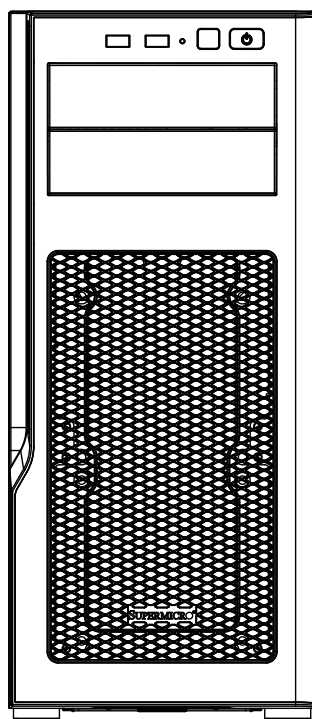




5038K-i



User's Manual

Revision 1.0

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- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
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Manual Revision 1.0
Release Date: June 03, 2016

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Preface

About This Manual

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

The 5038K-i is a high-end system based on the GS5A-753B mid-tower chassis and the K1SPE 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 K1SPE motherboard and the GS5A-753B chassis.

Chapter 2: System Installation

This chapter describes the steps necessary to setup the 5038K-i and check out the system configuration prior to powering up the system.

Chapter 3: System Interface

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

Chapter 4: System Safety

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

Chapter 5: Advanced Motherboard Setup

Chapter 5 provides detailed information on the K1SPE motherboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing main memory and when reconfiguring the motherboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the GS5A-753B chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Chapter 1

Introduction

1-1 Overview

The 5038K-i is a high-end workstation comprised of two main subsystems: the GS5A-753B mid-tower chassis and the K1SPE single Intel® processor motherboard. Please refer to our web site for information on operating systems that have been certified for use with the 5038K-i (www.supermicro.com).

These units are sold as complete systems with the motherboard, processor, and heat sink assembly factory installed. These components are not user serviceable, and the user should not attempt to remove or modify these components other than adjustments specifically outlined in this manual. Making other adjustments to these components risks damaging the system and voiding the system warranty.

If you believe there is a hardware problem with one of these components, please contact Supermicro's technical support team or your service contact if you have purchased a service package for this system.

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

- One (1) rear exhaust fan, two (2) front cooling fans, two (2) top exhaust fans at the top under the radiator for the liquid cooling unit
- Two (2) chassis 3.5" HDD cages (MCP-220-GS504-0N)
- One (1) chassis 2.5" HDD cage (MCP-220-GS505-0N)

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 system.

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

1-2 Motherboard Features

At the heart of the 5038K-i lies the K1SPE, a single processor motherboard based on the Intel® PCH C612 chipset. Below are the main features of the K1SPE. (See Figure 1-1 for a block diagram of the chipset).

Processors

The K1SPE motherboard supports a single non-fabric Intel® Xeon Phi™ x200 processor in an Intel® LGA 3647 (P0) socket. With the Intel® C612 chipset, the K1SPE. motherboard offers substantial system performance and storage capability. Please refer to our website (<http://www.supermicro.com/products/>) for processor and memory support updates.”

Other chipset features include:

- Direct Media Interface (up 10 Gb/s transfer, Full Duplex)
- Intel® Matrix Storage Technology and Intel Rapid Storage Technology
- Dual NAND Interface
- Intel I/O Virtualization (VT-d) Support
- Intel Trusted Execution Technology Support
- PCI Express 3.0 Interface (up to 8 GT/s)
- SATA Controller (up to 6Gb/sec)
- Advanced Host Controller Interface (AHCI)

Memory

The K1SPE has six (6) DIMM slots that can support 384 GB of Registered RDIMM up to 64 GB size and DDR4 2400 MHz speed, 1.20V SDRAM. See Chapter 5 for details.

SATA

A SATA controller is integrated into the chipset to provide a SATA3 subsystem that supports seven (7) SATA 3.0 connections (I-SATA connectors 1-3, S-SATA connectors 1-4). This system supports RAID 0, 1 and 10 (from the Intel PCH). Additionally, two SATA DOM (Device-On-Module) power connectors (JSD1/2) are provided.

PCI Expansion Slots

The K1SPE has the following available expansion ports on the motherboard:

- Two (2) PCI Express 3.0 x16 slots (CPU Slot4/Slot6)
- One (1) PCI Express 2.0 x4 (in x8) slot (PCH Slot2)

Onboard Controllers/Ports

Both the motherboard and chassis include the following I/O ports:

- Four (4) USB 3.0/2.0 ports on the rear I/O panel (USB 2.0 0/1, USB 2.0 5/6 or USB 3.0 2/3, USB 3.0 7/8)
- One (1) Onboard USB header with two USB 3.0 connections (USB 3.0 8/9) for front control panel
- One Intel i350 Gigabit (10/100/1000 Mb/s) Ethernet controller for a Gigabit (GbE) LAN port
- One (1) Serial port on the IO back panel (COM1)
- One (1) Fast UART 16550 connection header (COM2)
- VGA port on the IO back panel
- One (1) TPM header

Other Features

Other onboard features of the motherboard include:

- BIOS features such as DMI 2.3, PCI 3.0, ACPI 3.0/4.0, USB Keyboard, Plug & Play (PnP), BIOS Rescue hot-key, Real Time Clock (RTC), UEFI 2.3.1, and SMBIOS 2.7 or later,
- CPU 6-Phase switching voltage regulator
- CPU/System overheat LED and control
- CPU Thermal Trip support
- Thermal Monitor 2 (TM2) support
- PECI (Platform Environment Configuration Interface) 2.0 support
- Fan status monitoring with firmware 4-pin fan speed control
- Low noise fan speed control
- ACPI Power Management
- Power-on mode for AC power recovery
- Intel® Intelligent Power Node Manager (available when the NMView utility is installed)
- Management Engine
- Riser card auto-detection

- LED Indicators for: CPU/system overheat LED, Power/suspend state indicator, Fan failure LED, LAN activity LED, BMC (BaseBoard Management) LED and UID/Remote UID LED
- System resource alert via SuperDoctor® 5
- SuperDoctor® 5, Watch Dog, NMI, SPM, SUM-InBand, SUM-OOB

Recovery from AC Power Loss

Basic I/O System (BIOS) provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off, (in which case you must press the power switch to turn it back on), or for it to automatically return to a power-on state. See the Advanced BIOS Setup section to change this setting. The default setting is **Last State**.

PC Health Monitoring

This section describes the PC health monitoring features of the board. All have an onboard System Hardware Monitoring chip that supports PC health monitoring. An onboard voltage monitor will scan these onboard voltages continuously: CPU core, +12V, +3.3V, 3.3V Standby, +5V, 5V Standby,, VBAT, HT, Memory PCH Temperature, System Temperature, and CPU Temperature. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

PC health monitoring in the BIOS can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via SIO.

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once the thermal sensor detects that the CPU temperature is too high, it will automatically turn on the thermal fans to prevent the CPU from overheating. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

Note: To avoid possible system overheating, please be sure to provide adequate airflow to your system.

System Resource Alert

This feature is available when the system is used with SuperDoctor 5 in the Windows OS environment. SuperDoctor is used to notify the user of certain system events. For example, you can also configure SuperDoctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond predefined thresholds.

ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start to blink to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will "wake up", and the LED will automatically stop blinking and remain on.

Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

This motherboard accommodates 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, the 12V 8-pin power connector located at JPW2 is also required to ensure adequate power supply to the system. Also your power supply must supply 1.5A for the Ethernet ports.

Super I/O

ASpeed 2400 baseboard management controller (BMC) Super I/O supports two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The ASpeed 2400 provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

1-3 Chassis Features

Supermicro's GS5A chassis (GS5A-753B) offers a versatile configuration in a sleek, attractive form. For this system, the chassis includes the K1SPE ATX form factor motherboard.

Key Features

- Black anodized brushed aluminum fascia front panel with two front USB 3.0 ports
- Removable 3.5" and 2.5" HDD/SSD cages with tool-less trays for up to 10 drives
- Tool-less 5.25" device installation with trays to support 3.5" and 2.5" drives additionally
- Cable management holes with rubber grommets for clean builds
- Removable magnetic dust filters
- One click front grille access
- Large motherboard tray cut-out for CPU cooler back-plates

System Power

The 5038K-i features a single 750 Watt power supply. This power supply unit has been designed to operate at a low noise level to make it ideal for use in a noise sensitive environment.

Hard Drives

The 5038K-i standard configuration includes two 5.25" drive bays, four 2.5" drive bays, and six combination bays that can house either 3.5" or 2.5" drives.

- Each 5.25" bay can be configured to accept a 3.5" drive, or one or two 2.5" drives (with optional bracket (MCP-220-00044-ON)).
- The four 2.5" bays are housed in a removable cage.
- Two additional removable cages can each accommodate three 2.5" or 3.5" drives.

Front Control Panel

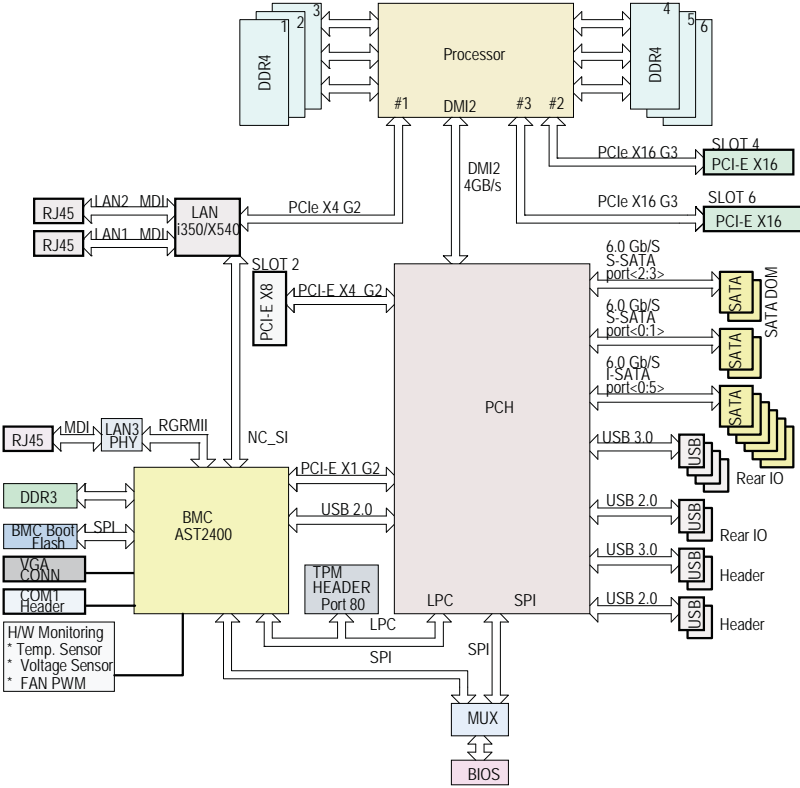
The front control panel on the 5038K-i includes system monitoring LEDs, the main power button, and a reset button and two USB 3.0 ports.

Fans and Cooling

The system includes two 120 mm PWM fans in the front of the chassis for intake, one 120 mm PWM fan in the rear of the chassis for exhaust and two top fans at the top of the chassis for exhaust of the liquid cooling unit.

**Figure 1-1. Intel PCH C612 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)

Website: www.supermicro.com

Europe

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's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

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Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Email: support@supermicro.com.tw

Website: www.supermicro.com.tw

Notes

Chapter 2

Installation

2-1 Overview

This chapter provides a quick setup checklist to get your 5038K-i 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 motherboard pre-installed.

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 system. 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 plugged into a grounded power outlet. Be sure to read the Warnings and Precautions in the next section.

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 system from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units to cool before touching them.

2-3 Accessing the Inside of the System

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

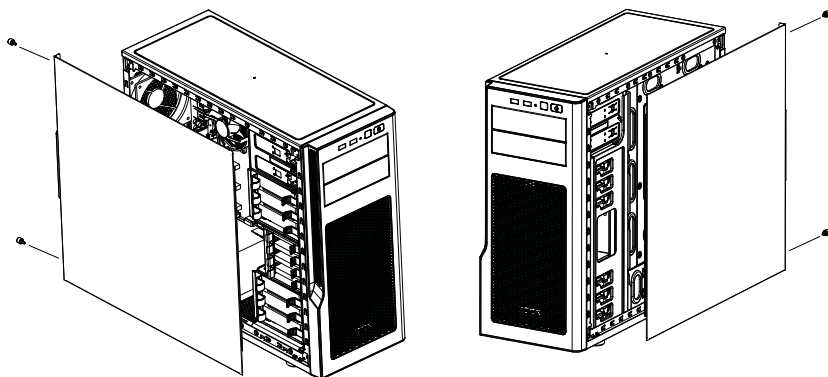
Caution: Except for short periods of time, do not operate the system without the cover in place. The chassis cover must be in place to allow proper airflow.

Left Side and Right Side Covers

Removing a Side Chassis Cover

1. Power down the system.
2. Remove the two thumb screws on the rear of the chassis.
3. Slide the cover back toward the rear of the chassis.

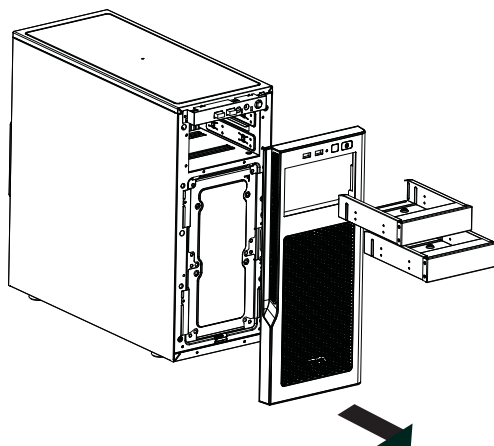
Figure 2-1. Removing the Chassis Side Covers



Front Bezel

Remove the front bezel by pulling it off from the bottom of the bezel.

Figure 2-2. Removing the Front Bezel



Notes

Chapter 3

System Interface

3-1 Overview

The control panel on the 5038K-i has one LED, a power button and a reset button. This LED keeps you constantly informed of hard drive status and activity.

3-2 Control Panel Button

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

Power

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

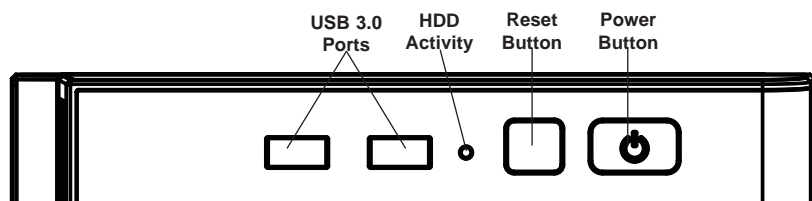
Reset

Use the reset button to reboot the system.

3-3 Front Panel Components

The 5038K-i features a front panel allowing easy access to the chassis power and communication ports. In addition to the Power and Reset buttons, two USB 3.0 ports are also provided on the Front Panel. An LED indicates activity for the HDD.

