X10SRD-F

USER'S MANUAL

Revision 1.0a

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

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FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

  • Reorient or relocate the receiving antenna.
  • Increase the separation between the equipment and the receiver.
  • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  • Consult the dealer or an experienced radio/television technician for help.

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".

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Preface

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the SUPER● X10SRD-F motherboard.

About This Motherboard

The SUPER● X10SRD-F Motherboard supports a single Intel® Xeon™ E5-1600/E5-2600 (v3/v4) series CPU (LGA 2011 socket). With the Intel® C612 chipset built in, the X10SRD-F motherboard offers exceptional system performance for Supermicro's line of MicroCloud nodes. This board offers features such as six SATA ports, support for up to 512GB of DDR4 ECC 3DS LRDIMM, SATA DOM, a Micro LP PCI-E 3.0 x8 slot, and a compact size makes the X10SRD-F ideal for multi-node server platforms.

Please refer to our website (http://www.supermicro.com/products/) for processor and memory support updates.

*This product is intended to be installed and serviced by professional technicians.

Manual Organization

Chapter 1 describes the features, specifications and performance of the motherboard, and provides detailed information on the Intel® C612 chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for video, memory and system setup stored in the CMOS.

Chapter 4 includes an introduction to the BIOS, and provides detailed information on running the CMOS Setup utility.

Appendix A provides BIOS Error Beep Codes.

Appendix B lists software program installation instructions**.**

Appendix C contains the UEFI BIOS Recovery instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Important: Important information given to ensure proper system installation or to relay safety precautions.

Note: Additional Information given to differentiate various models or provides information for correct system setup.

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Appendix A BIOS Error Beep Codes

Appendix B Software Installation Instructions

Appendix C UEFI BIOS Recovery Instructions

Chapter 1

Introduction

1-1   Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

The following items are included in the retail box:

- One (1) Supermicro Mainboard

- One (1) User's Manual

SUPER● X10SRD-F Motherboard Image
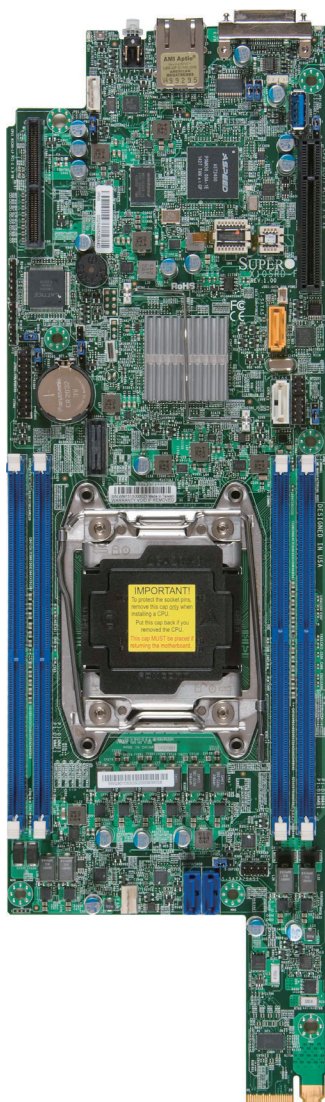
Note: All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

Motherboard Layout
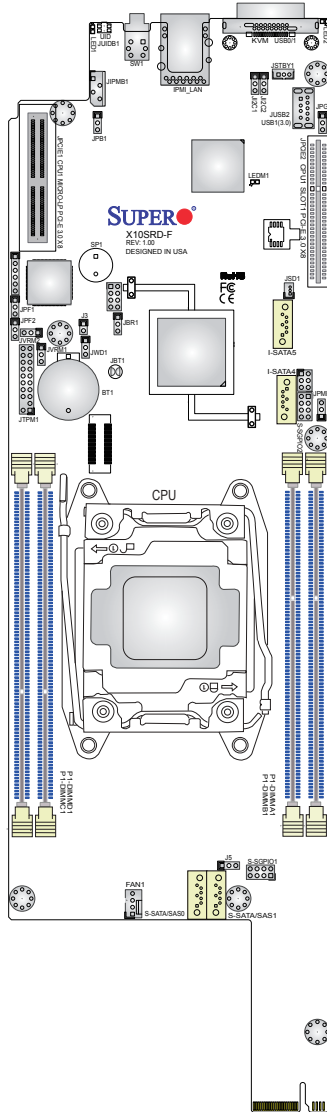
Important Notes to the User

- See Chapter 2 for detailed information on jumpers, connectors and LEDs.

- "■" indicates the location of "Pin 1."

- Jumpers not indicated are for testing only.

X10SRD-F Quick Reference

(not drawn to scale)
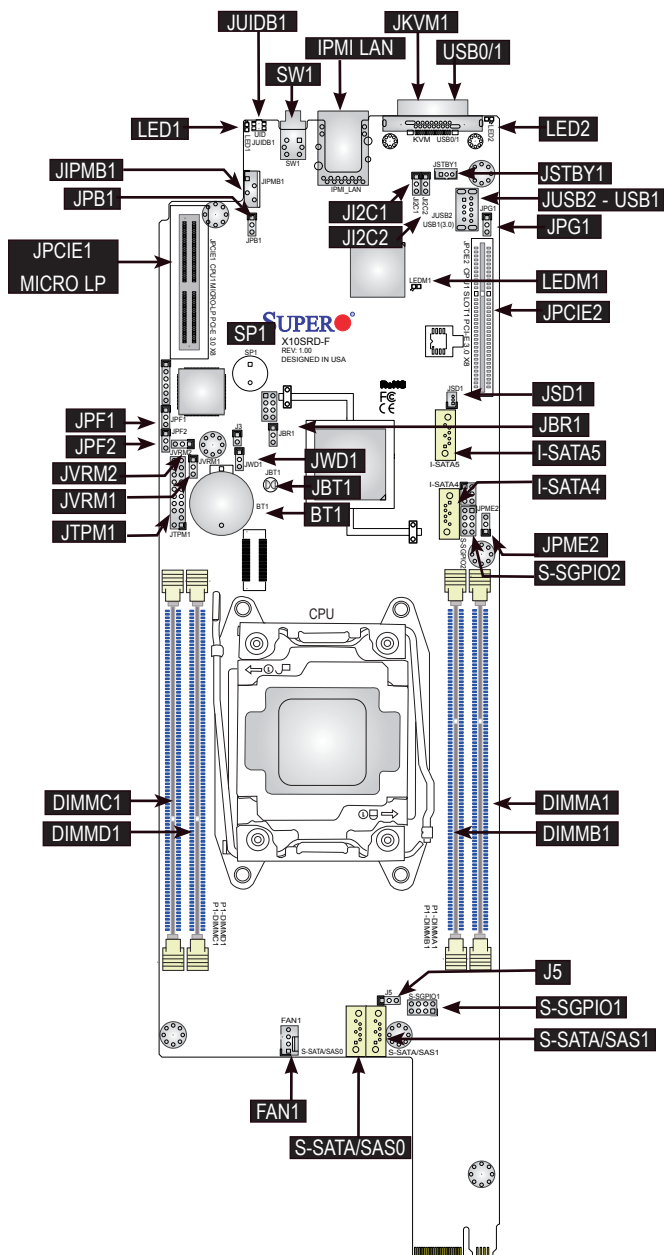
Connectors	Description
BT1	Onboard Battery
CPU	LGA 2011 Socket for a single Intel® Xeon™ E5-1600/E5-2600 (v3/v4) series CPU
FAN1	System Fan Header
IPMI_LAN	IPMI Dedicated LAN Port
I-SATA4, I-SATA5	SATA 3.0 Ports supported by Intel® PCH
J5	HDD BP Selection
JIPMB1	System Management Bus Header for the IPMI Slot
JPCIE1	MicroLP PCI-E 3.0 X8 Slot
JPCIE2	Slot1 PCI-E 3.0 X8 Slot
JSD1	SATA Disk On Module (DOM) Power Connector
JSTBY1	Standby Power Header
JTPM1	Trusted Platform Module (TPM) Header
JUIDB1	UID Button
JUSB2	USB 3.0 Header (USB1)
KVM	Keyboard/Video/Mouse connector
S-SATA/SAS0	For SAS AOC use
S-SATA/SAS1	For SAS AOC use
SP1	Internal Speaker / Buzzer
S-SGPIO1	Serial Link General Purpose Header
S-SGPIO2	Serial Link General Purpose Header
SW1	Power Button
USB0/1	Backpanel USB 2.0 Ports 0/1

Jumper	Description	Default Setting
JBR1	BIOS Recovery	Pins 1-2 (Normal)
JBT1	CMOS Clear	See Chapter 2
JI2C1, JI2C2	SMB to PCI Slots	Pins 2-3 (Disabled)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPF1, JPF2	Power Force On	Open: Normal, Closed: Force On
JPG1	Onboard VGA Enable/Disable	Pins 1-2 (Enabled)
JPME2	ME Manufacturing Mode	Pins 1-2 (Normal)
JVRM1, JVRM2	I²C Bus for VRM	Pins 1-2 (BMC: Normal)
JWD1	Watch Dog Timer RST	Pins 1-2 (Reset)

LED	Description	State/Color	Status
LED1	UID LED	Blue: On	Unit Identified
LED2	OVT Indicator	Red: On	On
LEDM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

Motherboard Features

CPU	Intel® Xeon™ E5-1600/E5-2600 (v3/v4) series (LGA 2011 socket)
	Note: E5-1600/E5-2600 (v4) requires Revision 2.0 BIOS (or higher).
Memory	Supports up to 512GB ECC 3DS LRDIMM, 256GB ECC LRDIMM, and 128GB ECC RDIMM at 2400 MHz (max.) memory in four (4) DIMM slots.
	Supports dual-channel memory bus
	DIMM sizes
	DIMM 1GB, 2GB, 4GB, 16GB, 32GB, 64GB, 128GB
Chipset	Intel® C612
Expansion Slots	One (1) PCI-E x8 Slot One (1) Micro LP PCI-E x8 Slot.
Graphics	One (1) VGA port on the KVM connector
Network Connections	One (1) dedicated RJ-45 I/O Panel connector with Link and Activity LEDs for IPMI
I/O Devices	**SATA Connections**
	SATA 3.0 Ports Two (2) SATA ports on Back Panel Two (2) SATA ports onboard
	SATA 2.0 Ports Two (2) SATA/SAS for AOC
	USB Devices
	One (1) Internal USB header for two USB ports. Two (2) additional USB ports are available on the KVM connector.
	Serial Ports
	One (1) COM Port on the KVM connector
	Graphics Controller
	Aspeed AST 2400 BMC onboard
BIOS	128 Mb SPI AMI BIOS® SM Flash BIOS
	Plug and Play (PnP), ACPI 3.0 or later, SMBIOS 2.7 or later, BIOS Rescue Hot-Key, and BMC GPIO
Power	ACPI/ACPM Power Management
	Main Switch Override Mechanism
	One (1) Disk-On-Module (DOM) Power Connector (SATA)
	Power-on mode for AC power recovery

