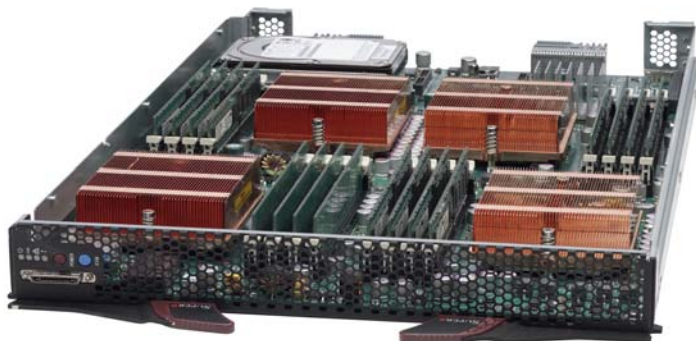


# SUPERMICRO<sup>®</sup>

## **SBA-7141M-T Blade Module**



## **User's Manual**

Revision 1.0d

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Manual Revision 1.0d

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 Supermicro's SBA-7141M-T 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 the SBA-7141M-T Blade Module and describes its main features.

### Chapter 2: Standardized Warning Statements

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SBA-7141M-T Blade Module.

### Chapter 3: Setup and Installation

Refer to this chapter for details on installing the SBA-7141M-T Blade Module into the SuperBladeSuperBlade 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 the SBA-7141M-T 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 the SBA-7141M-T Blade Module.

### Appendix A: BIOS POST Codes

BIOS POST Codes for the SBA-7141M-T Blade Module are explained in this appendix.

## Notes

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# Chapter 1

## Introduction

### 1-1 Overview

The SBA-7141M-T 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-7141M-T 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/)).

### 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 following optional add-on cards may be ordered for your blade module:

- Blade IPMI Add-on Card: AOC-SIMBL
- Mezzanine Cards (with Infiniband Switch): AOC-IBH-XDD, AOC-IBH-XDS or AOC-IBH-002

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).

## 1-3 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.

## 1-4 Blade Module Features

[Table 1-1](#) lists the main features of the SBA-7141M-T blade module. See the proceeding section for components typically included in a blade system and other optional components. Specific details on the SBA-7141M-T blade module is found in [Chapter 4: "Blade Module Features" on page 4-1](#).

**Table 1-1. SBA-7141M-T Blade Specification Features**

Mainboard	BHQME (proprietary form factor) Chassis Dimensions (HxWxD): 11.32" x 1.67" x 18.5"
Processors	Supports four AMD Opteron 8300/8200 series processors. Please refer to our web site for a complete listing of supported processors.
FSB Speed	1000 MHz Hyper Transport front side (system) bus speed
Chipset	Nvidia MCP55 Pro
Graphics Controller	Onboard ATI ES1000 graphics chip with 16MB of SDRAM
BIOS	8 Mb AMI <sup>®</sup> Flash ROM
Memory Capacity	Eight 240-pin DIMM sockets supporting up to 128 GB of ECC Registered DDR2-800/667/533 SDRAM.
SATA Controller	Nvidia MCP55 Pro on-chip controller for two Serial ATA drives
Hard Drive Bays	One Internal 2.5" SATA hard disk drive

### Processors

The SBA-7141M-T blade module supports up to four AMD Opteron 8300/8200 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-7141M-T blade module are found in [Chapter 3: "Setup and Installation" on page 3-1](#).

## Memory

The BHQME supports single or dual-channel, registered ECC DDR2-800/667/533 SDRAM in sixteen DIMM sockets. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots. Populating two adjacent slots at a time with memory modules of the same size and type will result in interleaved (128-bit) memory, which is faster than non-interleaved (64-bit) memory.

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-7141M-T blade module are found in [Chapter 3: "Setup and Installation" on page 3-1](#).

## Storage

The SBA-7141M-T blade module accommodates one internal 2.5" SATA hard disk drive, which is mounted directly on the blade's mainboard. See [Chapter 3: "Setup and Installation" on page 3-1](#) for storage installation details.

## Density

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

## 1-5 Contacting Supermicro

### Headquarters

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

Technical Support:

Email: 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，必須將系統完全斷電，並移除電源線。

#### 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 للهيكل 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 لتثبيت واستبدال أو خدمة هذا الجهاز  
경고!

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

**Waarschuwing**

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

**Restricted Area**



**Warning!**

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

**アクセス制限区域**

このユニットは、アクセス制限区域に設置されることを想定しています。

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

**警告**

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

**警告**

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

### אזור עם גישה מוגבלת

#### אזהרה!

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

تم تخصيص هذه الوحدة 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 ontplofingsgevaar indien de batterij verkeerd vervangen wordt. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

## Redundant Power Supplies



### Warning!

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

### 冗長電源裝置

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。

修理する際にはご注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上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.

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عند تركيب الجهاز يجب استخدام كابلات التوصيل، والكابلات الكهربائية

ومحولات التيار المتردد

التي . أن استخدام أي كابلات ومحولات أخرى يتسبب في حدوث عطل أو حريق.

تم توفيرها لك مع المنتج

الأجهزة الكهربائية ومواد قانون السلامة يحظر استخدام الكابلات UL أو CSA

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لأي أجهزة كهربائية أخرى غير المنتجات المعينة من قبل Supermicro

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**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-7141M-T 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 an installed SIMBL add-on card 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).
- Use IPMIview or a browser connected to the SIMBL card attached to the blade to power down.
- Use IPMItool to use a Command Line Interface (CLI) to the SIMBL (if you have Operator or Admin privileges).

