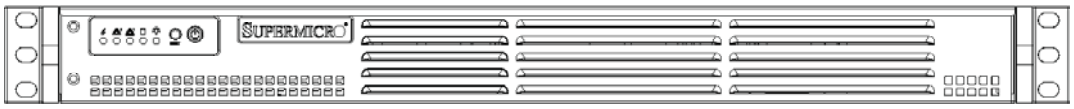
SUPERMICRO®

SUPERSERVER

5017A-EF



USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5017A-EF. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 5017A-EF is a high-end server based on the SC504-203B rack-mountable chassis and the X9SBAA-F single processor serverboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the X9SBAA-F serverboard and the SC504-203B chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5017A-EF into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: Standardized Warning Statements

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 SuperServer 5017A-EF.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X9SBAA-F serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC504-203B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Appendix A POST Error Beep Codes

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Chapter 1

Introduction

1-1 Overview

The SuperServer 5017A-EF is a mini server comprised of two main subsystems: the SC504-203B 1U chassis and the X9SBAA-F single processor motherboard. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the motherboard and chassis, various hardware components have been included with the 5017A-EF, as listed below:

- One riser card bracket (MCP-120-00063-0N)
- One riser card (RSC-R1U-33)

Note: a complete list of safety warnings is provided on the Supermicro web site at http://www.supermicro.com/about/policies/safety_information.cfm

1-2 Motherboard Features

The SuperServer 5017A-EF is built around the X9SBAA-F, a single processor motherboard designed to provide maximum performance. Below are the main features of the X9SBAA-F.

Processors

The X9SBAA-F supports a single Intel® Atom™ SoC S1260 embedded processor. Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X9SBAA-F has one SO-DIMM slot that can support up to 8GB of unbuffered ECC DDR3-1333 memory. See Chapter 5 for details.

Serial ATA

A SATA controller is also integrated into the chipset to provide four SATA 3.0 (6/ Gbps) aports. The SATA 3.0 ports are RAID 0 and 1 supported.

PCI Expansion Slots

The X9SBAA-F has one 32-bit 5V PCI slot.

Rear I/O Ports

The color-coded I/O ports include one COM port, a VGA port, two USB 3.0 ports, two Gb Ethernet ports and a dedicated IPMI LAN port. A Unit ID button is also included.

1-3 Server Chassis Features

The SC504-203B is a mini-ITX form factor chassis designed to be used in a 1U rackmount configuration. The following is a general outline of the main features of the SC504-203B server chassis.

System Power

The SC504-203B features a single 200W power supply. Power must be removed from the system and the AC power cord removed when replacing. See Chapter 6 for details.

Hard Drive Subsystem

Either two 3.5" internal drive or four 2.5" internal drives (with a 2.5" HDD bracket) are supported by the system. These are not hot-swap drives.

Front Control Panel

The control panel on the SC504-203B provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system information and power supply failure. A main power button and a system reset button are also included.

1-4 Contacting Supermicro

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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5017A-EF up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer 5017A-EF was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 5017A-EF. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer 5017A-EF was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

2-4 Warnings and Precautions

Rack Precautions

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

- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.

- Always make sure the rack is stable before extending a component from the rack.

- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.

- Determine the placement of each component in the rack *before* you install the rails.

- Install the heaviest server components on the bottom of the rack first, and then work up.

- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.

- Allow any hot plug drives and power supply modules to cool before touching them.

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

Rack Mounting Considerations

Ambient Operating Temperature

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

Reduced Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

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

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

2-5 Installing the System into a Rack

This section provides information on installing the SC504 chassis into a rack unit. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

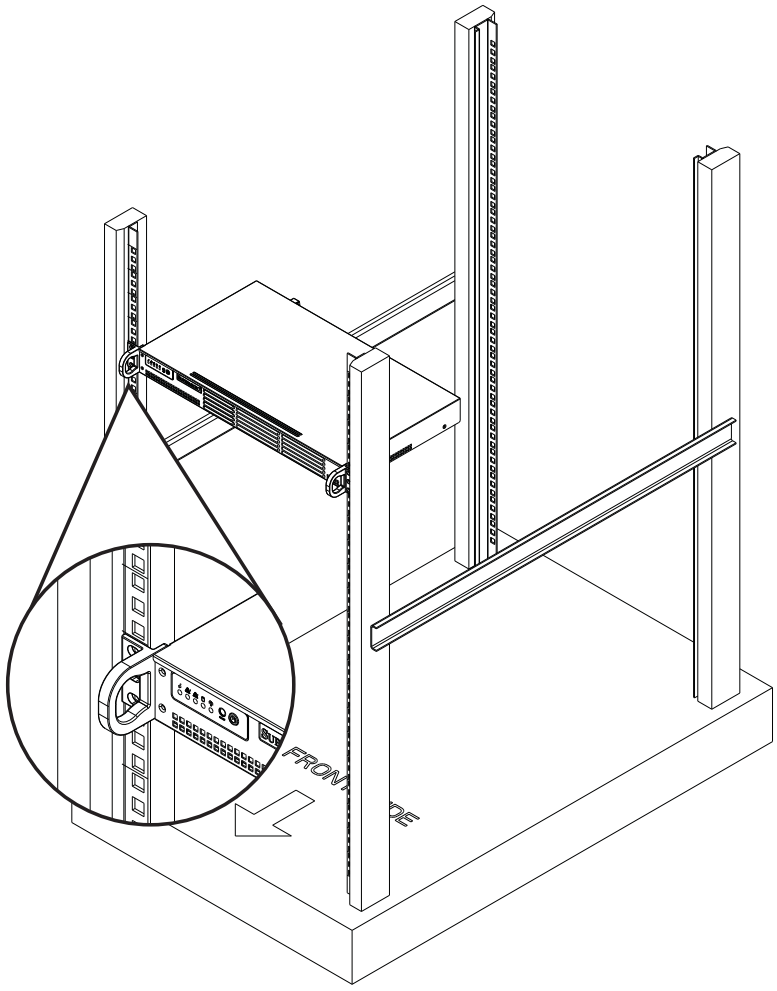
Installing the Chassis into a Standard Rack

1. Confirm that chassis includes the four mounting screws required to mount the chassis into a rack

2. Align the thru holes of the chassis with the thru holes of the rack.

3. Insert the mounting screws into the thru holes in the front of the chassis and through the thru holes in the rack and secure.

Figure 2-1. Installing the Chassis into a Rack



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

Telco Rack

The SC504 supports Telco Rack installation. The SC504 chassis' compact design allows the it to be installed into a Telco rack without the use of rails.

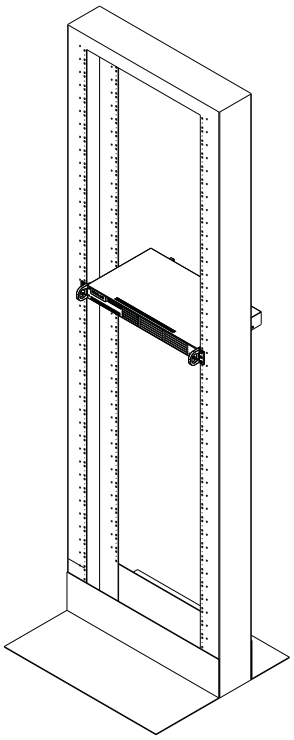


Figure 2-2. Installing the Chassis into a Telco Rack

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

Installing the Chassis into a Telco Rack

1. To install the chassis into a Telco style two-post rack, use two L-shaped brackets on either side of the chassis (four total).

2. First, determine how far follow the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back.

3. If a bezel is included on your chassis, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the Telco rack.

4. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Note: the figures are for illustrative purposes only. Always install chassis starting from the bottom of the rack and working up.

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system and the activity and health of specific components. There are also two buttons on the chassis control panel.

3-2 Control Panel Buttons

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

Reset

Use the reset button to reboot the system.

Power

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

3-3 Control Panel LEDs

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

Power Fail

Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.

Informational LED	
Status	**Description**
Continuously on and red	An overheat condition has occured. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	Local UID has been activated. Use this function to locate the server in a rack mount environment.
Blinking blue (300 m/s)	Remote UID is on. Use this function to identify the server from a remote location.

NIC1

Indicates network activity on the LAN1 port when flashing.

NIC2

Indicates network activity on the LAN2 port when flashing.

HDD

On the SuperServer 5017A-EF, this LED indicates SATA drive activity when flashing.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

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

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

These warnings may also be found on our web site at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition

Warning!

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

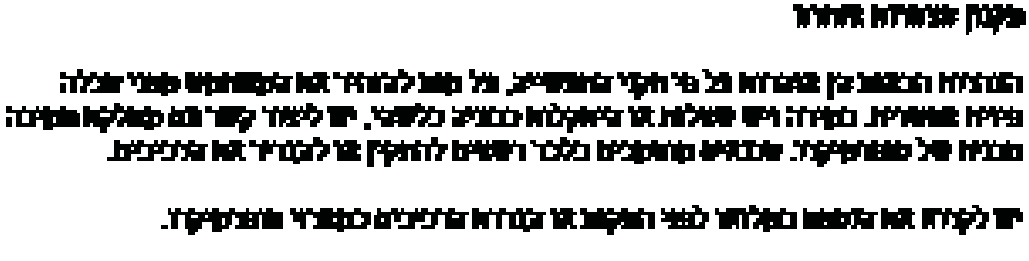
Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.



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.

.הוראות התקנה לפני חיבור המערכת למקור מתח [illegible]

[illegible] قبل توصيل النظام إلى مصدر الطاقة

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 الدوائرالقصيرة 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 electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 220V, 20A.

Power Disconnection Warning

Warning!

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

電源切断の警告

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、
システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

Equipment Installation

Warning!

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

!אזהרה

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

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

경고!

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

Waarschuwing

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

Restricted Area

Warning!

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה!
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת באמצעות כלי אבטחה בלבד (מפתח, מנעול וכו').

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

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 fabricant.

!אזהרה
קיימת סכנת פיצוץ של הסוללה במידה והחלפה בדרך לא הנכונה יש להחליף
את הסוללה בסוג זהה או שווה ערך המומלץ ע"י היצרן.

יש לפנות הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies

Warning!

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

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

סכנה בפאנל האחורי

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

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

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes

Warning!

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

תיאום חוקי החשמל הארצי

!אזהרה
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة
بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

Product Disposal

Warning!

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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

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

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

경고!

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

Waarschuwing

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

Hot Swap Fan Warning

Warning!

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

ファン・ホットスワップの警告

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

警告

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

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

Warnung

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

¡Advertencia!

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

Attention

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

!אזהרה

כאשר מסירים את מודול המאוורר, ייתכן שהמאווררים עדיין פועלים. יש להרחיק אצבעות, מברגים וחפצים אחרים מהפתחים במודול המאוורר

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

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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.

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ومحولات التيار المتردد
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Waarschuwing

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Notes

Chapter 5

Advanced Motherboard Setup

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

5-1 Handling the Motherboard

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

Precautions

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

Unpacking

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

5-2 Connecting Cables

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

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-10 for connector locations.)

