normal, non-CPU-overheating LFSC condition.

Condition	When a CPU is overheating
Front Panel Overheating LED	On and Solid Red
Onboard Buzzer or Speaker	On and Continuous Sound
System Fan Speed Controls	Full Speed
BMC	Report PROCHOT
BMC Event Log	Record PROCHOT
Super Doctor	Report PROCHOT
Super Doctor Event Log	Record PROCHOT

## ► ACPI Configuration

### PS2 KB/MS Wakeup

This setting allows you to Enable or **Disable** PS2 keyboard and mouse wakeup.

### ACPI Aware O/S

This setting Enables or Disables ACPI support for the system's operating system. Options include **Yes** (enabled) or No (disabled).

### **ACPI APIC Support**

Determines whether to include the ACPI APIC table pointer in the RSDT pointer list. The available options are **Enabled** and Disabled.

### **Headless Mode**

Use this setting to Enable or **Disable** headless operation mode through ACPI.

### **ACPI Version Features**

Use this setting to determine which ACPI version to use. Options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0.

### **NUMA Support**

This setting **Enables** or Disables the building of a ACPI SRAT table.

## **▶ Trusted Computing**

### **TCG/TPM Support**

This setting enables/disables TPM/TCG (TPM 1.1/1.2) support in BIOS. Options include **No** or Yes.

## **▶ IPMI Configuration**

This menu shows static information about the IPMI firmware revision and status of the BMC, as well as options for IPMI configuration.

### **▶ View BMC System Event Log**

Pressing the Enter key will open the following settings. Use the "+" and "-" keys to navigate through the system event log.

#### **Clear BMC System Event Log**

Selecting this and pressing the Enter key will clear the BMC system event log.

### **▶ Set LAN Configuration**

Use the "+" and "-" keys to choose the desired channel number. This displays Channel Number and Channel Number Status information.

This menu contains options for inputting settings for the SET LAN Configuration Command. See IPMI 1.5 Specification, table 11.1 for details. Use the "+" and "-" keys to choose the desired channel number.

**Note:** Each question in this group may take a considerable amount of time.

### **IP Address Source**

Select the source of this machine's IP address. If Static is selected, you will need to know and enter manually the IP address of this machine below. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network it is attached to, and request the next available IP address. The options are **DHCP** and Static.

The following items are assigned IP addresses automatically if DHCP is selected under IP Address Source above:

### **IP Address**

This submenu sets the IP address source as either Static or **DHCP**. Selecting Static allows you to manually set the IP Address, Subnet Mask and Gateway Address.

In the field provided here enter the IP address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The IP address and current IP address in the BMC are shown.

### **Subnet Mask**

In the field provided here enter the Subnet address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The current subnet address in the BMC is shown.

### **Gateway Address**

In the field provided here enter the Gateway address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The current Gateway address in the BMC is shown.

### **MAC Address**

In the field provided here enter the MAC address in the hex form of xx.xx.xx.xx.xx.xx with xx in hex form only. The current MAC address in the BMC is shown.

### **BMC Watch Dog Timer Action**

This setting is used to set the Watch Dog function, which allows the BMC to reset or powerdown the system if the OS crashes or hangs. Options include **Disabled**, Reset System, Power Down and Power Cycle.

## ► Event Log Configuration

### View Event Log

Pressing the Enter key will open the event log. Use the "↑" and "↓" keys to navigate through the system event log.

### Mark All Events as Read

Selecting this and pressing the Enter key marks all events as read in the event log.

### Clear Event Log

Selecting this and pressing the Enter key clears the system event log.

### SR56x0 (RD890S) PCIE Error Log

This setting allows you set an error log ofr PCIE errors. Options include Yes or No.

## 7-4 Security Menu

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

### Change Supervisor Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

### Change User Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

### Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When "Enabled", 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 Menu

The Boot Menu is accessible only when the "Load Onboard LAN Option ROM" setting (in the PCI/PnP Configuration menu) is enabled.

### ▶ Boot Device Priority

This feature allows you to prioritize the boot sequence from the list of available devices. A device that is in parenthesis has been disabled in the corresponding type menu.

### ▶ Removable Drives

This feature allows you to specify the boot sequence from the list of available Removable drives. A device that is in parenthesis has been disabled in the corresponding type menu.

### ▶ Hard Disk Drives

This feature allows you to specify the boot sequence from the list of available hard disk drives. A device that is in parenthesis has been disabled in the corresponding type menu.

### ▶ CD/DVD Drives

This feature allows you to specify the boot sequence from the list of available CD/DVD drives. A device that is in parenthesis has been disabled in the corresponding type menu.

### ▶ USB Drives

This feature allows you to specify the boot sequence from the list of available USB drives. A device that is in parenthesis has been disabled in the corresponding type menu.

