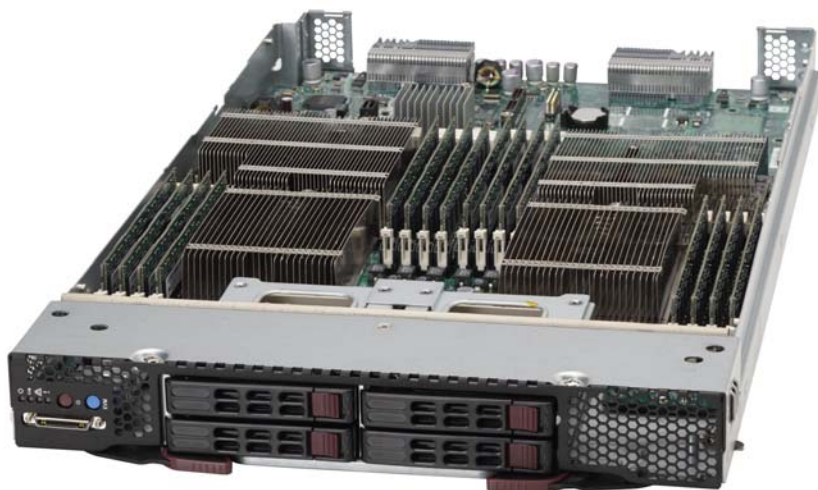


# SUPERMICRO®

## **SBA-7142G-T4 Blade Module**



## **User's Manual**

Revision 1.0c

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Manual Revision 1.0c

Release Date: January 30, 2014

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# Preface

## About this Manual

This manual is written for professional system integrators, Information Technology professionals, service personnel and technicians. It provides information for the installation and use of the Supermicro SuperBlade<sup>®</sup> system's SBA-7142G-T4 blade module. Installation and maintenance should be performed by experienced professionals only.

## Manual Organization

### Chapter 1: Introduction

The first chapter provides a checklist of the main components included with SBA-7142G-T4 blade module and describes their main features.

### Chapter 2: System Safety

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing SBA-7142G-T4 blade module.

### Chapter 3: Setup and Installation

Refer to this chapter for details on installing the SBA-7142G-T4 blade module into the SuperBlade chassis. Other sections cover the installation and placement of memory modules and the installation of hard disk drives into the blade module.

### Chapter 4: Blade Module Features

This chapter covers features and component information about SBA-7142G-T4 blade module. Included here are descriptions and information for mainboard components, connectors, LEDs and other features of the blade module.

### Chapter 5: BIOS

BIOS setup is covered in this chapter for SBA-7142G-T4 blade module.

### Appendix A: BIOS POST Codes

BIOS POST Codes for SBA-7142G-T4 blade module are explained in this appendix.

## Notes

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# Chapter 1

## Introduction

### 1-1 Overview

The SBA-7142G-T4 blade module is a compact self-contained server that connects into a pre-cabled enclosure that provides power, cooling, management and networking functions. One enclosure for the SBA-7142G-T4 blade module can hold ten blade units.

In this manual, “blade system” refers to the entire system (including the enclosure and blades units), “blade” or “blade unit” refers to a single blade module and “blade enclosure” is the chassis that the blades, power supplies and modules are housed in.

Please refer to our web site for information on operating systems that have been certified for use with the SuperBlade ([www.supermicro.com/products/superblade/](http://www.supermicro.com/products/superblade/)).

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

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

**Note:** A complete list of safety warnings is provided on the Supermicro web site at [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm).

### 1-2 Product Checklist of Typical Components

Your blade module ships with its mainboard already installed in its chassis. Memory, hard disk drives and the CPU must all be installed by the user after shipment. See [Chapter 3: "Setup and Installation" on page 3-1](#) for details on installation of these components.

Aside from the blade module unit itself, the optional AOC-XEH-iN2 Mezzanine add-on card (with 10G Pass-Through or 10G Switch) may be ordered for your blade module along with the following add-on cards:

- AOC-XEH-iN2
- AOC-IBH-XDD
- AOC-IBH-XQD
- AOC-IBH-XQS
- AOC-IBH-XDS

See the [Supermicro website](#) and the *SuperBlade Network Modules User’s Manual* on your SuperBlade system’s CD-ROM for more details on these add-on cards.

## 1-3 Blade Module Features

Table 1-1 lists the main features of the SBA-7142G-T4 blade module. See the proceeding section for components typically included in a blade system and other optional components. Specific details on the SBA-7142G-T4 blade module is found in Chapter 4: "Blade Module Features" on page 4-1.

**Table 1-1. SBA-7142G-T4 Blade Specification Features**

Mainboard	BHQGE (proprietary form factor) Blade Module Chassis Dimensions (HxWxD): 11.32" x 1.67" x 20.5"
Processors	Supports four 1944-pin G34 socket AMD Opteron 6100 series processors per blade module. Please refer to our web site for a complete listing of supported processors.
FSB Speed	HyperTransport HT 3.0
Chipset	AMD SR5650 & SP5100 chipset
Graphics Controller	One embedded Matrox G200eW Graphics chip with 16MB of SDRAM
BIOS	16 Mb AMI® SPI Flash EPROM BIOS
Memory Capacity	Sixteen 240-pin DIMM sockets per node supporting up to 256 GB of ECC Registered DDR3-1600/1333/1066 SDRAM DIMMs or 64 GB of ECC Unbuffered DDR3-1600/1333/1066 SDRAM DIMMs.
SATA Controller	SATA Controller SP5100 on-chip controller for four Serial ATA drives total.
Hard Drive Bays	Four (4) hot-swap drive bays for 2.5" SATA disk drives or SSD drives.

### Processors

The SBA-7142G-T4 blade module supports up to four 1944-pin G34 socket AMD Opteron 6100 series processors.

Refer to the Supermicro web site for a complete listing of supported processors (<http://www.supermicro.com/products/superblade>). Please note that you will need to check the detailed specifications of a particular blade module for a list of the CPUs it supports.

Details on installation of the processor into the SBA-7142G-T4 blade module are found in Chapter 3: "Setup and Installation" on page 3-1.

### Memory

The SBA-7142G-T4 blade module has sixteen 240-pin DIMM sockets that can support up to 64 GB of ECC Unbuffered DDR3-1600/1333/1066 SDRAM or 256 GB of ECC Registered DDR3-1600/1333/1066 SDRAM DIMMs. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Please refer to the Supermicro web site for a list of supported memory ([www.supermicro.com/products/superblade](http://www.supermicro.com/products/superblade)). The detailed specifications for a blade module will contain a link to a list of recommended memory sizes and manufacturers.

Details on installation of memory modules into the SBA-7142G-T4 blade module are found in [Chapter 3: "Setup and Installation" on page 3-1](#).

## Storage

The SBA-7142G-T4 blade module can have four 2.5" SATA (Serial ATA) hard disk drives in front-mounted easy removable carriers. See [Chapter 3: "Setup and Installation" on page 3-1](#) for storage installation details.

## RAID

Each SBA-7142G-T4 blade module supports up to four hard drives, which may be used with SATA drives to create a RAID 0 or 1 (or JBOD) array using the Windows™ and Linux™ operating systems.

Further information on RAID software can be found on our website at: [http://www.supermicro.com/manuals/other/LSI\\_2108\\_2208\\_SAS\\_MegaRAID\\_Configuration\\_Utility.pdf](http://www.supermicro.com/manuals/other/LSI_2108_2208_SAS_MegaRAID_Configuration_Utility.pdf)

## Density

A maximum of ten blade modules may be installed into a single blade enclosure with two nodes. Each blade enclosure is a 7U form factor, so a standard 42U rack may accommodate up to six enclosures with 60 blade modules. With the inclusion of six CMM modules, twelve Gigabit Ethernet switches and twelve 10G or InfiniBand switches, this would occupy up to 84U space in a conventional 1U dual processor server configuration.

## 1-4 Contacting Supermicro

### Headquarters

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Fax: +1 (408) 503-8008

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[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)

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

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

Technical Support:

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

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



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# Chapter 2

## Standardized Warning Statements

### 2-1 About Standardized Warning Statements

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

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

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

#### Warning Definition



##### Warning!

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

##### 警告の定義

この警告サインは危険を意味します。

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

此警告符号代表危險。

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

此警告符號代表危險。

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

## Warnung

### WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

### INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

### IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

## תקנון הזהרות אזהרה

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

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

تحذير! هذا الرمز يعني خطر انك في حالة يمكن أن تتسبب في اصابة جسدية .  
قبل أن تعمل على أي معدات، كن على علم بالمخاطر الناجمة عن الدوائر  
الكهربائية

وكن على دراية بالممارسات الوقائية لمنع وقوع أي حوادث  
استخدم رقم البيان المنصوص في نهاية كل تحذير للعثور ترجمتها

안전을 위한 주의사항

경고!

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험 요소들을 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.

