SUPER●®

SUPERSERVER

6017R-M7UF
6017R-M7RF

Revision 1.0

Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 6017R-M7UF/6017R-M7RF. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 6017R-M7UF/6017R-M7RF is a 1U rackmount server based on the SC813MFTQ-400CB/R400CB server chassis and the Super X9DRL-7F serverboard. Please refer to our web site for updates on supported processors.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super X9DRL-7F serverboard and the SC813MFTQ-400CB/R400CB chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 6017R-M7UF/6017R-M7RF into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

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

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 6017R-M7UF/6017R-M7RF.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X9DRL-7F serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC813MFTQ-400CB/R400CB chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

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

Appendix A: BIOS POST Error Codes

Appendix B: System Specifications

Notes

Table of Contents

Chapter 6 Advanced Chassis Setup

Chapter 1

Introduction

1-1   Overview

The SuperServer 6017R-M7UF/6017R-M7RF is comprised of two main subsystems: the SC813MFTQ-400CB/R400CB 1U chassis and the X9DRL-7F serverboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 6017R-M7UF/6017R-M7RF (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the system, as listed below:

- Five 4-cm high-performance fans (FAN-0147L4)

- Two passive heat sinks (SNK-P0047PD)

- One air shroud (MCP-310-19009-0N)

- One PCI-Express 3.0 x8 riser card (RSC-RR1U-E8)

- SAS Accessories
  One SAS/SATA backplane (BPN-SAS-815TQ)
  Four 3.5" hard disk trays w/ dummy drives (MCP-220-00075-0B)
  One SGPIO cable (CBL-0157L) and one SAS/SATA cable (CBL-0186L)

- One SuperServer 6017R-M7UF/6017R-M7RF Quick Reference Guide

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

1-2   Serverboard Features

At the heart of the SuperServer 6017R-M7UF/6017R-M7RF lies the X9DRL-7F, a dual processor serverboard based on the Intel® PCH C602J chipset. Below are the main features of the X9DRL-7F. See Figure 1-1 for a block diagram of the chipset.

Processors

The X9DRL-7F supports dual Intel® E5-2600 Series processors (Socket R-LGA 2011). Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X9DRL-7F has eight DIMM slots that can support up to 256 GB of 240-pin DDR3-1600/1333/1066/800 Registered (RDIMM)/Load Reduced (LRDIMM) ECC or Unbuffered (UDIMM) ECC/Non-ECC DIMM modules. Memory modules of the same size and speed should be used. See Chapter 5 for details.

SAS/SATA

A SATA controller is integrated into the chipset to provide a six-port Serial ATA subsystem 4x SATA 2.0 and 2x SATA 3.0 ports). In addition, the X9DRL-7F has an LSI 2208 controller to support eight SAS ports. The SAS and SATA drives are hot-swappable units.

PCI Expansion Slots

The system supports one PCI-Express 3.0 x8 card with the use of the installed riser card.

I/O Ports

The color-coded I/O ports include a COM port, a VGA port, four USB 2.0 ports, two Gb LAN (NIC) ports and a dedicated IPMI LAN port.

1-3   Server Chassis Features

The following is a general outline of the main features of the SC813MFTQ-400CB/R400CB chassis.

System Power

When configured as a SuperServer 6017R-M7UF, the SC813MFTQ-400CB chassis includes a single 400W power supply. When configured as a SuperServer 6017R-MTRF, the SC813MFTQ-R400CB chassis includes a redundant 400W power supply.

SAS/SATA Subsystem

For the 6017R-M7UF/6017R-M7RF, the SC813MFTQ-400CB/R400CB chassis was designed to support four SAS/SATA hard drives, which are hot-swappable units.

Control Panel

The SC813MFTQ-400CB/R400CB's control panel provides important system monitoring and control information. LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions. The control panel also includes a main power button and a system reset button.

Cooling System

The SC813MFTQ-400CB/R400CB chassis has an innovative cooling design that features five 4-cm high-performance system cooling fans and an air shroud. Each of these fans plug into a chassis fan header on the serverboard. An air shroud channels the airflow generated by the fans to efficiently cool the processor area of the system. Fan speed is controlled by IPMI.

**Figure 1-1. Intel C602J Chipset:
System Block Diagram**

Note: This is a general block diagram. Please see Chapter 5 for details.
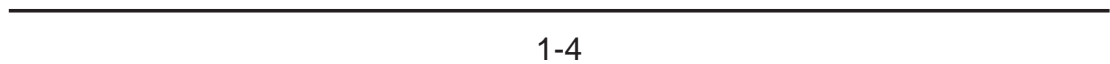
1-4   Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.

                  980 Rock Ave.

                  San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)

                  support@supermicro.com (Technical Support)

Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.

                  Het Sterrenbeeld 28, 5215 ML

                  's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: sales@supermicro.nl (General Information)

                  support@supermicro.nl (Technical Support)

                  rma@supermicro.nl (Customer Support)

Asia-Pacific

Address: Super Micro Computer, Inc.

                  4F, No. 232-1, Liancheng Rd

                  Chung-Ho Dist., New Taipei City 235

                  Taiwan

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3991

Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

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

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 6017R-M7UF/6017R-M7RF up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. This quick setup assumes that your system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a mother-board, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

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

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

2-3 Preparing for Setup

The box the SuperServer 6017R-M7UF/6017R-M7RF was shipped in should include two sets of rail assemblies, six rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimal amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

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

installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

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

2-4   Warnings and Precautions

Rack Precautions

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

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

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

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

Server Precautions

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

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

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

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

- Allow the hot plug SAS/SATA drives and power supply modules to cool before touching them.

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

Rack Mounting Considerations

Ambient Operating Temperature

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

Reduced Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

2-5   Installing the System into a Rack

This section provides information on installing the SuperServer 6017R-M7UF/6017R-M7RF into a rack unit with the rack rails provided. If the server has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6.

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

Identifying the Sections of the Rack Rails

You may have received rack rail hardware with the server. (Two front inner rails should already be attached to the chassis.) This hardware consists of two rear inner rails that secure to the chassis, one on each side just behind the preinstalled front inner rails. Note that these two rails are left/right specific.

Installing the Rear Inner Rails

First, locate the right rear inner rail (the rail that will be used on the right side of the chassis when you face the front of the chassis). Align the two square holes on the rail against the hooks on the right side of the chassis. Securely attach the rail to the chassis with M4 flat head screws. Repeat these steps to install the left rear inner rail to the left side of the chassis (see Figure 2-1). You will also need to attach the rail brackets when installing into a telco rack.

Locking Tabs: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure 2-1. Installing Rear Inner Chassis Rails
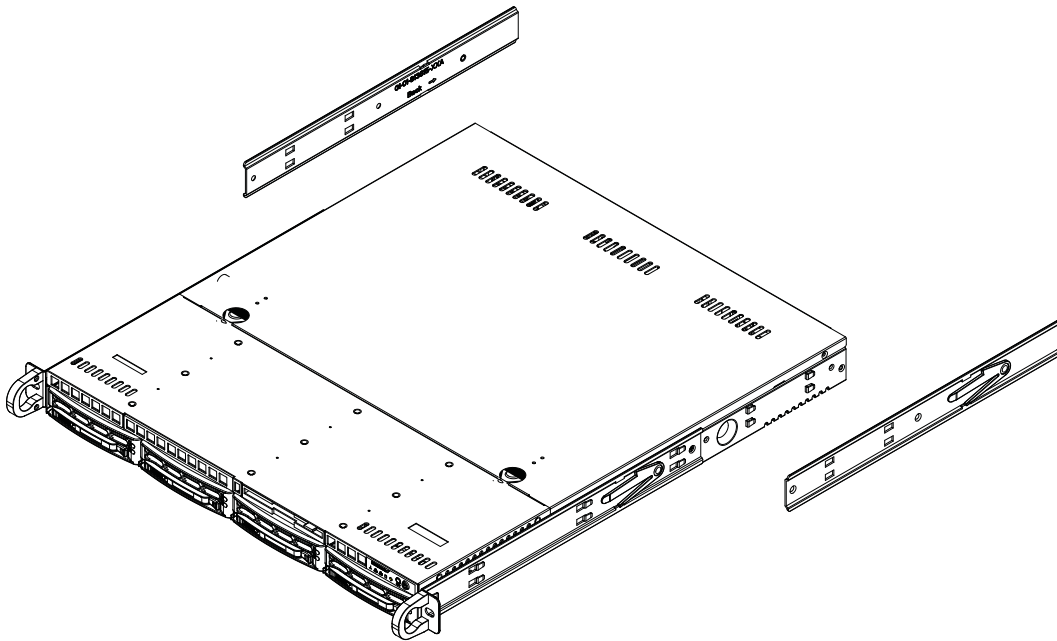
Installing the Rack Rails

Determine where you want to place the SuperServer 6017R-M7UF/6017R-M7RF in the rack (see Rack and Server Precautions in Section 2-4). Position the chassis rail guides at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-2.

When the server has been pushed completely into the rack, you should hear the locking tabs "click".

Figure 2-2. Installing the Server into a Rack
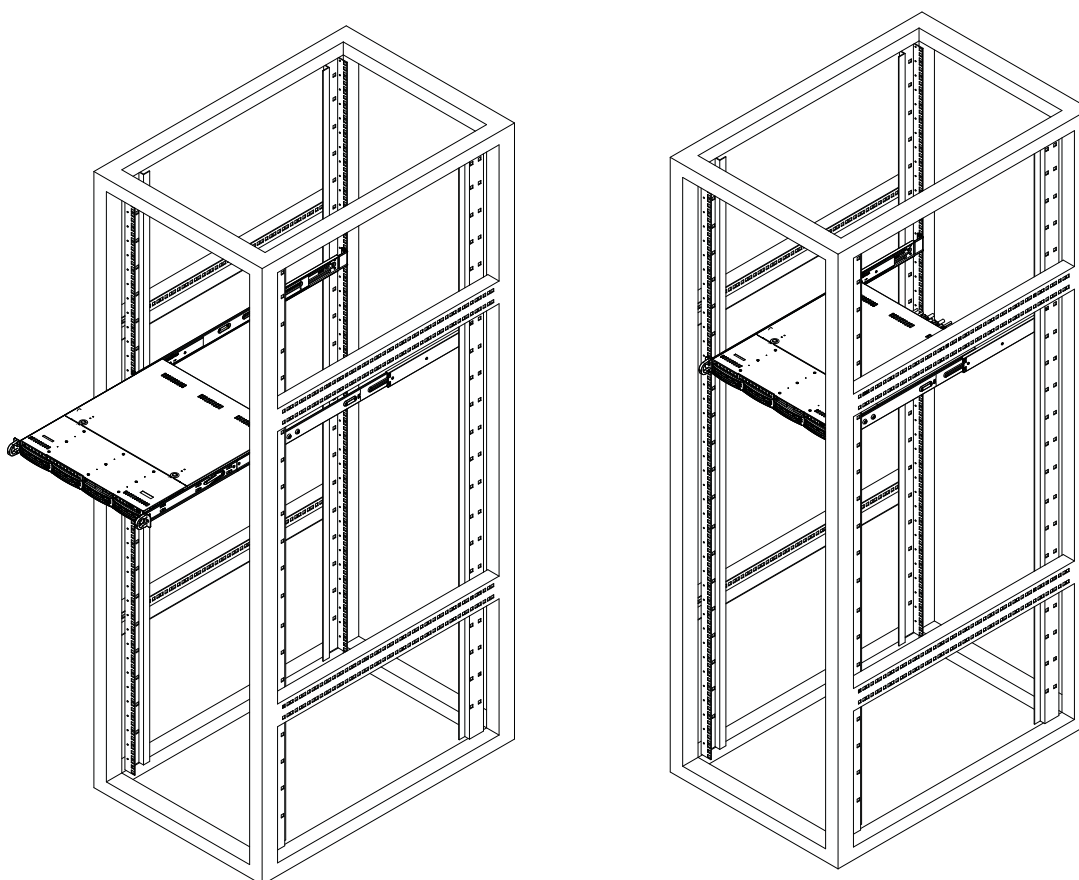
Note: this figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

