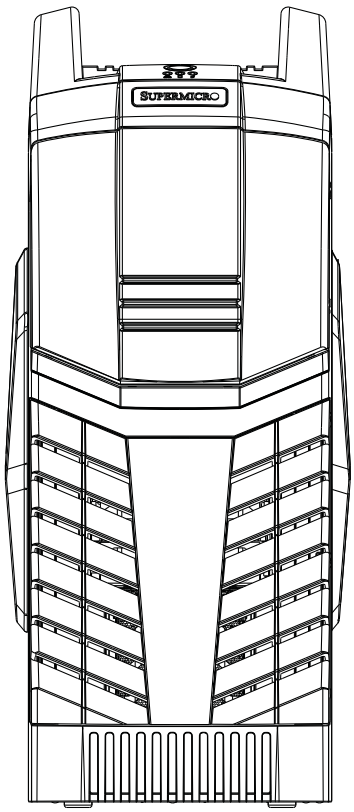
SUPERMICRO®

SuperWorkstation

5038AD-T



USER'S MANUAL

1.0

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.**

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"

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 1.0
Release Date: August 20, 2013

Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperWorkstation 5038AD-T. Installation and maintenance should be performed by experienced technicians only.

The SuperWorkstation 5038AD-T is a high-end system based on the SC732G-903B tower chassis and the C7Z87-OCE motherboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the system and describes the main features of the C7Z87-OCE motherboard and the SC732G-903B chassis.

Chapter 2: Installation

This chapter describes the steps necessary to setup the SuperWorkstation 5038AD-T. If your system was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: Standardized Warning Statements

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperWorkstation 5038AD-T.

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the C7Z87-OCE motherboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC732G-903B chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring 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 Error Beep Codes

Appendix B: System Specifications

Notes

Table of Contents

Chapter 1 Introduction

1-1 Overview 1-1
1-2 Motherboard Features 1-2
Processors 1-2
Memory 1-2
SATA 1-2
PCI Expansion Slots 1-2
Onboard Controllers/Ports 1-2
1-3 Chassis Features 1-3
System Power 1-3
SATA Subsystem 1-3
Front Control Panel 1-3
Cooling System 1-3
1-4 Contacting Supermicro 1-5

Chapter 2 Installation

2-1 Overview 2-1
2-2 Unpacking the System 2-1
2-3 Warnings and Precautions 2-1
2-4 Accessing the Inside of the System 2-2

Chapter 3 System Interface

3-1 Overview 3-1
3-2 Control Panel Button 3-1
Power 3-1
3-3 Communications Panel Components 3-1
3-4 Communication Panel LEDs 3-2
NIC 3-2
HDD 3-2

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 5-1
5-2 Connecting Cables 5-2
Connecting Data Cables 5-2
Connecting Power Cables 5-2
Connecting the Control Panel 5-2
5-3 I/O Ports 5-3
5-4 Processor and Heatsink Installation 5-4
Installing an LGA 1150 Processor 5-4
Installing the Heatsink 5-6
5-5 Installing Memory Modules 5-8
Installing & Removing DIMMs 5-8
Memory Support 5-9
Memory Population Guidelines 5-9
Memory Population Guidelines 5-10
5-6 Serverboard Details 5-11
C7Z87-OCE Quick Reference 5-11
5-7 Connector Definitions 5-13
5-8 Jumper Settings 5-21
5-9 Onboard Indicators 5-25
5-10 SATA Ports 5-25
5-11 Installing Software 5-26
SuperDoctor III 5-27
5-12 Onboard Battery 5-28

Chapter 6 Advanced Chassis Setup

6-1 Static-Sensitive Devices 6-1
Precautions 6-1
Unpacking 6-1
6-2 Accessing the Inside of the System 6-2
6-3 Removing and Installing Hard Drives 6-4

Internal 3.5" Hard Drives 6-4
Front 3.5" and Optional 2.5" Hard Drives 6-7
6-4 Installing Peripheral Drives 6-9
6-5 Installing Expansion Cards 6-10
PCI Slot Setup 6-10
Installing Expansion Cards 6-11
6-6 Installing the System Fans 6-12
6-7 Power Supply 6-14

Chapter 7 BIOS

7-1 Introduction 7-1
Starting BIOS Setup Utility 7-1
How To Change the Configuration Data 7-1
How to Start the Setup Utility 7-2
7-2 Main Setup 7-2
7-3 Advanced Setup Configurations 7-4
7-4 Boot Settings 7-38
7-5 Security Settings 7-40
7-6 Save & Exit 7-41

Appendix A BIOS Error Beep Codes

Appendix B System Specifications

Chapter 1

Introduction

1-1 Overview

The 5038AD-T is a high-end gaming system* comprised of two main subsystems: the SC732G-903B tower chassis and the C7Z87-OCE single Intel® Core™ processor motherboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperWorkstation 5038AD-T (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the SuperWorkstation 5038AD-T, as listed below:

- Two 12-cm PWM "SuperQuiet" chassis fans (FAN-0124L4)

Optional:

- One active CPU heatsink (SNK-P0051AP4)

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.

- Supermicro product manuals: http://www.supermicro.com/support/manuals/
- Product drivers and utilities: ftp://ftp.supermicro.com
- Product safety info: http://super-dev/about/policies/safety_information.cfm
- If you have any questions, please contact our support team at: support@supermicro.com

*Overclocking may void system warranty. Please check the operations manual or online at www.supermicro.com for supported components.

1-2 Motherboard Features

At the heart of the SuperWorkstation 5038AD-T lies the C7Z87-OCE, a single processor motherboard based on the Intel® Z87 chipset. Below are the main features of the C7Z87-OCE. (See Figure 1-1 for a block diagram of the chipset).

Processors

The C7Z87-OCE supports a single Intel Xeon E3-1200V3 series processor or 4th Generation Intel Core™ i7/i5/i3 DT processor in an LGA1150 socket (Socket H3). Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The C7Z87-OCE has four DIMM slots that can support up to 32 GB of Unbuffered ECC/non-ECC DDR3-1600/1333/1066 DIMMs. See Chapter 5 for details.

SATA

The C7Z87-OCE supports six SATA 3.0 (via by PCH) and two additional SATA 3.0 ports (via ASM1061®) (RAID 0, 1, 5, 10 supported.)

PCI Expansion Slots

The C7Z87-OCE has three PCI-E 3.0 x16 slots (can be used to support one x16 card, two x8 cards or one x8 card and two x4 cards) and three PCI-E 2.0 x4 slots.

Onboard Controllers/Ports

The rear I/O ports include a VGA port, two USB 2.0 ports, four USB 3.0 ports, a combination a Thunderbolt port, a DVI port, an HDMI port two Gb Ethernet ports and six HDA (High Definition Audio) ports. A CMOS reset button is also included with the rear I/O ports.

1-3 Chassis Features

The SC732G-903B is mid-tower chassis. The following is a general outline of the main features of the chassis.

System Power

The 5038AD-T features a single 900W power supply. This power supply unit has been designed to operate at a low noise level to make it ideal for use in a workstation environment.

SATA Subsystem

The SC732G-903B chassis can accommodate all eight SATA hard drives supported by the C7Z87-OCE motherboard.

Front Control Panel

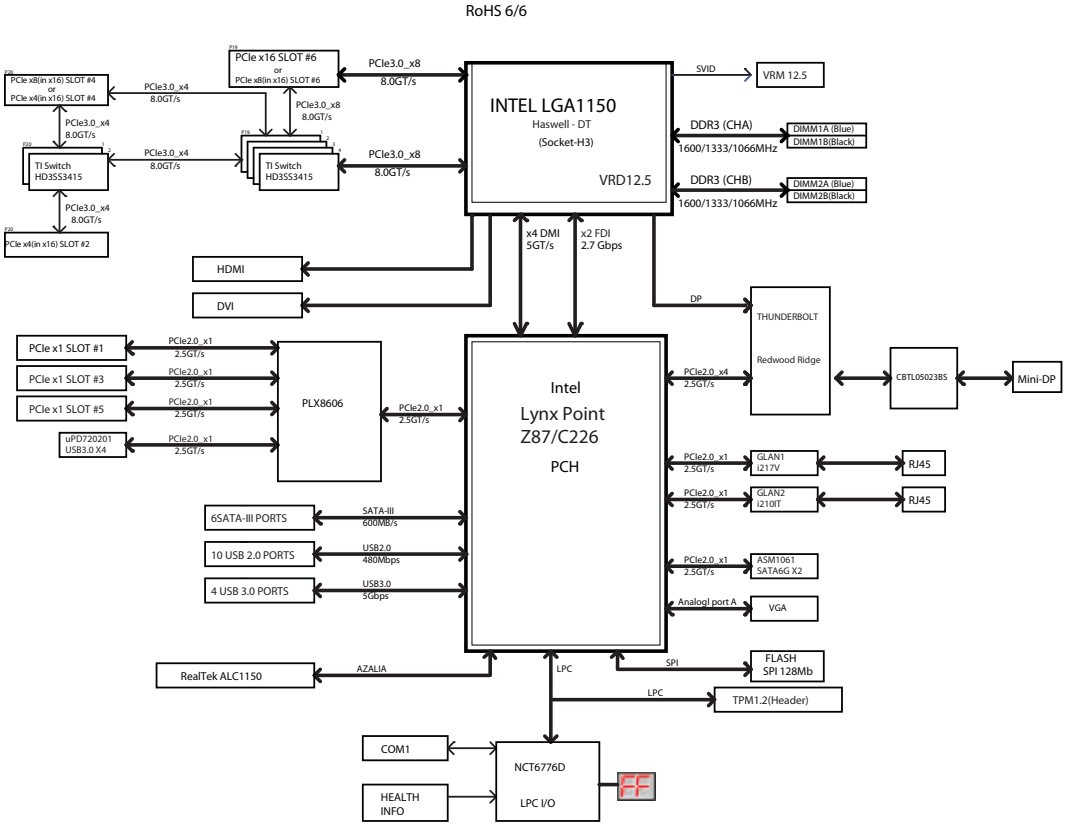
The control panel on the SuperWorkstation 5038AD-T includes system monitoring LEDs and a main power button. In addition, one eSATA port, two USB 2.0 ports, two USB 3.0 ports, one audio port and one microphone port are included on the control panel. See Chapter 3 for details.

Cooling System

The SC732G-903B chassis has an innovative "Super Quiet" cooling design that provides sufficient cooling at very low noise level - ideal for a workplace environment. The chassis includes one 12-cm rear exhaust fan and a 12-cm front cooling fan.

Figure 1-1. Intel Z87 Chipset: System Block Diagram

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



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 (General Information)
	support@supermicro.com (Technical Support)
Web Site:	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 (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Inc.
	3F, No. 150, Jian 1st Rd.
	Zhonghe Dist., New Taipei City 23511
	Taiwan (R.O.C)
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3992
Web Site:	www.supermicro.com.tw

Technical Support:

Email:	support@supermicro.com.tw
Tel:	+886-(2)-8226-3990

Notes

Chapter 2

Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperWorkstation 5038AD-T up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a serverboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the system was shipped in and note if it was damaged in any way. If the system itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the SuperWorkstation. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet.

2-3 Warnings and Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Use a regulating uninterruptible power supply (UPS) to protect the workstation from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot-swap SATA drives to cool before touching them.
- To maintain proper cooling, always keep all chassis panels closed and all SATA carriers installed when not being serviced.

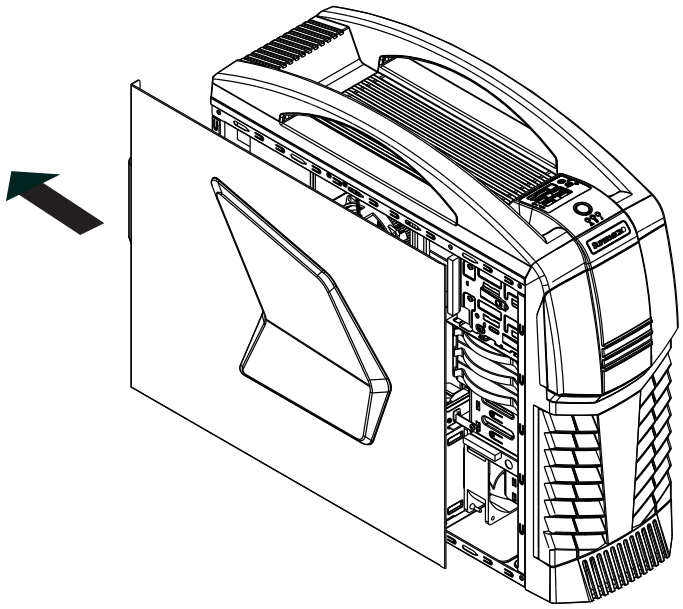
2-4 Accessing the Inside of the System

You may need to access the system periodically to perform maintenance or install components such as hard drives. The SC732G features two removable side covers to allow easy access to the chassis interior.

Removing the Side Covers

1. Power down the system and disconnect the power cord from the rear of the power supply.
2. Remove the screws securing the left side cover of the chassis.
3. Slide the left cover toward the rear of the chassis.
4. Lift the left cover from the chassis.
5. Remove the screws securing the right side cover to the chassis.
6. Slide the right side cover toward the rear of the chassis
7. Lift the right cover from the chassis.

Figure 2-1. Removing the Chassis Side Covers



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

Chapter 3

System Interface

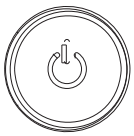
3-1 Overview

The control panel on the 5038AD-T has several LEDs and a power button. These LEDs keep you constantly informed of the overall status of the system and the activity and health of specific components. See Figure 3-1 for an overview.

3-2 Control Panel Button

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

Power



The main power button is used to apply or remove power from the power supply to the system. When the power is on, the power button will be lighted by a blue LED. Turning off the system power with this button will cause the blue LED to turn off and will remove the main power, but will keep standby power supplied to the system. Therefore, you must unplug system before servicing the system.

3-3 Communications Panel Components

The SC732G features a front communication panel allowing easy access to the chassis communication ports. The chassis models are equipped as follows:

- One eSATA port
- Two USB 2.0 ports
- Two USB 3.0 ports
- One audio port
- One microphone port

See diagram on page 3-3.

3-4 Communication Panel LEDs

The control panel located on the front of the SC732G chassis has three LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

NIC

Indicates network activity on the LAN port when flashing.

HDD

Indicates HDD channel activity on the SAS/SATA drives and/or DVD-ROM drive activity when flashing.

Informational LED	
Status	**Description**
Continuously on and red	An overheat condition has occured. (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 failed power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue (300 ,SEC)	Remote UID is on. Use this function to identify the server from a remote location.

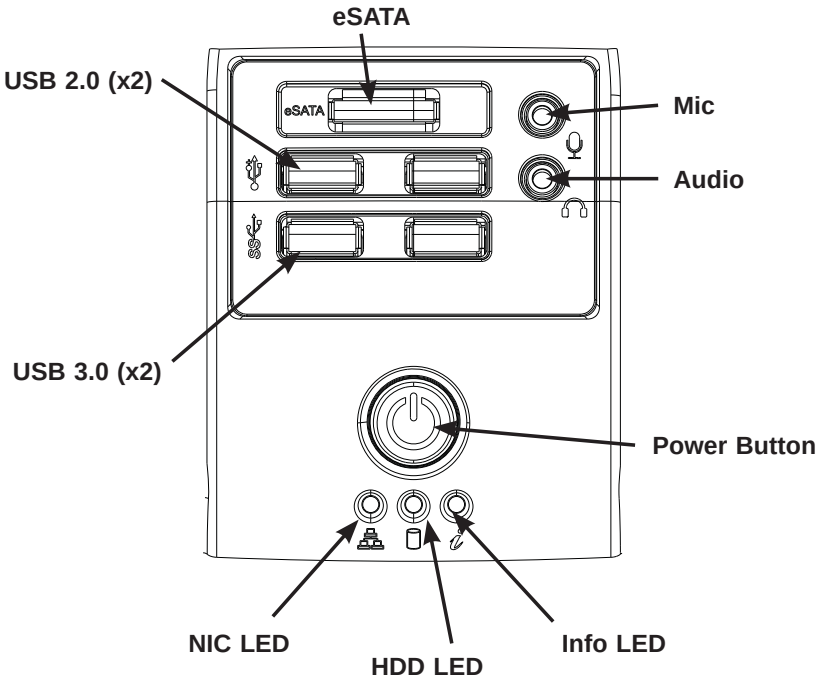


Figure 3-1. SC732G Communications Panel

Notes

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.

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。

此警告符号代表危险。

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.

תקנון 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 במלואו לפני התקנת או הגדרת הרכיבים במארזי 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
此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於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 המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-60VDC, 20A

هذا المنتج يعتمد على معدات الحمايت من الدوائرالقصيرة التي تم تثبيتها في المبنى

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

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 electrische installatie. Controleer of het beveiligde aparaat 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、シャーシー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 chassis pour installer ou enlever des composants de systéme.

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 للهيكل 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 لتركيب 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 لتركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
قفل ومفتاح أو أي وسيلة أخرى للالأمان

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 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
电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

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

此裝置連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 trom 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 !