اقرأ إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

### Waarschuwing

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

### Circuit Breaker



#### Warning!

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が 250 V、20 A を超えないことを確認下さい。

#### 警告

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

#### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

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

هذا المنتج يعتمد على معدات الحماية من الدوائر القصيرة التي تم تثبيتها في  
المبنى  
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من: 20A, 250V

경고 !

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

### Waarschuwing

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

### Power Disconnection Warning



#### Warning!

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

#### 電源切斷の警告

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

システムの電源はすべてのソースから切斷され、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 מפני ניתוק חשמלי

### !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 채시 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 لتكيب واستبدال أو خدمة هذا الجهاز  
경고!

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

### Waarschuwing

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

### Restricted Area



#### Warning!

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

#### アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

#### 警告

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

#### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

### אזור עם גישה מוגבלת

#### אזהרה!

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

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

경고 !

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

### Waarschuwing

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



## Battery Handling



### Warning!

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

### 電池の取り扱い

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

### 警告

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.

### 冗長電源裝置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

### 警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

### 警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

**אם קיים יותר מספק אחד**

**אזהרה!**

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

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

경고 !

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

### Waarschuwing

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

### Backplane Voltage



#### Warning!

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

バックプレーンの電圧

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

修理する際には注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

## תיאום חוקי החשמל הארצי

אזהרה !

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوانين المحلية والوطنية المتعلقة  
بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

### Waarschuwing

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

## Product Disposal



### Warning!

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

### 製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

## סילוק המוצר

אזהרה!

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

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

경고!

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

### Waarschuwing

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

## Hot Swap Fan Warning



### Warning!

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

### ファン・ホットスワップの警告

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

### 警告

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

### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

! אזהרה

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

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

경고 !

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

### Waarschuwing

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

## Power Cable and AC Adapter



### Warning!

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

### 電源コードと AC アダプター

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

### 警告

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

### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

### חשמליים ומתאמי AC

אזהרה!

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

عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية ومحولات التيار المتردد التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق. تم توفيرها لك مع المنتج الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات UL أو CSA 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 CSA 에서 인증한 케이블 (전선 위에 UL/CSA 가 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

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# Chapter 3

## Setup and Installation

### 3-1 Overview

This chapter covers the setup and installation of the blade module and its components.

### 3-2 Installing Blade Modules

Up to ten SBA-7142G-T4 blade modules may be installed into a single blade enclosure (depending upon your enclosure and blade). Blade modules with Windows and Linux operating systems may be mixed together in the same blade enclosure.

#### Powering Up a Blade Unit

Each blade unit may be powered on and off independently from the rest of the blades installed in the same enclosure. A blade unit may be powered up in two ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to apply power using either a CMM module, or by the use of the onboard BMC chip in the blade module.

#### Powering Down a Blade Unit

A blade unit may be powered down in either of five ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to power down (if you have Operator or Admin privileges on the CMM).
- Use IPMItool when connected to the CMM to power down (if you have Operator or Admin privileges on the CMM).

#### Removing a Blade Unit from the Enclosure

Although the blade system may continue to run, individual blades should always be powered down before removing them from the enclosure.

##### ***Removing a Blade Unit from the Enclosure***

1. Power down the blade unit (see "[Powering Down a Blade Unit](#)" above).
2. Squeeze both handles to depress the red sections then pull out both handles completely and use them to pull the blade unit from the enclosure.

**NOTE:** Blade Modules can be Hot-Plugged from the enclosure.

## Removing/Replacing the Blade Cover

The blade cover must be removed to access the mainboard when you need to install or remove processors, memory units, the onboard battery and so on.

### *Removing/Replacing the Blade Cover*

1. Remove the blade unit from the enclosure (see "[Removing a Blade Unit from the Enclosure](#)" above).
2. Depress the two buttons on the cover while pushing the cover toward the rear of the blade unit. When it stops, lift the cover off the blade unit.
3. To replace the cover, fit the six grooves in the cover into the studs in the sides of the blade, then slide the cover toward the front of the blade to lock it into place.

## Installing a Blade Unit into the Enclosure

Make sure the cover of the blade unit has been replaced first before installing a blade unit in the enclosure.

### *Installing a Blade Unit into the Enclosure*

1. Slowly push the blade unit into its bay with the handles fully pulled out (see [Figure 3-1](#)).
2. When the blade stops, push the handles back in to their locked position, making sure the notches in both handles catch the lip of the enclosure (see [Figure 3-2](#)).

**NOTE:** Blade Modules can be Hot-Plugged into the enclosure.

**WARNING: Use extreme caution when inserting a blade module into the enclosure.** If the blade's power connector becomes damaged, it can damage pins on other blade bays that it is inserted into.

Figure 3-1. Inserting a Blade into the Enclosure

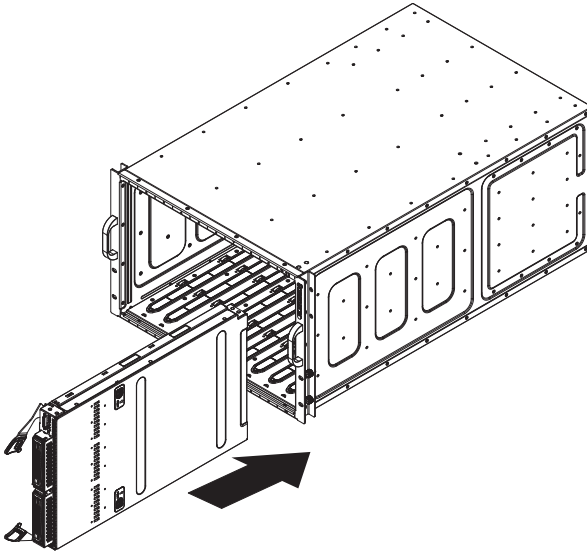
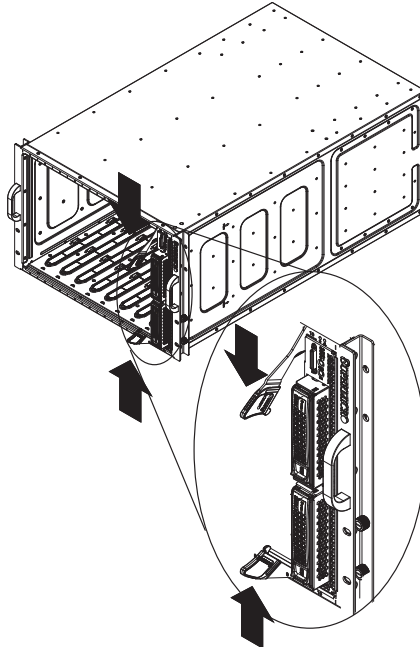


Figure 3-2. Locking the Blade into Position



### 3-3 Processor Installation

One to four 1944-pin G34 socket AMD Opteron 6100 series processors may be installed to the mainboard of the blade module. See [Chapter 1](#) for general information on the features of the blade unit and the [Supermicro web site](#) for further details including processor, memory and operating system support.

**WARNING:** This action should only be performed by a trained service technician. Allow the processor heatsink to cool before removing it.

#### *Removing a Processor*

1. Power down and remove the blade unit from the enclosure (see [Section 3-2: Installing Blade Modules on page 3-1](#) for details).
2. Remove the cover of the blade unit (see ["Removing/Replacing the Blade Cover" on page 3-2](#)).
3. Loosen the two screws that secure the heatsink to the mainboard.
4. Remove the heatsink by *gently* rotating it back-and-forth sideways with your fingers to release it from the processor. Set the heatsink aside and upside-down so that nothing comes into contact with the thermal grease on its underside.
5. Raise the lever of the processor socket up until the processor is released from the socket, then lift the silver cover plate and remove the processor.

**WARNING:** This action should only be performed by a trained service technician.

#### *Installing a Processor*

1. If present, remove the protective black PnP cap from the processor socket.
2. Raise the lever of the processor socket until it reaches its upper limit.
3. Lift the silver cover plate completely up and out of the way.

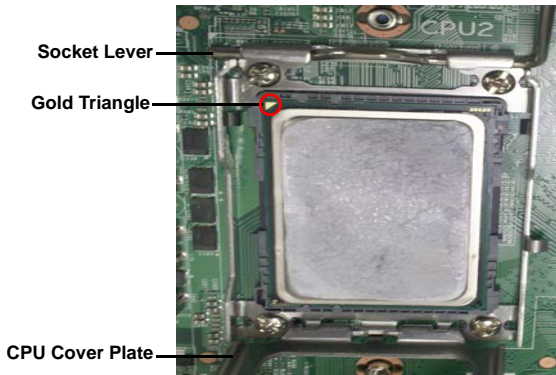
**NOTE:** Be careful not to damage the pins protruding from the CPU socket.