PC Health Monitoring	CPU Monitoring
	Onboard voltage monitors for CPU core, +3.3V, +5V, +12V, +3.3V Stdby, VBAT, Memory and Chipset
	Tachometer Monitoring
	CPU Thermal Trip support
	Thermal Monitor 2 (TM2) support
System Management	PECI (Platform Environment Configuration Interface) 2.0 support
	System resource alert via SuperDoctor® 5
	SuperDoctor® 5, Watch Dog
	Unit ID LED, System/CPU Overheat LED
Other	ROHS (Full Compliance, Lead Free)
	Single Cooling Zone
Dimensions	4.75" x 15.95"

X10SRD-F Motherboard Block Diagram
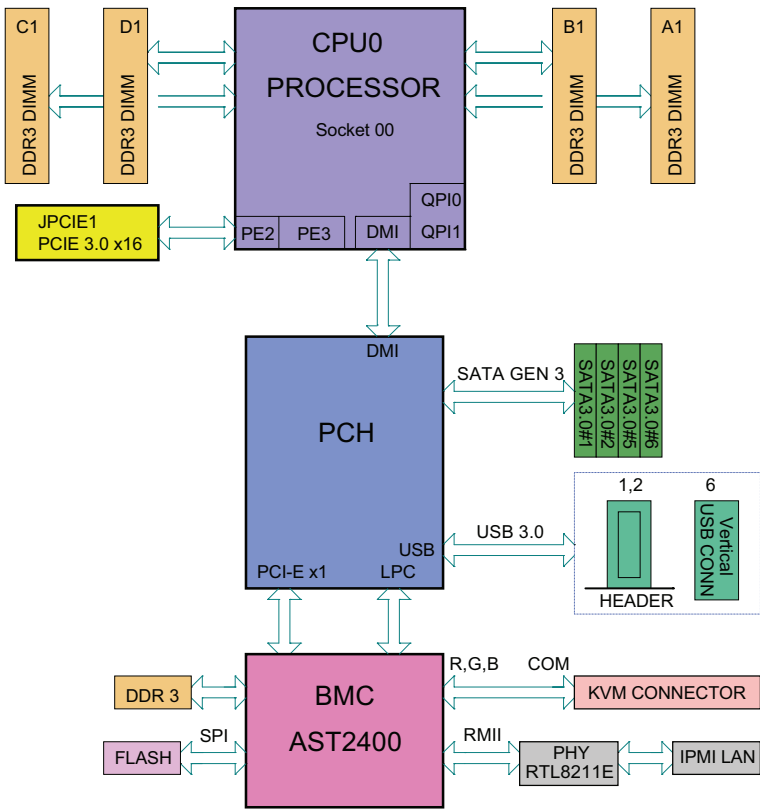
System Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. See the Motherboard Features pages for the actual specifications of each motherboard.

1-2   Chipset Overview

The X10SRD-F supports a single Intel® E5-1600/2600 (v3/v4) series processor in an LGA2011 R3 socket. Built on the Intel® C612 Express chipset, this motherboard provides a combination of performance and power efficiency for multi-node server platforms. It supports high-speed SATA and advanced requirements for Intel® Xeon™ platforms. The motherboard provides substantial enhancement to system performance and storage capability for high performance platforms in a sleek package.

The high-speed Direct Media Interface (DMI) featured in the Intel® C612 Express chipset supports high-speed Direct Media Interface (DMI) for chip-to-chip true isochronous communication, providing up to 5 Gb/s of software-transparent data transfer rate on each read/write direction. In addition, the X10SRD-F also features a TCO timer which allows the system to recover from a software/hardware lock and perform tasks, including Function Disable and Intruder Detect.

Intel® C612 Chipset Features

- Direct Media Interface (up 5 Gt/s transfer, Full Duplex)

- Intel® Matrix Storage Technology and Intel® Rapid Storage Technology

- Intel® I/O Virtualization (VT-d) Support

- Intel® Trusted Execution Technology Support

- PCI Express 2.0 Interface (up to 5.0 GT/s)

- SATA 3.0 ports (up to 6Gb/s)

- Advanced Host Controller Interface (AHCI)

Note: E5-1600/2600 (v4) requires Revision 2.0 BIOS (or higher).

1-3 Special Features

Recovery from AC Power Loss

Basic I/O System (BIOS) provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the power switch to turn it back on), or for it to automatically return to a power-on state. See the Advanced BIOS Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the board. All have an onboard System Hardware Monitoring chip that supports PC health monitoring. An onboard voltage monitor will scan these onboard voltages continuously: CPU core, +3.3V, +5V, +12V, +3.3V Stdby, VBAT, Memory and Chipset. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

PC health monitoring in the BIOS can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under the Hardware Monitoring section in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. Once the thermal sensor detects that the CPU temperature is too high, it will automatically turn on the thermal fans to prevent the CPU from overheating. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

> **Note**: To avoid possible system overheating, please be sure to provide adequate airflow to your system.

System Resource Alert

This feature is available when the system is used with SuperDoctor® 5 in the Windows OS environment or used with SuperDoctor II in Linux. SuperDoctor is used to notify the user of certain system events. For example, you can also configure SuperDoctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond predefined thresholds.

1-5   ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation that is compatible with the Microsoft® Windows® series of operating systems.

1-6   Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

This motherboard draws is power from the chassis power through its IF+PWR connector. It is strongly recommended that you use a high quality power supply that meets power supply Specifications 2.02 or above. It must also be SSI compliant. (For more information, please refer to the web site at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

Notes

Chapter 2

Installation

2-1 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 section in its entirety before installing or configuring components in the Supermicro chassis.

Battery Handling

⚡ **Warning!**

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

電池の取り扱い

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

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

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה!

קיימת סכנת פיצוץ של הסוללה אם היא תוחלף בצורה לא נכונה. יש להחליף את הסוללה בסוג התואם או בסוג שווה-ערך, המומלץ על ידי היצרן.

יש להשליך את הסוללה הישנה בהתאם להוראות היצרן.

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

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.

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 מוצר זה

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

2-2   Static-Sensitive Devices

Electrostatic-Discharge (ESD) can damage electronic components. To prevent dam-
age to your system board, it is important to handle it very carefully. The following
measures are generally sufficient to protect your equipment from ESD.

Precautions

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

• Touch a grounded metal object before removing the board from the antistatic
bag.

• Handle the 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 and peripherals back into their antistatic bags when not in
use.

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

• Use only the correct type of onboard CMOS battery. Do not install the onboard
upside down battery to avoid possible explosion.

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.

2-3   Motherboard Installation

Make sure that the locations of all the mounting holes for both motherboard and chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly. Then use a screwdriver to secure the motherboard onto the motherboard tray.

> **Note**: Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.

Tools Needed
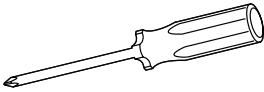
Philips Screwdriver   Pan head screws (7 pieces)   Stand Offs (7 pieces)
                                                              (Only if needed)

Location of Mounting Holes

There are eight (7) mounting holes on the X10SRD-F motherboard. These holes correspond to screw holes in a matching motherboard tray that slides into a blade-type chassis.
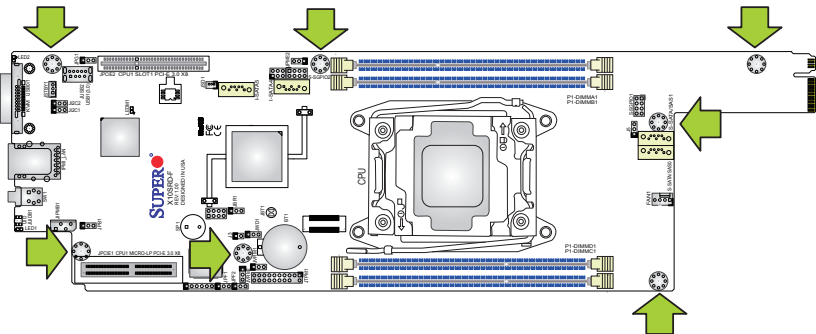
> **Warning:** To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

Installation Instructions

1. Locate the mounting holes on the motherboard. Refer to the layout on the previous page for mounting hole locations.

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

Stand Off
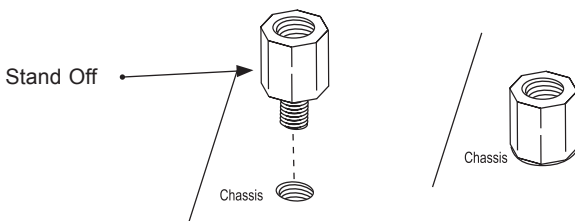
Chassis

Chassis

3. Install the motherboard carefully to avoid damaging motherboard components.

4. Insert a Pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis, using the Philips screwdriver.

Motherboard

Motherboard
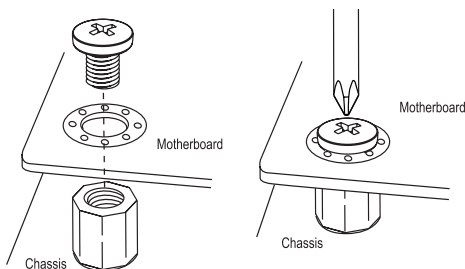
Chassis

Chassis

5. Repeat Step 4 to insert #6 screws to all mounting holes. Make sure that the motherboard is securely placed on the motherboard tray. Insert the tray containing the motherboard in the chassis and follow you chassis manufacturer's installation instructions.

2-4   Processor and Heatsink Installation

Notes:

* When handling the processor package, avoid placing direct pressure on the label area.

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

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

* Make sure to install the system board into the chassis before you install the CPU heatsink.

* When receiving a server board 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 website for updates on CPU support.

* Please proceed to the following pages for instructions on processor and heatsink installation.

The LGA2011 Socket

Currently, there are two kinds of LGA2011 socket mounted on Supermicro moth-erboards, a 'regular' and a 'narrow' sized socket. Though they may look slightly different from one another, the labeling, operation of the hardware, mounting of the CPU are similar on both types. The 'narrow' type socket is installed on this motherboard (X10SRD-F)
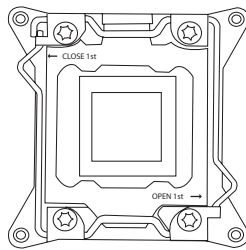
Regular LGA2011 Socket   Narrow LGA2011 Socket
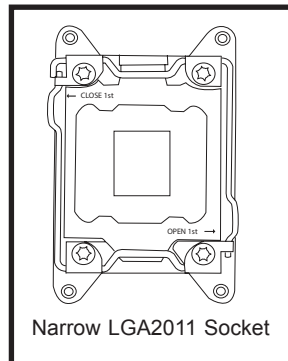
Opening the LGA2011 Socket

The instructions on the following pages will show the 'regular' type socket. However, they also apply to the 'narrow' type as well. The drawings are provided for illustration purposes only.

1. Before opening the LGA2011 socket, remove the black 'IMPORTANT!' plastic protective cap using your fingers and save it for future use.
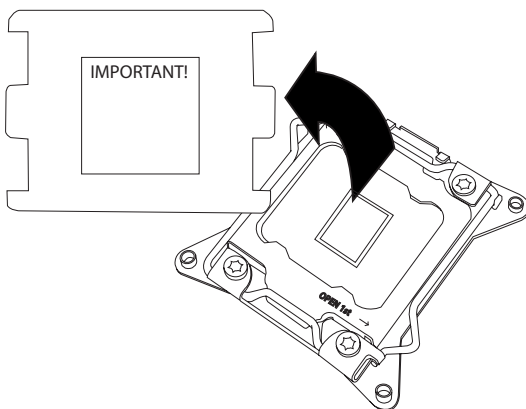
2. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.