#### 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

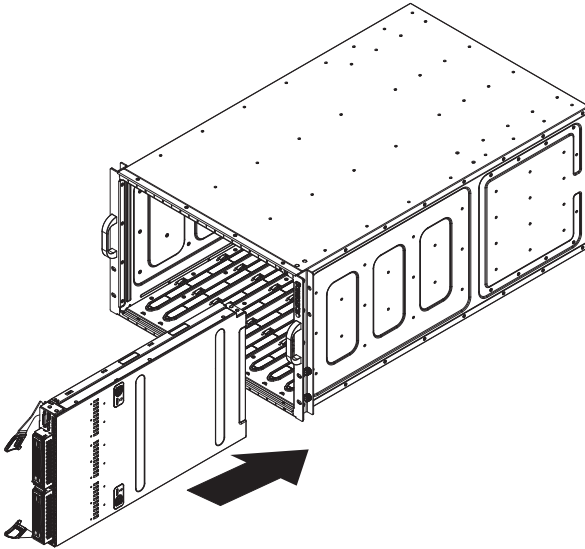
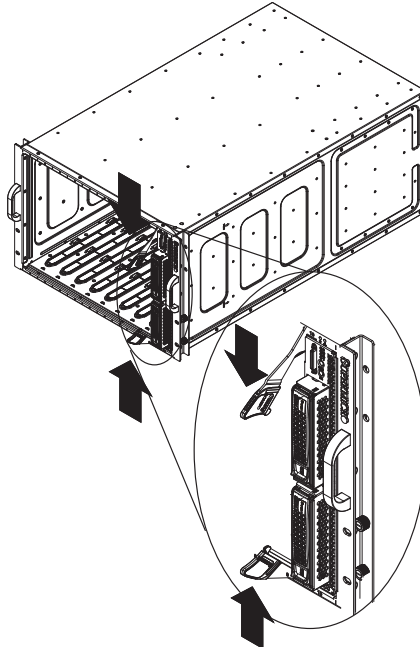


Figure 3-2. Locking the Blade into Position



### 3-3 Processor Installation

One or two processors may be installed to the mainboard of each blade unit. 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 four 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.

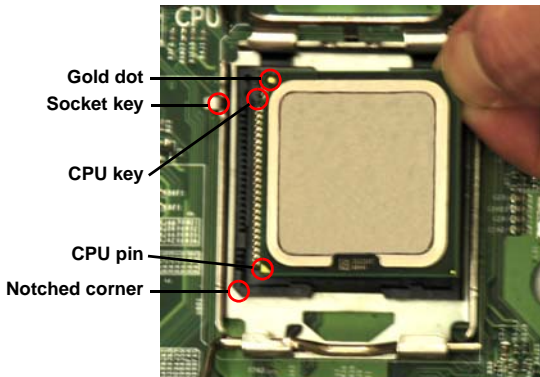
**NOTE:** Be careful not to damage the pins protruding from the CPU socket.

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 two diagonal screws until snug, then the other two screws.
9. When all four screws are snug, tighten them all 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 Processor in a Socket

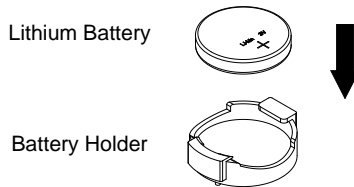


### 3-4 Onboard Battery Installation

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

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 due to compatibility issues.**

See below for details 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 has sixteen memory slots. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots. Maximum memory is 128 GB DDR2-800/667/533 registered ECC SDRAM for four CPU systems.

Populating two slots at a time with memory modules of the same size and of the same type will result in dual-channel, interleaved memory, which is faster than single-channel, non-interleaved memory. In this case it is better to spread pairs of DIMMs across all memory banks with a CPU installed than to fill up one CPU memory bank while leaving another empty.

For example, if you were to install eight DIMMs in a quad-CPU configuration, you should install two in the CPU1 DIMM slots (slots 1A and 1B), two in the CPU2 DIMM slots, two in the CPU3 DIMM slots and two in the CPU4 DIMM slots rather than four in any two CPU DIMM slots. If you install four more, install two in the remaining CPU1 DIMM slots and two in the remaining CPU2 DIMM slots, etc. This balances the load over all CPUs to optimize performance. In a dual-CPU configuration, memory can only be installed in the banks associated with CPU#1 and CPU#2.

See [Table 3-1](#) and [Figure 3-5](#) for DIMM slot number information.

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

**NOTE:** Each processor has its own built-in memory controller, consequently each CPU has a four-slot memory bank associated with it. Memory installed into a bank with no CPU present cannot be accessed.

**WARNING:** It is highly recommended that you remove the power cord from the system before installing or changing any memory modules.

Memory modules with a size of 512 MB, 1 GB, 2 GB, 4GB and 8 GB are supported.