### ▶ Network Drives

This feature allows you to specify the boot sequence from the list of available Network drives. A device that is in parenthesis has been disabled in the corresponding type menu.

### Retry Boot Devices

This option allows you to retry boot devices. Options include Enabled and **Disabled**.

## 7-6 Exit Menu

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

### **Save Changes and Exit**

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

### **Discard Changes and Exit**

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

### **Discard Changes**

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

### **Load Optimal Defaults**

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

### **Load Fail-Safe Defaults**

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

## Notes

## Appendix A

### BIOS POST Error 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 the boot-up process. The error messages normally appear on the screen.

**Fatal errors** are those which will not allow the system to continue the boot-up procedure. 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 (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

#### A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
1 long, 8 short	Video error	Video adapter disabled or missing

## Notes

## Appendix B

### Installing Windows 2003/XP

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at [www.supermicro.com/support/manuals](http://www.supermicro.com/support/manuals).



**Note:** The following OS installation instructions are written for the Windows XP/2003 OS only. If you have the Windows 2008 or Windows Vista OS, please follow the instructions displayed on your screen to install the OS.

#### B-1 Installing Windows for a RAID System

1. Insert Microsoft's Windows XP/2003/2008/Vista Setup CD in the CD drive and the system will start booting up from CD.
2. Press the <F6> key when the message "Press F6 if you need to install a third party RAID driver" displays.
3. When the Windows OS Setup screen appears, press "S" to specify additional device(s).
4. Insert the driver diskette "ITE RAID Windows XP/2003/2008/Vista Driver for IDE" into the floppy drive and press the <Enter> key.
5. When the Windows OS Setup screen appears, press "S" to specify additional device(s).
6. Insert the driver diskette into the drive and press the <Enter> key.
7. Choose the LSI SAS RAID driver indicated in the Windows OS Setup screen, and press the <Enter> key.
8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.
9. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then, continue the Windows OS installation.

10. After the Windows OS Installation is completed, the system will automatically reboot.

## **B-2 Installing Windows for a Non-RAID System**

1. Insert Microsoft's Windows OS Setup CD in the CD drive, and the system will start booting up from CD.
2. Continue with the OS installation. The Windows OS Setup screen will display.
3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows OS installation.
4. After the Windows OS Installation is completed, the system will automatically reboot.
5. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

# Appendix C

## System Specifications

### Processors

Dual AMD Opteron 6100 series processors

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

### Chipset

Dual SR5690 and one SP5100 chipsets

### BIOS

16 Mb AMIBIOS® SPI Flash ROM

### Memory Capacity

Sixteen (16) four channel DIMM slots support up to 128 GB of ECC/ Non-ECC UDIMM or up to 512 GB of ECC RDIMM DDR3-1333/1066 in 1 GB, 2 GB, 4 GB, 8 GB or 16 GB sizes of 1.5V or 1.35V voltages.

**Note:** Interleaved memory - requires memory must be installed four modules at a time. See Section 5-6 for details.

### SAS Controller

LSI 2008 SAS2 controller

### SATA Controller

On-chip (SP5100) 3 Gb/s Intel SATA controller

### Drive Bays

Eight hot-swap drive bays to house eight SAS or SATA drives

### Peripheral Drive Bays

Three 5.25" drive bays

## Expansion Slots

Six slots (three PCI Express 2.0 x16 slots, one PCI Express 2.0 x8 slot and two PCI Express 2.0 x4 (in x8 slot) slots)

## Serverboard

H8DG6-F (Extended ATX form factor)  
Dimensions: 12 x 13 in (305 x 330 mm)

## Chassis

SC745TQ-920B, tower/4U rackmount  
Dimensions (as tower): (WxHxD) 7 x 19 x 27 in. (178 x 483 x 686 mm)

## Weight

Gross (Bare Bone): 70 lbs. (31.8 kg.)

## System Cooling

Three (3) 8-cm system cooling fans  
Two (2) 8-cm rear exhaust fans  
One (1) air shroud

## System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range  
Rated Input Current: 13 - 4A max  
Rated Input Frequency: 50 to 60 Hz

## Power Supply

Rated Output Power: 920W (Part# PWS-920P-1R)  
Rated Output Voltages: +12V (75A), +5Vsb (4A)

## Operating Environment

Operating Temperature: 10° to 35° C (32° to 95° F)  
Non-operating Temperature: -40° to 70° C (-40° to 158° F)  
Operating Relative Humidity: 20% to 95% (non-condensing)  
Non-operating Relative Humidity: 5% to 95% (non-condensing)

## **Regulatory Compliance**

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

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

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

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

(continued from front)

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.