ליחדה 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。
修理する際には注意ください。

警告
当系统正在进行时，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 أوالطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생합니다. 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 instalacion 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 ell montaje del ventilador del chasis. Mandtenga 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 retirerez 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 المراوح لا تزال تدورعند 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 조림품 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

安裝此產品時,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 câbles 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 צוין על ידי סופרקמיקרו 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, AC어댑터를 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 UL또는 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 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.

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.
- 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 Connecting Cables

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

Connecting Data Cables

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

The following data cables (with their locations noted) should be connected. (See the layout on page 5-11 for connector locations.)

- SATA drive data cables (I-SATA0 ~ I-SATA8)
- Control Panel cable (JF1)

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

Connecting Power Cables

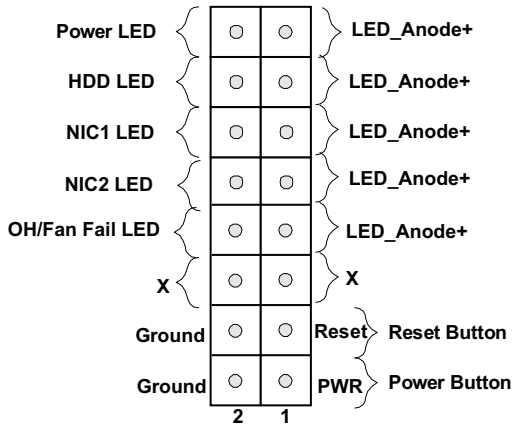
The C7Z87-OCE has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, an 8-pin secondary power connector (JPW2) must also be connected to your power supply. See Section 5-7 for power connector pin definitions.

Connecting the Control Panel

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

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

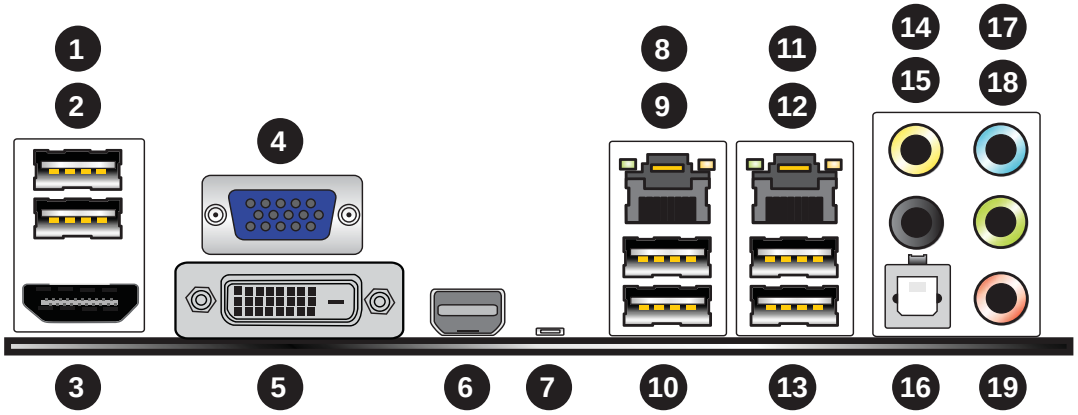
Figure 5-1. Control Panel Header Pins



5-3 I/O Ports

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

Figure 5-2. I/O Ports



Backplane I/O Ports	
1. USB 2.0 Port 0	11. Gb LAN Port 2
2. USB 2.0 Port 1	12. USB 3.0 Port 4
3. HDMI Port	13. USB 3.0 Port 5
4. VGA Port	14. Center/LFE Out
5. DVI Port	15. Surround Out
6. Thunderbolt Port	16. S/PDIF/Out
7. CMOS Reset	17. Line In
8. Gb LAN Port 1	18. Line Out
9. USB 3.0 Port 6	19. Mic In
10. USB 3.0 Port 7	

5-4 Processor and Heatsink Installation

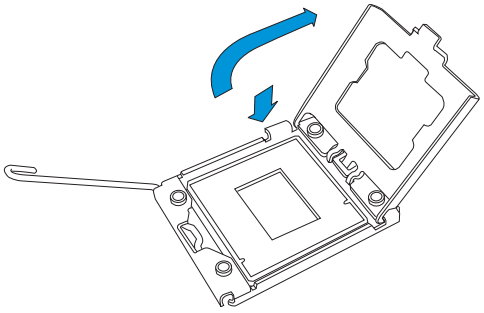
Warning: When handling the processor package, avoid placing direct pressure on the label area of the fan.

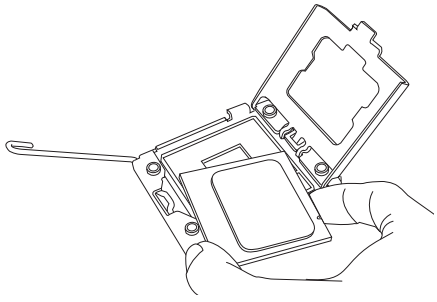
Notes:

- 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.

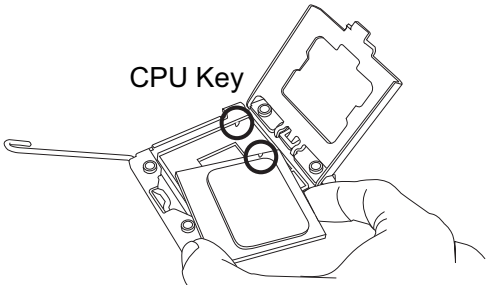
Installing an LGA 1150 Processor

1. Press the load lever to release the load plate covering the CPU socket from its locked position.
2. Gently lift the socket clip to open the load plate.
3. Hold the plastic cap at its north and south center edges to remove it from the CPU socket.
4. After removing the plastic cap, hold the CPU at the north and south center edges with your thumb and index finger.



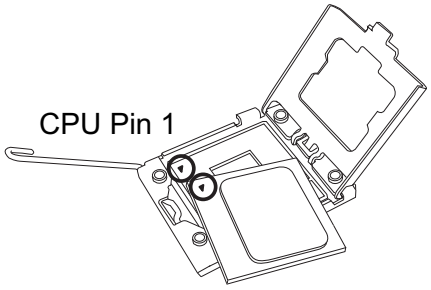


5. Align the CPU key, which is a semi-circle cutout, against the socket key, which is the notch below the gold color dot on the side of the socket.



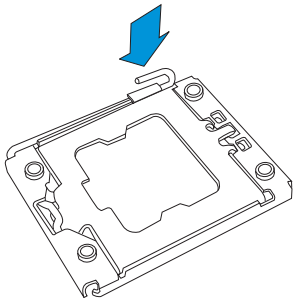
6. Align pin 1 of the CPU against pin 1 of the CPU socket.

7. Once both CPU and the socket are aligned, carefully lower the CPU straight down into the socket. (To avoid damaging the CPU or the socket, do not rub the CPU against the surface of the socket or its pins.)



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

9. Once the CPU is securely seated on the socket, lower the CPU load plate to the socket.



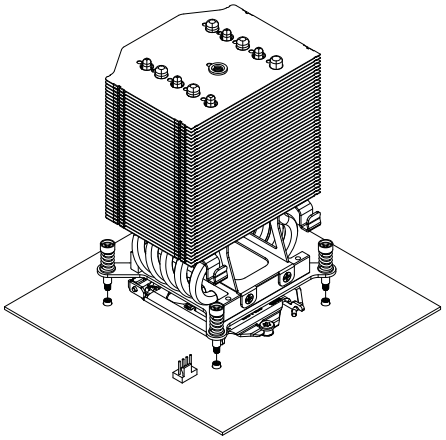
10. Use your thumb to gently push the socket clip down to the clip lock.

Warning: Please save the plastic cap. The serverboard must be shipped with the plastic cap properly installed to protect the CPU socket pins. Shipment without the plastic cap properly installed will cause damage to the socket pins.

Installing the Heatsink

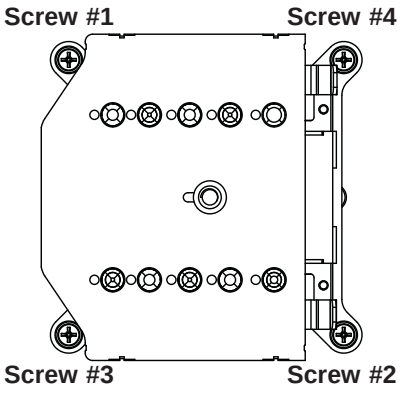
1. Do not apply any thermal grease to the bottom of the heatsink, the required amount has already been applied. The heatsink mounting back plate with an insulation slice should be pre-attached underneath the motherboard.

2. Place the heatsink directly on top of the CPU (figure at right) so that the four heatsink mounting screws are aligned with and seated on the four screw studs of the mounting back-plate. The heatsink must be properly oriented to favor cooling airflow direction in the system. Please note that the heatsink cooling fan should not be attached to the heatsink body when tightening the four heatsink mounting screws.



3. Use a Philips #2 screwdriver and adjust the torque setting to 5.0 kgf/cm (4.3 lbf/in). Make sure that the screwdriver head is fully engaged in the cross grooves of the heatsink mounting screw head before tightening. Keep the heatsink mounting screw vertical during installation.

4. Tighten the two diagonal heatsink mounting screws, i.e. the #1 and #2 screws (figure at right), 1 to 2 turns until they are just snug. Do not fully tighten! Then do the same with the remaining two diagonal heatsink mounting screws.

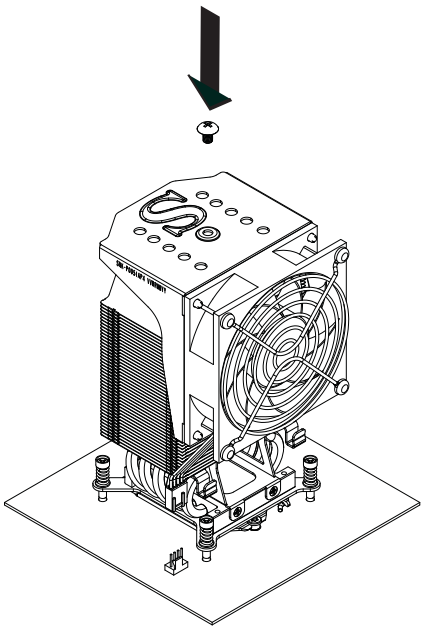


5. Follow the cross installation pattern on all four heatsink mounting screws to ensure that the bottom of the heatsink is properly seated on the CPU and to prevent the heatsink from tilting. Finish by fully tightening all four screws.

6. Install the heatsink cooling fan and holder assembly on the heatsink body and then tighten the single locking screw on top of the fan holder (figure at right).

7. Connect the SNK-P0051AP4 cooling fan connector to the fan header labeled FAN 1 on the motherboard.

8. To remove the heatsink, follow the above steps in reverse order.



5-5 Installing Memory Modules

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

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

Installing & Removing DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with P1-DIMMA2. For best performance, only use the DIMMs of the same type and speed. See the DIMM Installation Chart on the following page.

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

3. Using both thumbs, gently press down on the DIMM module until it snaps into place in the slot. Make sure the release tabs are in their locked position. Repeat for all modules.

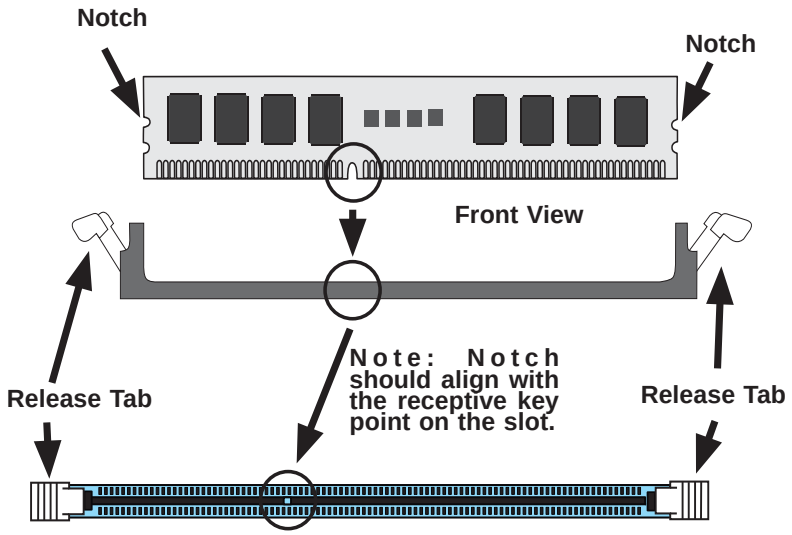
4. Reverse the steps above to remove the DIMM modules from the serverboard.

5. Reverse the steps above to remove the DIMMs from the motherboard.

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

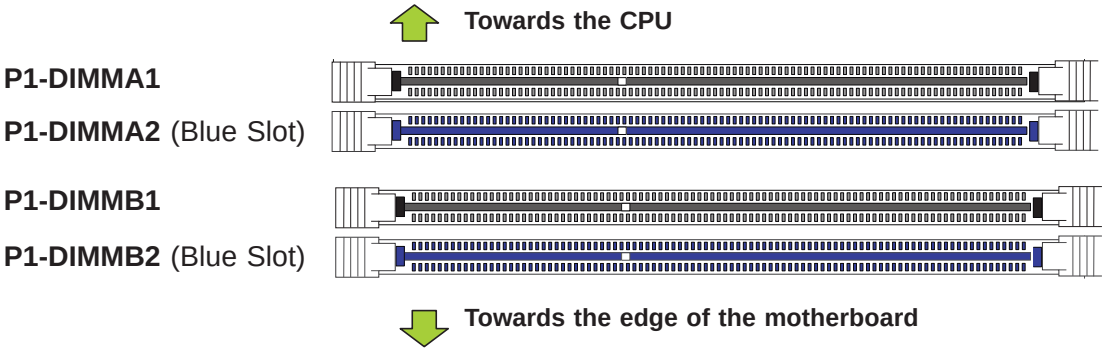
To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

Figure 5-3. DIMM Installation



Memory Support

The C7Z87-OCE supports up to 32GB of Unbuffered (UDIMM) DDR3 Non-ECC 1600/1333/1066 MHz in four memory slots. Populating these DIMM modules with a pair of memory modules of the same type and same size will result in interleaved memory, which will improve memory performance. Please refer to the table below:



Memory Population Guidelines

Please follow the table below when populating the memory slots.

DDR3 Unbuffered Non-ECC (UDIMM) Memory				
DIMM Slots per Channel	**DIMMs Populated per Channel**	**DIMM Type**	**Speeds**	**Ranks per DIMM (any combination)**
2	1	Unbuffered DDR3	1066, 1333, 1600	Single Rank, Dual Rank
2	2	Unbuffered DDR3	1066, 1333, 1600	Single Rank, Dual Rank

Notes

- Be sure to use memory modules of the same type, same speed, same frequency on the a motherboard. Mixing of memory modules of different types and speeds is not allowed.

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

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

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

Memory Population Guidelines

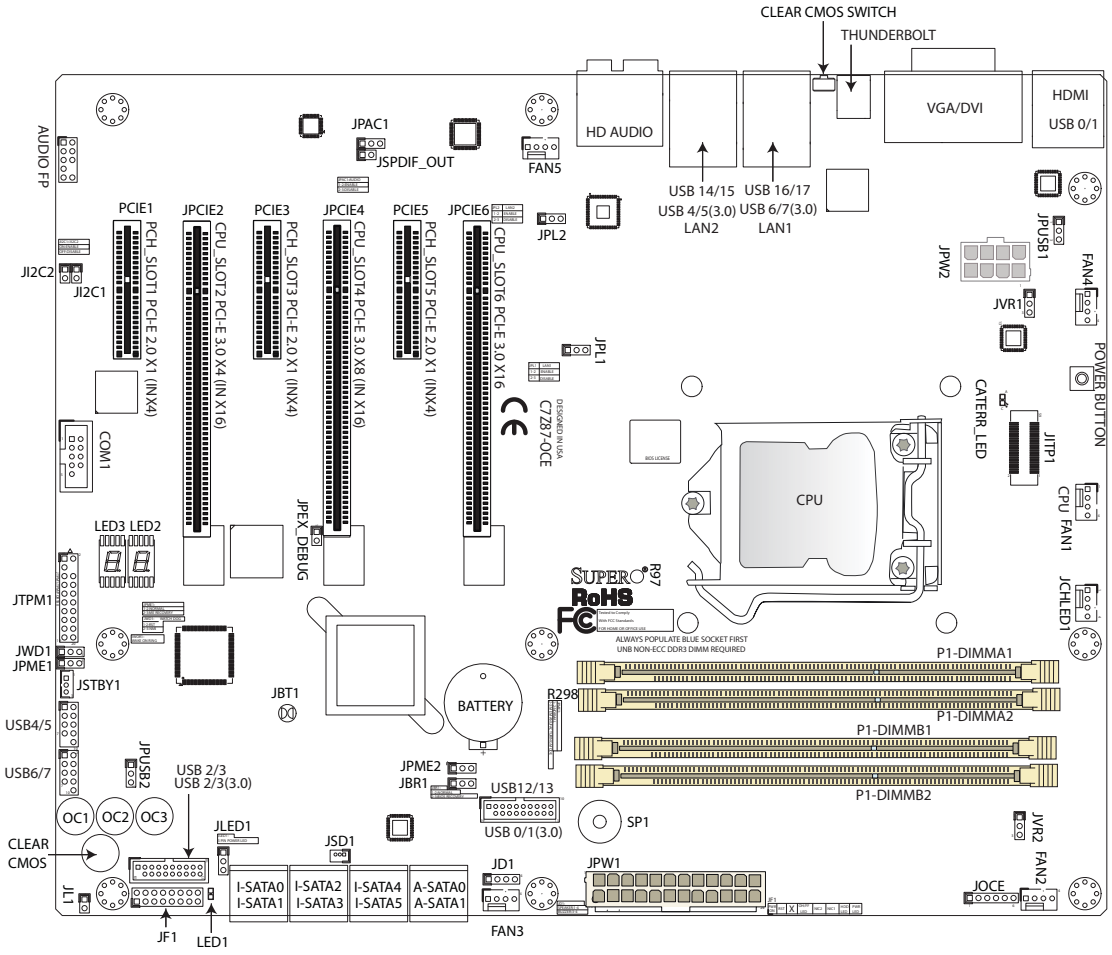
When installing memory modules, the DIMM slots should be populated in the following order: P1-DIMMA2, P1-DIMMB2, then P1-DIMMA1, P1-DIMMB1.