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

Installing the Server into a Telco Rack

To install the SuperServer 6017R-M7UF/6017R-M7RF into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Figure 2-3. Installing the Server into a Telco Rack
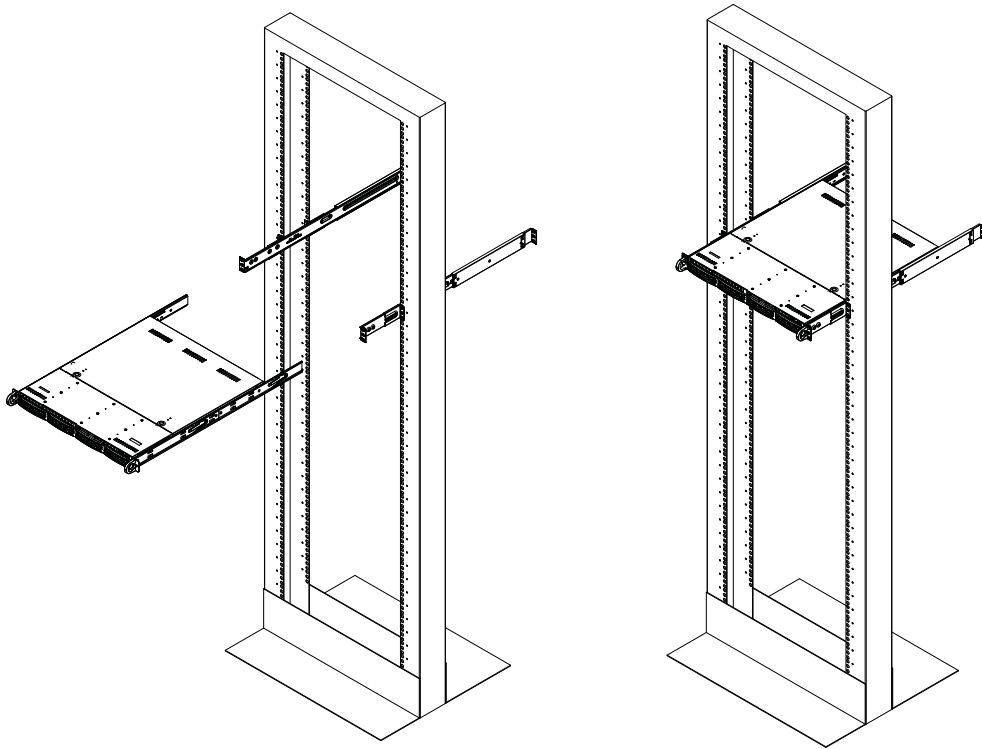
Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Notes

Chapter 3

System Interface

3-1   Overview

There are several LEDs on the control panel as well as others on the SAS/SATA drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2   Control Panel Buttons

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

RESET

Reset

The reset button reboots the system.

Power

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

3-3   Control Panel LEDs

The control panel located on the front of the SC813MFTQ-400CB/R400CB chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Information LED

This LED will be solid blue when the UID function has been activated. When this LED flashes red, it indicates a fan failure. When red continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.

NIC2

Indicates network activity on LAN2 when flashing.

NIC1

Indicates network activity on LAN1 when flashing.

HDD

Channel activity for all HDDs. This light indicates SAS/SATA drive activity on the 6017R-M7UF/6017R-M7RF when flashing.

Power

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

3-4   SAS/SATA Drive Carrier LEDs

Each drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the drive carrier indicates drive activity. A connection to the backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED to indicate a drive failure. If one of the drives fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed drives.

Notes

Chapter 4

Standardized Warning Statements for AC Systems

4-1   About Standardized Warning Statements

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

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

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

Warning Definition

 Warning!

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

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

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או התקלות 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 للترجمتها

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

⚠️ **Warning!**

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告
将此系统连接电源前，请先阅读安装说明。

警告
將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

Circuit Breaker

Warning!

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

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

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

Power Disconnection Warning

Warning!

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

電源切断の警告

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

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前,必須將系統完全斷電,並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה !
יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק לפני גישה לחלק הפנימי של המארז לצורך 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 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing

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

Equipment Installation

 Warning!

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

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

警告
只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告
只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

Restricted Area

⚠️ **Warning!**

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה !
יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת 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 للالأمان

경고!

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

Waarschuwing

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

Battery Handling

Warning!

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

電池の取り扱い

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

警告
电池更换不当会有爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更
换原有电池。请按制造商的说明处理废旧电池。

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !

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

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Redundant Power Supplies

Warning!

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה!
ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן את היחידה.

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

경고!

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

Waarschuwing

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

Backplane Voltage

 Warning!

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

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

警告
当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告
當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

<div dir="rtl">

מתח בפנל האחורי

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

</div>

<div dir="rtl">

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

</div>

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.

<div dir="rtl">

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

</div>

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 מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

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

경고!

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

Waarschuwing

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

Power Cable and AC Adapter

⚡ **Warning!**

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

電源コードとACアダプター

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

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

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

Warnung

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

¡Advertencia!

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

Attention

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

חשמליים ומתאמי AC

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

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

경고!

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

Waarschuwing

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

Notes

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X9DRL-7F serverboard into the SC813MFTQ-400CB/R400CB chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1   Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the X9DRL-7F serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).

- Touch a grounded metal object before removing any board from its antistatic bag.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

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

5-2   Serverboard Installation

This section explains the first step of physically mounting the X9DRL-7F into the SC813MFTQ-400CB/R400CB chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

Installing to the Chassis

1. Remove the screws from the rear lip of the chassis cover (see Figure 2-5).

2. Release the top cover by pushing it away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server

3. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.

4. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.

5. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads).

Note: Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.

Warning: To avoid damaging the serverboard and its components, do not apply any force greater than 8 lbs. per square inch when installing a screw into a mounting hole.

5-3   Connecting Cables

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

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations).

The following data cables (with their locations noted) should be connected. (See the layout on page 5-9 for connector locations.)

- SAS/SATA drive cables (L-SAS0 ~ L-SAS3)

- SGPIO cable (6-SGPIO 0)

- Control Panel cable (JF1)

Connecting Power Cables

The X9DRL-7F has a 24-pin primary power supply connector (JPW4) for connection to the ATX power supply. In addition, there are two 8-pin processor power connectors (JPW1/JPW2) that also must be connected to your power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis.

Figure 5-1. Control Panel Header Pins

```
                20    19
     Ground  |  o  |  o  | NMI
    x (Key)  |  o  |  o  | x (Key)
Power On LED |  o  |  o  | Vcc
    HDD LED  |  o  |  o  | Vcc
   NIC1 LED  |  o  |  o  | Vcc
   NIC2 LED  |  o  |  o  | Vcc
OH/Fan Fail LED | o | o | Vcc/Front UID LED
Power Fail LED | o | o | Vcc
     Ground  |  o  |  o  | Reset (Button)
     Ground  |  o  |  o  | Power (Button)
                 2    1
```
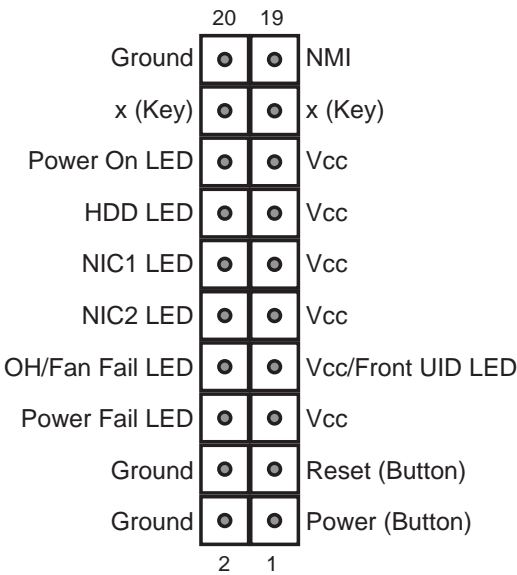
5-4   Rear I/O Ports

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

Figure 5-2. Rear I/O Ports
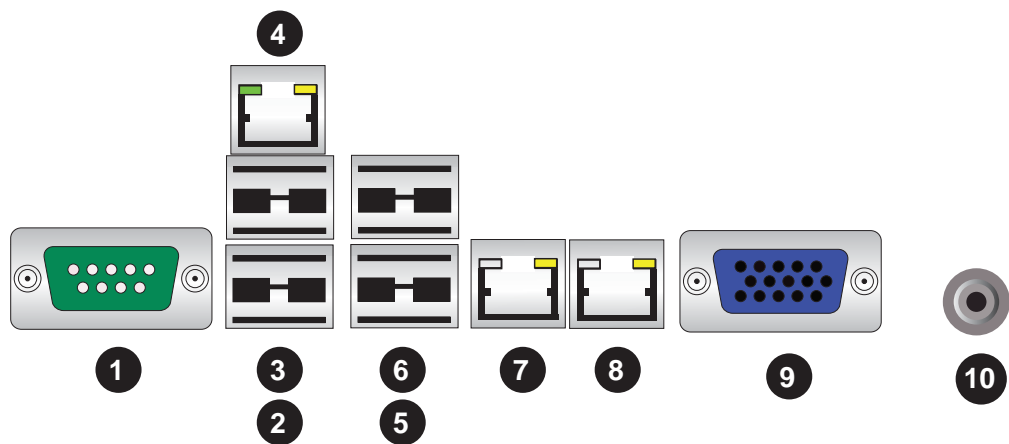
Rear I/O Ports	
1. COM1 Port	6. USB7
2. USB8	7. LAN1
3. USB9	8. LAN2
4. Dedicated IPMI LAN	9. VGA Port
5. USB6	10. UID Button

5-5   Installing the Processor and Heatsink

Caution: When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

• Always connect the power cord last and always remove it before adding, re-moving or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

• If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.

• Make sure to install the serverboard into the chassis before you install the CPU heatsinks.

• When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.

• Refer to the Supermicro web site for updates on CPU support.

Installing an LGA 2011 Processor

1. There are two levers on the LGA2011 socket. First press and release the load lever labeled 'Open 1st'.

2. Press the second load lever labeled 'Close 1st' to release the load plate from its locked position.

Press down on the lever labeled 'Close 1st'
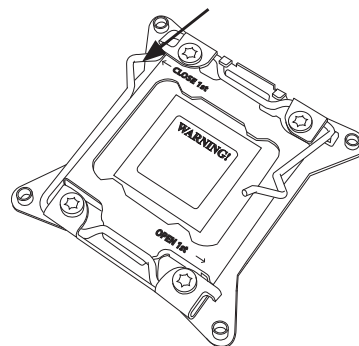
Pull lever away from the socket
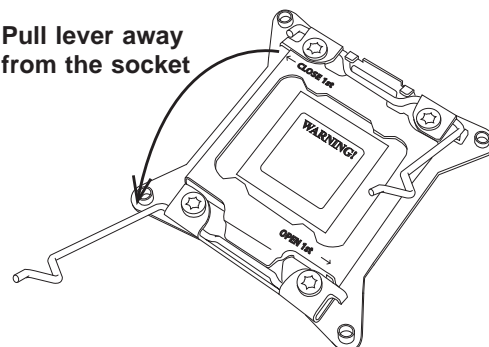
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.
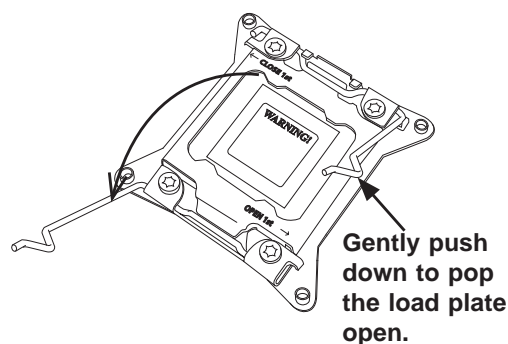
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.

5. Use your thumb and index finger to hold the CPU by its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.
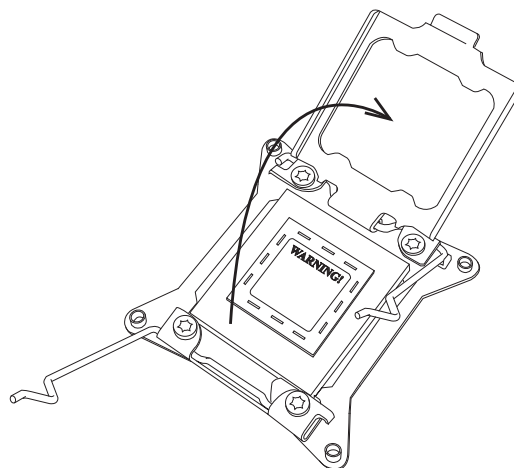
6. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically and do not rub the CPU against any pins of the socket, which may damage the CPU or the socket.)

Gently push down to pop the load plate open.