- SATA drive data cables (I-SATA0 ~ I-SATA3)
- Control Panel cable (JF1)

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

Connecting Power Cables

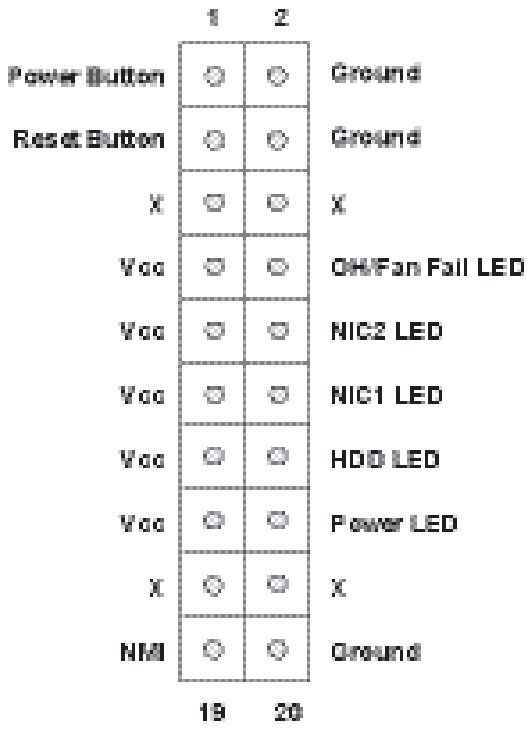
The X9SBAA-F has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. See Section 5-8 for power connector pin definitions.

Connecting the Control Panel

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

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

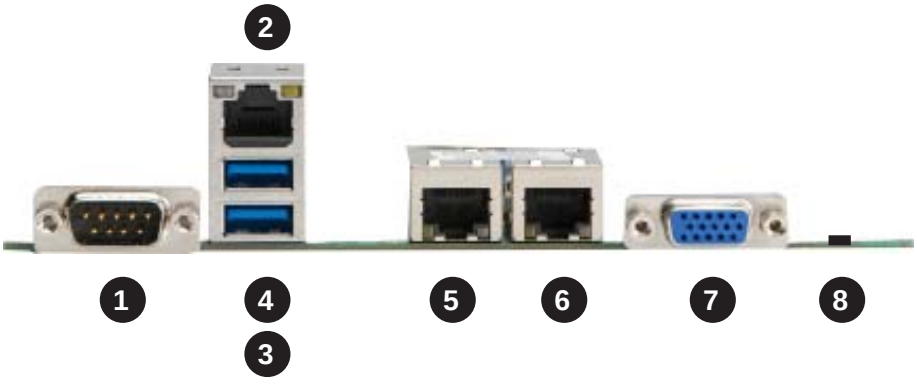
Figure 5-1. Control Panel Header Pins



5-3 Rear I/O Ports

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

Figure 5-2. Rear I/O Ports



Rear I/O Ports			
1	COM Port 3	5	Gb LAN Port 1
2	IPMI LAN Port	6	Gb LAN Port 2
3	USB0 (USB 3.0)	7	VGA Port
4	USB1 (USB 3.0)	8	Unit ID Button

5-4 Onboard Processor and Heatsink

The X9SBAA-F features an embedded Intel® Atom™ SoC S1260 processor.

5-5 Installing Memory

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

Note: Check the Supermicro website for a list of memory modules that have been validated with the X9SBAA-F motherboard.

How to Install SO DIMMs

1. Insert the SO DIMM into the memory slot. Pay attention to the notch along the bottom of the module to prevent incorrect installation.

2. With the SO DIMM module positioned correctly, push until it snaps into place. See instructions on the next page.

Memory Support

The X9SBAA-F motherboard supports up to 8GB of unbuffered ECC DDR3-1333 memory.

5-6 Adding PCI Add-On Cards

The 5017A-EF can accommodate a single riser card to support a 32-bit 5V PCI add-on card

Installing an Add-on Card

1. Begin by removing the shield for the PCI slot where the riser card is located.

2. Fully seat the card into the riser card, pushing down with your thumbs evenly on both sides of the card.

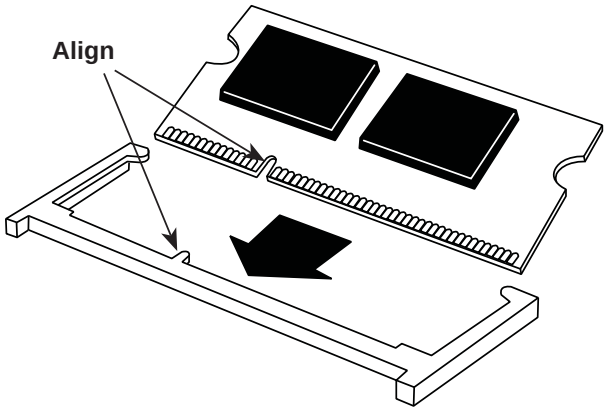
3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shields protect the motherboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

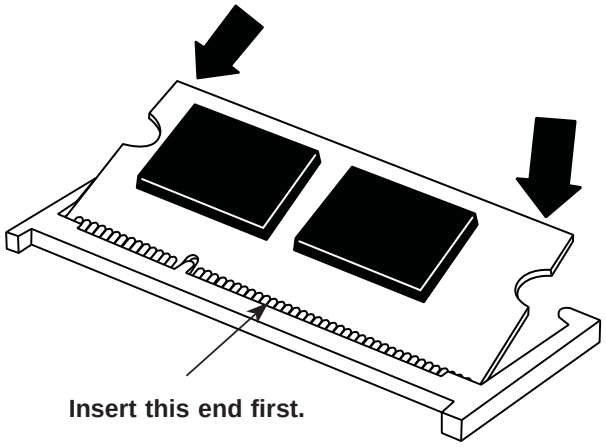
1. Position the SO-DIMM module's bottom key so that it aligns with the receptive point on the slot.

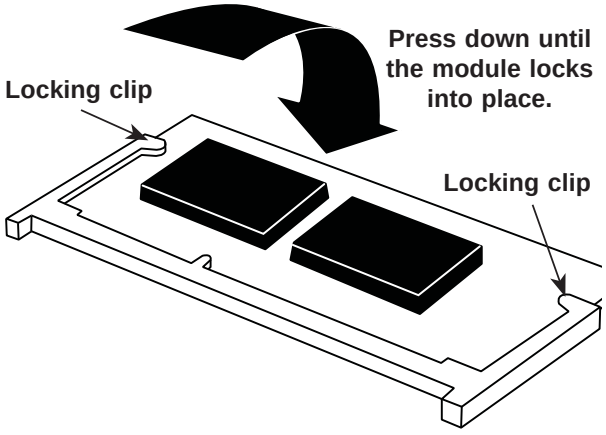
2. Insert the SO-DIMM module vertically at about a 45 degree angle.

3. Press down until the module locks into place. The side clips will automatically secure the SO DIMM module, locking it into place.

4. To Remove: Use your thumbs to gently push the side clips near both ends away from the module. This should release it from the slot. Pull the SO DIMM module upwards.

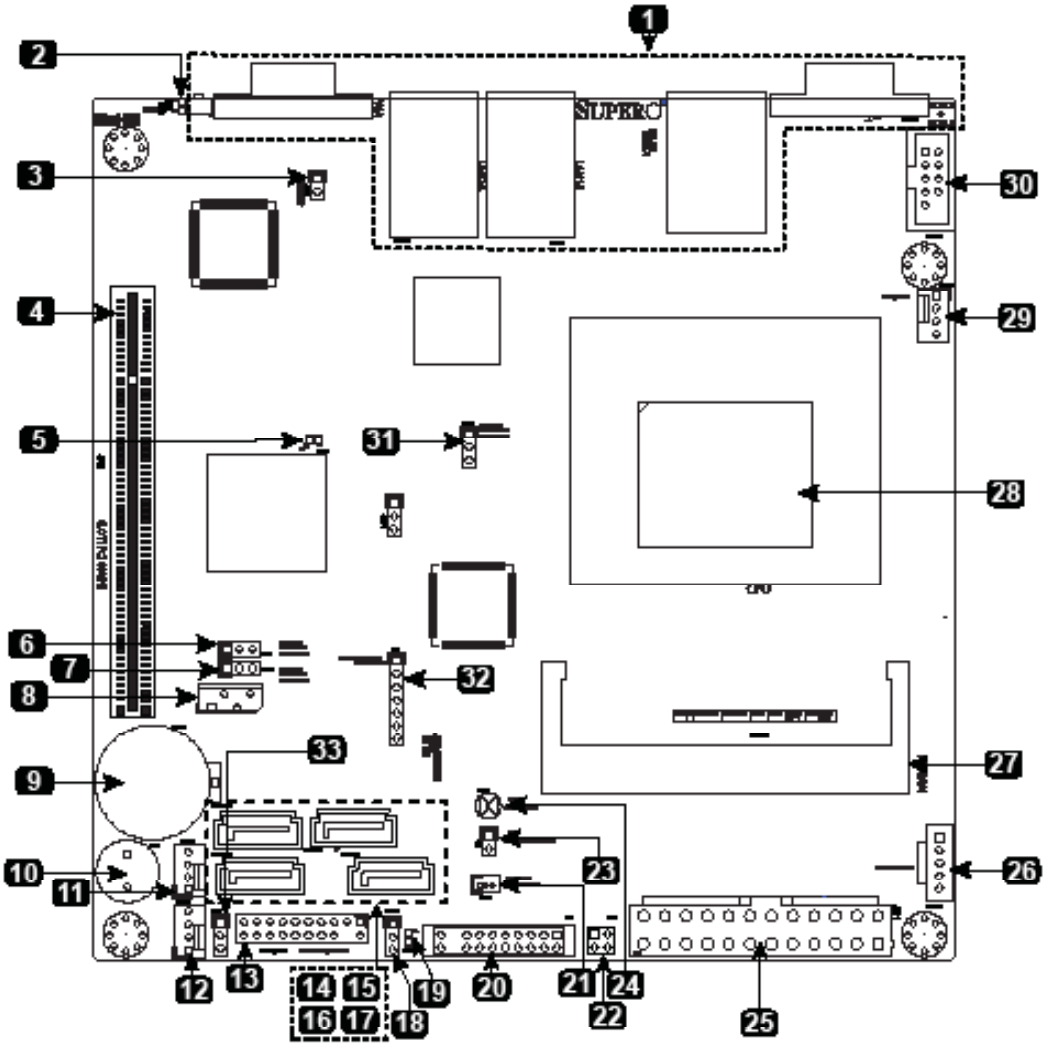






5-7 Motherboard Details

Figure 5-4. X9SBAA-F Layout



Notes

- "■" indicates the location of "Pin 1".
- Jumpers not indicated are for test purposes only.

X9SBAA-F Quick Reference			
Item #	**Jumper**	**Description**	**Default**
6	JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
7	JPG1	On-board VGA Enable/ Disable	Pins 1-2 (Enabled)
18	JWD1	Watch Dog Timer Reset	Pins 1-2 (Enabled)
24	JBT1	CMOS Reset	See Section 5-9
31	JPL1	LAN Enable/Disable	Pins 1-2 (Enabled)
33	J22	AC On Default	Pins 1-2 (Enabled)

Item #	**Connector**	**Description**
1	Back Panel I/O	See Section 5-3
3	JOH1	System Overheat Header
4	SLOT1	33MHz PCI Slot (Slot 1)
8	JIPMB1	4-pin External BMC I2C Header
9	JBAT1	Internal Backup Battery
10	SP1	Internal Speaker/Buzzer
11,12,29	FAN3,2,1	System Fan Headers (FAN1=CPU Fan)
13	JTPM1	Trusted Platform Module (TPM) Header
14,15,16,17	SATA3,1,2,0	Internal SATA Ports
20	JF1	Front Panel Control Header, see detail on the right
21	JSD1	Disk-On-Module (DOM) Power Header
22	JF2	Reserved
23	JL1	Chassis Intrusion Header
25	JPW1	24-Pin ATX Power Header
26	JPI2C1	Power Supply SMBus I2C Header
27	SODIMM1	Memory Slot (SODIMM, up to 8GB)
28	CPU	Intel ATOM SoC S1260, BGA1283,8.5W,2.0GHz 2C/4T
30	COM1	Internal COM1 Header
32	JD1	Power LED / Ext. Speaker Header

Item #	**LED**	**Description**	**State: Status**
2	UID*	Unit ID LED	Solid Blue: Unit ID switch is on
5	DM1	IPMI Heartbeat	Blinking Green: IPMI On/Normal
19	LE1	System Power LED	Solid Green: System On/Running

5-8 Connector Definitions

ATX Power Connectors (JPW1)

The 24-pin (JPW1) power connector is used to provide power to the motherboard from an ATX power supply. This connector meets the SSI EPS 12V specification. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions (JPW1)

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

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	+3.3V
16	Ground

HDD LED

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

HDD LED Pin Definitions (JF1)

Pin#	Definition
13	+3.3V
14	HD Active

NIC1/NIC2 LED Indicators

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

NIC 1/2 LED Pin Definitions (JF1)

Pin#	Definition
11/9	Vcc
12/10	Ground

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	Signal
20	Ground

Overheat (OH)/Fan Fail LED

Connect an LED Cable to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheat or fan failure.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

OH/Fan Fail Indicator Pin Definitions (JF1)	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case.