**Press down on Load
Lever 'Open 1st'**
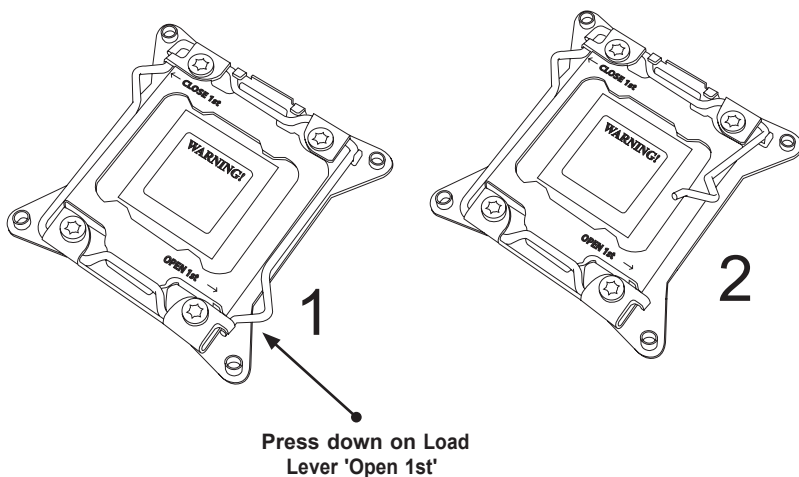
3. Press the second load lever labeled 'Close 1st' to release the load plate which covers the CPU socket from its locking position.
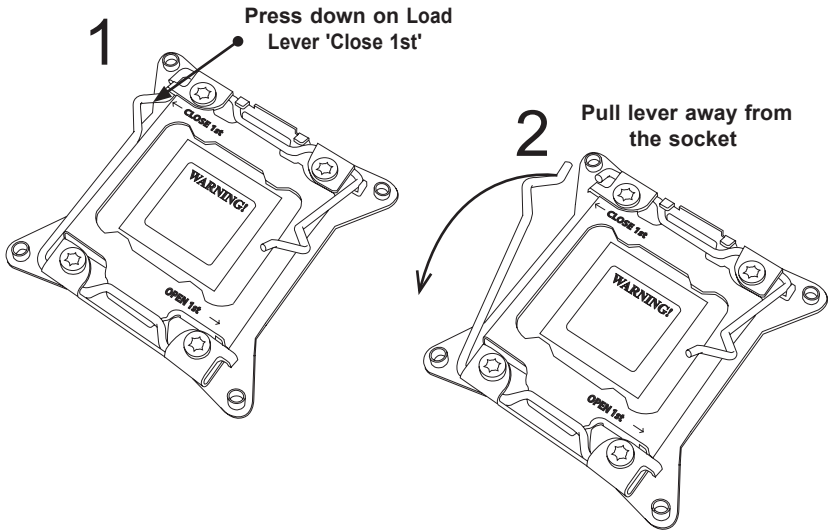
4. With the 'Close 1st' lever fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.
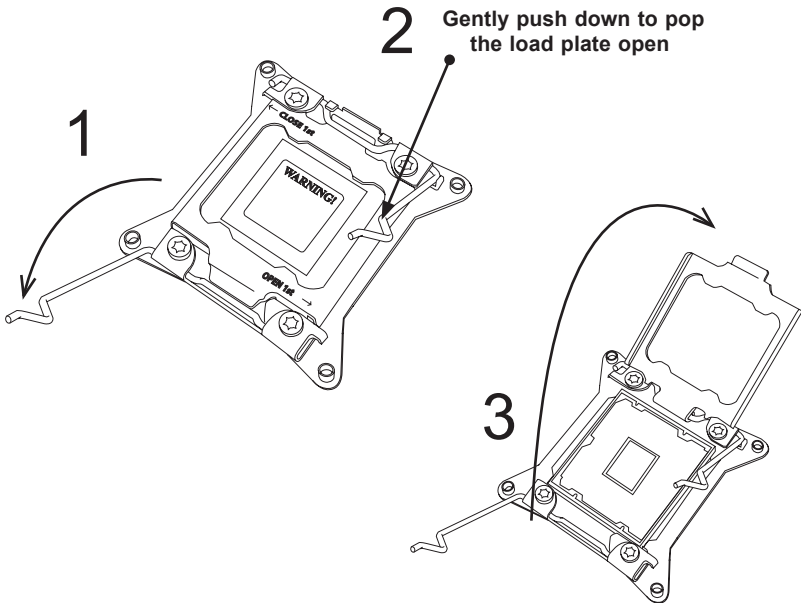
Installing the LGA2011 Processor

1. Use your thumb and index finger to hold the CPU on its edges. Align the CPU keys (semi-circle cutouts) against the socket keys.

Socket Keys   **CPU Keys**
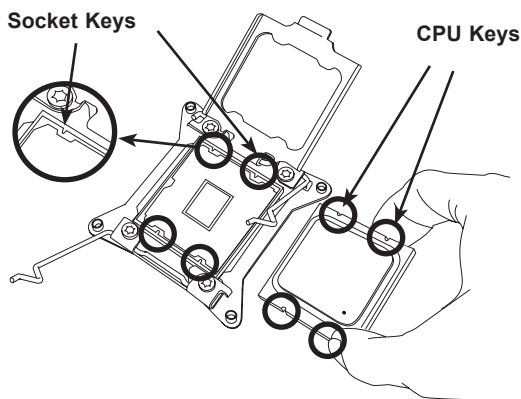
2. Once it is aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.)
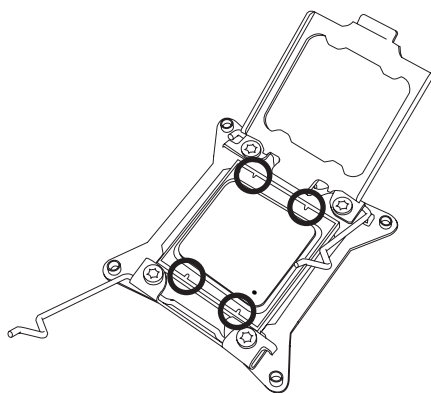
Note: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

3. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)

4. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

5. To close and lock the socket, close the load plate with the CPU. Lock the 'Close 1st' lever first, then lock the 'Open 1st' lever second. Use your thumb to gently push the load levers down to the lever locks.

Push down and lock
'Close 1st' lever

2

Gently close
the load plate

1

Lever Lock

Push down and lock
'Open 1st' lever

3

4

Lever Lock
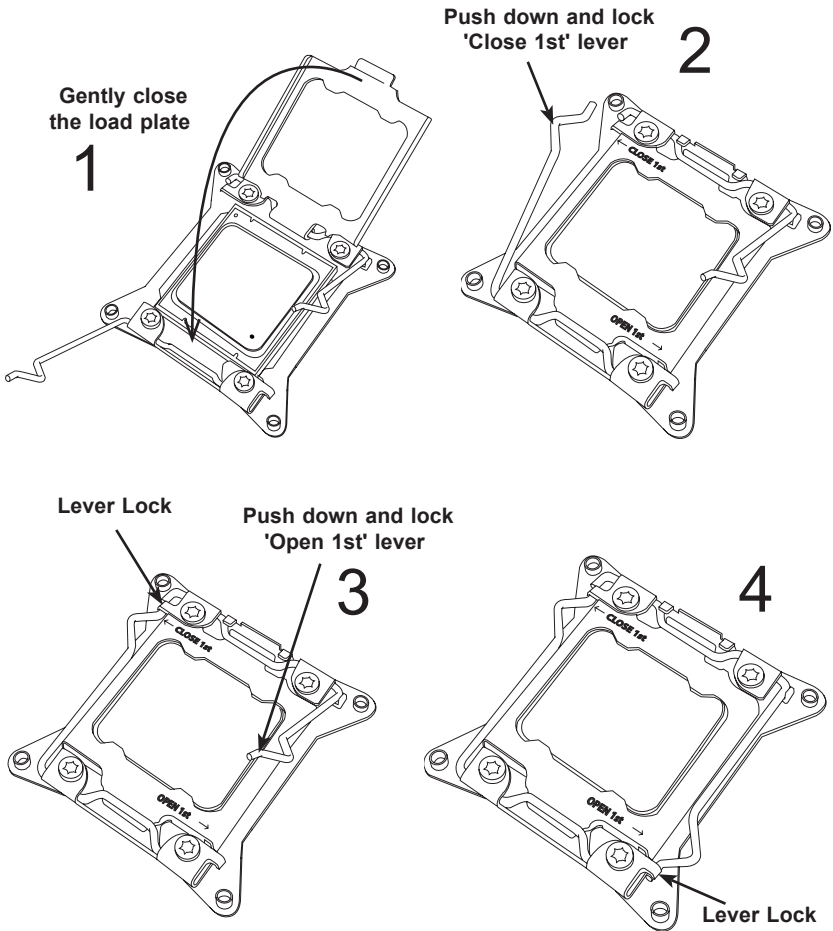
Installing a Passive CPU Heatsink

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's 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.
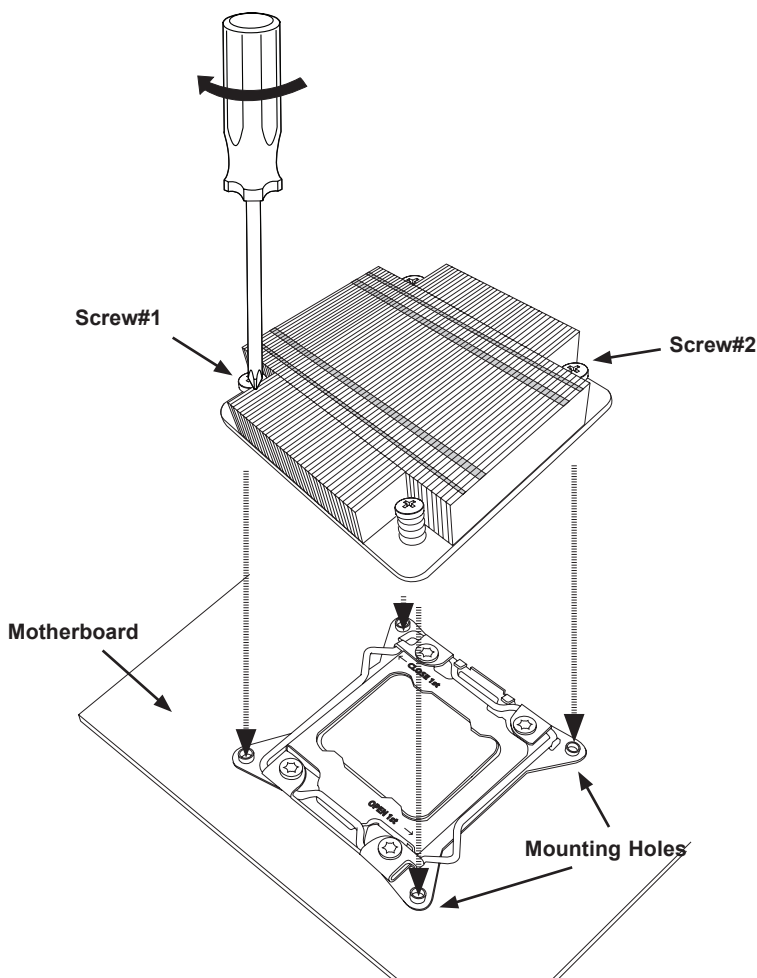
Removing the Heatsink

Note: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions below to uninstall the heatsink to prevent damage done to the CPU or the CPU socket.