- Always use DDR3 DIMM modules of the same size, type and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.

Recommended Population (Balanced)				
DIMMA2	**DIMMB2**	**DIMMA1**	**DIMMB1**	**Total System Memory**
2GB	2GB			4GB
2GB	2GB	2GB	2GB	8GB
4GB	4GB			8GB
4GB	4GB	4GB	4GB	16GB
8GB	8GB			16GB
8GB	8GB	8GB	8GB	32GB

5-6 Serverboard Details

Figure 5-4. C7Z87-OCE Layout



C7Z87-OCE Quick Reference		
Jumper	**Description**	**Default**
JBT1	Clear CMOS	(See Section 5-8)
JI²C1/JI²C2	SMB to PCI Slots	Off (Disabled)
JPAC1	Audio Enable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JPME1	Intel Manufacturing Mode	Pins 2-3 (Disabled)
JPME2	Intel Recovery Mode	Pins 2-3 (Disabled)
JWD1	Watch Dog Enable	Pins 2-3 (NMI)
JBR1	BIOS Recovery Mode	Pins 2-3 (Disabled)
JPUSB1	USB Wake Up Enable (Back Panel)	Pins 1-2 (Enabled)
JPUSB2	USB Wake Up Enable (USB Headers)	Pins 1-2 (Enabled)

Note: Jumpers not indicated are for test purposes only.

Connector	Description
Audio FP	Front Panel Audio Header
Battery	Onboard Battery
COM1	COM1 Port Header
Fans 1-5	System/CPU Fan Headers (Fan1: CPU Fan)
JD1	Speaker Header
JF1	Control Panel Header
JL1	Chassis Intrusion Header
JL2	Reserved
JLED1	Power LED Indicator Header
JPW1	24-pin ATX Main Power Connector (Required)
JPW2	+12V 4-pin CPU Power Connector (Required)
JSD1	SATA DOM (Disk On Module) Power Connector
JSPDIF_OUT	Sony/Philips Digital Interface (S/PDIF) Out Header
JSTBY1	Standby Power Header
JTPM1	Trusted Platform Module/Port 80 Connector
SP1	Internal Speaker/Buzzer
A-SATA0/1	(ASMedia) SATA 3.0 Port 0 / Port 1 (6Gb/sec)
I-SATA0~5	(Intel Z87) SATA 3.0) Ports 0~5 (6Gb/sec)
USB 0/1	Front Panel Accessible USB 3.0 Ports 0/1 (USB 2.0 12/13)
USB 2/3	Front Panel Accessible USB 3.0 Ports 2/3 (USB 2.0 2/3)
USB 4/5, 6/7	Front Panel Accessible USB 2.0 Headers 4/5,6/7,8/9,10/11
JCHLED1	Chassis LED Control (Supermicro Chassis only)
Power Button	Internal Power Button
OC1, OC2, OC3	Over-Clocking Buttons OC1 (15%), OC2 (20-25%), OC3 (User-Defined in BIOS)

LED	Description	State/Status
LED1	Onboard Standby PWR LED	Solid Green: Power On
LED2/3	POST Code Indicator	Readout Displays POST Code

5-7 Connector Definitions

Main ATX Power Supply Connector

A 24-pin main power supply connector (JPW1) is used to provide power to the serverboard. This power connectors meets the SSI EPS 12V specification. See the table on the right for pin definitions.

Main ATX Power 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

Required Connection

Processor Power Connectors

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

Processor Power Connector Pin Definitions

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

Required Connection

Power Button

The connection for the power button is on pins 1 and 2 of JF1. The chassis power button should be connected here. This button can also function as a suspend button (BIOS setting). See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	Signal
2	+3V Standby

Reset Connector

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

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Overheat/Fan Fail LED

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

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

NIC1/2 (GLAN) LEDs

The LED connections for LAN port 1 are on pins 11 and 12 and those of LAN port 2 are on pins 9 and 10 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	Vcc
10/12	Ground

HDD LED

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

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	+5V
14	HD Active

Power On LED

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

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	5V
16	Ground

Chassis Intrusion

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

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

Fan Headers

The C7Z87-OCE has five fan headers (Fan 1 - FAN 5), all of which are 4-pin fans. Although pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans, 4-pin fans are recommended to take advantage of the fan speed control via Pulse Width Modulation through BIOS. This allows the fan speeds to be automatically adjusted based on the motherboard temperature. The default is disabled.

Fan Header Pin Definitions

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

Internal Buzzer

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

Internal Buzzer (SP1) Pin Definition

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

Speaker

On JD1 header, pins 3-4 are used for an internal speaker. Close pins 3-4 with a cap to use the onboard speaker. If you wish to use an external speaker, close pins 1-4 with a cable.

Speaker Connector Pin Definitions

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

Serial Ports (COM1/COM2)

There is one serial (COM) port headers on the motherboard. COM1 is located next to the 1394-1 header header. See the table on the right for pin definitions.

Serial/COM Ports Pin Definitions

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

SPDIF Out (JSPDIF_OUT)

The SPDIF Out (JSPDIF_OUT) port is used for digital audio. Connect an appropriate cable on the header for audio support.

SPDIF_Out Pin Definitions

Pin#	Definition
1	S/PDIF_Out
2	Ground

Onboard Power LED (JLED1)

An onboard Power LED header is located at JLED1. This Power LED header is connected to Front Control Panel located at JF1 to indicate the status of system power. See the table on the right for pin definitions.

Onboard PWR LED Pin Definitions

Pin#	Definition
1	VCC
2	No Connection
3	Connection to PWR LED in JF1

Standby Power Header

The Standby Power header is designated STBY1 on the motherboard. See the table on the right for pin definitions.

Standby Power Pin Definitions

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

DOM PWR Connector (JSD1)

The Disk-On-Module (DOM) power connector, located at JSD1, provides 5V (Gen1/Gen) power to a solid state DOM storage device connected to one of the SATA ports. See the table on the right for pin definitions.

DOM PWR Pin Definitions

Pin#	Definition
1	5V
2	Ground
3	Ground

Chassis LED

If this motherboard will be mounted on a Supermicro chassis, this header can be used to attach the motherboard to control the chassis' LED readout.

Universal Serial Bus (USB)

Two Universal Serial Bus 2.0 ports (0/1) and four USB 3.0 ports (4/5, 6/7) are located on the I/O backpanel. In addition, two USB 2.0 headers (four ports: 4/5, 6/7) and two USB 3.0 headers (four ports: 0/1, 2/3) are also provided on the motherboard for front chassis access using USB cables (not included). See the tables below for pin definitions.

Front Panel USB (2.0) 4/5, 6/7 Pin Definitions

Pin #	Definition	Pin #	Definition
1	+5V	2	+5V
3	USB_PN2	4	USB_PN3
5	USB_PP2	6	USB_PP3
7	Ground	8	Ground
9	Key	10	Ground

Back Panel USB (2.0) 0/1 Pin Definitions

Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN1	6	USB_PN0
3	USB_PP1	7	USB_PP0
4	Ground	8	Ground

Front Panel USB (3.0) 0/1, 2/3 Pin Definitions

Pin#	Pin#	Signal Name	Description
1	10	VBUS	Power
2	11	D-	USB 2.0 Differential Pair
3	12	D+	
4	13	Ground	Ground of PWR Return
5	14	StdA_SSRX-	SuperSpeed Receiver
6	15	StdA_SSRX+	Differential Pair
7	16	GND_DRAIN	Ground for Signal Return
8	17	StdA_SSTX-	SuperSpeed Transmitter
9	18	StdA_SSTX+	Differential Pair

Front Accessible Audio Header

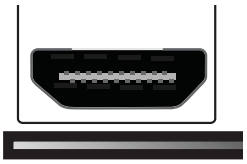
A 10-pin Audio header is also provided on the motherboard. This header allows you to use the onboard sound for audio playback. Connect an audio cable to the audio header to use this feature. See the table at right for pin definitions for the header.

10-in Audio Pin Definitions

Pin#	Signal
1	Microphone_Left
2	Audio_Ground
3	Microphone_Right
4	Audio_Detect
5	Line_2_Right
6	Ground
7	Jack_Detect
8	Key
9	Line_2_Left
10	Ground

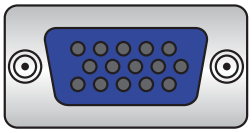
HDMI Port

One HDMI (High-Definition Multimedia Interface) is located next to the VGA port on the I/O backpanel. This connector is used to display both high definition video and digital sound through an HDMI capable display using a single HDMI cable (not included).



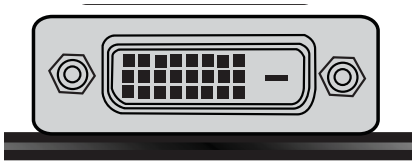
VGA Port

A VGA port is located next to the USB ports 0/1 on the I/O backpanel. Use this port to connect to a compatible VGA display.



DVI Port

A DVI port is located just under the VGA port on the I/O backpanel. Use this port to connect to a compatible DVI (Digital Visual Interface) display.



Ethernet Ports

Two Gigabit Ethernet ports (LAN1/ LAN2) are located next to the HD Audio Connector on the I/O backpanel to provide network connections. These ports accept RJ45 type cables.

Note Please refer to the LED Indicator Section for LAN LED information.

LAN Ports
Pin Definition

Pin#	Definition	Pin#	Definition
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Green, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	88	Ground

Thunderbolt Interface

This motherboard supports one Thunderbolt interface on the backpanel. A Thunderbolt interface is a hardware interface that allows peripherals to be connected to the motherboard at transfer speeds of up to 10Gbit/s. This port combines a PCIe and a DisplayPort into one serial signal.

CMOS Reset/Clear

This motherboard supports three momentary hardware switches to clear or reset the CMOS memory back to its default values. These switches are located at different locations on the motherboard for maximum convenience. The switches located at A and B are momentary push buttons while C (JBT1) is made up of two contact pads that need to be shorted with a metallic obect (i.e., screwdriver, etc).

A. Thunderbolt Interface
B. CMOS Reset Button (Backpanel)
C. CMOS Reset Pads (JBT1) Onboard)
D. CMOS Reset Button (Onboard)

TPM Header/Port 80 Header

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

TPM/Port 80 Header Pin Definitions

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

Back Panel High Definition Audio (HD Audio)

This motherboard features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously supports multiple-streaming 7.1 sound playback with 2 channels of independent stereo output through the front panel stereo out for front, rear, center and subwoofer speakers. Use the Advanced software included in the CD-ROM with your motherboard to enable this function.

(BP) HD Audio	
Conn#	Signal
1	SPDIF_Out
2	Surround_Out
3	CEN/LFE_Out
4	Mic_In
5	Line_Out
6	Line_In

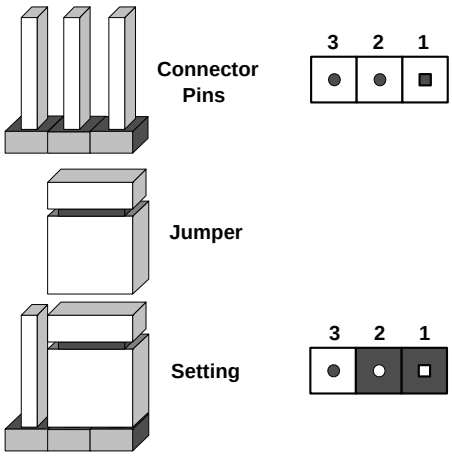
HD Audio

5-8 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, 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 serverboard layout pages for jumper locations.

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



CMOS Clear

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

To clear CMOS,

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

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

LAN1/LAN2 Enable/Disable

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

GLAN Jumper Settings

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

Watch Dog Enable/Disable

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

Watch Dog Jumper Settings

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

Front Panel Audio Enable

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

Audio Enable/Disable Jumper Settings

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

Over-Clocking Buttons

Press these buttons to activate the over-clocking feature of the motherboard. These buttons will allow the CPU to run above its rated speed. This is an advanced feature and should only be used by experienced users. Also, refer to the CMOS Reset/Clear features on page 2-20 for related information.

Over-Clocking Buttons Switch Settings

Switch Setting	Definition
OC1 On	15% Over-Clock
OC2 On	20-25% Over-Clock
OC3 On	User Defined (BIOS)

Management Engine (ME) Recovery

Use jumper JPME1 to select ME Firmware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain normal power operation and management. In the single operation mode, online upgrade will be available via Recovery mode. See the table on the right for jumper settings.

ME Recovery Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	ME Recovery

Manufacturer Mode Select

Close pins 2 and 3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacturer Mode, allowing the user to flash the system firmware from a host server for system setting modifications. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacture Mode

PCI Slot SMB Enable (I^2C1/I^2C2)

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

PCI Slot_SMB Enable Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

BIOS Recovery (JBR1)

The BIOS Recovery (JBR1) is used to enable or disable the BIOS Recovery feature of the motherboard. Install the jumper on pins 2-3 to begin the recovery process. See Appendix D for related information.

BIOS Recovery (JBR1) Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Recover

USB Wake-Up

Use jumper JPUSB1 to activate the "wake-up" function of the USB ports by pressing a key on a USB keyboard or clicking the USB mouse connected. This jumper is used together with a USB Wake-Up feature in the BIOS. Enable this jumper and the USB support in the BIOS to wake up your system via USB devices.

Note: Use JPUSB1 for the USB ports on the back panel, and JPUSB2 for the front panel USB headers.

USB Wake-Up Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled (Default)

Power Button

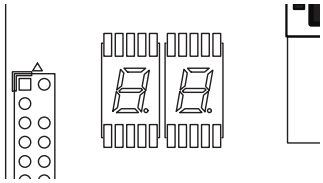
In addition to the soft power switch provided in JF1, your motherboard is equipped with a 'soft' power button on the motherboard. This switch works the same way as the soft power switch on JF1.

Manufacture Mode (JPME2) Jumper Settings

Pin#	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacture Mode

Status Display (LED3,LED2)

LED3 and LED2 are alpha-numeric displays that will display a status or POST code when the motherboard is powered on. Please download the AMI publication at the url below for a complete list of POST codes:



http://www.ami.com/support/doc/ami_aptio_4.x_status_codes_pub.pdf

5-9 Onboard Indicators

LAN1/2 LEDs

The Ethernet ports on the I/O backplane each have two LEDs. On each port, one LED indicates activity while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

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

Onboard Power LED

An Onboard Power LED1 is located at LE1 on the serverboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the table at right for more information.

Onboard PWR LED Indicator LED Status	
Status	Definition
Off	System Off
On	System on, or System off and PWR Cable Connected

5-10 SATA Ports

SATA Ports

Eight SATA 3.0 ports (I-SATA0-5, A-SATA0/1) are provided on the serverboard. The I-SATA 3.0 ports are supported by the Intel Z87 PCH chip while the A-SATA 3.0 ports are provided by the ASMedia SATA controller. See the table on the right for pin definitions.

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

5-11 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 5-5 should appear.