Socket Keys

CPU Keys
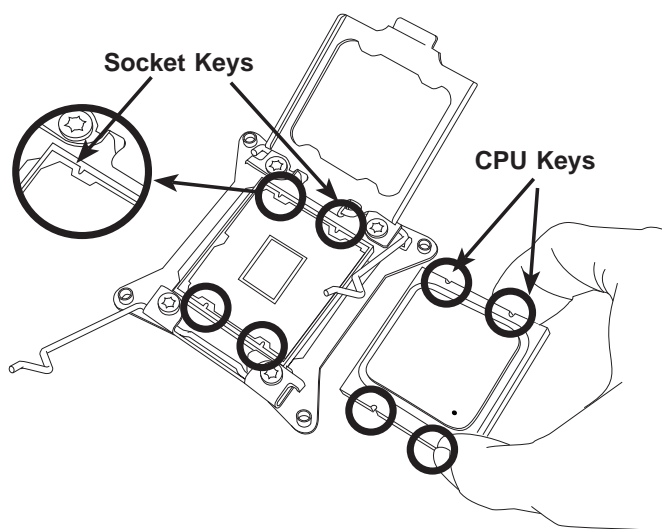
Caution: You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

7. With the CPU in the socket, in-spect the four corners of the CPU to make sure that they are flush with the socket.

8. Close the load plate. Lock the lever labeled 'Close 1st', then lock the lever labeled 'Open 1st'. Use your thumb to gently push the load levers down until the lever locks.

9. Repeat steps to install to the remaining CPU socket.

Gently close the load plate.

Push down and lock the level labeled 'Close 1st'.
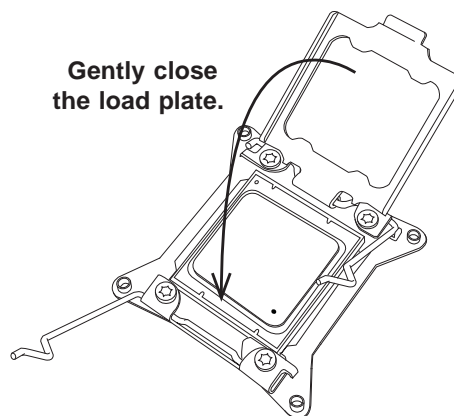
Lever Lock

Push down and lock the lever labeled 'Open 1st'.
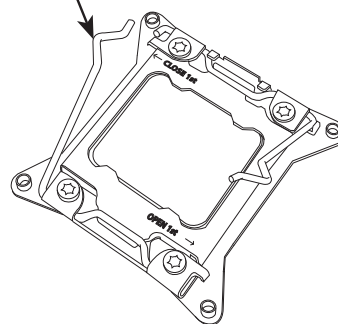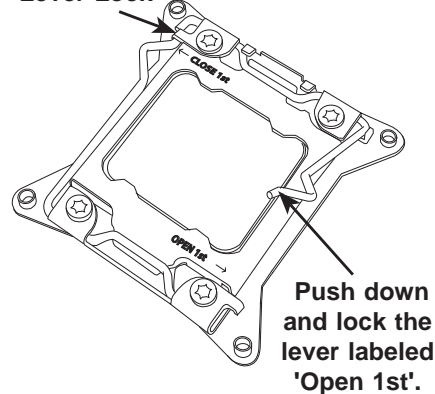
Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the serverboard and the heatsink bracket underneath.

3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (do not over-tighten the screws to avoid possible damage to the CPU.)

4. Add the two remaining screws then fully tighten all four screws.

Removing the Heatsink

Caution: We do not recommend removing the CPU or the heatsink. However, if you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unscrew the heatsink screws from the serverboard in the sequence shown above.

2. <u>Gently</u> wriggle the heatsink to loosen it from the CPU (do not use excessive force). Once the CPU is loose, remove the it from the CPU socket.

3. Clean the surface of the CPU and the heatsink, removing the used thermal grease. Reapply the proper amount of thermal grease on the surface before re-installing the CPU and the heatsink.

Figure 5-3. Installing the Heatsink

Loosen screws in sequence as shown.

Screw#3

Screw#2

Screw#1

Screw#4
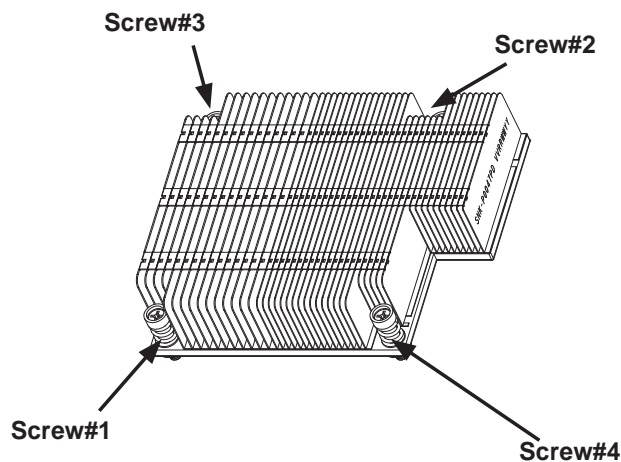
5-6   Installing Memory Modules

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

CAUTION
Exercise extreme care when installing or removing DIMMs to prevent any possible damage.

Installing & Removing DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #A1. For best performance, please use the memory modules of the same type and same speed in the same bank. See the DIMM Installation Chart son the following pages.

2. Press down the release tabs on the ends of a memory slot. Insert each DIMM vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM incorrectly.

3. Gently press down on the DIMM until it snaps into place in the slot. Repeat for all modules.

4. Reverse the steps above to remove the DIMM from the serverboard.

Press the release tabs
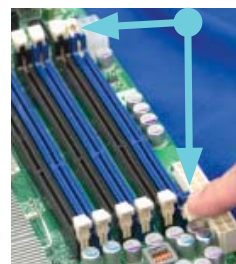
Insert & press a DIMM into the slot
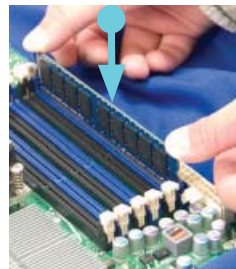
Figure 5-4. DIMM Installation

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

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

Notch

Notch

Front View

Release Tab

Note: Notch should align with the receptive key point on the slot.

Release Tab

Top View of DDR3 Slot

Memory Support

The X9DRL-7F serverboard supports up to 256GB of DDR3-1600/1333/1066/800 Registered (RDIMM)/Load Reduced (LRDIMM) ECC or Unbuffered (UDIMM) ECC/Non-ECC DIMMs. For the latest memory updates, please refer to our website at http://www.supermicro.com/products/serverboard.

Populating Memory Slots

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

Processors and their Corresponding Memory Modules				
CPU#	Corresponding DIMM Modules			
CPU1	P1-DIMMA1	P1-DIMMB1	P1-DIMMC1	P1-DIMMD1
CPU2	P2-DIMME1	P2-DIMMF1	P2-DIMMG1	P2-DIMMH1

Processor and Memory Module Population	
Number of CPUs+DIMMs	CPU and Memory Population Configuration Table (For memory to work properly, please install DIMMs in pairs)
1 CPU/2 DIMMs	CPU1: P1-DIMMA1/P1-DIMMB1
1 CPU/4 DIMMs	CPU1: P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
2 CPUs/2 DIMMs	CPU1 + CPU2: P1-DIMMA1, P2-DIMME1
2 CPUs/4 DIMMs	CPU1 + CPU2: P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs/6 DIMMs	CPU1 + CPU2: P1-DIMMA1/P1-DIMMB1/P1-DIMMC1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1
2 CPUs/8 DIMMs	CPU1 + CPU2: P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1, P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1

Populating with UDIMM ECC/Non-ECC DIMMs

Intel E5-2600 Series Processor UDIMM Memory Support					
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (see note below)			1 Slot per Channel	
				1DPC	
				1.35V	1.5V
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333, 1600
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333, 1600
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333, 1600
SRx8 ECC	1GB	2GB	4GB	1066,1333	1066, 1333, 1600
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600
Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List at http://www.supermicro.com/support/resources/mem.cfm.					

Populating with RDIMM ECC DIMMs

Intel E5-2600 Series Processor RDIMM Memory Support					
Ranks Per DIMM & Data Width	**Memory Capacity Per DIMM**			**1 Slot Per Channel**	
				1DPC	
	(See the Note Below)			**1.35V**	**1.5V**
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600
DRx4	4GB	8GB	16GB	1066, 1333	1066, 1333, 1600
QRx4	8GB	16GB	32GB	800	1066
QRx8	4GB	8GB	16GB	800	1066
Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List at http://www.supermicro.com/support/resources/mem.cfm.					

5-7 Adding PCI Cards

The 6017R-M7UF/6017R-M7RF includes an RSC-RR1U-E8 riser card, which fits into a PCI-E slot to support a full-height half-length PCI Express expansion card.

PCI Card Installation

When installing a PCI add-on card, make sure you install it into a slot that supports the speed of the card.

1. Swing out the release tab on the PCI-E slot shield.

2. Insert the PCI-E card into the riser card, pushing down with your thumbs evenly on both sides of the card.

3. Finish by pushing the release tab back to its original (locked) position.

5-8   Serverboard Details

Serverboard Layout

Figure 5-5. X9DRL-7F Layout
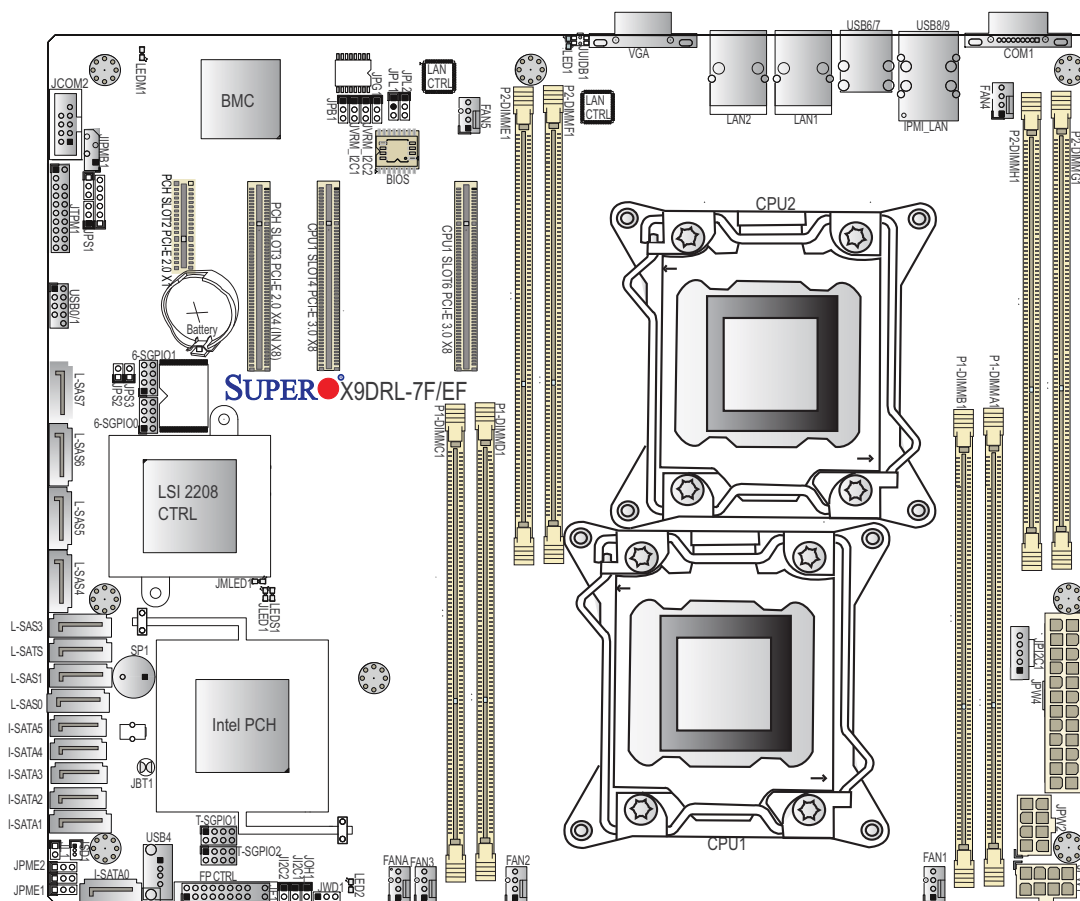
Jumpers not indicated are for test purposes only. Connections not described are for the X9DRL-EF only.

A square contact pad indicates the location of pin 1.

