SUPER○®

X9SRD-F

USER'S MANUAL

Revision 1.0

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- 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.
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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.

Manual Revision 1.0

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Preface

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER● X9SRD-F motherboard.

About This Motherboard

The SUPER● X9SRD-F Motherboard supports a single Intel® E5-1600/E5-2600 series CPU (LGA 2011 socket). With the Intel® C602J chipset built in, the X9SRD-F motherboard offers exceptional system performance in a proprietary footprint optimized for Supermicro's line of chassis. Features such as up to six SATA ports, support for up to 128GB of memory, IPMI, Gb LAN, and compact size makes the X9SRD-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 mother-board, and provides detailed information on the Intel Patsburg chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when in-stalling the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes trouble-shooting 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:

Danger/Caution: Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury

Warning: Critical information to prevent damage to the components or data loss.

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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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) Supermicro CD containing drivers and utilities

- One (1) User's Manual

SUPER● **X9SRD-F Motherboard Image**
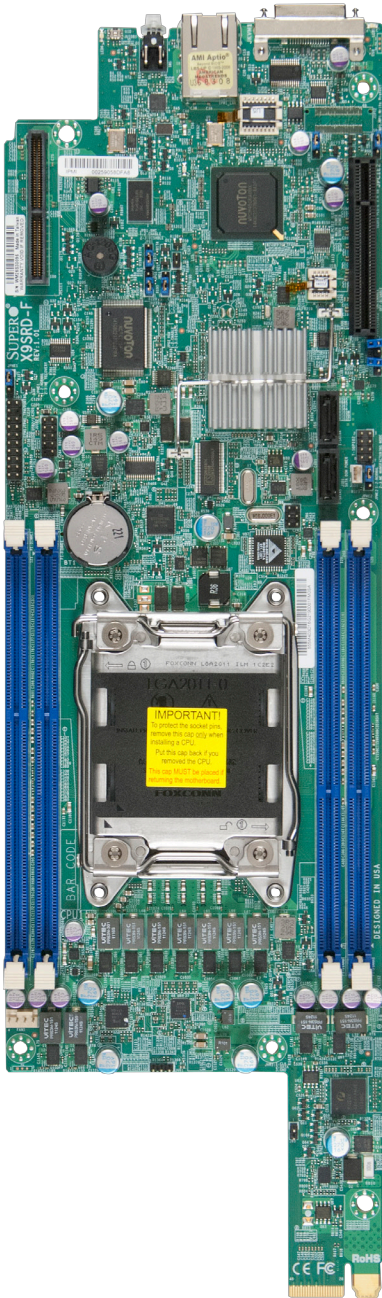
Note: All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

Motherboard Layout
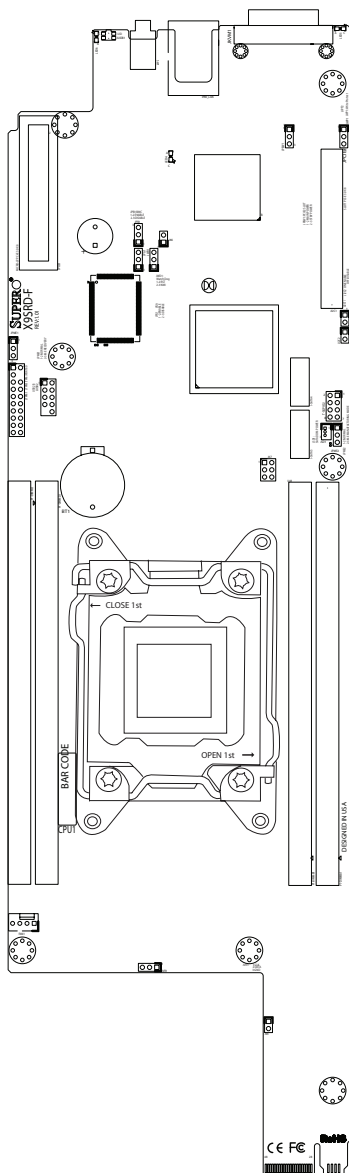
Important Notes to the User

- See Chapter 2 for detailed informa-
  tion on jumpers, I/O ports and JF1
  front panel connections.

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

- Jumpers not indicated are for test-
  ing only.

X9SRD-F Quick Reference

(not drawn to scale)
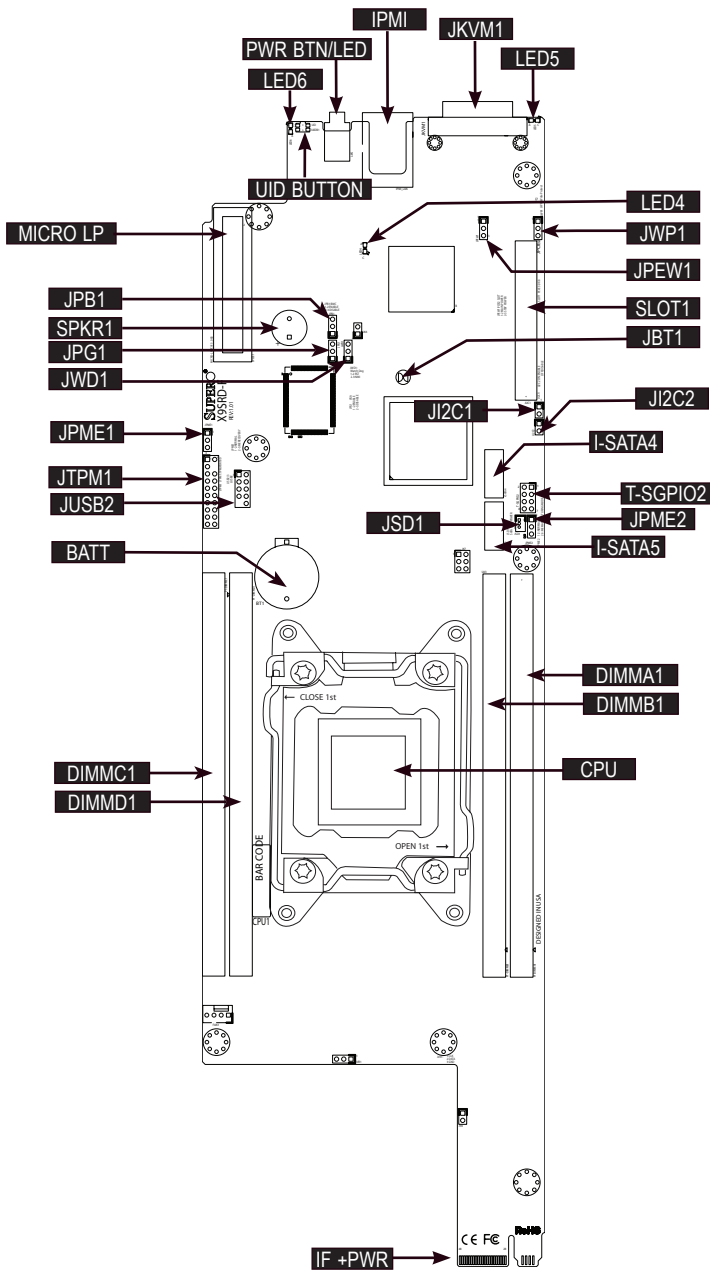
Ports and Connectors

