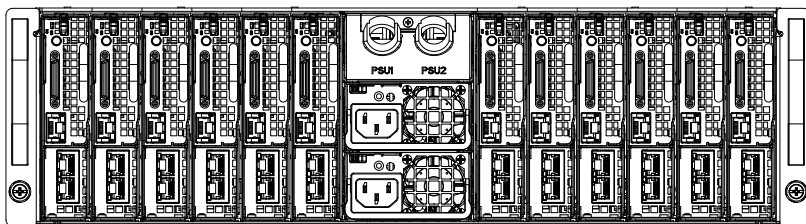


SUPERO[®]

A+ SERVER
3012MA-H12TRF



USER'S MANUAL

Revision 1.0b

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Manual Revision 1.0b
Release Date: March 11, 2014

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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 A+ Server 3012MA-H12TRF. Installation and maintenance should be performed by experienced technicians only.

Manual Organization

Chapter 1: Introduction

The first chapter provides a quick overview of the product and a checklist of the main components. It also gives contact information.

Chapter 2: Server Installation

This chapter describes the steps to install the server 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, see Chapter 5 for installation procedures..

Chapter 3: System Interface

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

Chapter 4: Warning Statements for AC Systems

You should thoroughly familiarize yourself with this chapter for safety precautions that should be followed when installing and servicing the server.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the H8SME-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 SC939H-R1K63B server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS Error Beep Codes

Appendix B: System Specifications

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Appendix A BIOS POST Checkpoint Codes

Appendix B System Specifications

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Chapter 1

Introduction

1-1 Overview

The SuperServer 3012MA-H12TRF is a 12 node, MicroCloud server system comprised of the SC939H-R1K63BP 3U chassis and 12 H8SME-F motherboards. It is optimized for power efficiency and cost-effectiveness. This 8/4-Core AMD Opteron™ 3000 series (3300 ready) processor based system is paired with AMD chipset in a high-density 3U form-factor. With best-in-class memory architecture supporting latest DDR3 memory, SATA drive bays, latest IPMI intelligent management, and PCI-E 2.0 for improved I/O performance, these systems are ideal for high volume file and print email, virtualization, web, cloud computing and HPC applications.

Please refer to our web site for information on operating systems that have been certified for use with the 3012MA-H12TRF (www.supermicro.com).

In addition to the motherboard and chassis and its components, various hardware components have been included with the 3012MA-H12TRF, as listed below:

- One backplane, twelve node, hotswap (BPN-SAS-939H)
- One passive heatsink, each node (SNK-P0047PSR)
- One 11.5-cm KVM/SUVI 30/28AWG dual USB cable (CBL-0218L)
- Four cables, each node (CBL-0488L, CBL-0489L, CBL-0493L, CBL-0487L-01)
- One MicroLP NIC, each node (AOM-CGP-I2M)

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

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

For support, email support@supermicro.com.

1-2 Motherboard Features

The system includes a total of 12 H8SME-F single processor motherboards, which are based on the AMD SR5650 chipset. Each motherboard constitutes a node in the system. Below are the main features. (See Figure 1-1 for a block diagram.)

Processors

Each H8SME-F supports a single AMD Opteron 3000. Please refer to the motherboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

Each H8SME-F serverboard contains four (4) single/dual channel DIMM slots supporting up to 32 GB of Unbuffered ECC/non-ECC DDR3-1600/1333/1066 Mhz speed, very low profile (VLP) 1 GB, 2 GB, 4 GB or 8 GB size SDRAM memory. Memory modules of the same size and speed should be used. See Chapter 5 for details.

SATA

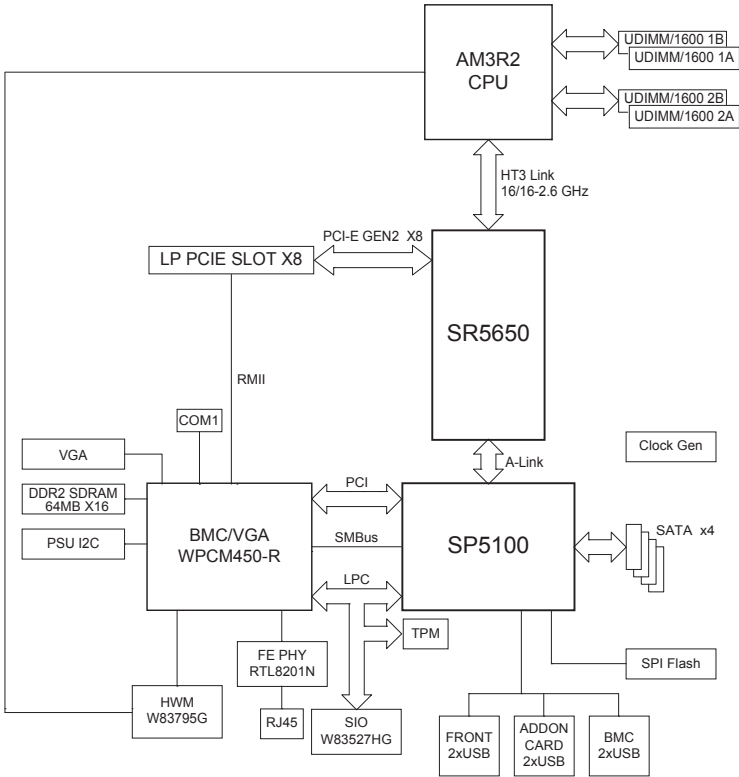
A SATA controller integrated into the chipset provides a four-port SATA 2.0 sub-system on each node.

IPMI

IPMI (Intelligent Platform Management Interface) is a hardware-level interface specification that provides remote access, monitoring and administration for Supermicro server platforms. IPMI allows server administrators to view a server's hardware status remotely, receive an alarm automatically if a failure occurs, and power cycle a system that is non-responsive. Each node features IPMI 2.0 with KVM over a dedicated LAN port.

Figure 1-1. H8SME-F Motherboard Layout
(not drawn to scale)

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



1-3 Server Chassis Features

The SC939H-R1K63BP server chassis include twelve computing nodes, each with its own motherboard and hard disk drives.

Drives

Each node supports two 3.5" SATA 2.0 HDDs or four 2.5" SATA 2.0 hard drives (optional) fixed to the computing node tray.

System Power

The chassis features a redundant 1620W high-efficiency power supply comprised of two separate power modules. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

Controls and I/O Ports

The I/O panel on the front of each node includes one KVM connector, two Gb Ethernet LAN ports, one dedicated IPMI LAN port, a power LED and buttons for UID (Unit Identification).

Cooling System

The chassis chassis includes four 9-cm fans located at the rear of the chassis. See Chapter 6 for details.

1-4 Contacting Supermicro

Headquarters

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

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

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

Web Site: www.supermicro.com

Europe

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

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Web Site: www.supermicro.com

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Taiwan (R.O.C)

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Email: support@supermicro.com.tw

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

Web Site: www.supermicro.com.tw

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter outlines the procedure to install your system into a rack. If your system is not already fully integrated with a motherboard, processors, system memory etc., refer to the relevant chapter for details on installing components.

2-2 Unpacking the System

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

2-3 Preparing for Setup

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

The server comes with hardware to mount the system into a server rack. This chapter describes the installation procedure. 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 according to §2 of the the German Ordinance for Work with Visual Display Units.

2-4 Warnings and Precautions

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from it.
- 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 the hot plug drives and power supplies to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

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

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:

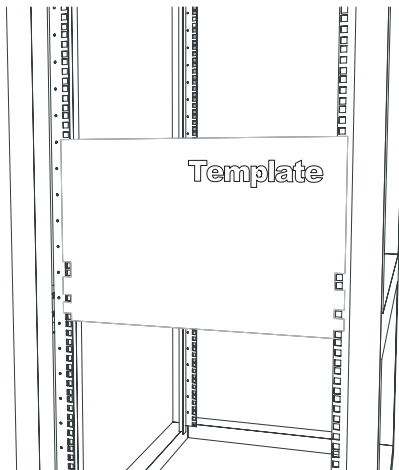
- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install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

2-5 Installing the System into a Rack

Use the procedure below for installing the system to a rack.

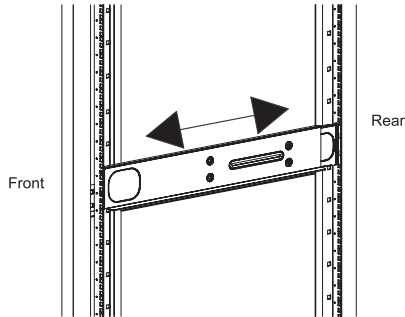
1. Decide where you want to place the system into the rack (see "Rack Mounting Considerations" in the previous section).
2. Position the template at the front of the system to determine the locations of the screws for the chassis rails (see Figure 2-1).