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 when wriggling the heatsink!!)

3. Once the CPU is loosened, remove the CPU 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 on the surface before re-installing the CPU and the heatsink.

Loosen screws in sequence as shown.

Screw#4

Screw#1

Screw#2

Motherboard

Screw#3
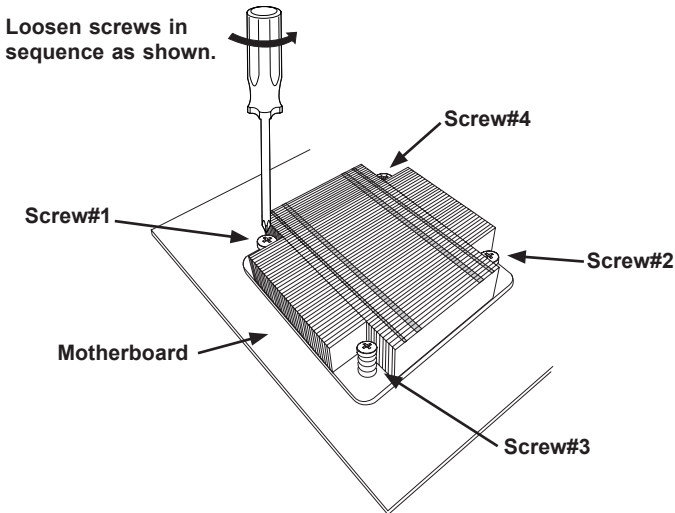
2-5   System Memory

CAUTION

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

Memory Support

The X10SRD-F supports up to 512GB ECC 3DS LRDIMM, 256GB ECC LRDIMM,
and 128GB ECC RDIMM at 2400 MHz (max.) in four DIMM slots. Check the
Supermicro website for a list of memory modules that have been validated for the
X10SRD-F motherboard.

How to Install DDR4 DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with
    DIMMA1, DIMMB1, DIMMC1, DIMMD1. Pay attention to the notch along the
    bottom of the module to prevent incorrect DIMM module installation.
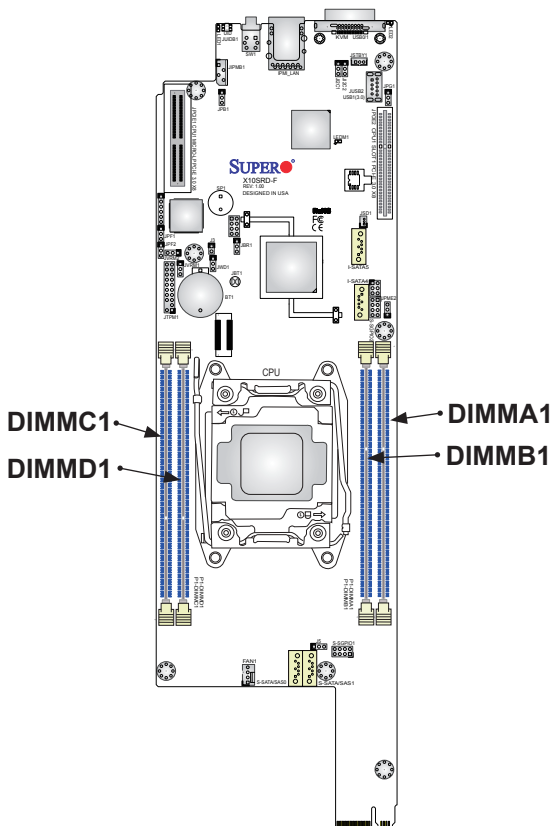
Installing and Removing DIMMs

1. Position the DIMM module's bottom key so that it aligns with the receptive point on the slot.
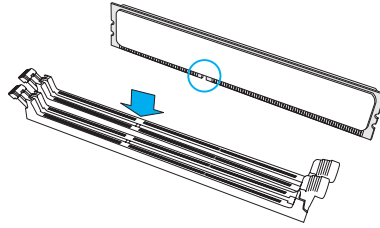
2. Push a Lock/Release tab to the Release position. Make sure that the side notches of the DIMM module aligns with the Lock/Release tab of the slot as it is pressed in.

Notches

Release

Release
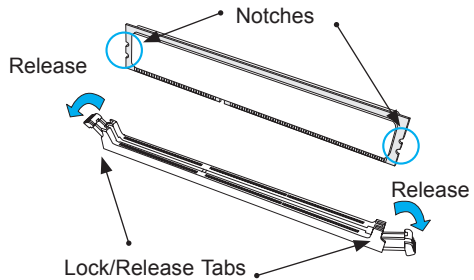
Lock/Release Tabs

3. Insert the DIMM module vertically and press down until the module snaps into place.

Press Down
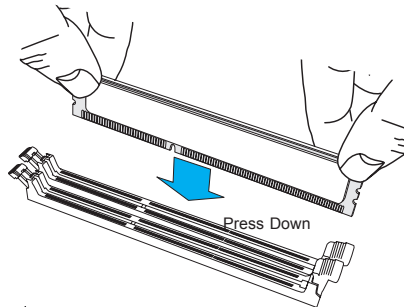
4. When the module is properly inserted, the Lock/Release tabs will automatically secure the DIMM module, locking it into place.
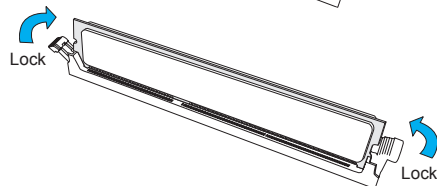
Lock

Lock

Release

To Remove:
Use your thumbs to gently push the Lock/Release tabs near both ends of the module. This should release it from the slot. Pull the DIMM module upwards.

Release
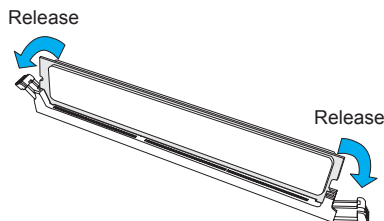
Memory Population Guidelines

When installing memory modules, the DIMM slots should be populated in the following order: DIMMA1, DIMMB1, DIMMC1 and DIMMD1.

• Always use DDR4 DIMM modules of the same size, type and speed.

• Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.

• The motherboard will support one DIMM module or three DIMM modules installed. For best memory performance, install DIMM modules in pairs.

Recommended Population (Balanced)				
DIMMA1 Slot	DIMMB1 Slot	DIMMC1 Slot	DIMMD1 Slot	Total System Memory
2GB	2GB			4GB
2GB	2GB	2GB	2GB	8GB
4GB	4GB			8GB
4GB	4GB	4GB	4GB	16GB
8GB	8GB			16GB
8GB	8GB	8GB	8GB	32GB
16GB	16GB			32GB
16GB	16GB	16GB	16GB	64GB
32GB	32GB			64GB
32GB	32GB	32GB	32GB	128GB
32GB	32GB	32GB	32GB	128GB

2-6   Connectors and I/O Ports

The I/O ports are color coded in conformance with the industry standards. See the figure below for the colors and locations of the various I/O ports.

I/O Port Location

1. KVM Port
2. IPMI Port
3. Power Button and LED
4. UID Button
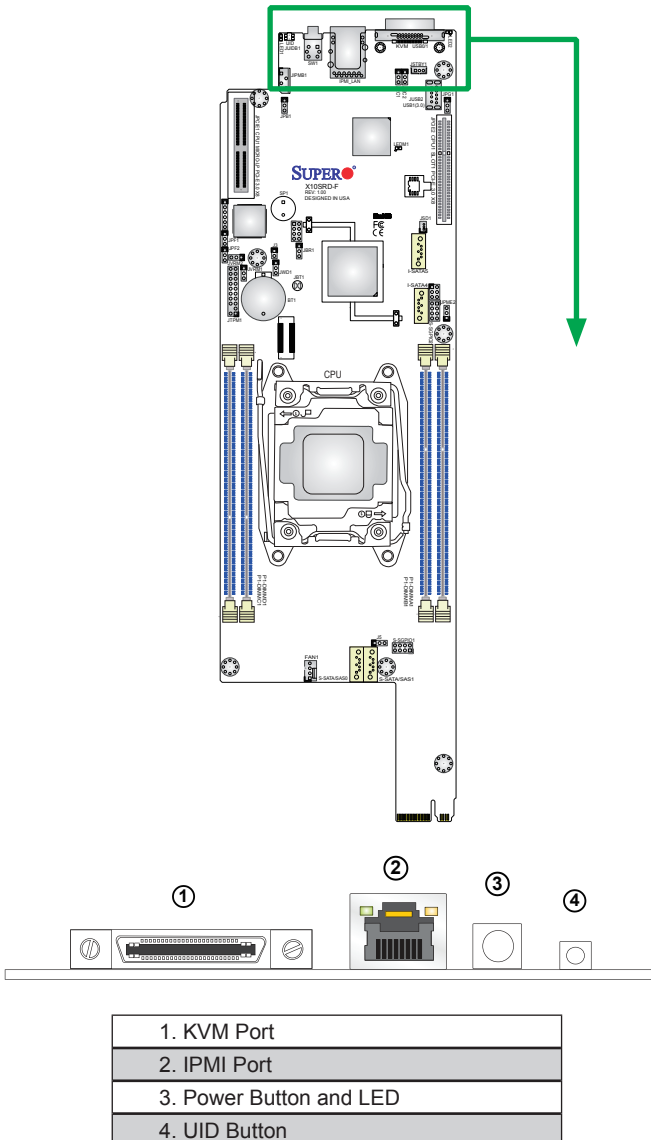
KVM Port

The KVM port supports two USB, VGA and UART interface.Please attach a compatible KVM connector/switch to this port.
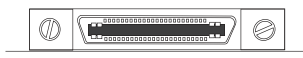
IPMI Port

A dedicated IPMI LAN port is located next to the KVM port to provide dedicated network connection for IPMI 2.0. This port accepts RJ45 type cables.
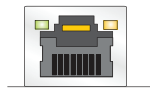
Power Button & LED

A Power Button (SW1) and LED is located right next to the IPMI port. Push this button to turn on the motherboard. When lit, it indicates that this particular motherboard is turned on.
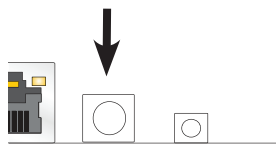
UID Button

The Unit ID Button (JUIDB1) is used in conjunction with the UID switch in front of the chassis and the UID LED located next to it. When the switch is turned on, the UID LED will turn on, making pinpointing of the node from the front or back panel easier, when servicing is required for instance. See UID LED on page 2-30.
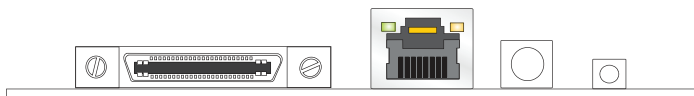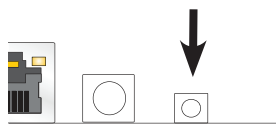
Back Panel Connectors

TPM Header

This header is used to connect a Trusted Platform Module (TPM) that is available from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive 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
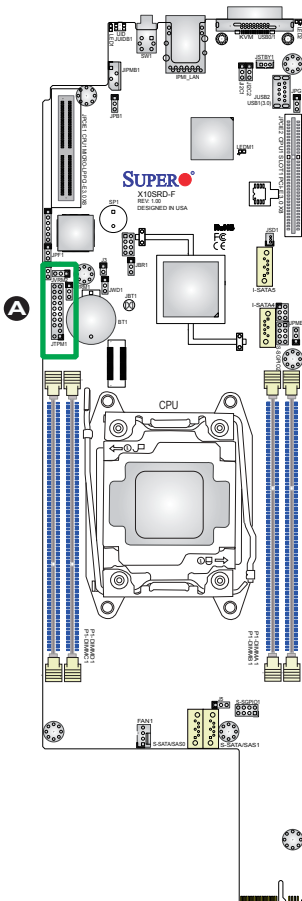
A. TPM Header

2-7   Connecting Cables

This section provides brief descriptions and pin-out definitions for onboard power connectors. Be sure to use the correct cable for each header or connector.