X9DRL-7F Quick Reference Table

LED	Description	State/Status
JLED1	I-SATA Activity LED	Blinking Green: I-SATA Active
JMLED1	SAS Activity LED	Blinking Green: SAS Active
LED1	Rear UID LED	Blue On: Unit Identified
LED2	Onboard PWR LED	On: System Power On
LEDM1	BMC Heartbeat LED	Blinking Green: BMC Normal
LEDS1	SAS Heartbeat LED	Green: SAS Normal

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Section 5-10
JI²C1/JI²C2	SMB to PCI-E Slots	Off (Disabled)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1/JPL2	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JPS1	SAS Enable	Pins 1-2 (Enabled)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Reset)

Connector	Description
COM1/COM2	Backplane COM Port1/Front Accessible COM2 Header
Fan1-5, FanA	CPU/System Fan Headers
JF1	Front Panel Control Header
JIPMB1	4-pin External BMC I²C Header (for an IPMI Card)
JL1	Chassis Intrusion
JOH1	Overheat LED Indicator
JPI²C1	Power Supply SMBbus I²C Header
JPW1/2	12V 8-Pin Power Connectors
JPW4	24-Pin ATX Main Power Connector
JSD1	SATA DOM (Device on Module) Power Connector
JTPM1	TPM (Trusted Platform Module)/Port 80
JUIDB	UID (Unit Identification) Switch
(I-)SATA 0-5	Intel PCH SATA Ports 0-5
(L-)SAS 0-7	SAS Ports 0-7 (supported by LSI 2208 controller)
(PCH) Slot2	PCI-Express 2.0 x1 Slot from Intel PCH
(PCH) Slot3	PCI-Express 2.0 x4 in x8 Slot from Intel PCH
(CPU1) Slot4	PCI-Express 3.0 x8 Slot from CPU1
(CPU1) Slot6	PCI-Express 3.0 x8 Slot from CPU1
(6)-SGPIO 0/1	Serial Link General Purpose I/O Headers 0/1 for SAS Ports
(FP) USB 4	Front Panel Type A USB Connector 4
(FP) USB 0/1	FP-Accessible USB Connectors 0/1
(BP) USB 6/7, 8/9	Backpanel USB Ports 6/7, 8/9

5-9   Connector Definitions

ATX Power Connector

The primary power supply connector (JPW4) on the X9DRL-7F meets the SSI EPS 12V specification. Refer to the table on the right for the pin definitions of the ATX 24-pin power connector. You must also connect the 8-pin processor power connectors (JPW1/JPW2) to your power supply. Refer to the table below right for the main power connector.

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

Processor Power Connector

In addition to JPW4, the 12V 8-pin processor power connectors at JPW1 and JPW2 must be connected to your serverboard. Failure in doing so will void the manufacturer warranty on your power supply and serverboard. See the table on the right for pin definitions.

Processor Power Connector Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection

PW_ON Connector

The PW_ON connector is on pins 1 and 2 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions	
Pin#	Definition
1	PW_ON
2	Ground

Reset Button

The reset button connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions	
Pin#	Definition
3	Reset
4	Ground

Power Fail LED

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

PWR Fail LED Pin Definitions	
Pin#	Definition
5	3.3V
6	Signal

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

Connect an LED cable to pins 7 and 8 of Front Control Panel to use the Overheat/Fan Fail/Power Fail and UID LED connections. The Red LED on pin 7 provides warnings of overheat, fan failure or power failure. The Blue LED on pin 8 works as the front panel UID LED indicator. The Red LED takes precedence over the Blue LED by default. Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_UID LED Pin Definitions (JF1)	
Pin#	Definition
7	Red_LED-Cathode/OH/Fan Fail/ Power Fail5.5V.SB
8	Blue_UID LED

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

NIC2 (LAN2) LED

The LED connections for LAN2 are on pins 9 and 10 of JF1. Attach LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions	
Pin#	Definition
9	Vcc
10	Ground

NIC1 (LAN1) LED

The LED connections for LAN1 are on pins 11 and 12 of JF1. Attach LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions	
Pin#	Definition
11	Vcc
12	Ground

HDD LED

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

HDD LED Pin Definitions	
Pin#	Definition
13	3.3V Standby
14	HD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions	
Pin#	Definition
15	3.3V
16	PWR LED

NMI Button

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

NMI Button Pin Definitions	
Pin#	Definition
19	Control
20	Ground

Fan Headers

There are eight fan headers on the X9DRL-7F. All are 4-pin fans but are backward compatible with traditional 3-pin fans. Fan speed control, however, is available for 4-pin fans only. See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

Chassis Intrusion

The Chassis Intrusion header is designated JL1. See the board layout for the location of JL1 and the table on the right for pin definitions.

Chassis Intrusion Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground

Serial Ports

Two serial ports are included on the serverboard: COM1 is a port located beside the USB ports and COM2 is a header (located near the JTPM1 connector) for front access support. See the table on the right for pin definitions.

Serial Port Pin Definitions			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: Pin 10 is included on the header but not on the port. NC indicates no connection.

USB Ports Pin Definitions (USB6/7/8/9)	
Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Universal Serial Bus (USB)

There are two Universal Serial Bus ports located on the I/O panel and five additional USB headers located on the serverboard. The headers, labeled USB2/3 and USB4/5, can be used to provide front side USB access (cables not included). USB 6 is an A Type. See the tables on the right for pin definitions.

USB Headers Pin Definitions (USB0/1, USB4)			
USB0/4		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

Power SMB (I²C) Connector

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

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

IPMB

IPMB (JIPMB1) is a System Management Bus header for IPMI 2.0. Connect the appropriate cable here to use the IPMB I²C connection on your system.

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

Onboard Speaker (SP1)

The onboard speaker provides audible indications for various beep codes. See the table on the right for pin definitions.

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

SGPIO Headers

Four SGPIO (Serial General Purpose Input/Output) headers are included on the serverboard. These headers are used to communicate with the System Monitoring chip on the backplane and provide a serial interface to the SAS/SATA ports. T-SGPIO 1/2 supports the I-SATA ports while 6-SGPIO 0/1 supports the SAS ports. See the table on the right for pin definitions.

SGPIO Headers Pin Definitions			
Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

Note: NC indicates no connection.

DOM Power Connector

A power connector for SATA DOM (Disk On Module) devices is located at JSD1. Connect an appropriate cable here to provide power support for your Serial Link DOM devices.

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

TPM/Port 80 Header

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

TPM/Port 80 Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

Overheat LED/Fan Fail

The JOH1 header is used to connect an LED indicator to provide warnings of chassis overheating and fan failure. This LED will blink when a fan failure occurs. Refer to the tables on right for pin definitions.

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

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

LAN1/2 (Ethernet Ports)

Two gigabit Ethernet ports (LAN1 and LAN2) are located on the I/O back-plane. These ports accept RJ45 type cables. The X9DRL-7F also includes a dedicated IPMI LAN port above the rear USB ports to provide KVM sup-port for IPMI 2.0.

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

Unit Identifier Switch/UID LED Indicators

A Unit Identifier button (JUIDB), a backplane LED indicator and a front panel UID header are provided on the serverboard. The UID button is located next to the VGA port on the backplane. The rear UID LED indicator (LED1) is located next to the UID button. The front panel UID LED header is located at pins 7/8 of JF1. Connect a cable to pin 8 on JF1 for the front panel UID LED connection. When you press the UID button, both the rear UID LED and the front panel UID LED will turn on. Press the UID button again to turn off both LEDs. These UID indicators provide easy identification of a system that may be in need of service.

Note: UID can also be triggered via IPMI on the serverboard. For more information on IPMI, please refer to the IPMI User's Guide posted on our website: http://www.supermicro.com.

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

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

5-10 Jumper Settings

Explanation of Jumpers

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

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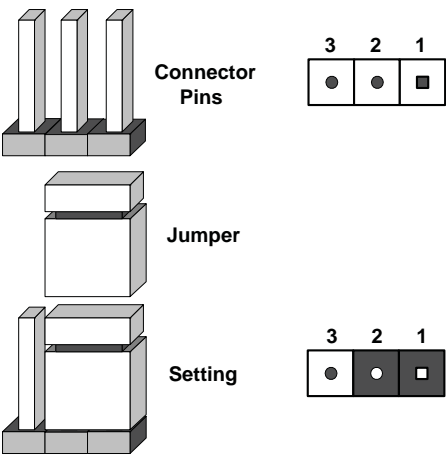
CMOS Clear

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

1. First power down the system and unplug the power cord(s).

2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.

3. Remove the screwdriver (or shorting device).

4. Reconnect the power cord(s) and power on the system

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

LAN1/LAN2 Enable/Disable

Change the setting of jumper JPL1 to enable or disable LAN1 port and JPL2 to enable or disable LAN2 port on the serverboard. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

VGA Enable/Disable

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

VGA Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Watch Dog

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

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

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

SAS2 Enable

Close pins 1-2 of JPS1 to enable SAS support. See the table on the right for jumper settings. The default setting is enabled.

SAS Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

BMC Enable

Jumper JPB1 allows you to enable the embedded WPCM 450 BMC (Baseboard Management) controller to provide IPMI 2.0/KVM support. See the table on the right for jumper settings. The default setting is enabled.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enabled
Pins 2-3	Disabled

I^{2}C Bus to PCI/PCI-Exp. Slots

Jumpers JI^{2}C1 and JI^{2}C2 allow you to connect the System Management Bus (I^{2}C) to the PCI-E slots to improve PCI performance. The default setting is Closed (Enabled.) Both jumpers must be set to the same setting. See the table on the right for jumper settings.

I^{2}C to PCI/PCI-E Slots Jumper Settings		
Jumper Settings		Definition
JI^{2}C1: Closed	JI^{2}C2:Closed	Enabled
JI^{2}C1: Open	JI^{2}C2: Open	Disabled

5-11 Onboard Indicators

Link LED — Activity LED

LAN Port LEDs

The LAN1/2 Ethernet ports each have two LEDs. One right LED indicates activity when blinking while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED (Connection Speed Indicator)	
LED Color	Definition
Off	No Connection or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

IPMI LAN

Link LED — Activity LED

IPMI Dedicated LAN LEDs

The IPMI LAN port has two LEDs as well. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table at right for more information.
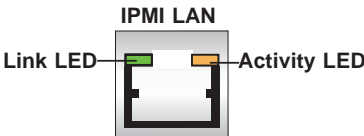
IPMI LAN Link LED (Left) & Activity LED (Right)		
LED	Color/State	Definition
Link (Left)	Green: Solid	100 Mbps
Activity (Right)	Amber: Blinking	Active

Rear UID LED

The rear UID LED (LED1) is located on the backplane This LED is used in conjunction with the front UID LED on the front control panel and the rear UID switch to provide easy identification of a system that might be in need of service. Refer to UID button/LED in Section 5-9 for more information.

Onboard Power LED

An Onboard Power LED is located at LED2 on the serverboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the table at right for more information.

Onboard PWR LED Indicator LED States	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State

SATA Activity LED

A SATA activity LED is located at JLED1. When JLED1 is blinking, there is activity on the SATA ports.

SATA Activity LED Status	
Color/State	Definition
Green: Blinking	SATA: Active
Off	SATA: Disabled or Failed

SAS Activity LED

A SAS Activity LED is located at JM-LED1. When JMLED1 is blinking, there is activity on the SAS ports.

SAS Activity LED Status	
Color/State	Definition
Green: Blinking	SAS: Active
Off	SAS: Disabled or Failed

SAS Heartbeat LED

A SAS Heartbeat LED is located at LEDS1. When LEDS1 is blinking, L-SAS is working properly.

SAS Heartbeat LED Status	
Color/State	Definition
Green: Blinking	SAS: Normal
Off or Red	SAS: Disabled or Failed

BMC Heartbeat LED

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

BMC Heartbeat LED States	
Color/State	Definition
Green: Blinking	BMC: Normal

5-12 SAS/SATA Ports

SAS Ports

There are eight SAS ports (L-SAS 0-7) supported by the LSI 2208 controller. See the table on the right for pin definitions.

SAS Port Pin Definitions	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

I-SATA Ports

In addition to the SAS ports, two SATA 3.0 (I-SATA 0/1) and four SATA 2.0 ports (I-SATA2-I-SATA5) are provided on the serverboard. These SATA ports are supported by the Intel PCH. See the table on the right for pin definitions.