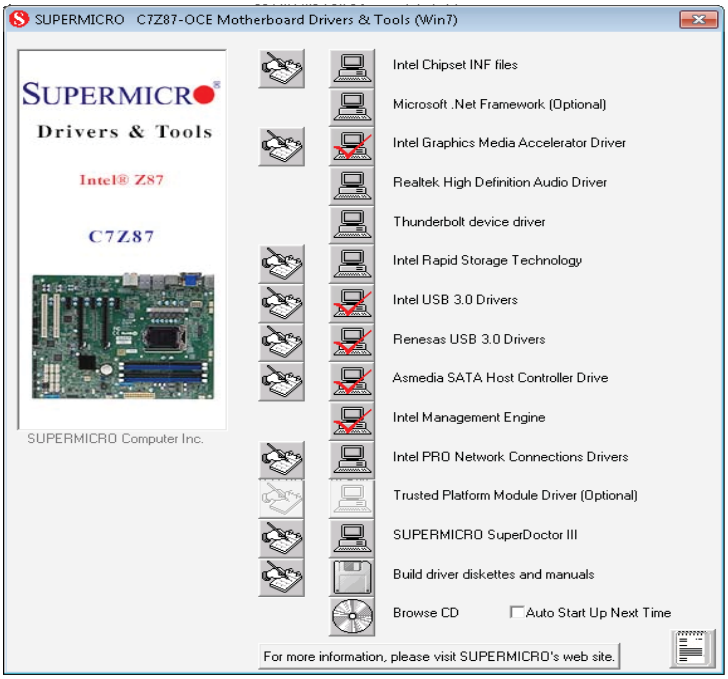


Figure 5-5. Driver/Tool Installation Display Screen

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

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 5-6. SuperDoctor III Interface Display Screen (Health Information)

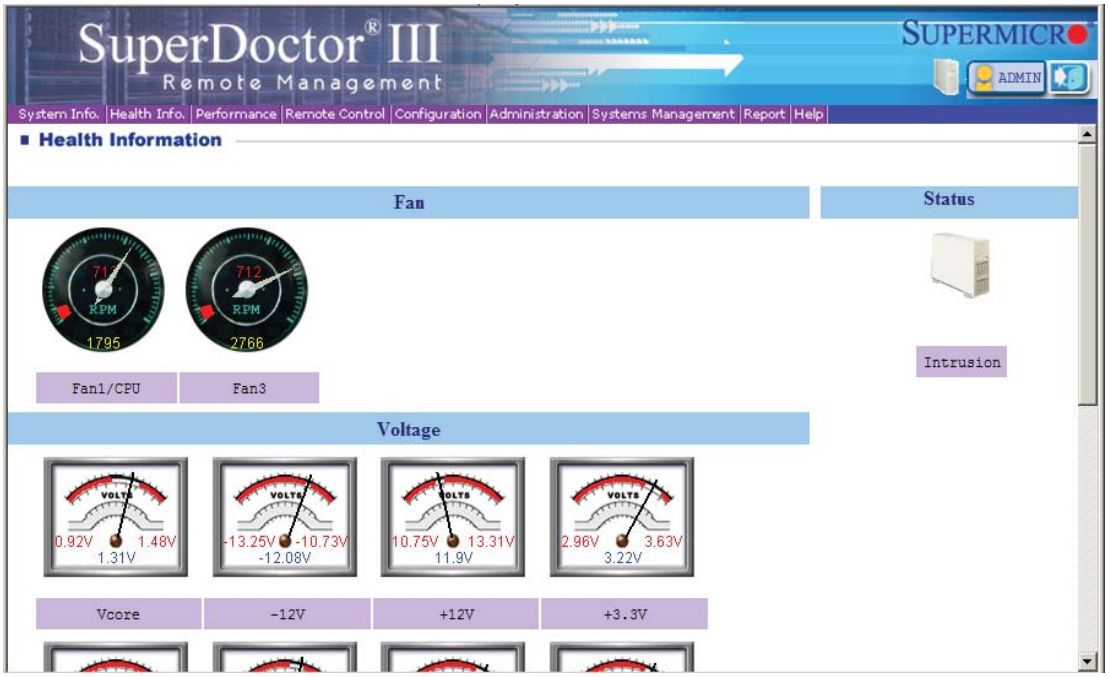
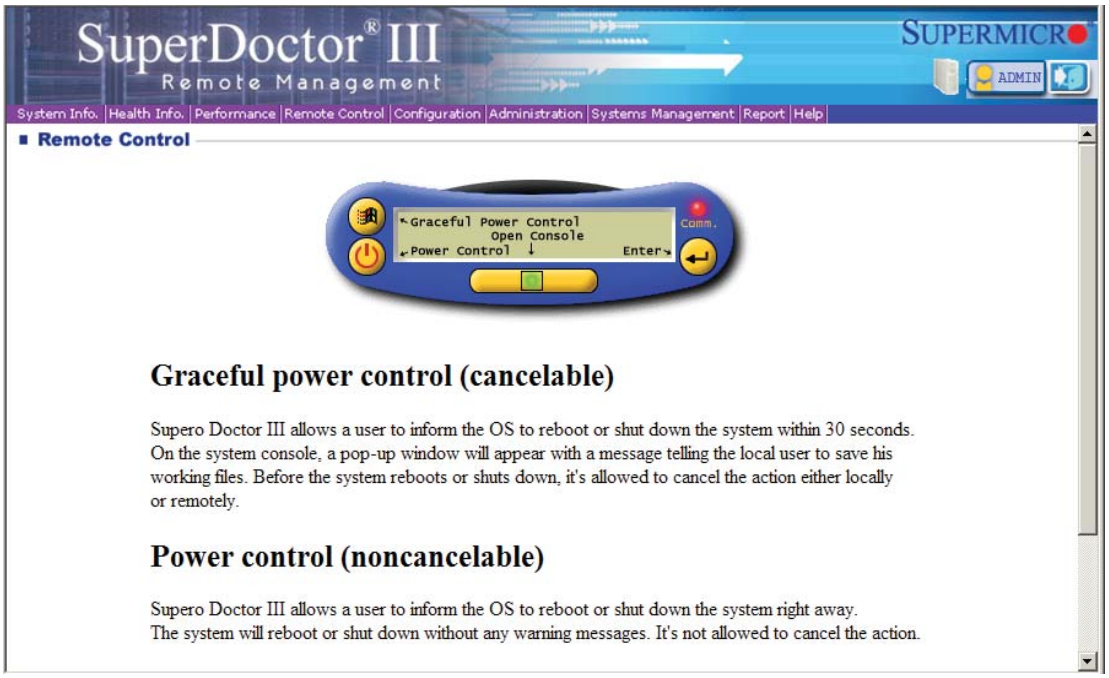


Figure 5-7. SuperDoctor III Interface Display Screen (Remote Control)

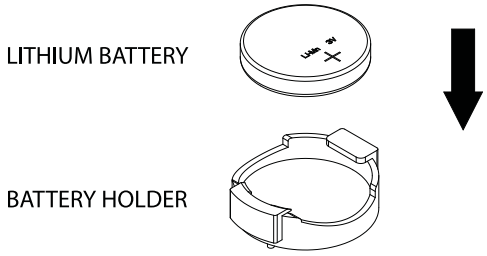


Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm. For Linux, we recommend that you use the SuperDoctor II application instead.

5-12 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.

Figure 5-8. Installing the Onboard Battery



Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC732G-903B chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the step that follows.

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

6-1 Static-Sensitive Devices

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

Precautions

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

Unpacking

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

6-2 Accessing the Inside of the System

The SC732G features two removable side covers, allowing easy access to the chassis interior.

Removing the Side Covers

1. Power down the system and disconnect the power cord from the rear of the power supply.
2. Remove the screws securing the left side cover of the chassis.
3. Slide the left cover toward the rear of the chassis.
4. Lift the left cover from the chassis.
5. Remove the screws securing the right side cover to the chassis.
6. Slide the right side cover toward the rear of the chassis
7. Lift the right cover from the chassis.

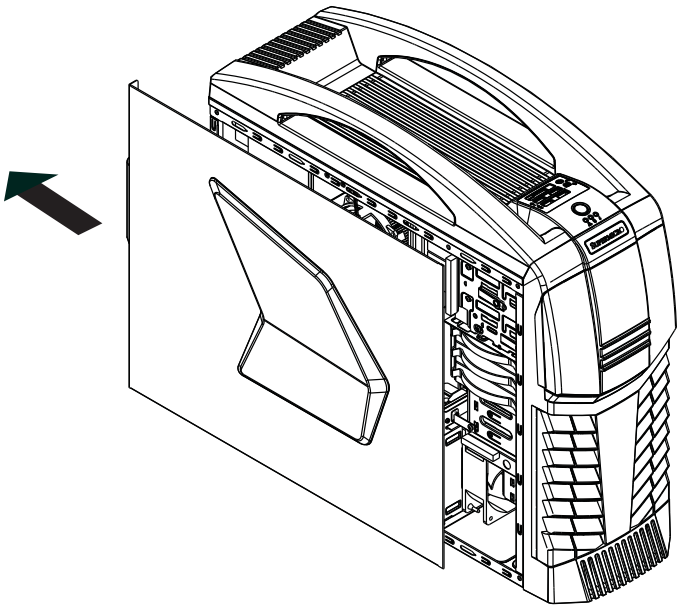


Figure 6-1. Removing the Side Covers

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

Opening and Closing the Upper Front Cover

The SC732G features upper and lower hinged front covers, allowing convenient access to peripheral drives and hot-swappable front hard drives. It is not necessary to power down the system when installing or removing front hard drives or operating the peripheral drives.

1. Gently push the left edge of the upper front cover to disengage the latching mechanism.

2. Swing the cover open and to the right as illustrated above.

3. To close the upper front cover, swing the door back into the closed position and gently push the left edge of the upper front cover to reengage the latching mechanism.

Opening and Closing the Lower Front Cover

4. Gently grasp the left edge of the lower front cover.

5. Swing the lower front cover open and to the right as illustrated above.

6. To close the lower front cover, swing the door back into the closed position.

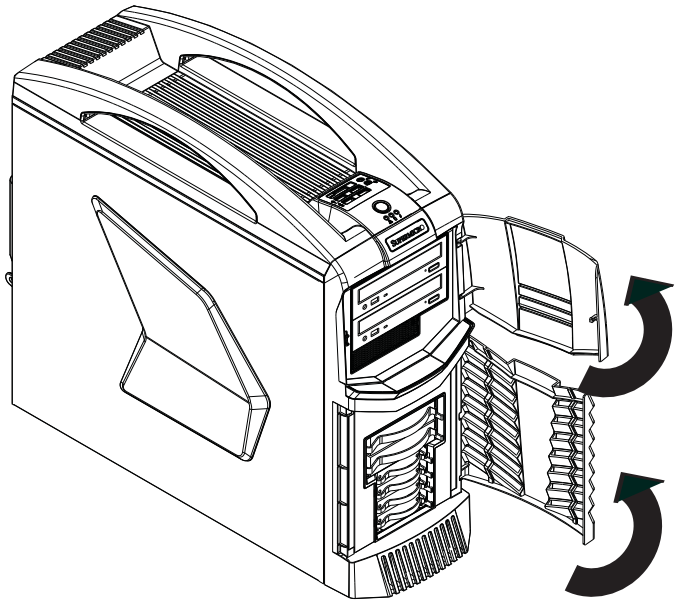


Figure 6-2. Opening the Front Covers

6-3 Removing and Installing Hard Drives

Internal 3.5" Hard Drives

The SC732G chassis features hot-swappable internal hard drives. It is not necessary to power down the system before removing and reinstalling the internal 3.5" hard drives.