Figure 2-1. Positioning the Template



3. The two rail sections are screwed together to keep them immobile during shipping. Release these screws just enough to allow the rails to slide apart. Note the arrow on the rail, which indicates the end that attaches to the front of the rack.
4. Slide the rails apart far enough to match the depth of the rack. Position the rails with the template and secure the front of each to the front of the rack with two flathead screws, then secure the back of each rail to the rear of the rack with two flathead screws (see Figure 2-2). Note that the rails are left/right specific and very heavy.

Figure 2-2. Securing the Rails to the Rack



5. (Optional step) Add the front left and right handles to the chassis using screws to secure each handle. Install a thumbscrew through the bottom hole of each handle.

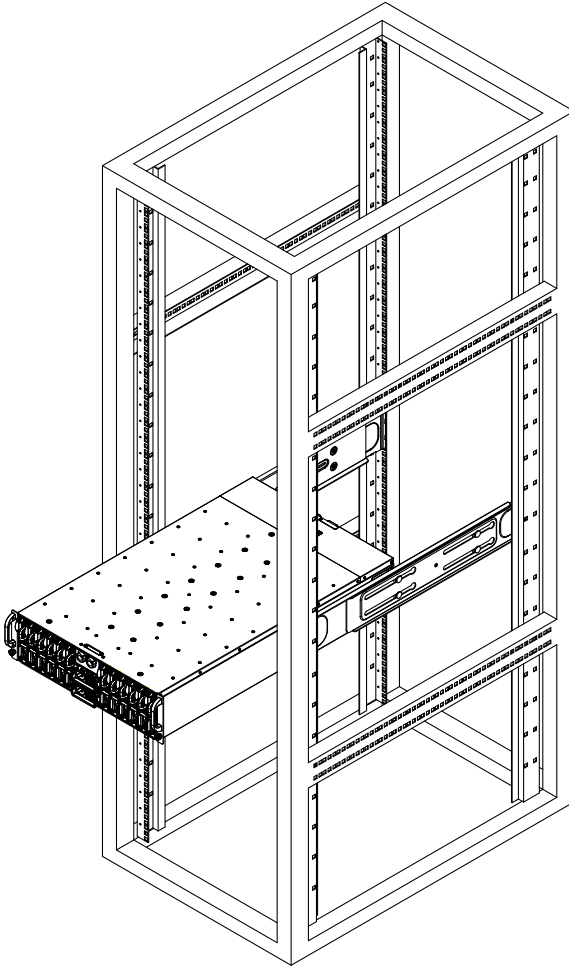
Note: These handles are optional and need only be installed when mounting the system into a short rack. When mounting into a deep rack, they are unnecessary and regular screws should be used instead of thumbscrews.

6. With one person on either side, lift the system and slide it into the installed rails.
7. After pushing the enclosure all the way into the rack, use two roundhead screws on each side of the server to lock it into place.



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

Figure 2-3. Installing to the Rack



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



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.

Chapter 3

System Interface

3-1 Overview

LEDs are included on the serverboard nodes and the power supply modules to keep you informed of their operational status. This chapter explains the meanings of the LED indicators and appropriate responses.

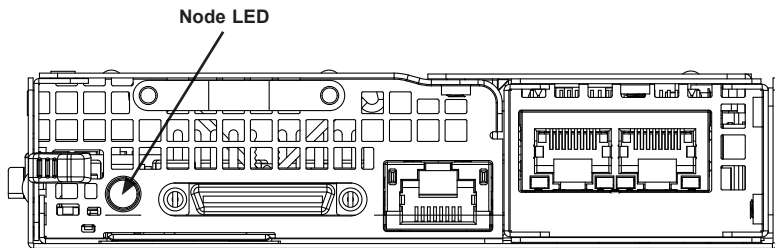
3-2 Motherboard Nodes

Power Button/LED

The main power button on each of the nodes functions as both an on/off switch and as an indicator LED. Pressing the button will alternately power on or remove power from the node. See the table below for the LED indications.

LED Appearance	Description
Green	The node is powered on and operating normally
Solid Red	The node is detecting an overheat condition
1Hz Blinking Red	The node is detecting a fan failure
.25Hz Blinking Red	The node is detecting a power failure
No Illumination	The node is powered down

Figure 3-1. Node LED Indicator



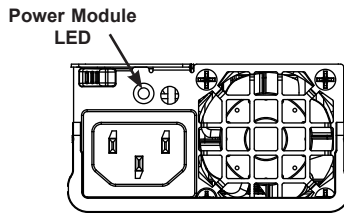
3-3 Power Supply Modules

Power Module LED

Each of the power supply modules has its own LED to indicate the status of the module.

LED Appearance	Description
Green	The power module is on and operating normally.
Amber	The system is off, the power module is not turned on or needs service.
Off	AC power is not connected to the power module or the module needs service.

Figure 3-2. Power Supply Module LED Indicator



Chapter 4

Standardized Warning Statements for AC Systems

4-1 About Standardized Warning Statements

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

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

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

Warning Definition



Warning!

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

警告の定義

この警告サインは危険を意味します。

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

此警告符号代表危險。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנת הצהרות אזהרה

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

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

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

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions



Warning!

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前，请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker



Warning!

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

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

此产品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於250V,20A。

Warnung

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

¡Advertencia!

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

Attention

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

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

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

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

경고!

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

Waarschuwing

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

Power Disconnection Warning



Warning!

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

電源切斷の警告

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

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

警告

在你打开机箱并安装或移除内部器件前，必须将系统完全断电，并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

Equipment Installation



Warning!

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

Restricted Area



Warning!

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה!

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

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

경고!

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

Waarschuwing

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

Battery Handling



Warning!

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies



Warning!

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

冗長電源装置

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

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此装置连接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה!

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

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

경고!

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

Waarschuwing

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

Backplane Voltage



Warning!

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

バックプレーンの電圧

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

修理する際にはご注意ください。

警告

当系统正在进行时，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，背板上危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

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

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

경고!

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

Waarschuwing

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

Comply with Local and National Electrical Codes



Warning!

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

תיאום חוקי החשמל הארצי

אזהרה!

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

Product Disposal



Warning!

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

製品の廃棄

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

警告

本製品の废弃処理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

אזהרה!

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

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

경고!

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

Waarschuwing

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

Hot Swap Fan Warning



Warning!

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

ファン・ホットスワップの警告

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

경고!

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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.

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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。

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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.

Attention

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

חשמליים ומתאמי AC

!אזהרה

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

경고!

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

Waarschuwing

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

Notes

Chapter 5

Advanced Motherboard Setup

This chapter covers the steps required to connect the data and power cables and install extension 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 server 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 any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

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

5-2 Motherboard Installation Overview

The motherboards have been preinstalled into carriers to simplify installing and removing the nodes from the chassis. The motherboards should remain in these carriers at all times. If a failed node needs to be returned for repair or replacement, the motherboard must be shipped assembled in its carrier and not by itself. See Chapter 6 for instructions on installing and removing the motherboard nodes from the chassis.

Installation Procedure

Follow the procedures as listed below to install the motherboard into a chassis.

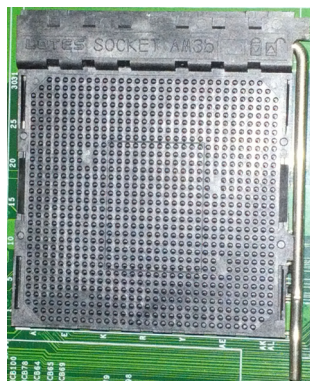
1. Install the processors and the heatsinks.
2. Install the motherboard to the node tray.
3. Install the memory and extension cards.
4. Connect the cables.
5. Push the loaded tray into the chassis and install the drivers.

5-3 Processor and Heatsink Installation

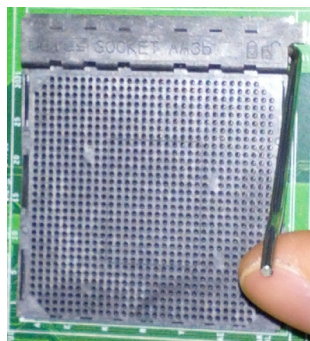
Caution: Avoid placing direct pressure to the top of the processor. Be sure power cords and cables are not connected while installing or removing the processor.

Installing the Processor

1. Begin by lifting the lever on the CPU socket until it points straight up.



2. Lift the processor socket lever vertically up and open.



3. With the lever raised, locate and align pin 1 of the CPU socket with pin 1 of the CPU. Both are marked with a triangle. Place the processor into the socket so that both are aligned, then *carefully* place the CPU into the socket.