**Table 3-1. Populating 16 Memory Slots and 4 CPUs for Interleaved Operation**

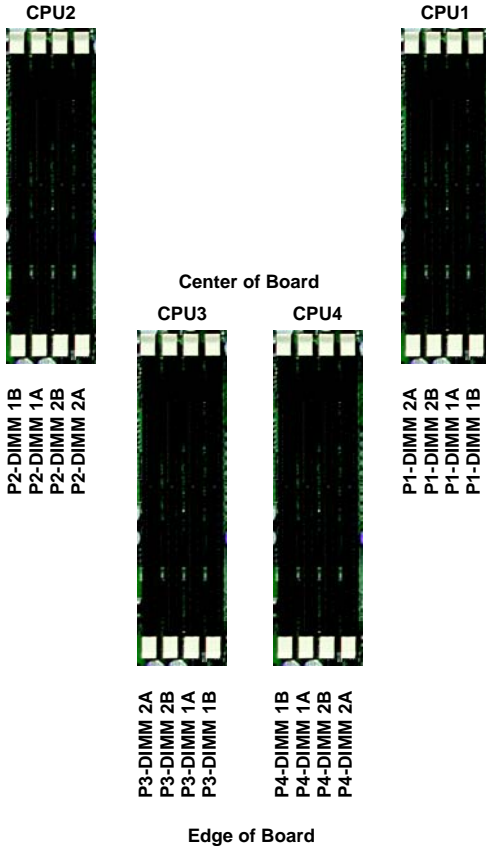
Number of DIMMS	CPU0				CPU1				CPU2				CPU3			
	Channel 0		Channel 1		Channel 0		Channel 1		Channel 0		Channel 1		Channel 0		Channel 1	
	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B
2	X				X											
4	X				X				X				X			
6	X	X			X	X			X				X			
8	X	X			X	X			X	X			X	X		
10	X	X	X		X	X	X		X	X			X	X		
12	X	X	X		X	X	X		X	X	X		X	X	X	



**Table 3-1. Populating 16 Memory Slots and 4 CPUs for Interleaved Operation (Continued)**

Number of DIMMS	CPU0				CPU1				CPU2				CPU3			
	Channel 0		Channel 1		Channel 0		Channel 1		Channel 0		Channel 1		Channel 0		Channel 1	
	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B	1A	1B	2A	2B
14	X	X	X	X	X	X	X	X	X	X	X		X	X	X	
16	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

**Figure 3-5. 16-slot DIMM Numbering**



## DIMM Installation

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

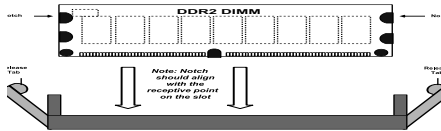
### Installing Memory Modules

1. Power down the blade module.
2. Remove the blade from the enclosure and the cover from the blade.
3. Remove the air shroud that covers the DIMM slots.
4. Insert each DIMM vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see [Figure 3-6](#)).

Insert first into the 1A slot(s), then the 1B slot(s), then the 2A slot(s) and 2B slot(s). See support information below.

**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.



5. 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).
6. Replace the air shroud and the blade cover and install the blade module back into the enclosure.
7. Power up the blade unit.

## 3-6 Hard Disk Drive Installation

The SBA-7141M-T blade unit accommodates one internal 2.5" SATA hard disk drive, which is mounted directly on the blade's mainboard.

## 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), *IPMITool* 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*, *IPMITool* 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**

The SBA-7141M-T blade module accommodates only one hard drive, therefore this blade module cannot be configured or setup for a RAID configuration.



## Notes

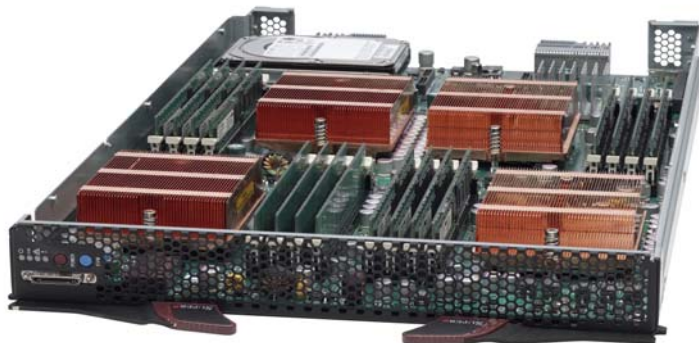
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# Chapter 4

## Blade Module Features

Figure 4-1. SBA-7141M-T Blade Unit Front View



This chapter describes the SBA-7141M-T 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-7141M-T Blade Unit Features

Feature	Description
Processors	Supports four AMD Opteron 8300/8200 series processors
Memory	Supports up to 128 GB of ECC Registered DDR2-800/667/533 DIMMs in four 8-DIMM slot banks
Storage	One Internal 2.5" SATA hard disk drive
Ports	KVM port (1)
Features	Onboard ATI ES1000 graphics chip with 16MB of SDRAM, IPMI 2.0, ATA/100, Plug and Play, APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, Real Time Clock, Watch Dog,
Power Consumption	Base Power Draw (~35W) / Power per CPU (60W/95W/135W) / 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

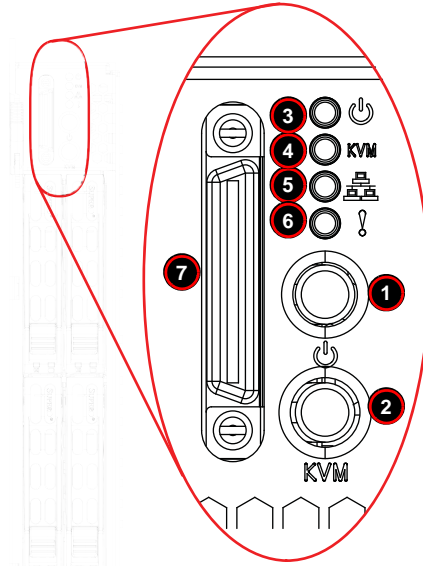


Table 4-2. Blade Control Panel

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 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) automatically turns on and picks up 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-7141M-T blade unit is a proprietary design, which is based on the Nvidia MCP55 Pro chipset. See [Figure 4-4](#) for a block diagram of this chipset, [Figure 4-3](#) for a view of the BHQME mainboard and [Figure 4-5](#) for an exploded view diagram of the blade unit.