Removing and Installing 3.5" Hard Drives

1. Without powering down the system, remove the cover as described in Section 6-2.

2. Press the release tab on the side of the hard drive carrier that is to be removed from the hard drive cage.

3. Pull the hard drive carrier out of the hard drive cage by the drive carrier handle.

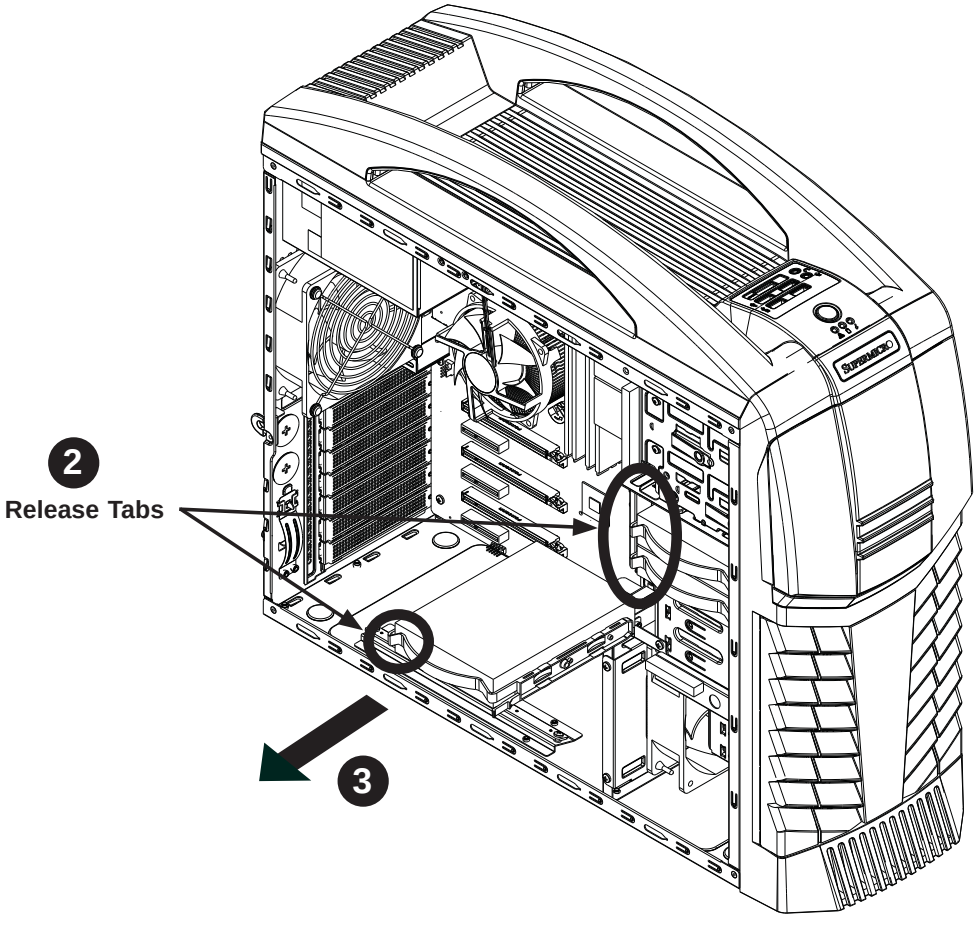


Figure 6-3. Removing a Hard Drive Carrier from the Hard Drive Cage

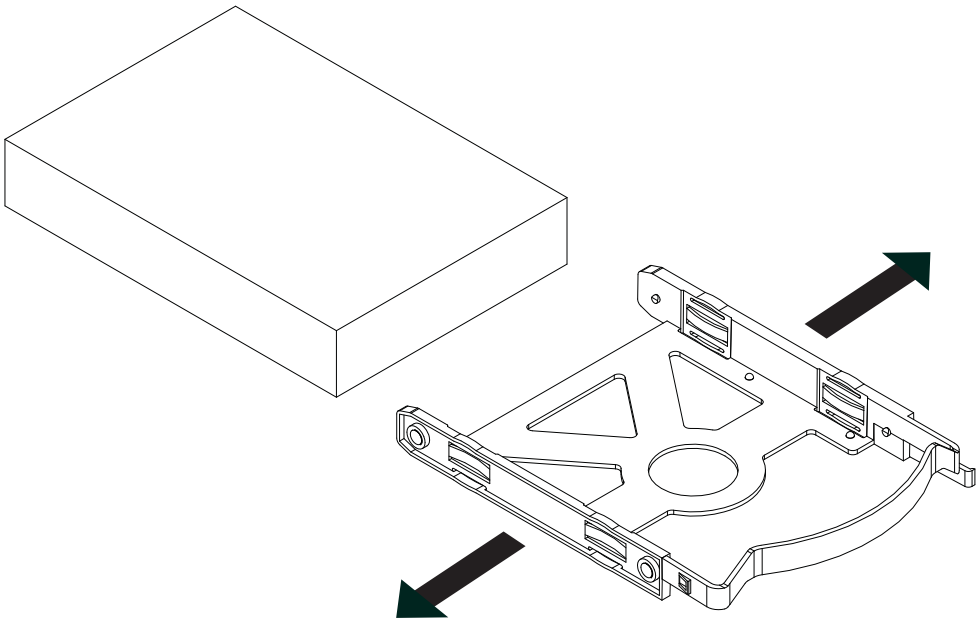


Figure 6-4. Removing a 3.5" Hard Drive from a Drive Carrier

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

5. Remove the hard drive from the hard drive carrier.

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

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

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

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

9. Replace the chassis cover and power up the system.

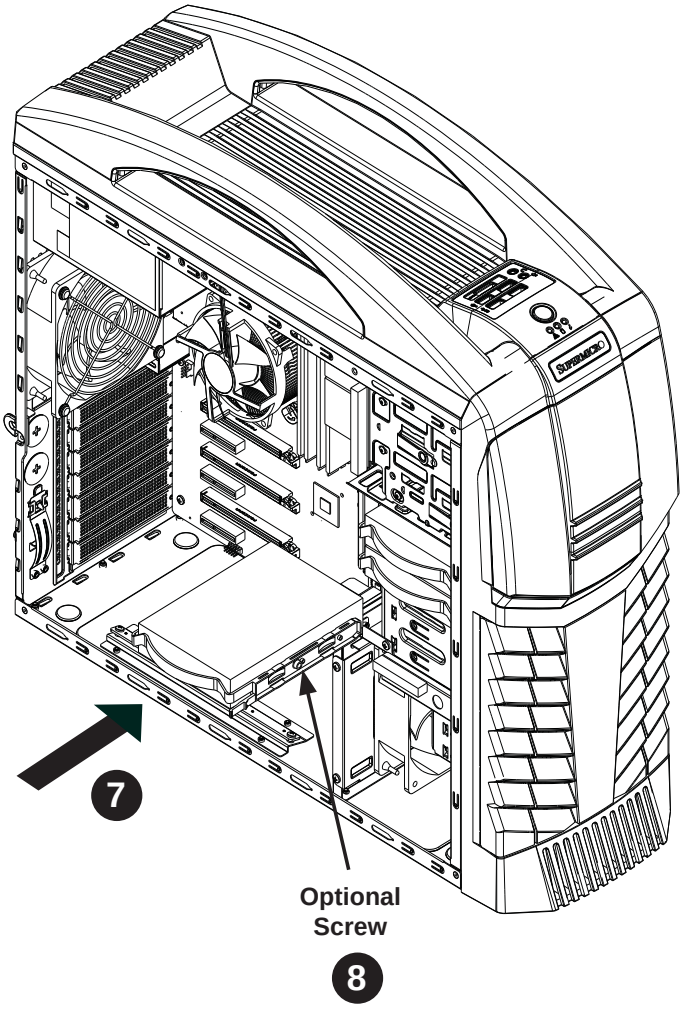


Figure 6-5. Installing a Hard Drive Carrier into the Hard Drive Cage

Front 3.5" and Optional 2.5" Hard Drives

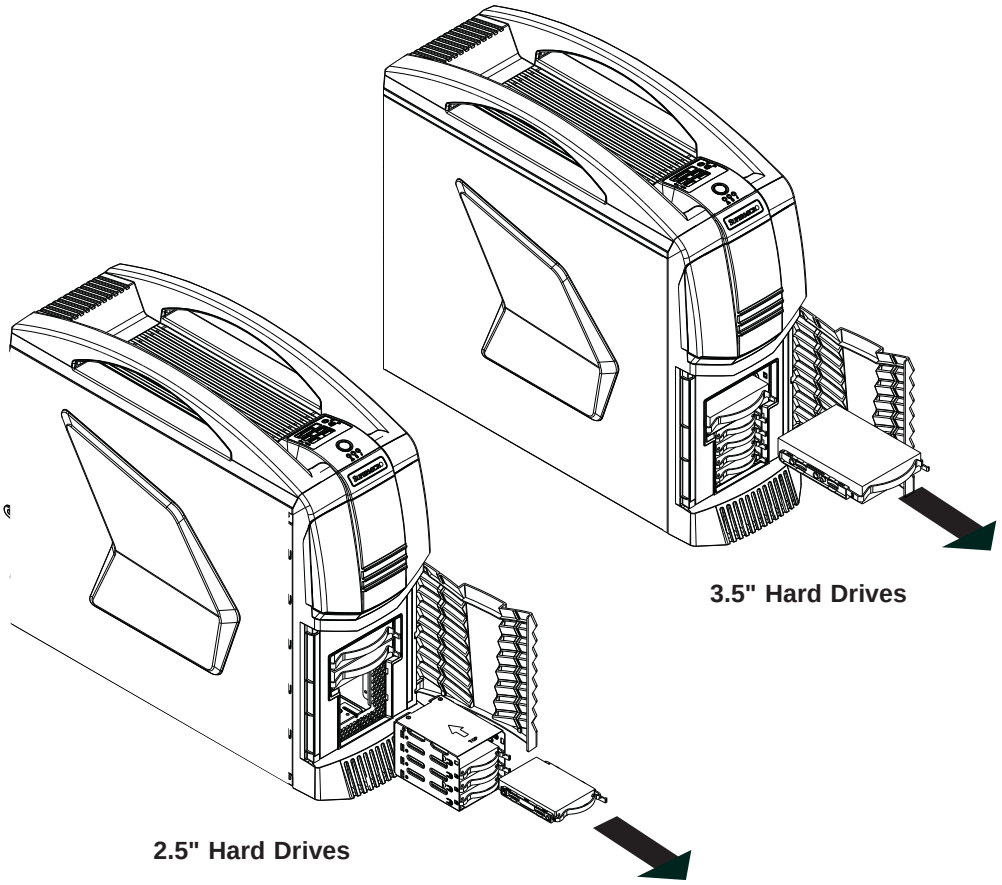


Figure 6-6. Removing the 3.5" and Optional 2.5" Hard Drives

The system includes hot-swappable front 3.5" and optional 2.5" hard drives. It is not necessary to power down the system when removing these drives. The removal and installation procedure for the 3.5" and 2.5" hard drives is the same.

Removing and Installing Front 3.5" and Optional 2.5" Hard Drives

1. Open the lower front cover door as described in Section 6-2.

2. Push the release tab on the hard drive carrier of the drive you wish to remove.

3. Grasp the hard drive carrier by the handle and pull it forward and out of the chassis.

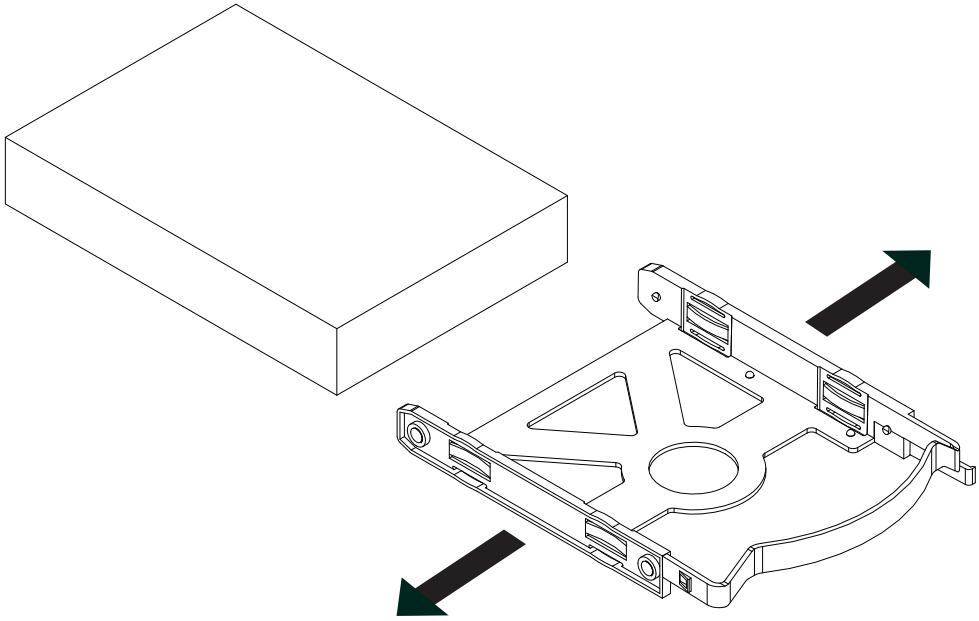


Figure 6-7. Removing 3.5" and 2.5" Hard Drives from a Drive Carrier

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

5. Remove the hard drive from the hard drive carrier.

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

7. Insert the hard drive carrier into its bay in the front of the chassis until it clicks into a locked position.

8. Close the front cover.

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

6-4 Installing Peripheral Drives

The SC732G features two 5.25" peripheral drive bays in the upper front compartment of the chassis. This drive bay supports a peripheral device such as a DVD-ROM drive or Blu-ray drive.

Installing a Peripheral Drive

1. Power down the system and disconnect the power cord from the rear of the power supply.

2. Remove the cover and open the upper front compartment as described in Section 6-2.

3. Secure the peripheral drive bracket to the left side of the peripheral drive.

4. Slide the whole peripheral drive module (with drive bracket) into the corresponding slot in the chassis and push the drive in until it clicks into the locked position.

5. Connect the cables to the rear of the periperal drive.

6. Replace the chassis cover, reconnect the power cord and power up the system.

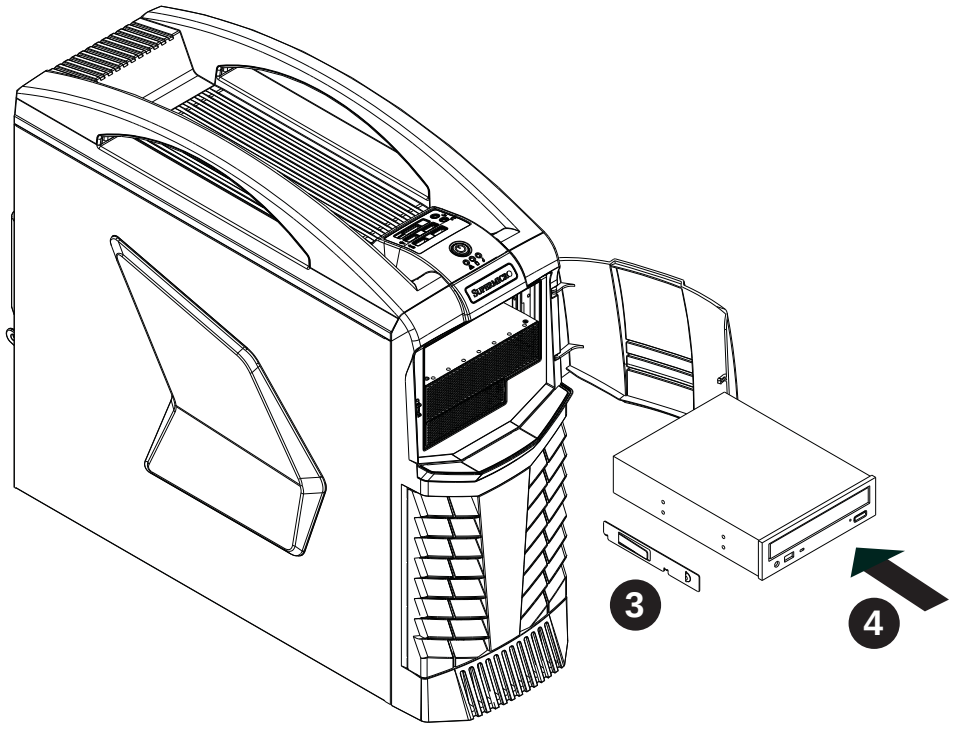


Figure 6-8. Installing a Peripheral Drive

6-5 Installing Expansion Cards

PCI Slot Setup

The SC732G chassis has room to support up to seven full-height, full-length PCI expansion cards. The number of cards used varies, depending upon the motherboard models.

Installing Expansion Cards

1. Power down the system, disconnect the power cord from the rear of the power supply and remove the chassis cover as described in Section 6-2. Place the chassis on a flat, stable surface.

2. Depress the release latch (A), which holds the protective bracket (B) and secures the expansion card brackets to the chassis.

3. Lower the protective bracket from over the top of the expansion card dummy brackets as shown in the lower illustration.

4. Remove the PCI slot covers from the PCI slots.

5. Simultaneously slide the expansion card into the motherboard and the PCI slot bracket into the PCI slot on the chassis.

6. If desired, screws can be used to secure the expansion card into the chassis.

7. Close the protective bracket over the tops of the expansion card brackets.

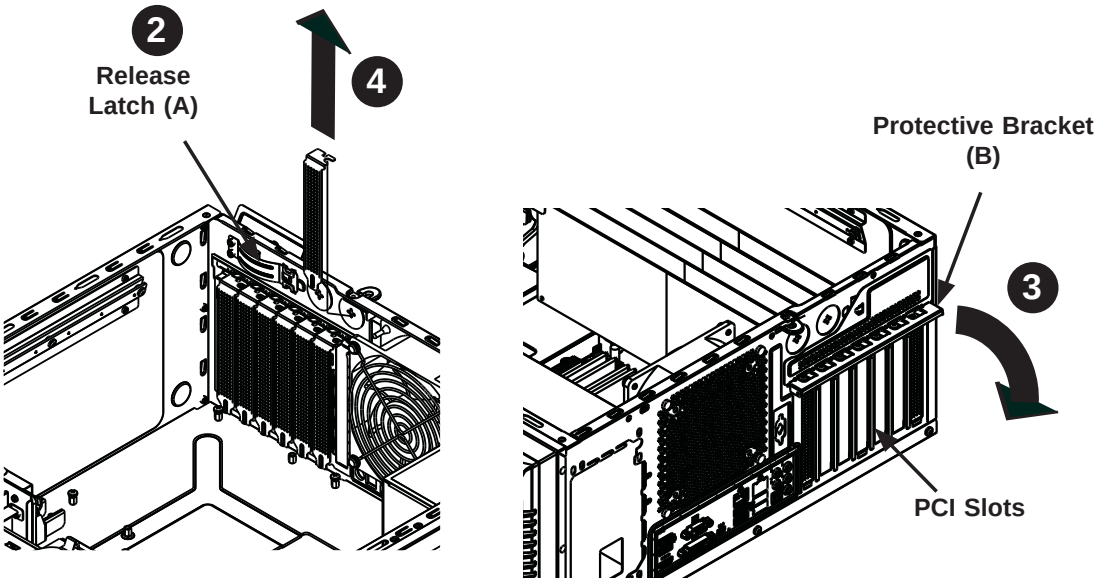


Figure 6-9. Expansion Card Components

Installing Expansion Cards

Installing Expansion Cards

1. Power down the system, disconnect the power cord from the rear of the power supply and remove the chassis cover as described in Section 6-2. Place the chassis on a flat, stable surface.

2. Begin by preparing the PCI slots as described in the previous section.

3. Locate the card holders (A), which are on the opposite side of the chassis from the add-on card brackets.

4. Push the card holder all the way down onto the end of the expansion card.

5. Simultaneously slide the expansion card into its slot on the motherboard and slide the PCI slot bracket into the PCI slot to secure the expansion card into the chassis.

6. Replace the chassis cover, reconnect the power cord and power up the system.

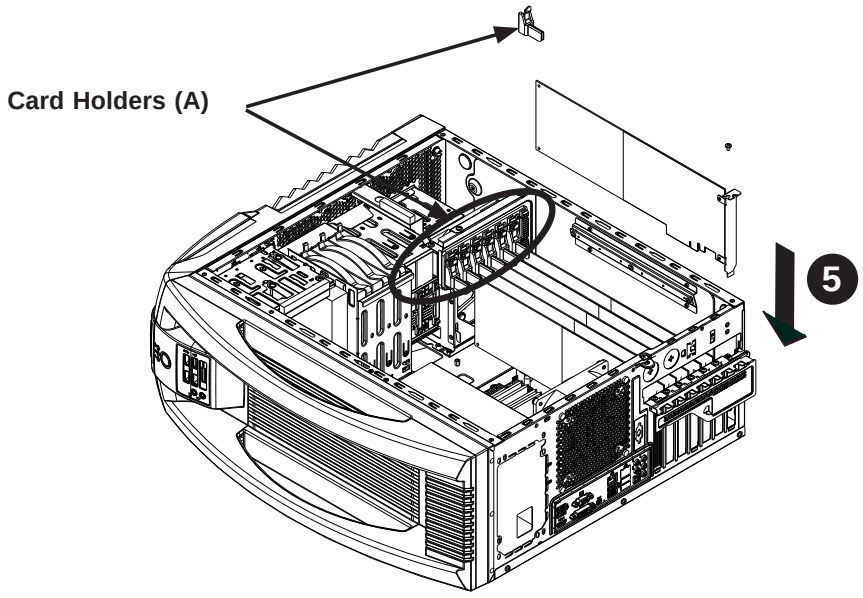


Figure 6-10. Installing a Full-Height, Full-Length Expansion Card

6-6 Installing the System Fans

The SC732G chassis includes a front cooling fan and a rear exhaust fan.

Installing the Rear Exhaust Fan

1. Power down the system, disconnect the power cord from the rear of the power supply and remove the chassis cover as described in Section 6-2.

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

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

4. Connect the fan cable to the motherboard.

5. Replace the chassis cover, reconnect the power cord and power up the system.

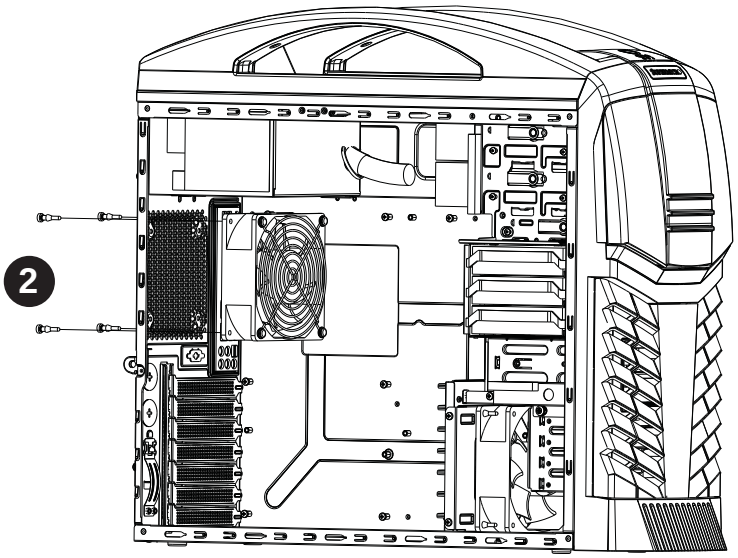


Figure 6-11. Installing the Rear Exhaust Fan

Installing the Front Cooling Fan (Optional)

1. Power down the system, disconnect the power cord from the rear of the power supply and remove the chassis cover as described in section 6-2.