SATA Port Pin Definitions	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5-13 Installing Software

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

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

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

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown in Figure 5-6 should appear.
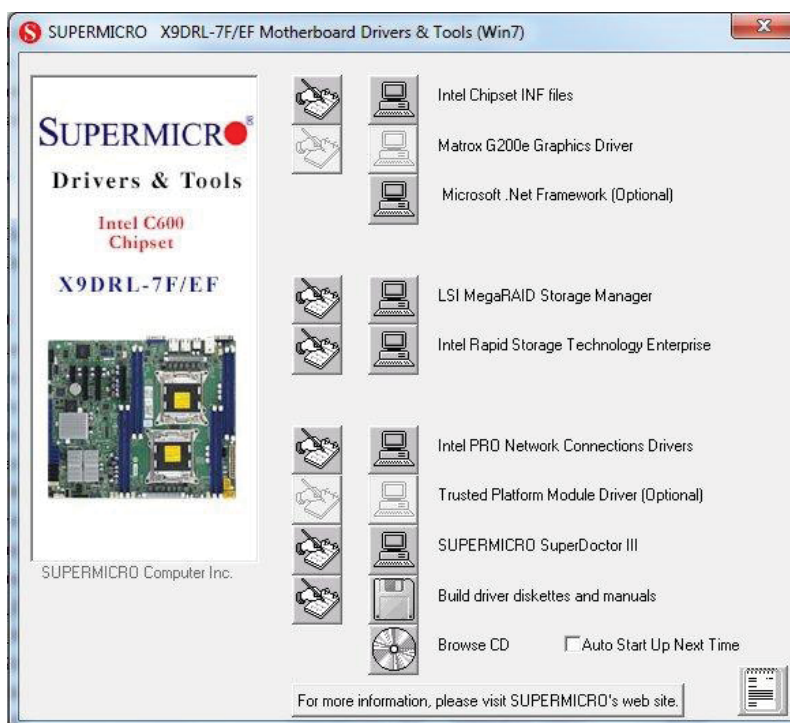
Figure 5-6. Driver/Tool Installation Display Screen

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

SuperDoctor III

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

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

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

Figure 5-7. SuperDoctor III Interface Display Screen (Health Information)
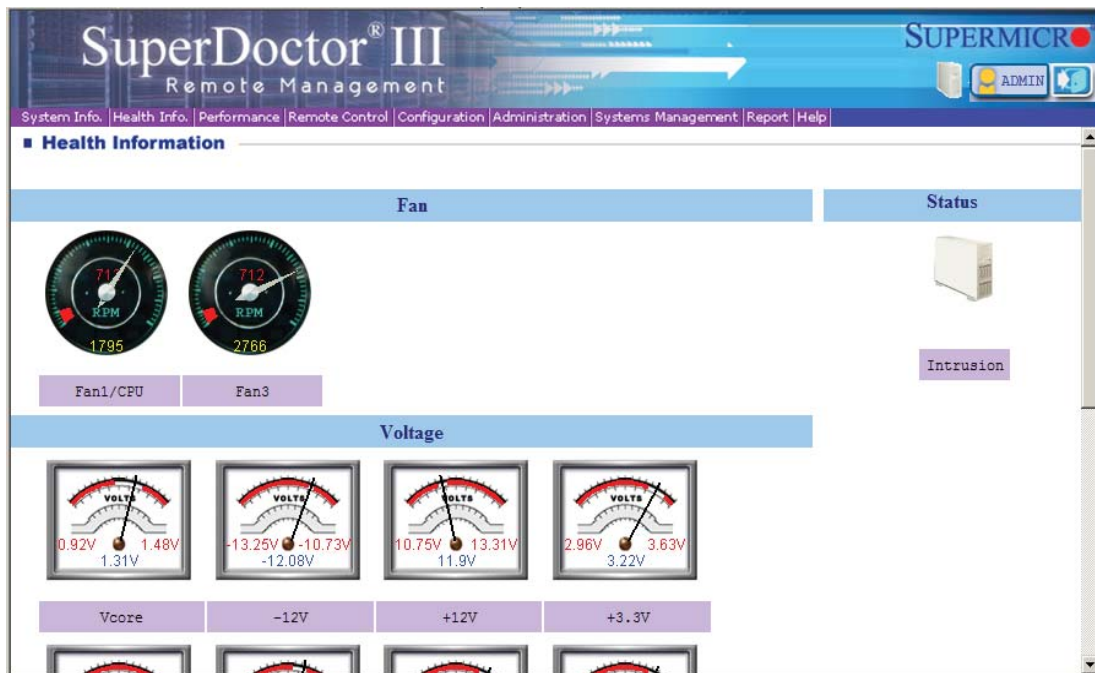
Figure 5-8. SuperDoctor III Interface Display Screen (Remote Control)
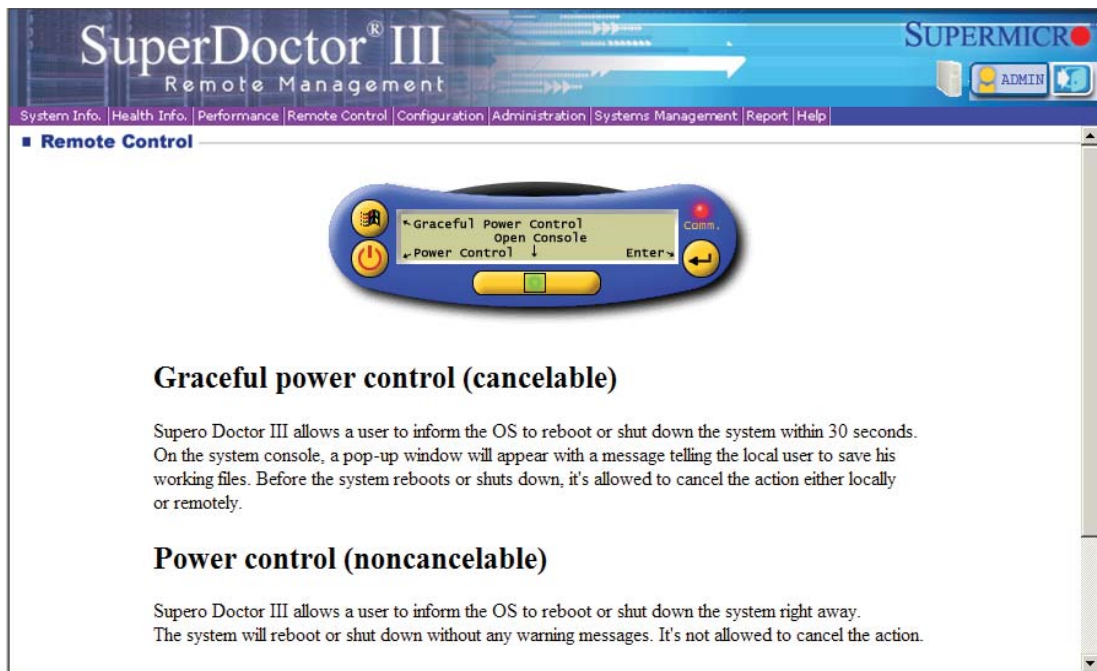
Note: The SuperDoctor III program and User's Manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm. For Linux, we recommend that you use the SuperDoctor II application instead.

5-14 Onboard Battery

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

Figure 5-9. Installing the Onboard Battery
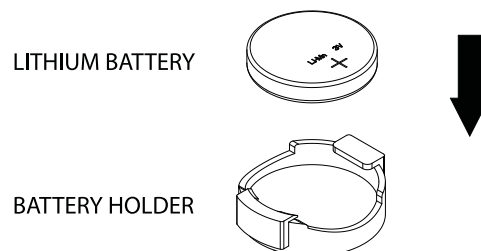
Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC813MFTQ chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

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

6-1   Static-Sensitive Devices

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

Precautions

- Use a grounded wrist strap designed to prevent static discharge.

- Touch a grounded metal object before removing any board from its antistatic bag.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

- When handling chips or modules, avoid touching their pins.

- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

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

Figure 6-1. Chassis Front View

Control Panel

SAS/SATA Drives (4)
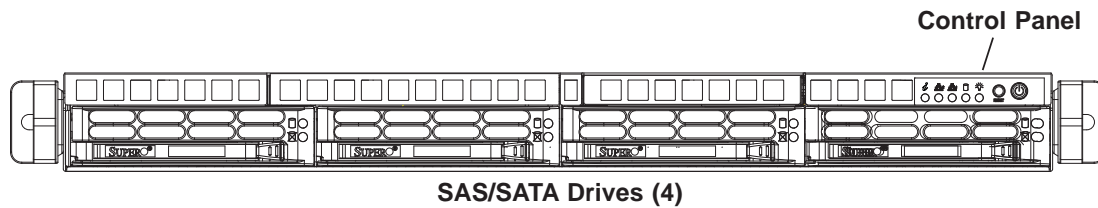
Figure 6-2. Chassis Rear View

Power Supplies   I/O Ports
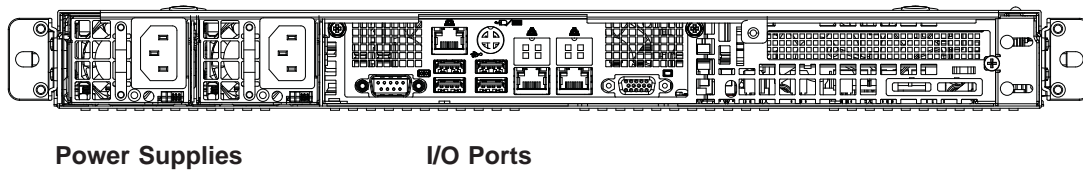
*The 6017R-M7UF includes one power supply only [may be upgraded with a second power supply (part #: PWS-406P-1R) or a BBP (battery backup power supply, part #: PWS-206B-1R) for redundancy].

6-2   Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system control buttons and status indicators. These wires have been bundled together in a ribbon cable to simplify the connection.

The LEDs inform you of system status. See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3   System Fans

Five 4-cm high-performance fans provide the cooling for the SuperServer 6017R-M7UF/6017R-M7RF. The chassis includes air seals under the fans and at the chassis cross section, which separates the drive bay area from the serverboard area of the chassis to promote better airflow. It is highly important that the air seal is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis.

The fans can adjust their speed according to the heat level sensed in the system, which results in more efficient and quieter fan operation. Fan speed is controlled by IPMI.

System Fan Failure

If a fan fails, you will need to have it replaced with the same type. Contact your vendor or Supermicro for information on replacement fans.

6-4   Drive Bay Installation/Removal

Removing the Front Bezel

If your system has a front bezel (optional) attached to the chassis, you must first remove it to gain access to the drive bays. To remove the bezel, first unlock the front of the chassis then press the release knob (see Figure 6-3). Carefully remove the bezel with both hands. A filter located within the bezel can be removed for replacement/cleaning. It is recommended that you keep a maintenance log of filter cleaning/replacement, since its condition will affect the airflow throughout the whole system.

Figure 6-3. Removing the Front Bezel

1. Unlock
2. Press release knob
3. Remove bezel assembly
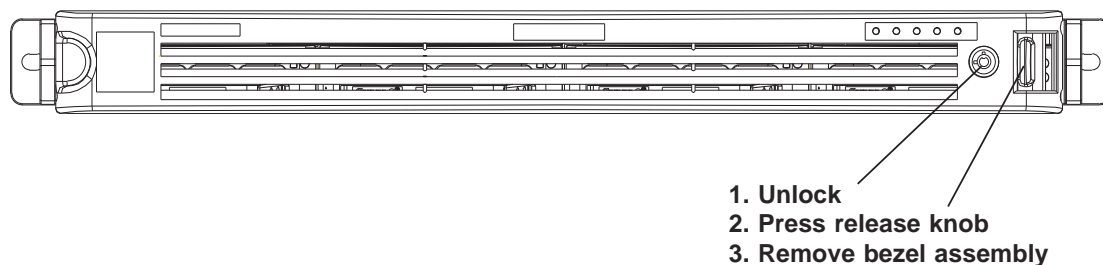
Accessing the Drive Bays

<u>SAS/SATA Drives</u>: Because of their hot swap capability, you do not need to access the inside of the chassis or power down the system to install or replace SAS/SATA drives. Proceed to the next step for instructions.

<u>DVD-ROM Drive (optional)</u>: For installing/removing a DVD-ROM drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "DVD-ROM Drive Installation" section in this chapter for instructions. Note that only a "slim" DVD-ROM drive will fit into the 6017R-M7UF/6017R-M7RF.

Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf

SAS/SATA Drive Installation

Mounting a Drive in a Drive Carrier

The SAS/SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the system. For this reason, even empty carriers without drives installed must remain in the chassis.

1. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with six screws, as shown in Figure 6-4.