Figure 3-1. Front Panel Components



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。

此警告符号代表危險。

您正處於可能受到嚴重傷害的工作環境中。在您使用設備開始工作之前，必須充分意識到觸電的危險，並熟練掌握防止事故發生的標準工作程序。請根據每項警告結尾的聲明號碼找到此設備的安全性警告說明的翻譯文本。

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 הזהרות אזהרה

הזהרות 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 כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250 V, 20 A

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

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

경고!

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

Waarschuwing

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

Power Disconnection Warning



Warning!

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

電源切斷の警告

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

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

警告

在你打开机箱并安装或移除内部器件前, 必须将系统完全断电, 并移除电源线。

警告

在您打開機殼安裝或移除內部元件前, 必須將系統完全斷電, 並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה מפני ניתוק חשמלי**אזהרה !**

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

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

경고!

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

Waarschuwing

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

Equipment Installation



Warning!

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

Restricted Area



Warning!

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה!

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

تم تخصيص هذه الوحدة لت تركيبها في مناطق محظورة .
يمكن الوصول إلى منطقة محظورة فقط من خلال استخدام أداة خاصة،
فقل 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 המושמשות 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 ontplofingsgevaar 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 Strom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה!

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

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

경고!

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

Waarschuwing

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

Backplane Voltage



Warning!

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

バックプレーンの電圧

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。
修理する際には注意ください。

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 أو الطاقة الموجودة على اللوحة
عندما يكون النظام يعمل كن حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 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.

תאום 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 وفقاً لجميع القوانين واللوائح الوطنية

경고!

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

Waarschuwing

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

Hot Swap Fan Warning



Warning!

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

ファン・ホットスワップの警告

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

Il est possible que les ventilateurs soient toujours en rotation lorsque vous 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 تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

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

Waarschuwing

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

Power Cable and AC Adapter



Warning!

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

電源コードとACアダプター

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

警告

安裝此產品時，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)。

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 סופרמיקרו בלבד.

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية ومحولات التيار المتردد

التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج

الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات CSA أو UL معتمدة من قبل

لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro (التي تحمل علامة UL/CSA)

경고!

제품을 설치할 때에는 제공되거나 지정된 연결케이블과 전원케이블, 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.

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to connect the K1SPE data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

5-1 Handling the Motherboard

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

Precautions

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

5-2 Connecting Cables

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

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them. The following data cables (with their locations noted) should be connected. (See the layout in Section 5-7 for connector locations.)

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

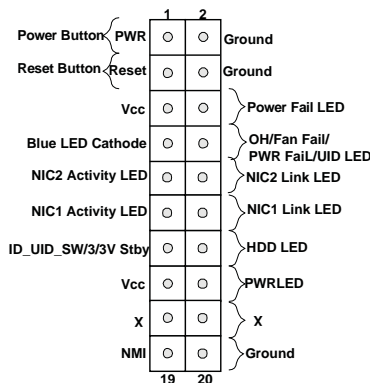
Connecting Power Cables

The K1SPE has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, an 8-pin processor power connector (JPW2) must also be connected to your power supply. See Section 5-8 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin definition. 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.

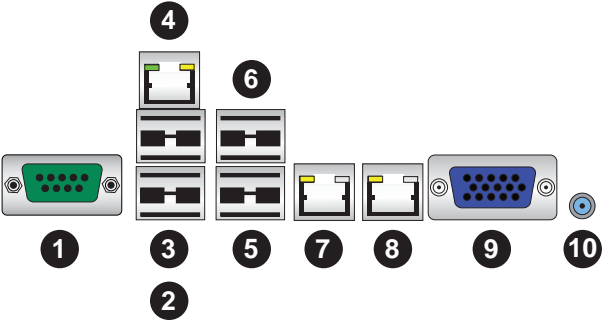
Figure 5-1. Control Panel Header Pins



5-3 I/O Ports

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

Figure 5-2. I/O Ports



1. COM Port1
2. Backplane USB 2.0 Port 0 or USB 3.0 Port 2
3. Backpanel USB 2.0 Port 1 or USB 3.0 Port 3
4. Backpanel USB 2.0 Port 5 or USB 3.0 Port 7
5. Backpanel USB 2.0 Port 6 or USB 3.0 Port 8
6. IPMI_Dedicated LAN
7. GLAN Port 1 (for K1SPE), 10G-LAN Port 1 (for K1SPE-T)
8. GLAN Port 2 (for K1SPE), 10G-LAN Port 2 (for K1SPE-T)
9. Backpanel VGA (Blue)
10. UID Switch

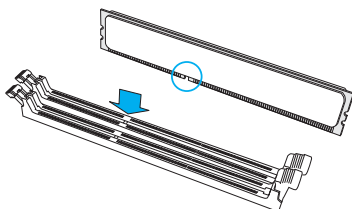
5-4 Installing Memory Modules

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

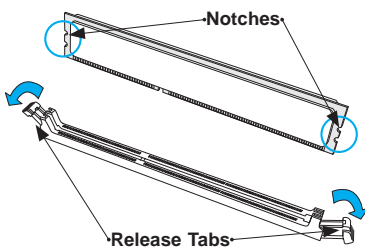
CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

DIMM Installation

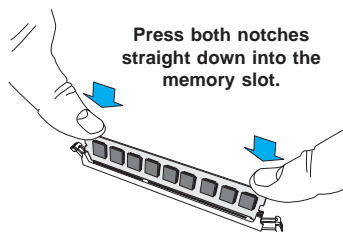
1. Insert the desired number of DIMMs into the memory slots, starting with DIMMA1 (see the next page for the location). For the system to work properly, please use the memory modules of the same type and speed in the same motherboard.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.



3. Align the key of the DIMM module with the receptive point on the memory slot.
4. Align the notches on both ends of the module against the receptive points on the ends of the slot.



5. Use two thumbs together to press the notches on both ends of the module straight down into the slot until the module snaps into place.



6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

Removing Memory Modules

Reverse the steps above to remove the DIMM modules from the motherboard.

Memory Support

The K1SPE motherboard supports 384 GB (max) Registered (RDIMM) DDR4 (288-pin) ECC memory of up to 2400 MHz memory in 6 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.

Processor & Memory Module Population Configuration

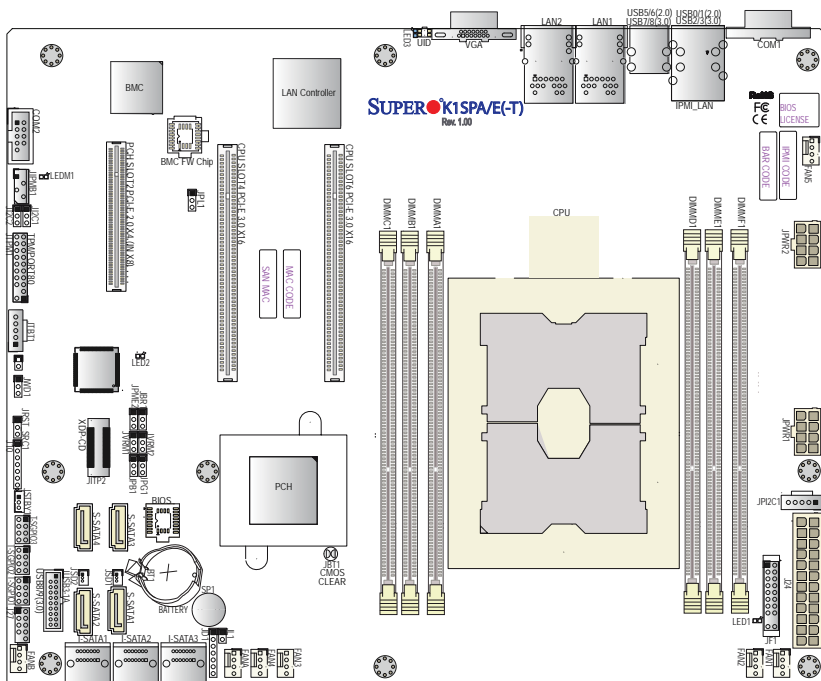
For memory to work properly, follow the tables below for memory installation.

Memory Modules					
DIMMA1	DIMMB1	DIMMC1	DIMMD1	DIMME1	DIMMF1

Note: To optimize memory performance, please install all DIMM modules on the motherboard.

5-5 Motherboard Details

Figure 5-3. K1SPE Layout



Notes:

- "■" indicates the location of "Pin 1".
- Components/Jumpers/LED Indicators that are not documented in this manual are reserved for internal testing only.

K1SPE Motherboard Jumpers

Jumper	Description	Default Setting
JBT1	Clear CMOS/Reset BIOS Configuration	See Sectio 5-7 for details
J12C1/J12C2	SMBus to PCI-E Slots Enabled	Pins 1-2 (Enabled)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPBR1	BIOS Recovery Enable	Pins 1-2 (Normal)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1 (For K1SPE)	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JPL1 (For K1SPE-T)	10G-LAN1/10G-LAN2 Enable	Pins 1-2 (Enabled)
JPME2	Manufacture Mode (ME) Select	Pins 1-2 (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)

K1SPE Motherboard LED Indicators

LED	Description	State
LED1	Onboard Power LED	On: System power on
LED2	HDD Activity LED	Green: (On/Blinking): HDD active
LED3	UID (Unit_Identifier) LED)	Blue: (On/Blinking) Unit identified
LEDM1	BMC Heartbeat LED	Green (Blinking): BMC normal

K1SPE Motherboard Connectors

Connectors	Description
Battery	Onboard CMOS battery (BT1) (See the end of this chapter for battery disposal instructions.)
COM1	Serial port header
FAN 1/2/3/4/5, A, B	System cooling/CPU fans 1-5, A & B headers
JD1	Speaker/LED header
JF1	Front Control Panel header
JL1	Chassis intrusion header
JPI ² C1	Power SMB (System Management Bus)
JIPMB1	4-pin external BMC I ² C header (for an IPMI card)
JPTM1	TPM (Trusted Platform Module)/Port 80
J24	24-pin ATX main power connector
JPWR1/2	8-pin 12V power connectors
JSD1/JSD2	SATA DOM (Device-on-Module) Power connectors 1/2
JSTBY1	P5V (+5V) Standby power connector
JVRM1/2	CPU1/CU2 Voltage Regulator Modules (VRMs)
LAN1/2	Gigabit (GLAN) Ethernet port (for K1SPE), 10G-LAN (TLAN) Ethernet port (for K1SPE-T)
(IPMI) LAN	IPMI-dedicated LAN port
PCH Slot2	Slot2 PCI-E 2.0 x4 (in X8) slot supported by the Intel PCH
CPU Slot4/6	Slot4 PCI-E 3.0 x16 slots supported by the CPU
SP1	Internal speaker/buzzer
I-SATA1-3	I-SATA ports 1-3 supported by Intel PCH
S-SATA1-4	S-SATA connectors 1-4
T-SGPIO1/2/3	General-Purpose Serial Link I/O connections headers 1/2/3 for SATA support
USB0/1 (2.0)	Back panel USB 2.0 ports (USB0/USB1)
USB2/3 (3.0)	Back panel USB 3.0 ports (USB2/USB3)
USB5/6 (2.0)	Back panel USB 2.0 ports (USB5/USB6)
USB7/8 (3.0)	Back panel USB 3.0 ports (USB7/USB8)
USB8/9 (3.0) (JUSB31A)	Onboard USB 3.0 connections 8/9 header for front access
UID	Unit identifier button (JUIDB1)
VGA	Back panel VGA port

5-6 Connector Definitions

NMI Button

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

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Power LED

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

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	Vcc
16	PWR LED

HDD LED/Front UID Switch

The HDD LED and UID switch connections are located on pins 13 and 14 of JF1. Attach a cable to pin 14 to show the HDD activity status. Attach a cable to pin 13 to use the UID switch. See the table on the right for pin definitions.

HDD LED/UID Switch Pin Definitions (JF1)	
Pin#	Definition
13	UID Switch
14	HD Active

NIC1 & NIC2 LED Indicators

The NIC (Network Interface Controller) LED connections for LAN 1/2 are located on pins 11/12 and pins 9/10 on JF1. Attach the NIC LED cables here to display network activities and Link status. Refer to the table on the right for pin definitions.

GLAN Ports LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC 2 Activity LED
10	NIC 2 Link LED
11	NIC 1 Activity LED
12	NIC 1 Link LED

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

Connect an LED cable to pins 7 and 8 of the front control panel to use the Overheat/Fan Fail/Power Fail and UID LED connections. The red LED on pin 8 provides warnings of overheat, fan failure, or power failure. The blue LED on pin 7 works as the front-panel UID LED indicator. Refer to the tables on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_ UID LED Pin Definitions (JF1)	
Pin#	Definition
7	Blue UID LED
8	OH/Fan Fail/Power Fail

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

Power Fail LED

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

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

Reset Button

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

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

Power Button

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

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

Power Connectors

A 24-pin main power supply connector (J24) and two 8-pin CPU power connectors (JPWR1/JPWR2) on the motherboard. These power connectors meet the SSI EPS 12V specification and must be connected to your power supply to provide adequate power to the system. See the tables on the right for pin definitions.

Warning! To avoid damaging the power supply or the motherboard, be sure to use a power supply that contains a 24-pin and two 8-pin power connectors. Be sure to connect the 24-pin power connector at J24, and the two 8-pin power connectors (JPWR1/JPWR2) to your power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

ATX Power 24-pin Connector Pin Definitions (J24)			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V (NC)	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

12V 8-Pin Power Connector Pin Definitions (JPWR1/2)	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

Fan Headers

This motherboard has seven system/ CPU fan headers (Fans 1-5, Fans A, B) on the motherboard. All these 4-pin fans headers are backward-compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by Thermal Management via the IPMI 2.0 interface. See the table on the right for pin definitions.

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

Chassis Intrusion

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

Internal Speaker/Buzzer

The Internal Speaker (SP1) can be used to provide audible notifications using various beep codes. See the table on the right for pin definitions. Refer to the layout below for the location of the internal buzzer.

Internal Buzzer Pin Definition (SP1)		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker

TPM/Port 80 Header

A Trusted Platform Module (TPM)/Port 80 header, located at JTPM1, provides TPM support and Port 80 connections. 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 (JTPM1)			
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	No Connection
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	No Connection	14	No Connection
15	+3V STBY	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	No Connection

Power SMB (I²C) Connector

The Power System Management Bus (I²C) connector (JPI²C1) monitors power supply, fan, and system temperatures. See the table on the right for pin definitions.

PWR SMB Pin Definitions (JPI ² C1)	
Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	+3.3V

IPMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I²C connection on your system.

IPMB Header Pin Definitions (JIPMB1)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

COM Port/Serial Port Headers

A COM port header is located on the I/O back panel. Another serial port (COM2) is located on the motherboard. See the layout below for the locations. Also, See the table on the right for pin definitions.

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

Universal Serial Bus (USB)

There are four USB ports located on the I/O back panel. USB ports 0/1, 5/6 support USB 2.0 connections. These USB ports also support USB 3.0 connections (USB 2/3 and USB 7/8). A Type A header, located next close to I-SATA1, also supports USB 3.0 (USB 8/9). See the tables on the right for pin definitions.