4. Align pin 1 of the processor with pin 1 of the socket (both are marked with a small gold triangle) and gently seat the processor into the socket ([Figure 3-3](#)).
5. Check to make sure the processor is flush to the socket and fully seated.
6. Lower the socket lever until it locks.
7. To install the heatsink, apply thermal grease to the top of the processor. (If reinstalling a heatsink, first clean off the old thermal grease with a clean, lint-free cloth.)
8. Place the heatsink on the processor then tighten one screw until snug, then the other screw.
9. When both screws are snug, tighten them down to secure the heatsink to the mainboard.

**NOTE:** Do not overtighten the screws as this may damage the processor or the heatsink.

10. Replace the cover on the blade unit and finish by installing the unit back into the blade enclosure.

**Figure 3-3. Installing a G34 Processor in a Socket**

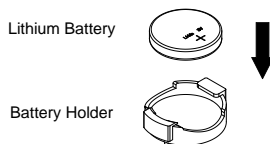


### 3-4 Onboard Battery Installation

A battery is included on the mainboard to supply certain volatile memory components with power when power has been removed from the blade module. If this battery dies, it must be replaced with an equivalent CR2032 Lithium 3V battery. Dispose of used batteries according to the manufacturer's instructions. See [Figure 3-4](#) for a diagram of installing a new onboard battery.

**WARNING:** There is a danger of explosion if the onboard battery is installed upside down, which reverses its polarities.

**Figure 3-4. Installing the Onboard Battery**



### 3-5 Memory Installation

The mainboard of each blade unit must be populated with DIMMs (Dual In-line Memory Modules) to provide system memory. **The DIMMs should all be of the same size and speed and from the same manufacturer to avoid compatibility issues.** See details below on supported memory and our web site ([www.supermicro.com/products/superblade](http://www.supermicro.com/products/superblade)) for recommended memory.

## Populating Memory Slots

The mainboard of a SBA-7142G-T4 blade module has 16 memory slots. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Populating slots at the same time with memory modules of the same size and of the same type will result in four-channel, interleaved memory, which is faster than single-channel, non-interleaved memory. See [Table 3-1](#) and [Figure 3-5](#) for details.

**WARNING: For an interleaved configuration, memory modules of the same size and speed must be installed. You should not mix DIMMs of different sizes and speeds.**

**NOTE:** The DIMM slot number specified in [Table 3-1](#) equals the DIMM slot to be populated. A “---” indicates that the DIMM slot should be left unpopulated. DIMMs for one board are P1/P2 and P3/P4 for the other board.

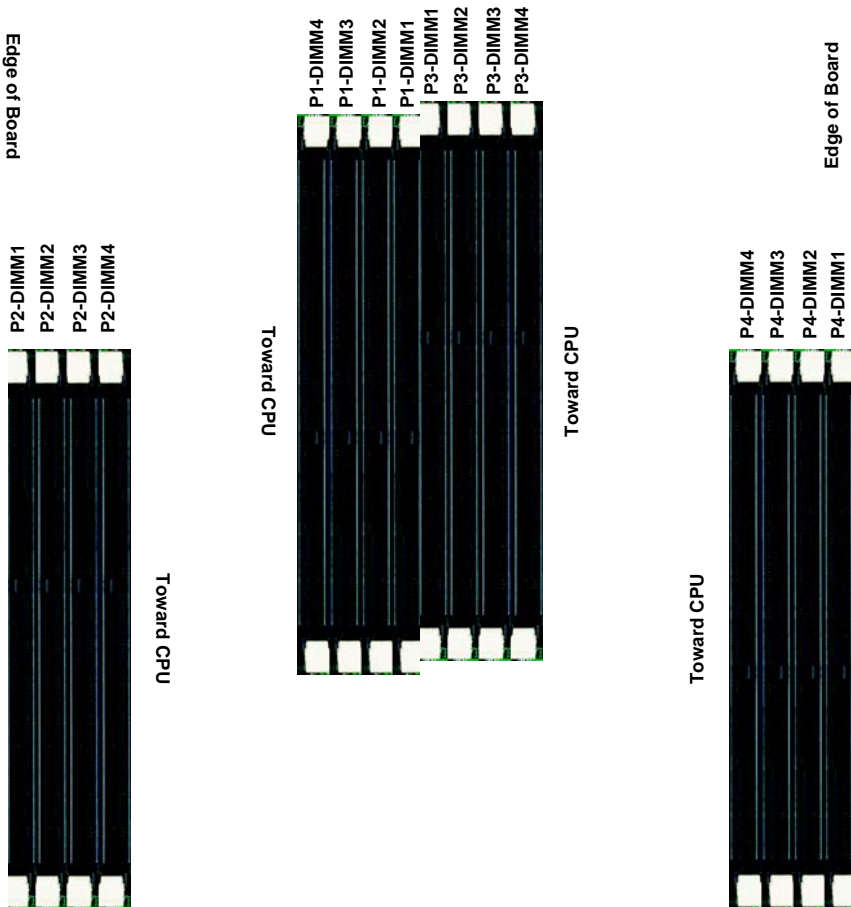
**NOTE:** Though multiple DIMM memory module types and speeds may be supported, you need to use DIMM memory modules of the same speed and type.



Table 3-1. Populating Memory Slots for Interleaved Operation

Number of DIMMs	CPU	Channel 1	Channel 2	Channel3	Channel4
4 DIMMs	CPU1	P1-DIMM1			
	CPU2	P2-DIMM1			
	CPU3	P3-DIMM1			
	CPU4	P4-DIMM1			
8 DIMMs	CPU1	P1-DIMM1	P1-DIMM2		
	CPU2	P2-DIMM1	P2-DIMM2		
	CPU3	P3-DIMM1	P3-DIMM2		
	CPU4	P4-DIMM1	P4-DIMM2		
12 DIMMs	CPU1	P1-DIMM1	P1-DIMM2	P1-DIMM3	
	CPU2	P2-DIMM1	P2-DIMM2	P2-DIMM3	
	CPU3	P3-DIMM1	P3-DIMM2	P3-DIMM3	
	CPU4	P4-DIMM1	P4-DIMM2	P4-DIMM3	
16 DIMMs	CPU1	P1-DIMM1	P1-DIMM2	P1-DIMM3	P1-DIMM4
	CPU2	P2-DIMM1	P2-DIMM2	P2-DIMM3	P2-DIMM4
	CPU3	P3-DIMM1	P3-DIMM2	P3-DIMM3	P3-DIMM4
	CPU4	P4-DIMM1	P4-DIMM2	P4-DIMM3	P4-DIMM4

Figure 3-5. 16-Slot DIMM Numbering for Blade Module



## DIMM Installation

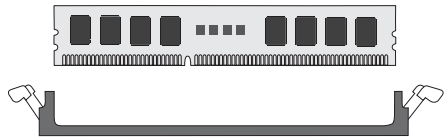
**WARNING:** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

### *Installing DIMM Memory Modules*

1. Power down the blade module (see ["Powering Down a Blade Unit" on page 3-1](#)).
2. Remove the blade from the enclosure and the cover from the blade (see ["Removing/Replacing the Blade Cover" on page 3-2](#)).
3. Insert each DIMM vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM incorrectly (see [Figure 3-6](#)).

**Figure 3-6. Installing a DIMM into a Memory Slot**

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



**To Remove:** Use your thumbs to gently push each release tab outward to free the DIMM from the slot.



4. Gently press down on the DIMM until it snaps into place in the slot. Repeat for all modules (see [Table 3-1](#) for installing DIMMs into the slots in the correct order).
5. Replace the air shroud and the blade cover and install the blade module back into the enclosure.
6. Power up the blade unit (see ["Powering Up a Blade Unit" on page 3-1](#)).

## 3-6 Hard Disk Drive Installation

Hard disk drives are installed in "carriers" which are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. A blade module needs a hard disk drive with an operating system installed to operate.

**WARNING:** To maintain proper airflow, all hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

### Removing a Hard Drive Carrier

To remove a hard drive carrier, do the following:

#### *Removing a Hard Drive Carrier*

1. Locate the colored "Open" button at the bottom of the drive carrier and press it with your thumb. This action releases the drive carrier from the drive bay.
2. Pull the release handle out about 45-degrees, then use it to pull the drive carrier out.