Caution: Do not drop the CPU on the socket, move the CPU horizontally or vertically or rub the CPU against the socket or against any pins of the socket otherwise you may damage the CPU and/or the socket.

4. With the CPU inserted into the socket, inspect the four corners of the CPU to make sure that it is properly installed and flush with the socket. Then, carefully press the CPU socket lever down until it locks into its retention tab.



Caution: You can install the CPU inside the socket only in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it does not close properly, do not force it, as that may damage your CPU. Instead, open the load plate again and check whether the CPU is properly aligned and securely seated inside the socket.

Installing the Heatsinks

With the air shroud removed:

1. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the motherboard and the heatsink bracket underneath.
2. Screw in two diagonal facing screws until just snug (do not over-tighten the screws to avoid possible damage to the CPU.)
3. Finish the installation by fully tightening all four screws.

Reverse the order of this procedure to remove a heatsink.

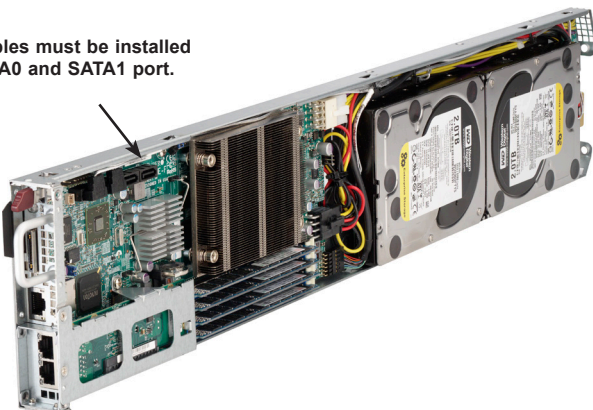
Note: Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

5-4 Mounting the Motherboard into a Node Tray

Each computing node has its own tray in which to mount the motherboard

Figure 5-2. Motherboard Installed in a Node Tray

SATA cables must be installed on SATA0 and SATA1 port.



Location of Mounting Holes

There are seven mounting holes on the H8SME-F motherboard. These holes correspond to screw holes in a matching motherboard tray that slides into a blade-type chassis.

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.

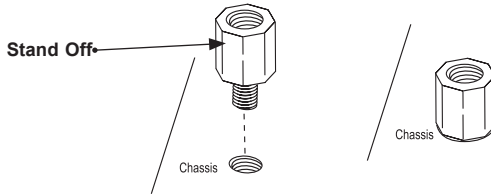
Caution: Some components are very close to the mounting holes. Be careful to prevent damage to these components when installing the motherboard to the chassis.

Caution: To avoid damaging the motherboard and its components, do not use more than 8 inch-lbs of force on the mounting screws.

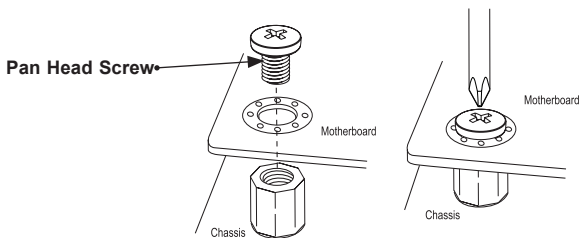
Mounting the Motherboard

Mounting the Motherboard onto the Tray in the Chassis

1. Locate the mounting holes on the motherboard.
2. Locate the matching mounting holes on the motherboard mounting tray. Install standoffs needed. Align the mounting holes on the motherboard against the mounting holes on the motherboard tray.



3. Install the motherboard carefully to avoid damaging motherboard components.
4. Insert a pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis, using a Philips screwdriver.



5. Repeat for the remaining screws and mounting holes.

5-5 Installing Memory

Caution: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage to the DIMMs or their sockets

How to Install Memory

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly.
2. Install to slots DIMM1A, DIMM2A, etc. Always install in groups of two and in the numerical order of the DIMM slots. See support information below.
3. Gently press down on the memory module until it and snaps into place.

Note: 1 GB, 2 GB, 4 GB, or 8 GB size memory modules are supported. It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the H8SME-F serverboard.

Memory Support

Each H8SME-F supports up to 32GB of Unbuffered (UDIMM) ECC DDR3-1600/1333/1066 memory in four DIMM slots. Only very low profile (VLP) DIMMs are supported. Refer to the product page on our web site for possible updates to memory support.

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

Figure 5-2. DIMM Installation

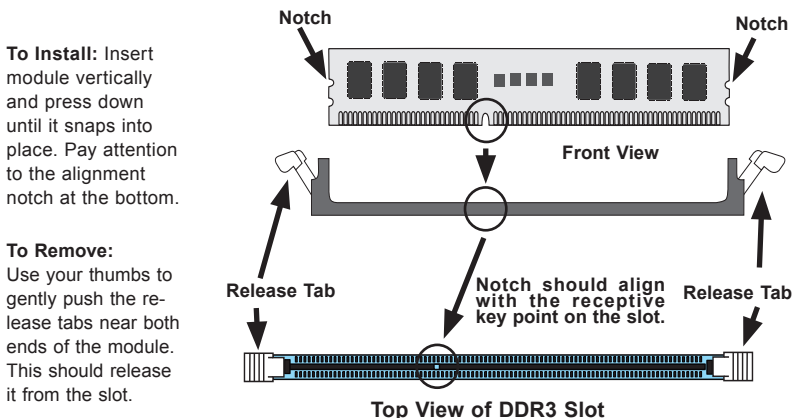
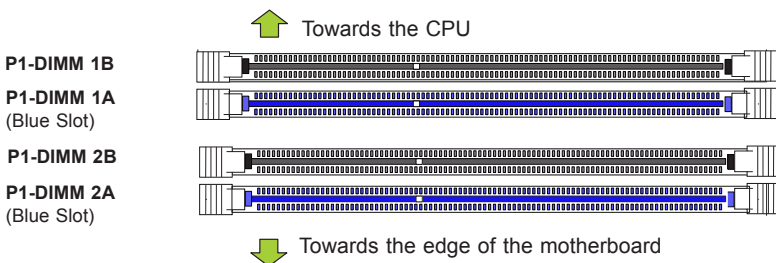


Figure 5-3. Populating DIMM Slots



Memory Population Guidelines

1. When installing memory modules, the DIMM slots should be populated in the following order: DIMM 1A, DIMM 2A, DIMM 1B and DIMM 2B
2. Always use DDR3 DIMM modules of the same size, type and speed.
3. The motherboard will support one or three DIMM modules installed. However, for best memory performance, install DIMM modules in pairs.

Memory Population for Optimal Performance				
# DIMMs	Channel 1		Channel 2	
2 DIMMs	DIMM1A		DIMM2A	
4 DIMMs	DIMM1A	DIMM1B	DIMM2A	DIMM2B

DIMM Module Population Configuration

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

Per Channel DIMM Population Options					
DIMM Type	DIMM A	DIMM B	Max. MHz, 1.5V DIMMs	Max. MHz, 1.35V DIMMs	Maximum GB/Channel
UDIMM	SR or DR	Empty	1600 MHz	1333 MHz	8 GB
	SR	SR	1600 MHz	1333 MHz	4 GB
	DR	DR	1333 MHz	1333 MHz	16 GB

5-6 MicroLP Expansion Module

Each of the 12 nodes in the system has one MicroLP slot, which can support a single MicroLP expansion module. A riser card is used to support one MicroLP (low profile) PCI-E 2.0 x8 expansion card. Follow the instructions below to install this module.

Installing a MicroLP Expansion Module

1. Power-down the node using that node's individual power button and remove it from the system as described in Chapter 6.
2. Open the PCI slot clip and remove the PCI slot shield.
3. Open the PCI slot clip in the rear of the motherboard node.
4. Remove the PCI slot shield.
5. The MicroLP module consists of a MicroLP card, a riser card and a mounting bracket. Simply insert the module into the MicroLP expansion slot.
6. Slide the expansion cards bracket into the PCI card slot and fit it with the opening in the rear of the node.
7. Close the PCI card slot clip to secure the expansion card.

Note: 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.

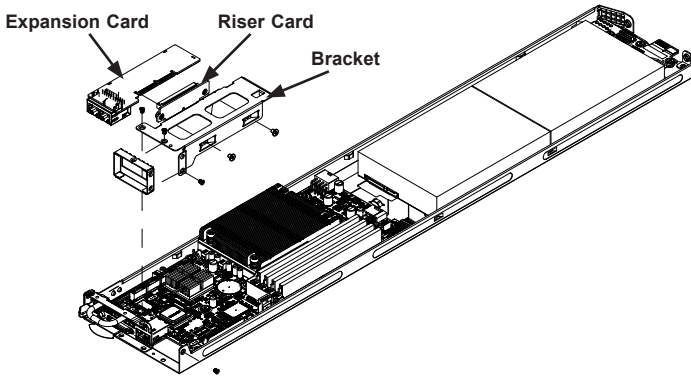


Figure 5-4. Installing the MicroLP Expansion Module

Notes: The node and motherboard shown above are examples. Your actual node and motherboard may vary from those illustrated.