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/off the system. To turn off the power when set to suspend mode, press the button for at least 4 seconds.

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

Fan Headers (FAN1~3)

The X9SBAA Motherboard Series has three fan headers (Fan1~Fan3). These are backward compatible with three pin fans, however 4-pin fans are recommended for optimal performance. Please see the table on the right for pin definitions.

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

System Management Bus (JIPMB1)

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

System Management Bus	
Pin#	Definition
1	Clock
2	Ground
3	Data
4	No Connection

Chassis Intrusion (JL1)

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

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

Power Supply I²C (JPI2C1)

The Power Supply I2C Connector, located at JPI2C1 monitors the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR Supply I2C Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PWR Fail
4	Ground
5	3.3V

SATA DOM Power (JSD1)

The SATA DOM Power on JSD1 is used to supply power to SATA Disk-on-Module (DOM) solid-state storage devices.

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

Overheat/Fan Fail LED (JOH1)

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

Overheat LED Pin Definitions	
Pin#	Definition
1	5vDC
2	OH Active

OH/Fan Fail LED Status Message	
State	Message
Solid	Overheat
Blinking	Fan Fail

Power LED/Speaker (JD1)

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

Speaker Connector Pin Definitions

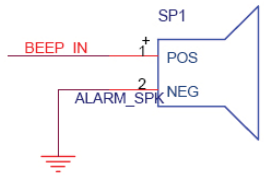
Pin Setting	Definition
Pins 6-7	Internal Speaker
Pins 4-7	External Speaker

Internal Speaker/Buzzer (SP1)

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

Internal Buzzer Pin Definition

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



Universal Serial Bus (USB 0/1)

There are two Universal Serial Bus (USB 3.0) ports located on the I/O backpanel. These support data transfer speeds of up to 5Gb/sec. See the tables on the right for pin definitions.

Back Panel USB Type A USB Pin Definitions

Pin#	Definition
1	+5V
2	USB_PN
3	USB_PP
4	Ground

TPM Header (JTPM1)

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

Trusted Platform Module Header Pin Definitions

Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME	4	No Pin
5	LRESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	RSV0	14	RSV1
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN
19	LPCPD	20	RSV2

Serial Port (COM3/COM1)

There is one COM port on the I/O back panel (COM3) and one COM header on the motherboard (COM1). These COM ports provide high-speed 16550-compatible serial communication support. See the table on the right for pin definitions.

Serial Ports Pin Definitions

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

VGA Connector (VGA)

A VGA connector is located next to LAN2 Port on the I/O back panel. This connector is used to provide video display to legacy VGA monitors. Refer to the board layout below for the location.

VGA Port/Connector Pin Definitions

Pin #	Definition	Pin #	Definition
1	Red Video	9	+5V DC
2	Green Video	10	Ground (Vsync, DDC)
3	Blue Video	11	Reserved
4	Reserved	12	I^2C Data
5	Ground	13	H Sync
6	Red Return	14	V Sync
7	Green Return	15	I^2C Clock
8	Blue Return		

LAN Ports (LAN1/LAN2)

There are two gigabit LAN ports located on the I/O back panel. These ports accept RJ45 type cables. These are used to connect the motherboard to a network.

RJ45/LAN Pin Definitions

Pin #	Definition	Pin #	Definition
1	TX_D1+	5	BI_D3-
2	TX_D1-	6	RX_D2-
3	RX_D2+	7	BI_D4+
4	BI_D3+	8	BI_D4-

IPMI LAN (IPMI)

A dedicated IPMI LAN port is located above USB0 to provide dedicated network connection for IPMI 2.0 remote system management. This port accepts RJ45 type cables.

RJ45/LAN Pin Definitions

Pin #	Definition	Pin #	Definition
1	TX_D1+	5	BI_D3-
2	TX_D1-	6	RX_D2-
3	RX_D2+	7	BI_D4+
4	BI_D3+	8	BI_D4-

Rear Unit ID Switch (SW1)

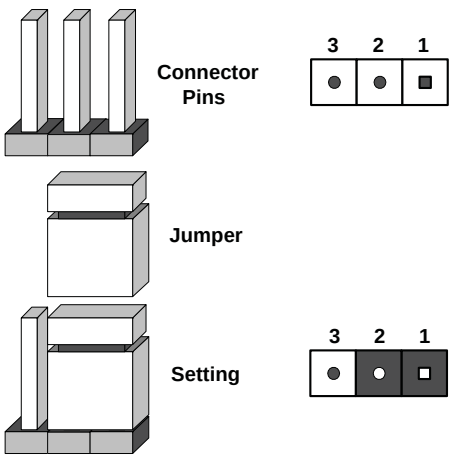
The Rear UID Switch is located on the backpanel. This switch is used in conjunction with the rear UID LED to provide easy identification of a system that might be in need of service. For example, in a large server cabinet with multiple units.

5-9 Jumper Settings

Explanation of Jumpers

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

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



CMOS Clear

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

To clear CMOS,

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

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

VGA Enable (JPG1)

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

VGA Enable/Disable Jumper Settings (JPG1)	
Both Jumpers	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

BMC Enable/Disable (JPB1)

JPB1 is used to enable or disable the BMC (Baseboard Management Control) chip and the onboard IPMI connection. This jumper is used together with the IPMI settings in the BIOS. See the table on the right for jumper settings.

BMC IPMI Enable/Disable Jumper Settings

Settings	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

AC On Default (J22)

The AC On Default on J22 determines whether the motherboard will turn on automatically or remain off, when plugged into a power source..

AC On Default Jumper Settings (J22)

Pin#	Definition
1-2	On (Default)
2-3	Off

Watch Dog Timer Reset (JWD1)

The Watch Dog Timer (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 a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watchdog Timer Reset Enable/Disable Jumper Settings (JWD1)

Jumpers	Definition
Pins 1-2	Reset (Default)
Pins 2-3	NMI

LAN Port Enable Jumper Settings (JPL1)

Pin#	Definition
1-2	Enabled (default)
2-3	Disabled

LAN Port Enable/Disable (JPL1)

JPL1 is used to enable or disable the LAN Ports on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

5-10 Onboard Indicators

LAN Port LEDs

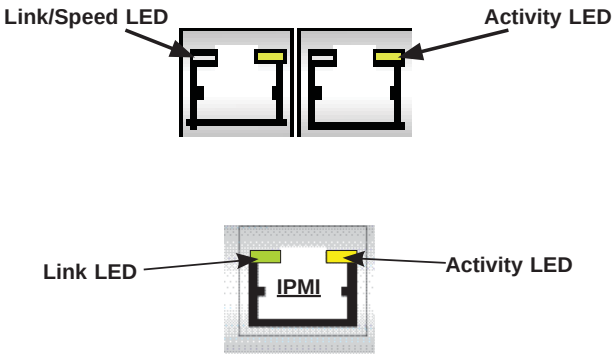
Two LAN ports are located on the I/O back-panel. Each Ethernet LAN port has two LEDs. The yellow LED (right, see below) indicates activity, while the Link/Speed LED (left) may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

GLAN Link/Speed LED Indicator	
LED Color	Definition
Off	No Connection or 10 Mbps
Green (On)	100 Mbps
Amber (On)	1 Gbps

GLAN Activity LED Indicator	
Color	Definition
Yellow (Flashing)	ConnectionActive

Dedicated IPMI LAN Port

A dedicated IPMI LAN port is included on the I/O back panel. The yellow LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the tables at right for more information.



System Power LED (LE1)

An System Power LED is located at LE1 on the motherboard. When LE1 is on, the AC power cable is connected and the system is running.

Onboard PWR LED (LE1) LED Status	
Status	Definition
Off	System Off (Soft Switch)
On	System is Running

IPMI Heartbeat LED (DM1)

An IPMI Heartbeat LED is located at DM1. When DM1 blinks, the IPMI is functioning properly. Refer to the table on the right for details. Also see the layout below for the LED location.

IPMI Heartbeat LED Indicator (DM1) LED Settings	
Green: Blinking	IPMI is ready for use

Rear UID LED (UID)

The rear UID LED is located at UID on the backpanel. 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.

Rear UID LED (UID) LED Settings	
Blue: Solid	UID Toggled On

5-11 SATA Ports

SATA Connections (SATA0~3)

There are four SATA 3.0 ports located on the motherboard. These Serial Link connections provide fast data transmission rates of up to 6Gb/sec. See the table on the right for pin definitions.

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

5-12 Installing Software

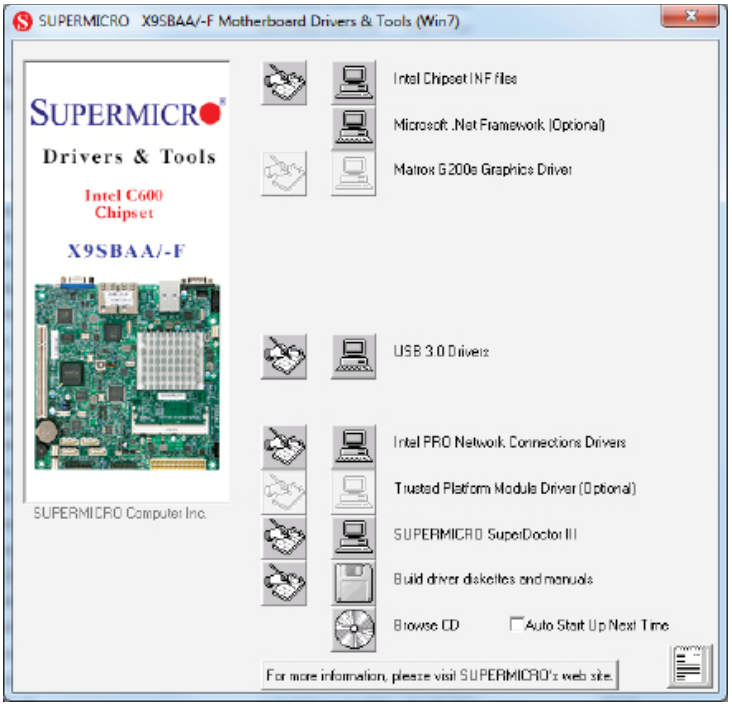
The Supermicro ftp site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

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

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

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

Figure 5-6. Driver Installation Display Screen



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

SuperDoctor III

The SuperDoctor® III program is a web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The SuperDoctor III program allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the figures below for examples of the SuperDoctor III interface.