Figure 4-3. BHQME Mainboard

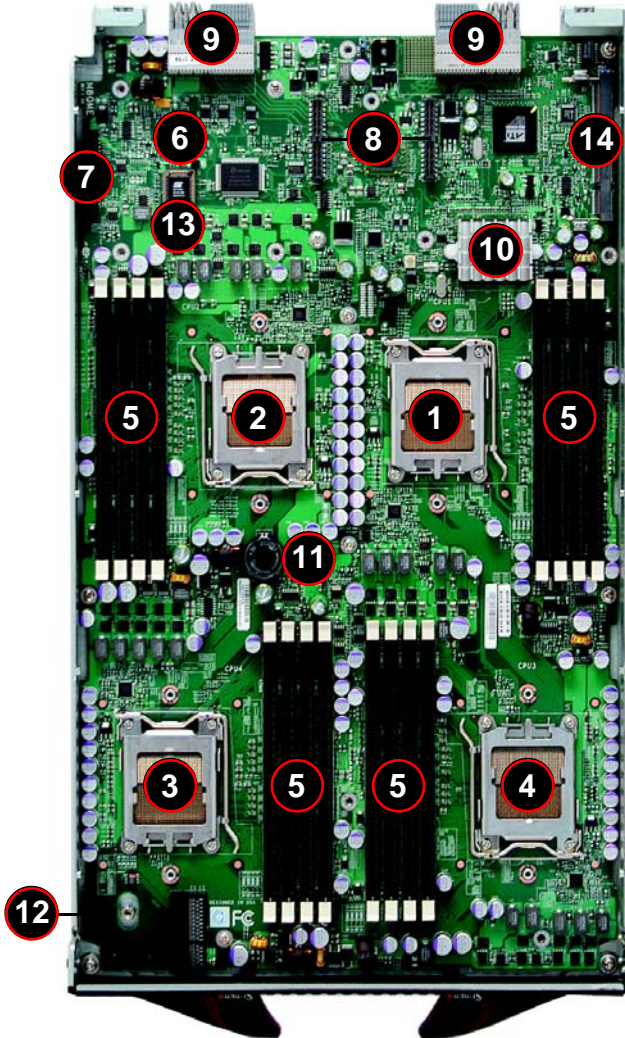
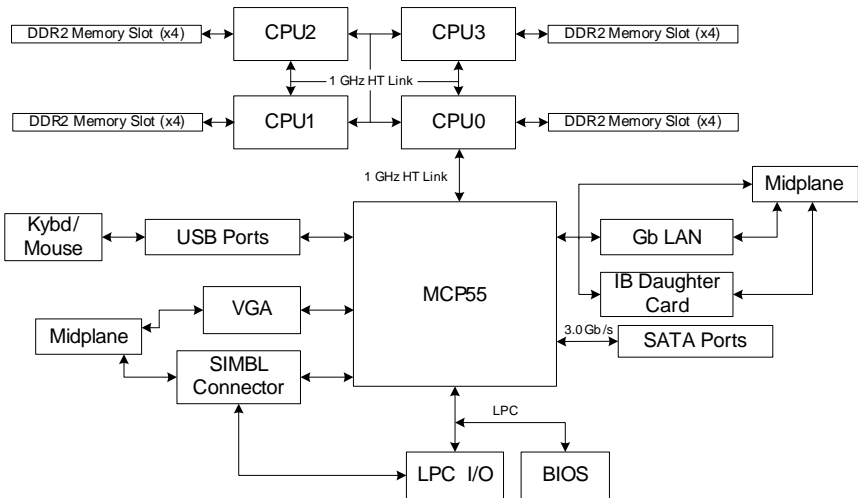


Table 4-4. BQME Mainboard Layout

Item	Description
1	CPU Socket CPU1
2	CPU Socket CPU2
3	CPU Socket CPU3
4	CPU Socket CPU4
5	DIMM Slots (see <a href="#">Figure 3-5: "16-slot DIMM Numbering" on page 3-7</a> for details)
6	Space for 2.5" SATA Hard Drive
7	SATA Connector
8	InfiniBand Connectors (for InfiniBand cards)
9	Gbx Connectors (for power and logic to backplane)
10	Nvidia MCP55 Pro chip
11	Onboard Battery
12	KVM Module
13	BIOS Chip
14	SIMBL IPMI Connector

Figure 4-4. NVidia MCP55 Pro Chipset: Block Diagram for SBA-7141M-T



## 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 [Section : 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-7141M-T Blade Module

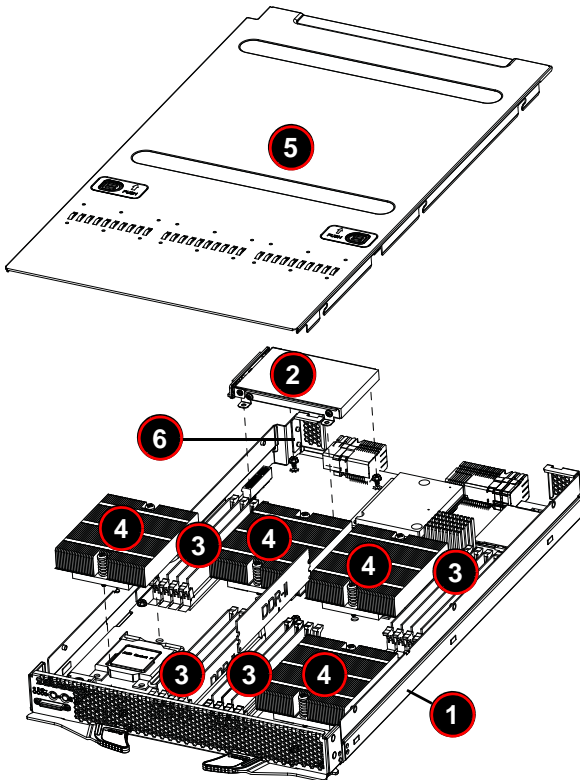


Table 4-5. Main Components of SBA-7141M-T Blade Module

Item	Description
1	Blade Unit/Module
2	2.5" SATA Hard Drive
3	DIMMs (system memory)
4	CPU Heatsinks (4)
5	Top Cover
6	Backplane

**WARNING:** Properly ground the server before performing any installation procedures to prevent electrical damage to components. Allow components to cool before handling them.