The figure above shows an exploded view of the module. The expansion card, riser card and mounting bracket come pre-assembled.

Currently there are three supported MicroLP expansion cards for the 3012MA-H12TRF system, as described below.

AOM-CGP-i2M: x2 LAN ports (standard)

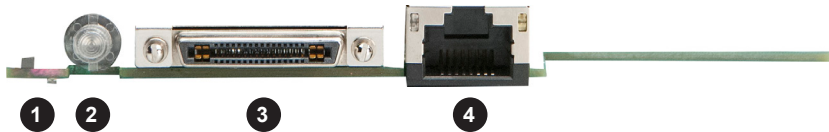
AOM-CIBF-M1M: QSFP + x2 USB ports (optional)

AOM-CTG-i1SM: SFP+ x2 USB ports (optional)

5-7 I/O Ports

The I/O ports are color coded to make setting up your system easier.

Figure 5-5. I/O Port Locations and Definitions



Rear I/O Ports			
1. UID Button	2. Power Button	3. KVM Connector	4. IPMI Dedicated LAN

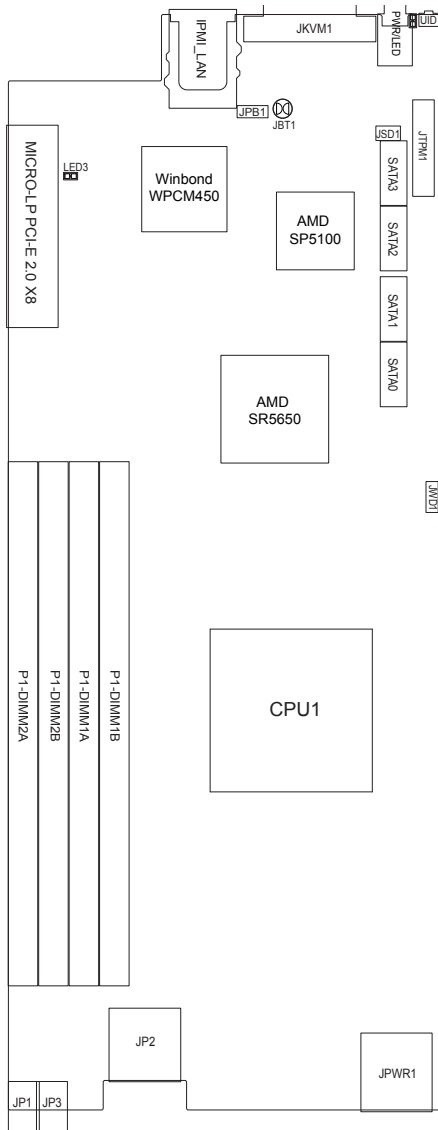
5-8 Motherboard Layout

H8SME-F Quick Reference		
Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 5-10)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (Reset)

LED	Description
Dedicated IPMI LAN LEDs	LEDs for the dedicated IPMI LAN Ethernet port
LED2	LED for Overheat, Power and Fan Fail
LED3	LED for IPMI Heartbeat
UID SW/LED	Unit Identifier Switch and LED Indicator
PWR SW/LED	Power Switch and Power LED

Connector	Description
IPMI LAN	Dedicated IPMI LAN Port
JKVM1	Keyboard, Video, Mouse Backpanel Connector
JP1/JP3	Motherboard Interface to PDB
JP2	Power Output for Hard Disk Drive (12V and 5V)
JPWR1	Power Connector from PDB
JSD1	SATA DOM (Device_On_Module) Power Connector
JTPM1	Trusted Platform Module Header
SATA0 ~ SATA3	SATA Ports

Figure 5-6. H8SME-F Motherboard Layout
(not drawn to scale)



Notes:

Jumpers not indicated are for test purposes only.

Not all ports, jumpers or LED Indicators are available on all serverboards.

5-9 Connector Definitions

IF + POWER

This edge connector, located on the opposite end of the motherboard from the I/O back panel, is used to connect the motherboard to the back plane of the server chassis. Through this connector, the motherboard receives its power and communicates with other components installed in the system.

Unit Identifier Button

There is a Unit Identifier (UID) button on the rear I/O of the board. When you push the UID button, the Rear UID indicator will illuminate. Push the button again to turn off the indicator. These UID indicator provides easy identification of a system unit that may be in need of service.

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

KVM Port

The KVM port (JKVM1) supports keyboard, VGA and mouse via a UART interface. Please attach a compatible KVM connector/switch to this port.

Power Button & LED

A Power Button and LED is located next to the KVM port. Push this button to turn on the motherboard. When the LED is on, the power of this motherboard is turned on.

Trusted Platform Module Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM), available separately from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives, disallowing access if the TPM associated with it is not installed in the system. See the table on the right for pin definitions.

Trusted Platform Module Header Pin Definitions (JTPM1)			
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

SATA DOM Power Connector

A power connector for SATA DOM (Disk_On_Module) devices is located at JSD1. Connect an appropriate cable here to provide power support for your DOM devices.

SATA DOM Power Connector Pin Definitions (JSD1)	
Pin#	Definition
1	+5V
2	Ground
3	Ground

Dedicated IPMI LAN Port

There is a dedicated LAN for IPMI next to the KVM port. This Ethernet port accepts RJ45 type cables.



Dedicated IPMI LAN Port Pin Definition			
Pin#	Definition	Pin#	Definition
1	P2V5SB	10	SGND
2	TD0+	11	Act LED
3	TD0-	12	P3V3SB
4	TD1+	13	Link 100 LED (Yellow, +3V3SB)
5	TD1-	14	Link 1000 LED (Yellow, +3V3SB)
6	TD2+	15	Ground
7	TD2-	16	Ground
8	TD3+	17	Ground
9	TD3-	18	Ground

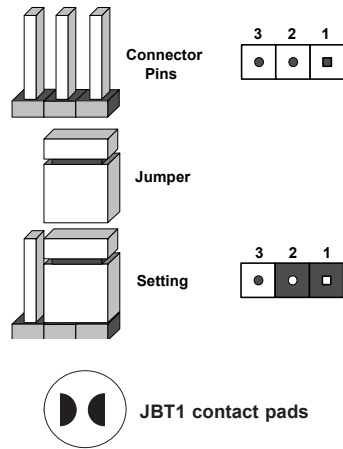
NC indicates no connection.

5-10 Jumper Settings

Explanation of Jumpers

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



CMOS Clear

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

To clear CMOS,

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

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

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

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

Watch Dog Enable/Disable

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

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

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

BMC Jumper

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

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

5-11 Onboard Indicators

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is also included on the H8SME-F serverboards. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table at right for more information.

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

IPMI Heartbeat LED

An IPMI Heartbeat LED is located at LED3. When LED3 blinks, the IPMI functions properly. Refer to the table on the right for details.

IPMI Heartbeat (LED3) LED Settings		
Color	Status	Definition
Green	Blinking	IPMI is ready for use
Off	Off	Not functioning normally

Overheat(OH)/Fan Fail/PWR Fail LED

A Red Overheat/Fan Fail/PWR Fail LED is located at LED2. See the table at right for more information.

Overheat(OH)/Fan Fail/PWR Fail LED (LED2) LED Settings		
Color	Status	Definition
Off	Off	Normal
Red	On	Overheat
Red Flashing	Flashing	Fan Fail

5-12 SATA Drive Connections

SATA Ports

There are no jumpers to configure the SATA ports, which are designated SATA0 through SATA3. See the table on the right for pin definitions.

SATA Ports Pin Definitions (SATA0-SATA3)	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5-13 Enabling SATA RAID

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

Serial ATA (SATA)

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

Installing the OS/SATA Driver

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

Building a Driver Diskette

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

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

Building a Driver Diskette

1. Install your system drives from the FTP website. A display as shown in Figure 5-10 will appear.
2. Click on the icon labeled "Build Driver Diskettes and Manuals" and follow the instructions to create a floppy disk with the drivers on it.
3. Once it has been created, remove the floppy and insert the installation CD for the Windows Operating System you wish to install into the CD drive of the new system you are about to configure.