Connectors/LED	Description
MICRO LP SLOT	PCI-E (Micro LP Slot)
SPKR1	Internal Speaker / Buzzer
JTPM1	Trusted Platform Module (TPM) Header
JUSB2	USB Header (USB 2/3)
I-SATA4 / I-SATA5	Internal SATA Ports
JSD1	SATA Disk On Module (DOM) Power Connector
T-SGPIO2	Serial Link General Purpose Header
DIMMA1~DIMMD1	DIMM Memory Slots
IF + PWR	Back Panel Edge Connector (SATA/Power)
CPU	LGA 2011 Socket for a single Xeon E5-2600/E5-1600 series CPU
BATT	Onboard Battery
SLOT1	PCI-E 3.0 x 8 Slot
LED4	IPMI Heartbeat (Green: Blinking = Normal)
LED5	Fail LED
JKVM1	USB / VGA / UART Interface
IPMI	RJ45 IPMI Port
LED6	Unit ID LED
UID BUTTON	Unit ID Button
PWR BTN/LED	Power Button and LED

Jumper Descriptions

Jumper	Description	Default Setting
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	Onboard VGA Enable/Disable	Pins 1-2 (Enabled)
JWD1	Watch Dog Timer RST/NMI Selection	Pins 1-2 (Reset)
JPME1	ME Recovery Mode Select	Pins 2-3 (Disabled)
JPME2	ME Manufacture Mode	Pins 2-3 (Disabled)
JPWP1	BIOS Write Protect	Pins 1-2 (Enabled)
JPEW1	PCI-E Vaux Select	Pins 1-2 (Normal, 3.3V Power Plane)
JBT1	CMOS Clear	(See Chapter 2)
JI2C1, JI2C2	SMB to PCI Slots	(See Chapter 2)

Motherboard Features

CPU	Single Intel® Xeon E5-2600/E5-1600 series (LGA 2011)
Memory	Four (4) DIMM slots support up to 128 GB of DDR3, unbuffered, 1600/1333/1066/800 MHz, ECC LV/LR/R/UDIMM
	Supports dual-channel memory bus

	DIMM sizes	
	DIMM	1 GB, 2 GB, 4 GB, 16GB and 32GB

Chipset	Intel® C602J PCH
Expansion Slots	One (1) PCI-E x 8 Slot, One (1) PCI-E x 8 in a Micro LP 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 0/1) on Back Panel
	SATA 2.0 Ports	Two (2) (SATA 2/3) on Back Panel
		Two (2) (I-SATA 4/5)
	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	

BIOS	64 Mb SPI AMI BIOS® SM Flash BIOS
	Play and Plug, ACPI 1.0/2.0/3.0, USB Keyboard, RTC wakeup and SMBIOS 2.3 support
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 Supero Doctor III
	SuperoDoctor III, Watch Dog
	Unit ID LED, System/CPU overheat LED
CD Utilities	BIOS flash upgrade utility
	Drivers and software for Intel® C602J PCH chipset utilities
Other	ROHS 6/6 (Full Compliance, Lead Free)
	One (1) TPM Header
Dimensions	4.75" x 16.00"

X9SRD-F Motherboard Block Diagram

(*:Default)

```
DIMMC          DDR3 (CHC)                                    DDR3 (CHA)    DIMMA
            Up to *1600/1866MHz                          Up to *1600/1866MHz
DIMMD          DDR3 (CHD)          *Sandy Bridge EP         DDR3 (CHB)    DIMMB
            Up to *1600/1866MHz          /               Up to *1600/1866MHz
                                    Ivy Bridge

PCIe x8 SLOT            PCIe3.0 x8
                         8GT/s
PCIe x8 SLOT (Micro LP) PCIe3.0 x8
                         8GT/s
                                        x4 DMI II
                                          5GT/s

                        USB2.0                          USB2.0
                        480Mbps         Patsburg-J      480Mbps      USB Header (2 ports)

2 SATA PORTS (MB)       SATA-II                         USB2.0
                        300MB/s                         480Mbps
2 SATA PORTS (BP)       SATA-II
                        300MB/s                                                    FLASH
2 SATA PORTS (BP)       SATA-III        PCH    PCI32    HERMON WPCM450            SPI 128Mb
                        600MB/s                         WINBOND

                                                             RMII
FLASH           SPI                                     RTL8201                    JKVM
SPI 64Mb                                                PHY                        USB x 2

                                        LPC                                       VGA

                                                                                  COM1
                                        TPM1.2
HEALTH          NCT6776F                Header
INFO            LPC I/O

(For BMC update BIOS only)
```

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 Intel® C602J is a single chip solution that is designed for dedicated servers and workstations. It supports high-speed SATA and advanced requirements for Intel Xeon platforms.

Intel C602J 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)

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 Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, you can also configure Supero Doctor 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   Static-Sensitive Devices

STOP Electrostatic-Discharge (ESD) can damage electronic components. To prevent damage 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.

2-2   Processor and Heatsink Installation

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

Notes:

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

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

Make sure to install the 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 motherboards, 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 (X9SRD-F)
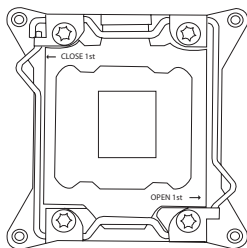
Regular LGA2011 Socket   Narrow LGA2011 Socket
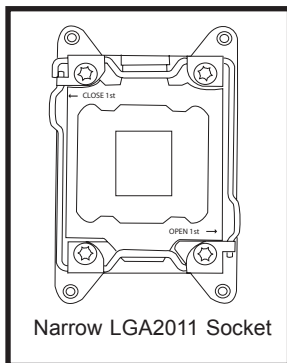
Opening the LGA2011 Socket

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.
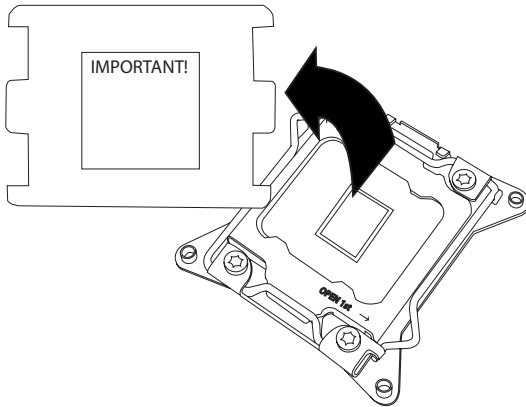
2. There are two load levers on the LGA2011 socket. To open the socket cover, first press and release the load lever labeled 'Open 1st'.

Press down on Load Lever 'Open 1st'
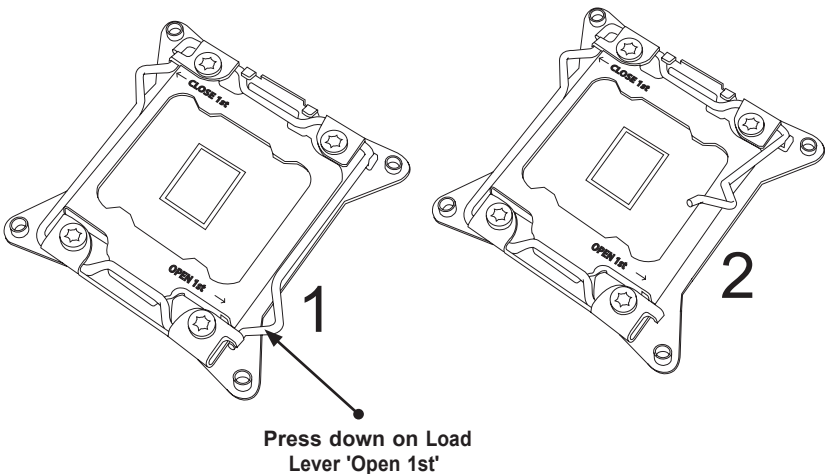
3. Press the second load lever labeled 'Close 1st' to release the load plate which covers the CPU socket from its locking position.