### Memory Support

The BQME supports single or dual-channel, ECC Registered DDR2-800/667/533 SDRAM in sixteen DIMM sockets. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots. Populating two adjacent slots at a time with memory modules of the same size and type will result in interleaved (128-bit) memory, which is faster than non-interleaved (64-bit) memory.

See [Section 3-5](#) for further details on mainboard memory installation.

### Hard Disk Drives

The SBA-7141M-T blade unit can accommodate one internal 2.5" SATA hard disk drive, which is mounted directly on the blade's mainboard.

**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/info/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.

## Notes

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# Chapter 5

## BIOS

### 5-1 Introduction

This document describes the AMI BIOS™ Setup utility for the SBA-7141M-T AMD Blade Module. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

**NOTE:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the <http://www.supermicro.com/products/SuperBlade/module/> web site for further details on BIOS setup and the BIOS menus for your SuperBlade blade module.

#### System BIOS

BIOS stands for Basic Input Output System. The AMI BIOS flash chip stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the blade unit is turned off, a backup battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the blade is powered on it is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot up.

#### How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <DELETE> key at the appropriate time during system boot. (See "[Starting the Setup Utility](#)" below.)

#### Starting the Setup Utility

Normally, the only visible POST (Power-On Self-Test) routine is the memory test. As the memory is being tested, press the <DELETE> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus.

**WARNING:** To prevent possible boot failure, do not shut down or reset the system while updating the BIOS.

## 5-2 BIOS Updates

It may be necessary to update the BIOS used in the blade modules on occasion. However, it is recommended that you not update BIOS if you are not experiencing problems with a blade module.

Updated BIOS files are located on our web site([www.supermicro.com/products/superblade/](http://www.supermicro.com/products/superblade/)). Please check the current BIOS revision and make sure it is newer than your current BIOS before downloading.

There are several methods you may use to upgrade (flash) your BIOS. After downloading the appropriate BIOS file (in a zip file format), follow one of the methods described below to flash the new BIOS.

### Flashing BIOS

Use the procedures below to “Flash” your BIOS with a new update using the KVM dongle, USB ports on the CMM module or by use of a Floppy disk.

#### ***Flashing a BIOS using the KVM Dongle:***

**NOTE:** For this method, you must use a KVM “dongle” cable (CBL-0218L, included with the system).

1. Copy the contents of the zip file to a bootable USB pen drive.
2. Connect the KVM dongle (CBL-0218L) to the KVM connector at the front of the blade you will be flashing the BIOS to.
3. Connect your bootable USB pen drive to one of the two USB slots on the KVM dongle.
4. Boot to the USB pen drive and go to the directory where you saved the contents of the zip file.
5. Type **flash filename.rom** (replace *filename.rom* by the actual ROM file name).

#### ***Flashing a BIOS using the USB Ports on the CMM:***

1. Copy the contents of the zip file to a bootable USB pen drive.
2. Connect your bootable USB pen drive to one of the two USB slots on the CMM (located on the back side of the enclosure).
3. Boot to the USB pen drive and go to the directory where you saved the contents of the zip file.
4. Type **flash filename.rom** (replace *filename.rom* by the actual ROM file name).

#### ***Flashing a BIOS using a Floppy Image File***

**NOTE:** This method must be performed remotely.

1. Copy the image file from the zip file to your desktop.
2. Use the web browser or IPMIView to access your CMM remotely using its IP Address.



3. Go to the VIRTUAL MEDIA menu and select FLOPPY IMAGE UPLOAD.
4. BROWSE or OPEN to locate the \*.img file on your desktop and select it.
5. Press the UPLOAD button and wait a few seconds for the image to upload to the CMM.
6. Once the upload finishes, turn on the blade module and press <DEL> to enter the BIOS setup utility.
7. In the BOOT MENU, bring **USB LS120: PEPPCMM VIRTUAL DISC 1** to the top of the boot priority list.
8. Exit while saving the changes. The blade module will boot to the virtual media (floppy image) **A:\>**.
9. Type **flash filename.rom**.

**NOTE:** Replace *filename.rom* by the actual ROM file name (such as **B7DBE142.rom** for example) in the command.

### 5-3 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:

### 5-4 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.

## 5-5 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 Settings Configuration](#)
- [CPU Configuration](#)
- [PCI/PnP Configuration](#)
- [Super IO Configuration](#)
- [Chipset Configuration](#)
  - [NorthBridge Configuration](#)
  - [SouthBridge/MCP55 Configuration](#)
- [Event Log Configuration](#)
- [PCI Express Configuration](#)
- [Remote Access Configuration](#)
- [System Health Monitor](#)