Enabling SATA RAID in the BIOS

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

1. Use the arrow keys to move to the "Exit" menu. Scroll down using the arrow keys to "Load Optimal Defaults" and press <Enter>. Select "OK" to confirm, then <Enter> to load the default settings.
2. Use the arrow keys to move to the "Advanced" menu, then scroll down to "IDE configuration". On this submenu, scroll down to "OnChip SATA Type" and choose the "RAID" option (Figure 5-7). "RAID Codebase" submenu appears. This setting allows you to select the codebase for your RAID setup. Options are either Adaptec or DotHill.

Figure 5-7. BIOS Setup Screen



3. Press the <Esc> key twice and scroll to the "Exit" menu. Select "Save Changes and Exit" and press <Enter>, then press <Enter> again to verify.
4. After exiting the BIOS Setup Utility, the system reboots. When prompted during the startup, to use the DotHill RAID Utility program press <CTRL+R> (Figure 5-8), or to use the Adaptec RAID Utility program press <CTRL+A> (Figure 5-9).

Figure 5-8. DotHill RAID Utility Program Screen

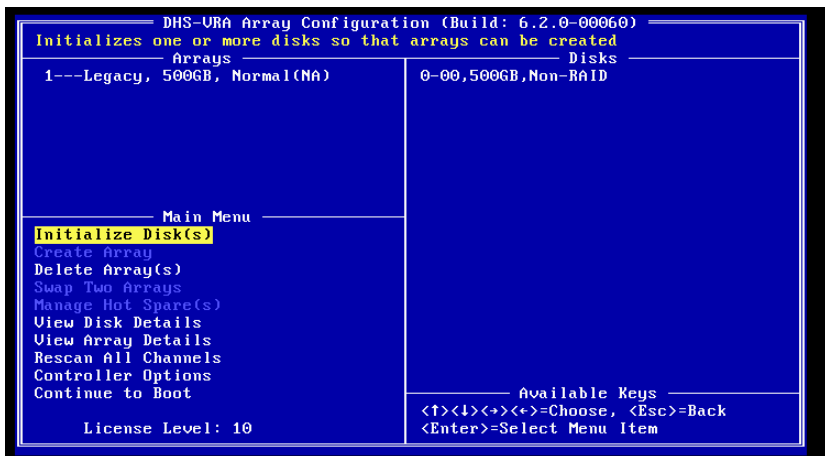


Figure 5-9. Adaptec RAID Utility Program Screen



Using the DotHill and Adaptec RAID Utility

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

Installing the RAID Driver During OS Installation

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

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

5-14 Installing Software

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

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

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

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-10 should appear.

Figure 5-10. Driver/Tool Installation Display Screen



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

SuperDoctor III

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

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

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

Figure 5-11. SuperDoctor III Interface Display Screen (Health Information)

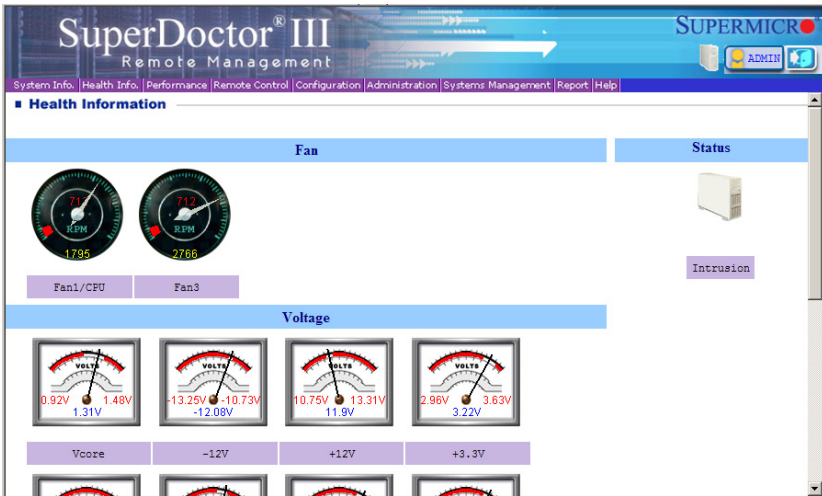
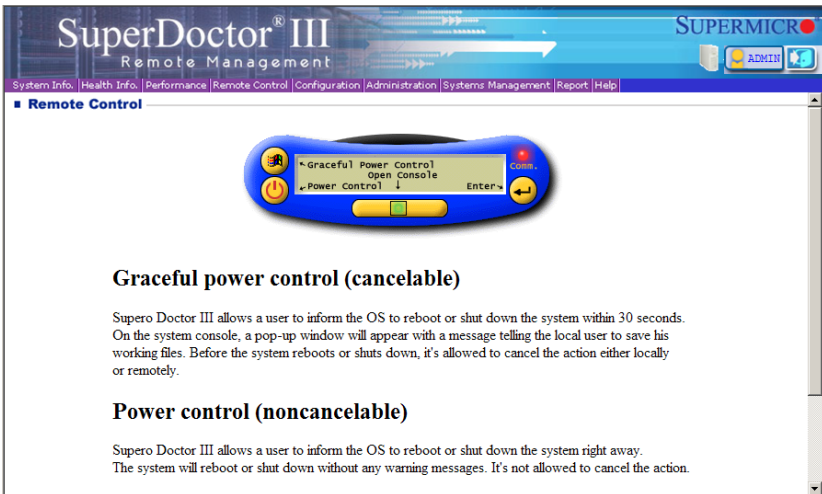


Figure 5-12. SuperDoctor III Interface Display Screen (Remote Control)

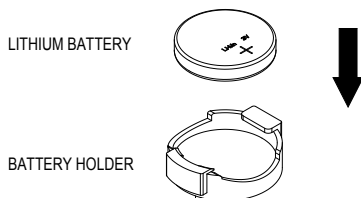


Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at <http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm>. For Linux, we recommend that you use the SuperDoctor II application instead.

5-15 Onboard Battery

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

Figure 5-13. Installing the Onboard Battery



Caution: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 5-13). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC939H-R1K63BP 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 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.
- The person unpacking the system should be static protected.

6-2 Removing the Chassis Cover

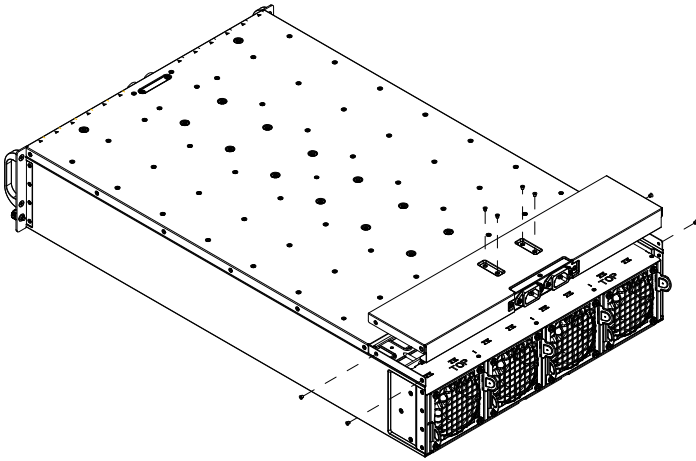


Figure 6-1. Removing the Chassis Cover

Removing the Chassis Cover

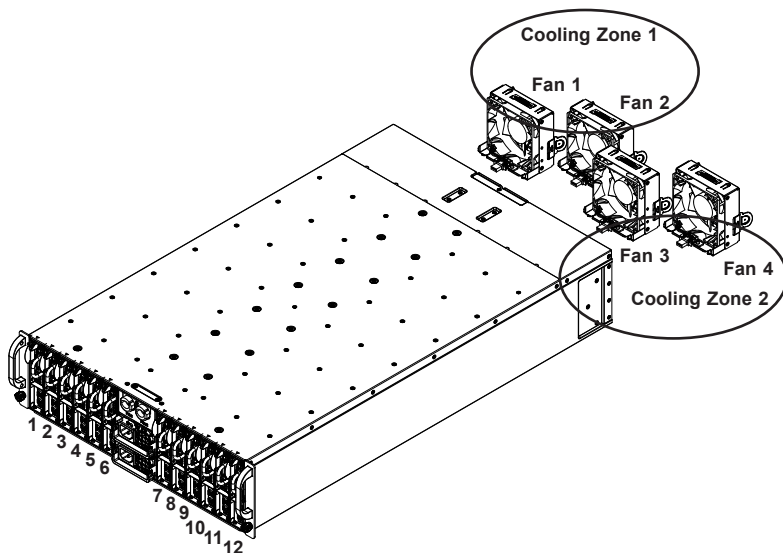
1. Disconnect the chassis from any power source.
2. Remove the three screws which secure the top cover to the chassis as illustrated above.
3. Lift the top cover up and off the chassis.
4. Peel off the protective film covering the top cover and the top of the chassis
5. Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

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.