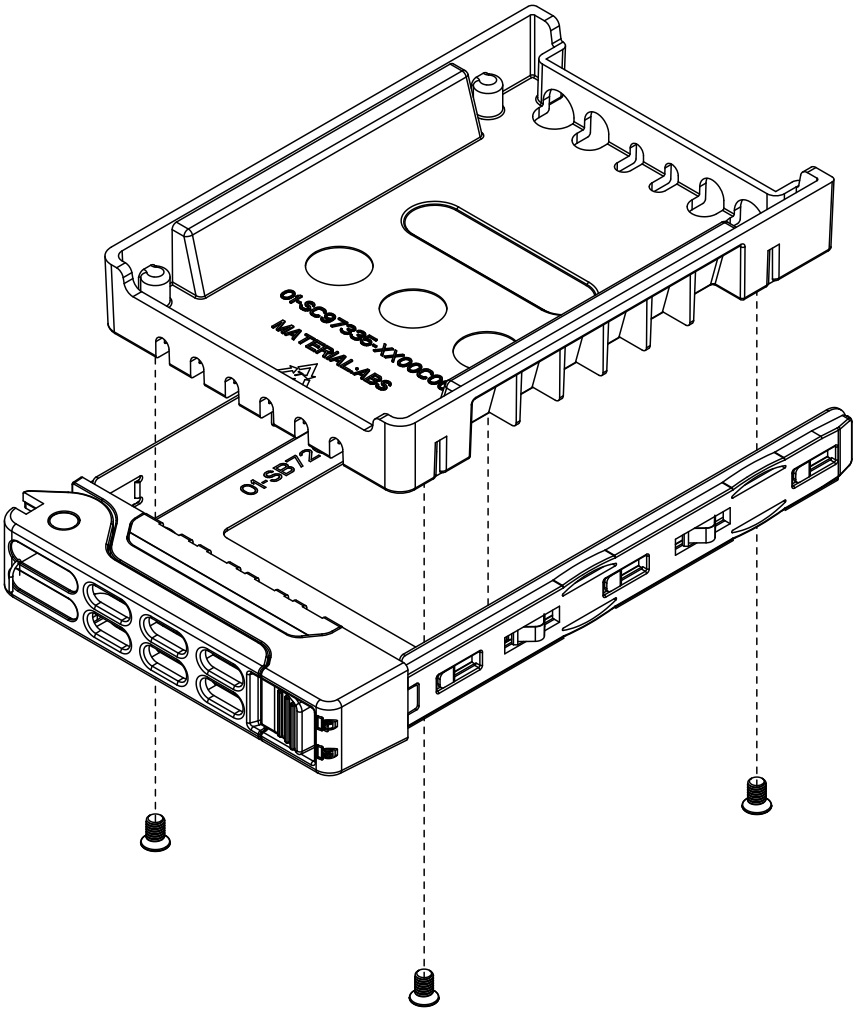
### Installing a Hard Drive

To Install a hard drive, use the following procedure:

#### *Installing a Hard Drive*

1. Remove a blank drive carrier from the blade (see removal procedure above).
2. Insert a 2.5" drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.
3. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked "SATA" to aid in correct installation.
4. Secure the drive to the carrier with four screws as shown in [Figure 3-7: "Installing a Hard Drive in a Carrier" on page 3-11](#).
5. Insert the drive carrier into its slot keeping the Open button at the bottom. When the carrier reaches the rear of the bay the release handle will retract.
6. Push the handle in until you hear the carrier click into its locked position.

Figure 3-7. Installing a Hard Drive in a Carrier



## 3-7 Installing the Operating System

An operating system (OS) must be installed on each blade module. Blades with Microsoft Windows OS and blades with Linux OS can both occupy and operate within the same blade enclosure. Refer to the SuperMicro web site for a complete list of supported operating systems.

There are several methods of installing an OS to the blade modules.

### Installing with an External USB CD-ROM Drive

The most common method of installing the OS is with an external USB CD-ROM drive. Take the following steps to install the OS to a blade module:

**WARNING:** Installing the OS from an external CD-ROM drive may take several hours to complete.

1. Connect an SUV cable (Serial port/USB port/Video port cable) to the KVM connector on the front of the blade module. You will then need to attach a USB hub to the USB port on this cable to provide multiple USB ports.
2. Connect the external CD-ROM drive, a USB keyboard and a mouse to the USB hub. You will also need to connect a monitor to the video connector on the SUV cable. Turn on the blade module.
3. Insert the CD containing the OS into the CD-ROM drive.
4. Follow the prompts to begin the installation.

### Installing via PXE Boot

PXE (Preboot Execution Environment) is used to boot a computer over a network. To install the OS via PXE, the following conditions must be met:

1. The PXE BOOT option in BIOS must be enabled.
2. A PXE server has been configured (this can be another blade in the system).
3. The PXE server must be connected over a network to the blade to be booted.
4. The blade has only non-partitioned/unformatted hard drives installed and no bootable devices attached to it.

Once these conditions are met, make sure the PXE server is running. Then turn on the blade on which you wish to boot and/or install the OS. The BIOS in the blade will look at all bootable devices and finding none will connect to the PXE server to begin the boot/install.

### Installing via Virtual Media (Drive Redirection)

You can install the OS via Virtual Media through either the *IPMIview* (Java based client utility), *SMCIPMItool* or the *Web-based Management Utility*. With this method, the OS is installed from an ISO image that resides on another system/blade.

Refer to the manuals on your SuperBlade CD-ROM for further details on the Virtual Media (CD-ROM or Drive Redirection) sections of these two utility programs.

### **3-8 Management Software**

System management may be performed with either of three software packages: *IPMIview*, *SMCIPMItool* or a *Web-based Management Utility*. These are designed to provide an administrator with a comprehensive set of functions and monitored data to keep tabs on the system and perform management activities.

Refer to the manuals on your SuperBlade CD-ROM for further details on the various functions provided by these management programs.

### **3-9 Configuring and Setting up RAID**

Each blade module that supports two or more hard drives may be used to create a RAID array. The procedures for doing this vary depending upon the blade model chosen for your SuperBlade system.

For RAID setup see <http://www.supermicro.com/support/manuals/> under RAID Installation Guides for more details.

## Notes



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# Chapter 4

## Blade Module Features

Figure 4-1. SBA-7142G-T4 Blade Unit Front View



This chapter describes the SBA-7142G-T4 blade unit. Installation and maintenance should be performed by experienced technicians only.

See [Figure 4-1](#) for a front view of the blade unit and [Table 4-1](#) for its features.

Table 4-1. SBA-7142G-T4 Blade Unit Features

Feature	Description
Processors	Four 1944-pin G34 sockets for AMD Opteron 6100 series processors .
Memory	Supports up to 256 GB of ECC Registered DDR3-1600/1333/1066 SDRAM DIMMs or 64 GB of ECC Unbuffered DDR3-1600/1333/1066 SDRAM DIMMs in sixteen DIMM slots
Storage	Up to four 2.5" hot-plug SATA or SSD hard disk drives
Ports	Serial, USB and KVM port
Features	Onboard Matrox G200eW Graphics chip with 16 MB of SDRAM, IPMI 2.0, Plug and Play, APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, Real Time Clock
Power Consumption	Base Power Draw (~35W) / Power per CPU (85W/115W/137W/140W) / Power per DIMM (typically ~7W)

## 4-1 Control Panel

Each blade has a similar control panel (Figure 4-2) with power on/off button, a KVM connector, a KVM button and four LEDs on the top front of the unit. The numbers mentioned in Figure 4-2 are described in Table 4-2.

Figure 4-2. Blade Control Panel

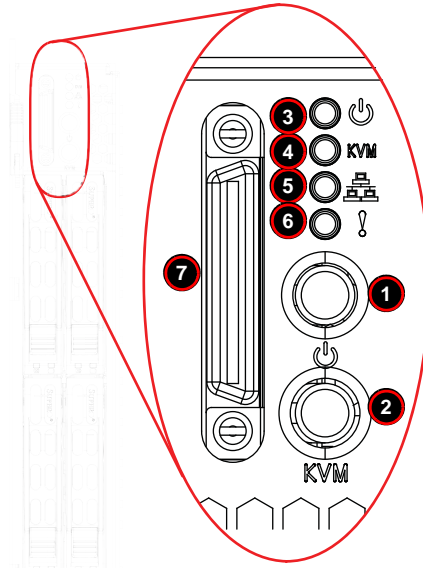


Table 4-2. Blade Control Panel

Item	Function	State	Description
1	Power Button	N/A	Turns blade module on and off
2	KVM Button	N/A	Initiates KVM function
3	Power LED	Green	Indicates power status "On"
		Orange	Indicates power status "Off" (with power cables plugged in)
4	KVM/UID LED	Blue	Indicates KVM being utilized on blade unit
		Flashing Blue	Indicates UID activated on blade module
5	Network/IB LED	Flashing Green	Indicates network activity over LAN
		Flashing Orange	Indicates network activity over InfiniBand module
6	System Fault LED	Red	Indicates a memory error, overheat, VGA error or any error that prevents booting
7	KVM Connector	N/A	Connector for SUV/KVM cable

## Power Button

Each blade has its own power button so that individual blade units within the enclosure may be turned on or off independently of the others. Press the power button (#1) to turn on the blade server. The power LED (#3) will turn green. To turn off, press and hold the power button for >4 seconds (one second if between POST and boot-up) and the power LED will turn orange.

## KVM Button

KVM stands for Keyboard/Video/Mouse. With KVM, a user can control multiple blades with a single keyboard/video/mouse setup. Connect your keyboard, mouse and monitor to the USB and VGA connectors on the CMM module, then push the KVM button on the control panel of the blade module you wish to access.

