



SUPERSERVER®

5018R-M  
5018R-MR



USER'S MANUAL

1.0b



WIT Company – поставка серверов, СХД,  
сетевое оборудование, лицензионного ПО

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## Preface

### About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer 5018R-M/5018R-MR. Installation and maintenance should be performed by experienced technicians only.

The SuperServer 5018R-M/5018R-MR is a high-end server based on the SC-813MFTQ-350CB/SC813MFTQ-R400CB 1U rackmount chassis and the Super X10SRI-F single processor motherboard.

### 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 X10SRI-F motherboard and the SC813MFTQ-350CB/SC813MFTQ-R400CB chassis.

#### Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5018R-M/5018R-MR into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

#### Chapter 3: System Interface

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

#### Chapter 4: Standardized Warning Statements

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 5018R-M/5018R-MR.

## **Chapter 5: Advanced Motherboard Setup**

Chapter 5 provides detailed information on the X10SRI-F motherboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

## **Chapter 6: Advanced Chassis Setup**

Refer to Chapter 6 for detailed information on the SC813MFTQ-350CB/SC-813MFTQ-R400CB server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply modules and cooling fans.

## **Chapter 7: BIOS**

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

## **Appendix A: BIOS Error Beep Codes**

## **Appendix B: System Specifications**



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## **Appendix A BIOS Error Beep Codes**

## **Appendix B System Specifications**

# Chapter 1

## Introduction

### 1-1 Overview

The SuperServer 5018R-M/5018R-MR is a high-end server comprised of two main subsystems: the SC813MFTQ-350CB/SC813MFTQ-R400CB 1U server chassis and the X10SRI-F single processor motherboard. Please refer to our web site for information on operating systems that have been certified for use with the system ([www.supermicro.com](http://www.supermicro.com)).

In addition to the motherboard and chassis, various hardware components have been included with the 5018R-M/5018R-MR, as listed below:

- Four 4-cm fans (FAN-0147L4)
- One passive CPU heatsink (SNK-P0047PS)
- One air shroud (MCP-310-19007-0N)
- One riser card for one PCI-E 3.0 x16 PCI add-on card in a PCI-E 3.0 x16 slot (RSC-RR1U-E16)
- One rackmount kit (CSE-PT52)

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

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

### Secure Data Deletion

A secure data deletion tool designed to fully erase all data from storage devices can be found at our website: [https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wftp/utility/Lot9\\_Secure\\_Data\\_Deletion\\_Utility/](https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wftp/utility/Lot9_Secure_Data_Deletion_Utility/)

## 1-2 Motherboard Features

At the heart of the SuperServer 5018R-M/5018R-MR lies the X10SRi-F, a single processor motherboard based on the Intel® C612 Express chipset. Below are the main features of the X10SRi-F (see Figure 1-1 for a block diagram of the chipset).

### Processors

The X10SRi-F supports a single Intel® Xeon® processor E5-2600 v3/v4 or E5-1600 v3/v4 family in an LGA2011 socket. Please refer to the motherboard description pages on our website for a complete listing of supported processors.

### Memory

The X10SRi-F has eight DIMM slots that can support up to 1 TB of ECC 3DS LRDIMM (Load-Reduced DIMM), 512 GB of ECC LRDIMM or 256 GB of ECC RDIMM (Registered DIMM) DDR4-2400/2133/1866/1600 memory. Please refer to Chapter 5 for installing memory.

### Serial ATA

A SATA controller is integrated into the C612 chipset to support ten SATA 3.0 (6 Gb/s) ports. RAID 0, 1, 5 and 10 levels supported.

### I/O Ports

The rear I/O ports include one COM port, a VGA (monitor) port, two USB 3.0 ports, two USB 2.0 ports, and two gigabit Ethernet ports. A dedicated IPMI LAN port is also included.

### Graphics Controller

The X10SRi-F features an integrated AST 2400 graphics controller.

## 1-3 Server Chassis Features

The SC813MFTQ-350CB/SC813MFTQ-R400CB is a 1U rackmount server chassis. The following is a general outline of the main features of the chassis.

### System Power

When configured as a SuperServer 5018R-M, the SC813MFTQ chassis includes a single 350W power supply. When configured as a SuperServer 5018R-MR, the SC813MFTQ includes two (redundant) 400W power supplies.

### SATA Subsystem

For the 5018R-M/5018R-MR, the SC813MFTQ chassis was designed to support four SATA hard drives, which are hot-swappable units.

### Control Panel

The SC813MFTQ'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. The front of the SC813MFTQ also includes a COM port and two USB serial ports for easy access.

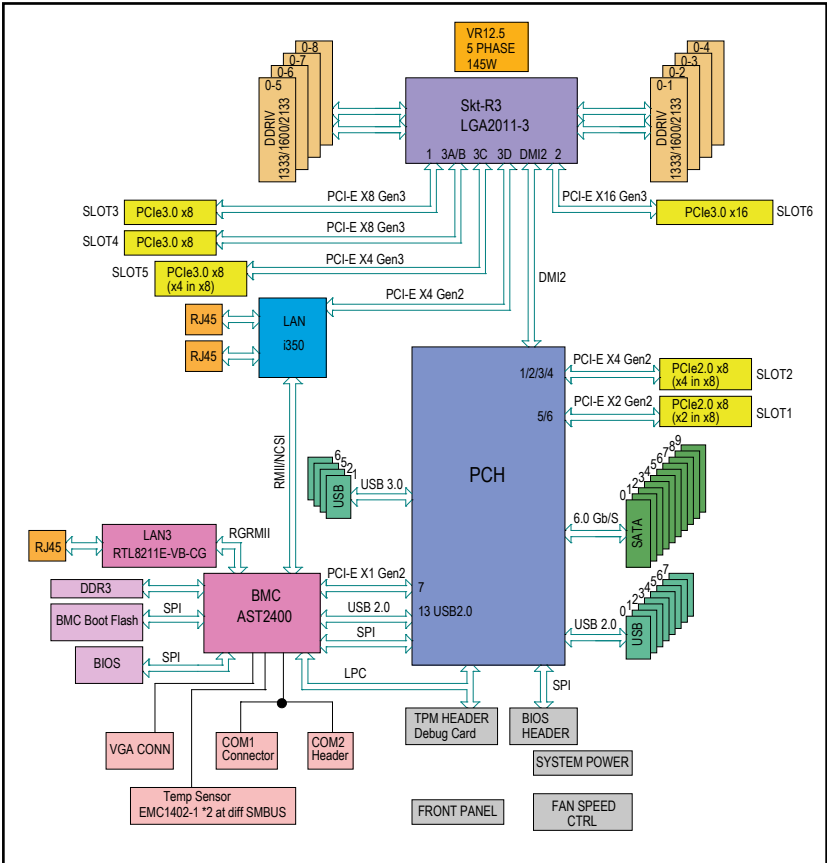
### Cooling Fans

The SC813MFTQ chassis has an innovative cooling design that features four 4-cm high-performance cooling fans. Each of these fans plug into a fan header on the motherboard.

Fan speed is controlled by IPMI and determined by system temperature.

**Figure 1-1. Intel C612 Express Chipset:  
System Block Diagram**

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





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## 1-4 Contacting Supermicro

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

## Notes

## Chapter 2

# Server Installation

### 2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5018R-M/5018R-MR 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 motherboard, 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 5018R-M/5018R-MR 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 system. 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 system 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 according to §2 of 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 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 (T<sub>mra</sub>).

### ***Reduced Airflow***

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

### ***Mechanical Loading***

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

### ***Circuit Overloading***

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

### ***Reliable Ground***

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



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

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

## 2-5 Installing the System into a Rack

This section provides information on installing the SuperServer 5018R-M/5018R-MR 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

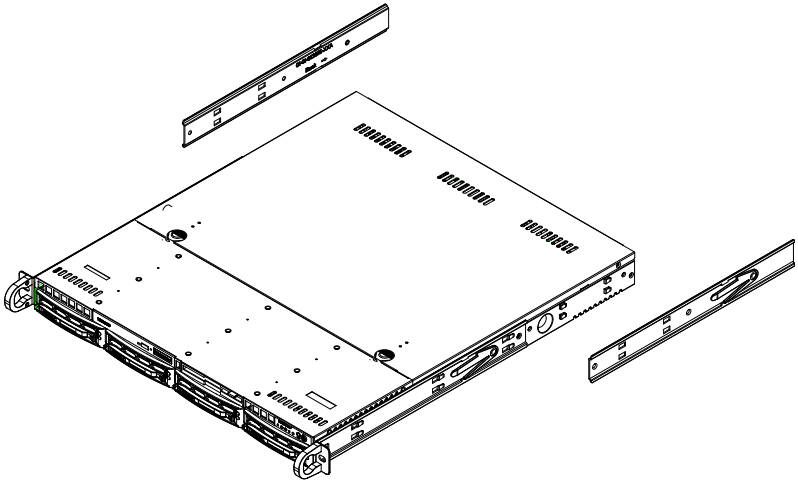
You may have received rack rail hardware with the SuperServer 5018R-M/5018R-MR. (Two front inner rails should already be attached to the chassis.) This hardware consists of two rear inner rails that secure to the chassis, one on each side just behind the preinstalled front inner rails. Note that these 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 5018R-M/5018R-MR in the rack (see [Rack and Server Precautions](#) in Section 2-3). 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.



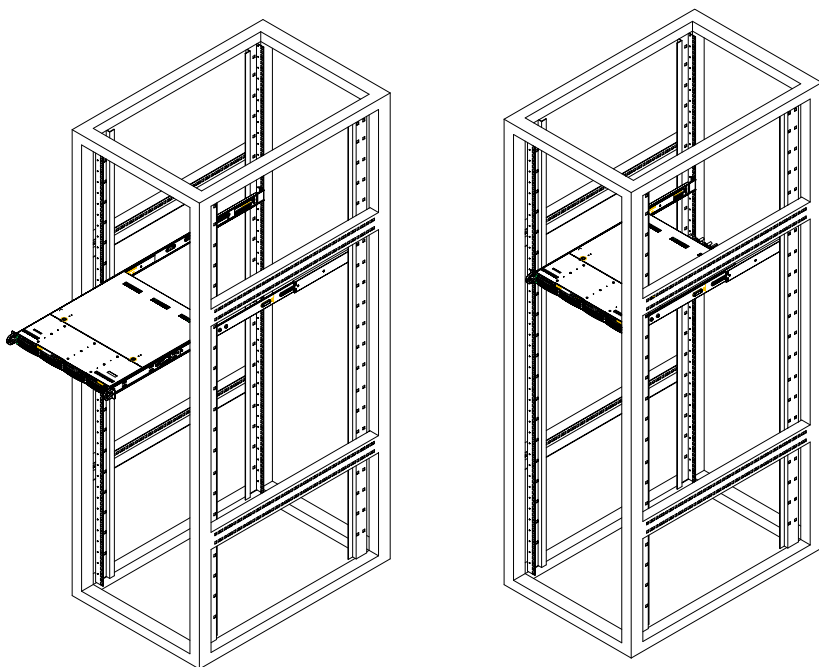
**Warning:** do not pick up the server with the front handles. They are designed to pull the system from a rack only.

## Installing the Server into 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  
(with optional front bezel shown)**



**Note:** figures are for illustrative purposes only. Always install servers starting from the bottom of a rack first.



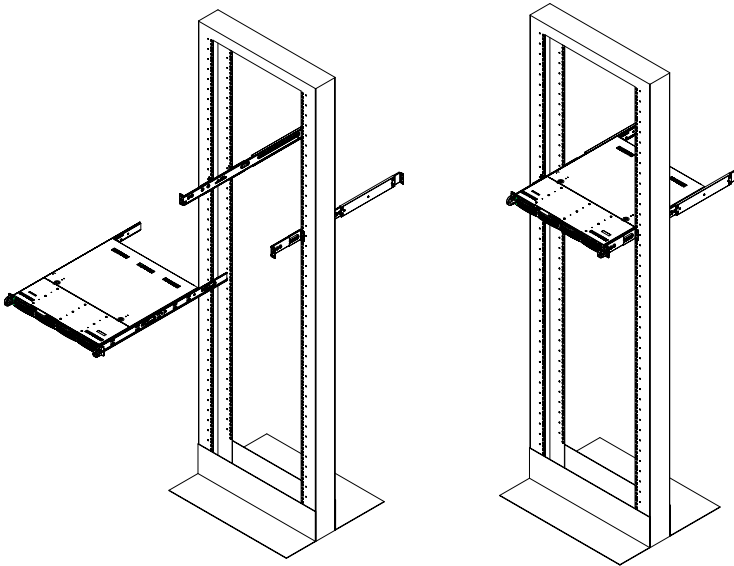
Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.



## Installing the Server into a Telco Rack

To install the SuperServer 5018R-M/5018R-MR 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  
(with optional front bezel shown)**



**Note:** figures are for illustrative purposes only. Always install servers starting from the bottom of a rack first.

## Notes

## Chapter 3

# System Interface

### 3-1 Overview

There are several LEDs on the control panel as well as others on the hard 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 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 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.

Universal Information LED States	
State	Indication
Fast Blinking Red (1x/sec)	Fan Fail
Solid Red	CPU Overheat
Slow Blinking Red (1x/4 sec)	Power Fail
Solid Blue	Local UID Button Depressed
Blinking Blue	IPMI-Activated UID



#### 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 hard drive activity on the 5018R-M/5018R-MR 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 Hard 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](http://www.supermicro.com/about/policies/safety_information.cfm).