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

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

Figure 5-7. SuperDoctor III Interface Display Screen (Health Information)

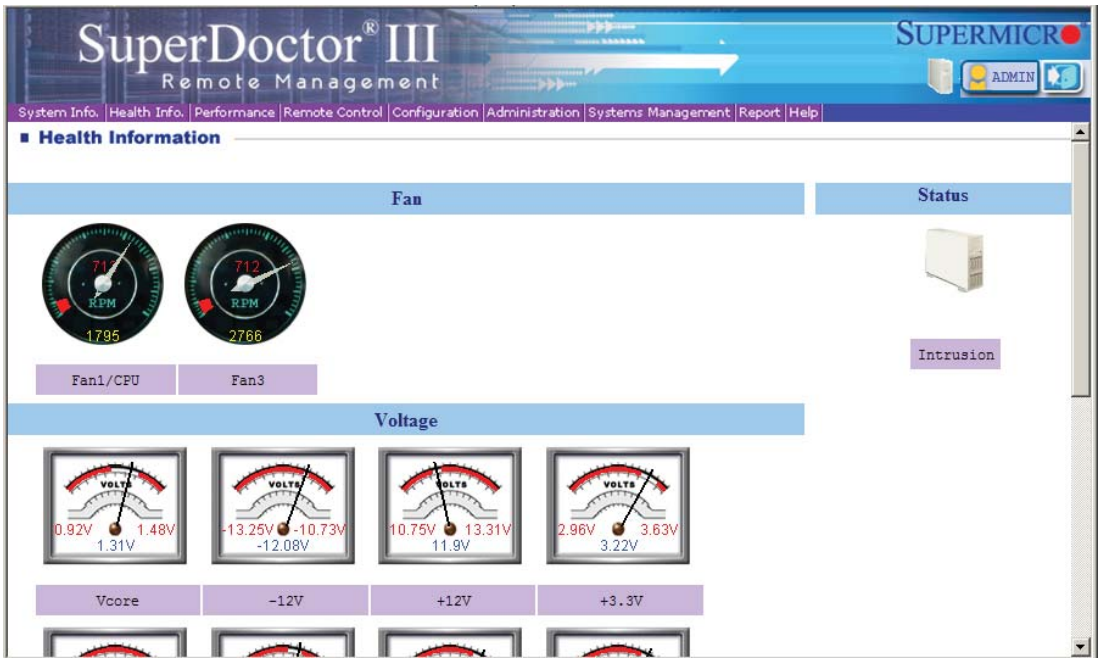
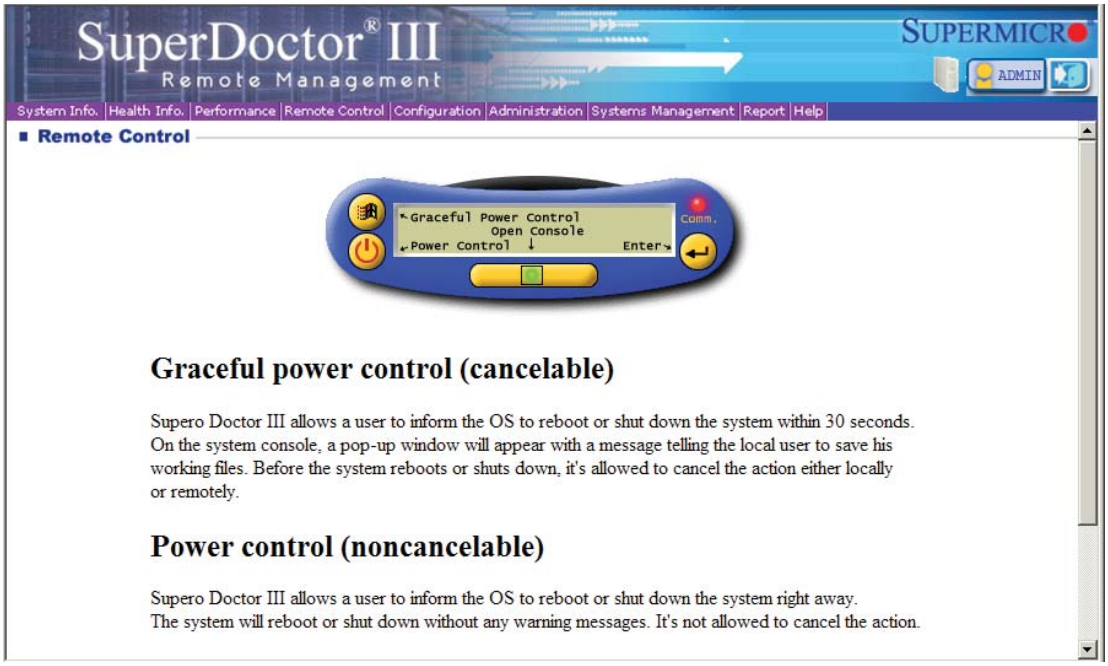


Figure 5-8. SuperDoctor III Interface Display Screen (Remote Control)

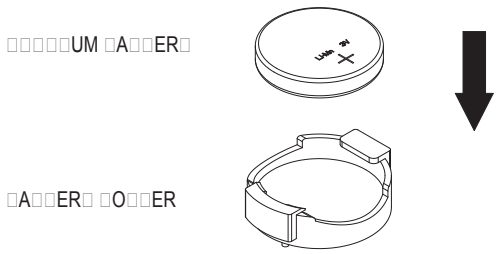


Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm. For Linux, we recommend that you use the SuperDoctor II application instead.

5-13 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 5017A-EF is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 5-9. 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 maintenance on the SC504-203B chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

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

6-1 Static-Sensitive Devices

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

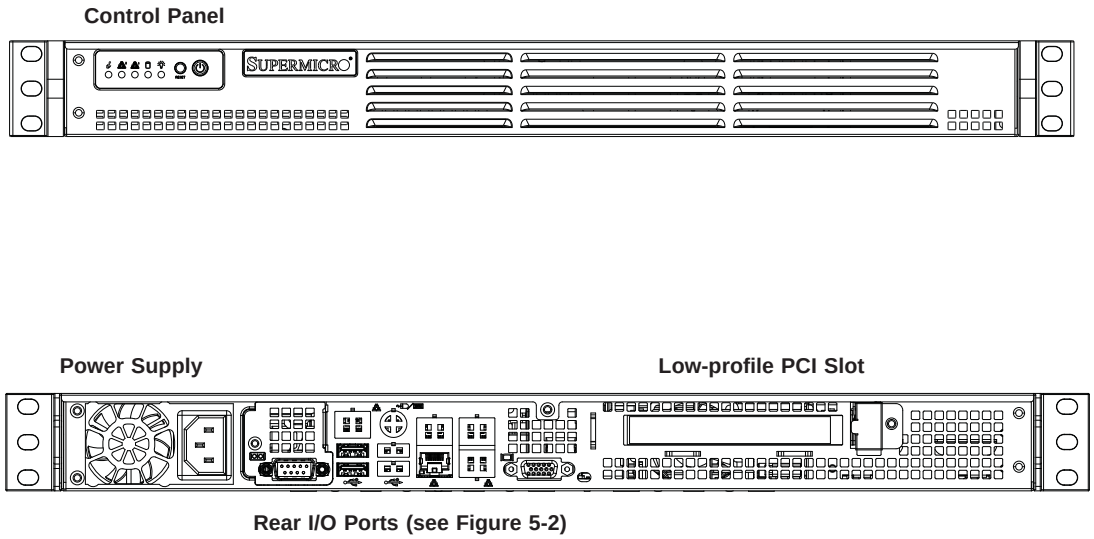
Precautions

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

Unpacking

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

Figure 6-1. Front and Rear Chassis Views



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The LEDs inform you of system status.

See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 Removing the Chassis Cover

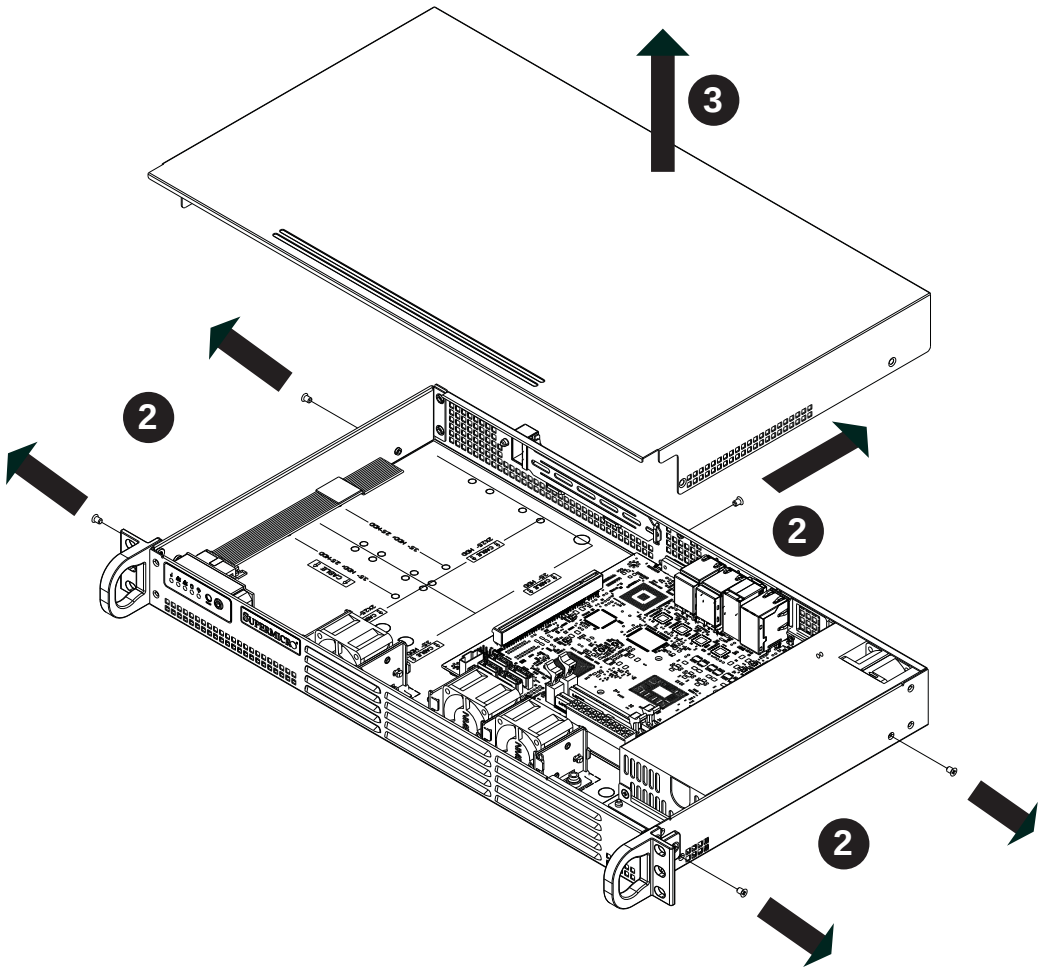


Figure 6-2. Removing the Chassis Cover

Removing the Chassis Cover

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

2. Remove the five screws that hold the chassis cover in place. There are two screws on each side of the chassis, and one screw on the back.

3. Once the screws have been removed, lift the cover upward to remove it from the chassis.

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

6-4 System Fans (Optional)

Up to three optional system fans may be installed in the SC504 chassis.

Installing Optional System Fans

1. Position the dual system fan housing in the front of the chassis, facing forward as illustrated above, in front of the motherboard.
2. Align the mounting holes in the fan housing with the holes in the floor of the chassis.
3. Secure the dual fan housing to the chassis with the screws provided.
4. Position the single system fan to the left of the dual system fans.
5. Align the mounting holes in the single fan housing with the holes in the floor of the chassis.
6. Secure the single fan housing to the floor of the chassis.
7. Connect the fan cables to the motherboard and put the cover back on the chassis.

6-5 Installing Hard Drives

Follow the instructions that follow to install either four 2.5" or two 3.5" hard drives.

Installing 3.5" Hard Drives

1. Power down the server, disconnect the power cord from the power supply and remove the cover.
2. Place the 3.5" hard drive into the chassis as illustrated above.
3. Secure the hard drive to the chassis floor by inserting four screws up through the underside of the chassis.
4. Connect the hard drive wiring, reinstall the chassis cover and power cord, then power up the server.