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

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

4. Slide the fan and bracket into the chassis, aligning the holes in the fan bracket with the holes in the chassis.

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

6. Connect the fan cable to the motherboard.

7. Replace the chassis cover, reconnect the power cord and power up the system

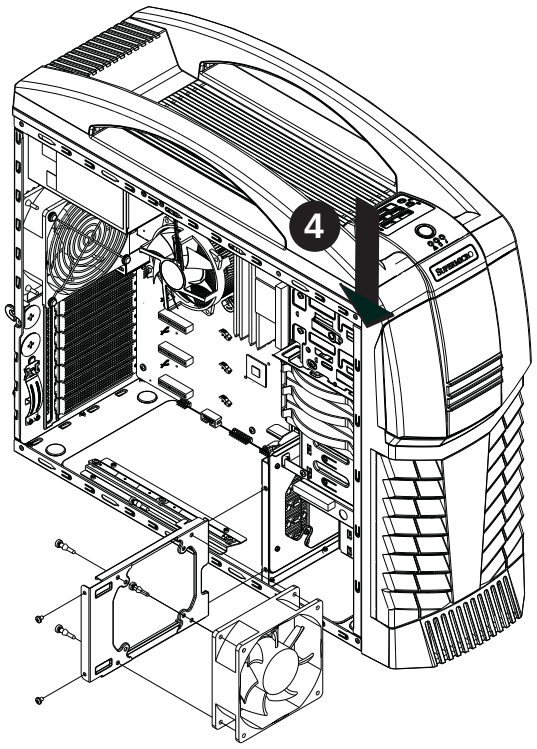


Figure 6-12. Installing the Front Cooling Fan (Optional)

6-7 Power Supply

The 5038AD-T includes a 900W power supply. In the unlikely event that it becomes necessary to replace the power supply, follow the instructions below.

Changing the Power Supply

1. Disconnect the power cord from the rear of the power supply and remove the chassis cover as described in section 6-2.
2. Disconnect the power cables that connect to the motherboard.
3. Remove the screws securing the power supply to the chassis, which are located on the rear of the chassis. Set these screws aside for later use.
4. Gently slide the power supply out of the chassis.
5. Replace the failed power supply with an identical power supply module.
6. Secure the new power supply using the screws previously set aside.
7. Replace the chassis cover, reconnect the power cord and power up the system

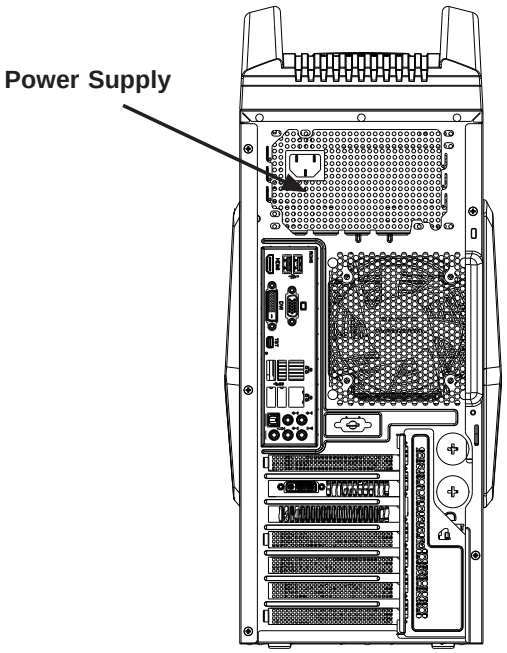


Figure 6-13. Removing the Power Supply

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the C7Z87-OCE. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

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

Starting BIOS Setup Utility

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

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

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

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <ESC>, and arrow keys, etc.

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

How To Change the Configuration Data

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

How to Start the Setup Utility

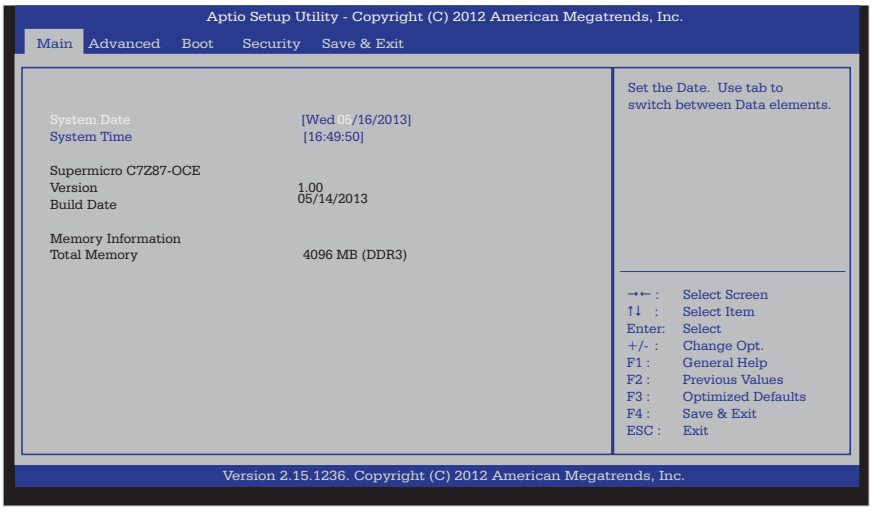
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

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

The following Main menu items will be displayed:



System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using 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.

> **Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

The following BIOS items will also be displayed:

Supermicro C7Z87-OCE

Version

Build Date

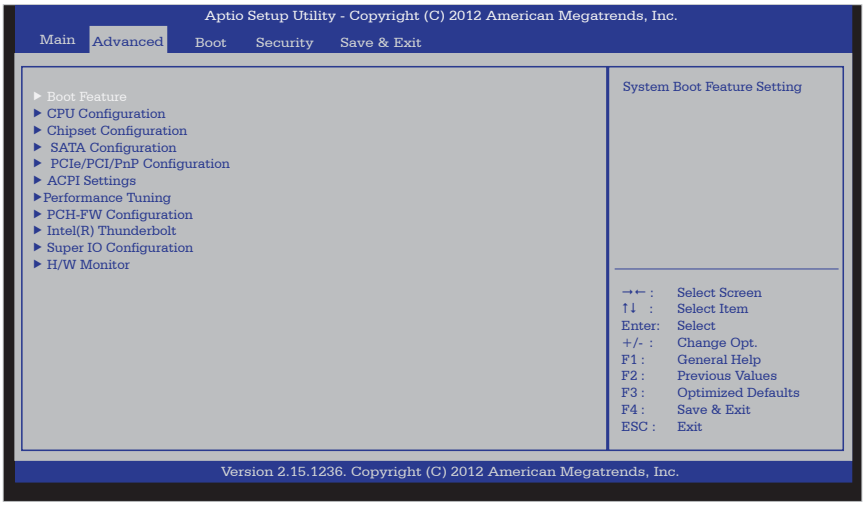
Memory Information

Total Memory

This displays the total size of memory available in the system.

7-3 Advanced Setup Configurations

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



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

Boot Feature

Quiet Boot

Use this feature to select the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

Use this feature to set the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

Use this feature to select the Power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

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

Interrupt 19 Capture

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

Re-try Boot

If this item is enabled, the BIOS will automatically reboot the system from a specified boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Stay-Off**,** Power-On, and **Last State**.

▶CPU Configuration

The following CPU information will be displayed:

- Type of CPU
- CPU Signature
- CPU Stepping
- Microcode Patch
- Max (Maximum) CPU Speed
- Min (Minimum) CPU Speed
- CPU Speed
- Processor Cores
- Intel HT(Hyper-Threading) Technology
- Intel VT-x (Virtualization) Technology
- Intel SMX (Trusted Execution) Technology
- 64-bit
- EIST Technology
- CPU C3 State
- CPU C6 State
- CPU C7 State
- L1 Data Cache
- L1 Code Cache
- L2 Cache
- L3 Cache

Clock Spread Spectrum

If this feature is set to Enabled, the BIOS will monitor the level of electromagnetic interference caused by the components and will attempt to reduce the interference whenever needed. The options are Enabled and **Disabled**.

Hyper-threading

Select Enabled to support Intel Hyper-threading Technology to enhance CPU performance. The options are **Enabled** and Disabled.

Active Processor Cores

This feature determines how many CPU cores will be activated for each CPU. When all is selected, all cores in the CPU will be activated. (Please refer to Intel's web site for more information.) The options are **All,** 1, 2, and 3.

Limit CPUID Maximum

Select Enabled to set the maximum CPU ID value and to boot a legacy OS that cannot support processors with extended CPUID functions. The options are Enabled and **Disabled** (for the Windows OS).

Execute Disable Bit (Available if supported by the OS & the CPU)

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

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

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

Hardware Prefetcher (Available when supported by the CPU)

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

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

Select Enabled for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disabled for the CPU to prefetch both cache lines for 64 bytes. The options are Disabled and **Enabled**.

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

CPU AES

Select Enable for Intel CPU Advanced Encryption Standard (AES) Instructions support to enhance data integrity. The options are **Enabled** and Disabled.

EIST

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

Turbo Mode

This feature allows processor cores to run faster than the frequency recommended by the manufacturer. The options are Disabled and **Enabled.** If this feature is set to Enabled, the following items will display:

CPU Power Limit1

Use this feature to set the power limit for CPU1. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

CPU Power Limit1 Time

This item allows the user to determine how long CPU1 should operate at the power limit set by the user for the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

CPU Power Limit2

Use this feature to set the power limit for CPU2. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

Platform Power Limit Lock

Use this feature to lock the power limit of the motherboard. The options are **Enabled** and Disabled.

CPU Power Limit3

Use this feature to set the power limit for CPU3. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

CPU Power Limit3 Time

This item allows the user to determine how long CPU3 should operate at the power limit set by the user for the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

CPU Power Limit3 Duty Cycle

This item allows the user to determine the percentage of time CPU3 should operate at the power set by the user for the item above (i.e., If Power Limit3 Time is set at 100 secs, a 60% duty cycle means CPU3 will run 60 seconds at the power limit set in Power Limit3 every 100 seconds.). Use the number keys on your keyboard to enter the value between 1~100. Enter 0 to use the manufacturer's default setting.

DDR Power Limit1

Use this feature to set the power limit for DDR Memory Module 1. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture's default setting.

DDR Power Limit1 Time

This item allows the user to determine how long Memory Module 1 should operate at the power limit set by the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

DDR Power Limit2

Use this feature to set the power limit for Memory Module 2. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacturer's default setting.

1-Core Ratio Limit

This increases (multiplies) 1 clock speed in the CPU core in relation to the bus speed when one CPU core is active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacturer's default setting.

2-Core Ratio Limit

This increases (multiplies) 2 clock speeds in the CPU core in relation to the bus speed when two CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacturer's default setting.

3-Core Ratio Limit

This increases (multiplies) 3 clock speeds in the CPU core in relation to the bus speed when three CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacturer's default setting.

4-Core Ratio Limit

This increases (multiplies) 4 clock speeds in the CPU core in relation to the bus speed when four CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacturer's default setting.

Energy Performance

Use this feature to select an appropriate fan setting to achieve the maximum system performance (with maximum cooling) or maximum energy efficiency (with maximum power saving). The fan speeds are controlled by the firmware management. The options are **Performance**, Balanced Performance, Balanced Energy, and Energy Efficient.

VR Current Value

Use this feature to set the limit on the current voltage regulator (VR). Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

CPU C States

C-States architecture, a processor power management platform developed by Intel, can further reduce power consumption from the basic C1 (Halt State) state that blocks clock cycles to the CPU. Select Enabled for CPU C Sates support. The options are **Enabled** and Disabled. If this feature is set to Enabled, the following items will display:

Enhanced C1 State (Available when "CPU C States" is set to Enabled)

Select Enabled to enable Enhanced C1 Power State to boost system performance. The options are **Enabled** and Disabled.

CPU C3 Report (Available when "CPU C States" is set to Enabled)

Select Enabled to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are **Enabled** and Disabled.

CPU C6 Report (Available when "CPU C States" is set to Enabled)

Select Enabled to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all caches is turned off. The options are **Enabled** and Disabled.

C6 Latency (Available when "CPU C States" is set to Enabled)

Select Short to set a short delay time(period) during which the BIOS reports CPU C6 State (ACPI C3) to the operating system. Select Long to set a long delay time(period) during which the BIOS reports CPU C6 State (ACPI C3) to the operating system. The options are **Short** and Long.

CPU C7 Report (Available when "CPU C States" is set to Enabled)

Select Enabled to allow the BIOS to report the CPU C7 State (ACPI C3) to the operating system. CPU C7 State is a processor-specific low C-State. The options are Disabled, CPU C7, and **CPU C7s**.

C7 Latency (Available when "CPU C States" is set to Enabled)

Select Short to set a short delay time(period) during which the BIOS reports CPU C7 State (ACPI C3) to the operating system. Select Long to set a long delay time(period) during which the BIOS reports CPU C7 State (ACPI C3) to the operating system. The options are Short and **Long**.

C1 State Auto Demotion

When this item is enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 State based on un-cored auto-demote information. The options are Disabled and **Enabled.**

C3 State Auto Demotion

When this item is enabled, the CPU will conditionally demote C6 or C7 requests to C3 State based on un-cored auto-demote information. The options are Disabled and **Enabled.**

C State Pre-Wake

Select Enabled to support C State Pre-Wake State features. The options are **Enabled** and Disabled

Package C-State limit

Select Auto for the AMI BIOS to automatically set the limit on the C-State package register. The options are C0/C1, C2, C3, C6, C7, C7s and **Auto**.

LakeTiny Feature

Select Enabled for LakeTiny feature support for C-State configuration. The options are Enabled and **Disabled**.

ACPI T State

Select Enabled to support Advanced Configuration and Power Interface (ACPI) Throttling States (T State), which will lower the power consumption level for the system as to the power consumption level set for CPU Performance State 1 to achieve power efficiency. The options are **Enabled** and Disabled.

▶Chipset Configuration

WARNING: Setting the wrong values in the following sections may cause the system to malfunction.

▶System Agent (SA) Configuration

The following System Agent (SA) information

- System Agent Bridge Name
- VT-d Capability

VT-d

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

▶Graphics Configuration

This item displays the following graphics information:

Graphics Configuration

- IGFX VBIOS Version
- IGfx Frequency

Graphics Turbo IMON Current

Use this feature to set the limit on the current voltage regulator. Press "+" or "-" on your keyboard to change this value.

Primary Display

Use this feature to select the graphics device to be used as the primary display. You can select from a device installed on the CPU IGFX, CPU SLOT, or PCH SLOT. The options are **Auto**, CPU IGFX, CPU SLOT, and PCH SLOT.

CPU Slot (Available when Primary Display is set to Auto)

Use this item to select the graphics device installed in an expansion slot supported by the CPU to be used as the primary display. The options are **Auto,** CPU SLOT4 PCI-E 3.0 X8 (IN X16) and CPU SLOT2 PCI-E 3.0 X4 (IN X16).

PCH Slot (Available when Primary Display is set to Auto)

Use this item to select the graphics device installed in an expansion slot supported by the PCH to be used as the primary display. The options are **Auto,** and PCH_SLOT1/SLOT3/SLOT5 PCI-E 2.0 X1 (IN X4).

CPU IGFX

Select Auto to keep an internal graphics device installed on an expansion slot supported by the CPU to be automatically enabled. The options are Auto, Disabled, and Enabled.

GTT Size

Use this feature to set the memory size to be used by the graphics translation table (GTT). The options are 1MB and 2MB.

Aperture Size

Use this feature to set the Aperture size, which is the size of system memory reserved by the BIOS for graphics device use. The options are 128MB, 256MB and 512 MB.

DVMT Pre-Allocated

Dynamic Video Memory Technology (DVMT) allows dynamic allocation of system memory to be used for video devices to ensure best use of available system memory based on the DVMT 5.0 platform. The options are 32M, 64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M, and 1024M.

DVMT (Dynamic Video Memory Technology) Total Gfx Mem

Use this feature to set the total memory size to be used by internal graphics devices based on the DVMT 5.0 platform. The options are 128MB, **256MB** and MAX.

Gfx (Graphics) Low Power Mode

Select Enabled to use the low power mode for internal graphics devices installed in a small form factor (SFF) computer. The options are **Enabled** and Disabled.

PCI-E Configuration

This item displays the information of the (graphics) device installed on a PCI-E slot.

CPU SLOT6 PCI-E 3.0 X16

CPU SLOT6 PCI-E 3.0 X16 - Gen X

This feature allows the user to select PCI-E support for the device installed on Slot6. The options are **Auto**, Gen1 (Generation 1), Gen 2 and Gen 3.

CPU SLOT4 PCI-E 3.0 X8(IN X16)

CPU SLOT4 PCI-E 3.0 X8(IN X16) - Gen X

This feature allows the user to select PCI-E support for the device installed on Slot4. The options are **Auto**, Gen1 (Generation 1), Gen 2 and Gen 3.