#### Warning Definition



#### Warning!

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

#### 警告の定義

この警告サインは危険を意味します。

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

此警告符号代表危險。

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

此警告符號代表危險。

您目前所處的工作環境可能讓您受傷。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 היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים. יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.



اَكْ فِ حَالَةٍ وَّكِي اَيُّ تَتَسَبَّبُ فِ اَصَابَةِ جَسَدٍ هَذَا الزَّهْرُ عَ خَطَرَ! تَحْذَرُ .  
قَبْلَ اَيُّ تَعْوَلُ عَلٰى اَيُّ هَعْدَاتٍ، كِي عَلٰى عِلْنِ بِالْوَاخِطِرِ اَلْ اُجُوَّةِ عِي الذَّوَاتِرِ  
الْكَهْزِبَائِيَّةِ  
وَكِي عَلٰى دِرَاةٍ بِالْوَوَارِسَاتِ الْمَقَائِيَّةِ لَوْ عَ وَقَعَ اَيُّ حَادِثٍ  
اَسْتَخْدَمَ رَقْمَ الْبِ اِي الْوَصْفِ فِ هَآءِ كُلِّ تَحْذَرُ لِّلْعَثْرَةِ تَرْجُوْنَهَا

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.

اقرأ إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

## Circuit Breaker



### Warning!

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

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

### 警告

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

### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

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

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

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

경고!

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

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 250V, 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 châssis pour installer ou enlever des composants de système.

אזהרה מפני ניתוק חשמלי

!אזהרה

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

يجب فصل انظاؤ من جميع مصادر انطاقت وإزانت سهك انكهرياء من وحدة امداد

انطاقت قيم

انصلل إلى امناطق انداخييت نههيكم نتشيح أو إزانت مكناث الجهاز

경고!

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

Waarschuwing

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

## Equipment Installation



### Warning!

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

### 機器の設置

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

### 警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

### 警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

### אזהרה!

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

والمدربيه لتزكيب واستبدال أو خدمة هذا الجهاز يجب أن يسمح فقط للمظفيه المؤهليه

### 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

此装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.).

تخصيص هذه انحدة نترك بؤها ف مناطق محظورة تم .  
،مكن اننصل إن منطقت محظورة فقط من خلال استخداو أداة خاصت  
أو أ وس هت أخرى نلاأما ققم ومفتاح

경고!

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

Waarschuwing

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

## Battery Handling



### Warning!

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

電池の取り扱い

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

警告

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

警告

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



### Warnung

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

### Attention

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

### ¡Advertencia!

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

### אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת. סילוק הסוללות המשמשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة ففعليل اسبدال البطارية

فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة  
جخلص من البطاريات المسحمة وفقا لتعليمات الشركة الصانعة

### 경고!

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

### Waarschuwing

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

## Redundant Power Supplies



### Warning!

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

### 冗長電源装置

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

### 警告

此部件连接的电源可能不止一个·必须将所有电源断开才能停止给该部件供电·

### 警告

此装置连接的电源可能不只一个·必须切断所有电源才能停止对该装置的供电·

### Warnung

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

### ¡Advertencia!

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

### Attention

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

אם קיים יותר מספק אחד

אזהרה!

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

את היחידה.

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

경고!

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

Waarschuwing

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

### Backplane Voltage



#### Warning!

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

バックプレーンの電圧

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

警告

当系统正在进行时·背板上有很危险的电压或能量·进行维修时务必小心。

警告

當系統正在進行時·背板上有危險的電壓或能量·進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

אזהרה!

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

هناك خطر من التيار الكهربائي أو الطاقة المسجدة على اللوحة عندما يكن النظام يعمل كه حذرا عند خدمة هذا الجهاز

경고!

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

Waarschuwing

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

## Comply with Local and National Electrical Codes



### Warning!

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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

#### Attention

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

תיאום חוקי החשמל הארצי

אזהרה!

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوايه المحلية والوطنية المتعلقة

بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

#### Waarschuwing

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

### Product Disposal



#### Warning!

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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

#### Warnung

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

¡Advertencia!

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

**Attention**

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

סילוק המוצר

אזהרה!

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

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

**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!**

Hazardous moving parts. Keep away from moving fan blades. 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**

警告!回転部品に注意。運転中は回転部(羽根)に触れないでください。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!**

警告! 危险的可移动性零件。请务必与转动的风扇叶片保持距离。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

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危险的可移动性零件。请务必与转动的风扇叶片保持距离。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。

**Warnung**

Gefährlich Bewegende Teile. Von den bewegenden Lüfterblätter fern halten. 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!**

Riesgo de piezas móviles. Mantener alejado de las aspas del ventilador. Los ventiladores podran dar vuelta cuando usted quite el montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

**Attention**

Pieces mobiles dangereuses. Se tenir a l'ecart des lames du ventilateur 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!**

חלקים נעים מסוכנים. התרחק מלהבי המאוורר בפעולה כאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير! أجزاء متحركة خطيرة. ابتعد عن شفرات المروحة المتحركة. 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!**

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 채시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조립품 외곽의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

**Waarschuwing**

Gevaarlijk bewegende onderdelen. Houd voldoende afstand tot de bewegende ventilatorbladen. 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!

**Warning!** When installing the product, use the provided or designated connection cables, power cables and AC. 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、提供または指定および購入された接続ケーブル、電源コードとACアダプターを該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。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或采购的连接线,电源线和电源适配器·包含遵照当地法规和安全要求的合规的电源线尺寸和插头.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

安装此產品時,請使用本身提供的或指定的或採購的連接線,電源線和電源適配器·包含遵照當地法規和安全要求的合規的電源線尺寸和插頭.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

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adapter, die Ihre örtlichen Sicherheitsstandards einhalten. Der Gebrauch von anderen Kabeln und Adapter können Fehlfunktionen oder Feuer verursachen. Die Richtlinien untersagen das Nutzen von UL oder CAS zertifizierten Kabeln (mit UL/CSA gekennzeichnet), an Geräten oder Produkten die nicht mit Supermicro gekennzeichnet sind.



## ¡Advertencia!

Cuando instale el producto, utilice la conexión provista o designada o procure cables, Cables de alimentación y adaptadores de CA que cumplan con los códigos locales y los requisitos de seguridad, incluyendo el tamaño adecuado del cable y el enchufe. El uso de otros cables y adaptadores podría causar un mal funcionamiento o un incendio. La Ley de Seguridad de Aparatos Eléctricos y de Materiales prohíbe El uso de cables certificados por UL o CSA (que tienen el certificado UL / CSA en el código) para cualquier otros dispositivos eléctricos que los productos designados únicamente por Supermicro.Attention

## Attention

Lors de l'installation du produit, utilisez les cables de connection fournis ou désigné ou achetez des cables, cables de puissance et adaptateurs respectant les normes locales et les conditions de securite y compris les tailles de cables et les prises electriques appropries. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et la Loi sur la Sécurité Matériel interdit l'utilisation de câbles certifiés- UL ou CSA (qui ont UL ou CSA indiqué sur le code) pour tous les autres appareils électriques sauf les produits désignés par Supermicro seulement.

## AC כבלים חשמליים ומתאמי

אזהרה!

אשר נרכשו או AC כאשר מתקינים את המוצר, יש להשתמש בכבלים, ספקים ומתאמים הותאמו לצורך ההתקנה, ואשר הותאמו לדרישות הבטיחות המקומיות, כולל מידה נכונה של הכבל והתקע. שימוש בכל כבל או מתאם מסוג אחר, עלול לגרום לתקלה או קצר חשמלי. בהתאם לחוקי השימוש במכשירי החשמל וחוקי הבטיחות, קיים איסור להשתמש עבור UL/CSA) כאשר מופיע עליהם קוד של) UL-CSA או ב UL -בכבלים המוסמכים ב בלבד Supermicro כל מוצר חשמלי אחר, אלא רק במוצר אשר הותאם ע"י

عند تركيب المنتج، قم باستخدام التوصيلات المتوفرة أو المحددة أو قم بشراء الكابلات الكهربائية ومحولات التيار المتردد مع الالتزام بقوانين ومتطلبات السلامة المحلية بما في ذلك حجم الموصل والقياس السليم. استخدام أي كابلات ومحولات أخرى قد يتسبب في عطل أو حريق. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام مع أي معدات أخرى غير المنتجات المعنية (UL/CSA) والتي تحمل علامة CSA أو UL الكابلات المعتمدة من قبل Supermicro والمحددة من قبل

#### 전원 케이블 및 AC 어댑터

경고! 제품을 설치할 때 현지 코드 및 적절한 굵기의 코드와 플러그를 포함한 안전 요구 사항을 준수하여 제공되거나 지정된 연결 혹은 구매 케이블, 전원 케이블 및 AC 어댑터를 사용하십시오.

다른 케이블이나 어댑터를 사용하면 오작동이나 화재가 발생할 수 있습니다. 전기 용품 안전법은 UL 또는 CSA 인증 케이블 (코드에 UL / CSA가 표시된 케이블)을 Supermicro가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

#### Stroomkabel en AC-Adapter

Waarschuwing! Bij het aansluiten van het Product uitsluitend gebruik maken van de geleverde Kabels of een andere geschikte aan te schaffen Aansluitmethode, deze moet altijd voldoen aan de lokale voorschriften en veiligheidsnormen, inclusief de juiste kabeldikte en stekker. Het gebruik van niet geschikte Kabels en/of Adapters kan een storing of brand veroorzaken. Wetgeving voor Elektrische apparatuur en Materiaalveiligheid verbiedt het gebruik van UL of CSA -gecertificeerde Kabels (met UL/CSA in de code) voor elke andere toepassing dan de door Supermicro hiervoor beoogde Producten.

## Chapter 5

### Advanced Motherboard Setup

This chapter covers the steps required to install processors and heatsinks to the X10SRI-F motherboard, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are described and a layout and quick reference chart are included in this chapter. Remember to close the chassis completely when you have finished working on the motherboard to protect and cool the system sufficiently.

#### 5-1 Handling the Motherboard

Static electrical discharge can damage electronic components. To prevent damage to printed circuit boards, it is important to handle them very carefully (see Chapter 4). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling.

The following measures are generally sufficient to protect your equipment from static 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 motherboard, add-on cards and peripherals back into their antistatic bags when not in use.

##### Unpacking

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

## 5-2 Processor and Heatsink Installation

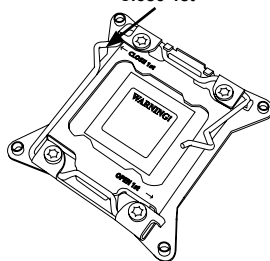
### Notes:

- Always connect the power cord last and always remove it before adding, removing 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 motherboard into the chassis before you install the CPU heatsinks.
- When receiving a motherboard 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.

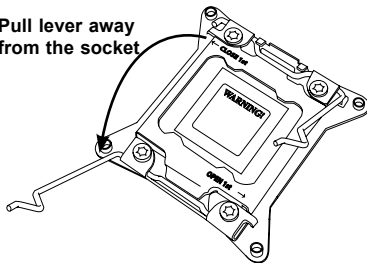
### Installing an LGA2011 Processor

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.

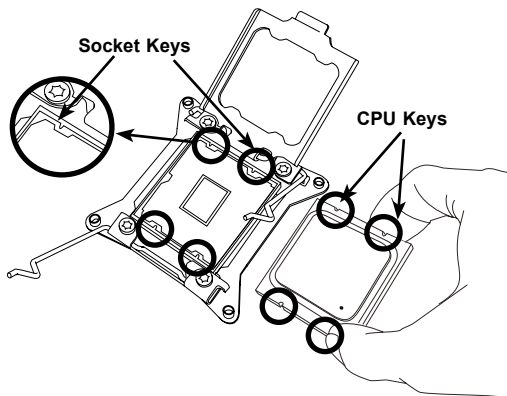
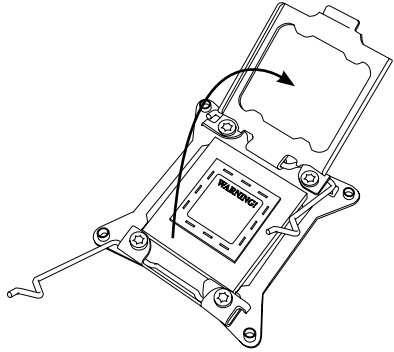
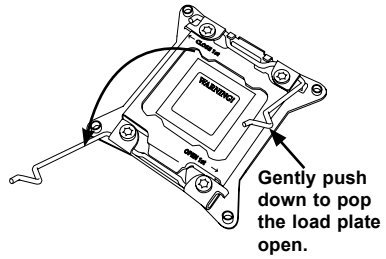
Press down on the lever labeled  
'Close 1st'



Pull lever away  
from the socket

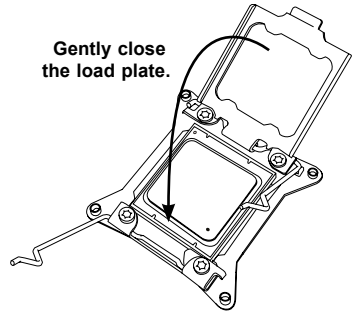


3. With the lever labeled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.
4. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.
5. Use your thumb and index finger to hold the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

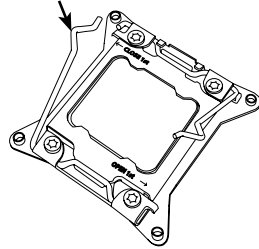


**Caution:** You can only install the CPU to the socket in one direction. Make sure that the CPU is properly inserted into the socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU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

7. With the CPU in the socket, inspect 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.



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



Lever Lock

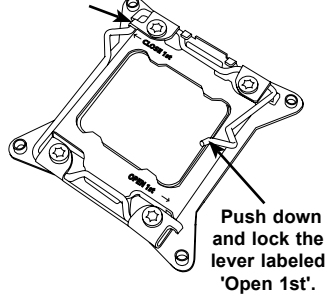
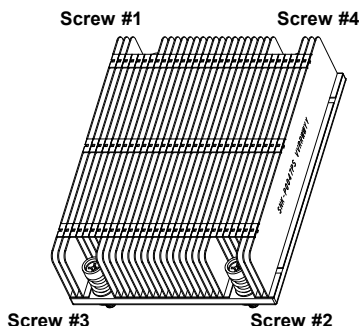


Figure 5-1. Installing the Heatsink



### 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 motherboard 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. Finish the installation by fully tightening 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 motherboard in the sequence as shown in the illustration below.
2. Gently wriggle the heatsink to loosen it from the CPU (do not use excessive force).
3. Once the CPU is loose, remove it from the CPU socket.
4. Clean the surface of the CPU and the heatsink, removing the used thermal grease. Reapply the proper amount of thermal grease to the surface before re-installing the heatsink.