Installing 2.5" Hard Drives

2.5" hard drives may be installed in several different configurations. Review the supported configuration options on page 6-6.

1. Power down the server, disconnect the power cord from the power supply and remove the cover.

2. Install up to four 2.5" hard drive(s) into the hard drive bracket(s) and secure them to the bracket with the screws provided. (See page 6-6 for supported configuration options.)

3. Place the hard drive and bracket into the chassis as illustrated in Figure 6-3. If up to four 2.5" hard drives are desired, rotate the hard drive brackets ninety degrees and place them side by side before attaching them to the chassis.

4. Secure the hard drive bracket(s) to the chassis floor by inserting the screws up through the underside of the chassis.

5. Expansion cards must be installed after installing the 2.5" hard drives.

6. Connect the hard drive wiring, reinstall the chassis cover and power cord, then power up the server

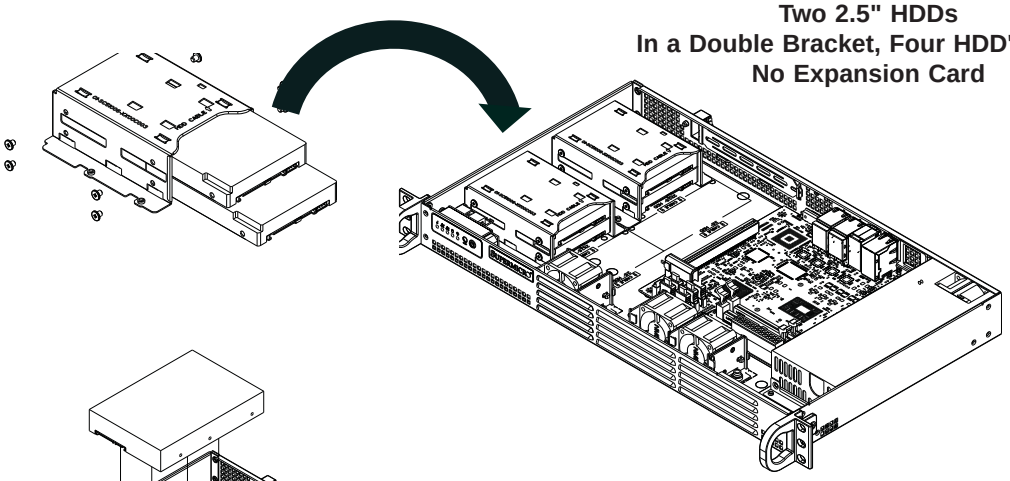
Note: bracket part number is MCP-220-000440N

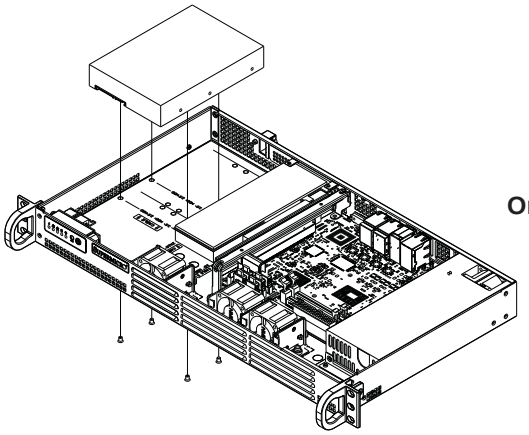
Hard Drive Configuration Options

2.5" and 3.5" hard drives are supported in the following configurations:

Figure 6-3. Installing Hard Drives

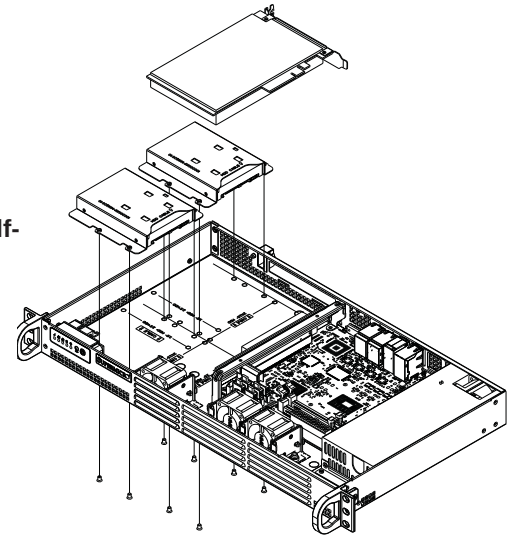
**Two 2.5" HDDs
In a Double Bracket, Four HDD's Total,
No Expansion Card**

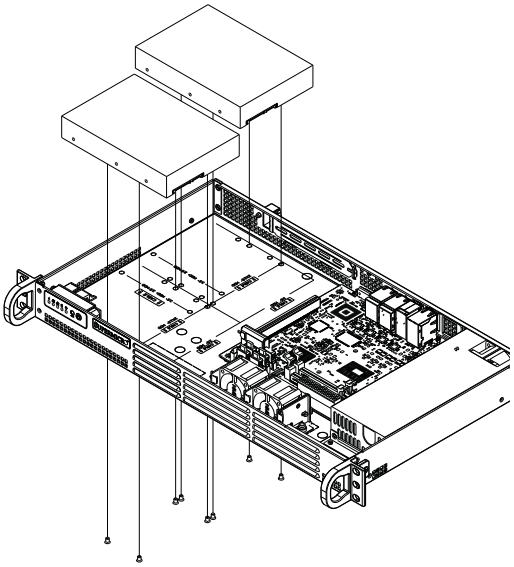




**One 3.5" Hard Drive and one Low Profile
Expansion Card**

Two 2.5" Hard Drives and One Full-Height, Half-Length Expansion Card





**Two 3.5" Hard Drives and No
Expansion Card**

6-6 Installing an Expansion Card

The SC504 chassis includes a PCI slot for an optional full-height, half-length expansion card. A riser card is required in order to connect the expansion card to the motherboard. For further information on expansionon cards and risers cards, visit the Supermicro website at www.supermicro.com

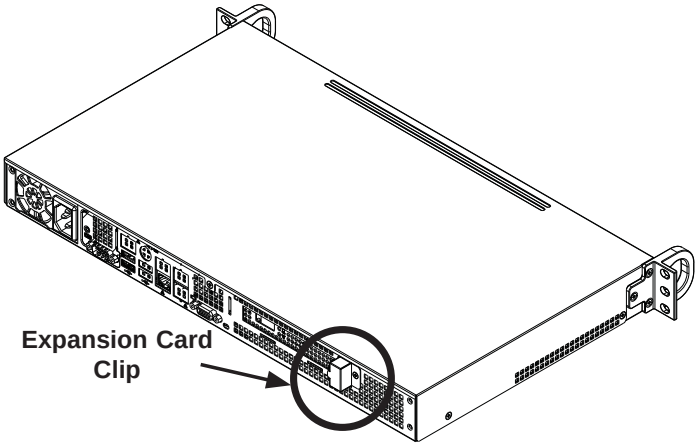


Figure 6-4. Locating the Expansion Card Clip

Installing the Expansion Card

1. Power down the server, disconnect the power cord from the power supply and remove the cover. Locate the expansion card clip on the back of the chassis

2. Remove the screws holding the expansion card clip and the PCI slot cover which covers the PCI slot opening in the back of the chassis.

3. Remove the expansion card clip and the PCI slot cover from the chassis.

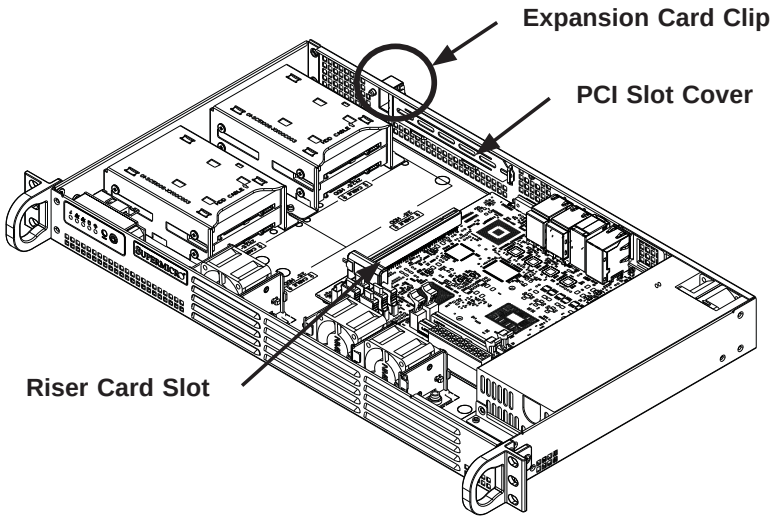


Figure 6-5. Installing the Expansion Card and Riser Card

4. Outside of the chassis, put the expansion card and the riser card together by inserting the expansion card into the riser card.

5. Simultaneously insert the PCI slot bracket of the expansion card into the open PCI slot and insert the riser card in to the riser card slot on the motherboard.

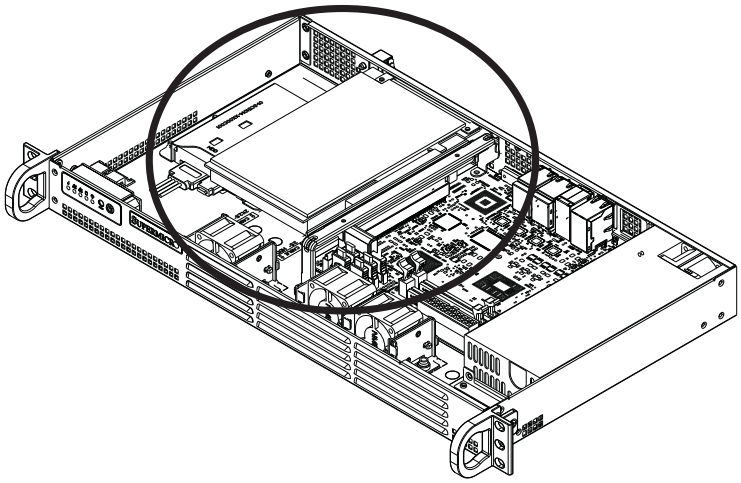


Figure 6-6. Installing the Expansion Card

6. Replace the expansion card clip and screw it onto the chassis to hold the expansion card in place.

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

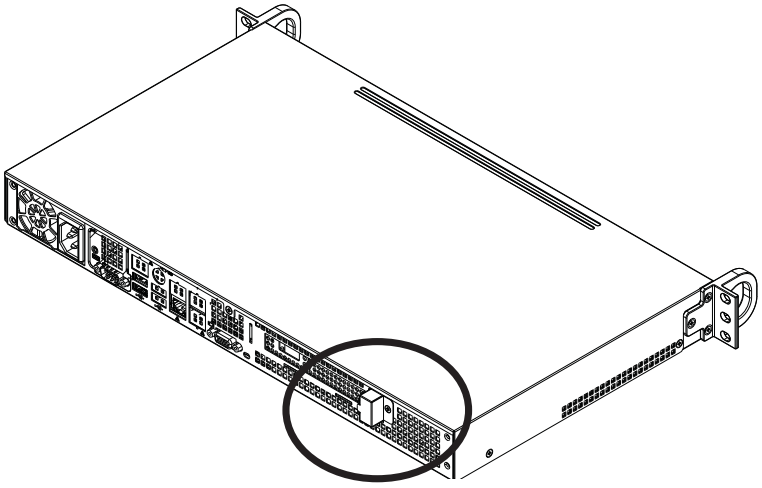


Figure 6-7. Replacing the Expansion Card Clip

6-7 Power Supply

The SC504 chassis has a 200 Watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage.In the unlikely event that the power supply module fails, the system will shut down and you will need to replace the power supply module. New units can be ordered directly from Supermicro (see contact information in the Preface).