USB (3.0) 2/3, 5/6 Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	6	RX+
2	D-	7	Ground
3	D+	8	TX-
4	Ground	9	TX+
5	RX-		

Type A Onboard USB (3.0) 8/9 Pin Definitions			
Pin#	Description	Pin#	Description
1	VBUS	6	SSTX+
2	SSRX-	7	GND_DRAIN
3	SSRX+	8	D-
4	Ground	9	D+
5	SSTX-		

Back Panel USB 0/1, 4/5 (2.0) 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

Ethernet Port/IPMI LAN

Two Ethernet LAN ports are located on the I/O back panel. These LAN ports provide Gigabit (GbE) LAN support on the K1SPE. In addition, an IPMI-dedicated LAN, located above USB 0/1 (2.0) ports on the I/O back panel, provides KVM support for IPMI 2.0. These NIC ports accept RJ45-type cables. (**Note:** Please refer to the LED Indicator section for LAN LED information.)

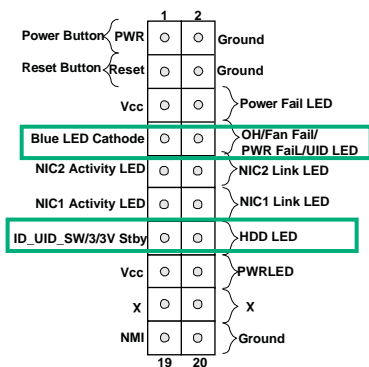
Video Connector

A video (VGA) connector is located on the IO back panel. This connector is used to provide video and CRT display. Refer to the board layout below for the location.

Unit Identifier Switches & UID LEDs

Two Unit Identifier (UID) switches and two LED Indicators are located on the motherboard. The rear UID switch is located next to the VGA port on the I/O back panel. The rear UID LED (LED3) is located next to the rear UID switch on the motherboard. The front UID switch is located on pin 13 of the Front Control Panel (JF1), and the front UID LED is located at pins 7/8 of JF1. Connect appropriate cables to pins 13, and 7/8 on JF1 for front UID switch and LED support. When you press the front or the rear UID switch, both front and rear UID LEDs will be turned on. Press the UID switch again to turn off both LED Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

UID Switch (UID) Pin Definitions	
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Ground



T-SGPIO 1/2/3 Headers

Three SGPIO (Serial Link General Purpose Input/Output) headers are located on the motherboard. These SGPIO ports support onboard S-SATA 3.0 (S-SATA 1-4) and I-SATA 3.0 ports (I-SATA 1-3). See the table on the right for pin definitions.

T-SGPIO Header Pin Definitions (SGPIO1/2/3)			
Pin#	Definition	Pin	Definition
2	NC	1	NC
4	Ground	3	Data
6	Load	5	Ground
8	Clock	7	NC

Note: NC=No Connection

DOM Power Connectors

Two power connectors for SATA DOM (Disk_On_Module) devices are located at JSD1/JSD2. Connect appropriate cables here to provide power support for your Serial Link DOM devices.

DOM PWR Pin Definitions (JSD1/2)	
Pin#	Definition
1	+5V
2	Ground
3	Ground

Standby Power Header

The P5V (+5V) Standby Power header is located at JSTBY1 on the motherboard. See the table on the right for pin definitions. (You must also have a card with a standby power connector and a cable to use this feature.)

Standby PWR Pin Definitions (JSTBY1)	
Pin#	Definition
1	+5V Standby
2	Ground
3	No Connection

Power LED/Speaker

On the JD1 header, pins 1-3 are used for power LED indication, and pins 4-7 are for the speaker. See the tables on the right for pin definitions. Please note that the speaker connector pins (4-7) are for use with an external speaker. If you wish to use the onboard speaker, close pins 6-7 with a cap.

PWR LED Connector Pin Definitions (JD1)	
Pin Setting	Definition
Pin 1	Anode (+)
Pin 2	Cathode (-)
Pin 3	NA

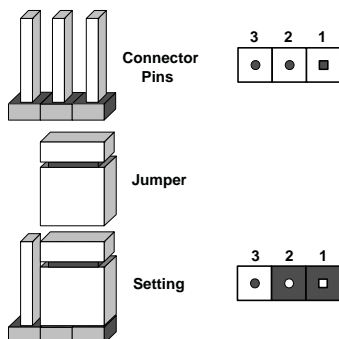
Speaker Connector Pin Settings	
Pin Setting	Definition
Pins 4-7	External Speaker
Pins 6-7	Internal Speaker

5-7 Jumper Settings

Explanation of Jumpers

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

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



CMOS Clear

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

To Clear CMOS

1. First power down the system and unplug the power cord(s). It is also recommended that you remove the onboard battery from the motherboard.
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note 1. For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

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

Note 3. Clearing CMOS will also clear all passwords.

Note 4: Do not use the PW ON connector to clear CMOS.

LAN Port Enable/Disable

JPL1 is used to enable or disable the LAN port on the motherboard. The default setting is Enabled. See the tables on the right for link speed support and jumper settings.

LAN Port Enable Jumper Settings (JPL1)	
Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

LAN Link Speed Support	
Jumper SKU	Name
GbE LAN	K1SPE

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate non-maskable interrupt signals for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

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

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA connector. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

BMC Enable

Jumper JPB1 allows you to enable the onboard BMC (Baseboard Management Controller) to provide IPMI 2.0/KVM support on the motherboard. Be sure to remove the power cord before closing pins 2-3 to disable the BMC. See the table on the right for jumper settings.

BMC Enable Jumper Settings (JPB1)	
Jumper Setting	Definition
Pins 1-2	BMC Enable (Default)
Pins 2-3	BMC Disable

Manufacturer Mode Select

Close pin 2 and pin 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 (JPME2)	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacturer Mode

I²C Bus to PCI-Exp. Slots

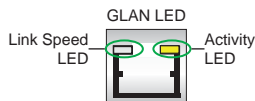
Use Jumpers JI²C1 and JI²C2 to connect the System Management Bus (I²C) to PCI-Express slots to improve PCI performance. These two jumpers are to be set at the same time using the same setting. The default setting is on pins 1-2 to enable the connections. See the table on the right for jumper settings.

I ² C for PCI-E slots Jumper Settings (JI ² C1/2)	
Jumper Setting	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

5-8 Onboard Indicators

LAN LEDs

Two onboard LAN ports are located on the IO back panel. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity. The Link LED on the right of the LAN port may be green, amber, or off to indicate the speed of the connection. See the tables on the right for more information

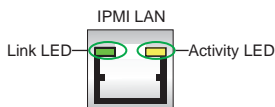


LAN Port Activity LED (Left) LED State		
Color	Status	Definition
Orange	Flashing	Active

1Gbps LAN Link LED Settings (For X##xxx-MB)	
Color	Definition
Off	No Connection, 10 Mbps
Green	100 Mbps
Amber	1 Gbps

IPMI Dedicated LAN LEDs

In addition to the LAN Port 1, an IPMI Dedicated LAN is also located on the I/O Backplane. The amber LED on the right indicates connection and activity; while the green LED on the left indicates the speed of the connection. See the tables at right for more information.



IPMI LAN Link/Speed LED (Left) & Activity LED (Right)		
LED	Color/Status	Definition
Link (Left)	Green: Solid	100 Mbps
	Amber: Solid	1 Gbps
Activity (Right)	Orange: Blinking	Active

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDM1 on the motherboard. When this LED is blinking, the BMC functions normally. See the table at right for more information.

BMC Heartbeat LED Status (LEDM1)	
Color/State	Definition
Green: Blinking	BMC: Normal

Onboard Power LED

An Onboard Power LED is located at LED1 on the motherboard. When this LED is on, the system power 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 Status (LED1)	
State	Definition
On	PWR On

Rear UID LED

The rear UID LED is located at LED3 on the rear of the motherboard. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service. Refer to UID Switch on page 2-20 for more information.

UID LED Status (LED3)		
Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

5-9 SATA 3.0 Connections

S-SATA 3.0/I-SATA 3.0 Connections

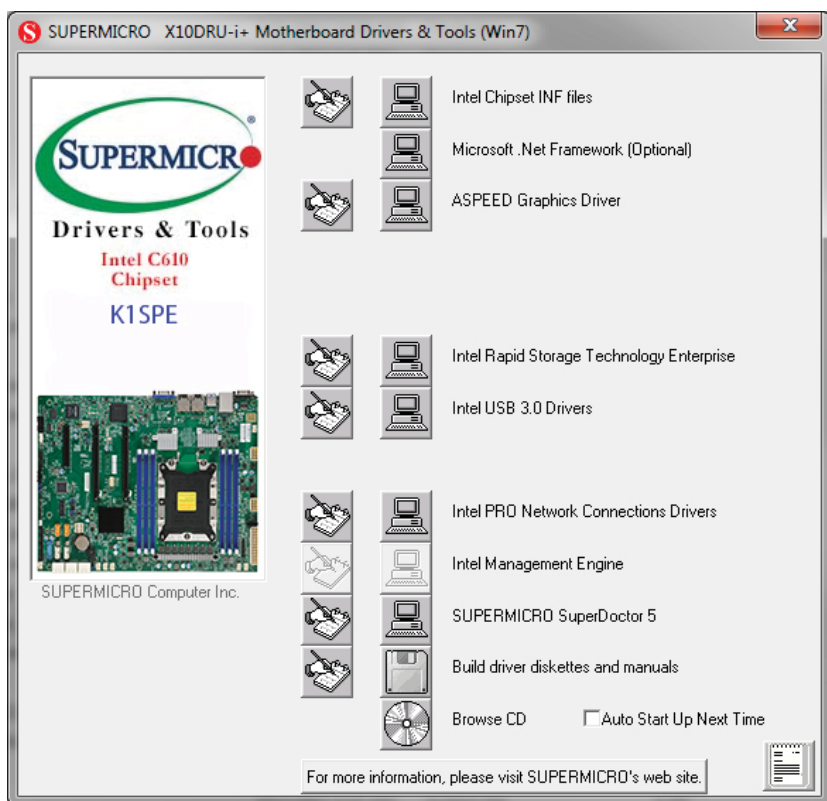
Four S-SATA 3.0 ports (S-SATA1-4) and three I-SATA 3.0 connectors (I-SATA1-3) are located on the motherboard. These SATA 3.0 connections are supported by the Intel PCH chip. In addition, S-SATA 3/4, colored in yellow, are used with Supermicro SuperDOM (Disk-on-Module) connectors with power-pins built in, and do not require separate external power cables. The SuperDOM connectors are backward-compatible with regular SATA HDDs and SATA DOMs that require external power supply. All SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA.

Note: For more information on the SATA HostRAID configuration, please refer to the Intel SATA HostRAID user's guide posted on our website at <http://www.supermicro.com>.

5-10 Installing Drivers

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

Figure 5-4. Driver Installation Display Screen



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

SuperDoctor 5

The Supermicro SuperDoctor® 5 is a hardware and operating system services monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management System (SSM System), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management System monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

Note: The default User Name and Password for SuperDoctor 5 is admin / admin.

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



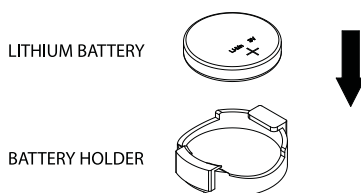
Figure 5-6. SuperDoctor 5 Interface Display Screen (Remote Control)



5-11 Motherboard Battery

Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 5-7). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Figure 5-7. Installing the Onboard Battery



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

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance. 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.

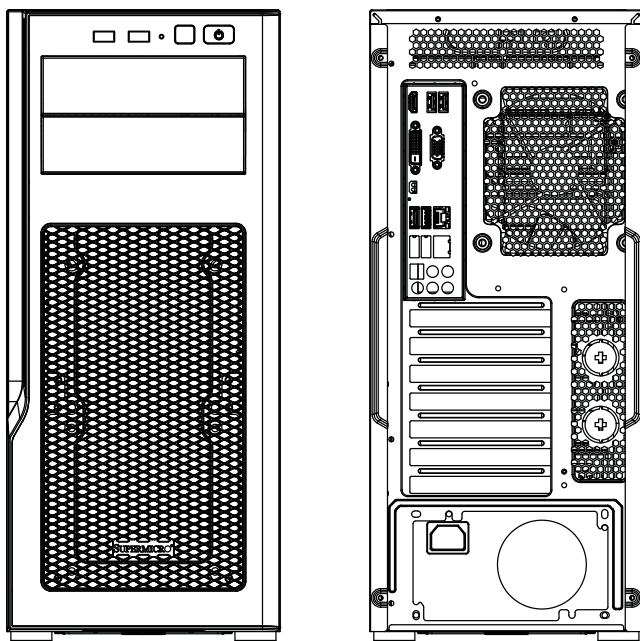
6-1 Static-Sensitive Devices

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 motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Note: The components in the following figures are representative for illustration purposes only.

Figure 6-1. Front and Rear View

6-2 Removing Power from the System

Before performing most setup or maintenance tasks, use the following procedure to ensure that power has been removed from the system.

1. Use the operating system to power down the system, following the on-screen prompts.
2. After the system has completely shut-down, carefully grasp the head of the power cord and gently pull it out of the back of the power supply.
3. Disconnect the cord from the power strip or wall outlet.

6-3 Accessing the Inside of the System

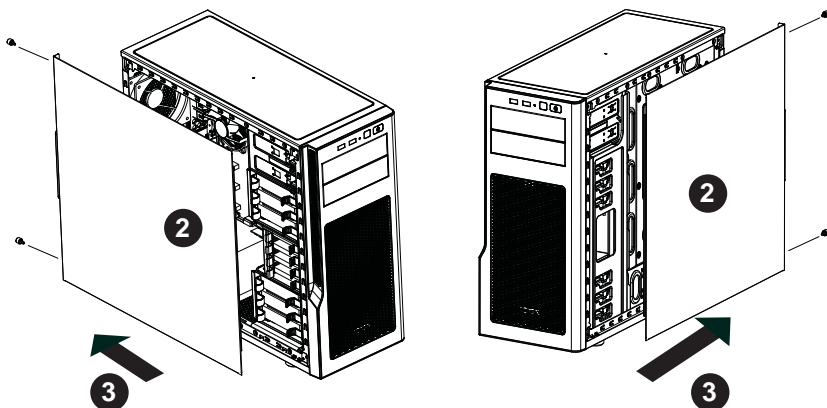
Caution: Except for short periods of time, do not operate the system without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

Left Side and Right Side Covers

Removing a Side Chassis Cover

1. Power down the system as described in section 6-2.
2. Remove the two thumb screws on the rear of the chassis.
3. Slide the cover back toward the rear of the chassis.

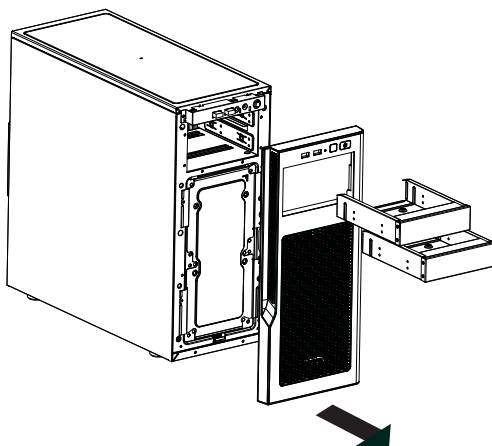
Figure 6-2. Removing the Chassis Side Covers



Front Bezel

Remove the front bezel by pulling it off from the bottom of the bezel.