## LED Indicators

Blade module LEDs are described below in [Table 4-3](#).

**Table 4-3. Blade Module LED Indicators**

LED	State	Description
Power LED	Green	Power On
	Amber	Standby
	Red	Power Failure <sup>a</sup>
KVM/UID LED (Blue)	Steady On	Indicates that KVM has been initialized on this blade module
	Flashing	Serves as a UID indicator (the UID function is activated with a management program)
Network LED (Green)	Flashing	Flashes on and off to indicate traffic (Tx and Rx data) on the LAN connection to this blade module.
System Fault LED (Red)	Steady On	This LED illuminates red when a fatal error occurs. This may be the result of a memory error, a VGA error or any other fatal error that prevents the operating system from booting up.

- a. In the event of a power failure, the N+1 Redundant Power Supply (if included in your system's configuration) shares the system load to provide uninterrupted operation. The failed power supply should be replaced with a new one as soon as possible.

## KVM Connector

Alternatively, you may connect a KVM cable (CBL-0218L, with a keyboard/video/mouse attached) to the KVM connector (#7) of the blade you wish to access. To switch to another blade, disconnect the cable then reconnect it to the new blade.

See the *Web-based Management Utility User's Manual* on your SuperBlade system CD-ROM for further details on using the KVM function remotely.

## 4-2 Mainboard

The mainboard of the SBA-7142G-T4 blade unit is a proprietary design, which is based on the AMD SR5650 & SP5100 chipset. See [Figure 4-4](#) for a block diagram of this chipset, [Figure 4-3](#) for a view of the BHQGE Mainboard and [Figure 4-5](#) for an exploded view diagram of the blade unit.

Figure 4-3. BHQGE Mainboard

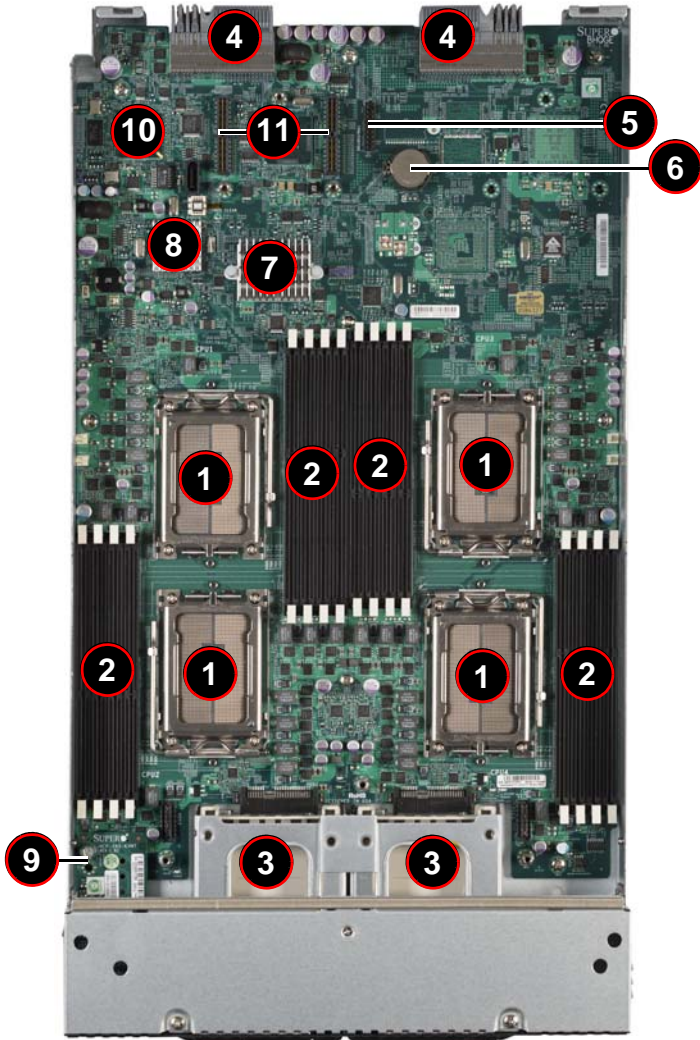
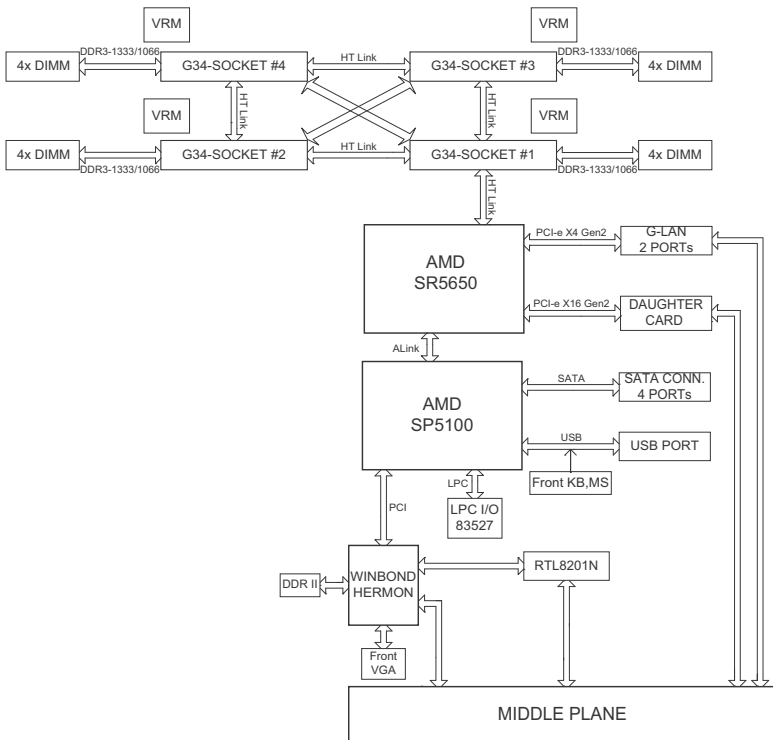


Table 4-4. BHQGE Mainboard Layout

Item	Description
1	CPU Sockets
2	DIMM Slots
3	Space for 2.5" SATA Hard Drive
4	Gbx Connector (for power and logic to backplane)
5	TPM Connector
6	Onboard Battery
7	AMD SR5650 chipset
8	SP5100 Chipset
9	KVM Module includes USB Type-A Connector (Not Shown)
10	NPCM450 BMC Controller with Embedded Matrox G200eW Graphics chip
11	InfiniBand or 10G Daughter Card Connectors

Figure 4-4. BHQGE Block Diagram



## Jumpers

The jumpers present on the mainboard are used by the manufacturer only; there are no jumpers used to configure the operation of the mainboard.

## CMOS Clear

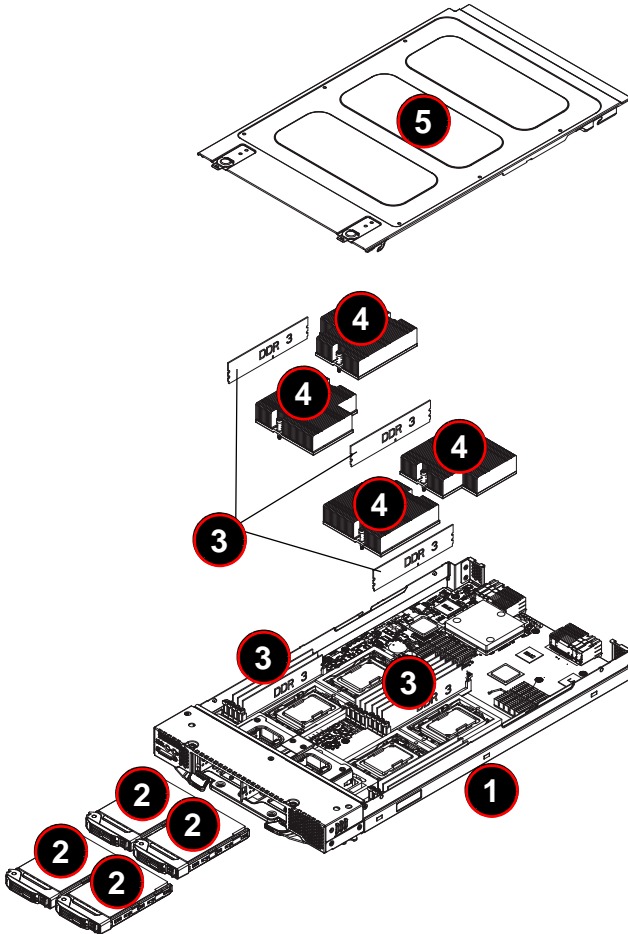
JBT1 is used to clear CMOS and will also clear any passwords. JBT1 consists of two contact pads located near the BIOS chip (#10 in [Figure 4-3](#)).

### *Clearing CMOS*

1. First power down the blade and remove it from the enclosure.
2. Remove the blade cover to access the mainboard (see "[Removing/Replacing the Blade Cover](#)" on page 3-2 for further details). Short the CMOS pads with a metal object such as a small screwdriver.
3. Replace the cover, install the blade back into the enclosure and power it on.