## BOOT Settings Configuration

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

**Table 5-1. BOOT Settings Configuration Submenu**

Menu Option	Description
Quick Boot	If <b>ENABLED</b> , this option will skip certain tests during POST to reduce the time needed for the system to boot up. The options are <b>Enabled</b> and <b>DISABLED</b> .
Quiet Boot	If <b>Disabled</b> , normal POST messages will be displayed on boot-up. If <b>ENABLED</b> , this display the OEM logo instead of POST messages.
Add-On ROM Display Mode	Set this option to display add-on ROM (read-only memory) messages. The options are <b>Force BIOS</b> and <b>KEEP CURRENT</b> . The default setting is <b>Force BIOS</b> . <ul style="list-style-type: none"> <li>• Select <b>Force BIOS</b> to allow the computer system to force a third party BIOS to display during system boot.</li> <li>• Select <b>KEEP CURRENT</b> to allow the computer system to display the BIOS information during system boot.</li> </ul>
Bootup Num-Lock	Set this value to allow the <b>NUMBER LOCK</b> setting to be modified during boot up. The options are <b>On</b> and <b>OFF</b> .
Wait for 'F1' If Error	Select <b>Enabled</b> to activate the <b>WAIT FOR F1 IF ERROR</b> function. The options are <b>Enabled</b> and <b>DISABLED</b> .
Hit 'DEL' Message Display	Select <b>Enabled</b> to display message to hit the <b>DEL</b> key to enter <b>SETUP</b> . The options are <b>Enabled</b> and <b>DISABLED</b> .
Interrupt 19 Capture	Select <b>Enabled</b> to allow ROMs to trap Interrupt 19. The options are <b>Enabled</b> and <b>DISABLED</b> .
OS Installation	Change this setting if using a 64-bit Linux operating system. The available options are <b>Other</b> and <b>LINUX</b> .
▶ ACPI Configuration	
ACPI Version Features	Use this setting the determine which ACPI version to use. Options are <b>ACPI v1.0</b> , <b>ACPI v2.0</b> and <b>ACPI v3.0</b> .
ACPI APIC Support	Determines whether to include the ACPI APIC table pointer in the RSDT pointer list. The available options are <b>Enabled</b> and <b>DISABLED</b> .
ACPI OEMB Table	Determines whether to include the ACPI APIC table pointer in the RSDT pointer list. The available options are <b>Enabled</b> and <b>DISABLED</b> .
Headless Mode	Use this setting to <b>ENABLE</b> or <b>Disable</b> headless operation mode through ACPI.
MCP55 ACPI HPET Table	Use this setting to either <b>Enable</b> or <b>DISABLE</b> the MCP55 ACPI HPET table.
▶ Power Configuration	
Power Button Mode	Allows the user to change the function of the power button. Options are <b>On/Off</b> and <b>SUSPEND</b> .
Restore on AC Power Loss	This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are <b>POWER OFF</b> , <b>POWER ON</b> and <b>Last State</b> .

**Table 5-1. BOOT Settings Configuration Submenu (Continued)**

Menu Option	Description
Watch Dog Timer	This setting is used to <b>ENABLE</b> or <b>Disable</b> the WATCH DOG TIMER function. It must be used in conjunction with the WATCH DOG jumper.
I2C Switch	<b>Auto</b> or <b>DISABLE</b> the I2C switch.
▶ MPS Configuration	
MPS Revision	This setting allows the user to select the MPS revision level. The options are 1.1 and <b>1.4</b> .
▶ Smbios Configuration	
Smbios Smi Support	This setting allows SMI wrapper support for PnP function 50h-54h. The options are <b>Enabled</b> and <b>DISABLED</b> .

## CPU Configuration

The menu options in the CPU CONFIGURATION submenu and their descriptions are shown in [Table 5-2](#).

**Table 5-2. CPU Configuration Submenu**

Menu Option	Description
GART Error Reporting	This setting is used to <b>Enable</b> or <b>Disable</b> GART error processing.
Microcode Update	This setting is used to <b>Enable</b> or <b>DISABLE</b> microcode updates for Virtual Machine.
Secure Virtual Machine Mode	This setting is used to <b>Enable</b> or <b>DISABLE</b> processor-assisted virtualization.
Power Now	This setting is used to <b>ENABLE</b> or <b>Disable</b> the AMD Power Now feature.
Thermal Throttling	This setting is used to <b>ENABLE</b> or <b>Disable</b> Thermal Throttling.
Power Now	This setting is used to <b>ENABLE</b> or <b>Disable</b> the generation of ACPI _PCC, _PSS, and _PCT objects.
ACPI SRAT Table	<b>Enable</b> or <b>Disable</b> the building of an ACPI SRAT Table.
Thermal Throttling	This setting is used to <b>ENABLE</b> or <b>Disable</b> Thermal Throttling.

## SATA Configuration

The menu options in the FLOPPY/IDE/SATA Configuration submenu and their descriptions are shown in [Table 5-3](#).

**Table 5-3. SATA Configuration Submenu**

Menu Option	Description
Serial ATA 0 Primary Channel	While entering BIOS, it auto detects the presence of IDE devices. This displays the status of auto detection of IDE devices.
Hard Disk Write Protect	Disable/ <b>Enable</b> device write protection. This will be effective only if device is accessed through BIOS.

## PCI/PnP Configuration

The menu options in the PCI/PNP CONFIGURATION submenu and their descriptions are shown in [Table 5-4](#).

**Table 5-4. PCI/PnP Configuration Submenu**

Menu Option	Description
Clear NVRAM	Select <b>Yes</b> to clear NVRAM during boot-up. The options are <b>Yes</b> and <b>No</b> .
Plug & Play OS	Select <b>Yes</b> to allow the OS to configure Plug & Play devices. <b>NOTE:</b> Selecting <b>Yes</b> 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.
Allocate IRQ to PCI VGA	Set this value to allow or restrict the system from giving the VGA adapter card an interrupt address. The options are <b>Yes</b> and <b>No</b> .
Palette Snooping	Select <b>ENABLED</b> to inform the PCI devices that an ISA graphics device is installed in the system in order for the graphics card to function properly. The options are <b>ENABLED</b> and <b>Disabled</b> .
IRQ3/IRQ4/IRQ5/ IRQ7/IRQ9/IRQ10/ IRQ11/IRQ14/IRQ15	This feature specifies the availability of an IRQ to be used by a PCI/PnP device. Select <b>RESERVED</b> for the IRQ to be used by a Legacy ISA device. The options are <b>Available</b> and <b>RESERVED</b> .
DMA Channel 0/ Channel 1/Channel 3/ Channel 5/Channel 6/ Channel 7	Select <b>Available</b> to indicate that a specific DMA channel is available to be used by a PCI/PnP device. Select <b>RESERVED</b> if the DMA channel specified is reserved for a Legacy ISA device. The options are <b>Available</b> and <b>Reserved</b> .
Reserved Memory Size	You may set reserved memory with this setting. The options are <b>Disabled</b> , 16k, 32k and 64k.