Figure 6-3. Removing the Front Bezel



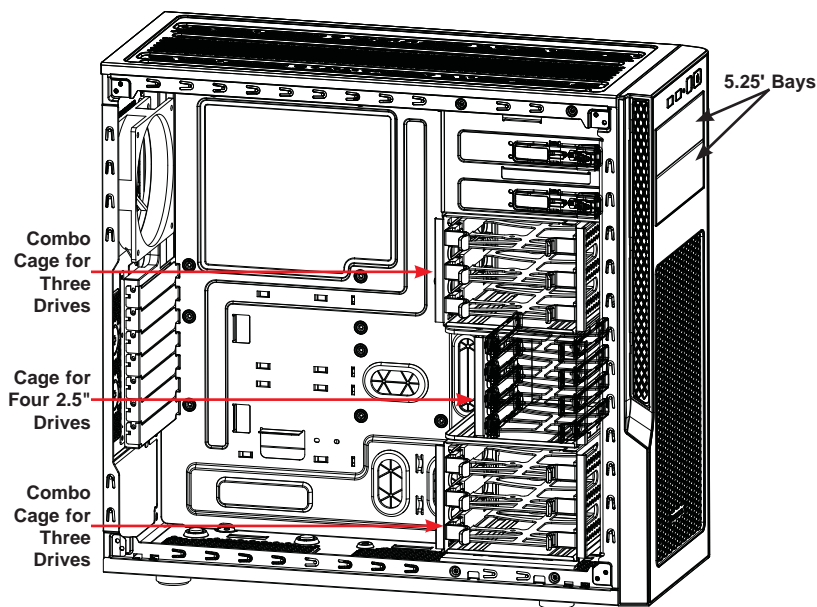
6-4 Installing Drives

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

The standard configuration includes two 5.25" drive bays, four 2.5" drive bays, and six combination bays that can house either 3.5" or 2.5" drives.

- Each 5.25" bay can be configured to accept a removable media drive, such as DVD, or a storage device, such as a 3.5" HDD, 2.5" HDD, or solid state drive.
- The four 2.5" bays are housed in a removable cage.
- Two additional removable cages can each accommodate three 2.5" or 3.5" drives.

Figure 6-4. Drive Bays

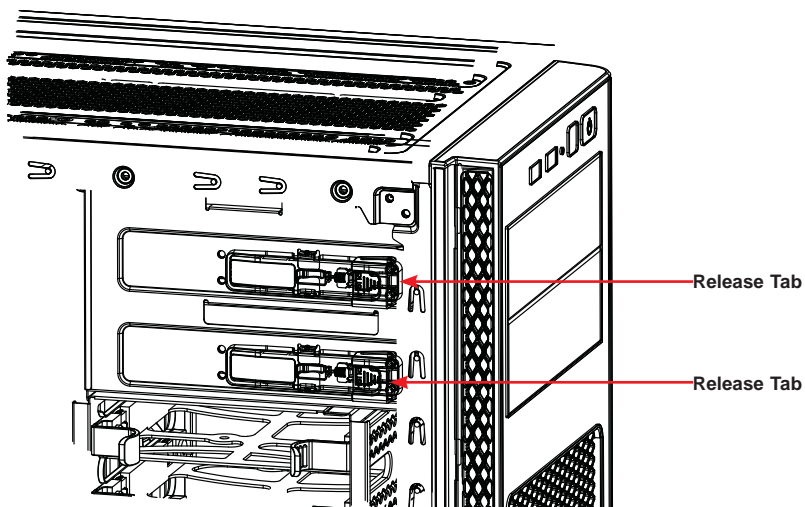


Installing a DVD Drive in the 5.25" Drive Bay

Replace a drive tray with a DVD drive.

1. Open the chassis left side cover.
2. Locate and press the release tab for the drive tray where you want to place the DVD drive.

Figure 6-5. Release Tabs for the Drive Tray



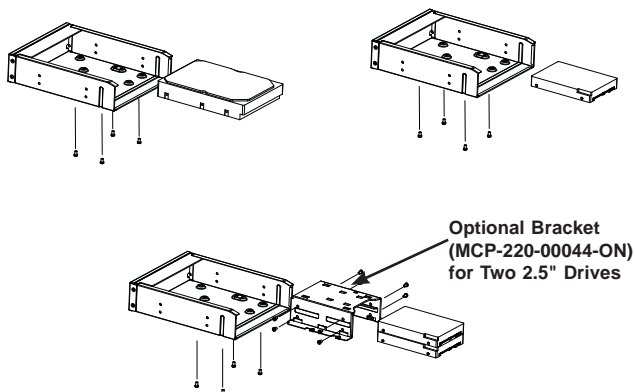
3. Push the drive tray toward the front of the chassis and out.
4. Slide the DVD drive into the chassis until it clicks into place.

Installing a Storage Device in the 5.25" Drive Tray

You can install a 3.5" drive, one or two 2.5" disk drives or solid state drives.

1. Open the chassis left side cover.
2. Locate and press the release tab (Figure 6-5) for the drive tray in which you want to place the drive.

Figure 6-6. Storage Device Configurations for 5.25" Bays



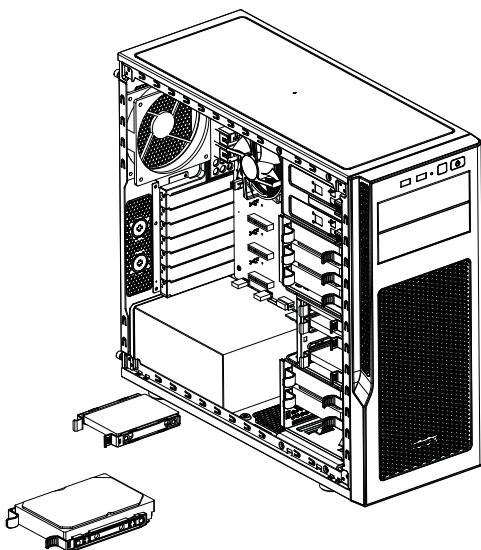
3. Push the drive tray toward the front of the chassis and out.
4. Secure the storage drive to the drive tray with screws through the bottom of the tray. To install two 2.5" drives, use the optional bracket (P/N MCP-220-00044-0N) as shown.
5. Slide the drive tray into the chassis until it clicks into place.

Installing Disk Drives into the Cage

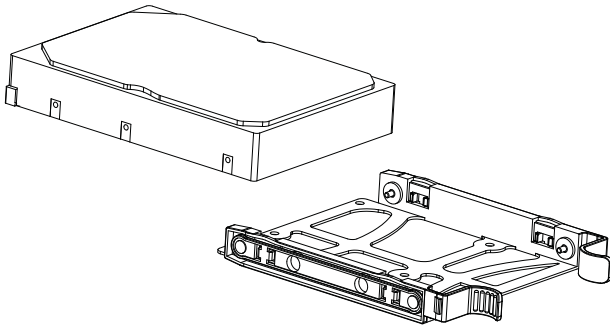
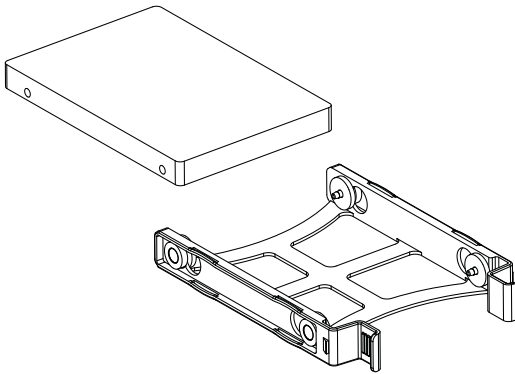
You can install up to four 2.5" drives into the dedicated center cage. You can also install three drives into each of the upper and lower combination cages.

1. Open the chassis left side cover.
2. Remove the drive mounting bracket from the cage. Pinch the tabs and pull out.

Figure 6-7. Installing Drives and Mounting Brackets in to the Cage



3. Secure the drive into the mounting bracket.
 - For 2.5" drives in the dedicated bays (center cage), flex the drive bracket and drop the drive in with the connector side facing into the chassis.
 - For 3.5" drives in the combo bays (top or bottom cages), flex the drive bracket and drop the drive in with the connector side facing into the chassis.
 - For 2.5" drives in the combo bays, use screws through the bottom of the bracket to secure the drive with the connector side facing into the chassis.
4. Slide the assembly into the cage.
5. Connect the storage device cables from the motherboard.

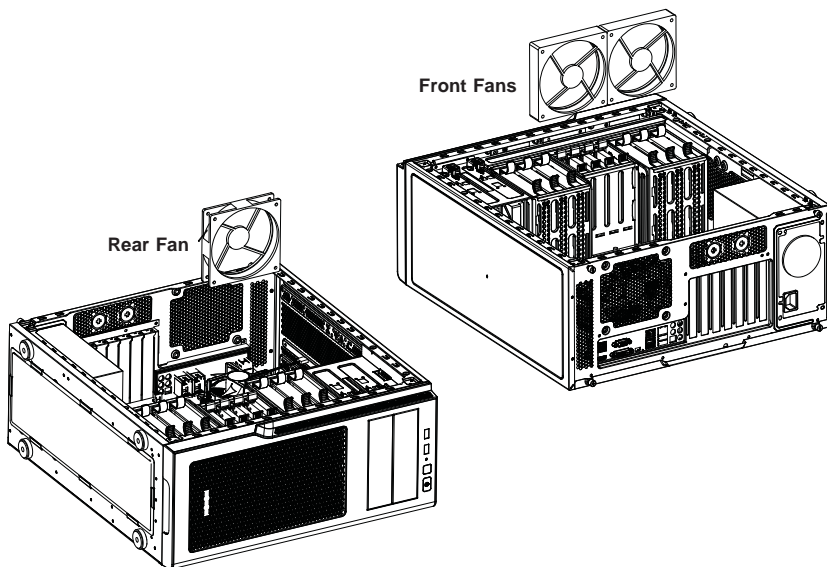
Figure 6-8. Mounting Tray for 3.5" Drive**Figure 6-9. Mounting Tray for 2.5" Drive**

Note: Refer to the following FTP site for RAID setup guidelines: <ftp://ftp.supermicro.com/driver/SAS/LSI/LSI_SAS_EmbMRAID_SWUG.pdf> and Supermicro's web site for additional information < <http://www.supermicro.com/support/manuals/>>.

6-5 Fans and Cooling

The chassis includes two 120 mm PWM fans in the front and one 120 mm PWM fan in the rear. The liquid cooling unit also provides two 120 mm PWM fans near the top of the chassis.

Figure 6-10. Standard Fan Placement



Adding or Changing Fans

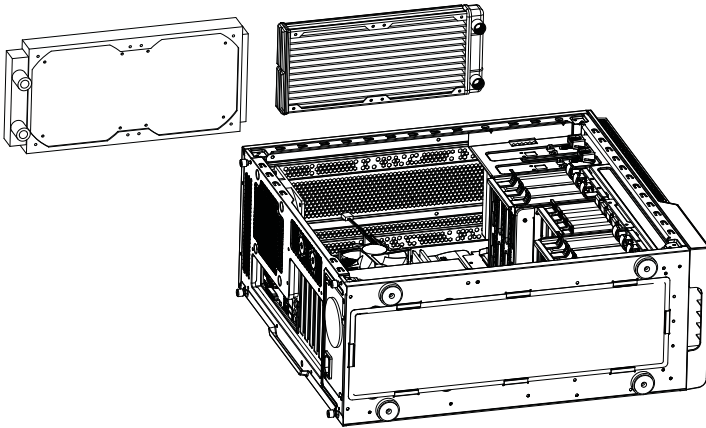
This system has been optimized thermally. The user should not change the default fans as any modifications could cause the system to overheat and risks damaging the unit.

Note: The fans in this system should NOT be modified by the user. For any issues with the fans, please contact Supermicro technical support or your service contact if you have purchased a service package for this system.

Water Cooled Heat Sink

The system includes a liquid cooling unit SNK-P3000A4 with a 240 mm x 120 mm radiator mounted on the top of the chassis and a cold plate mounted over the CPU. The unit is maintenance free and the user should not make any modifications to this unit or disassemble the unit. Making any changes to the default setup risks damaging the motherboard, processor, or cooling unit. For any issues that you suspect with the cooling unit, please contact Supermicro for assistance.

Figure 6-11. Example 240 mm Radiator



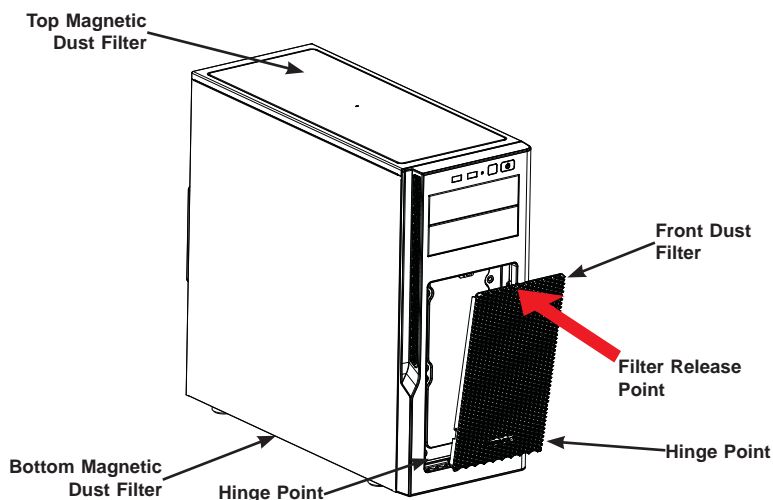
Air Flow

Make sure cables do not obstruct the cooling airflow.

Dust Filters

The chassis features a dust filter in front of the front fans, and two magnetic dust filters, one on top of the chassis and one on the bottom. They can be lifted off and cleaned to improve system air flow circulation.

Figure 6-12. Dust Filters



Cleaning the Front Dust Filter

1. Disengage the filter by pushing on the top edge center. The top pops loose.
2. Rotate the filter top downward to release it from the hinge points on the bottom.
3. Clean the filter.
4. Replace the filter by aligning it in the bottom hinge points, then pushing the top edge back into place. Push the top center until it clicks in.

The top and bottom magnetic filters can be simply lifted off for cleaning.

6-7 Installing Expansion Cards

Installing an Expansion Card

5. Power down the system as described in section 6-2 and open the left side chassis cover.
6. Remove the blank PCI shield from the rear of the chassis by removing the thumb screw.
7. Insert the expansion card into the motherboard expansion slot while aligning the expansion card bracket with the opening in the rear of the chassis.
8. Secure the expansion card bracket to the rear of the chassis with the thumb screw.
9. Replace the chassis side cover and power up the system.

6-8 Power Supply

The 5038K-i system comes with a 750 Watt power supply mounted on the rear floor of the chassis.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS setup utility for the K1SPE/K1SPE-T. 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 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 AMI 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>, 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 at the appropriate time during system boot.