### 4-3 Blade Unit Components

Figure 4-5. Exploded View of SBA-7142G-T4 Blade Module



**Table 4-5. Main Components of SBA-7142G-T4 Blade Unit**

Item	Description
1	Blade Unit/Module
2	SATA Hard Drives (4 total)
3	DIMMs (system memory, 16 total)
4	CPU Heatsinks (4 total)
5	Top Cover

### Memory Support

The SBA-7142G-T4 blade module each supports up to 256 GB of ECC Registered DDR3-1600/1333/1066 SDRAM or 64 GB of ECC Unbuffered DDR3-1600/1333/1066 SDRAM in sixteen DIMM sockets. See [Section 3-5](#) for further details on mainboard memory installation.

### Hard Disk Drives

The SBA-7142G-T4 blade unit accommodates up to four 2.5" SATA hard disk drives, which are mounted in drive "carriers". The drives are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. The four drives can be used to set up a RAID array (SATA RAID 0 or 1 only) or JBOD. These drives use a blue color for the Blade HDD active LED.

**WARNING:** Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro WEB SITE at <http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf>.

**WARNING:** To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.



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# Chapter 5

## BIOS

### 5-1 Introduction

This document describes the AMI® BIOS Setup utility for the SBA-7142G-T4 Blade Module. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

#### Running Setup

**Note:** Default settings are in **bold** text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the MAIN BIOS SETUP screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options.

When you first power on the computer, the BIOS is immediately activated. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <DELETE> immediately after turning the system on, or
2. When the message **Press the <Delete> key to enter Setup** appears briefly at the bottom of the screen during the POST, press the <DELETE> key to activate the main SETUP menu.

### 5-2 Main BIOS Setup Menu

The MAIN MENU 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:** The BIOS has default text messages built in. SuperMicro retains the option to include, omit, or change any of these text messages.

Settings printed in **bold** are the default values. Use the UP/DOWN arrow keys to move among the different settings in each menu. Use the LEFT/RIGHT arrow keys to change the options for each setting.

Items that use sub-menus are indicated with the ► icon. With the item highlighted, press the <ENTER> key to access the 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, and so on) can be used at any time during the setup navigation process. Press the <ESC> key to exit the CMOS SETUP menu.

When you first enter the 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 the SYSTEM TIME/SYSTEM DATE 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.

## 5-3 Advanced Settings Menu

Choose **Advanced** from the BIOS Setup Utility main menu with the arrow keys. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <ENTER>. Below is a list of all submenus in the ADVANCED SETTINGS menu:

- [Boot Feature](#)
- [Processor & Clock Options](#)
- [Advanced Chipset Control](#)
- [IDE Configuration](#)
- [PCI/PnP Configuration](#)
- [Super IO Device Configuration](#)
- [Remote Access Configuration](#)
- [Hardware Health Configuration](#)
- [ACPI Configuration](#)
- [IPMI Configuration](#)
- [Event Log Configuration](#)

## Boot Feature

The menu options in the BOOT FEATURE submenu and their descriptions are shown in [Table 5-1](#).

**Table 5-1. Boot Feature Submenu**

Menu Option	Description
Quick Boot	This option allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system. Options include <b>Enabled</b> or Disabled.
Quiet Boot	When this option is <b>Enabled</b> , it displays the OEM Logo instead of POST messages. When Disabled, it displays normal POST messages.
AddOn ROM Display Mode	This option sets the display mode for Option ROM. It can be set as either <b>Force BIOS</b> or Keep Current.
Bootup Num-Lock	This option selects the power-on state for the Numlock. It can be set to either <b>On</b> or Off.
PS/2 Mouse Support	Use this option to select support for the PS/2 mouse. Options include <b>Auto</b> , Enabled or Disabled.
Wait for 'F1' If Error	This option sets the system to wait for the F1 key to be pressed if an error occurs. Options include <b>Enabled</b> or Disabled.
Hit 'DEL' Message Display	This option displays the message "Press DEL to run Setup in Post" when enabled. Options include <b>Enabled</b> or Disabled.
Interrupt 19 Capture	When <b>Enabled</b> , this option allows the system's option ROMs to trap interrupt 19.
Watch Dog Function	This option allows the system to restart when it is not active more than 5 minutes. Options include Enabled or <b>Disabled</b> .
Power Button Function	This sets the power button function to either <b>Instant Off</b> or 4 Second Override.
Restore on AC Power Loss	This option allows you to specify the action the system will take when there is an AC power loss. Options include <b>Power-Off</b> , Power-On or Last State.

## Processor & Clock Options

The menu options in the PROCESSOR & CLOCK OPTIONS submenu and their descriptions are shown in [Table 5-2](#).

**Table 5-2. Processor & Clock Options Submenu**

Menu Option	Description
CPU Settings (Static)	This menu displays static information for each CPU in the system. It includes CPU Manufacturer, Chip information, Revision, Speed, Cache L1, Cache L2, Cache L3, 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 it for testing purpose. Options include <b>Disabled</b> and Enabled.
Microcode Update	This option allows you to <b>enable</b> or disable microcode updating for the system.
Secure Virtual Machine Mode	This option allows you to <b>enable</b> or disable Secure Virtual Machine Mode (SVM)
PowerNow	This option allows you to <b>enable</b> or disable the generation of ACPI _PPC, _PPS, and _PCT objects.
PowerCap	This option can decide the highest performance P-state in the OS. Options include <b>P-state 0</b> , P-state 1, P-state 2, P-state 3 and P-state 4.
ACPI SRAT Table	This option <b>enables</b> or disables the building of the ACPI SRAT Table.
CPU Down Core	This option allows you to specify the Down Core support for the CPU. Options include <b>Disabled</b> , 2 cores, 4 cores, 6 cores, 8 cores and 10 cores.
C1E Support	This option allows you to disable or <b>enable</b> C1E support in your system.
Clock Spread Spectrum	This setting allows you to <b>disable</b> or enable clock spread spectrum modulation in your system.

## Advanced Chipset Control

The menu options in the Advanced Chipset Control submenu and their descriptions are shown in [Table 5-3](#).

**Table 5-3. Advanced Chipset Control Submenu**

Menu Option	Description
Chipset Version Information	This static information is provided for the chipset CIMx version.
▶ NorthBridge Configuration	This submenu contains the following submenus and options for NorthBridge Configuration.
▶ Memory Configuration	This submenu contains the following options for Memory Configuration.
Bank Interleaving	This option enables Bank Memory Interleaving. Options include <b>Auto</b> and <b>Disabled</b> .
Node Interleaving	This option enables Node Memory Interleaving. Options include <b>Auto</b> and <b>Disabled</b> .

Table 5-3. Advanced Chipset Control Submenu

Menu Option	Description
Channel Interleaving	This option enables Channel Interleaving. Options include <b>Auto</b> and Disabled.
CS Sparing Enable	This option reserves a spare memory rank in each node. Options include Enabled and <b>Disabled</b> .
Bank Swizzle Mode	This option <b>enables</b> or disables bank swizzle mode.
► ECC Configuration	This submenu contains the following options for ECC Configuration.
ECC Mode	This option sets the level of ECC protection. Setting the option to 'Super' ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8 hours. If you set this option to 'User' then you may further set the DRAM ECC Enable option manually. Options include Disabled, <b>Basic</b> , Good, Super, Max and User.
DRAM ECC Enable	This option is only available for manual setting if the ECC Mode option above is set to 'User". This option allows hardware to report and correct memory errors automatically, maintaining system integrity. Options include <b>Enabled</b> or Disabled.
► DRAM Timing Configuration	This submenu contains the following options for DRAM Timing Configuration.
DRAM Timing Configuration	This option allows you to set the DRAM Timing configuration as <b>Auto</b> or Manual.
IOMMU	This option enables or <b>disables</b> the IOMMU setting.
Memory Timing Parameters	This option selects which node's timing parameters to display. Options include <b>CPU Node 0</b> or CPU Node 3.
Memory Information	Static memory information is also displayed in this submenu that includes Memory CLK, CAS Latency (Tcl), RAS/CAS Delay (Trcd), Row Precharge Time (Trp), Min Active RAS (Tras), RAS/RAS Delay (Trrd), Row Cycle (Trc), Read to Precharge (Trtp), Write Recover Time (Twr).and Memory Type.
► SouthBridge Configuration	This submenu contains the following submenus and options for SouthBridge Configuration.
OHCI HC and EHCI HC Bus Settings	These settings allow to <b>enable</b> or disable the various OHCI or EHCI HC bus settings.
USB 2.0 Controller Mode	This option allows you to configure the USB 2.0 controller in HiSpeed (480Mbps) or Full Speed (12Mbps) mode. Options include <b>Enabled</b> or Disabled.
Legacy USB Support	This option enables support for legacy USB devices. Auto disables legacy support if no USB devices are connected. Options include <b>Auto</b> , Enabled or Disabled.