## Super IO Configuration

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

**Table 5-5. 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 Mode	<p>This tells the BIOS which mode to select for serial port 2. The options are <b>Normal</b>, IRDA and ASKIR.</p>

## Chipset Configuration

The CHIPSET CONFIGURATION submenu contains two submenus as shown in [Table 5-6](#).

**Table 5-6. Chipset Configuration Submenu**

Menu Option	Description
▶ NorthBridge Configuration	This menu option configures the NorthBridge Chip. See <a href="#">Table 5-7</a> for details.
▶ SouthBridge/MCP55 Configuration	This menu option configures the SouthBridge/MCP55 Chip. See <a href="#">Table 5-8</a> for details.

## NorthBridge Configuration

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

**Table 5-7. NorthBridge Configuration Submenu**

Menu Option	Description
▶ Memory Configuration	
Bank Interleaving	Select <b>Auto</b> to automatically enable interleaving-memory scheme when this function is supported by the processor. The options are <b>Auto</b> and Disabled.
Enable Clock to All DIMMs	Use this setting to enable unused clocks to all DIMMs, even if some DIMM slots are unpopulated. Options are ENABLED and <b>Disabled</b> .
Mem Clk Tristate C3/ALTVID	Use this setting to ENABLE or <b>Disable</b> memory clock tristate during C3 and ALT VID.
Memory Hole Remapping	When ENABLED, this feature enables hardware memory remapping around the memory hole. Options are <b>Enabled</b> and DISABLED.
CS Sparing Enable	Use this setting to ENABLE or <b>Disable</b> the CS Sparing function.
DCT Unganged Mode	This allows selection of unganged DRAM mode (64-bit width). Options are <b>Auto</b> (Ganged Mode) and ALWAYS (unganged mode).
▶ ECC Configuration	
ECC Mode	<p>DRAM ECC allows hardware to report and correct memory errors automatically. Options are <b>Enabled</b> and DISABLED.</p> <ul style="list-style-type: none"> <li>4-Bit ECC Mode – Allows you to enable 4-bit ECC mode (also known as ECC Chipkill). Options are ENABLED and <b>Disabled</b>.</li> <li>DRAM Scrub Redirect – Allows the system to correct DRAM ECC errors immediately, even with background scrubbing on. Options are ENABLED and <b>Disabled</b>.</li> <li>DRAM BG Scrub – Corrects memory errors so later reads are correct. Options are <b>Disabled</b> and various times in nanoseconds and microseconds.</li> </ul>
Power Down Enable	<b>Enable</b> or DISABLE DDR power down mode.
Power Down Mode	Set DDR power down mode to <b>Channel</b> or CHIP SELECT.
Alternate VID	Specifies and alternate VID while in low power states. Options are <b>Auto</b> and various voltages between.8V and 1.115V.
Memory Timing Parameters	Allows the user to select which CPU Node's timing parameters (memory clock, etc.) to display. Options are <b>CPU Node 0</b> , CPU NODE 1, CPU NODE 2 and CPU NODE 3.
▶ DRAM Timing Configuration	
Memory Clock Mode	Set the Memory Clock Mode. Options are <b>Auto</b> , LIMIT and MANUAL.
DRAM Timing Mode	Set the DRAM Timing Mode. Options are <b>Auto</b> , DCT0, DCT1 and BOTH.

**SouthBridge/MCP55 Configuration**

The menu options in the SOUTHBRIDGE/MCP55 CONFIGURATION submenu and their descriptions are shown in [Table 5-8](#).

**Table 5-8. SouthBridge/MCP55 Configuration Submenu**

Menu Option	Description
CPU/LDT Spread Spectrum	Enables spread spectrum for the CPU/LDT. Options are <b>Center Spread</b> , DOWN SPREAD or DISABLED.
PCIE Spread Spectrum	Allows you to <b>Enable</b> or DISABLE spread spectrum for PCI-Express.
SATA Spread Spectrum	Enables spread spectrum for the SATA. Options are <b>Enabled</b> and DISABLED.
Primary Graphics Adapter	Options are <b>PCI Express → PCI</b> and PCI if PCI EXPRESS.
USB 1.1 Controller	<b>Enable</b> or DISABLE the USB 1.1 controller.
USB 2.0 Controller	<b>Enable</b> or DISABLE the USB 2.0 controller.
USB Devices Enabled	This menu option is greyed out and cannot be configured by the user.
Legacy USB Support	Select <b>Enabled</b> to enable the support for USB Legacy. Disable Legacy support if there are no USB devices installed in the system. AUTO disables Legacy support if no USB devices are connected. The options are DISABLED, <b>Enabled</b> and AUTO.
USB 2.0 Controller Mode	Select the controller mode for your USB ports. Options are <b>HiSpeed</b> and FULLSPEED. (HiSpeed=480 Mbps, FullSpeed=12 Mbps).
BIOS EHCI Hand-Off	<b>Enable</b> or DISABLE a workaround for OS's without EHCI hand-off support.
▶ USB Mass Storage Device Configuration	
USB Mass Storage Reset Delay	This sets the number of seconds POST waits for the USB mass storage device after the START unit command. Options are 10 SEC, <b>20 sec</b> , 30 SEC AND 40 SEC.
▶ Emulation Type	
Device 1 Emulation Type	Options are <b>Auto</b> , FLOPPY, FORCED FDD, HARD DISK and CDROM. If <b>Auto</b> , then USB devices less than 530 MB will be emulated as floppy and remaining as hard drive. Forced FDD option can be used to force HDD formatted drive to boot as an FDD (example: ZIP Drive).
Device 2 Emulation Type	



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## Event Log Configuration

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

**Table 5-9. 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.

## PCI Express Configuration

The PCI EXPRESS CONFIGURATION submenu contains a single menu option as shown in [Table 5-10](#).