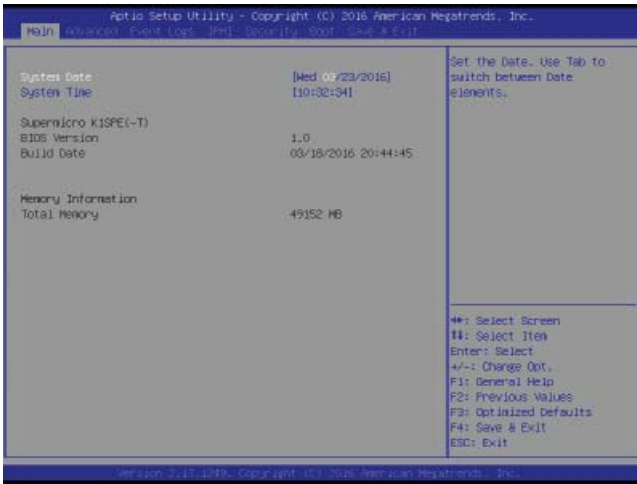
How to Start the Setup Utility

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 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.

Supermicro K1SPE Series

BIOS Version: This item displays the version of the BIOS ROM used in the system.

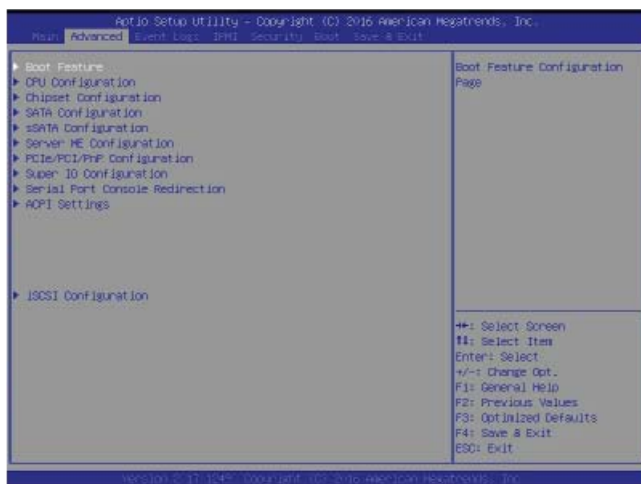
Build Date: This item displays the date when the version of the BIOS ROM used in the system was built.

Memory Information

Total Memory: This item 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, DRAM frequency or BIOS timing setting may cause the system to malfunction. 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.

Option ROM Messages

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

Bootup Num-Lock State

Use this feature to set 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**.

INT19 (Interrupt 19) Trap Response

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

Re-try Boot

When EFI Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after its initial boot failure. Select Legacy Boot to allow the BIOS to automatically reboot the system from a Legacy boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration**Watch Dog Function**

Select Enabled to allow the Watch Dog timer to reboot the system 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 4 Seconds Override and **Instant Off**.

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 Power-On, Stay-Off and **Last State**.

►CPU Configuration

This submenu displays the following CPU information as detected by the BIOS. It also allows the user to configure CPU settings.

►Per-Socket Configuration

- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- Processor 0 Version

Intel® Hyper-Threading Technology

Select Enable to support Intel's Hyper-threading Technology to enhance CPU performance. The options are **Enable** and Disable.

Monitor/Mwait

Select Enable to use address-range monitor and advanced power management which will require the use of monitor instructions to enhance processor performance. The options are **Enable** and Disable.

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

Select Enable for Execute Disable Bit Technology support, which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor to damage the system during an attack. This feature is used in conjunction with the items: "Clear MCA," "VMX," "Enable SMX,"

and "Lock Chipset" for Virtualization media support. The options are **Enable** and **Disable**. (Refer to Intel and Microsoft websites for more information.)

VMX (Available when supported by the CPU and the OS)

Select **Enable** for CPU-related Virtualization support. This feature is used in conjunction with the items: "Clear MCA," "Enable SMX," and "Lock Chipset" for Virtualization media support. The options are **Enable** and **Disable**.

MSR Lock Control

Select **Enable** to lock MSR 3Ah, MSR 0E2h and CSR in the machine state register tables and make these three items "read-only" to prevent new data from being written into them for system security enhancement. The options are **Enable** and **Disable**.

Lock Chipset

Select **Enable** to lock chipset register tables and set the register tables to "read-only" to prevent new data from being written into the processor to ensure system security. This feature is used in conjunction with the items: "Clear MCA," "VMX," and "Enable SMX" for Virtualization media support. The options are **Enable** and **Disable**.

PPIN Control

Select **Unlock/Enable** to use the Protected-Processor Inventory Number (PPIN) in the system. The options are **Unlock/Enable** and **Unlock/Disable**.

L2 Prefetcher (Available when supported by the CPU)

If set to **Enable**, 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 **Disable** and **Enable**.

L1 Prefetcher (Available when supported by the CPU)

If set to **Enable**, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L1 cache to improve CPU performance. The options are **Disable** and **Enable**.

X2APIC (Advanced Programmable Interrupt Controller) (Available when supported by the CPU)

Based on Intel's Hyper-Threading architecture, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this feature is set to **Enable**, the APIC ID will be expanded (X2) from 8 bits to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. The options are **Enable** and **Disable**.

AES-NI

Select **Enable** to use the Intel Advanced Encryption Standard (AES) New Instructions (NI) to ensure data security. The options are **Enable** and **Disable**.

APIC Physical Mode (Available when supported by the CPU and the OS)

Select Enable to enable the physical destination mode in the Advanced Programmable Interrupt Controller (APIC). The options are **Disable** and **Enable**.

Down Stream PECI (Platform Environment Control Interface)

Select Enable to allow the client server to interact with the host server directly to achieve better host-client communication in the PECI platform, which will result in power saving and energy efficiency. The options are **Disable** and **Enable**.

Targeted SMI

Select Enable to enable specific (targeted) features in the Scalable Memory Interconnect (SMI) controller. The options are **Disable** and **Enable**.

► Advanced Power Management Configuration (Available when supported by your system)**Advanced Power Management Configuration****Power Technology**

Select Energy Efficient to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are **Disable**, **Energy Efficient**, and **Custom**.

If the option is set to Energy Efficient or Custom, the following items will display:

Config TDP (Configuring Thermal Design Power)

Select Enable to configure TDP power settings to enhance thermal management. The options are **Enable** and **Disable**.

Config TDP Level (Available when Config TDP above is set to Enable)

Use this item to set TDP configuration level to enhance thermal management. The options are **Nominal**, **Level 1**, and **Level 2**.

► CPU P State Control (Available when Power Technology is set to Custom)**EIST (P-states)**

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are **Disable** and **Enable**.

P-state Coordination

This feature is used to change the P-state (Power-Performance State) coordination type. P-state is also known as "SpeedStep" for Intel processors. Select **HW_ALL** to change the P-state coordination type for hardware components only. Select **SW_ALL** to change the P-state coordination type for all software installed in the system. Select **SW_ANY** to change the P-state coordination type for a software program in the system. The options are **HW_All**, **SW_ALL**, and **SW_ANY**.

► CPU C State Control (Available when Power Technology is set to Custom)

Package C State limit

Use this item to set the limit on the C-State package register. The options are C0/1 state, C2 state, C6 (non-Retention) state, and **C6 (Retention) state**.

CPU C3 Report

Select **Enable** 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 **Enable** and **Disable**.

CPU C6 Report (Available when Power Technology is set to Custom)

Select **Enable** to allow the BIOS to report the CPU C6 state (ACPI C3) to the operating system. During the CPU C6 state, power to all cache is turned off. The options are **Enable** and **Disable**.

Enhanced Halt State (C1E)

Select **Enable** to use Enhanced Halt-State technology, which will significantly reduce the CPU's power consumption by reducing the CPU's clock cycle and voltage during a Halt-state. The options are **Disable** and **Enable**.

► CPU T State Control (Available when Power Technology is set to Custom)

ACPI (Advanced Configuration Power Interface) T-States

Select **Enable** to support CPU throttling by the operating system to reduce power consumption. The options are **Enable** and **Disable**.

► Chipset Configuration

Warning! Please set the correct settings for the items below. A wrong configuration setting may cause the system to malfunction.

► North Bridge

This feature allows the user to configure Intel North Bridge settings.

► IIO Configuration

IIO PCIe Link on Phase

This item determines when the IIO PCI-E link training should be done. Select Post Chipset Init for the link training to take place after the memory chipset has been initialized. The options are **Post Chipset Init** and Before Memory Chip Init.

PCIe Train by BIOS

Select Yes to enable this feature to maximize the reliability of the A-0 Silicon when the IIO is strapped for "Wait-for-BIOS". The options are **Yes** and No.

PCIe Hot Plug

Select Yes to enable PCI-E hot plug support which will allow the user to change a component without shutting down the machine. The options are **Disable** and Enable.

EV DFX (Device Function On-Hide) Features

When this feature is set to Enable, EV_DFX Lock Bits that are located on a processor will always remain clear during electric tuning. The options are **Disable** and Enable.

► IIO0 Configuration

IOU2 (IIO PCIe Port 1)

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4, x8, and **Auto**.

IOU0 (IIO PCIe Port 2)

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

IOU1 (IIO PCIe Port 3)

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

No PCIe Port Active ECO

Use this item to select a work-around setting when there is no active PCI-E port detected in the system. The options are **PCU Squelch exit ignore option** and **Reset the SQ FLOP by CSR option**.

►Socket 0 PCIeD00F0 - Port 0/DIM

This section allows the user to configure the settings for Socket 0 PCIeD00F0-Port 0/DIM

Link Speed

This item configures the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) and **Auto**.

PCI-E Port DeEmphasis

This item configures the De-Emphasis Control (LANKCON2 [6]) setting for this computer. The options are **Auto**, -6.0 dB and -3.5 dB.

The following items will be display:

- PCI-E Port Link Status
- PCI-E Port Link Max
- PCI-E Port Link Speed

PCI-E Port L0s Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L0s to L0. The default setting is **4uS - 8uS**.

PCI-E Port L1 Exit Latency

Use this feature to set the length of time required for the port specified by the user to complete the transition from L1 to L0. The options are: <1uS, 1uS - 2uS, 2uS - 4uS, 4uS - 8uS, **8uS - 16uS**, 16uS - 32uS, 32uS - 64uS, and >64uS.

Fatal Err (Error) Over

Select Enable to force a fatal error that has occurred to the port specified by the user to be prorogated to the IIO core error logic. The options are **Disable** and **Enable**.

Non-Fatal Err (Error) Over

Select Enable to force a non-fatal error that has occurred to the port specified by the user to be prorogated to the IIO core error logic. The options are **Disable** and Enable.

Corr Err (Correctable Error) Over

Select Enable to force a correctable error that has occurred to the port specified by the user to be prorogated to the IIO core error logic. The options are **Disable** and Enable.

L0s Support

When this item is set to Disable, IIO will not put its transmitter in the L0s state. The options are **Disable** and Enable.

►IOAT (Intel® IO Acceleration) Configuration**Disable TPH**

Select Enable to de-activate TLP Processing Hint support. The options are **Disable** and Enable.

Relaxed Ordering

Select Enable to enable Relaxed Ordering support which will allow certain transactions to violate the strict-ordering rules of PCI bus for a transaction to be completed prior to other transactions that have already been enqueued. The options are **Disable** and Enable.

►IIO Generation Configuration**IIO ACPI (Advanced Configuration Power Interface)**

Select Enable to enable Advanced Configuration Power Interface (ACPI) support for the IO device specified by the user. The options are **Enable** and Disable.

► Intel VT for Directed I/O (VT-d)

Intel VT for Direct I/O (VT-d)

Intel® VT for Directed I/O (VT-d)

Select Enable to use Intel Virtualization Technology support for Direct I/O VT-d support by reporting the I/O device assignments to the VMM (Virtual Machine Monitor) through the DMAR ACPI tables. This feature offers fully-protected I/O resource sharing across Intel platforms, providing greater reliability, security and availability in networking and data-sharing. The options are **Enable** and Disable.

ACS Control

This item determines how to use the Access Control Service (ACS) in the system. ACS control provides an easy way of authenticating and authorizing for the user to gain access to web applications and services. Select Enable to achieve ACS Control via software programming. Select Disable to obtain ACS control by managing PCI-E bridge connections. The options are **Enable** and Disable.

Interrupt Remapping

Select Enable for Interrupt Remapping support to enhance system performance. The options are **Enable** and Disable.

Coherency Support (Non-Isoch)

Select Enable for the Non-Isoch VT-d engine to pass through DMA (Direct Memory Access) to enhance system performance. The options are **Enable** and Disable.

► Memory Configuration

Enforce POR

Select Enforce POR to enforce the onboard memory DIMM modules to operate and run at the frequency and voltage as specified by the Intel POR specifications. The options are **Enforce POR**, Disabled and Enforce Stretch Goals.

Memory Frequency

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1600, 1867, 2133, and 2400.

MRC Promote Warnings

Select Enabled to promote the MRC (Memory Reference Code) warnings to the system level. The options are **Enabled** and Disabled.

Halt On Mem (Memory) Training Error

Select Enabled to put memory training errors on halt. The options are **Enabled** and Disabled.

ECC Support

Select Enabled to enable Error Checking & Correction (ECC) support for onboard memory modules. The options are **Auto**, Enabled and Disabled.

Enhanced Log Parsing

If this item is set to Enabled, additional output spacing will be added for memory debug-logging for easy machine parsing. The options are **Disabled** and Enabled.

MemTest (Memory Test)

Select Enabled to enable memory testing during system boot. The options are **Enabled** and Disabled.

MemTest (Memory Test) Loops

This item determines how many times of complete memory tests should be performed during system boot. Enter "1" to run the memory tests infinitely. The default setting is 1.

Rank Margin Tool

Select Enabled for the memory rank margin tool to run after DDR3 memory training. The options are **Disabled** and Enabled.

RMT Pattern Length

Use this item to set the pattern length for the memory margin tool. The options are **Disabled** and Enabled.

Per Bit Margin

Select Enabled to enable logging from the serial port that is based on the DDR Per Bit Margin Data. The options are **Disabled** and Enabled.

Attempt Fast Boot

Select Enabled to skip some portion of Memory Reference Code from memory testing whenever possible to increase bootup speed. The options are **Disabled** and Enabled.

Attempt Fast Cool Boot

Select Enabled to skip some portion of Memory Reference Code from memory testing whenever possible to expedite cold system boot. The options are **Disabled** and Enabled.

Data Scrambling

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are **Enabled** and Disabled.

Allow SBE during Training

Select Enabled to use the "Specifications by Example" (SBE) model in memory training. The options are **Enabled** and Disabled.

Scrambling Seed Low

Use this item to configure the setting for the low 32 bits of the scrambling seed. The default setting is **41003**.

Scrambling Seed High

Use this item to configure the setting for the high 32 bits of the scrambling seed. The default setting is **54165**.

DLL Reset Test

This item allows the user to decide how many times of DLL reset tests should be performed. The default setting is **0**.

MC (Memory Controller) ODT Mode

This item allows the user to select the MC ODT mode. The options are 100 Ohms and **50 Ohms**.

ODT Activation

This item allows the user to select the ODT Activation mode. The options are Memory Controller Activation and **DIMM Register Activation**.

C/A Parity Error

Select Enabled to enable DDR4 Command Address Parity support to enhance memory performance. The options are **Enabled** and Disabled.