Installing/Removing SAS/SATA Drives

1. To remove a carrier, push the release button located beside the drive LEDs.

2. Swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-5).

Warning! Use caution when working around the backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane. Also, regardless of how many drives are installed, all four drive carriers must remain in the chassis to maintain proper airflow.

Figure 6-4. Mounting a Drive in a Carrier
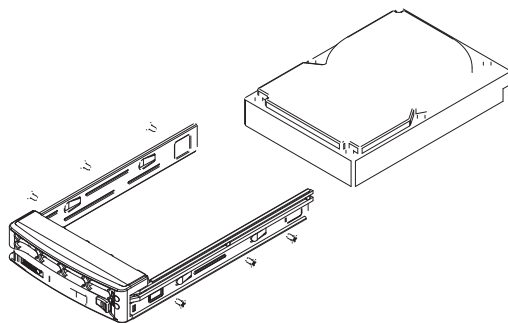
SAS/SATA Backplane

The SAS/SATA drives plug into a backplane that provides power, drive ID and bus termination.

Figure 6-5. Removing a Drive from the Server
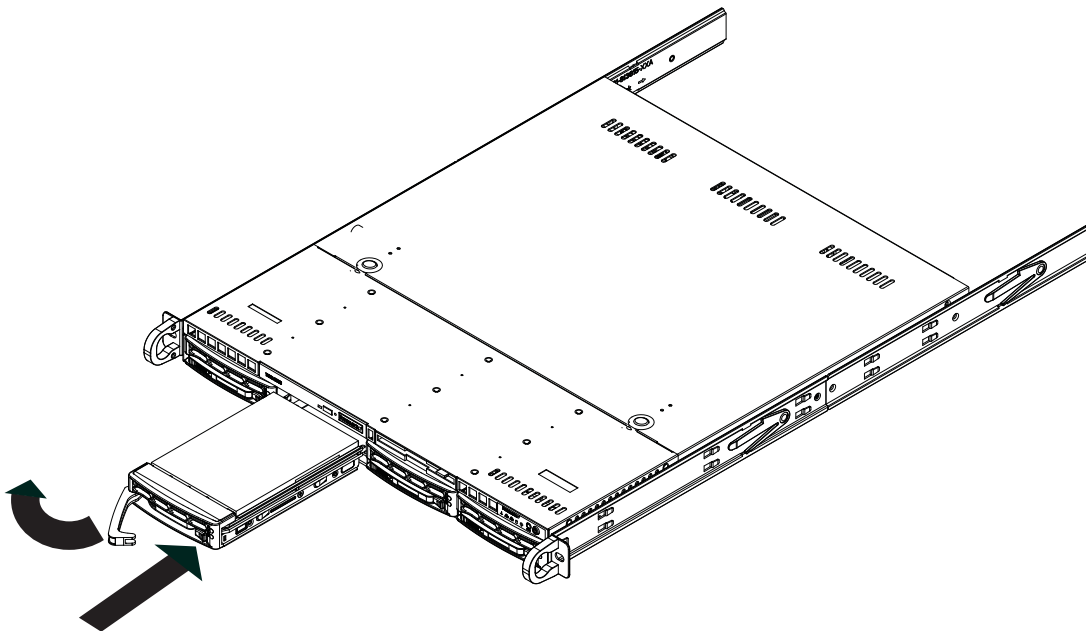
DVD-ROM Drive Installation (Optional)

The top cover of the chassis must be opened to gain full access to the DVD-ROM drive bay. The 6017R-M7UF/6017R-M7RF accomodates only slim DVD-ROM drives. Side mounting brackets are needed to mount a slim DVD-ROM drive into the 6017R-M7UF/6017R-M7RF server. <u>You must power down the system before installing or removing a DVD-ROM drive.</u>

Removing the Chassis Cover

1. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").

2. Depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server.

Removing/Installing a Drive

1. With the chassis cover removed, unplug the power and data cables from the drive.

2. Locate the locking tab at the rear of the drive. It will be on the left side of the drive when viewed from the front of the chassis.

3. Pull the tab away from the drive and push the drive unit out the front of the chassis.

4. Add a new drive by following this procedure in reverse order. You may hear a faint *click* of the locking tab when the drive is fully inserted.

5. Remember to reconnect the data and power cables to the drive before replacing the chassis cover and restoring power to the system.

6-5   Power Supply

6017R-M7UF

The SuperServer 6017R-M7UF has a single 400 watt power supply. This power supply has the capability of operating with an input voltage of 100-240V. A second identical power suppy (PWS-406P-1R) may be installed for redundancy or a BBP (Battery Backup Power Supply, PWS-206B-1R) can be installed to provide backup power.

Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit. Replacement units can be ordered directly from Supermicro (see contact infomation in Chapter 1).

Replacing the Power Supply

1. First depress the main power button on the front of the chassis then unplug the AC power cord from the power supply unit.

2. Push the release tab on the power supply to the side to unlock it, then pull the power supply straight out of the chassis.

3. Replace the failed unit with another unit with another of the same part number (the exact same power supply).

4. Carefully insert the new unit into position in the chassis and push it in until fully seated.

5. Reconnect the AC power cord to the new power supply.

6. Finish by depressing the power button on the control panel to reboot the system.

6017R-M7RF

The SuperServer 6017R-M7RF has a 400 watt redundant power supply consisting of two power modules (PWS-406P-1R). Each power supply module has an auto-switching capability, which enables it to automatically sense and operate with an input voltage of 100-240V.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The Power LED will illuminate and remain on until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro. The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

Replacing the Power Supply

1. First unplug the AC power cord from the failed power supply module.

2. To remove the failed power unit, push its release tab to the side to unlock it, then pull the power supply straight out of the chassis.

3. Replace the failed unit with another unit with another of the same part number (the exact same power supply).

4. Carefully insert the new unit into position in the chassis and push it in until fully seated.

5. Reconnect the power cord to the new power supply.

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup utility for the X9DRL-7F/X9DRL-EF. It also provides the instructions on how to navigate the AMI BIOS Setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

Starting BIOS Setup Utility

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

> **Note**: In most cases, the <Del> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F3>, <F4>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

> **Note**: The AMI BIOS has default text messages built in. The manufacturer retains the option to include, omit, or change any of these text messages.

The AMI BIOS Setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during setup navigation. These keys include <F3>, <F4>, <Enter>, <ESC>, arrow keys, etc.

> **Note 1**: Options printed in **Bold** are default settings.

> **Note 2**: <F3> is used to lad optimal default settings. <F4> is used to save the current settings and exit the setup utility.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <F2> at the appropriate time during system boot.

> ✏ **Note**: For AMI UEFI BIOS Recovery, please refer to the UEFI BIOS Re-
> covery User Guide posted @http://www.supermicro.com/support/manuals/.

Starting the Setup Utility

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

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

7-2   Main Setup

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

```
            Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                      Set the Date. Use Tab to
                                                      switch between Date
  System Date                     [Sat 02/23/2013]    elements.
  System Time                     [23:08:17]

  Supermicro X9DRL-7F
  Version                         1.0
  Build Date                      02/23/2013

  Memory Information
  Total Memory                    16384 MB (DDR3)


                                                      →←: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit



            Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.
```

The AMI BIOS main menu displays the following information:

System Time/System Date

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

Supermicro X9DRL-7F

Version

This item displays the version of the BIOS used in the system.

Build Date

This item displays the day when this version of BIOS was built.

Memory Information

Total Memory

This displays the amount of memory that is available in the system.

7-3   Advanced Setup Configurations

Use the arrow keys to select Advanced and press <Enter> to access the following submenu items:

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                          System Boot Feature
                                                          Setting.
  ▶ Boot Feature
  ▶ CPU Configuration
  ▶ Chipset Configuration
  ▶ SATA Configuration
  ▶ PCIe/PCI/PnP Configuration
  ▶ Super IO Configuration
  ▶ Serial Port Console Redirection
  ▶ ACPI Settings
  ▶ ME Subsystem