## 5-3 Connecting Cables

Now that the processors are installed, the next step is to connect the cables to the motherboard. These include the data (ribbon) 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 in preconfigured systems 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 reroute them as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). If you are configuring the system, keep the airflow in mind when routing the cables. The following data cables (with their motherboard connector locations noted) should be connected.

See the motherboard layout diagram in this chapter for connector locations.

- Control Panel cable (JF1, see next page)
- SATA cables (I-SATA0 ~ I-SATA3)

### Connecting Power Cables

The X10SRi-F has a 24-pin primary power supply connector designated "JPW1" for connection to the ATX power supply. Connect the appropriate connector from the power supply to JPW1 to supply power to the motherboard. See the Connector Definitions section in this chapter for power connector pin definitions.

In addition, your power supply must be connected to the 4-pin Processor Power connector at JPWR1.

### Connecting the Control Panel

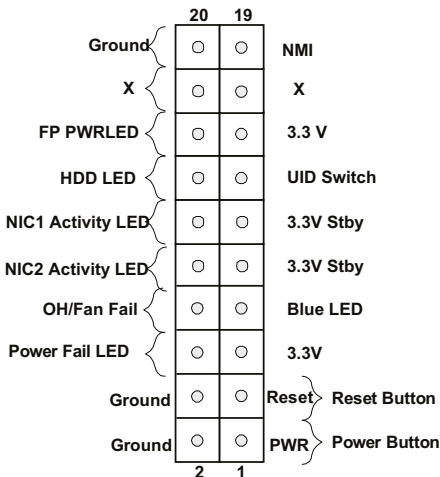
JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides of each header.

All JF1 wires have been bundled into single keyed ribbon cable to simplify their connection. Connect one end of this cable to JF1 and the other end to the Control Panel printed circuit board, located just behind the system status LEDs in the chassis.

See the Connector Definitions section in this chapter for details and pin descriptions of JF1.



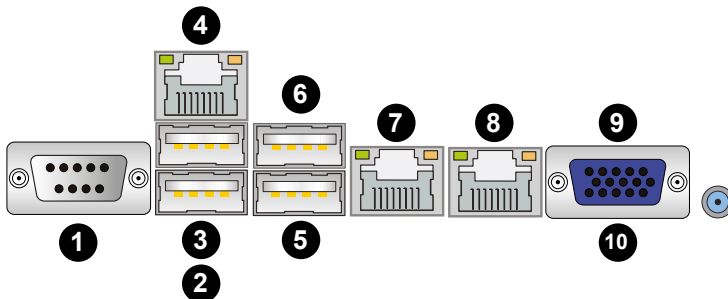
Figure 5-3. Front Control Panel Header Pins (JF1)



### 5-4 I/O Ports

The I/O ports on the motherboard are located at the rear of the system. See Figure 5-4 below for the locations of the various I/O ports.

Figure 5-4. Rear Panel I/O Ports



Rear I/O Ports	
1. COM Port	6. USB Port 3 (3.0)
2. USB Port 0 (2.0)	7. LAN1 Port
3. USB Port 1 (2.0)	8. LAN2 Port
4. IPMI LAN	9. VGA Port
5. USB Port 2 (3.0)	10. UID Switch

## 5-5 Installing Memory

Note: Check the Supermicro website for recommended memory modules.

### **CAUTION**

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

#### **Installing DIMMs**

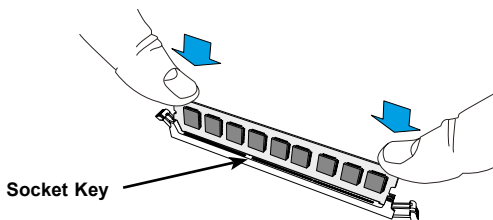
Insert the desired number of DIMMs into the memory slots, starting with slot DIMMA1.

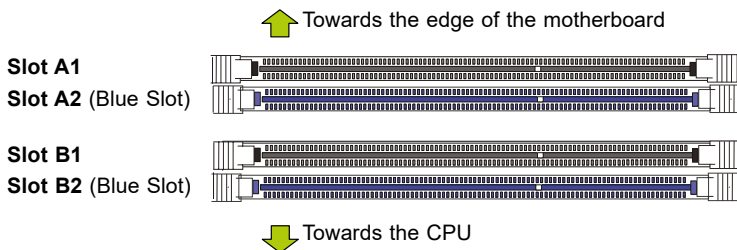
1. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
2. Align the key on the DIMM module with the receptive point on the slot.
3. Use two thumbs together to press on both ends of the module straight down into the slot until the module snaps into place.
4. Press the release tabs to the lock positions to secure the DIMM module into the slot. Reverse the above steps to remove DIMMs. See Figure 5-5.

#### **Memory Support**

The X10SRi-F supports up to 1 TB of ECC 3DS LRDIMM (Load-Reduced DIMM), 512 GB of ECC LRDIMM or 256 GB of ECC RDIMM (Registered DIMMs) DDR4-2400/2133/1866/1600 memory.in eight memory slots. Please refer to the table on the following page and the Supermicro website for possible updates to memory support.

**Figure 5-5. Installing a DIMM into a Slot**





### Notes

- Be sure to use memory modules of the same type, same speed, same frequency on the same motherboard. Mixing of memory modules of different types and speeds is not allowed.
- Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. See the following table for details.
- For Microsoft Windows users: Microsoft implemented a design change in the Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the behavior of Physical Address Extension (PAE) mode which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: <http://support.microsoft.com/kb/888137>.

<b>Possible System Memory Allocation &amp; Availability</b>		
System Device	Size	Physical Memory Remaining (Available with 4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256 MB boundary.	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

## 5-6 Adding PCI Cards

### PCI Expansion Slots

One riser card is used to support a PCI expansion (add-on) card in the system. The system can accommodate one standard size (full height full length) PCI expansion card. When viewed from the chassis front, the card installs to the left rear of the system.

### PCI Card Installation

Before installing a PCI add-on card, make sure it is supported by the riser card. Begin by releasing the locking tab that corresponds to the slot you wish to populate. Insert the expansion card into the riser card by pushing down with your thumbs evenly on both sides of the card.

### PCI Slot/Card Configuration

#### *Riser Card*

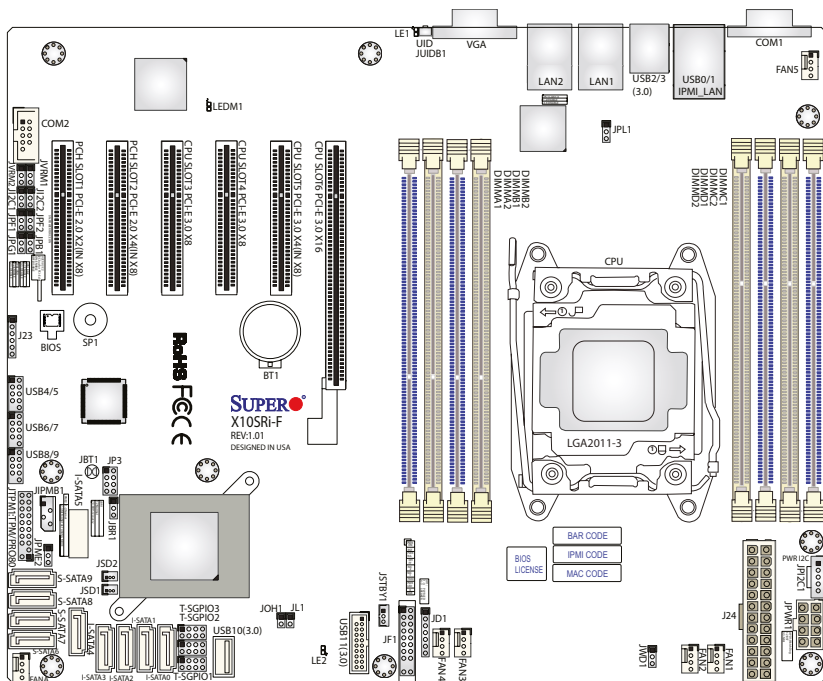
RSC-RR1U-E16 (pre-installed)

#### *Expansion card supported*

One PCI-E 3.0 x16

## 5-7 Motherboard Details

Figure 5-6. SUPER X10SRi-F Layout



### X10SRi-F Quick Reference

Jumper	Description	Default
JBR1	BIOS Recovery	Pins 1-2 (Normal)
JBT1	CMOS Clear	See Section 5-9
JPC1/2	SMB to PCI-E Slots	Pins 2-3 (Disabled)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JPME2	Manufacture Mode Select	Pins 1-2 (Normal)
JWD1	Watch Dog	Pins 1-2 (Reset)
JVRM1	VRM SMB Clock (to BMC or PCH)	Pins 1-2 (BMC)
JVRM2	VRM SMB Data (to BMC or PCH)	Pins 1-2 (BMC)

Connector	Description
COM1/COM2	COM1 (Port)/COM2 (Header)
Fan1 - Fan5, FanA	System/CPU Fan Headers
JD1	Speaker/Buzzer
JF1	Front Control Panel Header
JIPMB1	4-pin External BMC I <sup>2</sup> C Header (for an IPMI Card)
JL1	Chassis Intrusion Header
JPI <sup>2</sup> C1	Power SMB (System Management Bus)
J24	24-pin ATX Main Power Connector
JOH1	Overheat/Fan Fail LED Indicator
JPWR1	+12V 8-pin CPU power Connector
JSD1/JSD2	SATA DOM (Device On Module) Power Connectors
JSTBY1	Standby Power Header
JTPM1	Trusted Platform Module/Port 80 Connector
JUIDB1	UID (Unit Identifier) Switch
LAN1/LAN2	Gigabit (RJ45) Ports (LAN1/2)
IPMI_LAN	Dedicated IPMI LAN Port
I-SATA0~9, S-SATA0~3	(Intel PCH) Serial ATA (SATA 3.0) Ports 0/1 (6Gb/sec)
Slots 1/2	PCI-Express 2.0 Slots: Slot1 x2 (in x8), Slot2 x4 (in x8)
Slots 3/4/5/6	PCI-Express 3.0 Slots: Slot3 x8, Slot4 x8, Slot5 x4 (in x8), Slot6 x16
SP1	Internal Speaker/Buzzer
T-SGPIO 1/2/3	Serial Link General Purpose I/O Headers SATA Connections
USB 0/1	USB 2.0 Ports
USB 2/3	USB 3.0 Ports
USB 4/5, 6/7, 8/9	Front Accessible USB 2.0 Headers 4/5, 6/7, 8/9
USB 10, USB 11	USB10: Front Accessible USB 3.0 Header, USB11: Type A Header

LED	Description	Color/State	Status
LE1	UID LED	Blue: On	Unit Identified
LE2	Onboard Power LED	Green: On	System Power On
LEDM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

#### Notes

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

## 5-8 Connector Definitions

### Power Connectors

The 24-pin main power connector (J24) is used to provide power to the motherboard. The 8-pin CPU power connector (JPWR1) is also required for the processor. These power connectors meet the SSI EPS 12V specification. See the tables on the right for pin definitions.

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 Pin Definitions	
Pins	Definition
1/2	Ground
3/4	+12V

### NMI Button

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

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	3.3V
16	PWR LED

### HDD LED

The HDD LED connections are located on pins 13 and 14 of JF1. Attach a cable here to indicate HDD activity. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	+3.3V Stby/UID Switch
14	HD Active

## NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on pins 9 and 10. Attach NIC LED cables to NIC1 LED and NIC2 LED to display network activities for LAN 1 and LAN2. Refer to the table on the right for pin definitions.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	Vcc
10/12	Signal

## Overheat (OH)/Fan Fail/Power Fail LED

Connect an LED cable to pins 7 and 8 of JF1 to use the Overheat, Fan Fail and Power Fail connections. Refer to the table on the right for pin definitions.

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

OH/Fan Fail/PWR Fail LED Status (Red LED)	
State	Definition
Off	Normal
On	Overheat
Flashing 1 Hz	Fan Fail
Flashing 1/4 Hz	Redundant Power Supply Fail

## 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 (JF1)	
Pin#	Definition
5	3.3V
6	PWR Supply Fail

## Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware Reset Button on the control panel. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground



## Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see BIOS Setup). To turn off the power in the suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

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

## Universal Serial Bus (USB)

Two USB 2.0 ports (USB0/1) and two USB 3.0 ports (USB2/3) are located on the I/O back panel of the X10SRI-F. In addition, three USB 2.0 headers (USB4/5, 6/7, 8/9), and two USB 3.0 connectors (USB 10, USB 11) are also provided on the motherboard (cables not included). USB 11 is a Type A connector. See the tables below for pin definitions.