SMB Clock Frequency

This item allows the user to set the DDR4 SMB Clock Frequency for SPD access. The options are 100 Khz, **400 Khz**, and 1 Mhz.

Opportunistic Self-Refresh

Select Enabled to enable Opportunistic Self-Refreshing support to enhance memory performance. The options are **Enabled** and Disabled.

Forced Self-Refresh

Select Enabled to force the memory controller to perform a Self-Refreshing to enhance memory performance. The options are **Enabled** and Disabled.

►Memory Topology

This item displays the information of a DIMM module as detected by the AMI BIOS. The following items will display:

- Mc1.Ch0.Dimm0 (Memory Controller 1 Channel 0. DIMM Slot 0)
- Mc1.Ch1.Dimm0 (Memory Controller 1 Channel 1. DIMM Slot 0)
- Mc1.Ch2.Dimm0 (Memory Controller 1 Channel 2. DIMM Slot 0)
- Mc0.Ch0.Dimm0 (Memory Controller 0 Channel 0. DIMM Slot 0)
- Mc0.Ch1.Dimm0 (Memory Controller 0 Channel 1. DIMM Slot 0)
- Mc0.Ch2.Dimm0 (Memory Controller 0 Channel 2. DIMM Slot 0)

►Memory Thermal

Set Throttling Mode

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled, OLTT (Open Loop Thermal Throttling), **CLTT** (Closed Loop Thermal Throttling), and. **CLTT** (Closed Loop Thermal Throttling) with PECI (Platform Environment Control Interface) update.

Phase Shedding

Select Enabled to support DDR3 VR Static Phase Shedding. The options are **Disabled** and Enabled.

Memory Power Savings Mode

Use this item to configure the chipset-related power saving mode. The options are **Disabled**, Enabled and User Defined.

WEMHOT (Memory Hot) Throttling Mode

Use this item to configure the Memory Throttling mode when the memory modules are hot. Memory Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled, Output-Only, Input-Only, and Input and Output Enabled.

MEMTRIP (Memory Trip)

When this item is set to Enabled, the MEMTRIPP (Memory Trip) will trigger the THERMTRIP (Thermal Trip) signal when needed. The options are **Disabled** and Enabled.

► Memory Map

Channel Interleaving

Use this item to set DIMM channel interleaving mood to enhance memory performance. The options are 1-Way Interleave and 6-Way Interleave.

► Memory RAS (Reliability_Availability_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

DRAM Maintenance

Select Auto to allow the AMI BIOS to configure DIMM maintenance settings automatically. Select Manual to customize DRAM maintenance settings. The options are **Auto**, Manual, and Disable.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enable, the IO hub will read and write back one cache line every 16K cycles if there is no delay caused by internal processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Auto**, Enable and Disable.

Patrol Scrub Interval

This feature allows you to decide how many hours the system should wait before the next complete patrol scrub is performed. Use the keyboard to enter a value from 0-24. The Default setting is **24**.

Demand Scrub

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, the error is corrected and sent to the requestor (the original source). Memory is updated as well. Select Enable to use Demand Scrubbing for ECC memory correction. The options are **Auto**, Enable and Disable.

►South Bridge

The following South Bridge information will display:

►USB Configuration

- USB Module Version
- USB Controllers
- USB Devices

Legacy USB Support

Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disabled to have all USB devices available for EFI applications only. The options are **Enabled**, Disabled and Auto.

XHCI Hand-Off

This 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**.

USB Mass Storage Driver Support

Select Enabled to support USB mass storage devices. The options are Disabled and **Enabled**.

Port 60/64 Emulation

Select Enabled to support I/O port 60h/64h emulation, which will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

USB Hardware Delays and Time-outs

USB Transfer Time-out

Use this item to set the time-out value to allow a USB device to perform a control transfer, a bulk transfer or an interrupt transfer. The options are 1 sec., 5 sec., 10 sec., and **20 sec.**

Device Reset Time-out

Use this item to set the time-out value to allow a USB mass storage device to initiate and to execute a reset command upon all related sub-components within this mass storage unit. The options are 10 sec., **20 sec.**, 30 sec., and 40 sec.

Device Power-up Delay

Use this item to set the maximum delay time allowed to a USB device before it properly reports itself to the host controller. Select Auto to use the default value. The default delay time value for a root port is 100 ms, but for a hub port, it will be a delay value taken from its hub descriptor port. The options are **Auto** and Manual.

►SATA Configuration

When this submenu is selected, AMI BIOS automatically detects the SATA devices installed in the system and displays the following items:

SATA Controller

This item enables or disables the onboard SATA controller. The options are **Enabled** and Disabled.

Configure SATA as

Select IDE to configure a SATA drive specified by the user as an IDE drive. Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

**If the item above "Configure SATA as" is set to AHCI, the following items will display:*

SATA Test Mode

Select Enabled to support SATA Test mode. The options are Enabled and **Disabled**.

►SATA Mode Options

SATA LED Locate

Select Enabled when an LED or an SPGIO hardware device is attached to the SATA connections. The options are **Enabled** and Disabled.

SATA AHCI LPM (Link Power Management)

Select Enabled to support Link Power Management for the onboard SATA AHCI connections. The options are **Enabled** and Disabled.

SATA AHCI ALPM (Aggressive Link Power Management)

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA links. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are Enabled and Disabled.

SATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and **Enabled**.

(Port 0~ Port 5) Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

(Port 0~ Port 5) Configure as eSATA

Select Enabled to configure the SATA port specified by the user as an external SATA port. The options are Enabled and **Disabled**.

(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 to the device. The options are Enabled and **Disabled**.

(Port 0~ Port 5) SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure SATA as" is set to IDE, the following items will display:*

SATA Test Mode

Select Enabled to enable SATA Test mode support. The options are Enabled and **Disabled**.

SATA Port 0~ Port 5

This item indicates that a SATA port specified by the user is installed (present) or not.

- Model number of drive and capacity
- Software Preserve Support

(Port 0~ Port 5) SATA Device Type (Available when a SATA port is detected)

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure SATA as" is set to RAID, the following items will display:*

SATA Test Mode

Select Enabled to support SATA Test mode. The options are Enabled and **Disabled**.

SATA RSTe Boot Info

Select Enabled to provide full int13h support for the SATA controller that is attached to a device specified by the user. Please set the CMS Storage OPRM policy to Legacy for this feature to be effective. The options are Disabled and **Enabled**.

►SATA Mode Options

SATA LED Locate

Select Enabled when an LED or an SPGIO hardware device is attached to the SATA connections. The options are **Enabled** and Disabled.

RAID0/RAID1/RAID10/RAID5

Select Enabled to support a selected RAID setting on a SATA device specified by a user. The options are **Enabled** and Disabled.

Intel Rapid Recovery Technology

Select Enabled for Intel® Rapid Recovery Technology (IRRT) support to enhance SATA RAID performance. The options are **Enabled** and Disabled.

RAID Option ROM UI Banner

Select Enabled use the RAID Option ROM User-Interface banner on a SATA device specified by the user for system boot. The options are **Enabled** and Disabled.

IRRT (Intel Rapid Recovery Technology) on ESATA

Select Enabled to use Intel® Rapid Recovery Technology (IRRT) on an external SATA device specified by the user to enhance SATA RAID performance. The options are **Enabled** and Disabled.

Smart Response Technology

Select Enabled to use Intel® Smart Response Technology to enhance SATA RAID performance. The options are **Enabled** and Disabled.

RAID OROM Prompt Delay

Use this item to set the time delay value of the RAID OROM prompt used by a SATA device specified by the user. The options are **2 Seconds**, 4 Seconds, 6 Seconds, and 8 Seconds.

SATA AHCI LPM (Link Power Management)

Select Enabled to support Link Power Management for the onboard SATA AHCI connections. The options are **Enabled** and Disabled.

SATA AHCI ALPM (Aggressive Link Power Management)

When this item is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

Alternate Device ID on RAID

Select Enabled to use an alternate device ID on a RAID device specified by the user. The options are **Disabled** and Enabled.

Load EFI Driver for RAID

Select Enabled to load the EFI driver in a RAID setting. The options are **Disabled** and Enabled.

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

SATA Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and **Enabled**.

(Port 0 ~ Port 5) Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are Enabled and **Disabled**.

(Port 0~ Port 5) Configure as eSATA

Select Enabled to configure the SATA port specified by the user as an external SATA port. The options are Enabled and **Disabled**.

(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 to the device. The options are Enabled and **Disabled**.

(Port 0 ~ Port 5) SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

►sSATA Configuration

When this submenu is selected, AMI BIOS automatically detects the sSATA devices installed in the system and displays the following items:

sSATA Controller

This item enables or disables the onboard sSATA controller. The options are **Enabled** and Disabled.

Configure sSATA as

Select IDE to configure an sSATA drive specified by the user as an IDE drive. Select AHCI to configure an sSATA drive specified by the user as an AHCI drive. Select RAID to configure an sSATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

**If the item above "Configure sSATA as" is set to AHCI, the following items will display:*

SATA Test Mode

Select Enabled to enable SATA Test mode support. The options are Enabled and **Disabled**.

►SATA Mode Options

SATA HDD Unlock

Select Enabled to allow the user to set a password to unlock an HDD device in the OS. The options are **Enabled** and Disabled.

SATA LED Locate

Select Enabled when an LED or an SPGIO hardware device is attached to the SATA connections. The options are **Enabled** and Disabled.

sSATA AHCI LPM (Link Power Management)

Select Enabled to support Link Power Management for the onboard sSATA AHCI connections. The options are **Enabled** and Disabled.

sSATA AHCI ALPM (Aggressive Link Power Management)

When this item is set to Enabled, the sSATA AHCI controller manages the power usage of the sSATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are Enabled and Disabled.

sSATA Port 0~ Port 5

This item displays the information detected on the installed sSATA drive on the particular sSATA port.

- Model number of drive and capacity
- Software Preserve Support

Port 0~ Port 5

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and **Enabled**.

(Port 0~ Port 5) Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace an sSATA disk drive installed on this port without shutting down the system. The options are **Enabled** and Disabled.

(Port 0~ Port 5) Configure as eSATA

Select Enabled to configure the sSATA port specified by the user as an external sSATA port. The options are Enabled and **Disabled**.

(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 to the device. The options are Enabled and **Disabled**.

(Port 0~ Port 5) sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure sSATA as" is set to IDE, the following items will display:*

SATA Test Mode

Select Enabled to enable SATA Test mode support. The options are Enabled and **Disabled**.

sSATA Port 0~ Port 5

This item indicates that as sSATA port specified by the user is installed (present) or not.

- Model number of drive and capacity
- Software Preserve Support

(Port 0~ Port 5) sSATA Device Type (Available when an sSATA port is detected)

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

**If the item above "Configure sSATA as" is set to RAID, the following items will display:*

SATA Test Mode

Select Enabled to enable SATA Test mode support. The options are Enabled and Disabled.

sSATA RSTe Boot Info

Select Enabled to provide full int13h support for the sSATA controller that is attached to a device specified by the user. Please set the CMS Storage OPRom policy to Legacy for this feature to be effective. The options are Disabled and **Enabled**.

►SATA Mode Options

SATA HDD Unlock

Select Enabled to allow the user to set a password to unlock an HDD device in the OS. The options are **Enabled** and Disabled.

SATA LED Locate

Select Enabled when an LED or an SPGIO hardware device is attached to the sSATA connections. The options are **Enabled** and Disabled.

RAID0/RAID1/RAID10/RAID5

Select Enabled to support a selected RAID setting on an sSATA device specified by a user. The options are **Enabled** and Disabled.

Intel Rapid Recovery Technology

Select Enabled for Intel® Rapid Recovery Technology (IRRT) support to enhance RAID performance. The options are **Enabled** and Disabled.

RAID Option ROM UI Banner

Select Enabled use the RAID Option ROM User-Interface banner on an sSATA device specified by the user for system boot. The options are **Enabled** and Disabled.

IRRT (Intel Rapid Recovery Technology) on ESATA

Select Enabled to use Intel® Rapid Recovery Technology (IRRT) on an external sSATA device specified by the user to enhance SATA RAID performance. The options are **Enabled** and Disabled.

Smart Response Technology

Select Enabled to use Intel® Smart Response Technology to enhance RAID performance. The options are **Enabled** and Disabled.

RAID OROM Prompt Delay

Use this item to set the time delay value of a RAID OROM prompt used by an sSATA device specified by the user. The options are **2 Seconds**, 4 Seconds, 6 Seconds, and 8 Seconds.

sSATA AHCI LPM (Link Power Management)

Select Enabled to support Link Power Management for the onboard sSATA AHCI connections. The options are **Enabled** and Disabled.

sSATA AHCI ALPM (Aggressive Link Power Management)

When this item is set to Enabled, the sSATA AHCI controller manages the power usage of the sSATA link. The controller will put the link to a low power state when the I/O is inactive for an extended period of time, and the power state will return to normal when the I/O becomes active. The options are **Enabled** and Disabled.

Alternate Device ID on RAID

Select Enabled to use an alternate device ID on a RAID device specified by the user. The options are **Disabled** and Enabled.

Load EFI Driver for RAID

Select Enabled to load the EFI driver in a RAID setting. The options are **Disabled** and Enabled.

s SATAPort 0~ Port 5

This item displays the information detected on the sSATA drive connected to the particular sSATA port specified by the user.

- Model number of drive and capacity
- Software Preserve Support

sSATA Port 0~ Port 5

Select Enabled to enable a SATA port specified by the user. The options are Disabled and **Enabled**.

(Port 0 ~ Port 5) Hot Plug

Select Enabled to enable hot-plugging support for a port specified by the user, which will allow the user to replace a SATA disk drive installed on this port without shutting down the system. The options are Enabled and **Disabled**.

(Port 0~ Port 5) Configure as eSATA

Select Enabled to configure the sSATA port specified by the user as an external SATA port. The options are Enabled and **Disabled**.

(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 to the device. The options are Enabled and **Disabled**.

(Port 0 ~ Port 5) sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are **Hard Disk Drive** and Solid State Drive.

►Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

- General ME Configuration
- Operational Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1
- ME Firmware Status #2
 - Current State
 - Error Code
- Altitude
- MCTP Bus Owner

►PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

- PCI Bus Driver Version
- PCI Device Common Settings

PCI Latency Timer

Use this item to configure the PCI latency timer for a device installed on a PCI bus. Select 32 to set the PCI latency timer to 32 PCI clock cycles. The options are **32**, 64, 96, 128, 160, 192, 224, and 248 (PCI Bus Clocks).

PCI-X Latency Timer

Use this item to configure the PCI-X latency timer for a device installed on a PCI-X bus. Select 32 to set the PCI latency timer to 32 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224, and 248 (PCI Bus Clocks).

VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow a PCI card that does not contain its own VGA color palette to examine a video card 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 (PCI/PCI-E Parity Error) number for a PCI bus error event. The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled to allow a PCI device to generate an SERR (System Error) number for a PCI bus error event. The options are Enabled and **Disabled**.

Above 4G Decoding (Available if the system supports 64-bit PCI decoding)

Select Enabled to decode a PCI device that supports 64-bit in the space above 4G Address. The options are Enabled and **Disabled**.