Replacing the Power Supply

Replacing the Power Supply

1. Power down the system, disconnect the power cord and remove the chassis cover.

2. Disconnect all wiring from the power supply.

3. Remove the four screws which hold the power supply in the chassis. Two rear mounting screws are located on the rear of the power supply. Two bottom mounting screws are accessed on the underside of the chassis and extend upwards through the mounting thru holes, to hold the power supply in place. Set the screws aside for later use.

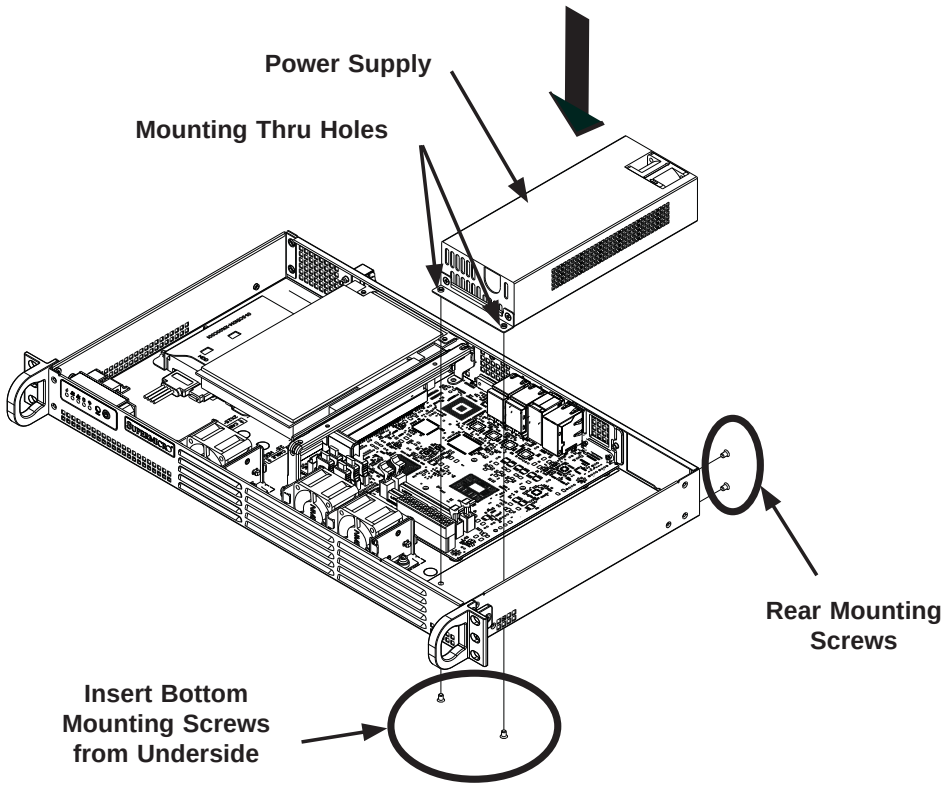


Figure 6-8. Installing the Power Supply

4. Remove the power supply from the chassis.

5. Align the mounting thru holes on the power supply with the mounting holes in the chassis and reattach the power supply to the chassis using the four screws which were previously set aside

6. Reconnect the wiring and the power cord to the power supply, replace the cover and power up the server.

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X9SBAA Motherboard Series. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Note: For instructions on BIOS recovery, please refer to the instruction guide posted at http://www.supermicro.com/support/manuals/.

Starting BIOS Setup Utility

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

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

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

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

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

How To Change the Configuration Data

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

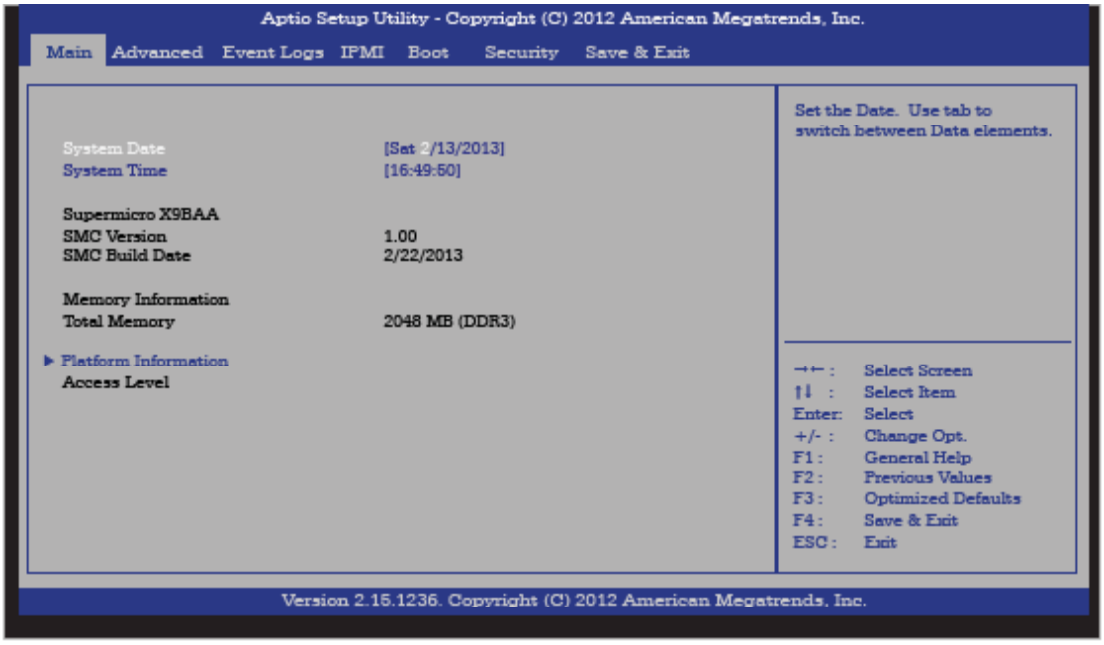
How to Start the Setup Utility

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

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

7-2 Main Setup

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



System Overview: The following BIOS information will be displayed:

System Time/System Date

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

Supermicro X9SBAA

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

SMC Build Date: This item displays the day this version of BIOS was built.

Memory Information

Total Memory: This displays the size of memory available in the system.

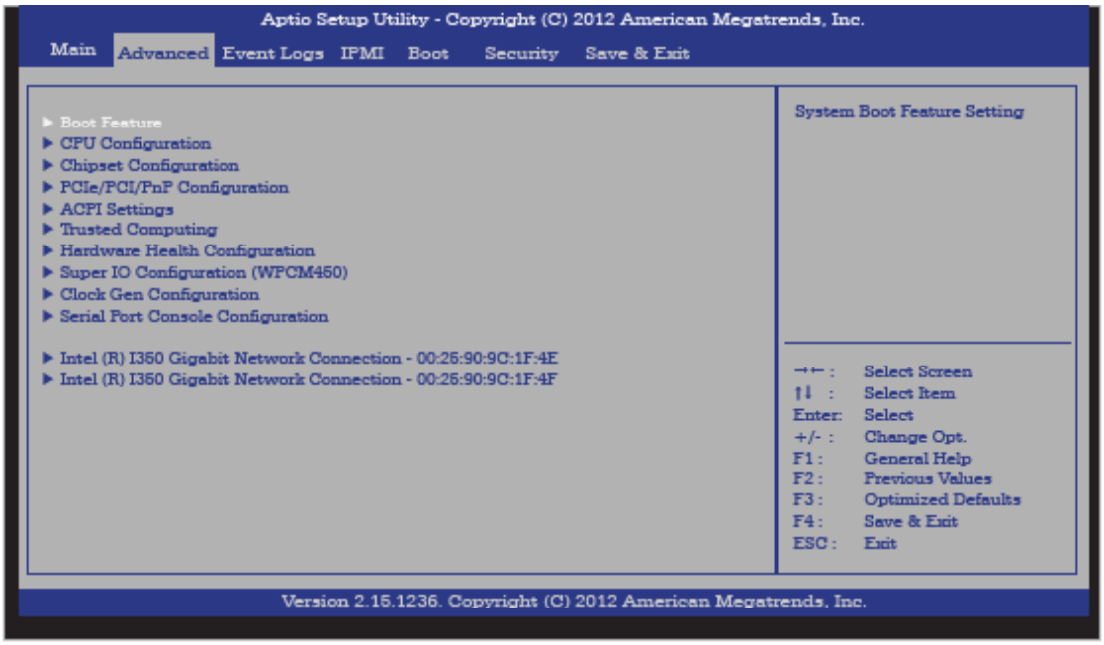
Platform Information

This section displays the processor information and firmware build date and time.

Access Level: This displays the user level currently authorized to access this setup.

7-3 Advanced Setup Configurations

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



▶BOOT Feature

Quiet Boot

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

AddOn ROM Display Mode

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

Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

Interrupt 19 Capture

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

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error occurs that lasts for more than five minutes. The options are Enabled and **Disabled.**

▶CPU Configuration

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

Intel SpeedStep Spectrum

Select Enable to activate support for the Intel SpeedStep™ technology. The options are **Enabled** and Disabled.

Hyper Threading

Set to Enabled to use the processor's Hyper Threading Technology feature. The options are **Enabled** and Disabled.

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

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

Limit CPUID Maximum

This feature allows the user to set the maximum CPU ID value. Enable this function to boot the legacy operating systems that cannot support processors with extended CPUID functions. The options are Enabled and **Disabled** (for the Windows OS.).

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

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

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

TM Support

Enable this feature to activate the CPU Thermal Management. The options are **Enabled** and Disabled (for the Windows OS.).

C-States

Use this feature to enable or disable C states C2 and above. The options are **Enabled** and Disabled.

Enhanced C1

This feature is used to enable or disable Enhanced C1 State. The options are Enabled and **Disabled**.

Enhanced C2

Use this feature to enable or disable Enhanced C2 State. The options are **Enabled** and Disabled.

Enhanced C3

This feature is used to enable or disable Enhanced C3 State. The options are Enabled and **Disabled**.

Enhanced C4

Use this feature to enable or disable Enhanced C4 State. The options are **Enabled** and Disabled.

▶Chipset Configuration

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

▶North Bridge Chipset Configuration

This item displays the current IO chipset Revision.

PMU Clock Gating

Use the feature to enable or disable the PMU (Power Management Unit) Clock Gating. The options are Enabled and **Disabled**.

PMU Clock Gating

Use this feature to enable or disable the PMU (Power Management Unit) Clock Gating. The options are Enabled and **Disabled**.

UNIT Clock Gating

This feature is used to enable or disable the Unit Clock Gating. The options are **Enabled** and Disabled.

Fast Boot

Use this feature to enable or disable fast boot, which skips memory training and attempts to boot the last known good configuration. The options are **Enabled** and Disabled.

Memory Test

This feature is used to enable or disable memory test during boot. The options are **Enabled** and Disabled.

MRC Debug Messages

Use this feature to enable or disable debug output in MRC (Memory Reference Code). The options are **Enabled** and Disabled.

DIMM vref Override

This feature is used to enable or disable DIMM vref override. The options are Enabled and **Disabled**.

MRC Reset Loop

Use this feature to enable or disable MRC (Memory Reference Code) to loop infinitely. The options are Enabled and **Disabled**.

ECC Support

Use this feature to enable or disable ECC (Error Checking and Correction) support. The options are **Enabled** and Disabled.

Patrol Scrub Enable

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 Enabled, the North Bridge 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 North Bridge will be scrubbed every day. The options are Enabled and **Disabled**.

Patrol Scrub Period

Use this feature to select the length of time period the system uses for Patrol Scrubbing. The options are **24 Hours**, 10 Hours, 4 Hours and 1 Hour.

Demand Scrub Enable

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 Enabled to use Demand Scrubbing for ECC memory correction. The options are **Enabled** and Disabled.

DDR Low Voltage

Use this feature to select DDR Low Voltage support. The options are **Disabled** and Enabled.