CPU SLOT2 PCI-E 3.0 X4 (IN X16)

CPU SLOT2 PCI-E 3.0 X4 (IN X16) - Gen X

This feature allows the user to select PCI-E support for the device installed on Slot4. The options are **Auto**, Gen1 (Generation 1), Gen 2 and Gen 3.

Detect Non-Compliant Device

Select Enabled for the AMI BIOS to automatically detect a PCI-E device that is not compliant with the PCI-E standards. The options are Enabled and **Disabled**.

Program PCI-E ASPM After OpROM

PCI-E ASPM, the Active State Power Management for PCI-Express slots, is a power management protocol used to manage power consumption of serial-link devices installed on PCI-Exp slots during a prolonged off-peak time. If this item is set to Enabled, PCI-E ASMP will be programmed after OpROM. If this item is set to Disabled, the PCI-E ASPM will be programmed before OpROM. The options are **Enabled** and Disabled.

CPU SLOT6 PCI-E 3.0 X16 - ASPM,
CPU SLOT4 PCI-E 3.0 X8(IN X16) - ASPM,
CPU SLOT2 PCI-E 3.0 X4 (IN X16)- ASPM

Use this feature to set the ASPM (Active State Power Management) level for the graphics device installed on a PCI-E or PCI slot specified by the user. The options are Disabled, ASPM L0s, ASPM L1, ASPM L0sL1, and **Auto**.

DMI Link ASPM Control

Use this feature to set the ASPM (Active State Power Management) state on the SA (System Agent) side of the DMI Link. The options are Disabled, L0s, L1 and **L0sL1**.

PCH DMI Link ASPM Control

Use this feature to set the ASPM (Active State Power Management) state on the device installed on the DMI Link supported by the PCH chip. The options are Disabled and **Enabled**.

PCH SLOT1 / SLOT3 / SLOT5 PCI-E 2.0 X1 ASPM

This feature sets the ASPM (Active State Power Management) level for the devices installed on PCI SLOT1, SLOT3 and SLOT5 . The options are Disabled, L0s, L1, L0sL1 and **Auto**.

▶Memory Configuration

This item displays the following information on the memory modules installed on the motherboard.

- Memory RC Version
- Memory Frequency
- Total Memory
- Memory Voltage
- DIMM A1
- DIMM A2
- DIMM B1
- DIMM B2
- CAS Latency (tCL)

- Minimum Delay Time
  - CAS to RAS (tRCDmin)
  - Row Precharge (tRPmin)
  - Active to Precharege (tRASmin)

Max TOLUD (Top of Low Usable DRAM)

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB and 3.25 GB.

Note: TSEG is a block of memory that is only accessible by the processor while operating in System Management Mode (SMM).

Memory Scrambler

This feature enables or disables memory scrambler support for memory error correction. The settings are **Enabled** and Disabled.

▶PCH-IO Configuration

This item displays the information for the PCH-IO Chip.

- Intel PCH Rev ID
- USB Configuration
- USB Devices: 1 Keyboard, 1 Mouse, 2 Hubs

EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 1 for USB 2.0 support. One EHCI controller must always be enabled. The settings are **Enabled** and Disabled.

EHCI2

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 2 for USB 2.0 support. One EHCI controller must always be enabled. The settings are **Enabled** and Disabled.

Legacy USB Support

Select Enabled to support legacy USB devices. Select Auto to disable legacy support when legacy USB devices are not present. If Disable is selected, legacy USB devices will not be supported. The options are **Enabled,** Disabled and Auto.

Port 60/64 Emulation

This feature enables or disables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB-aware operating systems. The options are Disabled and **Enabled**.

XHCI Hand-Off

This item is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

EHCI Hand-Off

This item is for Operating Systems that do not support Enhanced Host Controller Interface (EHCI) hand-off. When this item is enabled, EHCI ownership change will be claimed by the EHCI driver. The settings are Enabled and **Disabled**.

XHCI Mode

This feature handles the operation mode for the XHCI (Extensible Host Controller Interface) controller. The settings are **Smart Auto**, Auto, Enabled, Disabled and Manual.

Frontside Audio Mode

This feature selects the type of audio output for the front_side audio header or connection. Select **HD Audio** for High Definition; otherwise, select AC '97 for legacy audio. The options are **HD Audio** and AC' 97.

▶On Board Chip Configuration

This item displays the On Board Chip options.

▶ASMedia 1061 SATA Controller

ASMedia 1061 SATA Controller

Select Enabled to activate the onboard ASMedia SATA controller. The settings are **Enabled** and Disabled.

▶SATA Configuration

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

SATA Controllers

This item Enables or Disables the built-in SATA controllers on the motherboard. The options are **Enabled** and Disabled.

SATA Mode Selection

This item selects the mode for the installed SATA drives. The options are IDE, **AHCI** and RAID.

SATA RAID Option ROM/UEFI Driver (Available if the item above - SATA Mode Select is set to AHCI or RAID)

Select Enabled to use the SATA RAID Option ROM/UEFI driver for system boot. The options are **Enabled** and Disabled.

If the item above -SATA Mode Select is set to AHCI, the following items are displayed:

Serial ATA Port 0~ Port 5

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

Port 0 ~ Port 5 Hot Plug

This feature designates the port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Enabled** and Disabled.

Port 0 ~ Port 1 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. The options are **Hard Disk Drive** and Solid Sate Drive.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization sequence to the device. The options are Enabled and **Disabled**.

If the item above - SATA Mode Select is set to IDE, the following items are displayed:

Serial ATA Port 0~ Port 5

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

If the item above - SATA Mode Select is set to RAID, the following items are displayed:

Serial ATA Port 0~ Port 5

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

Port 0 ~ Port 5 Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA drive without shutting down the system. The options are **Enabled** and Disabled.

Port 0 ~ Port 1 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. Set this item to Enabled to enable hot-plugging. The options are **Hard Disk Drive** and Solid Sate Drive.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization sequence to the device. The options are Enabled and **Disabled**.

▶PCIe/PCI/PnP Configuration

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

Above 4G Decoding

Select Enabled for 64-bit devices to be decoded above the 4GB address space If 64bit PCI decoding is supported by the system. The options are **Disabled** and Enabled.

VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow the PCI cards that do not contain their own VGA color palette to examine the video cards palette and mimic it for proper color display. The options are **Disabled** and Enabled.

PERR# Generation

Select Enabled to allow a PCI device to generate a PERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled to allow a PCI device to generate an SERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

PCH SLOT1 PCI-E 2.0 X1 (IN X4),
CPU SLOT2 PCI-E 3.0 X4 (IN X16),
PCH SLOT3 PCI-E 2.0 X1 (IN X4),
CPU SLOT4 PCI-E 3.0 X8 (IN X16),
PCH SLOT5 PCI-E 2.0 X1 (IN X4),
CPU SLOT6 PCI-E 3.0 X16

Select Disabled to deactivate the selected slot, Legacy to activate the slot in legacy mode and EFI to activate the slot in EFI mode. The options are Disabled, **Legacy** and EFI.

Launch Storage OPROM Policy

This feature controls how the system executes UEFI (Unified Extensible Firmware Interface), and legacy storage OPROM. Select Legacy Only to boot the system using a legacy device installed in a PCI slot. The options are UEFI Only and **Legacy Only**.

Other PCI Device ROM Priority

This feature selects a PCI device Option ROM for system boot if this device is not a network, mass storage, or video device. The options are UEFI Only and **Legacy Only**.

Onboard LAN1 Option ROM/Onboard LAN2 Option ROM

Select PXE (Preboot Execution Environment) to boot the computer using a PXE device installed in a LAN port specified. Select Disabled to prevent system boot using a device installed in a LAN port. The options for Onboard LAN1 Option ROM/ Onboard LAN2 Option ROM are Disabled and PXE. The default for Onboard LAN1 Option ROM is **PXE**, and **Disabled** for Onboard LAN2 Option ROM.

Network Stack

Select Enabled to enable PXE (Preboot Execution Environment) or UEFI (Unified Extensible Firmware Interface) for network stack support. The options are Enabled and **Disabled**.

Ipv4 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv4 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv4 PXE boot option will not be supported. The options are **Enabled** and Disabled.

Ipv6 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv6 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv6 PXE boot option will not be supported. The options are Enabled and **Disabled.**

▶ACPI Settings

High Precision Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

ACPI Sleep State

This feature selects the ACPI Sleep State that the system will enter into when the suspend button is activated. The options are Suspend Disabled, S1 only (CPU Stop Clock), S3 only (Suspend to RAM), and **Both S1 and S3**.

▶Trusted Computing (Available when a TPM Device is Detected)

Configuration

Security Device Support

Select Enable for the AMI BIOS to automatically download the drivers needed to provide Trusted Computing platform support for this machine to ensure date integrity and network security. The options are **Disable** and Enable.

TPM State

Select Enabled to use TPM (Trusted Platform Module) settings for system data security. The options are Disabled and **Enabled**.

Note: The system will reboot for the change on TPM State to take effect.

Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for TPM support. The options are **None**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Note: The computer will reboot to carry out a pending TPM operation and change TPM state for a TPM device.

Current Status Information

This feature indicates the status of the following TPM items:

TPM Enabled Status

TPM Active Status

TPM Owner Status

Intel TXT (LT) Support

Intel TXT (Trusted Execution Technology) helps protect against software-based attacks to ensure the security, confidentiality, and integrity of all data stored in the system. The options are Enabled and **Disabled**.

▶Performance Tuning Mode (Available when both XMP memory and an Extreme Edition CPU are installed)

This item allows the user to choose the Intel Extreme Memory Profile (XMP) Specification which enables DDR3 memory to operate beyond the standard JEDEC SPD specification. Select XMP for 1600 MHz XMP memory operation for better system performance.

▶CPU Configuration

The following CPU Configuration submenu items will display:

Non Turbo Ratio Override

This feature allows the user to set the non-turbo override ratio. The default setting is **dependent on the type of CPU installed**.

Package Current Lock

Select Enabled to lock the current CPU package values. The options are Enabled and **Disabled**.

IA Core Current Max (1/8 Amp)

This feature allows the user to set the maximum electric current value for the Intel CPU cores. The default setting is **760**.

Enhanced Intel SpeedStep Technology

Select Enabled to enable Enhanced Intel SpeedStep Technology (EIST) support to allow the system to automatically adjust processor voltage and core frequency to enhance power efficiency. The options are Disabled and **Enabled**.

Turbo Mode

Select Enabled to use Turbo Mode to boost system performance. The options are Disabled and **Enabled**. The following options are available if Turbo Mode is enabled:

Package TDP Lock Enable

Select Enabled to lock the Thermal Design Power (TDP) value for the processor. The options are **Disabled** and Enabled.

Power Limit 1 Value (Watt)

Use this feature to set the power limit for CPU1. Use the number keys on your keyboard to enter the value. The default setting is **84**.

Power Limit 1 Time (Seconds)

This item allows the user to determine how long CPU1 should operate at the power limit set by the user for the item above. Use the number keys on your keyboard to enter the value. The default setting is **8**.

Power Limit 2 Switch

Select Enabled for power limit switch for CPU2. The settings are Disabled and **Enabled**.

Power Limit 2 Value (Watt)

Use this feature to set the power limit for CPU2. Use the number keys on your keyboard to enter the value. The default setting is **105**.

1 Core Ratio Limit

This increases (multiplies) 1 clock speed in the CPU core in relation to the bus speed when one CPU core is active. Use the number keys on your

keyboard to enter the value. The default setting is **dependent on the CPU installed.**

2 Core Ratio Limit

This increases (multiplies) 2 clock speeds in the CPU core in relation to the bus speed when two CPU cores are active. Use the number keys on your keyboard to enter the value. The default setting is **dependent on the CPU installed.**

3 Core Ratio Limit

This increases (multiplies) 3 clock speeds in the CPU core in relation to the bus speed when three CPU cores are active. Use the number keys on your keyboard to enter the value. The default setting is **dependent on the CPU installed.**

4 Core Ratio Limit

This increases (multiplies) 4 clock speeds in the CPU core in relation to the bus speed when four CPU cores are active. Use the number keys on your keyboard to enter the value. The default setting is **dependent on the CPU installed.**

Disable OverClocking Lock

If this feature is set to Enabled, the OverClocking Lock will be deactivated. The options are Disabled and **Enabled**.

Filter PLL

This feature selects the Phase Lock Loop (PLL) filter frequency. The options are **High Frequnecy 3.2GHz** and Lower Frequnecy 1.6GHz.

ICC (Intelligent Clock Control) Clock Setting

Host Clock Override (1/100 MHz)

Use this item to set the CPU clock override value for the host system. Press "+" or "-" on your keyboard to change the value. The default setting is **10000**.

▶North Bridge Configuration

The following North Bridge Configuration submenu items will display:

Memory Multiplier Configuration

Performance Memory Profiles

Use this feature to set Performance Memory Profiles which may cause impact on memory behavior due to different sizes of memory used in the system. Select Automatic to allow the BIOS to automatically set Performance Memory Profiles. Select Manual to manually configure Performance Profiles. The options are **Automatic,** Manual, XMP Profile 1 and XMP Profile 2.

XMP Profile 1

XMP Profile 2

If Manual is selected, the following options will be displayed:

Memory Timing Configuration

Memory Clock Multiplier

This option selects the Memory Clock Multiplier. The options are **1.33** and 1.00.

Memory Multiplier

This option selects the Memory Multiplier value. The options are **8,** 10, 12, 14, 16, 18, 20, 22, 24, 26 and 28.

tCL

This option configures the Cas Latency Range. Enter a number between 4-18. The default is **9**.

tRP

This option selects the Ras Precharge Range. Enter a number between 1-38. The default is **11**.

tRCD

This option configures the Row to Col Delay Range. Enter a number between 1-38. The default is **11**.

tRAS

This option selects the Ras Active Time. Enter a number between 1-586. The default is **28**.

tWR

This option configures the Minimum Write Recovery Time. Enter a number between 1-38. The default is **12**.

tRFC

This option selects the Minimum Refresh Recovery Delay Time. Enter a number between 1-9363. The default is **128**.

tWTR

This option configures the Minimum Internal Write to Read Command Delay Time. Enter a number between 1-38. The default is **6**.

tRRD

This option selects the Minimum Row Active To Row Active Delay Time. Enter a number between 1-38. The default is **5**.

tRTP

This option configures the Internal Read to Precharge Command Delay Time. Enter a number between 1-38. The default is **6**.

tCWL Value

This option selects the Minimum CAS Write Latency Time. Enter a numeric value. The default is **8**.

tREFI Value

This option configures the Maximum tREFI Time (Average Periodic Refrech Interval). Enter a numeric value. The default is **6240**.

tFAW

This option selects the Minimum Four Activate Window Delay Time. Enter a numeric value between 1-586. The default is **24**.

tRC

This option configures the Minimum Active to Active/Refresh Delay Time (tRCmin). Enter a numeric value between 1-586. The default is **39**.

Memory Voltage

Use this feature to select the Memory Voltage. The default setting is **Auto**.

Intel Graphics Configuration

Graphics Core Ratio Limit

Use this feature to set graphics core ratio limit. The default setting is **dependent on the type of CPU installed.**

▶Overclocking CPU Option

Note: Overclocking may void system warranty. Please check the operations manual or online at www.supermicro.com for supported components. The following Overclocking CPU Option submenu items will display:

CPU Adaptive Voltage Target (mV)

Use this feature to set the CPU voltage Target(mV) value from 0mV to 2000mV. Enter 0 to use the manufacture default value.

CPU Voltage Mode

Use this feature to select the CPU voltage mode. The options are Override and **Adaptive**.

CPU Voltage Offset (mV)

Use this feature to set to set the CPU Voltage Offset value from -1000mV to 998mV. Enter 0 to use the manufacture default value.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

▶Overclocking RING Option

The following Overclocking RING Option submenu items will display:

RING Adaptive Voltage Target (mV)

Use this feature to set the RING Adaptive Voltage Target(mV) value from 0mV to 2000mV. Enter 0 to use the manufacture default value.

RING Voltage Mode

Use this feature to select the CPU RING Voltage mode. The options are Override and **Adaptive**.

RING Voltage Offset (mV)

Use this feature to set to set the RING Voltage Offset value from -1000mV to 998mV. Enter 0 to use the manufacture default value.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

▶Overclocking SVID and FIVR Option

The following Overclocking SVID and FIVR Option submenu items will display:

SVID Control Enable

Select Enabled to enable SVID control for Intel SVID Protocol support. If this setting is set to Disabled, there will be no change made to SVID until the CPU powers down. The options are **Enabled** and Disabled.

SVID Override Voltage Target (mV)

Use this feature to set the value for SVID Override Voltage Target (up to 2500 mV). Enter 0 to use the manufacture default value.

FIVR Faults Enable

Select Enabled to enable FIVR Faults support. If this setting is set to Disabled, there will be no change made to FIVR Faults settings until the CPU powers down. The options are **Enabled** and Disabled.