Universal Serial Bus (USB)

One USB 3.0 header (USB1) is located the on the motherboard. There are also two ports (USB 0/1) available through the KVM port (Cables are not included). See the table on the right for pin definitions.

USB Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	+5V	6	+5V
2	USB_PN	7	USB_PN
3	USB_PP	8	USB_PP
4	Ground	9	Ground
5	NA	10	Key

SATA DOM Power

The SATA DOM Power on JSD1 is used to supply power to SATA Disk-on-Module (DOM) solid-state storage devices.

DOM PWR Pin Definitions	
Pin#	Definition
1	5V
2	Ground
3	Ground
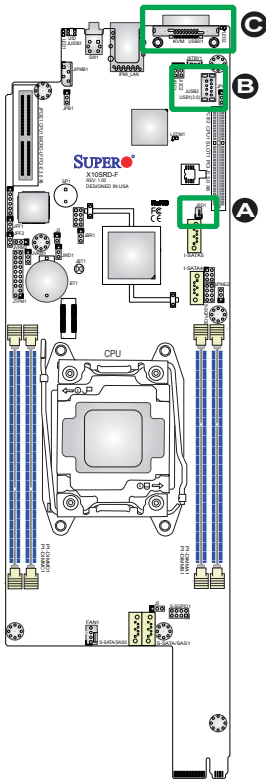
A. SATA DOM Power
B. USB1 (3.0) (JUSB2 Header)
C. USB0/1 (on KVM Port)

Serial Link General Purpose I/O Headers

Two Serial-Link General Purpose Input/Output (S-SGPIO1 and S-SGPIO2) headers are supported 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. Refer to the board layout below for the location of the headers.

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

A. S-SGPIO1

B. S-SGPIO2
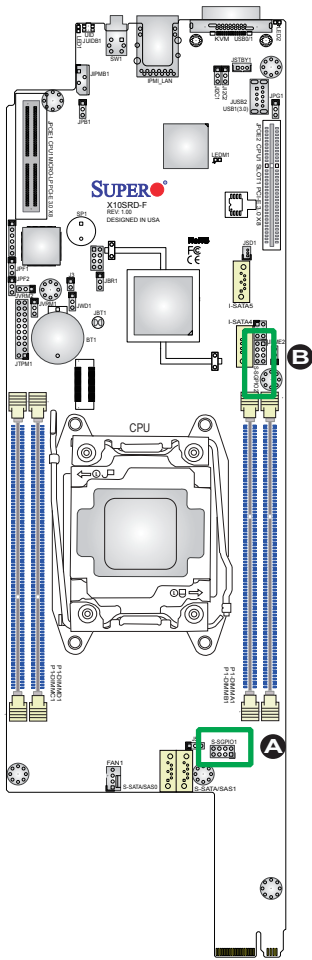
Internal Buzzer

The Internal Buzzer, located at SP1, can be used to provide audible alarms for various beep codes. See the table on the right for pin definitions. Refer to the layout below for the location of the Internal Buzzer.

Internal Buzzer Pin Definitions		
Pin#	Definitions	
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker
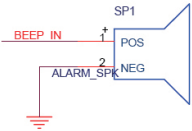
IPMB I²C SMB

A System Management Bus header for the IPMI slot is located at JIPMB1. Connect an appropriate cable here to use the IPMB I²C connection on your system.

SMB Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection
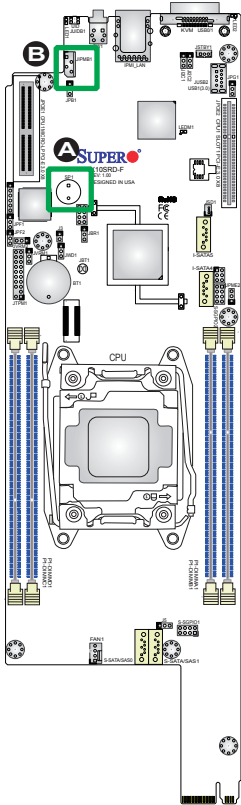
A. Internal Buzzer
B. System Management Bus

2-22

Fan Header

This motherboard has one system fan header (FAN1). This 4-pin fan header is backward compatible with the traditional 3-pin fan headers. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via the IPMI 2.0 interface. See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

A. Fan Header
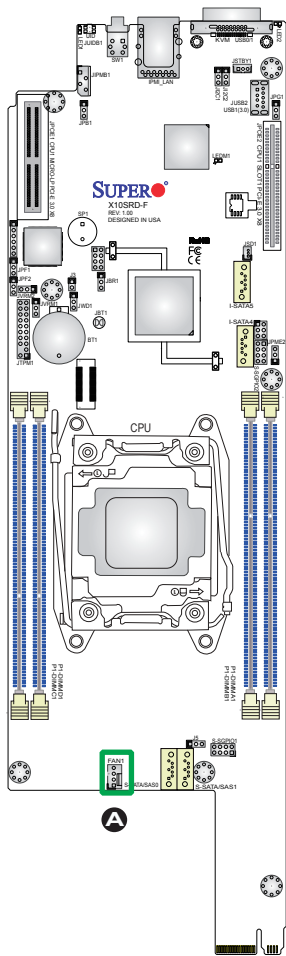
2-8 Jumper Settings

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.

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

Jumper

Connector Pins

3 2 1

Top View

3 2 1

Top View

Connector Pins with a Jumper installed on pins 1 and 2.
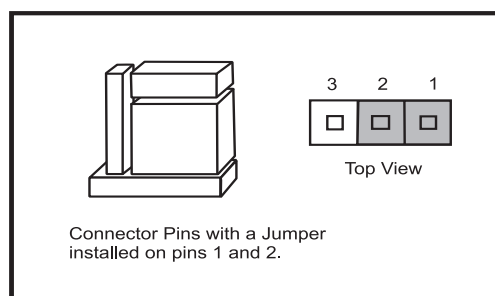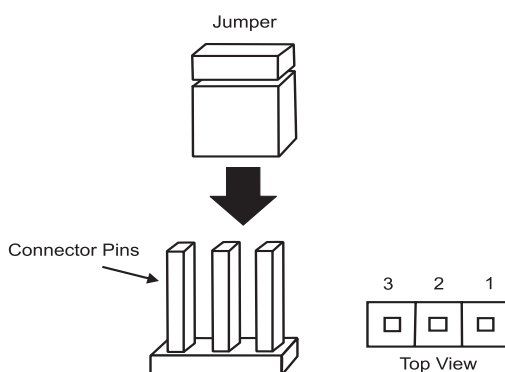
CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS.

Metal contact pads

Important: You must shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

A. CMOS Clear
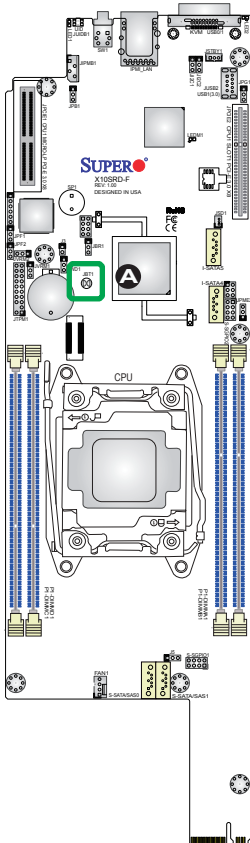
VGA Enable

JPG1 allows the user to enable the onboard VGA connector (through the KVM). Close Pins 1-2 to use this function. The default setting is Enabled.

VGA Enable/Disable Jumper Settings (JPG1)	
Pin#	Definition
1-2	Enabled (Default)
2-3	Disabled

Watch Dog

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 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	
Pin#	Definition
1-2	Reset (default)
2-3	NMI
Open	Disabled
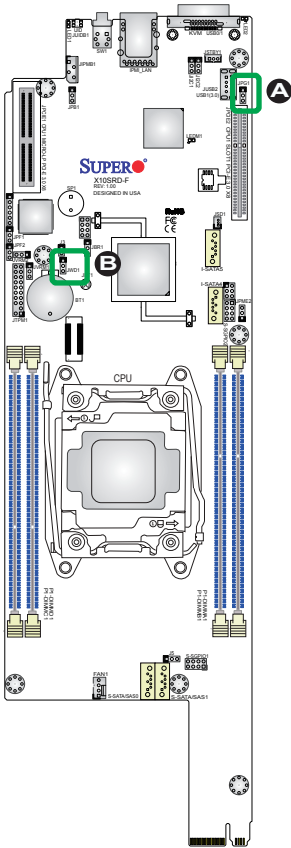
A. VGA Enable
B. Watch Dog Enable

Manufacturing Mode

Close pins 2 and 3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the Manufacturing Mode, allowing the user to flash the system firmware from a host server for system setting modifications. See the table on the right for jumper settings.

Manufacturing Mode Jumper Settings	
Pin#	Definition
1-2	Normal (Default)
2-3	Manufacturing Mode

BIOS Recovery Enable

Close pins 2 and 3 of jumper JBR1 for BIOS recovery. The default setting is on pins 1 and 2 for normal operation. See the table on the right for jumper settings.

BIOS Recovery Jumper Settings	
Pin#	Definition
1-2	Normal
2-3	BIOS Recovery
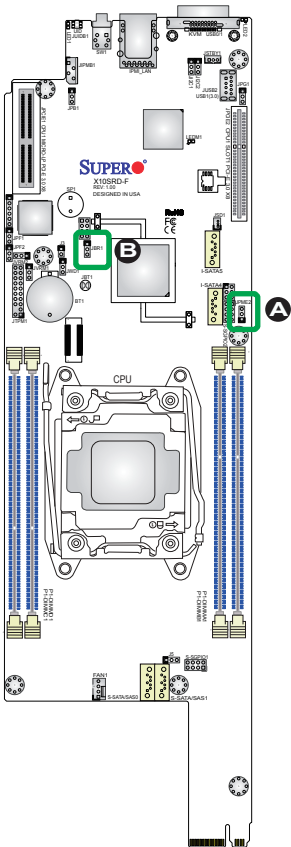
A. ME Manufacturing Mode
B. BIOS Recovery

SMB (I²C) Bus to PCI Slots

Jumpers JI²C1 and JI²C2 allow you to con-
nect the System Management Bus (SMB) to
PCI-E and PCI slots. The default setting is
set to **Disabled**. See the table on the right for
jumper settings.