USB0/1 (2.0) Port Pin Definitions			
Pin #	Definition	Pin #	Definition
1	+5V	2	+5V
3	USB_PN8	4	USB_PN9
5	USB_PP8	6	USB_PP9
7	Ground	8	Ground
9	Key	10	Ground

USB4/5/6/7/8/9 (3.0) Port Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN4	6	USB_PN5
3	USB_PP4	7	USB_PP5
4	Ground	8	Ground

USB11 (3.0) Connector Pin Definitions			
Pin#	Pin#	Signal Name	Description
1	19	VBUS	Power
2	18	StdA_SSRX-	USB 3.0 Differential Receive Pair
3	17	StdA_SSRX+	USB 3.0 Differential Receive Pair
4	16	Ground	Ground of PWR Return
5	15	StdA_SSTX-	USB 3.0 Differential Transmit Pair
6	14	StdA_SSTX+	USB 3.0 Differential Transmit Pair
7	13	Ground	Ground for Signal Return
8	12	D-	USB 2.0 Transmit/Receive Differential Pair
9	11	D+	USB 2.0 Transmit/Receive Differential Pair
10	x		

## Fan Headers

The X10SRi-F has six fan headers (Fan1 ~ Fan5 and FanA). These are 4-pin fan headers and work with IPMI to monitor and change fan speed as required based on the system temperature. Refer to 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

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

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

## Power LED/Speaker

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

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

## Internal Buzzer (SP1)

The Internal Buzzer (SP1) can be used to provide 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

## Standby Power

The Standby Power header is located at JSTBY1 on the motherboard. See the table on the right for pin definitions.

Standby Power Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	No Connection

### Trusted Platform Module Header

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

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

### Power SMB (I<sup>2</sup>C) Connector

Power System Management Bus (I<sup>2</sup>C) Connector (JPI<sup>2</sup>C1) 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	PWR Fail
4	Ground
5	+3.3V

### Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and an LED Indicator are located on the motherboard. The UID switch is located next to the VGA port on the backplane. The UID LED (LE4) is located next to the UID switch. When you press the UID switch, the UID LED will be turned on. Press the UID switch again to turn off the LED indicator. The UID Indicator provides easy identification of a system unit that may be in need of service.

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

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

UID LED Status	
Color/State	Status
Blue: On	Unit Identified

### T-SGPIO 1/2 & 3-SGPIO 1/2 Headers

Two T-SGPIO (Serial-Link General Purpose Input/Output) headers are provided on the motherboard. These headers are used to communicate with the enclosure management chip in the system. See the table on the right for pin definitions.

Serial Link-SGPIO Pin Definitions			
Pin#	Definition	Pin	Definition
1	NC	2	NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	NC

### DOM Power Connector

The Disk-On-Module (DOM) power connectors, located at JSD1 and JSD2, provide 5V for a solid state DOM storage device connected to one of the SATA ports. See the table on the right for pin definitions.

DOM Power Connector Pin Definitions	
Pin	Definition
1	5V
2	Ground
3	Ground

### Serial Ports

The COM1 port is located on the I/O backpanel. COM2 is a header located on the the motherboard. See the table on the right for pin definitions.

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

### Overheat/Fan Fail

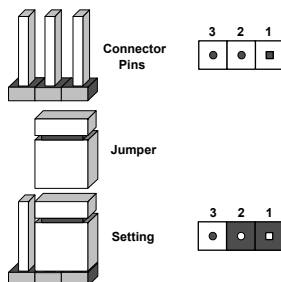
Connect an LED cable to JOH1 to provide warnings for chassis overheat/fan failure. Refer to the table on the right for pin definitions.

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash- ing	Fan Fail

## 5-9 Jumper Settings

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.



**Note:** Ontwo-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

### CMOS Clear

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

#### To Clear CMOS

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

**Note:** *Do not use the PW\_ON connector to clear CMOS.*

### VGA Enable/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	
Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

**PCI Slot SMB Enable**

Use Jumpers J1<sup>2</sup>C1/J1<sup>2</sup>C2 to enable PCI-E SMB (System Management Bus) support to improve system management for the PCI-E slots. Default is disabled. See the table on the right for jumper settings.

PCI Slot SMB Enable/Disable Jumper Settings	
Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

**LAN Port Enable/Disable**

Use JPL1 to enable or disable LAN 1/2 ports. See the table on the right for jumper settings. The default setting is enabled.

LAN Port En/Disable Jumper Settings	
Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

**BMC Enable/Disable**

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

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

**BIOS Recovery (JPBIOS1)**

The BIOS Recovery (JBR1) is used to enable or disable the BIOS Recovery feature of the motherboard. Install the jumper on pins 1-2 to begin the recovery process.

BIOS Recovery Jumper Settings	
Setting	Definition
Pins 1-2	Normal
Pins 2-3	Recover

**Watch Dog Enable**

Watch Dog is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 of JWD1 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

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

### Manufacturer Mode Select

Close this jumper (JPME2) to bypass SPI flash security and force the system to use the Manufacturer mode, which will allow the user to flash the system firmware from a host server to modify system settings. See the table on the right for jumper settings.

ME Mode Select Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal (Default)
Pins 2-3	Manufacture Mode

### VRM SMB Clock/Data

The VRM SMB Clock/Data is used to select where the voltage Regulator Module's System Management Bus clock signal (VRM1) or Data (JVRM2) is directed to. Select between BMC or PCH.

VRM SMB Clock/Data Jumper Settings	
Pin#	Definition
Pins 1-2	BMC (default)
Pins 2-3	PCH

## 5-10 Onboard Indicators

### LAN1/LAN2 LEDs

The two Ethernet ports and the dedicated IPMI LAN port on the I/O backplane each have two LEDs. On each port, one 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 Indication	
LED State	Definition
Off	No connection or 10 Mb/s
Green	100 Mbps
Amber	1 Gbps

### Onboard Power LED

An Onboard Power LED is located at LED2 on the motherboard. When LED2 is on, it means that the AC power cable is connected. See the table at right for more information.

Onboard Power LED Status	
Status	Definition
Off	System Off (Soft Switch)
On	System on or system is off and power cable is connected

### BMC Heartbeat LED

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

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



## 5-11 SATA Ports

### SATA Ports

Ten SATA 3.0 ports are included on the motherboard. These SATA ports are supported by the Intel C612 PCH chip. See the table on the right for the pin definitions of the onboard SATA ports.

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

## 5-12 Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at [www.supermicro.com/support/manuals](http://www.supermicro.com/support/manuals).

### *Installing the OS*

1. Create a method to access the MS Windows installation ISO file. That might be a DVD, perhaps using an external USB/SATA DVD drive, or a USB flash drive, or the IPMI KVM console.
2. Retrieve the proper RST/RSTe driver. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities", select the proper driver, and copy it to a USB flash drive.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing F11 during the system startup.

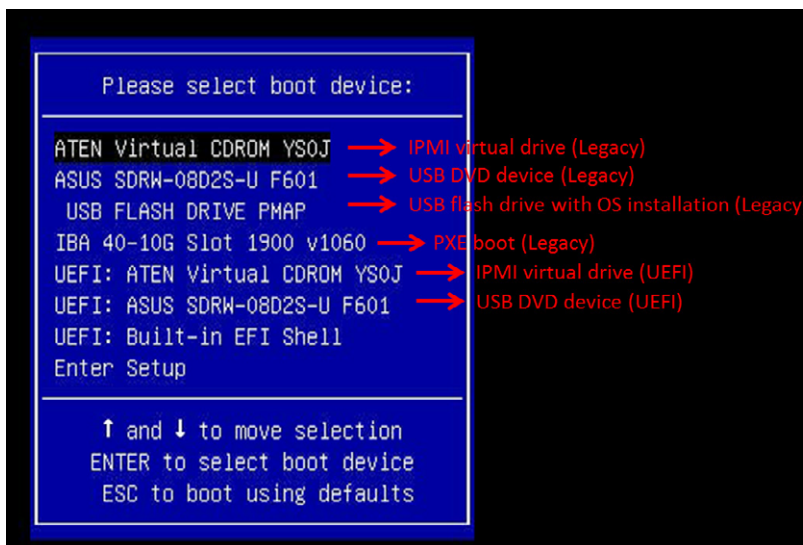
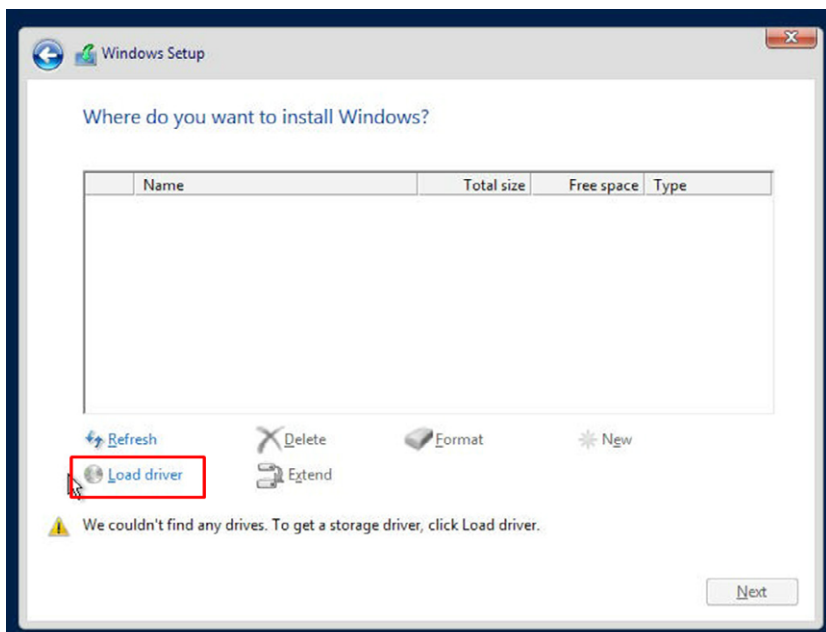


Figure 5-7. Select Boot Device

4. During Windows Setup, continue to the dialog where you select the drives on which to install Windows. If the disk you want to use is not listed, click on “Load driver” link at the bottom left corner.



**Figure 5-8. Load Driver Link**

To load the driver, browse the USB flash drive for the proper driver files.

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.
  - For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.
5. Once all devices are specified, continue with the installation.
  6. After the Windows OS installation has completed, the system will automatically reboot multiple times.

## 5-12 Driver Installation

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

After accessing the website, go into the CDR\_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to a USB flash drive or a DVD. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro website at <http://www.supermicro.com/products/>. Find the product page for your motherboard, and "Download the Latest Drivers and Utilities".

Insert the flash drive or disk and the screenshot shown below should appear.

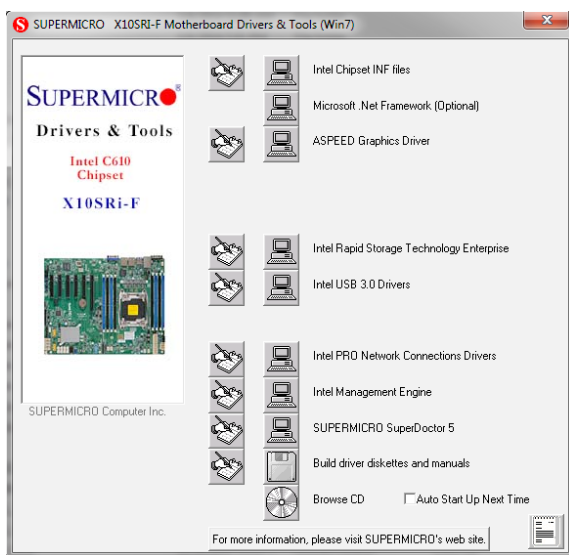


Figure 5-9. Driver/Tool Installation Display Screen

**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.

## 5-13 SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SuperDoctor 5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

**Note:** The default User Name and Password for SuperDoctor 5 is ADMIN / ADMIN.

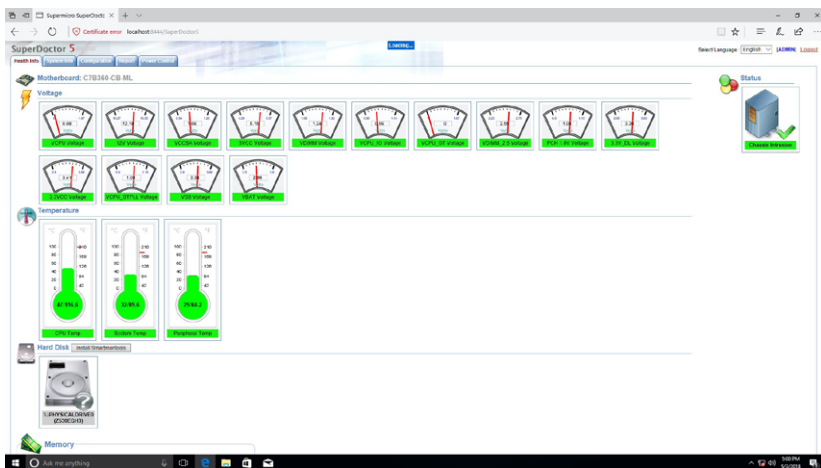


Figure 5-10. SuperDoctor 5 Interface Display Screen (Health Information)

## 5-14 IPMI

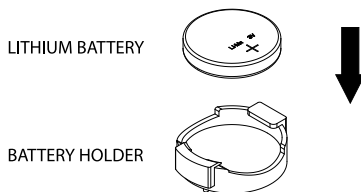
The X10SRI-F supports the Intelligent Platform Management Interface (IPMI). IPMI is used to provide remote access, monitoring and management. There are several BIOS settings that are related to IPMI.

Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard.

For general documentation and information on IPMI, please visit our website at: <http://www.supermicro.com/products/nfo/IPMI.cfm>.

## 5-15 Onboard Battery

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



**Figure 5-11. Installing the Onboard Battery**

## 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 maintenance is a Philips screwdriver.

#### 6-1 Static-Sensitive Devices

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

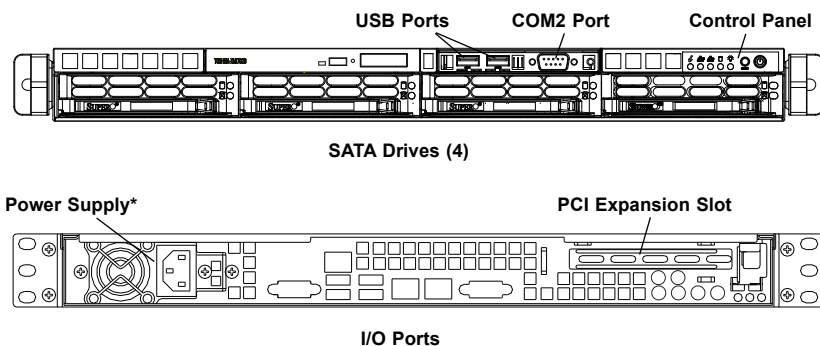
##### Precautions

- 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 and Rear Views



**\*Note:** the 5018R-MR features redundant power supplies (two power supply modules).

## 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 Accessing the System

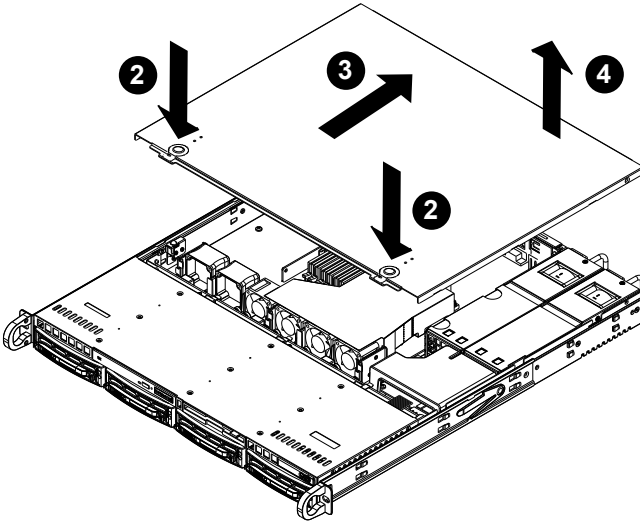
### *Removing the Chassis Cover*

1. Power down the system and unplug the power cord from the rear of the power supply.
2. Simultaneously press both release tabs.
3. Slide the cover back toward the rear of the chassis.
4. Lift the cover upwards and off of the chassis.

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



Figure 6-2. Accessing the System



## 6-4 System Fans

Four 4-cm high-performance fans provide the cooling for the SuperServer 5018R-M/5018R-MR. 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.

#### *Replacing a System Fan*

1. If necessary, open the chassis while the power is running to determine which fan requires changing. (Never run the server for an extended period of time with the chassis open.)
2. Power down the system and unplug the power cord from the rear of the power supply. Open the chassis cover.
3. Remove the failed fan's cable from the connector on the motherboard.

4. Gently pull upward to remove the failed fan from the housing.
5. Place the new fan into the vacant space in the housing. Make sure that the arrows on the side of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Plug the new fan's cable into the connector on the motherboard.
7. Plug the power cord into the rear of the power supply, power up the system and check that the fan is working properly before replacing the chassis cover.

## 6-5 Drive Bay Installation/Removal

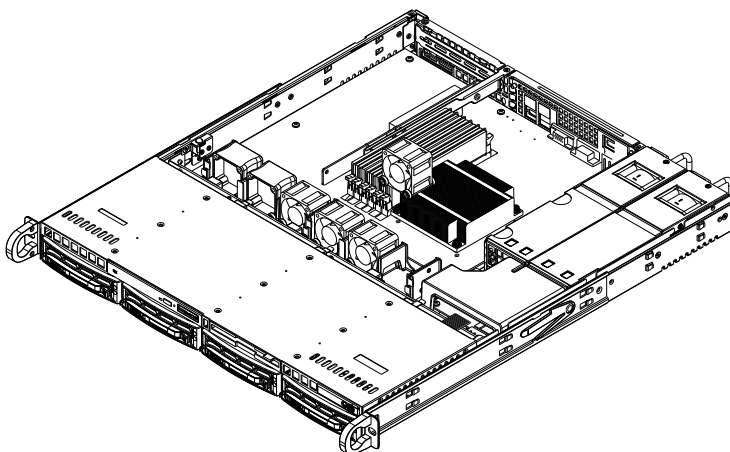
### Accessing the Drive Bays

**SATA Drives:** 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 SATA drives. Proceed to the next step for instructions. **Note:** The operating system you use must have RAID support to enable the hot-swap capability of the drives.

**DVD-ROM Drive:** 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 5018R-M/5018R-MR.

**Note:** A DVD drive does not come standard with the system.

Figure 6-3. Replacing System Fans



## SATA Drive Installation

### *Mounting a Drive in a Drive Carrier*

The 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 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).

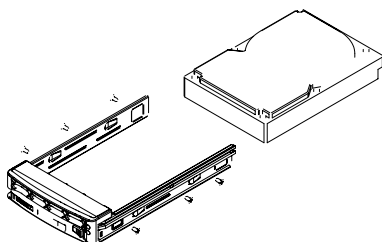
**Note:** There is no onboard RAID support for SATA drives.

## SATA Backplane

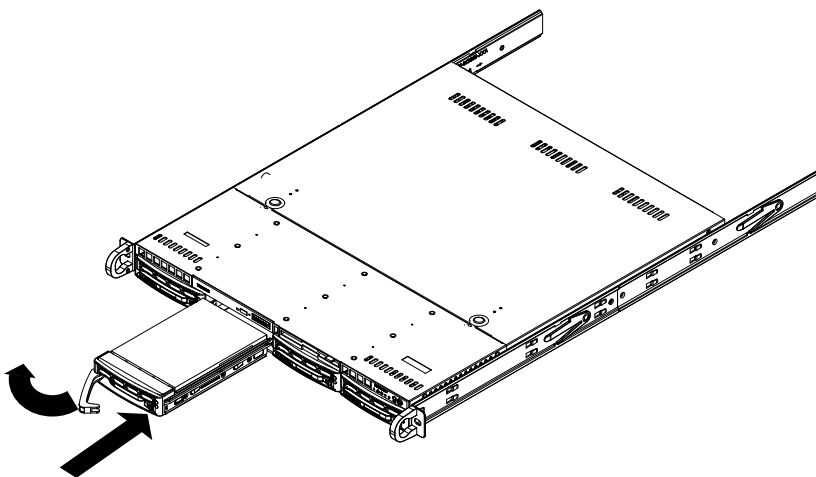
The SATA drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security for the drives. The backplane is already preconfigured, so there are no jumpers or switches present on it.

**Warning:** Use caution when working around the SATA 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**



**Figure 6-5. Removing a Drive from the Server**



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

## DVD-ROM Drive Installation

The top cover of the chassis must be opened to gain full access to the DVD-ROM drive bay. The 5018R-M/5018R-MR accommodates only slim DVD-ROM drives. Side mounting brackets are needed to mount a slim DVD-ROM drive into the 5018R-M/5018R-MR server. You must power down the system before installing or removing a DVD-ROM drive. Note that the DVD drive is optional; it does not come already installed in the system but may be installed by the user.

### *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.

## 6-6 Power Supply

The SuperServer 5018R-M has a single 350 watt power supply. The SuperServer 5018R-MR has a 400 watt redundant power supply consisting of two power modules.

These power supplies have the capability of operating at 100 - 240 input volts. Depress the main power button on the front of the chassis and then unplug the AC power cord to completely remove power from the system before removing the power supply.

### 5018R-M Power

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 information in Chapter 1).

#### *Replacing the Power Supply*

To replace a power supply, you must first remove the chassis cover (follow the procedure as described in Section 6-3).

1. First unplug the power cord from the system.
2. Remove the cover from the chassis (see Figure 6-2).
3. To remove the failed power unit, remove the two screws on the back and the two screws on the front of the power supply, which secure it to the chassis. You can then lift the unit straight out of the chassis.
4. Replace the failed unit with another power supply unit of the same wattage. You must replace it with the exact same model.
5. Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear and the two screws at the front of the unit.
6. Reconnect the power cord, replace the chassis cover and push the unit back into the rack.
7. Finish by depressing the power button on the control panel to power up the system.

## 5018R-MR Power

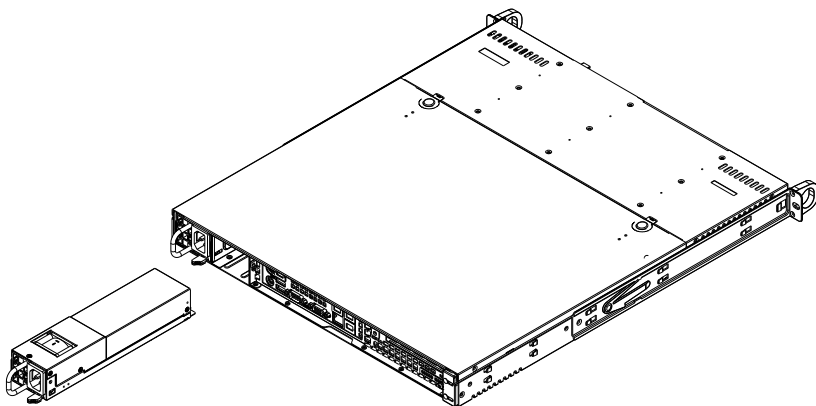
If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The PWR Fail LED will illuminate and remain on until the failed unit has been replaced.

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.

### **Removing the Power Supply**

1. First unplug the AC power cord from the failed power supply module.
2. To remove the failed power unit, press and hold the red tab then pull the power supply out from the back of the chassis.
3. Replace the failed unit with another unit of the same wattage. You should replace it with the exact same power supply (same model number).
4. Carefully insert the new unit into position in the chassis and secure it by locking the red tab.
5. Finish by reconnecting the power cord.

**Figure 6-6. Replacing the Power Supply**



## Notes



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# Chapter 7

## BIOS

### 7-1 Introduction

This chapter describes the AMI BIOS setup utility for the X10SRI-F. The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS setup utility screens.

**Note:** For AMI BIOS recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

#### Starting BIOS Setup Utility

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

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

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

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

The AMI BIOS setup utility uses a key-based navigation system called "hot keys." Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <Esc>, arrow keys, etc.

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

#### How To Change the Configuration Data

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

## How to Start the Setup Utility

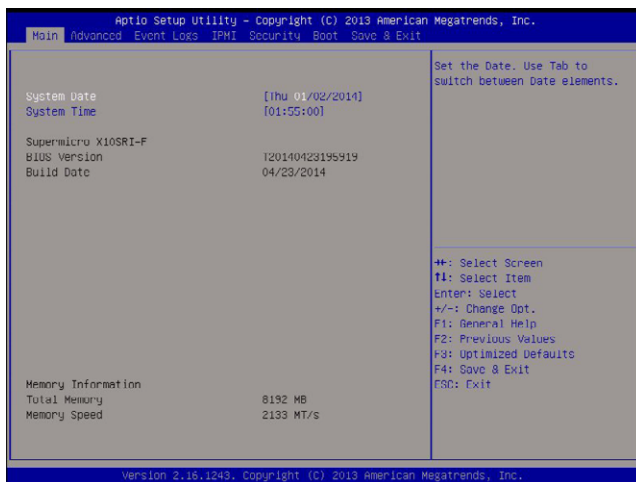
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the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

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

## 7-2 Main Setup

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

The following Main menu items will be displayed:



### System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YYYY format. The time is entered in HH:MM:SS format.

**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

### Supermicro X10SRI-F

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

**Build Date:** This item displays the date when the version of the BIOS ROM used in the system was built.

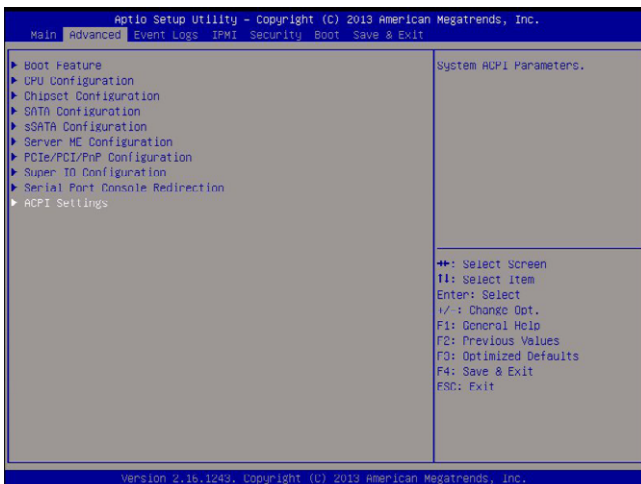
### Memory Information

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

**Memory Speed:** This item displays the default speed of the memory modules installed in the system..

## 7-3 Advanced Setup Configurations

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



**Warning:** Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or an incorrect BIOS timing setting may cause the system to malfunction. When this occurs, restore the setting to the manufacture default setting.