SR-IOV (Available if the system supports Single-Root Virtualization)

Select Enabled for Single-Root IO Virtualization support. The options are Enabled and **Disabled**.

Don't Reset VC-TC Mapping (Used for system with virtual channels)

Select Enabled to prevent the user from resetting VC-TC mapping. The options are Enabled and **Disabled**.

PCI/PCIX/PCle Slot 1 OPROM/PCI/PCIX/PCle Slot 2 OPROM/PCI/PCIX/PCle Slot 3 OPROM/PCI/PCIX/PCle Slot 4 OPROM/

Select Enabled to enable Option ROM support to boot the computer using a device installed on the slot specified by the user. The options are Disabled, **Legacy** and EFI.

Onboard LAN1 Option ROM/Onboard LAN2 Option ROM

Use this option to select the type of device installed in LAN Port1 and LAN Port2 for system boot. The default setting for LAN1 Option ROM is **PXE**, for LAN2 Option ROM is **Disabled**.

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, Ipv4 PXE boot option will not be supported. The options are Enabled and **Disabled**.

Onboard Video Option ROM Type

Select Enabled to enable Option ROM support to boot the computer using a video device specified by the user. The options are Disabled, **Legacy** and EFI.

►PCI Express Settings

Relaxed Ordering

Select Enabled to enable Relaxed Ordering support which will allow certain transactions to violate the strict-ordering rules of PCI and to be completed prior to other transactions that have already been enqueued. The options are **Disabled** and Enabled.

Extended Tag

Select Enabled to enable Extended Tag support which will allow the device specified by a user to use the 8-bit tag field as a register. The options are **Disabled** and Enabled.

No Snoop

Select Enabled to support no-snoop mode for each CB device. The options are Disabled and **Enabled**.

Maximum Payload

Select Auto for the system BIOS to automatically set the maximum payload value for a PCI-E device to enhance system performance. The options are **Auto**, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes.

Extended Synch

Select Enabled to support generations of Extended Synchronization patterns. The options are **Disabled** and Enabled.

Link Training Retry

Use this item to decide how many attempts the software shall make to retrain a PCI link if the previous training has failed. The options are **Disabled**, 2, 3, and 5.

Link Training Timeout (uS)

Use this item to decide how many microseconds the software shall wait before polling the Link Training bit from the Link Status Register. Enter a value between 10 to 10000 us. The default setting is **1000**.

Unpopulated Links

Select Disable Link for the BIOS to disable the unpopulated PCI-E link to save energy use. The options are **Keep Link On** and Disable Link.

Restore PCIE Registers

Select Enabled to support a PCI-E device that is not recognized by an OS that is Vista or older. The options are **Disabled** and Disable Link.

►Super IO Configuration

Super IO Chip AST2400

►Serial Port 1 Configuration/Serial Port 2 Configuration

Serial Port 1/Serial Port 2

Select Enabled to enable the onboard serial port specified by the user. The options are **Enabled** and Disabled.

Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.

Change Port 1 Settings/Change Port 2 Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1 or Serial Port 2. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

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).

The options for Serial Port 2 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).

Serial Port 2 Attribute

Select SOL to use COM Port 2 as a Serial_Over_LAN (SOL) port for console redirection. The options are COM and **SOL**.

►Serial Port Console Redirection

COM 1

COM 1 Console Redirection

Select Enabled to enable COM Port 1 Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are **Disabled** and Enabled.

**If the item above set to Enabled, the following items will become available for configuration:*

►COM 1 Console Redirection Settings

Terminal Type

Use this item to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this item to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this item to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and 2.

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled.

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this item to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

Use this item to select Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this item to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When "Bootloader" is selected, legacy Console Redirection is disabled before booting the OS. When "Always Enable" is selected, legacy Console Redirection remains enabled while the OS boots up. The options are **Always Enable** and Bootloader.

SOL

SOL Console Redirection

Select Enabled to use the SOL port for Console Redirection. The options are **Enabled** and Disabled.

**If the item above set to Enabled, the following items will become available for user's configuration:*

► SOL Console Redirection Settings

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and **2**.

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by the overflow in the buffer. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled.

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When this feature is set to Bootloader, legacy Console Redirection is disabled before booting the OS. When this feature is set to Always Enable, legacy Console Redirection remains enabled upon OS boot. The options are **Always Enable** and Bootloader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

(EMS) Console Redirection

Select Enabled to use a COM port selected by the user for EMS Console Redirection. The options are Enabled and **Disabled**.

*If the item above set to Enabled, the following items will become available for user's configuration:

►EMS Console Redirection Settings (Available when EMS Console Redirection is enabled)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Out-of-Band Management Port

The feature selects a serial port in a client server to be used by the Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1 (Console Redirection)** and SOL (Console Redirection).

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**.

Bits Per Second

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in both host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

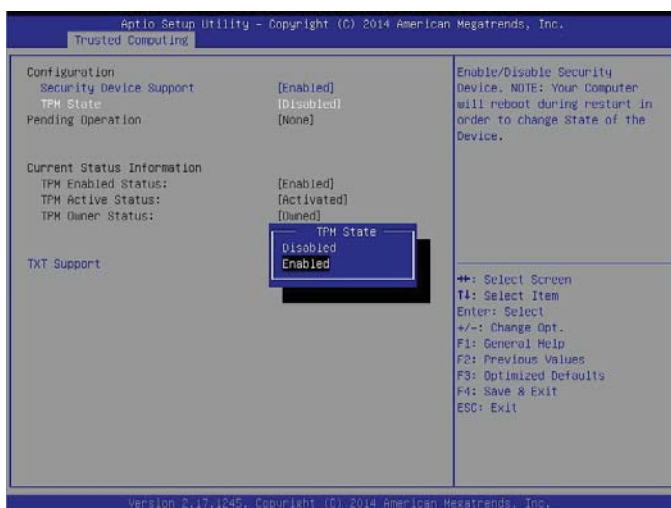
Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None**, Hardware RTS/CTS, and Software Xon/Xoff.

The following settings will be displayed:

Data Bits, Parity, Stop Bits

► Enabling TPM in the BIOS



The steps below describe the proper procedure on how to enable the TPM in the BIOS. This process is necessary to activate support in the system before you can start using the TPM.

1. Enter the BIOS setup screen. You may do this either from the IPMI remote console or from the server directly using KVM. Reboot the system and press the key as the system boots until you reach the BIOS screen.
2. You will be presented with the BIOS setup main screen. Using the arrow keys, navigate to the Advanced tab. From there, navigate down and select the "CPU Configuration" option as shown below. Press <Enter>.
3. You will be taken to the CPU Configuration page. Using the arrow keys, navigate down to the "Intel Virtualization Technology" option and press <Enter>. Select "Enable" and press <Enter>.

4. Once you have enabled Virtualization support, press your <Esc> key until you are back to the Advanced tab. Navigate down to the "Trusted Computing" option and press <Enter>.
5. The Trusted Computing window will appear. Select "TPM State" and press <Enter>.
6. From the window that pops up, select "Enabled" and press <Enter>.
7. You must save your changes and reset for the changes to take effect. Scroll to the Save & Exit tab and select "Save Changes and Reset."

►Intel TXT (LT-SX) Configuration

This submenu allows the user to configure the following TXT settings.

TXT Support

Select Enabled to enable Intel Trusted Execution Technology (TXT) support. The options are **Disabled** and Enabled.

Note: If the option for this item (TXT Support) is set to Enabled, be sure to disable EV DFX (Device Function On-Hide) support for the system to work properly. (EV DFX is under "I/O Configuration" in the "Chipset/North Bridge" submenu on Page 4-10). For more information on TPM, please refer to the TPM manual at http://www.supermicro.com/manuals/other/AOM-TPM-9655V_9655H.pdf

►ACPI Settings

Enable ACPI Auto Configuration

Select Enabled to enable BIOS ACPI Auto Configuration support to enhance system performance. The options are Enabled and **Disabled**.

Enable Hibernation

Select Enabled for Hibernation support to enhance system performance. The options are **Enabled** and Disabled.

Lock Legacy Resources

Select Enabled for Lock Legacy Resources support to enhance system performance. The options are Enabled and **Disabled**.

► iSCSI Configuration

This item displays iSCSI configuration information:

iSCSI Initiator Name

Use this item to enter the name of the iSCSI Initiator, which is a unique name used in the world. The name must be in the IQN format. The following submenu will be available for configuration:

► Add an Attempt

► Delete Attempts

► Change Attempt Order

► COM1 Console Redirection Settings

Terminal Type

This feature allows the user to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this item to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and **2**.

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled.

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this item to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When the option-Bootloader is selected, legacy Console Redirection is disabled before booting the OS. When the option- Always Enable is selected, legacy Console Redirection remains enabled upon OS bootup. The options are **Always Enable** and Bootloader.

SOL/COM2

SOL/COM2 Console Redirection

Select Enabled to use the SOL port for Console Redirection. The options are **Enabled** and Disabled.

**If the item above set to Enabled, the following items will become available for user's configuration:*

► SOL/COM2 Console Redirection Settings

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII Character set. Select VT100+ to add color and function key support. Select ANSI to use the Extended ASCII Character Set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, **VT100+**, and VT-UTF8.

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 38400, 57600 and **115200** (bits per second).

Data Bits

Use this feature to set the data transmission size for Console Redirection. The options are 7 (Bits) and **8 (Bits)**.

Parity

A parity bit can be sent along with regular data bits to detect data transmission errors. Select Even if the parity bit is set to 0, and the number of 1's in data bits is even. Select Odd if the parity bit is set to 0, and the number of 1's in data bits is odd. Select None if you do not want to send a parity bit with your data bits in transmission. Select Mark to add a mark as a parity bit to be sent along with the data bits. Select Space to add a Space as a parity bit to be sent with your data bits. The options are **None**, Even, Odd, Mark and Space.

Stop Bits

A stop bit indicates the end of a serial data packet. Select 1 Stop Bit for standard serial data communication. Select 2 Stop Bits if slower devices are used. The options are **1** and **2**.

Flow Control

Use this feature to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

Select Enabled to enable VT-UTF8 Combination Key support for ANSI/VT100 terminals. The options are **Enabled** and Disabled.

Recorder Mode

Select Enabled to capture the data displayed on a terminal and send it as text messages to a remote server. The options are **Disabled** and Enabled.

Resolution 100x31

Select Enabled for extended-terminal resolution support. The options are Disabled and **Enabled**.

Legacy OS Redirection Resolution

Use this feature to select the number of rows and columns used in Console Redirection for legacy OS support. The options are 80x24 and **80x25**.

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST (Power-On Self-Test). When this feature is set to Bootloader, legacy Console Redirection is disabled before booting the OS. When this feature is set to Always Enable, legacy Console Redirection remains enabled upon OS boot. The options are **Always Enable** and Bootloader.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management.

EMS Console Redirection

Select Enabled to use a COM port selected by the user for EMS Console Redirection. The options are Enabled and **Disabled**.

*If the item above set to Enabled, the following items will become available for user's configuration:

►EMS Console Redirection Settings (Available when EMS Console Redirection is enabled)

Use this feature to specify how the host computer will exchange data with the client computer, which is the remote computer used by the user.

Out-of-Band Management Port

The feature selects a serial port in a client server to be used by the Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1 (Console Redirection)** and **COM2/SOL (Console Redirection)**.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirection. Select VT100 to use the ASCII character set. Select VT100+ to add color and function key support. Select ANSI to use the extended ASCII character set. Select VT-UTF8 to use UTF8 encoding to map Unicode characters into one or more bytes. The options are ANSI, VT100, VT100+, and **VT-UTF8**.

Bits Per Second

This item sets the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in both host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 57600, and **115200** (bits per second).

Flow Control

Use this item to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop data-sending when the receiving buffer is full. Send a "Start" signal to start data-sending when the receiving buffer is empty. The options are **None**, Hardware RTS/CTS, and Software Xon/Xoff.

The setting for each these features is displayed:

Data Bits, Parity, Stop Bits

►Trusted Computing (Available when a TPM device is installed and detected by the BIOS)

Configuration

Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM (Trusted Platform Module) support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Enabled and **Disabled**.

TPM State

Select Enabled to use TPM (Trusted Platform Module) settings to enhance system data security. Please reboot your system for any change on the TPM state to take effect. The options are Disabled and **Enabled**.

Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **0**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

Note: Your system will reboot to carry out a pending TPM operation.

Current Status Information

This item displays the status of the TPM support on this motherboard.

►ACPI Settings

WHEA Support

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform and provide a common infrastructure for the system to handle hardware errors within the Windows OS environment to reduce system crashes and to enhance system recovery and health monitoring. The options are Enabled and **Disabled**.

High Precision Timer

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

NUMA (Available when the OS supports this feature)

Select Enabled to enable Non-Uniform Memory Access support to enhance system performance. The options are **Enabled** and Disabled.

7-4 Event Logs

Use this feature to configure Event Log settings.



► Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

Select Enabled to enable SMBIOS (System Management BIOS) Event Logging during system boot. The options are **Enabled** and Disabled.

Erasing Settings

Erase Event Log

Select Yes to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No** and Yes.

When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings**Log System Boot Event**

Select Enabled to log system boot events. The options are **Enabled** and Disabled.

MECI (Multiple Event Count Increment)

Enter the increment value for the multiple event counter. Enter a number between 1 to 255. The default setting is **1**.

METW (Multiple Event Count Time Window)

This item is used to determine how long (in minutes) the multiple event counter should wait before generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

Note: Please reboot the system for the changes to take effect.

Custom Options**Log OEM Codes**

Select Enabled to log OEM codes for this system. The options are **Enabled** and Disabled.

Convert OEM Codes

Select Enabled to convert OEM codes to be used for your system. The options are **Disabled** and Enabled.

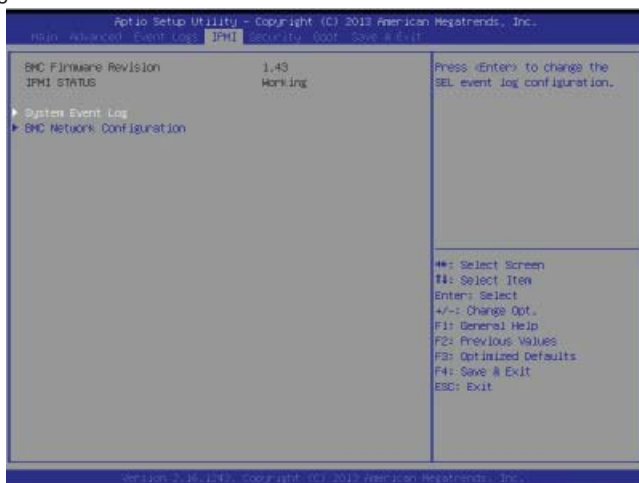
►View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log. The following categories are displayed:

Date/Time/Error Code/Severity

7-5 IPMI

Use this feature to configure Intelligent Platform Management Interface (IPMI) settings.



BMC (BaseBoard Management Controller) Firmware Revision

This item indicates the BMC firmware revision used in your system.

IPMI Status

This item indicates the status of the IPMI firmware installed in your system.