I²C **to PCI Slots Jumper Settings**	
Pin#	Definition
On	Enabled
Off	Disabled (Default)

BMC Enable/Disable

Jumper JPB1 allows you to enable the embed-
ded BMC (Baseboard Management) Control-
ler to provide IPMI 2.O/KVM support on the
motherboard. See the table on the right for
jumper settings.

BMC Enable Jumper Settings	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled
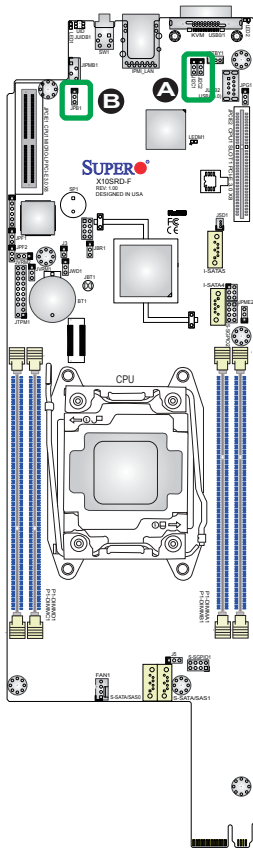
A. SMB I²C to PCI Slots
B. BMC Enable/Disable

I²C Bus for VRM

Jumpers JVRM1 and JVRM2 allow the BMC or the PCH to access CPU and memory VRM controllers. See the table on the right for jumper settings.

VRM Pin Defintions	
Pin #	Definition
1-2	BMC (Default)
2-3	PCH

Power Force On Enable/Disable

Jumpers JPF1 and JPF2 allow you to enable (force on) or disable the Power Force On function. If enabled, the power will always stay on automatically. If this function is disabled (the normal setting), the you will need to press the power button to power on the system.

Power Force On Enable/Disable Jumper Settings	
Jumper Setting	Definition
Open	Normal
Closed	Force On
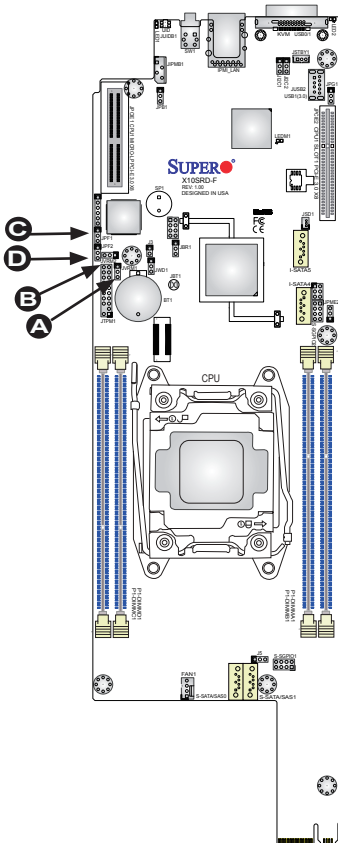
A. JVRM1
B. JVRM2
C. JPF1
D. JPF2

2-9   Onboard Indicators

IPMI Dedicated LAN Port

An IPMI Dedicated LAN port installed on the I/O back panel. The yellow LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the tables at right for more information.

LAN Link/Speed LED Indicator	
LED Color	Definition
Off	No Connection or 10 Mbps
Green (On)	100 Mbps

Link LED   **A**   **Activity LED**
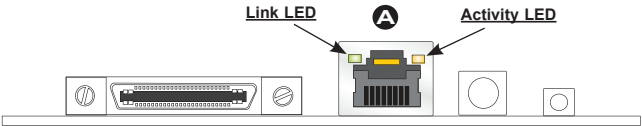
Back Panel Connectors

A
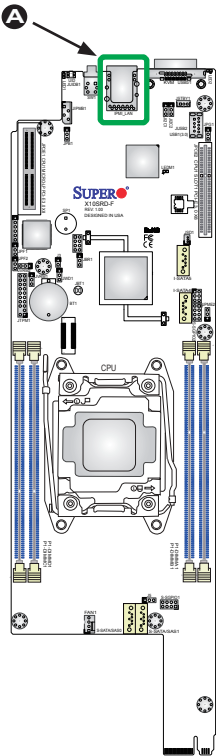
A. IPMI LAN Port

Unit ID LED

The Unit LED at LED1 is controlled by the Unit ID Button. It enables the user to pinpoint this particular motherboard that may be in need of service. Turn on the UID button in the front of the chassis or on the motherboard's I/O panel to identify the unit in need of servicing.

Unit ID LED LED Settings	
On (Steady)	Unit ID switch is on

OVT Indicator

OVT Indicator	
LED Color	Definition
Red (On)	On
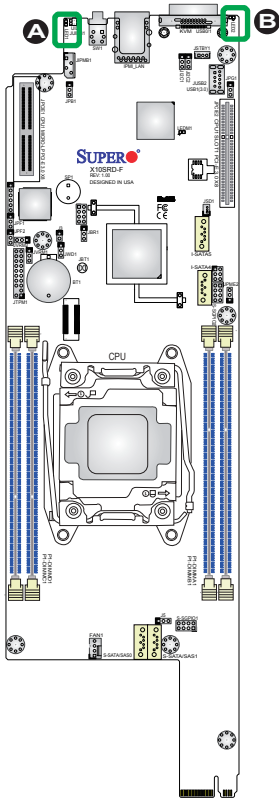
A. Unit ID LED
B. OVT Indicator

BMC Heartbeat LED

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

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

A. BMC Heartbeat
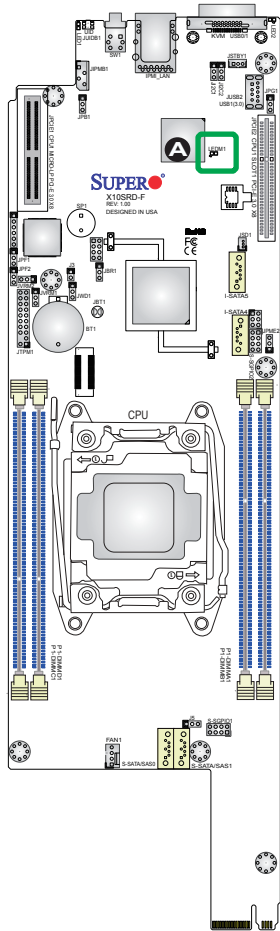
2-10 Serial ATA Connections

SATA Connections

Two SATA 3.0 connectors (I-SATA4, I-SATA5) and two SAS 3.0 connectors (SAS0, SAS1) are located on the motherboard to provide Serial Link connections. I-SATA ports are supported by the Intel® PCH C612 chipset, and SAS ports are supported by the Intel® SCU chip. These Serial Link connections provide faster data transmission than legacy Parallel ATA. See the table on the right for pin definitions.

SATA Connectors Pin Definitions	
Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

A. I-SATA4
B. I-SATA5
C. SAS0
D. SAS1
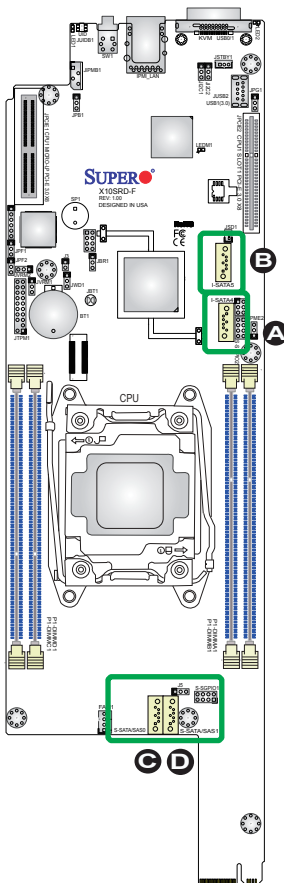
Notes

Chapter 3

Troubleshooting

3-1　Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. Always disconnect the AC power cord before adding, changing or installing any hardware components.

Before Power On

1. Make sure that the Standby is not on. (**Note:** If it is on, the onboard power is on. Be sure to unplug the power cable before installing or removing the components.)

2. Make sure that there are no short circuits between the motherboard and chassis.

3. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse. Also, be sure to remove all add-on cards.

4. Install a CPU and heatsink (be sure that it is fully seated) and then connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.

No Power

1. Make sure that there are no short circuits between the motherboard and chassis.

2. Make sure that all jumpers are set to their default positions.

3. Check if the 115V/230V switch on the power supply is properly set.

4. Turn the power switch on and off to test the system.

5. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you have no video--in this case, you will need to re-move all the add-on cards and cables first.

2. Use the speaker to determine if any beep codes exist. (Refer to Appendix A for details on beep codes.)

3. Remove all memory modules and turn on the system. (If the alarm is on, check the specs of memory modules, reset the memory or try a different one.)

Memory Errors

1. Make sure that the DIMM modules are properly installed and fully seated in the slots.

2. You should be using memory recommended by Supermicro (see Section 2-4). Also, it is recommended that you use the memory modules of the same type and speed for all DIMMs in the system. Do not use memory modules of differ-ent sizes, different speeds and different types on the same motherboard.

3. Check for bad DIMM modules or slots by swapping modules between slots to see if you can locate the faulty ones.

4. Check the switch of 115V/230V power supply.

When You Lose the System's Setup Configuration

1. Please be sure to use a high quality power supply. A poor quality power sup-ply may cause the system to lose CMOS setup information. Refer to Section 1-5 for details on recommended power supplies.

2. The battery on your motherboard may be old. Check to verify that it still sup-plies ~3VDC. If it does not, replace it with a new one.

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2   Technical Support Procedures

Before contacting Technical Support, please make sure that you have followed all the steps listed below. Also, Note that as a motherboard manufacturer, Supermicro does not sell directly to end users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (http://www.supermicro.com/support/faqs/) before contacting Technical Support.

2. BIOS upgrades can be downloaded from our website at (http://www.supermicro.com/support/bios/).

    Note: Not all BIOS can be flashed. Some cannot be flashed; it depends on the boot block code of the BIOS.

3. If you've followed the instructions above to troubleshoot your system, and still cannot resolve the problem, then contact Supermicro's technical support and provide them with the following information:

*   Motherboard model and PCB revision number

*   BIOS release date/version (this can be seen on the initial display when your system first boots up)

*   System configuration

*   An example of a Technical Support form is on our website at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com, by phone at: (408) 503-8000, option 2, or by fax at (408)503-8019.

3-3   Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: Please see Section 2-5 for a comprehensive answer.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS ROM file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. Please unzip the BIOS file onto a bootable device or a USB pen/thumb drive. To flash the BIOS, run the batch file named "flash.bat" with the new BIOS ROM file from your bootable device or USB pen/thumb drive. Use the following format:

F:\> flash.bat BIOS-ROM-filename.xxx <Enter>

> **Note:** Always use the file named "flash.bat" to update the BIOS, and insert a space between "flash.bat" and the filename. The BIOS-ROM-filename will bear the motherboard name (i.e., X9SRD) and build version as the extension. For example, "X10SRD1.218". When completed, your system will automatically reboot.

> When the BIOS flashing screen is completed, the system will reboot and will show "Press F1 or F2". At this point, you will need to load the BIOS defaults. Press <F1> to go to the BIOS setup screen, and press <F3> to load the default settings. Next, press <F4> to save and exit. The system will then reboot.