1

Press down on Load Lever 'Close 1st'

2

Pull lever away from the socket
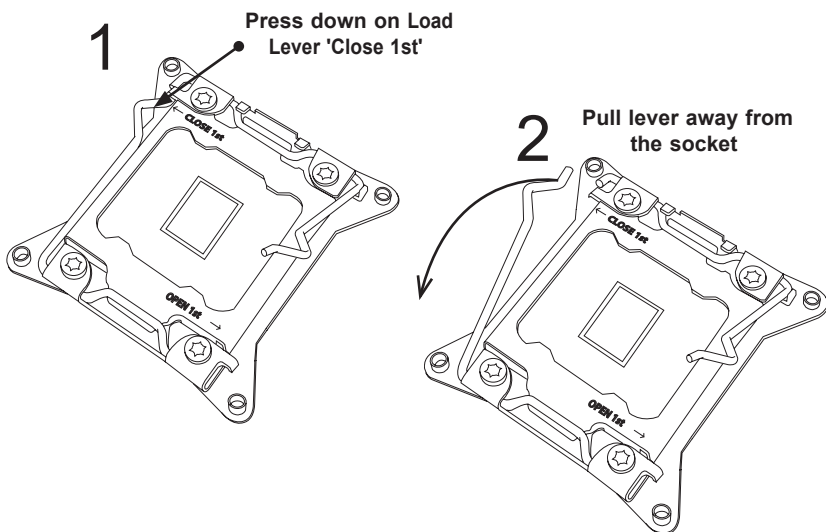
4. With the 'Close 1st' lever fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.

2

Gently push down to pop the load plate open

1

3
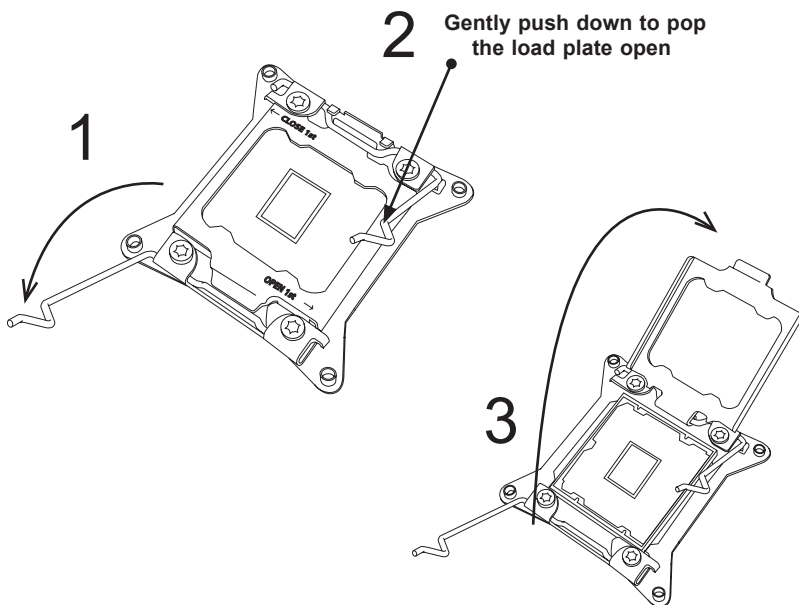
Installing the LGA2011 Processor

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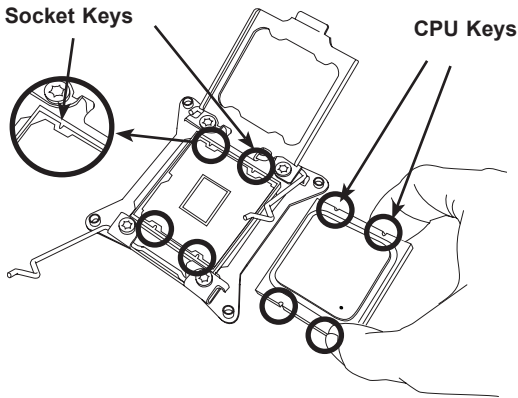
2. Once it is aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.)
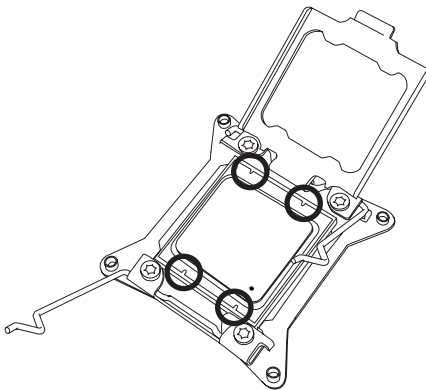
⚠ **Warning:** You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the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

Gently close the load plate **1**

Push down and lock 'Close 1st' lever **2**

Lever Lock   Push down and lock 'Open 1st' lever **3**

4

Lever Lock
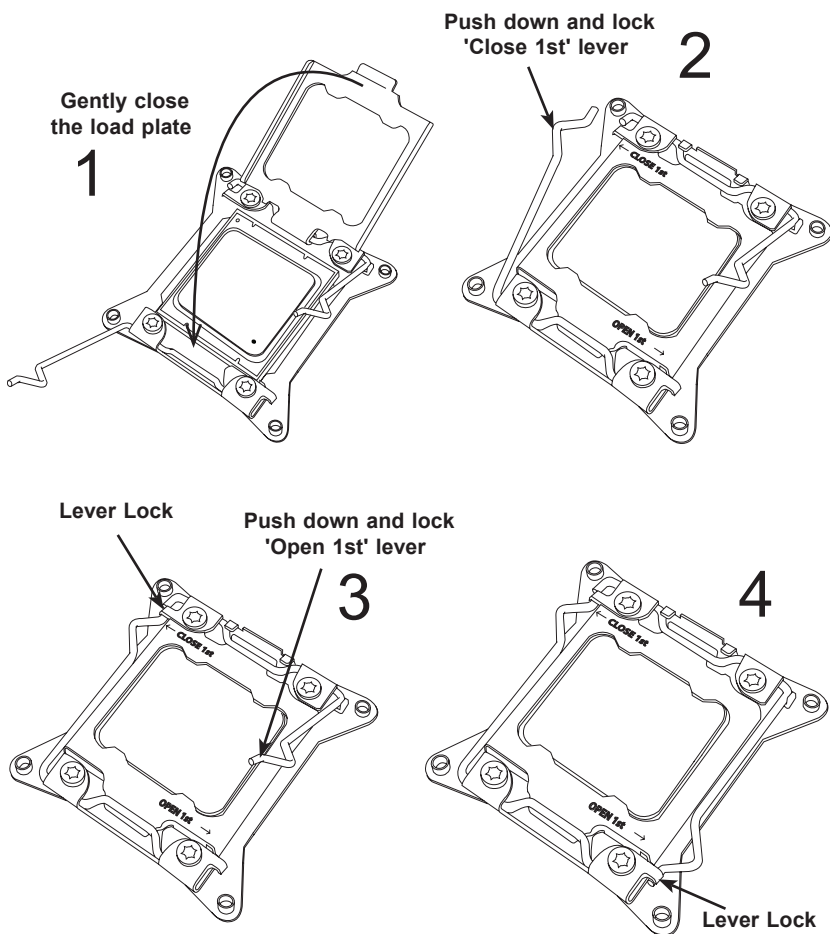
Installing a Passive CPU Heatsink