                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

              Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.
```

▶Boot Feature

Quiet Boot

Use this feature to select the bootup screen display between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo. The default setting is **Enabled**.

AddOn ROM Display Mode

This sets the display mode for the Option ROM. Select Keep Current to use the current AddOn ROM Display setting. Select Force BIOS to use the Option ROM display mode set by the system BIOS. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

Use this feature to set the Power-on state for the Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

If this feature is set to **Enabled**, the system will wait until the 'F1' key is pressed when an error occurs. The options are Disabled and **Enabled**.

Interrupt 19 Capture

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

Re-try Boot

If this item is enabled, the BIOS will automatically reboot the system from a specified boot device again after its initial boot failed. The options are **Disabled**, Legacy Boot, and EFI Boot.

Power Configuration

Watch Dog Function

If enabled, the Watch Dog timer will reboot the system when it is not active for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

If this feature is set to Instant Off, the system will power off immediately as soon as the user presses the power button. Select 4 Second Override for the system

to power off when the user presses the power button for 4 seconds or longer. The options are **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Stay Off for the system power to remain off after a power loss. Select Power On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last power state before a power loss. The options are Power On, Stay Off and **Last State**.

▶CPU Configuration

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

▶Socket 1 CPU Information/Socket 2 CPU Information

This submenu displays the following information regarding the CPU installed in Socket 1 or Socket 2.

- Type of CPU

- CPU Signature

- Microcode Patch

- CPU Stepping

- Maximum CPU Speed

- Minimum CPU Speed

- Processor Cores

- Intel HT(Hyper-Threading) Technology

- Intel VT-x (Virtualization) Technology

- Intel SMX (Trusted Execution) Technology

- L1 Data Cache

- L1 Code Cache

- L2 Cache

- L3 Cache

CPU Speed

This item displays the speed of the CPU installed in a socket specified.

64-bit

This item indicates if the CPU installed in the socket specified by the user supports 64-bit technology.

Clock Spread Spectrum

Select Enabled to enable Clock Spectrum support which allows the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled.

RTID (Record Types IDs)

This feature displays the total number of Record Type IDs for local and remote pools. The options are **Optimal** and Alternate.

Hyper-threading

Select Enabled to support Intel Hyper-threading Technology to enhance CPU performance. The options are **Enabled** and Disabled.

Active Processor Cores

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are **All,** 1, 2, 4, 6, and 8.

Limit CPUID Maximum

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

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

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

Intel® AES-NI

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

MLC Streamer Prefetcher (Available when supported by the CPU)

If set to Enabled, the MLC (mid-level cache) streamer prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disabled and **Enabled**.

MLC Spatial Prefetcher (Available when supported by the CPU)

If this feature is set to Disabled, The CPU prefetches the cache line for 64 bytes. If this feature is set to Enabled the CPU fetches both cache lines for 128 bytes as comprised. The options are Disabled and **Enabled**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enabled to support Data Cache Unite (DCU) prefetch to speed up data accessing and processing in the DCU to enhance CPU performance. The options are Disabled and **Enabled**.

DCU IP Prefetcher

Select Enabled for DCU (Data Cache Unit) IP Prefetcher support, which will prefetch IP addresses to enhance network connectivity and system performance. The options are **Enabled** and Disabled.

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

Select Enabled to support Intel Virtualization Technology, which will allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled.

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

▶**CPU Power Management Configuration**

This submenu allows the user to configure the following CPU Power Management settings.

Power Technology

Select Energy Efficiency to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are Disabled, **Energy Efficient**, and Custom. If the option is set to Custom, the following items will display:

EIST (Available when Power Technology is set to Custom)

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency to reduce power consumption and heat dissipation. The options are Disabled (GV3 Disabled), and **Enabled (GV3 Enabled)**. (**Note**: GV3 is Intel Speedstep support used on older platforms. Please refer to Intel's website for detailed information.)

Turbo Mode (Available when Power Technology is set to Custom)

Select Enabled to use the Turbo Mode to boost system performance. The options are **Enabled** and Disabled.

C1E Support (Available when Power Technology is set to Custom)

Select Enabled to enable Enhanced C1 Power State to boost system performance. The options are **Enabled** and Disabled.

CPU C3 Report (Available when Power Technology is set to Custom)

Select Enabled to allow the BIOS to report the CPU C3 State (ACPI C2) to the operating system. During the CPU C3 State, the CPU clock generator is turned off. The options are Enabled and **Disabled.**

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

Select Enabled to allow the BIOS to report the CPU C6 State (ACPI C3) to the operating system. During the CPU C6 State, the power to all caches is turned off. The options are **Enabled** and Disabled.

CPU C7 Report (Available when Power Technology is set to Custom)

Select Enabled to allow the BIOS to report the CPU C7 State (ACPI C3) to the operating system. CPU C7 State is a processor-specific low C-State. The options are **Enabled** and Disabled.

Package C-State limit (Available when Power Technology is set to Custom)

This feature allows the user to set the limit on the C-State package register. The options are C0, C2, **C6,** and No Limit.

Energy Performance Bias

Use this feature to select an appropriate fan setting to achieve maximum system performance (with maximum cooling) or maximum energy efficiency (with maximum power saving). The fan speeds are controlled by the firmware management via IPMI 2.0. The options are Performance, **Balanced Performance**, Balanced Energy, and Energy Efficient.

Factory Long Duration Power Limit

This item displays the power limit (in watts) set by the manufacturer during which long duration power is maintained.

Long Duration Power Limit

This item displays the power limit (in watts) set by the user during which long duration power is maintained. The default setting is **0**.

Factory Long Duration Maintained

This item displays the period of time (in seconds) set by the manufacturer during which long duration power is maintained.

Long Duration Maintained

This item displays the period of time (in seconds) during which long duration power is maintained. The default setting is **0**.

Recommended Short Duration Power Limit

This item displays the short duration power settings (in watts) recommended by the manufacturer.

Short Duration Power Limit

During Turbo Mode, the system may consume more power than the default power setting set for a processor, and thus, exceeds the Short Duration Power limit. By increasing this value, the processor can provide better performance during a short period. This item displays the time period during which short duration power is maintained. The default setting is **0**.

▶Chipset Configuration

▶North Bridge

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

▶Integrated IO Configuration

Intel® VT-d

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

Ageing Timer Rollover

Select Disabled to allow the BIOS to determine how long the system should wait before reallocating resources to PCI-E devices for data transferring when a deadlock occurs. Select 32 us for the BIOS to wait for 32 us second before reallocating system resources for use of PCI-E data transferring when a deadlock occurs. The options are Disabled, 32 us,**128 us**, and 512 us.

Intel® I/OAT

Select Enabled to enable Intel I/OAT (I/O Acceleration Technology), which will significantly reduce CPU overhead by leveraging CPU architectural improve-ments and freeing the system resource up for other tasks. The options are Disabled and **Enabled**.

DCA Support

Select Enabled to use Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The default is **Enabled** and can not be changed.

MMCFG Base

Use this feature to select the default value for the PCI MMIO (Memory-Mapped IO) Base Address. The lower the value, the less available the system memory will be in a 32-bit OS environment. The options are **0x80000000**, 0xA0000000 and 0xC0000000.

IIO 1 PCIe Port Bifurcation Control/IIO 2 PCIe Port Bifurcation Control

This submenu configures the following IO PCIe Port Bifurcation Control settings for IIO 1 PCIe ports to determine how the available PCI-Express lanes to be distributed between the PCI-Exp. Root Ports.

CPU1 Slot4 PCI-E 3.0 x8 Link Speed

This feature allows the user to set the PCI-Exp bus speed for the slot specified above. The options are Gen1 (Generation 1), Gen2 and **Gen3**.

CPU1 Slot6 PCI-E 3.0 x8 Link Speed

This feature allows the user to set the PCI-Exp bus speed for the slot specified above. The options are Gen1 (Generation 1), Gen2 and **Gen3**.

▶**QPI Configuration**

Current QPI Link

This item displays the current status of the QPI Link.

Current QPI Frequency

This item displays the current frequency of the QPI Link.

Isoc

Select Enabled to enable Ischronous support to meet QoS (Quality of Service) requirements. This feature is especially important for virtualization technology. The options are **Disabled** and Enabled.

QPI (Quick Path Interconnect) Link Speed Mode

Use this feature to select data transfer speed for QPI Link connections. The options are **Fast** and Slow.

QPI Link Frequency Select

Use this feature to select the desired QPI frequency. The options are **Auto**, 6.4 GT/s, 7.2 GT/s, and 8.0 GT/s.

▶**Memory Configuration**

- **Current Memory Mode**: This item displays the current memory mode.

- **Current Memory Speed**: This item displays the current memory speed.

- **Mirroring**: This item displays if memory mirroring is supported by the motherboard.

- **Sparing**: This item displays if memory sparing can be supported by the motherboard.

▶**DIMM Information**

CPU Socket 1 DIMM Information/ CPU Socket 2 DIMM Information

The status of the memory modules detected by the BIOS will be displayed.

Memory Mode

When Independent is selected, all DIMMs are available to the operating system. When Mirroring is selected, the motherboard maintains two identical copies of all data in memory for data backup. When Lockstep is selected, the motherboard uses two areas of memory to run the same set of operations in parallel. The options are **Independent**, Mirroring, and Lockstep.

DRAM RAPL Mode

RAPL (Running Average Power Limit) provides mechanisms to enforce power consumption limits on supported processors. The options are DRAM RAPL MODE0 , **DRAM RAPL MODE1**, and Disabled.

DDR Speed

Use this feature to force a DDR3 memory module to run at a frequency other than what is specified by the manufacturer. The options are **Auto**, Force DDR3-800, Force DDR3-1066, Force DDR3-1333, Force DDR3-1600 and Force SPD.

Channel Interleaving

This feature selects from the different channel interleaving methods. The options are **Auto**, 1 Way, 2 Way, 3, Way, and 4 Way.

Rank Interleaving

This feature allows the user to select a rank memory interleaving method. The options are **Auto**, 1 Way, 2 Way, 4, Way, and 8 Way.

Patrol Scrub

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

Demand Scrub

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

Data Scrambling

Select Enabled to enable data scrambling to ensure data security and integrity. The options are Disabled and **Enabled**.

Device Tagging

Select Enabled to support device tagging. The options are **Disabled** and Enabled.

Thermal Throttling

Throttling improves reliability and reduces power consumption in the processor via automatic voltage control during processor idle states. The options are Disabled and **CLTT** (Closed Loop Thermal Throttling).

▶South Bridge

This feature allows the user to configure the settings for the Intel PCH chip.

PCH Information

This feature displays the following PCH information.

Name: This item displays the name of the PCH chip.

Stepping: This item displays the PCH stepping.

USB Devices: This item displays the USB devices detected by the BIOS.

All USB Devices

This feature enables all USB ports/devices. The options are Disabled and **Enabled**. (If set to Enabled, EHCI Controller 1 and Controller 2 will appear.)

EHCI Controller 1/EHCI Controller 2 (Available when All USB Devices is set to Enabled)

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 1 or Controller 2 to enhance system performance. The options are Disabled and **Enabled**.

Legacy USB Support (Available when USB Functions is not Disabled)

Select Enabled to support legacy USB devices. Select Auto to enable legacy support if a legacy USB device is present. Select Disabled to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are Disabled, **Enabled** and Auto.

Port 60/64 Emulation

Select Enabled to enable I/O port 60h/64h emulation support for the legacy USB keyboard so that it can be fully supported by the operating systems that does not recognize a USB device. The options are Disabled and **Enabled**.

EHCI Hand-Off

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

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of IDE or SATA devices and displays the following items.

SATA Port0~SATA Port5: The AMI BIOS displays the status of each SATA port as detected by the BIOS.

SATA Mode

Use this feature to configure SATA mode for a selected SATA port. The options are Disabled, IDE Mode, **AHCI Mode** and RAID Mode. The following are displayed depending on your selection:

IDE Mode

The following items are displayed when IDE Mode is selected:

Serial-ATA (SATA) Controller 0 and Serial-ATA (SATA) Controller 1

Use this feature to activate or deactivate the SATA controller and to set SATA modes. The options are Disabled, Enhanced, and Compatible. The default for SATA Controller 0 is **Compatible.** The default of SATA Controller 1 is **Enhanced**.

AHCI Mode

The following items are displayed when the AHCI Mode is selected.

Aggressive Link Power Management

When this feature is set to Enabled, the SATA AHCI controller manages the power usage of the SATA link. The controller will put the link in a low power mode during an extended period of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are **Enabled** and Disabled.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for a particular port, which will allow the user to change a hardware component or device without shutting down the system. The options are **Enabled** and Disabled.

Port 0~5 Staggered Spin-up

Select Enabled to enable Staggered Spin-up support for a port specified by the user to prevent excessive power consumption caused by multiple HDDs spinning-up simultaneously. The options are Enabled and **Disabled**.

RAID Mode

The following items are displayed when RAID Mode is selected:

SATA RAID Option ROM/UEFI Driver

Select Enabled to boot the system from a SATA RAID device or a UEFI (Unified Extensible Firmware Interface) device. The options are **Enabled** or Disabled.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for a port specified by the user. The options are **Enabled** and Disabled.

▶PCIe/PCI/PnP Configuration

This submenu allows the user to configure the following PCIe/PCI/PnP settings.

Launch Storage OpROM Policy

This feature selects the Storage Option ROM to be used to bootup the system from a storage device when there are multiple Storage Option ROMs available. The options are UEFI Only and **Legacy Only**.

PCI Latency Timer

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

PERR# Generation

Select Enabled to allow a PCI device to generate a PERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

SERR# Generation

Select Enabled to allow a PCI device to generate a SERR number for a PCI Bus Signal Error Event. The options are Enabled and **Disabled**.

Maximum Payload

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

Maximum Read Request

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

ASPM Support

This feature allows the user to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto to allow the system BIOS to automatically set the ASPM level for the system. Select Disabled to disable ASPM support. The options are **Disabled** and Auto.

Warning: Enabling ASPM support may cause some PCI-E devices to fail!

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

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

PCH Slot 2 PCI-E 2.0 x1 OPROM, PCH Slot 3 PCI-E 2.0 x4 (in x8) OPROM, CPU1 Slot 4 PCI-E 3.0 x8 OPROM, CPU1 Slot 6 PCI-E 3.0 x8 OPROM

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

Onboard LAN Option ROM Select

Select iSCSI to use the iSCSI Option ROM to boot the computer using a network device. Select PXE (Preboot Execution Environment) to use an PXE Option ROM to boot the computer using a network device. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable the onboard LAN1 Option ROM/LAN2 Option ROM. This is to boot the computer using a network device. The default setting for LAN1 Option ROM is **Enabled**, and the default setting for LAN2 Option ROM is **Disabled**.

Load Onboard SAS Option ROM

Select Enabled to enable the onboard SAS Option ROM. This is to boot the computer using a SAS device. The options are **Enabled** and Disabled.

VGA Priority

This feature allows the user to select the graphics adapter to be used as the primary boot device. The options are **Onboard**, and Offboard.

Network Stack

When this featurer is set to Enabled, both PXE (Preboot Execution Environment) and UEFI (Unified Extensible Firmware Interface) will be enabled for network stack support. The options are Enabled and **Disabled**.

▶Super IO Configuration

Super IO Chip

Displays the Super IO chip type.

▶COM 1 Configuration

Serial Port

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

Device Settings

This item displays the settings of Serial Port 1.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of COM Port 1. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12.

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **Normal** and High Speed.

▶SOL (Serial_Over_LAN) Configuration

SOL Serial Port

Select Enabled to enable a serial port (Serial Port 2) specified by the user for SOL use. The options are **Enabled** and Disabled.

Device Settings

This item displays the settings of Serial Port 2.

SOL (Serial_Over_LAN) Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 2. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12.

SOL (Serial_Over_LAN) Device Mode

Use this feature to select the desired mode for the SOL port. The options are **Normal** and High Speed.

Serial Port 2 Attribute

Use this feature to select the attribute for serial port 2. The options are **SOL** (Serial_On_LAN), and COM.

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **Normal** and High Speed.

▶**Serial Port Console Redirection**

These submenus allow the user to configure the following Console Redirection settings for a COM Port 1 or COM Port 2 as specified by the user.

COM 1/SOL (Serial-Over-LAN)

COM1/SOL Console Redirection

Select Enabled to use COM Port1 or SOL Port for Console Redirection. The options are **Enabled** and Disabled. If this feature is set to enabled, the following items will display.

▶**Console Redirection Settings**

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

Terminal Type

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

Bits Per Second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection

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

Putty Keypad

Use this feature to select function key and keypad setting on Putty. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

Redirection After BIOS POST

If **Always Enabled** is selected, Legacy Console Redirection will be enabled for Legacy OS after BIOS POST (Power-On Self Test) is completed. The options are **Always Enabled**, and BootLoader.

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

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

Console Redirection

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

▶**Console Redirection Settings**

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

Out-of-Band-Mgmt (Management) Port

Use this feature to select the port to be used for out-of-band management. The options are **COM1** and COM2

Terminal Type

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

Bits Per Second

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

Flow Control

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

Data Bits

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

Parity

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

Stop Bits

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

▶ACPI Settings

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

ACPI Sleep State

Use this feature to select the ACPI State when the system is in sleep mode. Select S1 (CPU Stop Clock) to erase all CPU caches and stop executing instructions. Power to the CPU(s) and RAM is maintained, but RAM is refreshed. Select Suspend to use power-reduced mode. Power will only be supplied to limited components (such as RAMs) to maintain the most critical functions of the system. The options are **S1 (CPU Stop Clock)** and Suspend Disabled.

NUMA (NON-Uniform Memory Access)

This feature enables the Non-Uniform Memory Access ACPI support. The options are **Enabled** and Disabled.

High Precision Event Timer

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

▶Intel ME (Management Engine) Subsystem

This feature displays the following ME Subsystem Configuration settings.

- **ME BIOS Interface Version**

- **ME Version**

▶Trusted Computing (Available if a TPM device is installed)

Configuration

TPM Support

Select Enabled on this item and enable the TPM jumper on the motherboard to allow TPM support to improve data integrity and network security. The options are Enabled and **Disabled**.

Current Status Information: This item displays the information regarding the current TPM status.

TPM Enable Status

If a security device is detected by the BIOS, this item displays the status of TPM Support to indicate if TPM is currently enabled or disabled.

TPM Active Status

If a security device is detected by the BIOS, this item displays the status of TPM Support to indicate if TPM is currently active or deactivated.

TPM Owner Status

If a security device is detected by the BIOS, this item displays the status of TPM Ownership.

▶**Intel TXT(LT-SX) Configuration**

This feature indicates if the following hardware components support the Intel TXT (Trusted Execution Technology), which helps protect against software-based attacks and ensures protection, confidentiality and integrity of data stored or created on the system.

- **CPU/Chipset TXT Feature** - Displays status of TXT Feature support.

- **TXT Support** - Indicates if TXT support is enabled or disabled. The default setting is **Disabled**.

- **Intel TXT Dependencies** - Displays a list of features that must be supported (and enabled) before Intel TXT(LT-SX) configuration can be enabled.

7-4   Event Logs

Use this menu to configure Event Log settings.

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

   ▶ Change Smbios Event Log Settings                          Press <Enter> to change
                                                               the Smbios Event Log
     View Smbios Event Log                                     configuration.




                                                               ↔: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Exit
                                                               ESC: Exit



              Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.
```