6-3 Corresponding Nodes and Fans

The 3012MA-H12TRF contains 12 individual motherboards contained in separate nodes. Three nodes each share a common fan (see figure below).

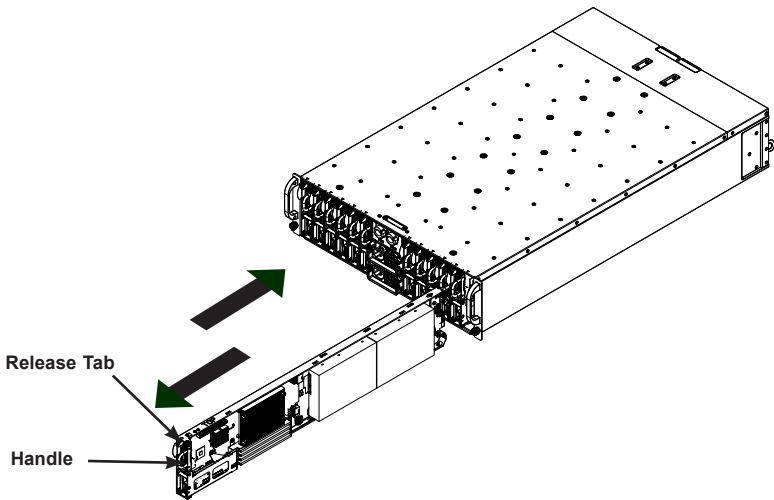
Figure 6-2. Corresponding Nodes and Fans



Corresponding Nodes and Fans		
Cooling Zone	Node	Fans
Zone 1	Nodes 1 through 6	Fans 1 & 2
Zone 2	Nodes 7 through 12	Fans 3 & 4

6-4 Removing and Installing Motherboard Nodes

Figure 6-3. Removing/Installing a Node Tray



The system comes features twelve removable nodes. Each node contains an individual motherboard and hard drives mounted on a tray, which allows it to easily be installed and removed from the chassis.

Removing Nodes Trays from the System

1. Power-down the individual node by pressing that node's power button.
2. Press and hold down the release tab on the back of the node.
3. Use the node's handle to pull the node from the system.

Caution: Except for short periods of time while swapping nodes, do not operate the server with the node bays empty. In the unlikely event of a node failure, remove the failed node and replace it with the dummy node that was included with the system.

6-5 Installing Hard Drives

The hard disk drives (HDDs) are installed directly to the node tray, which must first be removed from the system. For this reason, hard drives are not hot-swappable. Either two 3.5" or four 2.5" hard drives can be installed in each tray (node). An optional kit is required to install 2.5" drives (MCP-220-93903-0N bracket).

Installing/Removing Hard Drives from the Tray

1. Remove the node to have HDDs installed or removed by following the procedure in the previous section.
2. Place the tray on a flat, non-conductive surface.
3. Insert the hard drive with the printed circuit board side facing downward so that the mounting holes in the drive align with those in the bottom of the tray.
4. Secure the hard drive to the tray with the screws included with the drive. If installing 2.5" drives, use the specialized mounting bracket.
5. When finished installing or removing drives, push the node/tray back into the bay it was removed from.
6. Use the node's power button to power it back on.

Figure 6-4. Installing/Removing 3.5" Hard Drives

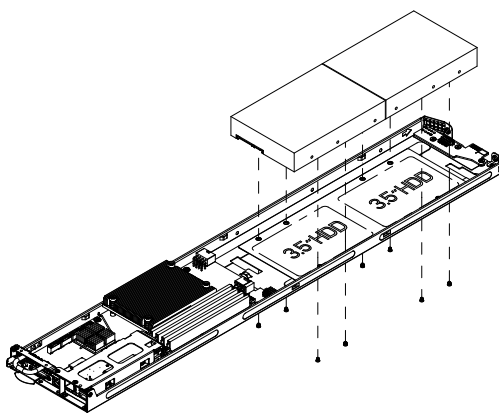
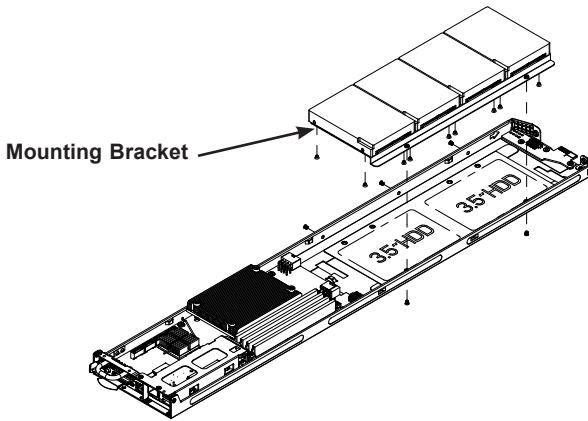


Figure 6-5. Installing/Removing 2.5" Hard Drives (Optional)



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

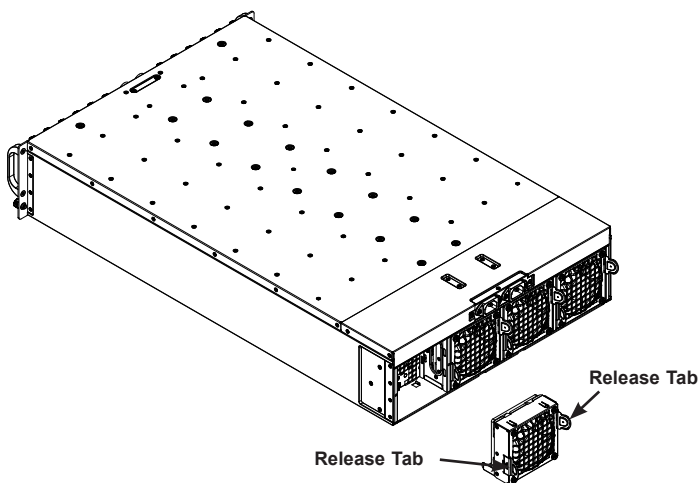
6-6 System Fans

Four 9-cm fans circulate air through the chassis to lower the internal temperature. These fans are designed to be easily changed, with no tools required and no need to remove any other parts inside the chassis. In the event of a fan failure, follow the instructions below to replace it.

Removing a Fan

1. Visually inspect the fans to see which one has failed.
2. Push both release tabs on the failed fan inward.
3. Remove the fan from the chassis. The wiring disconnects automatically.
4. Remove the screws securing the fan to its housing and set them aside for later use.
5. Insert a new fan into the housing and secure with the screws previously removed.
6. Confirm that the fan is working with the system powered on.

Figure 6-6. Removing a Fan



6-7 Power Supply

The system includes a redundant 1620 watt, high-efficiency power supply. The two power supply modules are auto-switching capable, which enables them to automatically sense and operate at a 100V to 240V input voltage. An amber light is illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is on.

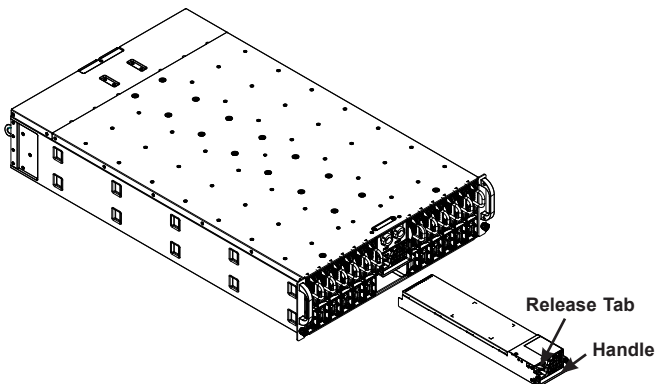
Power Supply Replacement

In the event that one of the power supplies needs to be replaced, one power supply can be removed without powering-down the system. Replacement power supply units may be ordered directly from Supermicro.

Changing the Power Supply

1. With the system running, unplug the AC power cord from the failed power supply module.
2. Press the release tab at the top of the power module
3. Push and hold the release tab on the back of the power supply.
4. Grasp the handle and pull the power supply out of its bay.
5. Push the replacement power supply module into the empty bay until it clicks into the locked position.
6. Plug the AC power cord back into the power supply module.