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.
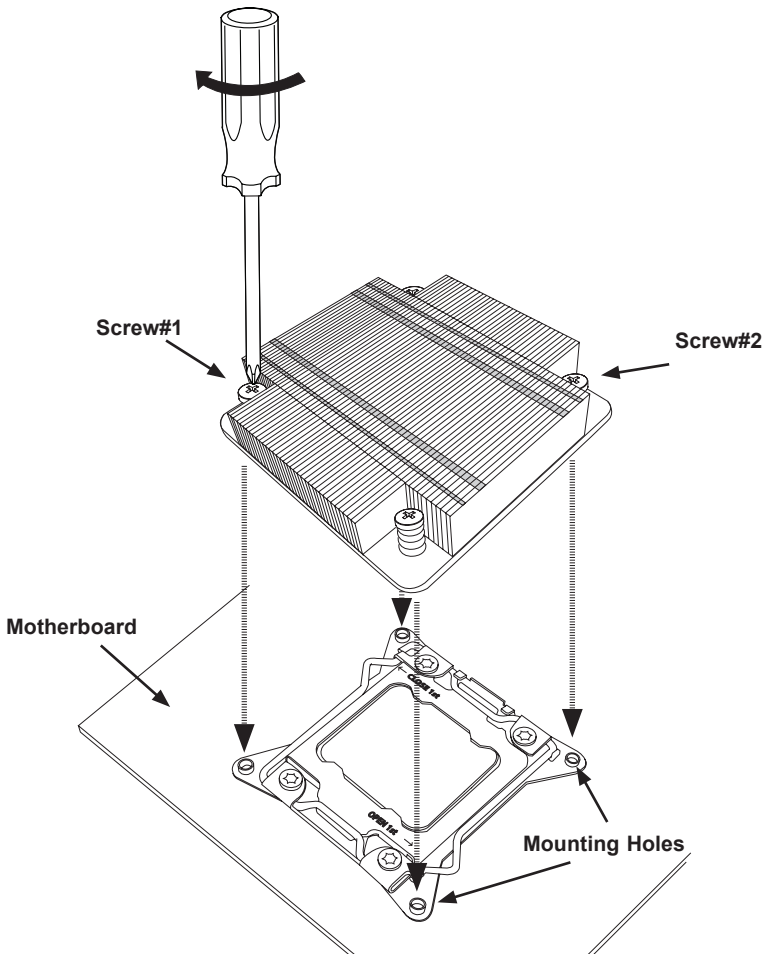
Removing the Heatsink

⚠️ **Warning:** 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
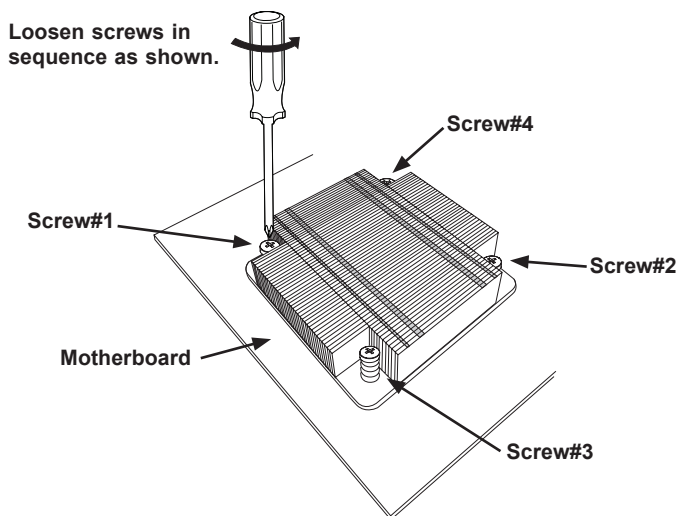
2-3   Motherboard Installation

All motherboards have standard mounting holes to fit a blade-type chassis. 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.

STOP

Caution: 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
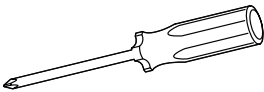
Philips Screwdriver

Pan head screws (8 pieces)

Stand Offs (8 pieces) (Only if needed)

Note: The above items are not provided with this motherboard.

Location of Mounting Holes

There are eight (8) mounting holes on the X9SRD-F motherboard. These holes correspond to screw holes in a matching motherboard tray that slides into a blade-type chassis. Please refer to the illustrations on the next page for a typical blade chassis installation.

STOP
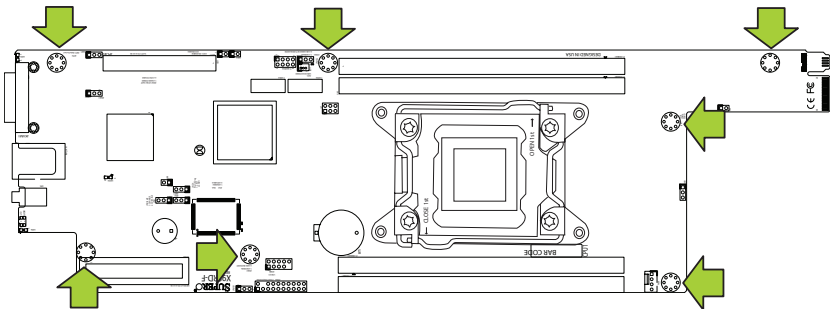
Caution: To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

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
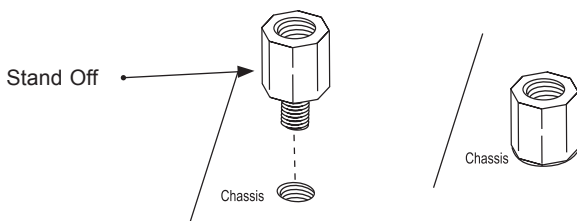
Chassis

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
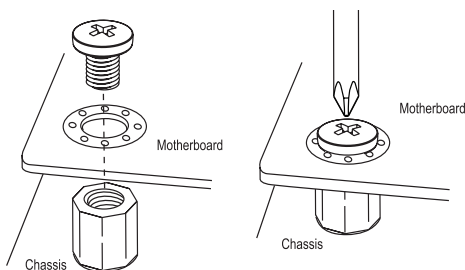
Chassis

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.
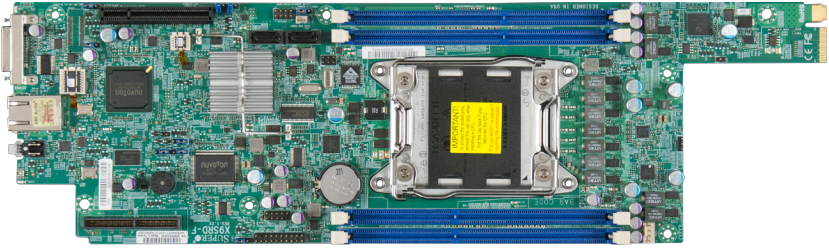
The image above shows the X9SRD-F motherboard.

Riser Card

Micro LP Network Card
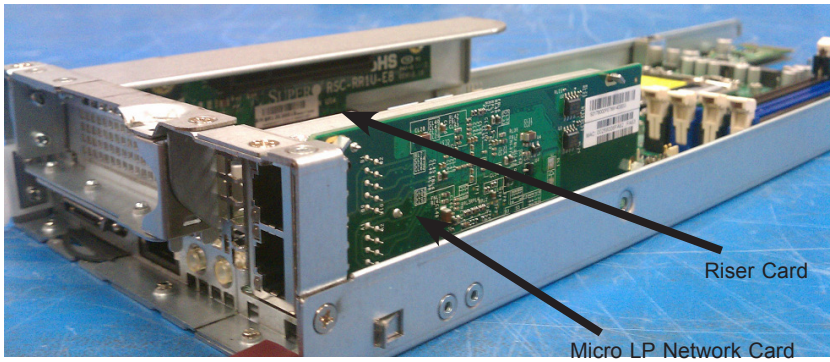
The image above shows the X9SRD-F and tray on a different angle, showing a riser card and a Micro LP network card installed.
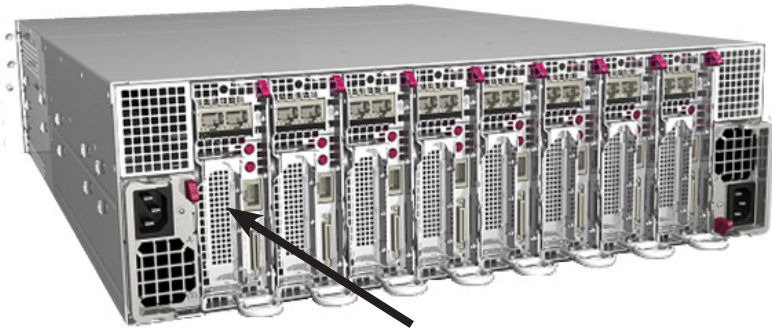
The image above shows the X9SRD-F on a motherboard tray and how it is installed as one of the nodes in a server chassis.