### ► Boot Feature

#### Quiet Boot

Use this feature to select the screen between displaying POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

#### AddOn ROM Display Mode

Use this item to set 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

Select Enabled to force the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

### INT19 (Interrupt 19) Trap Response

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

### Re-try Boot

When EFI Boot is selected, the system BIOS will automatically reboot the system from an EFI boot device after its initial boot failure. Select Legacy Boot, to allow the BIOS to automatically reboot the system from a Legacy boot device after its initial boot failure. The options are **Disabled**, Legacy Boot, and EFI Boot.

## Power Configuration

### DeepSx Power Policies

Use this item to configure the Advanced Configuration and Power Interface (ACPI) settings for the system. Enable S3 to use Standby Mode (Suspend-to-RAM) and maintain power supply to the system RAM when the system is in the sleep mode. Enable S4 to use Hibernation mode (Suspend to Disk) so that all data stored in of the main memory can be saved in a non-volatile memory area such as in a hard drive and then power down the system. Enable S5 to power off the whole system except the power supply unit (PSU) and keep the power button "alive" so that the user can "wake-up" the system by using an USB keyboard or mouse. The options are **Disabled**, Enabled in S5, Enabled in S4-S5, and Enabled in S3-S4-S5,

### Watch Dog Function

Select Enabled to allow the Watch Dog timer to reboot the system when it is inactive for more than 5 minutes. The options are Enabled and **Disabled**.

### Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are 4 Seconds Override and **Instant Off**.

### Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-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

**Warning!** Setting the wrong values in the following sections may cause the system to malfunction.

#### CPU Configuration

The following CPU information will be displayed:

- Processor Socket
- Processor ID
- Processor Frequency
- Processor Max Ratio
- Processor Min Ratio
- Microcode Revision
- L1 Cache RAM
- L2 Cache RAM
- L3 Cache RAM
- CPU1 Version

#### Clock Spread Spectrum

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

### Hyper-Threading (ALL)

Select Enable to use Intel Hyper-Threading Technology to enhance CPU performance. The options are **Enable** and Disable.

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

Set to Enabled for Execute Disable Bit support 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 damaging the system during a virus attack. The options are **Enable** and Disable. (Refer to Intel and Microsoft websites for more information.)

### PPIN Control

Select Unlock/Enable to use the Protected-Processor Inventory Number (PPIN) in the system. The options are **Unlock/Enable** and Unlock/Disable.

### Hardware Prefetcher (Available when supported by the CPU)

If this item is set to Enable, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the Level 2 (L2) cache to improve CPU performance. The options are Disable and **Enable**.

### Adjacent Cache Line Prefetch (Available when supported by the CPU)

Select Enable for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disable for the CPU to prefetch both cache lines for 64 bytes. The options are Disable and **Enable**.

**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 web site for detailed information.

### DCU Streamer Prefetcher (Available when supported by the CPU)

If this item is set to Enable, the DCU (Data Cache Unit) streamer prefetcher will prefetch data streams from the cache memory to the DCU (Data Cache Unit) to speed up data accessing and processing for CPU performance enhancement. The options are Disable and **Enable**.

### DCU IP Prefetcher

If this item is set to Enable, the IP prefetcher in the DCU (Data Cache Unit) will prefetch IP addresses to improve network connectivity and system performance. The options are **Enable** and Disable.

### DCU (Data Cache Unit) Mode

Use this item to set the DCU data-prefetching mode. The options are **32KB 8Way Without ECC** and **16KB 4Way With ECC**.

### Direct Cache Access (DCA)

Select Enable to use Intel DCA (Direct Cache Access) Technology to maximize efficiency in memory data transferring and accessing. The options are **Auto**, **Enable** and **Disable**.

### DCA Prefetch Delay

A DCA prefetcher is used with a TOE (TCP/IP Offload Engine) adapter to prefetch data to shorten execution cycles and to maximize data processing efficiency. Prefetching data too frequently can saturate the cache directory and delay necessary cache access. This feature reduces or increases the frequency of system data prefetching activities. The options are **Disable**, [8], [16], [**32**], [40], [48], [56], [64], [72], [80], [88], [96], [104], and [112].

### X2APIC (Extended Advanced Programmable Interrupt Controller)

Based on the Intel Hyper-Threading technology, each logical processor (thread) is assigned 256 APIC IDs (APIDs) in 8-bit bandwidth. When this item is set to **Enable**, the APIC ID will be expanded from 8 bits to 16 bits to provide 512 APIDs to each thread to enhance CPU performance. The options are **Disable** and **Enable**.

### AES-NI

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

### Intel Virtualization Technology

Select **Enable** to use Intel Virtualization Technology so that I/O device assignments will be reported directly to the VMM (Virtual Memory Management) through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are **Enable** and **Disable**.

## ► Advanced Power Management Configuration

### Power Technology

Select **Energy Efficient** to support power-saving mode. Select **Custom** to customize system power settings. Select **Disabled** to disable power-saving settings. The options are **Disable**, **Energy Efficient**, and **Custom**.



### Config TDP

Select Enable to allow the user to configure the Thermal Design Power (TDP) settings for the system. The TDP refers to the maximum amount of power allowed for running "real applications" without triggering an overheating event. The options are **Disable** and Enable.

### ► CPU P State Control

#### EIST (P-States)

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. Please refer to Intel's website for detailed information. The options are Disable and **Enable**.

#### Turbo Mode

Select Enable for processor cores to run faster than the frequency specified by the manufacturer. The options are Disable and **Enable**.

#### P-state Coordination

Use this item to configure the processor's P-State coordination settings. During a P-State, the voltage and frequency of the processor will be reduced when it is in operation. This makes the processor more energy efficient, resulting in further energy gains. The options are **HW\_ALL**, **SW\_ALL** and **SW-ANY**.

### ► CPU C State Control

#### Package C State limit

Use this item to set the limit on the C-State package register. The options are C0/1 state, C2 state, C6 (non-Retention) state, and **C6 (Retention) state**.

#### CPU C3 Report

Select Enable 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 Enable and **Disable**.

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

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

### Enhanced Halt State (C1E)

Select Enabled to enable "Enhanced Halt State" support, which will significantly reduce the CPU's power consumption by minimizing CPU's clock cycles and voltage use during a "Halt State." The options are Disable and **Enable**.

### ► CPU T State Control

#### ACPI (Advanced Configuration Power Interface) T-States

If this item is set to Enable, CPU throttling will be supported by the operating system to reduce power consumption. The options are **Enable** and Disable.

### ► CPU Advanced PM Tuning

#### ► Energy Perf BIAS

##### Energy Performance Tuning

When enabled, this item selects whether the BIOS or Operating System can turn on the energy performance bias tuning. The options are Enable and **Disable**.

##### Energy Performance BIAS Setting

This feature allows balancing Power Efficiency vs Performance. This will override whatever setting is in the Operating System. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

##### Power/Performance Switch

This feature allows dynamic switching between Power and Performance power efficiency. The options are **Enabled**, and Disabled.

##### Workload Configuration

This feature allows for optimization of workload. **Balanced** is recommended. The options are **Balanced** and I/O Sensitive.

##### Averaging Time Window

This feature is used to control the effective window average for C0 and P0 times. Enter a numeric values using the keyboard.

##### P0 TotalTimeThreshold Low

The hardware switching mechanism will disable the performance setting when the total P0 time is less than this threshold. Enter a numeric value.

### **P0 TotalTimeThreshold High**

The hardware switching mechanism will disable the performance setting when the total P0 time is greater than this threshold. Enter a numeric value.

### **► Socket RAPL (Running Average Power Limit) Config**

#### **FAST\_RAPL\_NSTRIKE\_PL2\_DUTY\_CYCLE**

This feature displays the value of the item above within the range between 25 (10%) and 64 (25%).

#### **Turbo Power Limit Lock**

Select Enable to set the power use limit for the machine when it is running in the turbo mode. The options are Enable and **Disable**.

#### **Long Power Limit Override**

Select Enable to support long-term power limit override. If this feature is disabled, BIOS will set the default value. The options are Enable and **Disable**.

#### **Long Duration Power Limit**

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

#### **Package Clamping Limit1**

Use this item to set the limit on power performance states for the run-time processor, with P0 being the state with the highest frequency (clock speed) and power (consumption), and P1, a step lower in performance than P0, with its frequency and voltage scaled back a notch. The options are Between P1/P0 and **Below P1**.

#### **Short Duration Power Limit Enable**

Select Enable to support Short Duration Power Limit (Power Limit 2). The options are **Enable** and Disable.

#### **Short Duration Power Limit**

This item displays the time period during which short duration power is maintained. The default setting is **0**.

#### **Package Clamping Limit2**

Use this item to set the limit on power performance states for the processor operating in turbo mode, with P0 being the state with the highest frequency (clock speed) and power (consumption), and P1, a step lower in performance than P0, with its frequency and voltage scaled back a notch. The options are Between P1/P0 and **Below P1**.

## ► Chipset Configuration

### ► North Bridge

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

### ► IIO Configuration

#### EV DFX (Device Function On-Hide) Feature

When this feature is set to Enable, the EV\_DFX Lock Bits that are located on a processor will always remain clear during electric tuning. The options are **Disable** and **Enable**.

### ► IIO1 Configuration

#### CPU SLOT3 PCI-E 3.0 X8

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are Gen 1 (2.5GT/s), Gen 2 (5 GT/s), and **Gen 3 (8GT/s)**.

#### CPU SLOT6 PCI-E 3.0 X16

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are Gen 1 (2.5GT/s), Gen 2 (5 GT/s), and **Gen 3 (8GT/s)**.

#### CPU SLOT4 PCI-E 3.0 X8

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are Gen 1 (2.5GT/s), Gen 2 (5 GT/s), and **Gen 3 (8GT/s)**.

#### CPU SLOT5 PCI-E 3.0 X4

This item configures the PCI-E port Bifurcation setting for a PCI-E port specified by the user. The options are Gen 1 (2.5GT/s), Gen 2 (5 GT/s), and **Gen 3 (8GT/s)**.

### ► IOAT Configuration

#### Enable IOAT

Select **Enable** to enable Intel IOAT (I/O Acceleration Technology), which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The options are **Enable** and **Disable**.

#### No Snoop

Select **Enable** to support no-snoop mode for each CB device. The options are **Disable** and **Enable**.

### Relaxed Ordering

Select Enable to enable Relaxed Ordering support which will allow certain transactions to violate the strict-ordering rules of PCI and to be completed prior to other transactions that have already been enqueued. The options are **Disable** and Enable.

## ► Intel VT for Directed I/O (VT-d)

### Intel® VT for Directed I/O (VT-d)

Select Enable to use Intel Virtualization Technology support for Direct I/O VT-d support 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 **Enable** and Disable.

### Interrupt Remapping

Select Enable for Interrupt Remapping support to enhance system performance. The options are **Enable** and Disable.

### Coherency Support (Non-Iscoch)

Select Enable for the Non-Iscoch VT-d engine to pass through DMA (Direct Memory Access) to enhance system performance. The options are Enable and **Disable**.

### Coherency Support (Iscoch)

Select Enable for the Iscoch VT-d engine to pass through ATS to enhance system performance. The options are Enable and **Disable**.

## ► QPI (Quick Path Interconnect) Configuration

### QPI Status

The following information will display:

- Number of CPU
- Number of IIO
- Current QPI Link Speed
- Current QPI Link Frequency
- QPI Global MMIO Low Base/Limit

- QPI Global MMIO High Base/Limit
- QPI PCIe Configuration Base/Size

### **Link Speed Mode**

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

### **Link Frequency Select**

Use this item to select the desired frequency for QPI Link connections. The options are 6.4GB/s, 8.0GB/s, 9.6GB/s, **Auto**, and Auto Limited.

### **Link L0p Enable**

Select Enable for Link L0p support. The options are Enable, **Auto**, and Disable.

### **Link L1 Enable**

Select Enable for Link L1 support. The options are Enable, **Auto**, and Disable.

### **COD Enable (Available when the OS and the CPU support this feature)**

Select Enabled for Cluster-On-Die support to enhance system performance in cloud computing. The options are Enabled and **Disabled**.

### **Early Snoop (Available when the OS and the CPU support this feature)**

Select Enabled for Early Snoop support to enhance system performance. The options are Enable, Disable, and **Auto**.

### **Isoc Mode**

Select Enabled for Isochronous support to meet QoS (Quality of Service) requirements. This feature is especially important for Virtualization Technology. The options are Enable and **Disable**.

## **►Memory Configuration**

### **Enforce POR**

Select Enable to enforce POR restrictions for DDR4 frequency and voltage programming. The options are **Enabled** and Disabled.

### **Memory Frequency**

Use this feature to set the maximum memory frequency for onboard memory modules. The options are **Auto**, 1333, 1400, 1600, 1800, 1867, 2000, 2133, 2200, 2400, 2600, 2667, and Reserved (Do not select Reserved).

### **ECC Support**

Select Enable to enable Error Checking & Correction (ECC) support for onboard memory modules. The options are **Auto**, Enable and Disable.

### **Enhanced Log Parsing**

Select Enable to enable Error Checking & Correction (ECC) support for onboard memory modules. The options are **Auto**, Enable and Disable.

### **Data Scrambling**

Select Enabled to enable data scrambling to enhance system performance and data integrity. The options are **Auto**, Disabled and Enabled.

### **Enable ADR**

Select Enabled for ADR (Automatic Diagnostic Repository) support to enhance memory performance. The options are Enabled and **Disabled**.

### **DRAM RAPL (Running Average Power Limit) Baseline**

Use this feature to set the run-time power-limit baseline for DRAM modules. The options are Disable, DRAM RAPL Mode 0, and **DRAM RAPL Mode 1**.

### **Set Throttling Mode**

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).