►System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled to enable all system event logging support at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

Select Yes, On next reset to erase all system event logs upon next system reboot. Select Yes, On every reset to erase all system event logs upon each system reboot. Select No to keep all system event logs after each system reboot. The options are **No**, Yes, On next reset, and Yes, On every reset.

When SEL is Full

This feature allows the user to determine what the AMI BIOS should do when the system event log is full. Select Erase Immediately to erase all events in the log when the system event log is full. The options are **Do Nothing** and Erase Immediately.

Note: After making changes on a setting, be sure to reboot the system for the changes to take effect.

►BMC Network Configuration

The following items will be displayed:

- IPMI LAN Selection
- IPMI Network Link Status

Update IPMI LAN Configuration

Select Yes for the system BIOS to automatically reset the following IPMI settings at next system boot. The options are Yes and **No**.

Configuration Address Source (Available when the item above - Update IPMI LAN Configuration is set to Yes)

Use this item to select the IP address source for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, AMI BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server attached to the network and request the next available IP address for this computer. The options are **DHCP** and Static.

Station IP Address

This item displays the Station IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

Subnet Mask

This item displays the sub-network that this computer belongs to. The value of each three-digit number is separated by dots and it should not exceed 255.

Station MAC Address

This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

Gateway IP Address

This item displays the Gateway IP address for this computer. This should be in decimal and in dotted quad form (i.e., 192.168.10.253).

IPMI Function Support

Select Enabled to enable IPMI function support. The options are **Enabled** and Disabled.

7-6 Security Settings

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



Password Check

Select Setup for the system to prompt for a password upon entering the BIOS setup utility. Select Always for the system to prompt for a password at bootup and upon entering the BIOS Setup utility. The options are **Setup** and Always.

Administrator Password

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

User Password

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

► Secure Boot Menu

The following items will display:

- System Mode
- Secure Boot
- Vendor Keys

Secure Boot Control

Select Enable for secure boot support to ensure system security at bootup. The options are Enabled and **Disabled**.

Secure Boot Mode

This item allows the user to select the desired secure boot mode for the system. The options are Standard and **Custom**.

► Key Management

Provision Factory Default Keys

Select Enable to install all manufacturer default keys for the following system security settings. The options are **Enabled** and Disabled.

► Enroll All Factor Default Keys

Select Enable to install all manufacturer defaults for the following system security settings. The options are **Yes** and No.

► Save All Secure Boot Variables

This feature allows the user to set and save the following Secure Boot Variable settings:

► Platform Key (PK)

This feature allows the user to configure and save platform key settings.

►Key Exchange Key

This feature allows the user to configure and save Key-Exchange-Key settings.

►Authorized Signatures

This feature allows the user to set and save authorized signatures and grant access to those whose names appear on the list.

►Forbidden Signatures

This feature allows the user to set and save the forbidden signatures and deny the access to those whose names appear on the list.

►Authorized TimeStamps

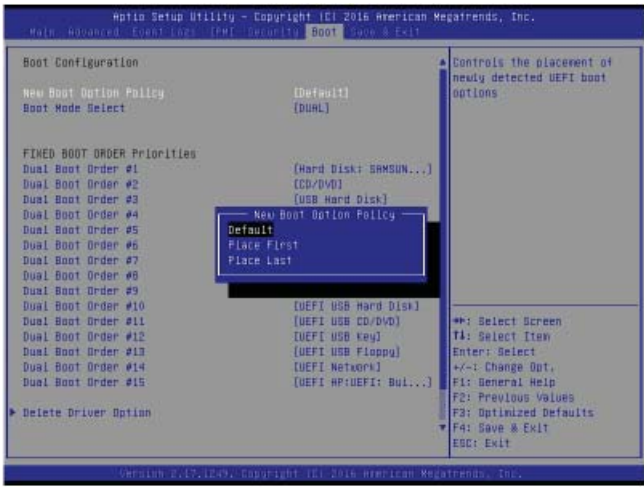
This feature allows the user to set and save the timestamps for authorized signatures to indicate when these signatures were entered into the system.

►OsRecovery Signatures

This feature allows the user to set and save the authorized signatures used for OS recovery.

7-7 Boot Settings

Use this feature to configure Boot Settings:



Boot Configuration

New Boot Option Policy

This item allows the user to decide the placement order of a newly detected UEFI boot option. The options are **Default**, Place First, and Place Last.

Boot Mode Select

Use this item to select the type of device to be used for system boot. The options are Legacy, UEFI, and **Dual**.

Fixed Boot Order Priorities

This option prioritizes the order of a bootable device from which the system will boot. Press <Enter> on each entry from top to bottom to select devices.

When the item above -"Boot Mode Select" is set to **Dual** (default), the following items will be displayed for configuration:

- Boot Order #1 - Boot Order #15

When the item above -"Boot Mode Select" is set to Legacy, the following items will be display for configuration:

- Boot Order #1 - Boot Order #7

When the item above -"Boot Mode Select" is set to UEFI, the following items will be display for configuration:

- Boot Order #1 - Boot Order #8

►Add New Boot Option

Use this item to select a new boot device to add to the boot priority list.

Add New Boot Option

Use this feature to select the target boot device to add to the boot priority list.

Path for Boot Option

Use this feature to create a new path for boot option.

Boot Option File Path

Use this feature to set a new file path for boot option.

Create

Use this feature to create a new boot option for the new device.

►Delete Boot Option

Use this item to select a boot device to delete from the boot priority list.

Delete Boot Option

Select the target boot device to delete from the boot priority list.

►Hard Disk Drive BBS Priorities

- Legacy Boot Order #1

►Network Drive BBS Priorities

- Legacy Boot Order #1 - # 8

►USB Key Drive BBS Priorities

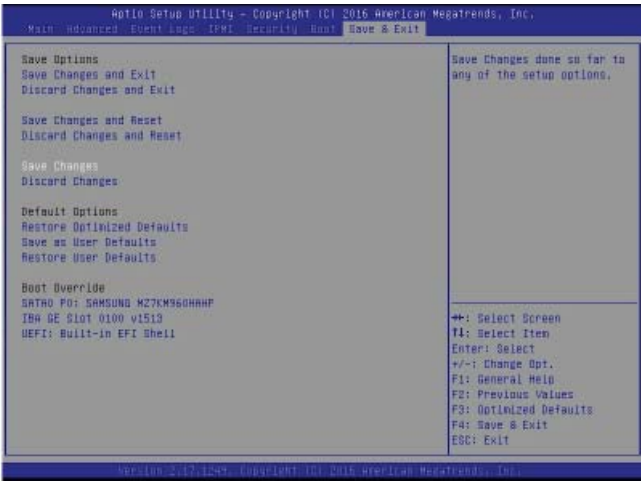
- Legacy Boot Order #1

►UEFI USB Key Drive BBS Priorities

- UEFI Boot Order #1

7-8 Save & Exit

Select the Save & Exit tab from the BIOS setup screen to configure the settings below.



Save Options

Save Changes and Exit

When you have completed the system configuration changes, select this option to save all changes you've made and exit from the BIOS setup utility.

Discard Changes and Exit

Select this option to quit the BIOS setup without making any permanent changes to the system configuration, and exit from the BIOS setup utility.

Save Changes and Reset

After you have made all changes on the BIOS settings, select this option to save the changes you've made and then reboot the computer for the new system configuration changes to take effect.

Discard Changes and Reset

When you have completed the system configuration changes, select this option to discard all the changes you've made and reboot the computer.

Save Changes

After you have made all changes on the BIOS settings, 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 you've made and return to the AMI BIOS setup utility.

Default Options

Restore Optimized Defaults

Select this item and press <Enter> to load the manufacture default settings which are designed for maximum system performance but not for maximum stability.

Save As User Defaults

Select this item and press <Enter> to save the current BIOS settings as user's default settings for future use.

Restore User Defaults

Select this item and press <Enter> to retrieve user-defined settings that were previously saved for future use.

Boot Override

This feature allows the user to override the Boot priorities sequence in the Boot menu and immediately boot the system with another device specified by the user. This is a one-time override.

Appendix A

BIOS Error Beep Codes

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

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

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

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

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

Notes

Appendix B

System Specifications

Processors

Single non-fabric Intel® Xeon Phi™ x200 processor in an Intel® LGA 3647 (P0) socket

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

Chipset

Intel PCH C612

BIOS

128 Mb AMI BIOS® SPI Flash BIOS

Memory Capacity

Six (6) DIMM slots that can support 384 GB of Registered RDIMM up to 64 GB size and DDR4 2400 MHz speed, 1.20V SDRAM.

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

SATA Controller

Intel on-chip controller supports seven (7) SATA 3.0 connections (I-SATA connectors 1-3, S-SATA connectors 1-4). This system supports RAID 0, 1 and 10 (from the Intel PCH). Additionally, two SATA DOM (Device-On-Module) power connectors (JSD1/2) are provided.

Drive Bays

Eight hot-swap and fixed drive bays are available to house up to twelve SATA drives

Peripheral Drive Bays

Two 5.25" drive bays can be used for peripheral devices

Expansion Slots

Supports the use of three standard size PCI add-on cards:

- Two (2) PCI Express 3.0 x16 slots (CPU Slot4/Slot6)
- One (1) PCI Express 2.0 x4 (in x8) slot (PCH Slot2)

Motherboard

K1SPE

Dimensions: 12.00" (L) x 9.875" (W) (304.80 mm x 250.83 mm)

Chassis

GS5A-753B Form Factor: mid tower,

Dimensions (as tower): HxWxD: 18.1" x 7.9" x 19.4" (460mm x 200mm x 493mm)

Weight

Gross (Bare Bone): 24.2 lbs. (10.98 kg)

System Cooling

Five (5) 12-cm low-noise PWM fans

System Input Requirements

AC Input Voltage: 100-240 VAC

Rated Input Current: 7A (115V) to 3.5A (240V)

Rated Input Frequency: 50/60 Hz

Power Supply

Rated Output Power: 750W (Part# PWS-753-PQ)

Rated Output Voltages: +3.3V (15A), +5V (20A), +12V (17A), -12V (0.5A), +5Vsb (3A))

Operating Environment

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

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

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

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

Regulatory Compliance

Electromagnetic Emissions: FCC Class 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"

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Appendix C

UEFI BIOS Recovery Instructions

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 need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

C-1 Overview to UEFI BIOS

The Unified Extensible Firmware Interface (UEFI) specification provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot up the system. UEFI offers a clean, hands-off control to a computer system at bootup.

C-2 Recovering the UEFI BIOS Image (Main BIOS Block)

A UEFI BIOS flash chip consists of a recovery BIOS block, which is comprised of two boot blocks and a main BIOS block (the main BIOS image). The boot block contains critical BIOS codes including memory detection and recovery codes for the user to flash a new BIOS image if the original main BIOS image is corrupted. When the system power is on, the boot block codes execute first. Then the main BIOS code will continue with system initialization and bootup.

Note: Follow the BIOS recovery instructions below when the main BIOS boot crashes.

C-3 Recovering the UEFI BIOS with a USB Device

This feature allows the user to recover a BIOS image using a USB device without the need of additional utilities. A device such as a USB flash drive or a USB CD/DVD ROM/RW can be used. A USB hard disk drive cannot be used for BIOS recovery at this time.

To perform UEFI BIOS recovery using an attached device, follow the instructions below.

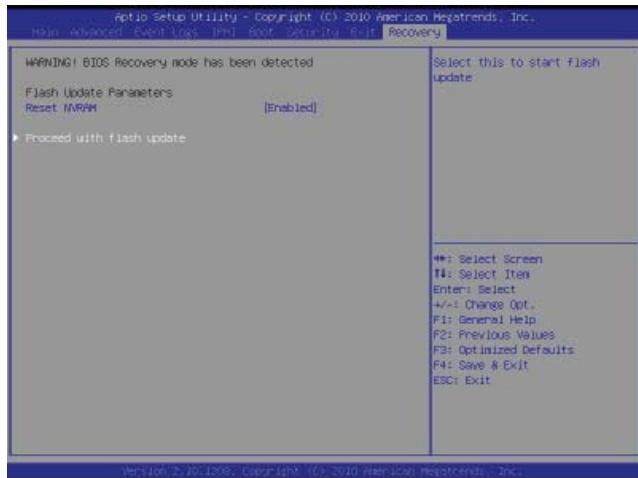
1. Using a different system, copy the "Super.ROM" binary image file into the disc Root "\" directory of a USB device or a writeable CD/DVD.

Note: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS image to a USB flash device and rename it "Super.ROM".

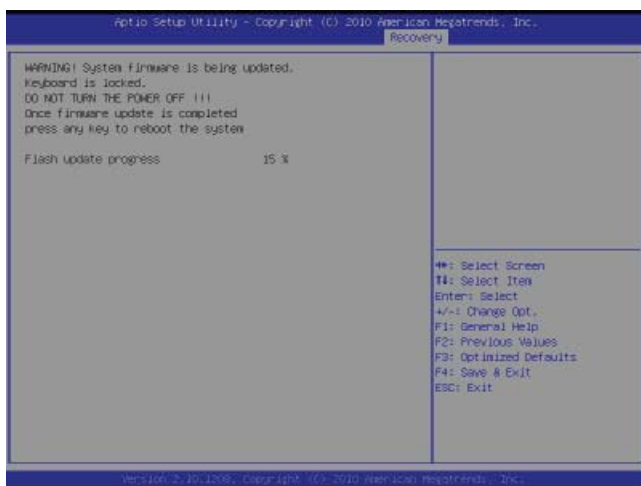
2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system
3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your keyboard until you hear two short beeps. This may take from a few seconds to one minute.
4. After locating the new BIOS binary image, the system will enter the BIOS recovery menu as shown below.

Note: At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.

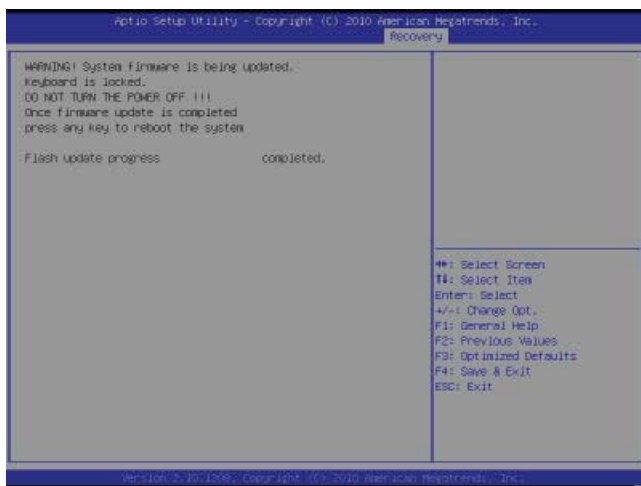
5. When the screen shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.



Note: Do not interrupt the BIOS flashing until it has completed.



- After the process has completed, press any key to reboot the system.



- Using a different system, extract the BIOS package into a bootable USB flash drive.
- When the DOS prompt appears, enter AMI.BAT BIOSName.###.

Note: Do not interrupt this process until BIOS flashing has completed.

9. After receiving the message that the BIOS update is complete, unplug the AC power cable from the power supply to clear CMOS, then plug the AC power cable in the power supply again to power on the system.
10. Press continuously to enter the BIOS Setup utility.
11. Press <F3> to load the default settings.
12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.