2-4   System Memory

STOP

CAUTION

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

Note: Check the Supermicro website for a list of memory modules that
have been validated with the X9SRD-F motherboard.

How to Install DDR3 DIMMs

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

2. Insert each DIMM module vertically and snap it into place. Repeat step 1 to
    install more memory, if needed. See instructions on the next page.

Memory Support

The X9SRD-F supports up to 128GB of unbuffered DDR3 ECC LV/LR/R/UDIMM
1333/1600 MHz in 4 DIMM slots.

Installing and Removing DIMMs

Image rotated 90°

DIMMA1
DIMMB1
DIMMD1
DIMMC1
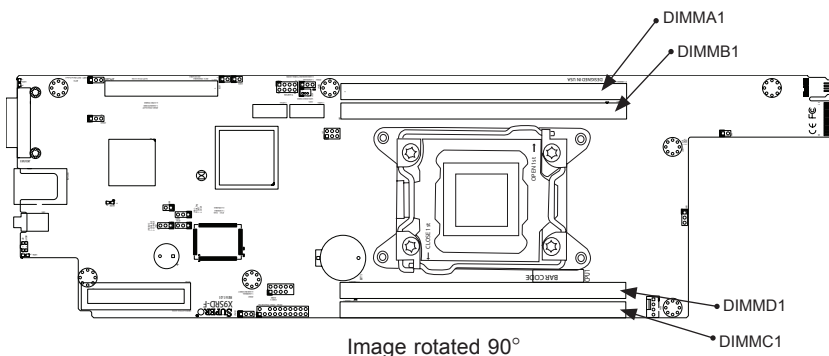
Installing and Removing DIMMs

1 Position the DIMM module's bottom key so that it aligns with the receptive point on the slot.
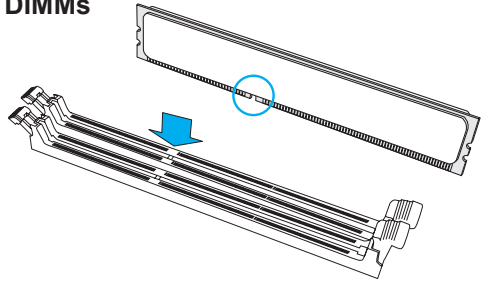
Notches

Release

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.

Release
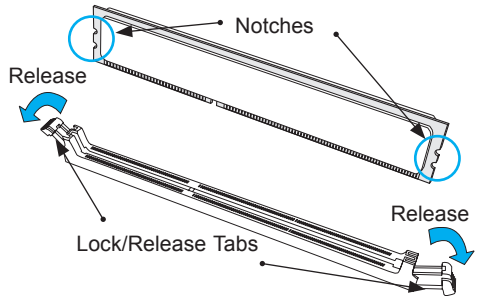
Lock/Release Tabs

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

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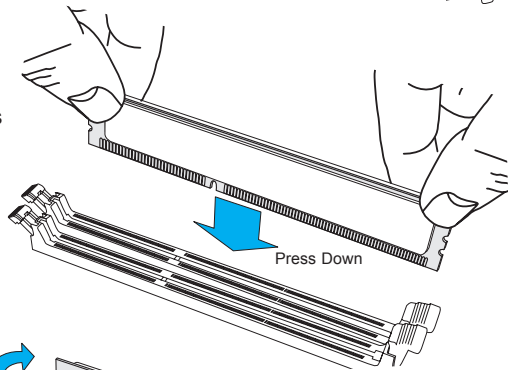
4 When the module is properlly inserted, the Lock/Release tabs will automatically secure the DIMM module, locking it into place.
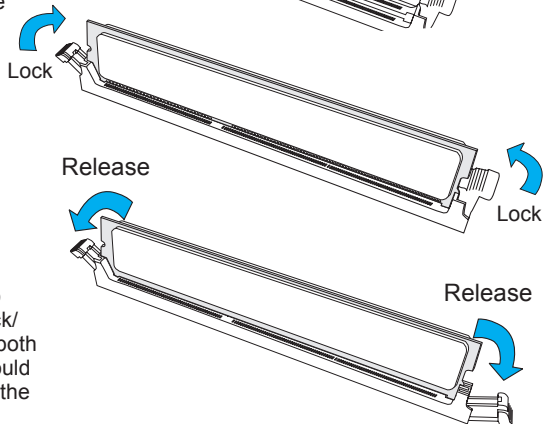
Lock

Release

Lock

5 **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 DDR3 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

2-5   Connectors/I/O Ports

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

Back Panel Connectors and I/O Ports

Image rotated 90°
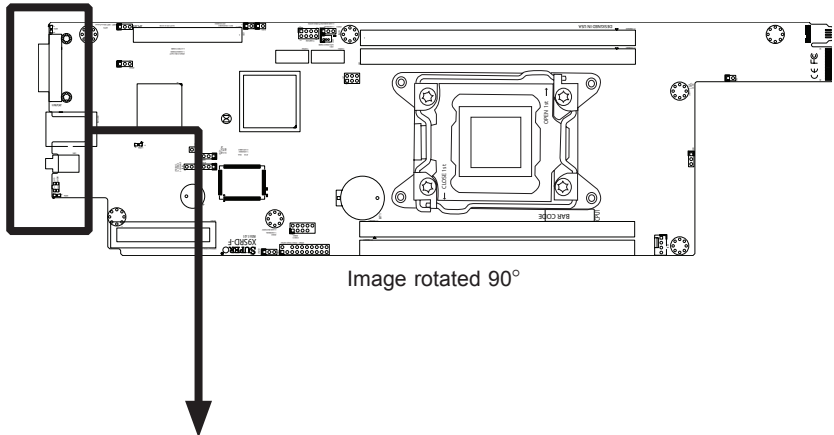
I/O Port Locations and Definitions
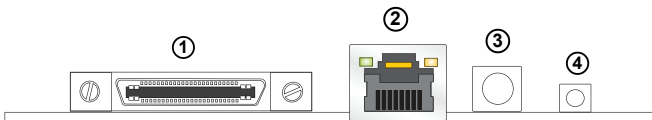
1. KVM Port
2. IPMI Port
3. Power Button and LED
4. UID Button

Back Panel Connectors

KVM Port

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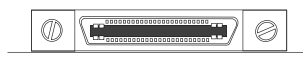
IPMI Port

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.
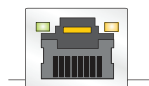
Power Button & LED

A Power Button 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.
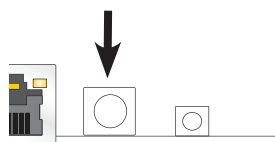
UID Button

The Unit ID (UID) Button 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 Chapter 2.
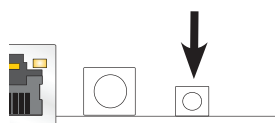
Back Panel Connectors

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

IF + POWER

This edge connector, located on the opposite end of the motherboard from the I/O back panel, is used to connect the motherboard to the back plane of the server chassis. Through this connector, the motherboard will receive its power and communicate with the rest of the system (hard drives, warning lamps, etc).