**Table 5-10. PCI Express Configuration Submenu**

Menu Option	Description
Active State Power Management	Used to ENABLE or <b>Disable</b> the PCI L0 and L1 link power states.

## Remote Access Configuration

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

**Table 5-11. Remote Access Configuration Submenu**

Menu Option	Description
Remote Access	Allows you to <b>ENABLE</b> or <b>Disable</b> remote access. If enabled, the settings below will appear.
Serial Port Number	Selects the serial port to use for console redirection. Options are <b>COM1</b> and <b>COM2</b> .
Serial Port Mode	Selects the serial port settings to use. Options are <b>(115200 8, n, 1)</b> , <b>(57600 8, N, 1)</b> , <b>(38400 8, N, 1)</b> , <b>(19200 8, N, 1)</b> AND <b>(09600 8, N, 1)</b> .
Flow Control	Selects the flow control to be used for console redirection. Options are <b>None</b> , <b>HARDWARE</b> and <b>SOFTWARE</b> .
Redirection After BIOS POST	Options are <b>DISABLE</b> (no redirection after BIOS POST), <b>BOOT LOADER</b> (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> , <b>VT100</b> and <b>VT-UTF8</b> .
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> , <b>1 SEC</b> , <b>2 SECS</b> and <b>4 SECS</b> .

## System Health Monitor

The SYSTEM HEALTH MONITOR submenu's menu option is shown in [Table 5-12](#).

**Table 5-12. System Health Monitor Submenu**

Menu Option	Description
CPU Overheat Temperature	Use the "+" and "-" keys to set the CPU temperature threshold to between 65 <sup>o</sup> and 90 <sup>o</sup> C. When this threshold is exceeded, the overheat LED on the chassis will light up and an alarm will sound. The LED and alarm will turn off once the CPU temperature has dropped to 5 degrees below the threshold set. The default setting is <b>72o C</b> .

Other items in the submenu are systems monitor displays for the following information: CPU1 TEMPERATURE, CPU2 TEMPERATURE, CPU3 TEMPERATURE, CPU4 TEMPERATURE, (for 4U systems), SYSTEM TEMPERATURE, CPU1 VCORE, CPU2 VCORE, CPU3 VCORE, CPU4 VCORE (for 4U systems), 3.3V VCC, +5VIN, +12VIN, 5V STANDBY and BATTERY VOLTAGE.

## 5-6 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	This feature allows the user to prioritize the boot sequence from the available devices. The devices to set are: <ul style="list-style-type: none"> <li>• 1ST BOOT DEVICE</li> <li>• 2ND BOOT DEVICE</li> <li>• 3RD BOOT DEVICE</li> <li>• 4TH BOOT DEVICE</li> </ul>
▶ Hard Disk Drives	This feature allows the user to specify the boot sequence from available hard disk drives.
1st Drive	Specifies the boot sequence for the 1st Hard Drive.
▶ CD/DVD Drives	This feature allows the user to specify the Boot sequence from the available drives.
1st Drive	Specifies the boot sequence for the 1st Removable Drive. The options are <b>USB: PeppCMM Virtual Disc 1</b> and <b>DISABLED</b> .
2nd Drive	Specifies the boot sequence for the 1st Removable Drive. The options are <b>USB: PeppCMM Virtual Disc 2</b> and <b>DISABLED</b> .

## 5-7 Security Menu

The menu options for the SECURITY menu are shown in [Table 5-14](#).

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

**Table 5-14. 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	This option is near the bottom of the SECURITY SETUP screen. The options are <b>ENABLED</b> and <b>Disabled</b> . <ul style="list-style-type: none"> <li>• Select <b>DISABLED</b> to deactivate the Boot Sector Virus Protection.</li> <li>• Select <b>ENABLED</b> to enable boot sector protection.</li> </ul> When <b>ENABLED</b> , 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.

## 5-8 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 5-15](#). You may also additionally press <Esc> to exit without saving or <F10> to save your settings and exit.

**Table 5-15. 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*.

**Table A-2. Terminal POST Errors**

Post Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh

**Table A-2. Terminal POST Errors (Continued)**

<b>Post Code</b>	<b>Description</b>
22h	1-3-1-3 Test 8742 Keyboard Controller
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line <b>xxxx*</b>
2Eh	1-3-4-3 RAM failure on data bits <b>xxxx*</b> of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2

**Table A-2. Terminal POST Errors (Continued)**

<b>Post Code</b>	<b>Description</b>
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
98h	1-2 Search for option ROMs. One long, two short beeps on check-sum failure
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
A Eh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function

**Table A-2. Terminal POST Errors (Continued)**

Post Code	Description
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for the boot block in Flash ROM:

**Table A-3. Boot Block Flash ROM Terminal POST Errors**

Post Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock

**Table A-3. Boot Block Flash ROM Terminal POST Errors (Continued)**

Post Code	Description
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (**xxxx**) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the low order byte of the error. It repeats this sequence continuously.

## Notes



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