## IDE Configuration

The menu options in the IDE Configuration submenu and their descriptions are shown in [Table 5-4](#)

**Table 5-4. IDE Configuration Submenu**

Menu Option	Description
OnChip SATA Channel	This option <b>enables</b> or disables the on-chip SATA channel.
OnChip SATA Type	This option specifies the on-chip SATA type. Options include <b>Native IDE</b> , 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 using your RAID setup. Options are either Adaptec or <b>DotHill</b> .
SATA IDE Combined Mode	This option <b>enables</b> or disables SATA IDE Combined Mode in your system.
PATA Channel Config	This option specifies the PATA Channel configuration. You may specify either <b>SATA as Primary</b> or SATA as Secondary as options.
►Primary/Secondary/Third/Fourth Master/Slave submenus	These submenus are specifying options for each installed Master/Slave drive in the system. Their common options are described below.
Device Information	Static device information is shown at the top of this submenu for Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA and S.M.A.R.T information.
Type	Use this option to select the type of device connected to the system. Options include Not Installed, <b>Auto</b> , CD/DVD and ARMD.
LBA/Large Mode	LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are Disabled and <b>Auto</b> .
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 <b>Auto</b> 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 <b>Auto</b> , 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.

Table 5-4. IDE Configuration Submenu (Continued)

Menu Option	Description
DMA Mode	Selects the DMA Mode. Options are <b>Auto</b> , SWDMA0, SWDMA1, SWDMA2, MWDMA0, MDWDMA1, MWDMA2, UDMA0, UDMA1, UDMA2, UDMA3, UDMA4, UDMA5, and UDMA6. (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 <b>Auto</b> .
32Bit Data Transfer	Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to deactivate the function. The options are <b>Enabled</b> and Disabled.
IDE Detect Time Out	Use the +/- keys to adjust and select the time out for detecting ATA/ATAPI devices. The default value is <b>35</b> .

## PCI/PnP Configuration

The menu options in the PCI/PNP CONFIGURATION submenu and their descriptions are shown in [Table 5-5](#).

Table 5-5. PCI/PnP Configuration Submenu

Menu Option	Description
Clear NVRAM	Select YES to clear NVRAM during boot-up. The options are YES and <b>No</b> .
Plug & Play OS	Select YES to allow the OS to configure Plug & Play devices. <b>NOTE:</b> Selecting YES is not required for system boot if your system has an OS that supports Plug & Play. Select <b>No</b> 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, <b>64</b> , 96, 128, 160, 192, 224 and 248.
PCI IDE BusMaster	When enabled, this allows BIOS to use PCI busmastering for reading/writing to IDE drives. Options include <b>Enabled</b> and Disabled.
ROM Scan Ordering	This setting determines which kind of option ROM activates prior to another. Options include <b>Onboard First</b> and Addon First.
PCIE X16 Slot 1	This option <b>enables</b> or disables slot OPROM.
Onboard LAN Option ROM Select	This setting allows you to select the onboard LAN option ROM for iSCSI or <b>PXE</b> . Note: You must enable ONLY LAN1 when the iSCSI support option is specified.
Load Onboard LAN 1 Option ROM	This option allows you to enable or <b>disable</b> the onboard LAN 1 option ROM.
Load Onboard LAN 2 Option ROM	This option allows you to enable or <b>disable</b> the onboard LAN 2 option ROM.
Primary Video Controller	This option specifies the primary video controller for <b>Onboard VGA</b> or Other.

## Super IO Device Configuration

The menu options in the SUPER IO CONFIGURATION submenu and their descriptions are shown in [Table 5-6](#).

**Table 5-6. Super IO Configuration Submenu**

Menu Option	Description
Serial Port1 Address	<p>This option specifies the base I/O port address and Interrupt Request address of serial port 1. The options are DISABLED, <b>3F8/IRQ4</b>, 3E8/IRQ4 and 2E8/IRQ3.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address.</li> </ul>
Serial Port2 Address	<p>This option specifies the base I/O port address and Interrupt Request address of serial port 2. The options are DISABLED, <b>2F8/IRQ3</b>, 3E8/IRQ4 and 2E8/IRQ3. 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.</p> <p>Select 2F8/IRQ3 to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address.</p>
Serial Port 2 Attribute	<p>This option can set COM 2 as a normal serial port or virtual COM for SOL. Options are COM or <b>SOL</b>.</p>

## Remote Access Configuration

The menu options in the REMOTE ACCESS CONFIGURATION submenu and their descriptions are shown in [Table 5-7](#).

**Table 5-7. Remote Access Configuration Submenu**

Menu Option	Description
Remote Access	Allows you to <b>Enable</b> or Disable remote access. If enabled, the settings below will appear.
Serial Port Number	Selects the serial port to use for console redirection. Options are COM1 and <b>COM2*</b>
Serial Port Mode	Selects the serial port settings to use. Options are ( <b>115200 8, n, 1</b> ), (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 <b>None</b> , 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 <b>Always</b> (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: <b>ANSI</b> , VT100 and VT-UTF8.



**Table 5-7. Remote Access Configuration Submenu (Continued)**

Menu Option	Description
VT-UTF8 Combo Key Support	Allows you to <b>Enable</b> or <b>DISABLE</b> 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 <b>No Delay</b> , 1 SEC, 2 SECS and 4 SECS.

## Hardware Health Configuration

The menu options in the **HARDWARE HEALTH CONFIGURATION** submenu and their descriptions are shown in [Table 5-8](#).

**Table 5-8. Hardware Health Configuration Submenu**

Menu Option	Description
CPU Overheat Alarm	This option lets you specify the CPU Overheat Alarm to either <b>The Early Alarm</b> or <b>The Default Alarm</b> .
CPU Information	Static CPU health information is shown in this submenu. The following information is shown: CPU 1 Temperature, CPU Temperature, NB Temperature, System Temperature, CPU1 Vcore, CPU2 Vcore, CPU1 Mem VTT, CPU2 Mem VTT, CPU1 Mem, CPU2 Mem, 1.1V, 5V, 5VSB, +12V, 3.3Vcc and 3.3VSB.

## ACPI Configuration

The menu options in the **ACPI CONFIGURATION** submenu and their descriptions are shown in [Table 5-9](#).

**Table 5-9. ACPI Configuration Submenu**

Menu Option	Description
ACPI Aware O/S	This option enables or disables ACPI support for the operating system. Options are <b>Yes</b> or <b>No</b> .
ACPI APIC support	Use this setting to include the ACPI APIC table pointer to the RSDT pointer list. Options are <b>Enabled</b> and <b>Disabled</b> .
Headless Mode	This setting <b>Enables</b> or <b>Disables</b> the Headless operation mode through ACPI.
ACPI Version Features	This option enables RSDP pointers to the 64-bit Fixed System Description Table and specifies the ACPI Version. Options are ACPI v1.0, <b>ACPI v2.0</b> and ACPI v3.0.

## IPMI Configuration

The menu options in the IPMI CONFIGURATION submenu and their descriptions are shown in [Table 5-10](#).

**Table 5-10. IPMI Configuration Submenu**

Menu Option	Description
IPMI Information Display (Static)	This static display provides information for the Status of BMC and IPMI Firmware Revision.
▶ View BMC System Event Log	This sub-menu allows you to view all events in the BMC Event Log. It will take a maximum of 15 seconds to read all BMC SEL records.
SEL Entry Number	Use the +/- keys to traverse the BMC Event Log.
Clear BMC System Event Log	Use this option to clear all events in the BMC System Event Log.
▶ Set LAN Configuration	This is the input for the SET LAN Configuration command. See IPMI 1.5 Specification Table 19.1 for details. <b>NOTE:</b> Each question in this sub-menu may take a considerable amount of time to complete.
▶ IP Address	Use this sub-menu for IP Address configuration.
IP Address Source	This setting allows you to specify either a <b>DHCP</b> or Static IP Address Source. If you select Static for the IP Address Source, then the IP Address setting becomes active.
IP Address	This setting allows you to set the IP Address for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current IP Address is statically displayed below.
▶ Subnet Mask	Use this sub-menu for Subnet Mask configuration.
Subnet Mask	This setting allows you to set the Subnet Mask for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current Subnet Mask is statically displayed below.
▶ Gateway Address	Use this sub-menu for Gateway Address configuration.
Gateway Address	This setting allows you to set the Gateway Address for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current Gateway Address is statically displayed below.
▶ MAC Address	Use this sub-menu for MAC Address configuration.
MAC Address	This setting allows you to set the IP Address for your LAN Configuration in hex format of XX.XX.XX.XX.XX.XX. The current MAC Address is statically displayed below.

## Event Log Configuration

The menu options in the EVENT LOG CONFIGURATION submenu and their descriptions are shown in [Table 5-11](#).