Figure 6-6. Removing a Power Module



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the H8SME-F serverboard. The 16 Mb AMI BIOS® is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

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

Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

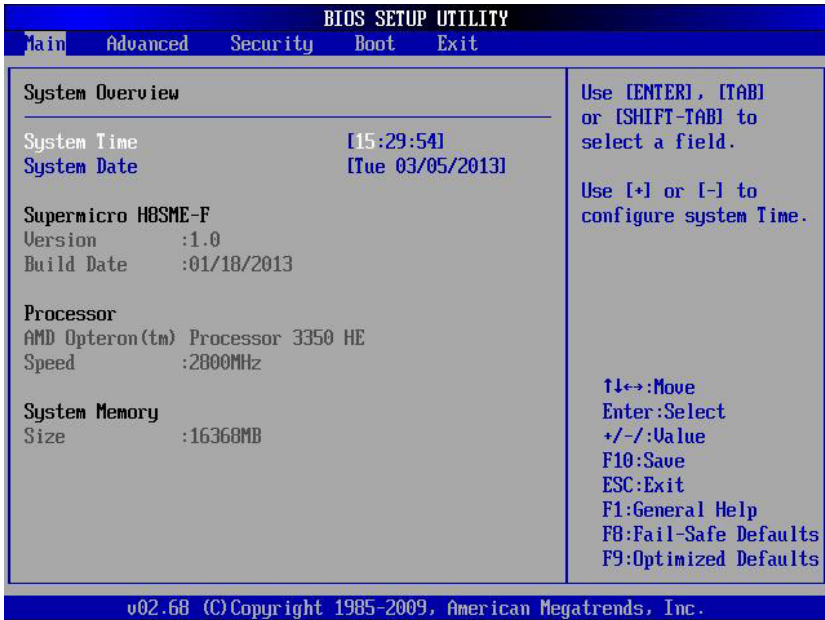
The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

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

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

7-2 Main Menu

Figure 7-1. Main BIOS Screen



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

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

System Time/System Date

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

7-3 Advanced Settings Menu

► Boot Feature

Quick Boot

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

Quiet Boot

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

Add On ROM Display Mode

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

Bootup Num Lock

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

PS/2 Mouse Support

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

Wait for F1 if Error

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

Hit 'DEL' Message Display

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

Interrupt 19 Capture

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

Watch Dog Function

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

Power Button Function

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

Restore on AC Power Loss

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

Resume On RTC Alarm

This setting allows you to Enable or **Disable** RTC to generate a wake event for S4/S5 or legacy soft off.

► Processor and Clock Options

CPU Configuration

This displays static information on the Module Version, Socket Count, Node Count, Core Count and HT Link Frequency for the system's processor(s) and clock.

CPU Information

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

GART Error Reporting

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

Microcode Update

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

Secure Virtual Machine Mode

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

Power Now

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

C State Mode

This specifies the method of C-State enablement. Options include Disabled and **C6**.

Power Cap

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

HPC Mode

This option Enables or **Disables** support for P-state HPC mode.

CPB Mode

This option specifies the method of core performance boost environment. Options include Disabled and **Auto**.

CPU Down Core Mode

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

C1E Support

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

Clock Speed Spectrum

This option Enables or **Disables** spread spectrum modulation.

► Advanced Chipset Control**Chipset Information**

Information on chipset models and their versions is statically displayed here.

► NorthBridge Configuration**Memory Information**

Information on memory including Memory speed, CAS Latency (Tcl), RAS/ CAS Delay (Trcd), Row Precharge Time (Trp), Min Active RAS (Tras), RAS/ RAS Delay (Trrd), Row Cycle (Trc), Read to Precharge (Trtp) and Write Recover Time (Twr) is displayed under this submenu.

► Memory Configuration

Bank Interleaving

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

Node Interleaving

This option allows you to enable Node Interleaving in the system. Options include Auto and **Disabled**.

Channel Interleaving

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

CS Sparing Enable

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

Power Down Enable

This option allows you to **Enable** or Disable DDR power down mode.

Bank Swizzle Mode

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

► ECC Configuration

ECC Mode

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

DRAM ECC Enable

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

► Memory Timing Configuration

Memory Timing Config

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

Memory Clock Speed

This options is only configurable if Memory Timing Config is set to **Manual**. This option sets the memory clock speed to either **200 Mhz**, 266 Mhz, 333 Mhz, 400 Mhz, 533 Mhz, 667 Mhz, 800 Mhz or 933 Mhz.

HT Speed Support

This option allows you to select an HT Link Frequency. Options are H1 and **Auto**.

Note: A cold reset is required if you change this option.

IOMMU

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

Memory Power Policy

This sets the Memory Power Policy to either **Enabled** or **Disabled**.

► SouthBridge Configuration

OHCI/EHCI HC Device Functions

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

USB 2.0 Controller Mode

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

Legacy USB Support

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

► IDE Configuration

Onboard PCI IDE Controller

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

OnChip SATA Channel

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

OnChip SATA Type

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

RAID Codebase

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

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

LBA/Large Mode

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

Block (Multi-Sector Transfer)

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

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

PIO Mode

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

The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined. Select 0 to allow BIOS to use PIO mode 0, which has a data

transfer rate of 3.3 MBs. Select 1 to allow BIOS to use PIO mode 1, which has a data transfer rate of 5.2 MBs. Select 2 to allow BIOS to use PIO mode 2, which has a data transfer rate of 8.3 MBs. Select 3 to allow BIOS to use PIO mode 3, which has a data transfer rate of 11.1 MBs. Select 4 to allow BIOS to use PIO mode 4, which has a data transfer rate of 16.6 MBs.

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

DMA Mode

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

S.M.A.R.T.

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

32-Bit Data Transfer

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

IDE Detect Timeout (Sec)

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

► PCI/PnP Configuration

Clear NVRAM

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

Plug & Play O/S

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

PCI Latency Timer

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

PCI IDE Busmaster

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

ROM Scan Ordering

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

LP PCIe x8 Slot

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

Boots Graphic Adapter Priority

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

► SuperIO Device Configuration

Serial 1 Address

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

Serial 2 Address

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

Serial Port 2 Attribute

This option allows you to set COM2 as a normal serial port or as virtual COM for SOL. Options are **SOL** or COM.

► Remote Access Configuration

Remote Access

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

Serial Port Number

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

Note: Make sure the selected port is enabled.

Serial Port Mode

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

Flow Control

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

Redirection After BIOS POST

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

Terminal Type

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

VT-UTF8 Combo Key Support

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

Sredir Memory Display Delay

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

► Hardware Health Configuration

CPU Overheat Alarm

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

Fan Speed Control Modes

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

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

CPU Temperature, System Temperature, CPU VCore, CPU Mem, SR56x0 1.1V, 1.8V, 5V, +12V, 3.3 Vcc, 3.3 VSB, VBAT and HT Voltage.

CPU Temperature Display (CTD)

CPU Temperature descriptions are defined as:

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

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

High → [Tctl Value = -61 and Above]

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

CPU Overheating Alarm (COA)

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

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

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

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

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

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

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

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

► ACPI Configuration

PS2 KB/MS Wakeup

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

ACPI Aware O/S

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

ACPI APIC Support

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

Headless Mode

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

ACPI Version Features

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

WHEA Support

Use this setting to **Enable** or Disable Windows Hardware Error Architecture.

► IPMI Configuration

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

► View BMC System Event Log

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

Clear BMC System Event Log

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

► Set LAN Configuration

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

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

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

IP Address Source

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

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

IP Address

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

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

Subnet Mask

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

Gateway Address

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

MAC Address

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

► Event Log Configuration**View Event Log**

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

Mark All Events as Read

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

Clear Event Log

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

SR56x0 PCIE Error Log

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

7-4 Security Menu

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

Change Supervisor Password

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

Change User Password

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

Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When "Enabled", AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-5 Boot Menu

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

► Boot Device Priority

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

► Removable Drives

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

▶ **Hard Disk Drives**

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

▶ **CD/DVD Drives**

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

▶ **USB Drives**

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

▶ **Network Drives**

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

Retry Boot Devices

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

7-6 Exit Menu

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

Save Changes and Exit

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

Discard Changes and Exit

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

Discard Changes

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

Load Optimal Defaults

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

Load Fail-Safe Defaults

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

Appendix A

BIOS POST Checkpoint Codes

When AMIBIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, diagnostic equipment can be attached to the computer to read I/O port 0080h.

A-1 Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution:

Checkpoint	Code Description
D0h	The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified.
D1h	Initializing the DMA controller, performing the keyboard controller BAT test, starting memory refresh and entering 4 GB flat mode next.
D3h	Starting memory sizing next.
D4h	Returning to real mode. Executing any OEM patches and setting the Stack next.
D5h	Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0.
D6h	Control is in segment 0. Next, checking if <Ctrl> <Home> was pressed and verifying the system BIOS checksum. If either <Ctrl> <Home> was pressed or the system BIOS checksum is bad, next will go to checkpoint code E0h. Otherwise, going to checkpoint code D7h.