Rank Margin Tool

Use this feature to enable or disable the DDR Rank Margin Tool support. The options are **Disabled** and Enabled.

Dynamic Self Refresh

Use this feature to enable or disable the Dynamic Self Refresh in the memory controller. The options are **Immediate** and Disabled.

Open Page Policy Timer

Use this feature to set the Open Page Policy Timer. The options are Disabled, Immediate, 30-60 ns, 60-120 ns, **120-240 ns**, 240-480 ns, 480-960 ns and 1-2 us.

Memory Performance DMap

Set this feature to select the Memory Performance DMap. The options are **DMAP_A** and DMAP_C.

BWFLUSH

Set this feature to select the BWFLUSH. The options are **BWFLUSH_A** and BWFLUSH_E.

Scrambler

Use this feature to enable or disable the Scrambler. The options are **Enabled** and Disabled.

Uncore Thermal Throttle

Use this feature to master enable or disable of Internal Hardware Thermal Throttling for internal thermal sensor-based hardware throttling Interrupts

are not affected by this, and is for 'hot trip' throttling only. The options are **Enabled** and Disabled.

Set the following for Default Thermal Enforcement for Thermal Trips

SchWriteMask,
SchReadMask,
MemoryRankWriteMask,
MemoryRankReadMask

The options are Bandwidth Allowed 0%, Bandwidth Allowed 12.5%, Bandwidth Allowed 25%, Bandwidth Allowed 37.5%, Bandwidth Allowed 50%, Bandwidth Allowed 62.5%, **Bandwidth Allowed 70%**, Bandwidth Allowed 87.5%, and Bandwidth Allowed 100%,.

Set the following for Lowest Thermal Enforcement Limits

SchWriteMask,
SchReadMask,
MemoryRankWriteMask,
MemoryRankReadMask

The options are Bandwidth Allowed 0%, Bandwidth Allowed 12.5%, **Bandwidth Allowed 25%**, Bandwidth Allowed 37.5%, Bandwidth Allowed 50%, Bandwidth Allowed 62.5%, Bandwidth Allowed 70%, Bandwidth Allowed 87.5%, and Bandwidth Allowed 100%,.

P_RTF_THERM

Use this feature to set Punit RTF Thermal Enforcement Limits. The options are No Thermal Throttle, Grants 8 clocks off 56 clocks on, Grants 16 clocks off 48 clocks on, Grants 24 clocks off 48 clocks on, **Grants 32 clocks off 32 clocks on**, Grants 40 clocks off 24 clocks on, Grants 48 clocks off 16 clocks on, and Grants 56 clocks off 8 clocks on.

▶South Bridge Chipset Configuration

▶PPM Config

C-state POPUP

Use this feature to enable or disable the C-state POPUP support. The options are **Enabled** and Disabled.

▶USB Configuration

Legacy USB Support

Use this feature to enable or disable Legacy USB support. The Auto option disables legacy support, if no USB devices are connected. If Disabled, it

will keep USB devices available only for EFI applications. The options are **Enabled**, Disabled, and Auto.

USB 3.0 Support

Use this feature to enable or disable the USB 3.0 (XHCI) Controller support. The options are **Enabled** and Disabled.

XHCI Hand-Off

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

USB Mass Storage Driver Support

Use this feature to enable or disable the USB Mass Storage Driver support. The options are **Enabled** and Disabled.

▶PCIe/PCI/PnP Configuration

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

Launch Storage OpROM Policy

In case of multiple Option ROMs (Legacy and EFI-compatible), this feature specifies what ROM to launch. The options are **Legacy Only** and UEFI Only.

Launch Video OpROM Policy

In case of multiple Option ROMs (Legacy and EFI-compatible), this feature specifies what ROM to launch. The options are **Legacy Only** and UEFI Only.

PCI Latency Timer

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

PERR# Generation

Set this item to Enabled to allow PCI devices to generate PERR# error codes. The options are Enabled and **Disabled**.

SERR# Generation

Set this item to Enabled to allow PCI devices to generate SERR# error codes. The options are Enabled and **Disabled**.

Maximum Payload

This feature selects the setting for the PCIE maximum payload size. The options are Auto, **128 Bytes,** and 256 Bytes**.**

Maximum Read Request

This feature selects the setting for the PCIE maximum Read Request size. The options are Auto**, 128 Bytes,** 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes**.**

ASPM Support

Set this item to the desired ASPM (Active State Power Management) level. The options are **Disabled,** Auto and Force L0s.

Onboard LAN Option ROM Select

This feature selects whether to load the iSCSI or PXE onboard LAN option ROM. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM / Load Onboard LAN2 Option ROM

This feature is to enable or disable the onboard option ROMs. The options are Disabled and Enabled. The default for LAN 1 is **Enabled**. Default for LAN 2 is **Disabled**.

Network Stack

Use this feature to enable or disable the network stack (PXE and UEFI). The options are **Disabled** and Enabled.

▶ACPI Configuration

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

Enable Hibernation

If set to enabled, the system will be able to hibernate (enter OS/S4 sleep state). The options are Disabled and Enabled.

High Precision Timer

Select Enabled to activate the high precision timer 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.

▶Trusted Computing

TPM Support

Select Enable to activate BIOS support for trusted platforms (TPM 1.1/1.2) and allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Disable and **Enable**.

TPM State

This feature changes the TPM State. The options are Disabled and **Enabled**. Note: The system will restart to change the TPM State.

Pending operation

Displays any TPM-related operation by the system.

Pending operation

The following are informational status messages that indicate the current TPM State:

TPM Enabled Status

TPM Active Status

TPM Owner Status

▶Hardware Health Configuration

Fan Speed Control Mode

This feature allows the user to decide how the system controls the speed of the onboard fans. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Standard" for the onboard fans to run at 20% of the Initial PWM Cycle in order to balance the needs between system cooling and power saving. In Standard mode, the fan speed will increase up to full speed, depending on motherboard system temperature. This setting is recommended for regular systems with normal hardware configurations. The options are Full Speed (@100% of PWM Cycle), and **Standard** (@20-100% linear change of PWM Cycle).

CPU, System, Peripheral Temperature

This feature displays the system and peripheral device temperatures, as detected by the motherboard sensors.

Fan1 ~ Fan3 Speed

This feature displays the fan speed readings from fan interfaces Fan1 through Fan3.

+5V, +12V, 5VSB, VDIMM, +1.05V, +3.3V, +3.3VSB, VBAT

This feature displays the current voltages of the above voltage monitors.

▶Super IO Device Configuration

▶Serial Port 1 Configuration / Serial Port 2 Configuration (SOL)

Serial Port

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

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port becomes unavailable.

The options for Serial Port 1 are:

Auto,

IO=3F8h; IRQ=4;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

The options for Serial Port 2 are:

Auto,

IO=2F8h; IRQ=3;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12;

Device Mode

This selects the serial port's device mode. The options are **Normal** and High Speed.

▶Clock Gen Configuration

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. Select Disabled to enhance system stability. The options are **Disabled** and Enabled.

▶Serial Port Console Redirection

COM1, COM2 (SOL) Console Redirection

Use this feature to enable console redirection for COM1, COM2 (SOL) ports. The options are Enabled and Disabled. The default for COM1 and COM2 (SOL) is **Disabled**.

▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Terminal Type : Select ANSI, **VT100**, VT100+, or VT-UTF8

Bits per Second (BPS): 9600, 19200, 38400, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

Flow Control: **None** or Hardware RTS/CTS

VT-UTF8 Combo Key Support: **Enabled** or Disabled

Recorder Mode: **Disabled** or Enabled

Resolution 100x31: Disabled or **Enabled**

Legacy OS Redirection Resolution: 80x24 or **80x25**

PuTTY Keypad: **VT100**, Linux, XTerm86, SCO, ESCN, VT400

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

Use this feature to enable console redirection.

Console Redirection

Use this feature to enable console redirection for Serial Port Out-of-Band Management / Windows Emergency Management Services (EMS) ports. The options are **Enabled** and Disabled.

▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Out-of-Band Mgmt Port: **COM1**, COM2, and SOL

Terminal Type: Select ANSI, VT100, VT100+, or **VT-UTF8**

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Flow Control: **None,** Hardware RTS/CTS, Software Xon/Xoff

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

▶Intel® I350 Gigabit Network Connection (x2)

Use these features to configure the Ethernet device parameters.

▶NIC Configuration

Link Speed

Use this feature to change the link speed and duplex for the current port. This feature cannot currently be changed using the BIOS.

Wake on LAN

Wake on LAN is currently not supported.

Blink LEDs

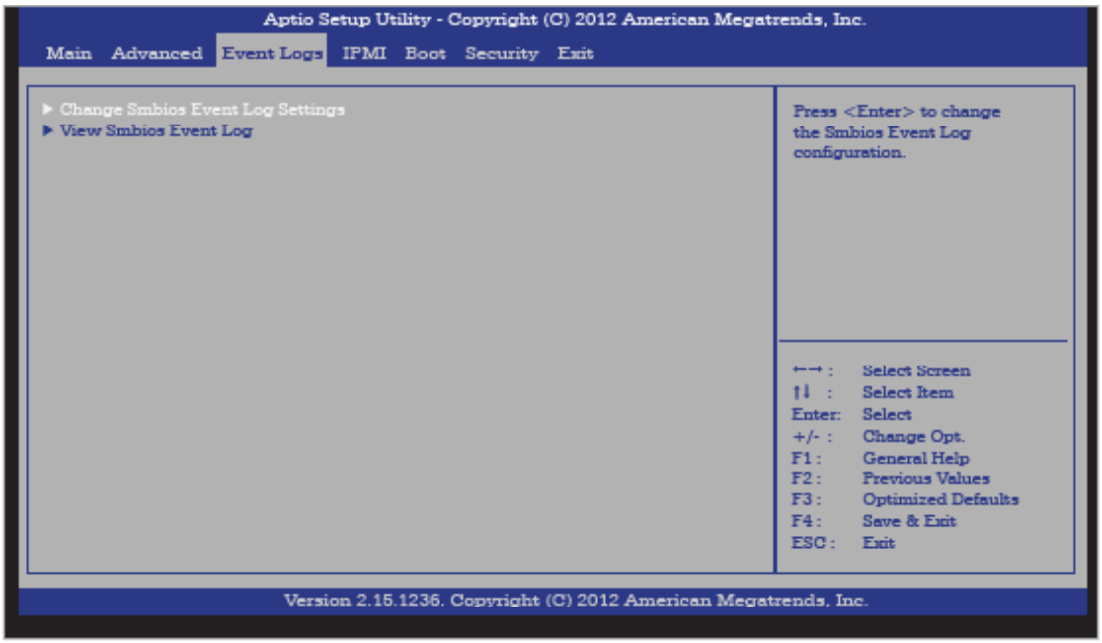
This feature allows the user to specify the duration for LEDs to blink. The range is from 0 ~ 15 seconds. The default setting is **0**.

PORT CONFIGURATION INFORMATION

This section displays the following port information:

- UEFI Driver
- Adapter PBA
- Chip Type
- PCI Device ID
- PCI Bus:Device:Function
- Link Status
- Factory MAC Address

7-4 Event Logs



▶Change SmBIOS Event Log Settings

Smbios Event Log

Change this item to enable or disable all features of the Smbios Event Logging during boot. The options are **Enabled** and Disabled.

Runtime Error Logging Support

Change this item to enable or disable runtime error logging. The options are **Enabled** and Disabled.

PCI Error Logging Support

Change this item to enable or disable runtime error logging. The options are **Enabled** and Disabled.

Corr Error Threshold

Change this item to define the system's memory correction error threshold. Directly enter a numeric value, **default is 10**.

Erase Event Log

This option erases all logged events. The options are **No**, Yes, Next reset and Yes, Every reset.