### **Socket Interleave Below 4GB**

Select Enabled for the memory above the 4G Address space to be split between two sockets. The options are Enable and **Disable**.

### **Channel Interleaving**

Use this item to set DIMM channel interleaving mood. The options are **Auto**, 1 Way Interleave, 2 Way Interleave, 3, Way Interleave, and 4 Way Interleave.

### **Rank Interleaving**

Use this item to select a rank memory interleaving method. The options are **Auto**, 1 Way, 2 Way, 4, Way, and 8 Way.

### **A7 Mode**

Select Enabled to support A7 (Addressing) Mode to improve memory performance. The options are **Enable** and Disable.

## ► DIMM Information

This item displays the status of a DIMM module specified.

- DIMMA1
- DIMMA2
- DIMMB1
- DIMMB2
- DIMMC1
- DIMMC2
- DIMMD1
- DIMMD2

## ► Memory RAS (Reliability\_Availability\_Serviceability) Configuration

Use this submenu to configure the following Memory RAS settings.

### RAS Mode

Select Enable to enable RAS support to enhance reliability, availability and serviceability of onboard memory modules. The options are Enable and **Disable**.

### Lockstep x4 DIMMs

Select Enable to enable Lockstep Technology support for x4 DIMM modules. The options are **Auto**, Disabled, and Enabled.

### Memory Rank Sparing

This item indicates if memory rank sparing is supported by the motherboard. Memory rank sparing enhances system memory performance. The options are Enabled and **Disabled**.

### Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected in a memory module and send the correction to the requestor (the original source). When this item is set to Enable, 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 **Enable** and Disable.



### Patrol Scrub Interval

Use this item to specify the number of hours (between 0 to 24) required for the system to complete a full patrol scrubbing. Enter 0 for patrol scrubbing to be performed automatically. The default setting is **24**.

### Demand Scrub

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

### Device Tagging

Select Enable to support device tagging. The options are **Disable** and Enable.

## ►South Bridge

The following South Bridge information will display:

- USB Configuration
- USB Module Version
- USB Devices

### Legacy USB Support

Select Enabled to support onboard legacy USB devices. Select Auto to disable legacy support if there are no legacy USB devices present. Select Disable to have all USB devices available for EFI applications only. The options are **Enabled**, Disabled and Auto.

### XHCI Hand-Off

This is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and Disabled.

### EHCI Hand-Off

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

### **USB Mass Storage Driver Support**

Select Enabled for USB mass storage device support. The options are Disabled and **Enabled**.

### **Port 60/64 Emulation**

Select Enabled for I/O port 60h/64h emulation support, which in turn, will provide complete legacy USB keyboard support for the operating systems that do not support legacy USB devices. The options are Disabled and **Enabled**.

### **USB 3.0 Support**

Select Enabled for USB 3.0 support. The options are Disabled, Enabled and **Auto**.

### **EHCI1**

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #1 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

### **EHCI2**

Select Enabled to enable EHCI (Enhanced Host Controller Interface) support on USB 2.0 connector #2 (-at least one USB 2.0 connector should be enabled for EHCI support.) The options are Disabled and **Enabled**.

### **XHCI Pre-Boot Drive**

Select Enabled to enable XHCI (Extensible Host Controller Interface) support on a pre-boot drive specified by the user. The options are Enabled and **Disabled**.

### **XHCI Idle L1**

Select Enabled for XHCI (Extensible Host Controller Interface) Idle Level 1 support on a USB 3.0 connector specified by the user. The options are **Enabled** and Disabled.

### **PCH DMI ASPM**

Select Enabled to enable ASPM (Active State Power Management) support for a PCH DMI drive. The options are **Disabled** and Enabled.

## **►SATA Configuration**

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the Intel PCH chip and displays the following items:

### SATA Controller

This item enables or disables the onboard SATA controller supported by the Intel PCH chip. The options are **Enabled** and Disabled.

### Configure SATA as

Select IDE to configure a SATA drive specified by the user as an IDE drive. Select AHCI to configure a SATA drive specified by the user as an AHCI drive. Select RAID to configure a SATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

***\*If the item above "Configure SATA as" is set to AHCI, the following items will display:***

### Support Aggressive Link Power Management

When this item 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 extended periods of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are **Enabled** and Disabled.

### SATA Port 0~ Port 5

This item displays the information detected on the installed SATA drive on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

### Port 0~ Port 5

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

### Port 0 ~ Port 5 Hot Plug

This feature designates the port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Enabled** and Disabled.

### Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to initialize the device. The options are Enabled and **Disabled**.

**Port 0 ~ Port 5 SATA Device Type**

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are Hard Disk Drive and Solid State Drive.

***\*If the item above "Configure SATA as" is set to IDE, the following items will display:***

**Serial ATA Port 0~ Port 5**

This item indicates that a SATA port specified by the user is not installed or not present.

**Port 0 ~ Port 5 SATA Device Type (Available when a SATA port is detected)**

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are Hard Disk Drive and Solid State Drive.

***\*If the item above "Configure SATA as" is set to RAID, the following items will display:***

**Support Aggressive Link Power Management**

When this item 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 extended periods of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are **Enabled** and Disabled.

**SATA RAID Option ROM/UEFI Driver**

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, **EFI**, and Legacy.

**Serial ATA Port 0~ Port 5**

This item displays the information detected on the installed SATA drives on the particular SATA port.

- Model number of drive and capacity
- Software Preserve Support

**Port 0~ Port 5**

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

### Port 0 ~ Port 5 Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA drive without shutting down the system. The options are Enabled and **Disabled**.

### Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

### Port 0 ~ Port 5 SATA Device Type

Use this item to specify if the SATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are Hard Disk Drive and Solid State Drive.

## ►sSATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA devices that are supported by the SCU controller and displays the following items:

### sSATA Controller

This item enables or disables the onboard SATA controller supported by the Intel SCU chip. The options are **Enabled** and Disabled.

### Configure sSATA as

Select IDE to configure an sSATA drive specified by the user as an IDE drive. Select AHCI to configure an sSATA drive specified by the user as an AHCI drive. Select RAID to configure an sSATA drive specified by the user as a RAID drive. The options are IDE, **AHCI**, and RAID.

*\*If the item above "Configure sSATA as" is set to AHCI, the following items will display:*

### Support Aggressive Link Power Management

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

### sSATA Port 0~ Port 3

This item displays the information detected on the installed sSATA drives on the particular sSATA port.

- Model number of drive and capacity

- Software Preserve Support

### **sSATA Port 0~ Port 3**

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and Enabled.

### **sSATA Port 0 ~ Port 3 Hot Plug**

This feature designates the sSATA port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace an sSATA disk drive without shutting down the system. The options are **Enabled** and Disabled.

### **sSATA Port 0 ~ Port 3 Spin Up Device**

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization to the device. The options are Enabled and **Disabled**.

### **Port 0 ~ Port 3 sSATA Device Type**

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are Hard Disk Drive and Solid State Drive.

***\*If the item above "Configure sSATA as" is set to IDE, the following items will display:***

### **sSATA Port 0~ Port 3**

This item indicates that an sSATA port specified by the user is not installed or not detected.

### **Port 0 ~ Port 3 sSATA Device Type (Available when a SATA port is detected)**

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are Hard Disk Drive and Solid State Drive.

***\*If the item above "Configure sSATA as" is set to RAID, the following items will display:***

### **Support Aggressive Link Power Management**

When this item 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 extended periods of I/O inactivity, and will return the link to an active state when I/O activity resumes. The options are **Enabled** and Disabled.

### sSATA RAID Option ROM/UEFI Driver

Select EFI to load the EFI driver for system boot. Select Legacy to load a legacy driver for system boot. The options are Disabled, **EFI**, and Legacy.

### sSATA Port 0~ Port 3

This item displays the information detected on the installed sSATA drives on the particular sSATA port.

- Model number of drive and capacity
- Software Preserve Support

### sSATA Port 0~ Port 3

Select Enabled to enable an sSATA port specified by the user. The options are Disabled and Enabled.

### sSATA Port 0 ~ Port 3 Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace an sSATA drive without shutting down the system. The options are Enabled and **Disabled**.

### sSATA Port 0 ~ Port 3 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRE-SET initialization to the device. The options are Enabled and **Disabled**.

### Port 0 ~ Port 3 sSATA Device Type

Use this item to specify if the sSATA port specified by the user should be connected to a Solid State drive or a Hard Disk Drive. The options are Hard Disk Drive and Solid State Drive.

## ► Server ME (Management Engine) Configuration

This feature displays the following system ME configuration settings.

- General ME Configuration
- Operational Firmware Version
- Recovery Firmware Version
- ME Firmware Features
- ME Firmware Status #1

- ME Firmware Status #2
  - Current State
  - Error Code

## ► PCIe/PCI/PnP Configuration

The following PCI information will be displayed:

- PCI Bus Driver Version
- PCI Latency Timer

### VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow a PCI card that does not contain its own VGA color palette to examine a video card palette and mimic it for proper color display. The options are **Disabled** and Enabled.

### PCI AER (Advanced Error-Reporting) Support

Select Enabled to support Advanced Error-Reporting for onboard PCI devices. The options are **Disabled** and Enabled.

### 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**.

### SR-IOV Support (Available if the system supports Single-Root Virtualization)

Select Enabled for Single-Root IO Virtualization support. The options are Enabled and **Disabled**.

### Maximum Payload

Select Auto for 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 for the system BIOS to automatically set the maximum size for a read request 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

Use this item to set the Active State Power Management (ASPM) level for a PCI-E device. Select Auto for the system BIOS to automatically set the ASPM level based on the system configuration. Select Disabled to disable ASPM support. The options are **Disabled** and Auto.

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

### MMIOHBase

Use this item to select the base memory size according to memory-address mapping for the IO hub. The base memory size must be between 4032G to 4078G. The options are **56T**, 48T, 24T, 512G, and 256G.\

### MMIO High Size

Use this item to select the high memory size according to memory-address mapping for the IO hub. The options are **256G**, 128G, 512G, and 1024G.

### PCH SLOT1 PCI-E 2.0 x2 (in x8) OPROM, CPU SLOT2 PCI-E 3.0 x4 (in x8) OPROM, CPU SLOT3 PCI-E 3.0 x8 OPROM, CPU SLOT4 PCI-E 3.0 x8 OPROM, CPU SLOT5 PCI-E 3.0 x4 (in x8) OPROM, CPU SLOT6 PCI-E 3.0 x16 OPROM

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

### Onboard LAN Option ROM Type

Use this item to select the Onboard LAN Option ROM type. The options are **Legacy** and EFI.

### Onboard LAN1 Option ROM/Onboard LAN2 Option ROM

Use this option to select the type of device installed in LAN Port1 or LAN Port2 used for system boot. The default setting for LAN1 Option ROM is **PXE**, and the default setting for LAN2 Option ROM is **Disabled**.

### Onboard Video Option ROM

Use this item to select the Onboard Video Option ROM type. The options are **Legacy** and EFI.

### VGA Priority

Use this item to select the graphics device to be used as the primary video display at bootup. The options are **Onboard** and Offboard.

## Network Stack

Select Enabled to enable PXE (Preboot Execution Environment) or UEFI (Unified Extensible Firmware Interface) for network stack support. The options are **Enabled** and Disabled.

## ► Super IO Configuration

### Super IO Chip AST2400

#### ► Serial Port 1 Configuration/Serial Port 2 Configuration

##### Serial Port 1/Serial Port 2

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

##### Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.

##### Change Port 1 Settings/Change Port 2 Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1 or Serial Port 2. Select **Auto** for the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

The options for Serial Port 2 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12); (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

##### Serial Port 2 Attribute

Select SOL to use COM Port 2 as a Serial\_Over\_LAN (SOL) port for console redirection. The options are COM and **SOL**.

## ► Serial Port Console Redirection

### COM 1 Console Redirection

Select Enabled to enable COM Port 1 for Console Redirection, which will allow a client machine to be connected to a host machine at a remote site for networking. The options are Enabled and **Disabled**.

*\*If the item above set to Enabled, the following items will become available for configuration:*

## ► COM1 Console Redirection

### 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

Use this item to set 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 (Bits) 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 a 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

Use this item 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 Resolution

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

### Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

### Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When set to Bootloader, legacy Console Redirection is disabled before booting the OS. When set to Always Enable, legacy Console Redirection remains enabled when booting the OS. The options are **Always Enable** and Bootloader.

## SOL/COM2

### SOL/COM2 Console Redirection

Select Enabled to use the SOL port for Console Redirection. The options are **Enabled** and Disabled.

***\*If the item above set to Enabled, the following items will become available for user's configuration:***

## ► SOL/COM2 Console Redirection Settings

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

### Terminal Type

Use this feature 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

Use this feature to set 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 (Bits) 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 a 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

Use this feature 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 Resolution

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

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, LINUX, XTERMR6, SCO, ESCN, and VT400.

### Redirection After BIOS Post

Use this feature to enable or disable legacy Console Redirection after BIOS POST. When set to Bootloader, legacy Console Redirection is disabled before booting the OS. When set to Always Enable, legacy Console Redirection remains enabled when booting the OS. The options are **Always Enable** and Bootloader.

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

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

#### EMS (Emergency Management Services) Console Redirection

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

*\*If the item above set to Enabled, the following items will become available for user's configuration:*

#### ►EMS 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 Management Port

The feature selects a serial port in a client server to be used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote host server. The options are **COM1** and COM2/SOL.

##### Terminal Type

Use this feature 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

Use this item 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.