> **Warning**: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!

> **Note:** The SPI BIOS chip installed on this motherboard is not removable. To repair or replace a damaged BIOS chip, please send your motherboard to RMA at Supermicro for service.

Question: I think my BIOS is corrupted. How can I recover my BIOS?

Answer: Please see Appendix C - BIOS Recovery for detailed instructions.

Question: Why do I get an error message "IASTOR.SYS read error" and "press F6 to install Intel RAID driver" when installing Windows on my motherboard?

Answer: To solve this issue, disable the IPMI jumper (if your motherboard has this feature). Another solution is to use a USB floppy drive instead of the onboard floppy drive. For the IPMI jumper location, please check Chapter 1.

Question: What is the heatsink part number for my X10SRD-F Series motherboard?

Answer: For the 1U passive heatsink, ask for SNK-P0047PS.

Question: Why can't I recover the BIOS even when I've followed the instructions in the user's manual for the motherboard?

Answer: Please disable the IPMI jumper and try it again. For the jumper location, please check Chapter 1.

3-4 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.

2. Locate the onboard battery as shown below.

3. Using a tool such as a pen or a small screwdriver, push the battery lock out-
   wards to unlock it. Once unlocked, the battery will pop out from the holder.

4. Remove the battery.

Proper Battery Disposal

Note: 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 hazard-
ous waste management agency to dispose of your used battery properly.

Battery Installation

1. To install an onboard battery, follow the steps 1 & 2 above and continue
   below:

2. Identify the battery's polarity. The positive (+) side should be facing up.

3. Insert the battery into the battery holder and push it down until you hear a
   click to ensure that the battery is securely locked.

   Note: When replacing a battery, be sure to only replace it with the same
   type.

LITHIUM BATTERY

BATTERY HOLDER

OR

LITHIUM BATTERY

BATTERY HOLDER
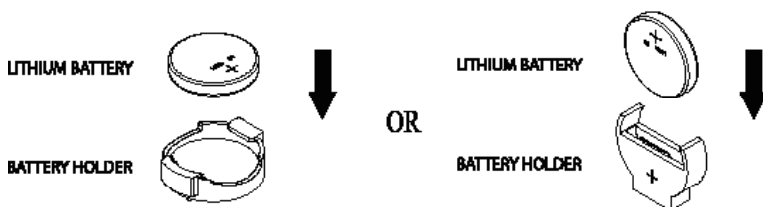
3-5   Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. For faster service, you may also obtain RMA authorizations online (http://www.supermicro.com/RmaForm/). When you return the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Notes

Chapter 4

BIOS

4-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X10SRD-F Motherboard. The AMI 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 setup screens.

Note: For instructions on BIOS recovery, please refer to the instruction guide posted at http://www.supermicro.com/support/manuals/.

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 Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often informational text will accompany it. (**Note**: the AMI BIOS has default informational text built in. Supermicro retains the option to include, omit, or change any of these informational 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>, <F10>, <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.

4-2 Main Setup

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

```
            Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
       Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

                                                          Set the Time. Use Tab to
                                                          switch between Time
   System Date                    [Mon 05/04/2015]        elements.
   System Time                    [09:27:13]

   Supermicro X10SRD-F
   BIOS Version                   T20150304184318
   Build Date                     03/04/2015




                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/−: Change Opt.
   Memory Information                                     F1: General Help
   Total Memory                   65536 MB                F2: Previous Values
   Memory Speed                   1867 MT/s               F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

            Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
```

System Overview: The following BIOS information will be displayed:

System Time/System Date

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

Supermicro X10SRD-F

BIOS Version:

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

Build Date:

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

Memory Information

Total Memory

This displays the size of memory available in the system.

Memory Speed

This item displays the default speed of the memory modules installed in the system.

4-3   Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:

```
                Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.
         Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

         ▶ Boot Feature                              Boot Feature Configuration
         ▶ CPU Configuration                         Page
         ▶ Chipset Configuration
         ▶ SATA Configuration
         ▶ Server ME Configuration
         ▶ PCIe/PCI/PnP Configuration
         ▶ Super IO Configuration
         ▶ Serial Port Console Redirection
         ▶ ACPI Settings


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

                Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
```

Warning: Take Caution when changing the Advanced settings. An incorrect value, a very high DRAM frequency or incorrect DRAM timing may cause system to become unstable. When this occurs, revert to the default setting.

▶BOOT Feature

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. 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

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

Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

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

Interrupt 19 Capture

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

▶**Power Configuration**

Watch Dog Function

If enabled, the Watch Dog timer will allow the system to automatically reboot when a non-recoverable error occurs that lasts for more than five 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 to force the user to press and hold the Power Button for 4 seconds before the system turns off. Select Instant Off if you want the system to instantly power off when the Power Button is pressed. 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 state before a power loss. The options are Power On, Stay Off and **Last State**.

▶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

- CPU Version

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, 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)

Set to Enabled to use the processor's Hyper Threading Technology feature. The options are **Enabled** and Disabled.

Cores Enabled

Set a numeric value to enable the number of cores. (Please refer to Intel's website for more information.) Enter **0** to enable all cores.

Execute Disable Bit (Available when supported by the OS and the CPU)

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

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 set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache to improve CPU performance. The options are Disable and **Enable**.

Adjacent Cache Prefetch (Available when supported by the CPU)

The CPU prefetches the cache line for 64 bytes if this feature is set to Disabled. The CPU prefetches both cache lines for 128 bytes as comprised if this feature is set to **Enable**.

DCU Streamer Prefetcher

This feature enables prefetch of the next L1 data line based on multiple loads in the same cache line. The options are **Enable** and Disable.

DCU IP Prefetcher

Set this feature to Enabled to activate the L1 Data Prefetcher based on sequential load history. The options are **Enable** and Disable.

Direct Cache Access (DCA)

Select Enabled to use Intel's DCA (Direct Cache Access) Technology to improve data transfer efficiency. The options are **Enable** and Disable.

X2APIC

Select Enable to activate APIC (Advanced Programmable Interrupt Controller) support. The options are **Enable** and Disable.

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 (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are **Enable** and Disable. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

▶**Advanced Power Management Configuration**

Power Technology

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

*If the item above is set to "Custom," CPU P State/C State/T State will display:

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 over-ride whatever setting is in the Operating System. The options are Performance, **Balanced Performance**, Balanced Power, and Power.

Energy Efficient Turbo

Use this feature to enable energy efficient turbo mode. The options are **Enable** and Disable.

▶**CPU P State Control**

EIST (P-States)

EIST (Enhanced Intel SpeedStep Technology) allows the system to automati-cally 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.

▶**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) Features

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

CPU1 MICRO-LP PCI-E 3.0 X8 SLOT Link Speed

Use this item to configure the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s) and **Gen 3 (Generation 3) (8 GT/s)**.

CPU1 SLOT1 PCI-E 3.0 X8 SLOT Link Speed

Use this item to configure the link speed of a PCI-E port specified by the user. The options are Gen 1 (Generation 1) (2.5 GT/s), Gen 2 (Generation 2) (5 GT/s) and **Gen 3 (Generation 3) (8 GT/s)**.

▶IOAT Configuration

Enable I/OAT

Select Enable to enable Intel I/OAT (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.

▶QPI (Quick Path Interconnect) Configuration

QPI Status

The following information will display:

- Number of CPU

- Number of IIO

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 **Disable**.

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) require-ments. 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).

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).

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**.

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 Configuration

The following South Bridge information will display:

- USB Configuration

- USB Module Version

- USB Devices

Legacy USB Support

This feature enables support for legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disabled to have USB devices available only for EFI applications. 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**.

Port 60/64 Emulation

This feature enables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB aware Operating Systems. The options are **Enabled,** and Disabled.

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 Driver

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**.

▶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 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 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.

▶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 Devices Common Settings:

PCI PERR/SERR Support

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

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.

CPU1 MICRO-LP PCI-E 3.0 X8 SLOT OPROM, CPU1 SLOT1 PCI-E 3.0 X8 SLOT 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 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 1or 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 redi-rectoin. 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 Settings**

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 re-mote host server. The options are **COM1** and COM2/SOL.

Terminal Type

Use this feature to select the target terminal emulation type for Console Redirec-tion. 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 Redirec-tion. 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

▶ACPI Settings

WHEA Support

Select Enabled to support the Windows Hardware Error Architecture (WHEA) plat-form 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 de-pendency on other timestamp calculation devices, such as an x86 RDTSC Instruc-tion embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

4-4   Event Logs

Use this feature to configure Event Log settings.
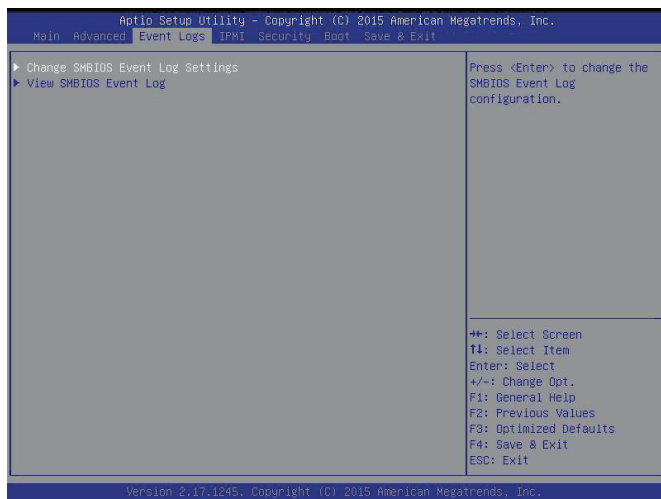
►Change SMBIOS Event Log Settings

SMBIOS Event Log

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

Runtime Error Logging Support

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

Memory Correction Error Threshold

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

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 SMBIOS 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/Error Code/Severity

4-5   IPMI Settings

Use this feature to configure the 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

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

Configuration Source

This feature selects whether the IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server (Dynamic Host and Configuration Protocol) "Dynamic" or manually entered by the user "Static". When Dynamic is selected, all the options below are automatically assigned to the system by itself or by an external DHCP server. If Static is selected, the IP Address, Subnet Mask and Gateway Address must be manually entered below. The options are Static and **DHCP**.

Station IP Address

Enter the IP address for this machine. This should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

Subnet Mask

Subnet masks tell the network which subnet this machine belongs to. The value of each three-digit number separated by dots should not exceed 255.

Station MAC Address

MAC addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots (i.e., 00.30.48.D0.D4.60).

Gateway IP Address

Enter the Gateway or Router address (i.e., 192.168.10.1).

4-6   Security

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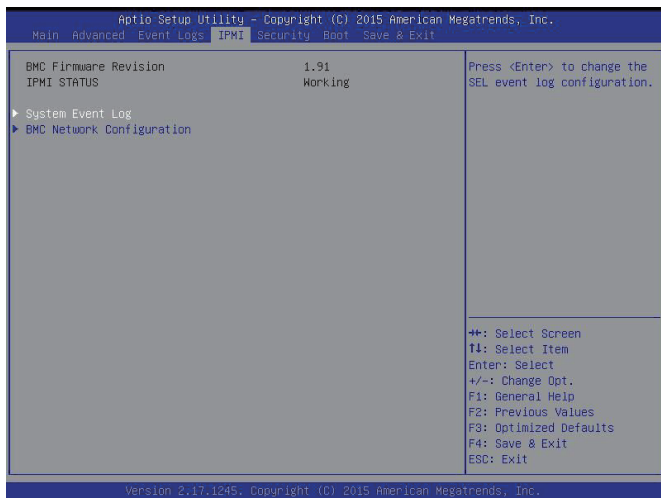
Password Check

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.