When Log is Full

This option automatically clears the Event Log memory of all messages when it is full. The options are **Do Nothing** and Erase Immediately.

Log System Boot Event

This option toggles the System Boot Event logging to enabled or disabled. The options are **Disabled** and Enabled.

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurences a duplicate event must happen before the MECI counter is incremented. This is a numeric value. The default value is **1**.

METW

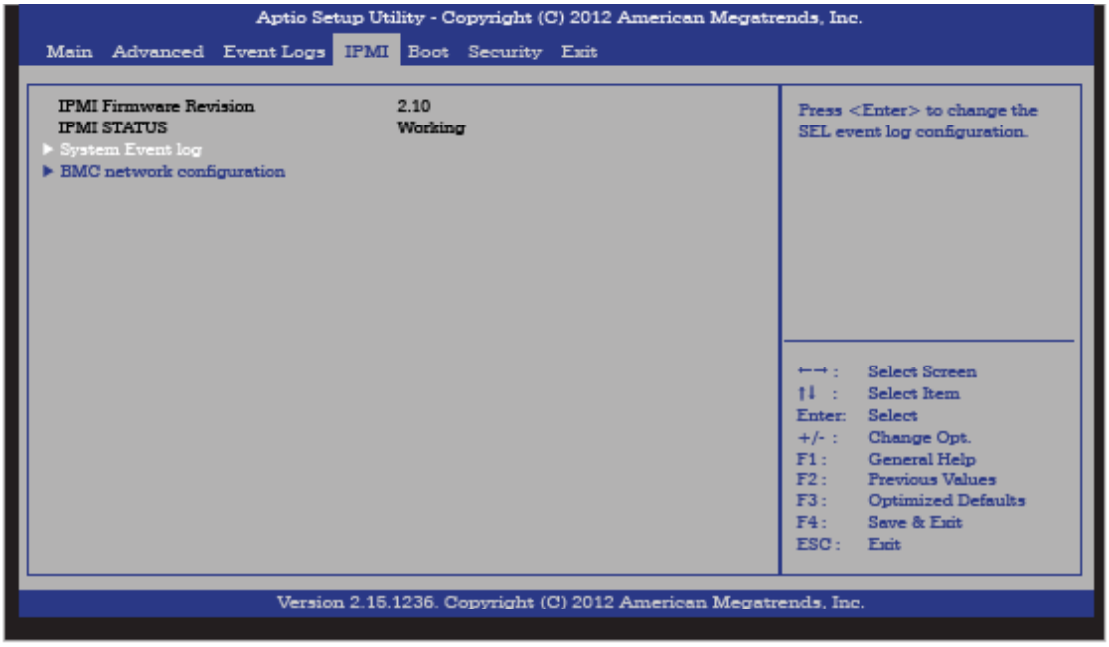
The Multiple Event Time Window (METW) defines number of minutes must pass between duplicate log events before MECI is incremented. This is in minutes, from 0 to 99. The default value is **60**.

▶View SmBIOS Event Log

This feature displays the contents of the SmBIOS Event Log.

7-5 IPMI

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.



▶System Event Log

This feature is used to change the Sytem Event Log (SEL) configuration.

SEL Components - Change this item to enable or disable all features of System Event Logging. The options are **Enabled** and Disabled. When Enabled, the following can be configured:

Erase SEL - This option erases all logged SEL events. The options are **No**, Yes, On Next reset and Yes, On Every reset.

When SEL Full

This option automatically clears the System Event Log memory of all messages when it is full. The options are **Do Nothing** and Erase Immediately.

Log EFI Status Codes

This option enables or disables the logging of Extensible Firmware Interface (EFI) status codes. The options are **Enabled** and Disabled.

▶BMC Network Configuration

Set this feature to configure the IPMI LAN adapter with a network address.

Update IPMI LAN Configuration

This feature allows the user to decide if the BIOS should configure the IPMI setting at next system boot. The options are **No** and Yes. If the option is set to Yes, the user is allowed to configure the IPMI settings at next system boot.

Configuration Source

This feature selects whether the IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server (Dynamic Host and Configuration Protocol) "Dynamic" or manually entered by the user "Static". If Static is selected, the IP Address, Subnet Mask and Gateway Address must be manually entered below. When Dynamic is selected, all the options below are automatically assigned to the system by itself or by an external DHCP server.

The options are Static and **DHCP**. The following items are displayed when Static is selected:

Station IP Address - Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

Subnet Mask - Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

Station MAC Address - MAC addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots (i.e., 00.30.48.D0.D4.60).

Gateway IP Address - Enter the Gateway or Router address this machine will use (i.e., 192.168.10.1).

7-6 Boot Settings

Use this feature to configure Boot Settings:

Boot Options Priorities

This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots during startup.

Boot Option #1, Boot option #2, etc.

The settings are **Built-in EFI Shell**, [any detected boot device] and Disabled.

Network Device BBS Priorities, Hard Drive BBS Prioirities

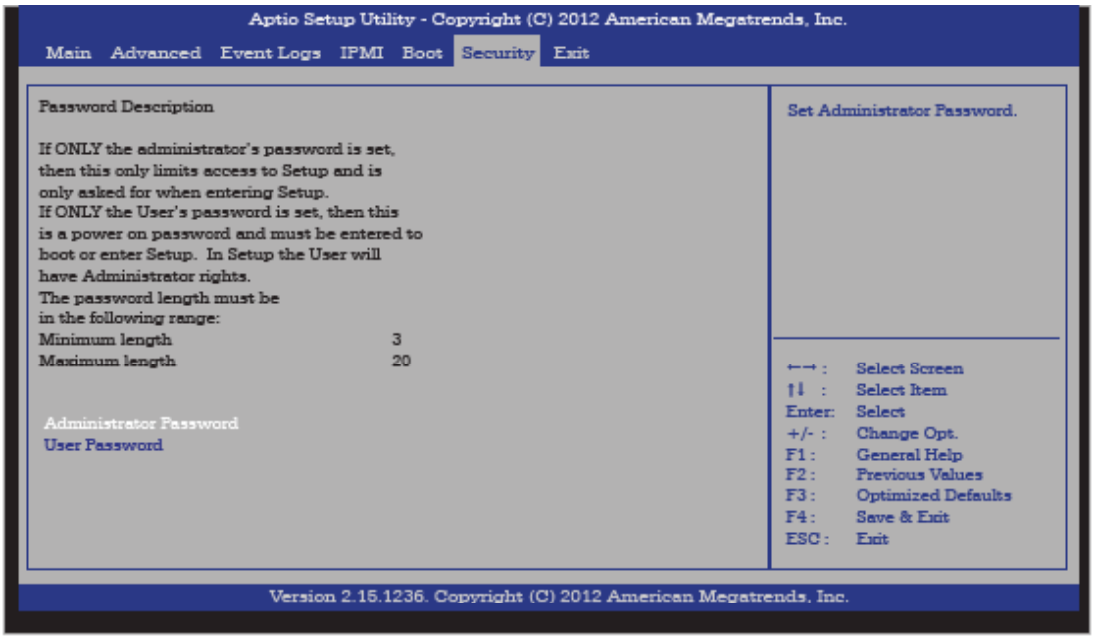
This option sets the order of the legacy network devices detected by the motherboard.

▶Delete Boot Option

This feature allows the user to delete a previously defined boot device from which the systems boots during startup.

The settings are **Built-in EFI Shell**, and [any pre defined boot device]

7-7 Security Settings



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

Administrator Password

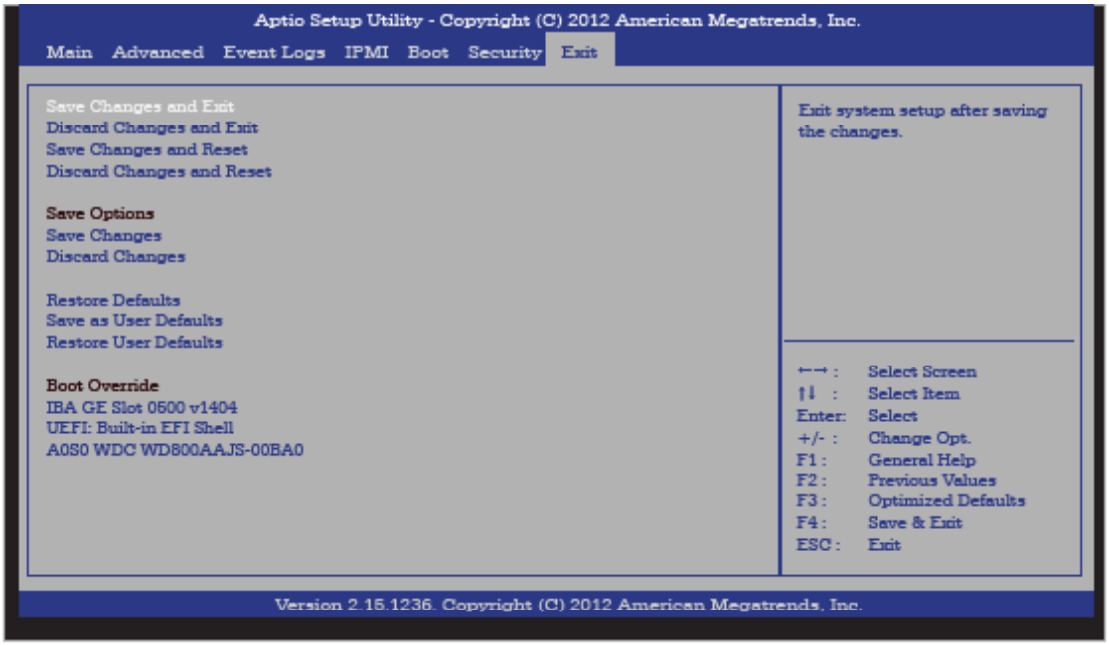
Press Enter to create a new, or change an existing Administrator password.

User Password:

Press Enter to create a new, or change an existing User password.

7-8 Save & Exit

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



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and Exit BIOS setup, the new system configuration parameters may not take effect until the system is rebooted. Select Yes to Save Configuration and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Yes to Quit Without Saving and and press <Enter>.

Save Changes and Reset

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

Discard Changes and Reset

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Yes to Reset Without Saving and and press <Enter>.

Save Changes

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

Discard Changes

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

Restore Defaults

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

Save As User Defaults

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

Restore User Defaults

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

Boot Override

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

Appendix A

POST Error Beep Codes

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

Recoverable POST Error Beep Codes

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

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

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

1 continuous beep with the front panel Fan Fail LED blinking - fan failure

8 short beeps - display memory read/write error

Notes

Appendix B

System Specifications

Processors

Single Intel® Atom™ SoC S1260 embedded processor

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

BIOS

64 MB AMI® SPI Flash ROM

Memory Capacity

One SO-DIMM slot that can support up to 8GB of unbuffered ECC DDR3-1333 memory

Note: see Section 5-6 for details.

Drive Bays

Two 3.5" internal drives or four 2.5" internal drives (not hot-swappable)

Serverboard

X9SBAA-F (Mini-ITX form factor)
Dimensions: 6.7 x 6.7 in (170.2 x 170.2 mm)

Chassis

SC504-203B (1U rackmount)
Dimensions: (WxHxD) 17.2 x 1.7 x 9.8 in. (437 x 43 x 249 mm)

Weight

8 lbs. (3.62 kg.)

System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range
Rated Input Current: 2.6A max
Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 200W (Part# PWS-203-1H)
Rated Output Voltages: +5V (8A), +12V (16A), +3.3V (8A), +5Vsb (2A)

Operating Environment

Operating Temperature: 10º to 35º C (32º to 95º F)
0º to 47º C (32º to 116º F) with certain configurations/workload environments
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)

Regulatory Compliance

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

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

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

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

Notes

(continued from front)

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