Ⓐ TPM Header

Ⓑ IF + Power

Image rotated 90°
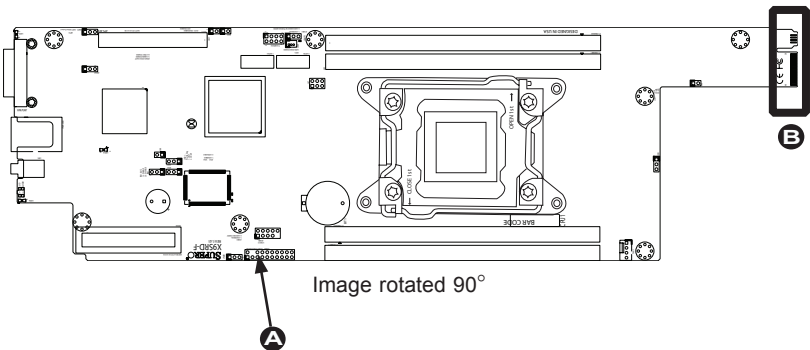
2-6   Connecting Cables

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)

Two Universal Serial Bus ports (USB 2~3) are located on the on the mother-board. These are available on a header. There are also two ports (USB 0/1) available through the KVM port (Cables are not included). See the tables 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 (JSD1)

The SATA DOM Power on JWF1 is used to supply power to SATA Disk-on-Module (DOM) solid-state storage devices.

Ⓐ SATA DOM Power
Ⓑ USB 2/3
Ⓒ USB 0/1 (on KVM Port)

Image rotated 90°
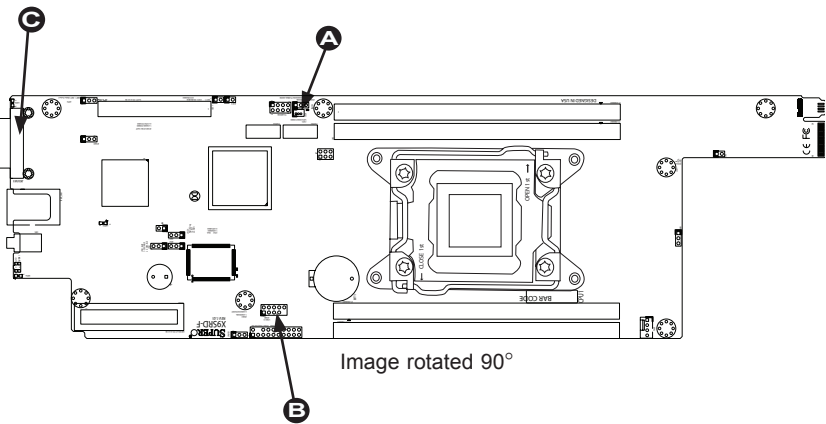
T-SGPIO (T-SGPIO2)

One T-SGPIO (Serial-Link General Purpose Input/Output) header is supported on the motherboard. This header is 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 header.

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 T-SGPIO2
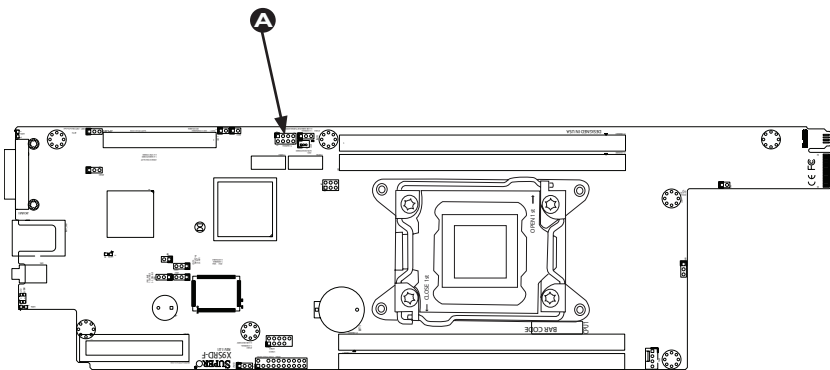
Image rotated 90°

2-7   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.
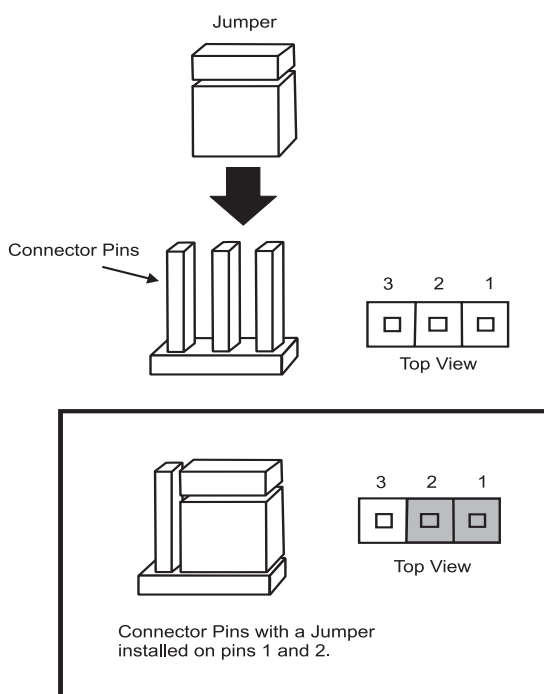
CMOS Clear (JBT1)

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to pre-vent 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.

Motherboard

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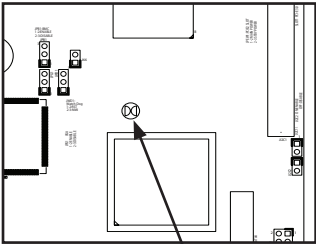
Metal contact pads

BMC Enable/Disable (JPB1)

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 CMOS Clear
B BMC Enable/Disable
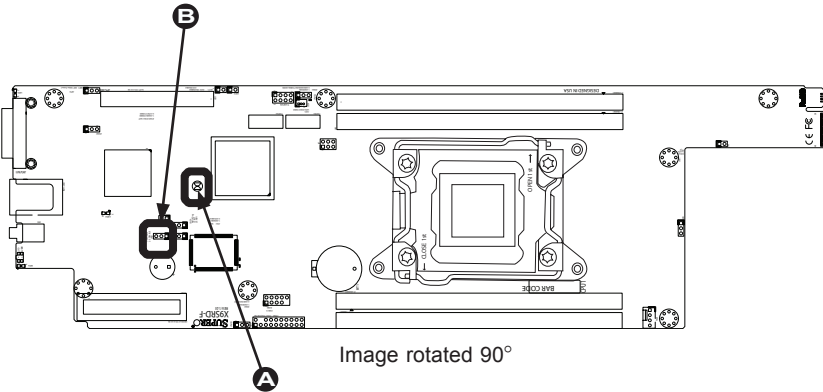
Image rotated 90°

VGA Enable (JPG1)

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)	
Both Jumpers	Definition
Pins 1-2	Enabled (Default)
Pins 2-3	Disabled

Watch Dog RST/NMI Selection (JWD1)

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

SMB (I²C) Bus to PCI Slots (JI2C1/JI2C2)

Jumpers JI²C1 and JI²C2 allow you to connect 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	
Jumper	Definition
On	Enabled
Off	Disabled (Default)

Ⓐ VGA Enable
Ⓑ Watch Dog Enable
Ⓒ JI²C1/JI²C2
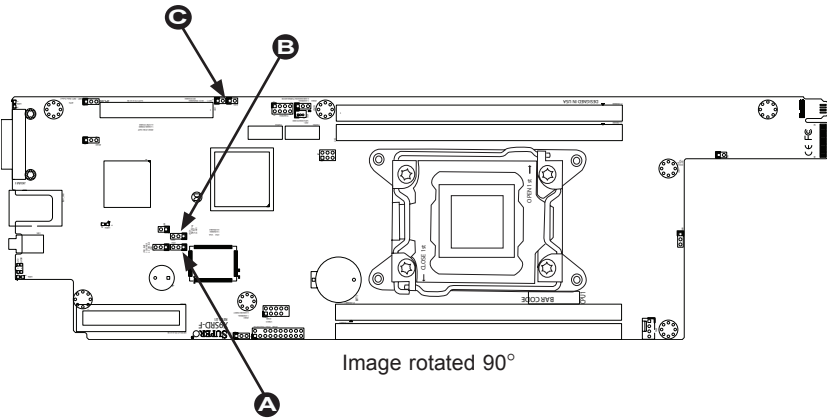
Image rotated 90°

ME Recovery (JPME1)

When enabled, Intel ME Recovery (JPME1) is used to update the ME (Management Engine) firmware. When disabled, the firmware is protected.