►Secure Boot Menu

This section displays the contents of the following secure boot features:

- System Mode

- Secure Boot

Secure Boot

Use this item to enable secure boot. The options are **Disabled** and Enabled.

Secure Boot Mode

Use this item to select the secure boot mode. The options are **Standard** and Custom.

CSM Support

Select Enabled to support the EFI Compatibility Support Module (CSM), which provides compatibility support for traditional legacy BIOS for system boot. The options are **Enabled** and Disabled.

▶**Key Management**

This submenu allows the user to configure the following Key Management settings.

Default Key Provision

Select Enabled to install the default Secure-Boot keys set by the manufacturer. The options are **Disabled** and Enabled.

▶**Enroll All Factory Default Keys**

Select Yes to install all default secure keys set by the manufacturer. The options are **Yes** and No.

Save All Secure Boot Variables

This feature allows the user to decide if all secure boot variables should be saved.

Platform Key (PK)

This feature allows the user to configure the settings of the platform keys.

▶**Set New PK**

Select Yes to load the new platform keys (PK) from the manufacturer's defaults. Select No to load the platform keys from a file. The options are **Yes** and No.

Key Exchange Key (KEK)

This feature allows the user to configure the settings of the key exchange keys.

▶**Set New KEK**

Select Yes to load the KEK from the manufacturer's defaults. Select No to load the KEK from a file. The options are Yes and No.

▶**Append KEK**

Select Yes to add the KEK from the manufacturer's defaults list to the existing KEK. Select No to load the KEK from a file. The options are Yes and No.

Authorized Signatures

This feature allows the user to configure the settings of the authorized signatures.

▶**Set New DB**

Select Yes to load the DB from the manufacturer's defaults. Select No to load the DBT from a file. The options are Yes and No.

▶**Append DB**

Select Yes to add the DB from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file. The options are Yes and No.

Authorized TimeStamps

This feature allows the user to configure the settings of the authorized time-stamps.

▶**Set New DBT**

Select Yes to load the DBT from the manufacturer's defaults. Select No to load the DBT from a file. The options are Yes and No.

▶**Append DBT**

Select Yes to add the DBT from the manufacturer's defaults list to the existing DBT. Select No to load the DBT from a file. The options are Yes and No.

Forbidden Signatures

This feature allows the user to configure the settings of the forbidden signatures.

▶**Set New DBX**

Select Yes to load the DBX from the manufacturer's defaults. Select No to load the DBX from a file. The options are Yes and No.

▶**Append DBX**

Select Yes to add the DBX from the manufacturer's defaults to the existing DBX. Select No to load the DBX from a file. The options are Yes and No.

4-7   Boot

Use this feature to configure Boot Settings:

```
                Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
         Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

      Boot Configuration                                      ▲ Number of seconds to wait
      Setup Prompt Timeout                     1                for setup activation key.
                                                               65535(0xFFFF) means
      Boot Mode Select                         [DUAL]          indefinite waiting.


      FIXED BOOT ORDER Priorities
      Dual Boot Order #1                       [Hard Disk]
      Dual Boot Order #2                       [CD/DVD]
      Dual Boot Order #3                       [USB Hard Disk]
      Dual Boot Order #4                       [USB CD/DVD]
      Dual Boot Order #5                       [USB Key]
      Dual Boot Order #6                       [USB Floppy]
      Dual Boot Order #7                       [Network:IBA GE S1...]
      Dual Boot Order #8                       [UEFI Hard Disk]
      Dual Boot Order #9                       [UEFI CD/DVD]
      Dual Boot Order #10                      [UEFI USB Hard Disk]
      Dual Boot Order #11                      [UEFI USB CD/DVD]        ↔: Select Screen
      Dual Boot Order #12                      [UEFI USB Key]          ↑↓: Select Item
      Dual Boot Order #13                      [UEFI USB Floppy]       Enter: Select
      Dual Boot Order #14                      [UEFI Network]          +/-: Change Opt.
      Dual Boot Order #15                      [UEFI AP:UEFI: Bui...]  F1: General Help
                                                                      F2: Previous Values
    ▶ Delete Boot Option                                          ▼  F3: Optimized Defaults
                                                                      F4: Save & Exit
                                                                      ESC: Exit

                Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
```

Boot Configuration

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

▶**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.

▶**Network Drive BBS Priorities**

- Legacy 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.

- Legacy Boot Order #2 - 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**

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

4-8　Save & Exit

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

```
         Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Security  Boot  Save & Exit

   Discard Changes and Exit                          Exit system setup without
   Save Changes and Reset                            saving any changes.

   Save Options
   Save Changes
   Discard Changes

   Restore Optimized Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   UEFI: Built-in EFI Shell
   IBA GE Slot 0200 v1381
   IBA GE Slot 0201 v1381

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

         Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.
```

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit 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, so the new system con-figuration 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 any 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 Optimized Defaults

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

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

Listed on this section are other boot options for the system (i.e., Built-in EFI shell). Select an option and press <Enter>. Your system will boot to the selected boot option. 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.

A-1   BIOS Error Beep Codes

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
5 beeps	Display memory read/write error	Video adapter missing or with faulty memory
1 continuous beep	System OH	System Overheat

Notes

Appendix B

Software Installation Instructions

B-1   Installing Drivers

You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items. (**Note**: These utility programs are available for download at http://www.supermicro.com)
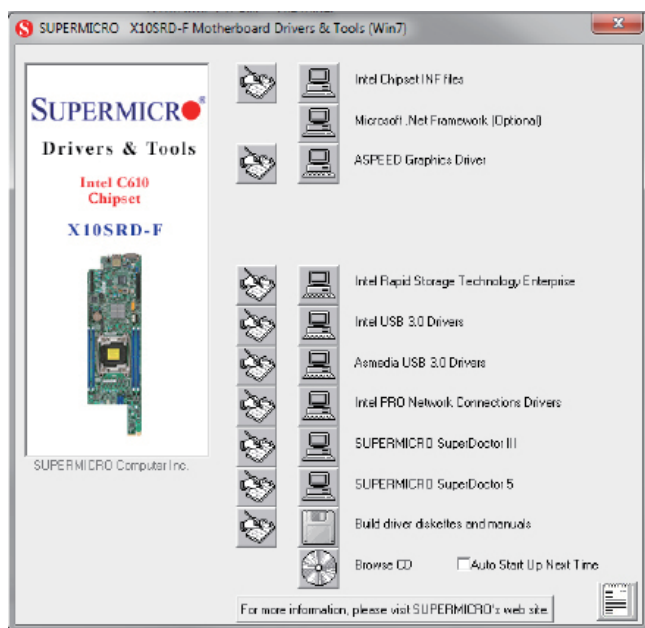
Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on the paper to view the readme files for each item. Click on a computer icon to the right of an item to install this item (from top to the bottom), one at a time. After installing each item, you must reboot the system before proceeding with the next item on the list.

B-2   Installing SuperDoctor® 5

The Supermicro SuperDoctor® 5 is a hardware monitoring program that functions in a command-line or web-based interface in Windows and Linux operating systems. The program monitors system health information such 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. SD5 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.

SuperDoctor® 5 Interface Display Screen (Health Information)

> **Note:** The SuperDoctor® 5 program and User's Manual can be downloaded from the Supermicro website at http://www.supermicro.com/products/nfo/ sms_sd5.cfm.

Appendix C

UEFI BIOS Recovery Instructions

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 need to update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

C-1   An Overview to the UEFI BIOS

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism for add-on card initialization to allow the UEFI OS loader, which is stored in the add-on card, to boot the system. The UEFI offers a clean, hands-off control to a computer system at bootup.

C-2   How to Recover the UEFI BIOS Image (-the Main BIOS Block)

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The boot block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a new BIOS image if the original main BIOS image is corrupted. When the system power is on, the boot block codes execute first. Once it is completed, the main BIOS code will continue with system initialization and bootup.

> **Note:** Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS boot crashes. However, when the BIOS boot block crashes, you will need to follow the procedures below for BIOS recovery.

C-3   To Recover the Main BIOS Block Using a USB-Attached Device

This feature allows the user to recover a BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB flash drive, or a USB CD/DVD ROM/RW device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

The file system supported by UEFI is FAT (including FAT12, FAT16, and FAT32) installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large because it contains too many folders and files.

To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below.

1. Using a different machine, copy the "Super.ROM" binary image file into the disc root "\" directory of a USB device or a writeable CD/DVD.

   Note: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS image into a USB flash device and rename it "Super.ROM" for BIOS recovery use.

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system

3. While powering on the system, please keep pressing <Ctrl> and <Home> simultaneously on your keyboard *until the following screen (or a screen similar to the one below) displays*.

Warning!! Please **stop** pressing the <Ctrl> and <Home> keys immediately when you see the screen (or a similar screen) below; otherwise, it will trigger a system reboot.

   Note: On the other hand, if the following screen displays, please load the "Super.ROM" file to the root folder and connect this folder to the system. (You can do so by inserting a USB device that contains the new "Super.ROM" image to your machine for BIOS recovery.)

4. After locating the new BIOS binary image, the system will enter the BIOS
    recovery menu as shown below.

    Note: At this point, you may decide if you want to start with BIOS recovery.
    If you decide to proceed with BIOS recovery, follow the procedures below.

```
                  Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Boot  Security  Exit  Recovery

    WARNING! BIOS Recovery mode has been detected         Select this to start flash
                                                          update
    Flash Update Parameters
    Reset NVRAM                        [Enabled]

  ▶ Proceed with flash update




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



                  Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

5. When the screen as shown above displays, using the arrow key, select the
    item "Proceed with flash update" and press the <Enter> key. You will see the
    progress of BIOS recovery as shown in the screen below.

    Note: *Do not interrupt* the process of BIOS flashing until it is completed.

```
                  Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                                                                 Recovery

    WARNING! System firmware is being updated.
    Keyboard is locked.
    DO NOT TURN THE POWER OFF !!!
    Once firmware update is completed
    press any key to reboot the system

    Flash update progress            15 %




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



                  Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

6. After the process of BIOS recovery is completed, press any key to reboot the system.

```
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
                                        Recovery

WARNING! System firmware is being updated.
Keyboard is locked.
DO NOT TURN THE POWER OFF !!!
Once firmware update is completed
press any key to reboot the system

Flash update progress              completed.

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

          Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

7. Using a different system, extract the BIOS package into a bootable USB flash drive.

8. When a DOS prompt appears, enter FLASH.BAT BIOSname.### at the prompt.

    Note: *Do not interrupt this process* until BIOS flashing is completed.

9. After seeing the message that BIOS update is completed, unplug the AC power cable from the power supply to clear the CMOS, and then plug the AC power cable into the power supply again to power on the system.

10. Press <Del> continuously to enter the BIOS Setup utility.

11. Press <F3> to load default settings.

12. After loading default settings, press <F4> to save the settings and exit the BIOS Setup utility.

(Disclaimer Continued)

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