FIVR Efficiency Enable

Select Enabled to enable FIVR Efficiency support. If this setting is set to Disabled, there will be no change made to FIVR Efficiency status until the CPU powers down. The options are **Enabled** and Disabled.

▶Overclocking GT Option

The following Overclocking GT Option submenu items will display:

GT Adaptive Voltage Target (mV)

Use this feature to set the GT Adaptive voltage Target(mV) value from 0mV to 2000mV. Enter 0 to use the manufacture default value.

GT Voltage Mode

Use this feature to select the Overclocking GT mode. The options are Override and **Adaptive**.

GT Voltage Offset (mV)

Use this feature to set the GT Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the GT Voltage Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

▶Overclocking UNCORE Option

The following Overclocking UNCORE Option submenu items will display:

UNCORE Voltage Offset (mV)

Use this feature to set the UNCORE Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

▶Overclocking IOA and IOD Option

The following Overclocking IOA and IOD Option submenu items will display:

IOA Voltage Offset (mV)

Use this feature to set the IOA Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

IOD Voltage Offset (mV)

Use this feature to set the IOD Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

▶Overclocking Button Option

The following Overclocking Button Option submenu items will display. These are the settings for the OC buttons on the motherboard:

▶OC1 Button Setting Configuration,
▶OC2 Button Setting Configuration

The following settings are displayed with their current values, please enter numeric characters only:

IA Core Current Max (1/8)

Power Limit 1 Value (Watts)

Power Limit 2 Value (Watts)

1 Core Ratio Limit

2 Core Ratio Limit

3 Core Ratio Limit

4 Core Ratio Limit

▶OC3 Button Setting Configuration

ICC Clock Setting

Host Clock Override (1/100 MHz)

This option allows the user to change the current Host Clock Override value. Please enter numeric characters only.

CPU Voltage Offset (mV)

Use this feature to set to set the CPU Voltage Offset value from -1000mV to 998mV. Enter 0 to use the manufacture default value.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

RING Voltage Offset (mV)

Use this feature to set to set the RING Voltage Offset value from -1000mV to 998mV. Enter 0 to use the manufacture default value.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

IOA Voltage Offset (mV)

Use this feature to set the IOA Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

IOD Voltage Offset (mV)

Use this feature to set the IOD Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

SVID Override Voltage Target (mV)

Use this feature to set the value for SVID Override Voltage Target (up to 2500 mV). Enter 0 to use the manufacture default value.

Memory Multiplier Configuration

Performance Memory Profiles

This option selects the Performance Memory Profiles which impacts memory sizing behavior. The options are **Automatic**, Manual, XMP Profile 1, and XMP Profile 2. If Manual is selected, the following options are displayed:

Memory Timing Configuration

Memory Clock Multiplier

This option selects the Memory Clock Multiplier. The options are **1.33** and 1.00.

Memory Multiplier

This option selects the Memory Multiplier value. The options are **8,** 10, 12, 14, 16, 18, 20, 22, 24, 26 and 28.

tCL

This option configures the Cas Latency Range. Enter a number between 4-18. The default is **9**.

tRP

This option selects the Ras Precharge Range. Enter a number between 1-38. The default is **11**.

tRCD

This option configures the Row to Col Delay Range. Enter a number between 1-38. The default is **11**.

tRAS

This option selects the Ras Active Time. Enter a number between 1-586. The default is **28**.

tWR

This option configures the Minimum Write Recovery Time. Enter a number between 1-38. The default is **12**.

tRFC

This option selects the Minimum Refresh Recovery Delay Time. Enter a number between 1-9363. The default is **128**.

tWTR

This option configures the Minimum Internal Write to Read Command Delay Time. Enter a number between 1-38. The default is **6**.

tRRD

This option selects the Minimum Row Active To Row Active Delay Time. Enter a number between 1-38. The default is **5**.

tRTP

This option configures the Internal Read to Precharge Command Delay Time. Enter a number between 1-38. The default is **6**.

tCWL Value

This option selects the Minimum CAS Write Latency Time. Enter a numeric value. The default is **8**.

tREFI Value

This option configures the Maximum tREFI Time (Average Periodic Refrech Interval). Enter a numeric value. The default is **6240**.

tFAW

This option selects the Minimum Four Activate Window Delay Time. Enter a numeric value between 1-586. The default is **24**.

tRC

This option configures the Minimum Active to Active/Refresh Delay Time (tRCmin). Enter a numeric value between 1-586. The default is **39**.

Memory Voltage

Use this feature to select the Memory Voltage. The options are 1.35V, 1.40V, 1.45V, 1.50V, 1.55V, 1.60V, 1.65V, 1.70V, 1.75V, 1.80V, 1.85V, 1.90V, 1.95V and **Auto**.

UNCORE Voltage Offset (mV)

Use this feature to set the UNCORE Voltage Offset value between -1000mV and 998mV. Enter 0 to use the default setting.

Offset Prefix

Use this feature to set the Offset value as a positive (+) number or a negative (-) number. Press "+" or "-" on your keyboard to make a selection. The default setting is **"+"**.

Intel Graphics Configuration

Graphics Core Ratio Limit

This option allows the configuration of the Graphics Core Ratio limit. Please enter a numeric value. The default is **24**.

Case LED

The following setting will enable the LED lamp that is mounted on the chassis to flash when Over-Clocking is enabled. The options are **Enabled** and Disabled.

▶PCH-FW Configuration

The following information are displayed:

- ME FW Version
- ME Firmware Mode
- ME Firmware Type
- ME Firmware SKU
- PTT Capability/State

▶Firmware Update Configuration

ME FW Image Re-Flash

Select Enabled to re-flash the ME (Management Engine) Firmware. The options are **Disabled** and Enabled.

▶Intel(R) Thunderbolt

The following Intel Thunderbolt submenu items will display:

- Thunderbolt Specification Version
- Intel Sample Code Version
- Thunderbolt Host Chip

Security Level

This option selects the security level for the Intel Thunderbolt port(s) . The options are **Legacy Mode**, Unique ID, One Time Saved Key, and DP+++ only.

Wake From Thunderbolt Devices

This option enables the wake-up feature from Thunderbolt devices. The options are **Disabled**, and Enabled.

Thunderbolt PCIe Cache-Line Size

This option configures the cache-line size value to be configured on the Thunderbolt PCIe subtree. The options 0, 1, 2, 4, 8, 16, **32**, 64, and 128.

Thunderbolt Surprise-Removal

This option enables or disables the Thunderbolt Surprise Removal workaround support. The options are **Disabled** and Enabled.

Thunderbolt Software SMI Delay

This option configures the Thunderbolt Software SMI Delay. Enter a numeric value in milliseconds. Default is **20**ms. (Note: 0 = Disabled).

Reserved Memory per Physical Slot

This option configures the Thunderbolt reserved memory for each physical slot. For example, if a PCIe device uses <X MB of memory, the BIOS will reserve X MB per physical slot. Enter a numeric value in megabytes. Default is **32**MB.

Reserved Prefetch Memory per Physical Slot

This option configures the Thunderbolt reserved Prefetch memory for each physical slot. For example, if a PCIe device uses <X MB of prefetchable memory, the BIOS will reserve X MB per physical slot. Enter a numeric value in megabytes. Default is **32**MB.

Thunderbolt Device IO Resource Support

This option enables or disables the IO resource for the Thunderbolt device. The options are **Disabled** and Enabled.

▶Super IO Configuration

Super IO Chip NCT6776D

▶Serial Port 1 Configuration

Select Enabled to enable onboard serial ports. The options are **Enabled** and Disabled.

Device Settings

This feature displays the base I/O port address and the Interrupt Request address of Serial Port 1.

Change Port 1 Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1. Select Auto to let the BIOS automatically assign the base I/O and IRQ address.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12) and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

▶H/W (Hardware) Monitor

PC Health Status

Fan Speed Control Mode

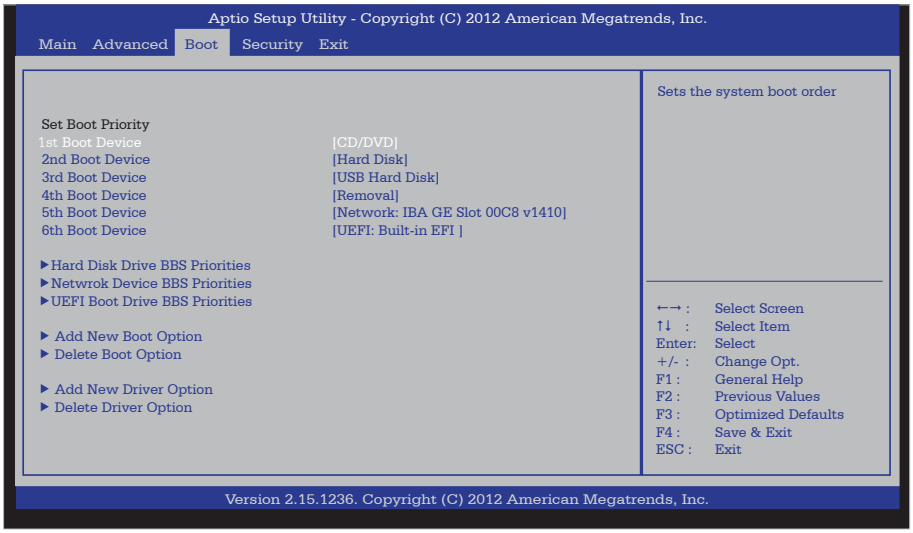
This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Standard" for the onboard fans to run at 50% of the Initial PWM Cycle in order to balance the needs between system cooling and power saving. This setting is recommended for regular systems with normal hardware configurations. The options are Full Speed (@100% of PWM Cycle), and **Standard** (@50% of PWM Cycle).

The following items will be displayed:

- CPU Temperature (PECI)
- System Temperature
- Peripheral Temperature
- PCH Temperature
- Fan 1 Speed ~ Fan 5 Speed
- VCORE
- 12V
- VDIMM
- 5Vcc
- PCH 1.05V
- AVCC
- 3.3Vcc
- VSB
- VBAT

7-4 Boot Settings

Use this feature to configure Boot Settings:



Set Boot Priority

This option prioritizes the order of bootable devices that the system to boot from. Press [ENTER] on each entry from top to bottom to select devices.

- 1st Boot Device
- 2nd Boot Device
- 3rd Boot Device
- 4th Boot Device
- 5th Boot Device
- 6th Boot Device

▶Hard Disk Drive BBS Priorities

- 1st Device
- 2nd Device

▶UEFI Boot Drive BBS Priorities

- 1st Boot Device

▶Delete Boot Option

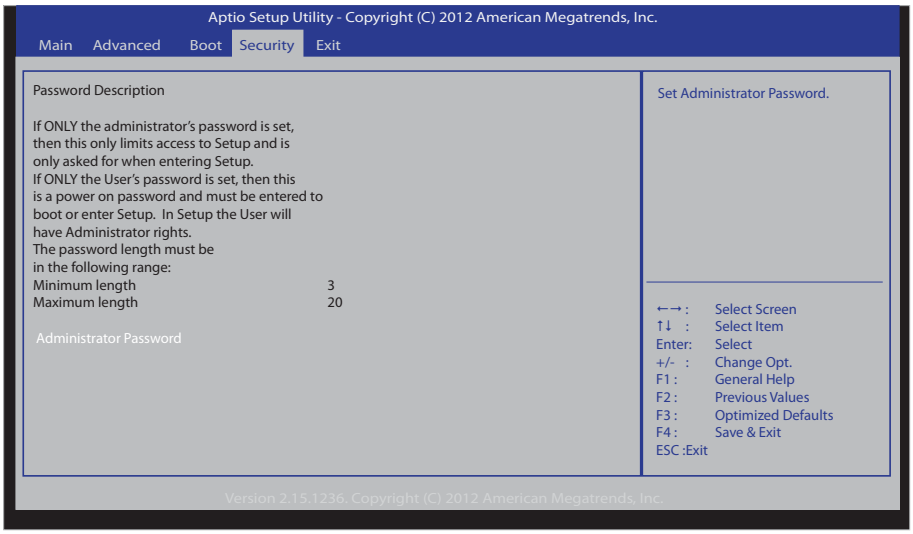
Use this feature to remove a pre-defined boot device from which the system will boot during startup. The settings are [any pre-defined boot device]

▶Delete Driver Option

Use this feature to remove a pre-defined driver from which the system will boot during startup. The settings are [any pre-defined boot device]

7-5 Security Settings

This menu allows the user to configure the following security settings for the system.



- If the Administrator password is defined ONLY - this controls access to the BIOS setup ONLY.
- If the User's password is defined ONLY - this password will need to be entered upon each system boot, and will also have Administrator rights in the setup.
- Passwords must be at least 3 and up to 20 characters long.

Administrator Password

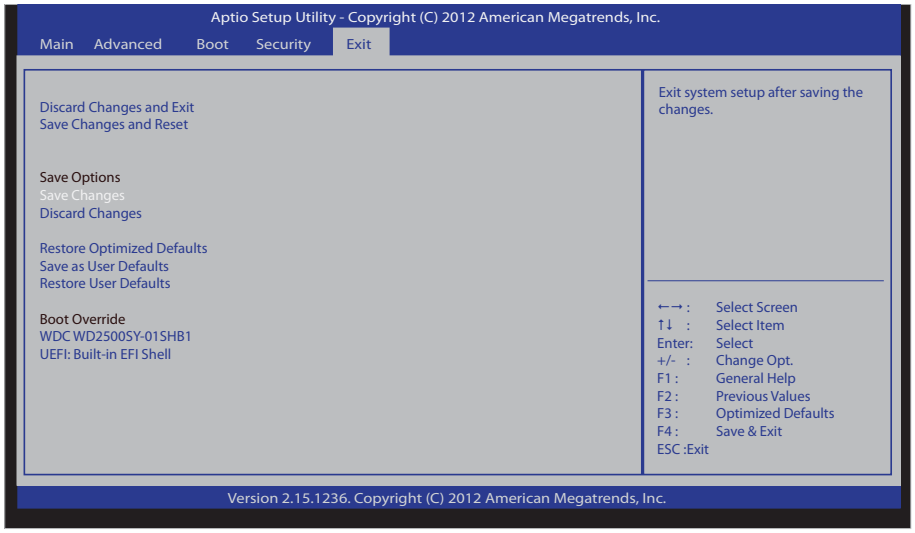
Use this feature to set the Administrator Password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

HDD Security Configuration

Use this feature to set the Hard Disk Drive Password which will be required to access the selected hard disk drive. The length of the password should be from 3 characters to 20 characters long. To begin, use the cursor to highlight a detected hard disk and press <Enter>. Press <Enter> again on "Set User Password" to define the hard disk drive password. Save when finished.

7-6 Save & Exit

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



Discard Changes and Exit

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

Save Changes and Reset

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

Save Options

Save Changes

When you have completed the system configuration changes, select this option to save all changes made. This will not reset (reboot) the system.

Discard Changes

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

Restore Optimized Defaults

To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system performance but not for maximum stability.

Save As User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select an option and press <Enter>. Your system will boot to the selected boot option.

Appendix A

BIOS Error Beep Codes

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

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

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

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

BIOS Error Beep Codes

Beep Code/LED	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 short beeps	Display error	System display error
OH LED On	System OH	System Overheat

Notes

Appendix B

System Specifications

Processor

One Intel Xeon E3-1200V3 series processor or 4th Generation Intel Core™ i7/i5/i3 DT processor in an LGA1150 socket

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

Chipset

Intel Z87

BIOS

128 Mb AMI SPI Flash EEPROM

Memory Capacity

Four DIMM slots that can support up to 32 GB of Unbuffered ECC/non-ECC DDR3-1600/1333/1066 DIMMs

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

SATA Controller

Intel on-chip controller for 8-port SATA 3.0 (RAID supported)

Drive Bays

Four 2.5" hot-swap drive bays (optional, MCP-220-73202-0N), two 3.5" hot-swap drive bays and three 3.5" internal hot-swap drive bays

Peripheral Drive Bays

Two 5.25" drive bays

Expansion Slots

Supports the use of standard size PCI add-on cards in three PCI-E 3.0 x16 slots and three PCI-E 2.0 x4 slots

Serverboard

C7Z87-OCE

Dimensions: 12" x 9.6" (305 x 244 mm)

Chassis

SC732G-903B mid tower chassis

Dimensions: (WxHxD) 8.66 x 20.08 x 22.83 in. (220 x 510 x 580 mm)

Weight

Gross: 35.5 lbs. (16.1 kg.)

System Cooling

One 12-cm low-noise exhaust fan

One 12-cm low-noise cooling fan

System Input Requirements

AC Input Voltage: 100-240V

Rated Input Current: 10A (115V) to 6A (240V)

Rated Input Frequency: 50/60 Hz

Power Supply

Rated Output Power: 900W (Part# PWS-903-PQ)

Rated Output Voltages: +3.3V (25A), +5V (25A), $+12V_1$ (25A), $+12V_2$ (25A), $+12V_3$ (25A), $+12V_4$ (25A), -12V (0.5A), +5Vsb (3A)

Operating Environment

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

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

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

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

Regulatory Compliance

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

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

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

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

(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.