The setting for each these features is displayed:

### Data Bits, Parity, Stop Bits

## ► Trusted Computing (Available when a TPM device is installed and detected by the BIOS)

### Configuration

#### Security Device Support

If this feature and the TPM jumper on the motherboard are both set to Enabled, onboard security devices will be enabled for TPM support to enhance data integrity and network security. Please reboot the system for a change on this setting to take effect. The options are Enabled and **Disabled**.

#### TPM State

Select Enabled to use TPM (Trusted Platform Module) settings to enhance system data security. Please reboot your system for any change on the TPM state to take effect. The options are Disabled and **Enabled**.

#### Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for system data integrity. Your system will reboot to carry out a pending TPM operation. The options are **0**, Enable Take Ownership, Disable Take Ownership, and TPM Clear.

**Note:** Your system will reboot to carry out a pending TPM operation.

### Current Status Information

This item displays the status of the TPM support on this motherboard.►ACPI Settings

### **WHEA Support**

Select Enabled to support the Windows Hardware Error Architecture (WHEA) platform and provide a common infrastructure for the system to handle hardware errors within the Windows OS environment to reduce system crashes and to enhance system recovery and health monitoring. The options are Enabled and **Disabled**.

### **High Precision 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 and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

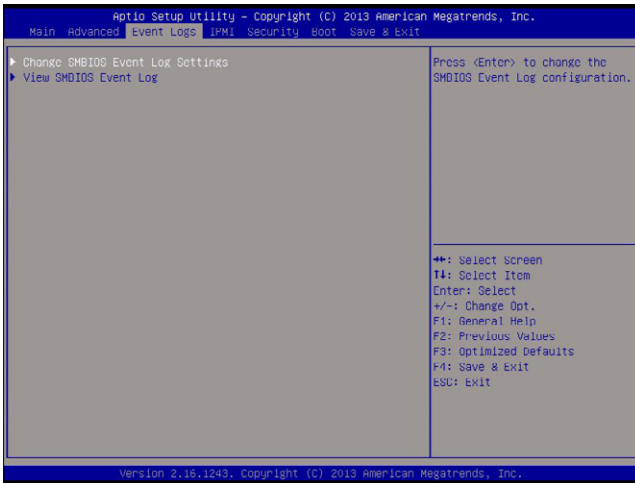
### **NUMA**

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



## 7-4 Event Logs

Use this feature to configure Event Log settings.



### ► Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

#### Enabling/Disabling Options

##### SMBIOS Event Log

Select Enabled to enable SMBIOS (System Management BIOS) Event Logging during system boot. The options are **Enabled** and Disabled.

##### Runtime Error Logging Support

Select Enabled to support Runtime Error Logging. The options are Enable and **Disable**. If this item is set to Enable, the following item will be available for configuration:

##### Memory Corrected Error Enabling (Available when the item above-Runtime Error Logging Support is set to Enable)

Select Enable for the BIOS to correct a memory error if it is correctable. The options are Enable and **Disable**.

##### PCI-Ex (PCI-Express) Error Enable

Select Yes for the BIOS to correct errors occurred in the PCI-E slots. The options are Yes and **No**.

##### Memory Correctable Error Threshold

Use this item to enter the threshold value for correctable memory errors. The default setting is **10**.

## Erasing Settings

### Erase Event Log

Select Enabled to erase all error events in the SMBIOS (System Management BIOS) log before an event logging is initialized at bootup. The options are **No** and Yes.

### When Log is Full

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

## SMBIOS Event Log Standard Settings

### Log System Boot Event

Select Enabled to log system boot events. The options are **Disabled** and Enabled.

### MECI (Multiple Event Count Increment)

Enter the increment value for the multiple event counter. Enter a number between 1 to 255. The default setting is 1.

### METW (Multiple Event Count Time Window)

This item is used to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 to 99. The default setting is **60**.

**Note:** Please reboot the system for the changes to take effect.

## View System Event Log

This item allows the user to view the event in the system event log. Select this item and press <Enter> to view the status of an event in the log.

Date/Time/Sensor/Type

## 7-5 IPMI

Use this feature to configure Intelligent Platform Management Interface (IPMI) settings.



### IPMI Firmware Revision

This item indicates the IPMI firmware revision used in your system.

### IPMI Status

This item indicates the status of the IPMI firmware installed in your system.

## ► 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 determine 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.

**Note:** After making changes on a setting, be sure to reboot the system for the changes to take effect.

## ►BMC Network Configuration

The following items will be displayed:

### IPMI LAN Selection

This item displays the IPMI LAN setting. The default setting is **Failover**.

### IPMI Network Link Status

This item displays the IPMI Network Link status. The default setting is **Shared LAN**.

### Update IPMI LAN Configuration

Select Yes for the BIOS to implement all IP/MAC address changes at the next system boot. The options are **No** and Yes

### Configuration Address Source

Use this item 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. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options are **DHCP** and Static.

The following items are assigned IP addresses automatically if DHCP is selected, or they can be configured manually if Static is selected.

### 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

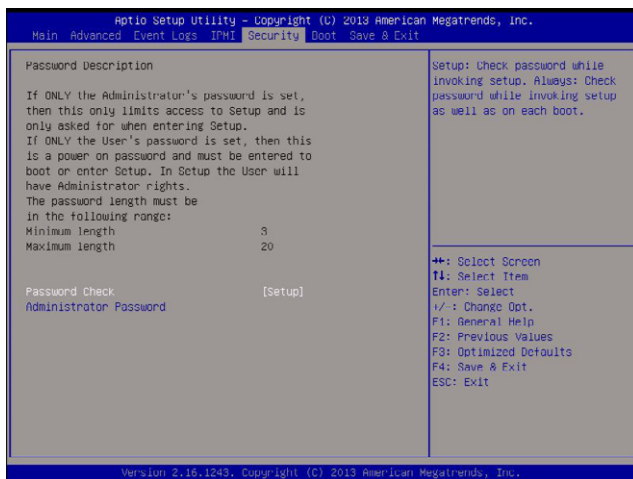
This item displays the Station MAC address for this computer. Mac addresses are 6 two-digit hexadecimal numbers.

**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 Security Settings

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



### Password Check

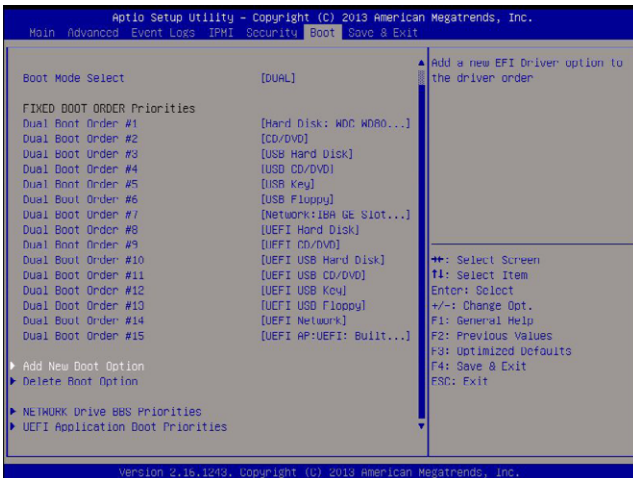
Select Setup for the system to check for a password at Setup. Select Always for the system to check for a password at bootup or upon entering the BIOS Setup utility. The options are **Setup** and Always.

### 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.

## 7-7 Boot Settings

Use this feature to configure Boot Settings:



### Setup Prompt Timeout

Use this item to indicate the length of time (the number of seconds) for the BIOS to wait before rebooting the system when the setup activation key is pressed. Enter the value of 65535 (0xFFFF) for the BIOS to wait indefinitely. The default setting is 1.

### Boot Mode Select

Use this item to select the type of device that the system is going to boot from. The options are Legacy, UEFI, and **Dual**. The default setting is Dual.

### Fixed Boot Order Priorities

This option prioritizes the order of bootable devices that the system to boot from. Press <Enter> on each entry from top to bottom to select devices.

- Dual Boot Order #1
- Dual Boot Order #2
- Dual Boot Order #3
- Dual Boot Order #4
- Dual Boot Order #5
- Dual Boot Order #6
- Dual Boot Order #7

- Dual Boot Order #8
- Dual Boot Order #9
- Dual Boot Order #10
- Dual Boot Order #11
- Dual Boot Order #12
- Dual Boot Order #13
- Dual Boot Order #14
- Dual Boot Order #15

### **Add New Boot Option**

This feature allows the user to add a new boot option to system boot priority features.

#### **Add Boot Option**

Use this item to specify the name of the driver that the new boot option is added to.

#### **Path for Boot Option**

This item is used to specify the path to the driver that the new boot option is added to. The format for the path is "fsx:\path\filename.efi".

### **Boot Option File Path**

#### **Create**

After the driver option name and the file path are set, press <Enter> to enter to submenu and click OK to create the new boot option drive.

#### **►Delete Boot Option**

Use this item to select a boot device to delete from the boot priority list.

#### **Delete Boot Option**

Select the target boot device to delete.

#### **►Hard Disk Drive BBS Priorities**

- Boot Order #1 - This feature sets the system boot order of detected devices. The options are **[the list of detected boot device(s)]** and Disabled.



### ► Network Drive BBS Priorities

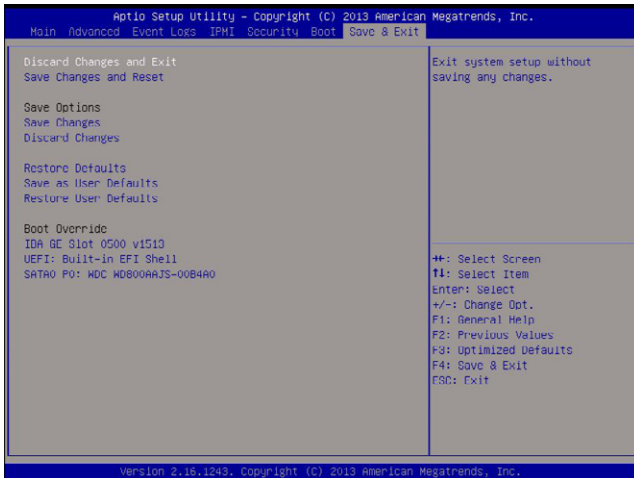
- Boot Order #1 - This feature sets the system boot order of detected devices. The options are **[the list of detected boot device(s)]** and Disabled.

### ► UEFI Application Boot Priorities

- Boot Order # - This feature sets the system boot order of detected devices. The options are **[the list of detected boot device(s)]** and Disabled. 1

## 7-8 Save & Exit

Select the Save & Exit tab from the BIOS setup screen to configure the settings below.



### 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 from the Exit menu and press <Enter>.

### Save Changes and Reset

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

## **Save Options**

### **Save Changes**

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

### **Discard Changes**

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

### **Restore Defaults**

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

### **Save As User Defaults**

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

### **Restore User Defaults**

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

### **Boot Override**

This feature allows the user to override the Boot Option Priorities sequence in the Boot menu, and immediately boot the system with another device specified by the user. This is a one-time override.

## Appendix A

### BIOS Error Beep 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 with bootup. The error messages normally appear on the screen.

**Fatal errors** will not allow the system to continue to bootup. 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.

BIOS Error Beep Codes		
Beep Code/LED	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
8 beeps	Display memory read/write error	Video adapter missing or with faulty memory
OH LED On	System OH	System Overheat

## Notes

# Appendix B

## System Specifications

### Processors

Single Intel® Xeon® processor E5-2600 v3/v4 or E5-1600 v3/v4 family in an LGA2011 socket

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

### Chipset

Intel C612

### BIOS

128 Mb SPI AMI® Flash

### Memory Capacity

Eight DIMM sockets supporting up to 1 TB of ECC 3DS LRDIMM (Load-Reduced DIMM), 512 GB of ECC LRDIMM or 256 GB of ECC RDIMM (Registered DIMMs) DDR4-2400/2133/1866/1600 memory

See the memory section in Chapter 5 for details.

### SATA Controller

Intel on-chip controller for ten SATA 3.0 (6 Gb/sec) ports, RAID 0, 1, 5 and 10 supported

### SATA Drive Bays

Four hot-swap drive bays to house SATA hard drives

### Expansion Slots

Riser card for one PCI-E 3.0 x16 add-on card

### Motherboard

X10SRI-F (ATX form factor)

Dimensions: 9.6 x 12 in (244 x 305 mm)

## Chassis

SC813MFTQ Form Factor: 1U rackmount

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

## Weight

Gross Weight: 30.4 lbs. (13.8 kg.)

## System Cooling

Four 4-cm high performance fans

## System Input Requirements

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

Rated Input Current: 4.2A (100V) to 1.8A (240V)

Rated Input Frequency: 50 to 60 Hz

## Power Supply

5018R-M: single power supply

Rated Output Power: 350W (Part# PWS-350-1H)

Rated Output Voltages: +3.3V (12A), +5V (15A), +12V (29A), -12V (.2A), +5Vsb (3A)

5018R-MR: redundant power supplies

Rated Output Power: 400W (Part# PWS-407P-1R)

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

## Operating Environment

Operating Temperature: 10° to 35° C (40° to 95° F)

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

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

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

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## Regulatory Compliance

Electromagnetic Emissions:

FCC Class A, EN 55032 Class A, EN 61000-3-2/-3-3, CISPR 32 Class A

Electromagnetic Immunity:

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

Safety:

EN 60950/IEC 60950-Compliant, UL Listed (USA), CUL Listed (Canada), TUV Certified (Germany), CE Marking (Europe)

Other:

VCCI-CISPR 32 and AS/NZS CISPR 32

Environmental: Directive 2011/65/EU and Delegated Directive (EU) 2015/863 and Directive 2012/19/EU

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](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)"

### Disclaimer (continued from front)

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## Notes