**Table 5-11. Event Log Configuration Submenu**

Menu Option	Description
View Event Log	Highlight this item and press <ENTER> to view the contents of the event log.
Mark All Events as Read	Highlight this item and press <ENTER> to mark all events as read.
Clear Event Log	Select Yes and press <ENTER> to clear all event logs. The options are YES and NO to verify.
SR56x0 (RD890S) PCIE Error Log	This option allows you to enable or disable the SR56x0 (RD890S) PCIE error log. Options include Yes or <b>No</b> .

## 5-4 Security Menu

The menu options for the SECURITY menu are shown in [Table 5-12](#).

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

**Table 5-12. Security Menu**

Menu Option	Description
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	<p>This option is near the bottom of the SECURITY SETUP screen. The options are ENABLED and <b>Disabled</b>.</p> <ul style="list-style-type: none"> <li>• Select DISABLED to deactivate the Boot Sector Virus Protection.</li> <li>• Select ENABLED to enable boot sector protection.</li> </ul> <p>When ENABLED, the AMI BIOS displays a warning when any program (or virus) issues a <i>Disk Format</i> command or attempts to write to the boot sector of the hard disk drive.</p>

## 5-5 Boot Menu

The menu options for the BOOT menu are shown in [Table 5-13](#).

**Table 5-13. Boot Menu**

Menu Option	Description
► Boot Device Priority	Use this sub-menu to specify the boot device priority sequence for devices installed in your system. .
1st ~ Boot Devices	These settings specify the boot sequence from the available devices installed in your system. A device enclosed in parenthesis indicates that it has been disabled in the corresponding type menu. Options for all three of these settings are available boot devices and Disabled. The devices to set are: 1ST BOOT DEVICE, 2ND BOOT DEVICE, 3RD BOOT DEVICE, 4TH BOOT DEVICE and so on.
► Removable Drives	This sub-menu specifies the boot device priority sequence from the available removable drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available removable drive devices installed in your system. The devices to set are: 1ST BOOT DEVICE, 2ND BOOT DEVICE, 3RD BOOT DEVICE, 4TH BOOT DEVICE and so on.
► Hard Disk Drives	This sub-menu specifies the boot device priority sequence from the available hard drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available hard disk drives devices installed in your system. The devices to set are: 1ST BOOT DEVICE, 2ND BOOT DEVICE, 3RD BOOT DEVICE, 4TH BOOT DEVICE and so on.
► CD/DVD Drives	This sub-menu specifies the boot device priority sequence from the available CD/DVD drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available CD/DVD drive devices installed in your system. The devices to set are: 1ST BOOT DEVICE, 2ND BOOT DEVICE, 3RD BOOT DEVICE, 4TH BOOT DEVICE and so on.
► USB Drives	This sub-menu specifies the boot device priority sequence from the available USB drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available USB drive devices installed in your system. The devices to set are: 1ST BOOT DEVICE, 2ND BOOT DEVICE, 3RD BOOT DEVICE, 4TH BOOT DEVICE and so on.
► Network Drives	This sub-menu specifies the boot device priority sequence from the available Network drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available Network drive devices installed in your system. The devices to set are: 1ST BOOT DEVICE, 2ND BOOT DEVICE, 3RD BOOT DEVICE, 4TH BOOT DEVICE and so on.
Retry Boot Devices	This option allows the system to retry boot devices. Options are Enabled or <b>Disabled</b> .

## 5-6 Exit Menu

Select the EXIT tab from AMI BIOS SETUP UTILITY screen to enter the EXIT BIOS SETUP screen. The options for the EXIT menu are shown in [Table 5-14](#). You may also additionally press <Esc> to exit without saving or <F10> to save your settings and exit.

**Table 5-14. Exit Menu**

Menu Option	Description
Save Changes and Exit	When you have completed the system configuration changes, select this option to leave BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select SAVE CHANGES AND EXIT from the EXIT menu and press <ENTER>.
Discard Changes and Exit	Select this option to quit BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select DISCARD CHANGES AND EXIT from the EXIT menu and press <ENTER>.
Discard Changes	Select this option and press <ENTER> to discard all the changes and return to AMI BIOS Utility Program.
Load Optimal Defaults	To set this feature, select LOAD OPTIMAL DEFAULTS from the EXIT menu and press <ENTER>. Then Select OK to allow BIOS to automatically load the OPTIMAL DEFAULTS as the BIOS Settings. The OPTIMAL SETTINGS are designed for maximum system performance, but may not work best for all computer applications.
Load Fail-Safe Defaults	To set this feature, select LOAD FAIL-SAFE DEFAULTS from the EXIT menu and press <ENTER>. The FAIL-SAFE settings are designed for maximum system stability, but not maximum performance.

## Notes

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# Appendix A

## BIOS POST Codes

### A-1 BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

**Table A-1. BIOS POST Messages**

BIOS Message	Description
Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
Stuck key	Stuck key on keyboard.
Keyboard error	Keyboard not working.
Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
Keyboard locked - Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
Shadow Ram Failed at offset: nnnn	Shadow RAM failed at offset <b>nnnn</b> of the 64k block at which the error was detected.
System RAM Failed at offset: nnnn	System RAM failed at offset <b>nnnn</b> of in the 64k block at which the error was detected.
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly at offset <b>nnnn</b> .
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
System timer error	The timer test failed. Requires repair of system board.
Real time clock error	Real-Time Clock fails BIOS hardware test. May require board repair.
Check date and time settings	BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

**Table A-1. BIOS POST Messages (Continued)**

BIOS Message	Description
Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of <b>wait states</b> , improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.
Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
Diskette drive A error Diskette drive B error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.
System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
CPU ID:	CPU socket number for Multi-Processor error.
EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
DMA Test Failed	ServerBIOS2 test error: Cannot write to extended <b>DMA</b> (Direct Memory Access) registers.
Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).
Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified <b>device</b> .
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified <b>device</b> .
CD ROM Drive	CD ROM Drive identified.
Entering SETUP...	Starting Setup program
Failing Bits: nnnn	The hex number <b>nnnn</b> is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk <b>n</b> (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.



**Table A-1. BIOS POST Messages (Continued)**

BIOS Message	Description
nxxx kB Extended RAM Passed	Where <b>xxxx</b> is the amount of RAM in kilobytes successfully tested.
nxxx Cache SRAM Passed	Where <b>xxxx</b> is the amount of system cache in kilobytes successfully tested.
xxxx kB Shadow RAM Passed	Where <b>xxxx</b> is the amount of shadow RAM in kilobytes successfully tested.
xxxx kB System RAM Passed	Where <b>xxxx</b> is the amount of system RAM in kilobytes successfully tested.
One or more I2O Block Storage Devices were excluded from the Setup Boot Menu	There was not enough room in the IPL table to display all installed I2O block-storage devices.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nxxx	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays <b>????</b> . Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nxxx	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays <b>????</b> .
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an <b>Option ROM</b> , i.e., an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST. Can be turned off in Setup.
PS/2 Mouse:	PS/2 mouse identified.
Run the I2O Configuration Utility	One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: nxxx	Displays the address <b>xxxx</b> of the upper limit of <b>Upper Memory Blocks</b> , indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

## A-2 BIOS POST Codes

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

### Recoverable POST Errors

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

- **One long and two short beeps** – video configuration error
- **One repetitive long beep** – no memory detected

### Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to *port 80h*, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to *port 80h*.

### Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution in table [Table A-2](#).

**Table A-2. Uncompressed Initialization Error Codes**

Post 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.

## Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution in [Table A-3](#).

**Table A-3. Bootblock Recovery Error Codes**

Post 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.
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.
F5h	Next, disabling internal cache memory.
FBh	Next, detecting the type of flash ROM.

**Table A-3. Bootblock Recovery Error Codes**

Post Code	Description
FCh	Next, erasing the flash ROM.
FDh	Next, programming the flash ROM.
FFh	Flash ROM programming was successful. Next, restarting the system BIOS.

***Uncompressed Initialization Codes***

The following runtime checkpoint codes are listed in order of execution in [Table A-4](#). These codes are uncompressed in F0000h shadow RAM.

**Table A-4. Uncompressed Initialization Error Codes**

Post 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.

**Table A-4. Uncompressed Initialization Error Codes**

Post Code	Description
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.
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 <DEL> message next.
3Bh	The Hit <DEL> message is displayed. The protected mode memory test is about to start.

**Table A-4. Uncompressed Initialization Error Codes**

<b>Post Code</b>	<b>Description</b>
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.
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 <DEL> message next.

**Table A-4. Uncompressed Initialization Error Codes**

Post Code	Description
59h	The Hit <DEL> 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.

**Table A-4. Uncompressed Initialization Error Codes**

<b>Post Code</b>	<b>Description</b>
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.
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.



**Table A-4. Uncompressed Initialization Error Codes**

Post Code	Description
B1h	Copying any code to specific areas.
00h	Code copying to specific areas is done. Passing control to INT 19h boot loader next.

## Notes

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