ME Recovery (JPME1)	
Pin#	Definition
1-2	Enabled
2-3	Disabled (Default)

BIOS Recovery (JPME2)

When enabled, Intel ME Recovery (JPME2) is used to update the BIOS firmware. BIOS recovery is activated when this feature is enabled.

BIOS Recovery (JPME2)	
Pin#	Definition
1-2	Enabled
2-3	Disabled (Default)

BIOS Write Protect (JPWP1)

When enabled, The firmware is protected from being accidentally erased or modified.

BIOS Write Protect (JPWP1)	
Pin#	Definition
1-2	Enabled (Default)
2-3	Disabled

PCI-E Vaux Select (JPEW1)

This jumper is used to select whether the PCI-E 3.3Vaux is from the normal 3.3V power plane or dual 3.3V standby power plane.

PCIE Vaux Select (JPEW1)	
Pin#	Definition
1-2	Normal 3.3V Power Plane (Default)
2-3	Dual 3.3V Standby Power Plane

A ME Recovery
B BIOS Recovery
C BIOS Write Protect
D PCIE Vaux Select

Image rotated 90°
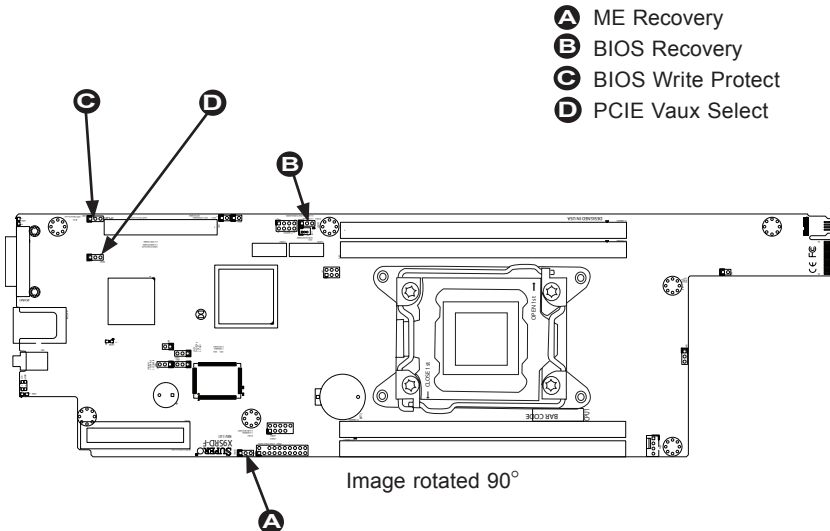
2-8　Onboard Indicators

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

A IPMI Port

Link LED   **IPMI**   Activity LED

A
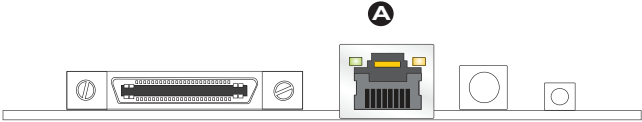
Back Panel Connectors

Image rotated 90°

A
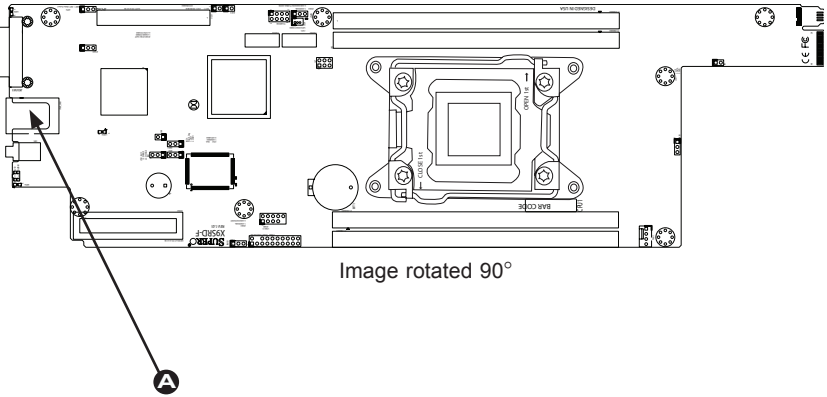
IPMI Heartbeat LED (LED4)

An IPMI Heartbeat LED is located at LED4. When LED4 blinks, the IPMI functions properly. Refer to the table on the right for details. Also see the layout below for the LED location.

IPMI Heartbeat LED Indicator (LED4) LED Settings	
Blinking	IPMI is ready for use

Fail LED (LED5)

The Fail LED on LED5 indicates a system failure. Please see the table on the right for message descriptions.

System Fail LED Indicator	
LED Color	Definition
Off	System Normal
Red (On - Solid)	System Overheat
Red (Blinking)	Fan Failure
Red (Blinking)	Power Failure

Unit ID LED (LED6)

The Unit LED 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

A IPMI Hearbeat
B Fail LED
C Unit ID LED

Image rotated 90°
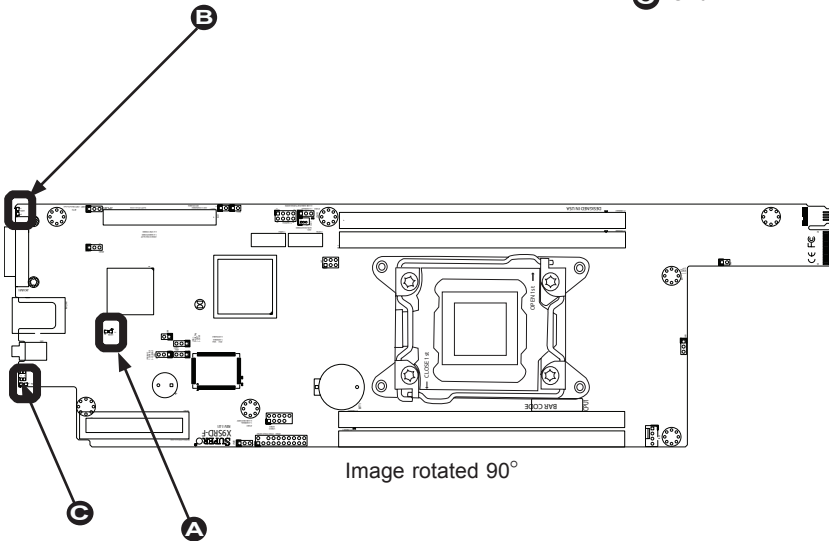
2-9   Serial ATA and HDD Connections

SATA Connections (SATA0~4)

Two Serial ATA 2.0 connectors (I-SATA 4/5) are located on the motherboard. In addition, Two SATA 3.0 (SATA 0/1) and Two SATA 2.0 (2/3) ports are supported through the back panel. These Serial Link connections provide faster data transmission than legacy Parallel ATA. See the table below for pin definitions.