▶Change SmBIOS Event Log Settings

Enabling/Disabling Options

Smbios Event Log

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

Runtime Error Logging Support

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

Memory Correction Error Threshold

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

PCI Error Logging Support

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

Erasing Settings

Erase Event Log

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

When Log is Full

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

Log System Boot Event

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

MECI

The Multiple Event Count Increment (MECI) counter counts the number of occurences a duplicate event must happen before the MECI counter is incremented. This is a numeric value ranging from 1 to 255. The default value is **1**.

METW

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

View Smbios Event Log

This feature displays the contents of the SmBIOS Event Log.

7-5   IPMI

Use this menu to configure Intelligent Platform Management Interface (IPMI) settings.
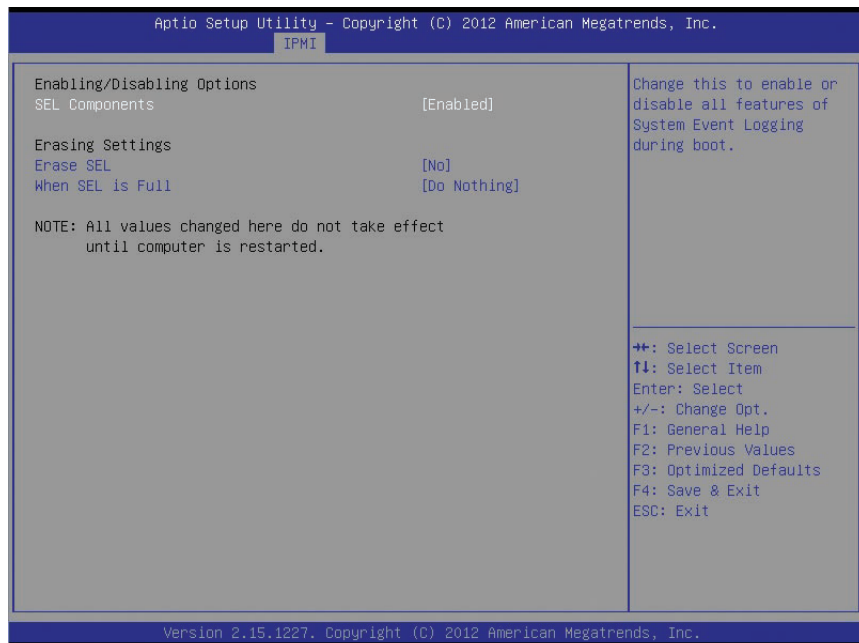
▶System Event Log

Enabling/Disabling Options

SEL Components

Select Enabled for all system event logging at bootup. The options are **Enabled** and Disabled.

Erasing Settings

Erase SEL

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

When SEL is Full

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

▶BMC Network Configuration

LAN Channel 1: This feature allows the user to configure the settings for LAN Channel 1.

IPMI LAN Selection: This feature displays the available IPMI LAN modes.

IPMI Network Link Status: This feature displays the IPMI Network Link status.

Update IPMI LAN Configuration

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

Configuration Address Source

This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field below. The options are Static and **DHCP**.

Station IP Address

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

Subnet Mask

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

Station MAC Address

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

Gateway IP Address

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

7-6 Boot

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

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                              Set Boot Priority.
        Set Boot Priority
        1st Boot Device                   [CD/DVD]
        2nd Boot Device                   [Hard Disk]
        3rd Boot Device                   [USB Hard Disk]
        4th Boot Device                   [Removable]
        5th Boot Device                   [Network:IBA GE S1...]
        6th Boot Device                   [UEFI: Built-in EF...]

      ▶ Delete Boot Option

      ▶ Network Device BBS Priorities
      ▶ UEFI Boot Drive BBS Priorities
                                                              ←→: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit
```

Set Boot Priorities

1st Boot Device/2nd Boot Device/3rd Boot Device/4th Boot Device/5th Boot Device/6th Boot Device

Use this feature to specify the sequence of boot priority for a device specified by the user.

▶**Add New Boot Option**

This feature allows the user to configure the following settings when adding a new device to the boot priority list.

> **Add Boot Option**

> **Path for Boot Option**

> **Boot Option File Path**

> **Create**

▶**Delete Boot Option**

This feature allows the user to select a boot device to delete from the boot priority list.

▶**USB Hard Disk Drive BBS Priorities**

This submenu allows the user to specify the boot priority sequence of a USB hard drive.

1st Device

▶**Network Device BBS Priorities**

This submenu allows the user to specify the boot priority sequence of a network device.

1st Device

▶**UEFI Boot Device BBS Priorities**

This submenu allows the user to specify the boot priority sequence of a UEFI bootable device.

1st Device

7-7   Security

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

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

      Password Description                                    Setup: Check password
                                                             while invoking setup.
      If ONLY the Administrator's password is set,           Always: Check password
      then this only limits access to Setup and is           while invoking setup as
      only asked for when entering Setup.                    well as on each boot.
      If ONLY the User's password is set, then this
      is a power on password and must be entered to
      boot or enter Setup. In Setup the User will
      have Administrator rights.
      The password length must be
      in the following range:
      Minimum length                      3
      Maximum length                      20
                                                             ←→: Select Screen
                                                             ↑↓: Select Item
      Password Check                      [Setup]            Enter: Select
      Administrator Password                                 +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


              Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.
```

Password Check

This item allows you to decide when the system should check for a password after it has been entered. Select Setup for the system to prompt for a password before the user enters the BIOS Setup utility. Select Always for the system to prompt for a password upon each system boot and before the user enters the Setup utility. The options are **Setup** and Always.

Administrator Password

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

7-8   Save & Exit

This submenu allows the user to configure the Save and Exit settings for the system.

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
       Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

   Discard Changes and Exit                              Restore the User
   Save Changes and Reset                                Defaults to all the
                                                         setup options.
   Save Options
   Save Changes
   Discard Changes

   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   IBA GE Slot 0600 v1403
   UEFI: Built-in EFI Shell                              →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



              Version 2.15.1227. Copyright (C) 2012 American Megatrends, Inc.
```

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without saving, select **Yes** to quit BIOS without saving the changes, or select No to quit the BIOS and save changes.

Save Changes and Reset

When you have completed the system configuration changes, select this option to save the changes and reboot the computer so that the new system configuration settings can take effect. Select Save Changes and Exit, and press <Enter>. When the dialog box appears, asking you if you want to exit the BIOS setup without sav-ing, select **Yes** to quit BIOS without saving the changes, or select No to quit the BIOS and save changes.

Save Options

Save Changes

Select this option and press <Enter> to save all changes you've done so far and return to the AMI BIOS utility Program. When the dialog box appears, asking you if you want to save configuration, select **Yes** to save the changes, or select No to return to the BIOS without making changes.

Discard Changes

Select this feature and press <Enter> to discard all the changes and return to the BIOS setup. When the dialog box appears, asking you if you want to load previous values, select **Yes** to load the values previous saved, or select No to keep the changes you've made so far.

Restore Optimized Defaults

Select this feature and press <Enter> to load the optimized default settings that help optimize system performance. When the dialog box appears, asking you if you want to load optimized defaults, select **Yes** to load the optimized default settings, or select No to abandon optimized defaults.

Save as User Defaults

Select this feature and press <Enter> to save the current settings as the user's defaults. When the dialog box appears, asking you if you want to save values as user's defaults, select **Yes** to save the current values as user's default settings, or select No to keep the defaults previously saved as the user's defaults.

Restore User Defaults

Select this feature and press <Enter> to load the user's defaults previously saved in the system. When the dialog box appears, asking you if you want to restore user's defaults, select **Yes** to restore the user's defaults previously saved in the system, or select No to abandon the user's defaults that were previously saved.

Boot Override

This feature allows the user to override the Boot Option Priorities setting in the Boot menu, and instead immediately boot the system with one of the listed devices. This is a one-time override.

Notes

Appendix A

BIOS Post Error Codes

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

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

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

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

X9 Motherboard BIOS Error Beep Codes		
Beep Code/LED	**Error Message**	**Description**
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL. Con-Out includes Video Controller, PCI or Serial Console Redirection, IPMI SOL.
1 beep per device	Refresh	1 beep or each USB device detected
X9 IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

System Specifications

Processors

Two Intel® E5-2600 Series processors in LGA2011 sockets

Note: refer to our web site for details on supported processors and operating systems.

Chipset

Intel PCH C602J

BIOS

128Mb SPI AMI BIOS® SM Flash BIOS

Memory Capacity

Eight DIMM slots that support up to 256GB of DDR3-1600/1333/1066/800 Registered (RDIMM) / Load Reduced (LRDIMM) ECC or Unbuffered (UDIMM) ECC/Non-ECC DIMMs

Note: refer to Section 5-6 for details and to our web site for updates to supported memroy.

SAS Controller

LSI 2208 controller, which supports eight SAS ports

Drive Bays

Four drive bays to house standard SAS/SATA drives

PCI Expansion

One PCI-Express 3.0 x8 card may be installed to the riser card in the system

Note: refer to page 5-11 for details.

Serverboard

X9DRL-7F

Dimensions: 12 x 10 in (305 x 254 mm)

Chassis

6017R-M7UF: SC813MFTQ-400CB (1U Rackmount)

6017R-M7RF: SC813MFTQ-R400CB (1U Rackmount)

Dimensions (both): (WxHxD) 17.2 x 1.7 x 19.85 in. (437 x 43 x 504 mm)

Weight

6017R-M7UF: Gross/Net Weight: 26/38 lbs. (11.8/17.3 kg.)

6017R-M7RF: Gross/Net Weight: 28/40 lbs. (12.7/18.2 kg.)

System Cooling

Five 4-cm high performance fans

One air shroud (Part# MCP-310-19009-0N)

System Input Requirements

AC Input Voltage: 100-240VAC auto-range

Rated Input Current: 100-240V, 6A-3A

Rated Input Frequency: 50 to 60 Hz

Power Supply

Rated Output Power: 400W (Part# PWS-406P-1R)

Rated Output Voltages: +3.3V (25A), +5V (25A), +12V (33A), -12V (.6A), +5Vsb (3A)

Operating Environment

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

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

Operating Relative Humidity: 20% to 95% (non-condensing)

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

Regulatory Compliance

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

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

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

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

Notes

(continued from front)
The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.