A-2 Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution:

Checkpoint	Code Description
E0h	The onboard floppy controller if available is initialized. Next, beginning the base 512 KB memory test.
E1h	Initializing the interrupt vector table next.
E2h	Initializing the DMA and Interrupt controllers next.
E6h	Enabling the floppy drive controller and Timer IRQs. Enabling internal cache memory.
Edh	Initializing the floppy drive.
Eeh	Looking for a floppy diskette in drive A:. Reading the first sector of the diskette.
Efh	A read error occurred while reading the floppy drive in drive A:.
F0h	Next, searching for the AMIBOOT.ROM file in the root directory.
F1h	The AMIBOOT.ROM file is not in the root directory.
F2h	Next, reading and analyzing the floppy diskette FAT to find the clusters occupied by the AMIBOOT.ROM file.
F3h	Next, reading the AMIBOOT.ROM file, cluster by cluster.
F4h	The AMIBOOT.ROM file is not the correct size.
F5h	Next, disabling internal cache memory.
FBh	Next, detecting the type of flash ROM.
FCb	Next, erasing the flash ROM.
FDh	Next, programming the flash ROM.
FFh	Flash ROM programming was successful. Next, restarting the system BIOS.

A-3 Uncompressed Initialization Codes

The following runtime checkpoint codes are listed in order of execution.

These codes are uncompressed in F0000h shadow RAM.

Checkpoint	Code Description
03h	The NMI is disabled. Next, checking for a soft reset or a power on condition.
05h	The BIOS stack has been built. Next, disabling cache memory.
06h	Uncompressing the POST code next.
07h	Next, initializing the CPU and the CPU data area.
08h	The CMOS checksum calculation is done next.
0Ah	The CMOS checksum calculation is done. Initializing the CMOS status register for date and time next.
0Bh	The CMOS status register is initialized. Next, performing any required initialization before the keyboard BAT command is issued.
0Ch	The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller.
0Eh	The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.
0Fh	The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next.
10h	The keyboard controller command byte is written. Next, issuing the Pin 23 and 24 blocking and unblocking command.
11h	Next, checking if <End> or <Ins> keys were pressed during power on. Initializing CMOS RAM if the Initialize CMOS RAM in every boot AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12h	Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2.
13h	The video display has been disabled. Port B has been initialized. Next, initializing the chipset.
14h	The 8254 timer test will begin next.
19h	Next, programming the flash ROM.
1Ah	The memory refresh line is toggling. Checking the 15 second on/off time next.
2Bh	Passing control to the video ROM to perform any required configuration before the video ROM test.
2Ch	All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it.
2Dh	The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control
23h	Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24h	The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin.
25h	Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on.
27h	Any initialization before setting video mode will be done next.
28h	Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
2Ah	Bus initialization system, static, output devices will be done next, if present. See the last page for additional information.

Checkpoint	Code Description
2Eh	Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next.
2Fh	The EGA/VGA controller was not found. The display memory read/write test is about to begin.
30h	The display memory read/write test passed. Look for retrace checking next.
31h	The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next.
32h	The alternate display memory read/write test passed. Looking for alternate display retrace checking next.
34h	Video display checking is over. Setting the display mode next.
37h	The display mode is set. Displaying the power on message next.
38h	Initializing the bus input, IPL, general devices next, if present. See the last page of this chapter for additional information.
39h	Displaying bus initialization error messages. See the last page of this chapter for additional information.
3Ah	The new cursor position has been read and saved. Displaying the Hit message next.
3Bh	The Hit message is displayed. The protected mode memory test is about to start.
40h	Preparing the descriptor tables next.
42h	The descriptor tables are prepared. Entering protected mode for the memory test next.
43h	Entered protected mode. Enabling interrupts for diagnostics mode next.
44h	Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next.
45h	Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next.
46h	The memory wraparound test is done. Memory size calculation has been done. Writing patterns to test memory next.
47h	The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next.
48h	Patterns written in base memory. Determining the amount of memory below 1 MB next.
49h	The amount of memory below 1 MB has been found and verified.
4Bh	The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next.
4Ch	The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next.
4Dh	The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next.
4Eh	The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next.
4Fh	The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next.
50h	The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadowing next.
51h	The memory size display was adjusted for relocation and shadowing.
52h	The memory above 1 MB has been tested and initialized. Saving the memory size information next.
53h	The memory size information and the CPU registers are saved. Entering real mode next.

Checkpoint	Code Description
54h	Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next.
57h	The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next.
58h	The memory size was adjusted for relocation and shadowing. Clearing the Hit message next.
59h	The Hit message is cleared. The <WAIT...> message is displayed. Starting the DMA and interrupt controller test next.
60h	The DMA page register test passed. Performing the DMA Controller 1 base register test next.
62h	The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next.
65h	The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
66h	Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next.
67h	Completed 8259 interrupt controller initialization.
7Fh	Extended NMI source enabling is in progress.
80h	The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81h	A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
82h	The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83h	The command byte was written and global data initialization has completed. Checking for a locked key next.
84h	Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next.
85h	The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next.
86h	The password was checked. Performing any required programming before WINBIOS Setup next.
87h	The programming before WINBIOS Setup has completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next.
88h	Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next.
89h	The programming after WINBIOS Setup has completed. Displaying the power on screen message next.
8Ch	Programming the WINBIOS Setup options next.
8Dh	The WINBIOS Setup options are programmed. Resetting the hard disk controller next.
8Fh	The hard disk controller has been reset. Configuring the floppy drive controller next.
91h	The floppy drive controller has been configured. Configuring the hard disk drive controller next.
95h	Initializing the bus option ROMs from C800 next. See the last page of this chapter for additional information.
96h	Initializing before passing control to the adaptor ROM at C800.
97h	Initialization before the C800 adaptor ROM gains control has completed. The adaptor ROM check is next.
98h	The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.

Checkpoint	Code Description
99h	Any initialization required after the option ROM test has completed. Configuring the timer data area and printer base address next.
9Ah	Set the timer and printer base addresses. Setting the RS-232 base address next.
9Bh	Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next.
9Ch	Required initialization before the Coprocessor test is over. Initializing the Coprocessor next.
9Dh	Coprocessor initialized. Performing any required initialization after the Coprocessor test next.
9Eh	Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next.
A2h	Displaying any soft errors next.
A3h	The soft error display has completed. Setting the keyboard typematic rate next.
A4h	The keyboard typematic rate is set. Programming the memory wait states next.
A5h	Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next.
A7h	NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next.
A8h	Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next.
A9h	Returned from adaptor ROM at E000h control. Performing any initialization required after the E000 option ROM had control next.
Aah	Initialization after E000 option ROM control has completed. Displaying the system configuration next.
Abh	Uncompressing the DMI data and executing DMI POST initialization next.
B0h	The system configuration is displayed.
B1h	Copying any code to specific areas.
00h	Code copying to specific areas is done. Passing control to INT 19h boot loader next.

Appendix B

System Specifications

Processors

Each node supports a single 8/4-Core ready AMD Opteron™ 3000 Series processor in a single 942-pin Socket AM3+ socket; HT3.0 Link support

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

Chipset

AMD chipset SR5650/SP5100

BIOS

16Mb SPI Flash ROM with AMI® BIOS

Memory Capacity

Each node supports up to 32GB Unbuffered ECC/non-ECC VLP DDR3 1600/1333/1066 SDRAM in 4 DIMMs memory (total of 384 GB for the system); Single or Dual (recommended) channel memory

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

Hard Drives

Each node can be configured to house 2x 3.5" SATA 2.0 hard drives or four 2.5" SATA 2.0 hard drives (with extra MCP-220-93903-0N bracket)

Expansion Slots

Each node supports one MicroLP card

Note: See the Chapter 5 for details.

Motherboard

H8SME-F (proprietary form factor)

Dimensions: 4.6" x 11.70" (11.68 x 29.72 cm)

Chassis

SC939H-R1K63BP (3U rackmount)

Dimensions: (WxHxD) 17.5 x 5.21 x 29.5 in. (444.5 x 132 x 749.3 mm)

Weight

Barebone: 95 lbs. (43.2 kg)

System Cooling

Four 9-cm system fans

System Input Requirements

AC Input Voltage: 100 - 240V AC auto-range

Rated Input Current: 11.5 - 5.5A max

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 1000W @ 100-120V, 1200W @ 120-140V, 1620W @ 180-240V (Part# PWS-1K63S-1R)

Rated Output Voltages: +12V (84A @ 1000W, 100A @ 1200W, 135A @ 1620W), +5Vsb (4A)

Operating Environment

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

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

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

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

Regulatory Compliance

Electromagnetic Emissions:

FCC Class 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:

EN 60950/IEC 60950-Compliant

UL Listed (USA)

CUL Listed (Canada)

TUV Certified (Germany)

CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials:

This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply.

See www.dtsc.ca.gov/hazardouswaste/perchlorate"

(continued from front)

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