SATA Connector Types	
Port#	Connection Type
I-SATA 4/5,	SATA 2.0 (3 Gb/s)
SATA 0~3	From IF port

SATA 2.0 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-SATA 4/5

B SATA0~3 - supported through the back panel.
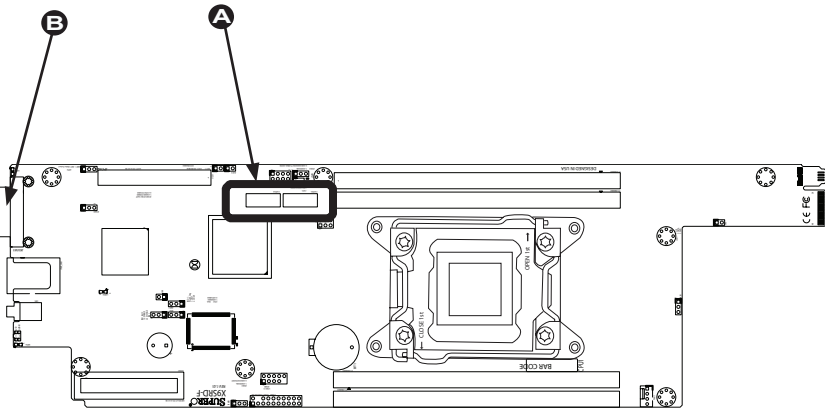
Image rotated 90°

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 2-3). 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 2-3 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 "ami.bat" with the new BIOS ROM file from your bootable device or USB pen/thumb drive. Use the following format:

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

Note: Always use the file named "ami.bat" to update the BIOS, and insert a space between "ami.bat" and the filename. The BIOS-ROM-filename will bear the motherboard name (i.e., X9SRD) and build version as the extension. For example, "X9SRD1.218". 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: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows, security programs, and audio drivers.

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 X9SRD-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 outwards to unlock it. Once unlocked, the battery will pop out from the holder.

4. Remove the battery.
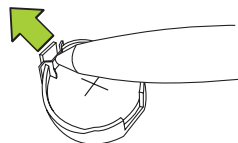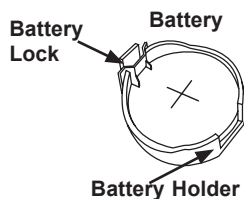
Proper Battery Disposal

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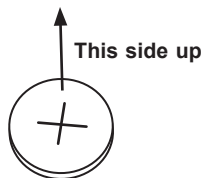
Battery Installation

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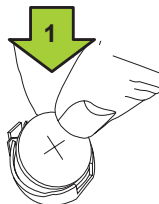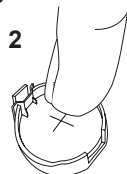
Warning: When replacing a battery, be sure to only replace it with the same type.

Battery Lock   **Battery**

Battery Holder

This side up

Press down until you hear a click.

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/support/rma/). 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 prob-lems.

Notes

Chapter 4

BIOS

4-1   Introduction

This chapter describes the AMI BIOS Setup Utility for the X9SRD-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) 2011 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                            Set the Date. Use Tab to
                                                            switch between Data
    System Date                    [Thu 05/24/2012]         elements.
    System Time                    [10:19:32]

    Supermicro X9SRD-F
    Version                        1.00
    Build Date                     04/03/2012

    Memory Information
    Total Memory                   4096 MB (DDR3)


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



            Version 2.14.1219. Copyright (C) 2011 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 X9SRD-F

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:

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) 2011 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                         System Boot Feature
                                                         Setting.
 ▶ Boot Feature
 ▶ CPU Configuration
 ▶ Chipset Configuration
 ▶ SATA Configuration
 ▶ SCU Configuration
 ▶ PCIe/PCI/PnP Configuration
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection
 ▶ ACPI Settings
 ▶ ME Subsystem
                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit

            Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

▶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 adap-tors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

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

⚠ **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.

▶Socket 1 CPU Information

This item is for informational purposes only and displays CPU information including type, speed, number of cores, etc.

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

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

Active Processor Cores

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

Limit CPUID Maximum

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

Execute-Disable Bit Capability (Available 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.)

Intel® AES-NI

Set to Enabled to use the processor's Advanced Encryption Standard (AES) feature. The options are **Enabled** and Disabled.

MLC Streamer Prefetcher (Available when supported by the CPU)

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

MLC Spatial Prefetch (Available when supported by the CPU)

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

DCU Streamer Prefetcher

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

DCU IP Prefetcher

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

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 **Enabled** and Disabled. **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.

▶**CPU Power Management Configuration**

Power Technology

This feature determines what power-saving scheme the motherboard uses. The options are Disabled, **Energy Efficient** and Custom. If Custom is selected, the following options become available:

EIST

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

Turbo Mode

This feature allows processor cores to run faster than marked frequency in specific conditions. The options are Disabled and **Enabled.**

CPU C3 Report

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

CPU C6 Report

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

CPU C7 Report

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

Package C State Limit

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are C0, C2, **C6**, and No Limit.

Energy/Performance Bias

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

Long duration power limit - this is the processor power consumption limit (in Watts) during a long duration time window.

Long duration maintained - this is the time in milliseconds where the Long Duration Power Limit is maintained.

Short duration power limit - During Turbo Mode, the system may exceed the processor's default power setting and exceed the Short Duration Power limit. By increasing this value, the processor can provide better performance for a short duration.

▶Chipset Configuration

⚠ **WARNING:** Setting the wrong values in the following sections may cause the system to malfunction.

▶North Bridge Configuration

This item displays the current IO chipset Revision.

▶Integrated IO Configuration

Intel® VT-d

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

Data Direct I/O

Select Enabled 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 Disabled and **Enabled**.

DCA Support

This feature accelerates the performance of I/O devices using Direct Cache Access. The default is **Enabled** and can not be changed.

Port 2A Link Speed

This feature enables the user to select the target link speed for this slot. The options are **GEN1** , GEN2, and GEN3.

Port 2C Link Speed

This feature enables the user to select the target link speed for this slot. The options are GEN1 , GEN2, and **GEN3**.

▶**DIMM Configuration**

Memory Configuration

This section displays memory status such as Current Memory Mode, Memory Speed, Mirroring and Sparing information.

▶**DIMM Information**

This feature displays information regarding the installed memory.

Memory Mode

The only option is **Independent**, a feature that allows for all DIMMs to be available to the operating system.

DRAM RAPL Mode

RAPL which stands for Running Average Power Limit is a feature that provides mechanisms to enforce power consumption limits on supported processors The options are DRAM RAPL MODE0 , **DRAM RAPL MODE1**, and Disabled.

DDR Speed

Use this option to force the system memory to run at a different frequency than the default frequency. The available options are **Auto**, Force DDR-800, Force DDR-1066, Force DDR-1333, Force DDR3-1600 and Force SPD.

Channel Interleaving

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

Rank Interleaving

This feature selects from the different rank memory interleaving methods. The options are **Auto,** 1 Way, 2 Way, 4 Way and 8 Way.

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enabled, the North Bridge 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 North Bridge will be scrubbed every day. The options are **Enabled** and Disabled.

Demand Scrub

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

Data Scrambling

This feature enables Data Scrambling. The options are **Enabled** and Disabled.

Device Tagging

This feature enables Device Tagging. The options are Enabled and **Disabled**.

Thermal Throttling

This feature selects from the different throttling methods. The options are Disabled and **CLTT** (Closed Loop Thermal Throttling).

▶South Bridge Configuration

This item displays the current South Bridge Revision.

All USB Devices

This feature enables all USB ports/devices. The options are **Enabled** and Disabled. When set to enabled, EHCI Controller 1 and 2 (below) become available.

EHCI Controller 1 / EHCI Controller 2

This feature enables the Enhanced Host Controller Interface (EHCI). The options are **Enabled** and Disabled.

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.

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.

EHCI Hand-Off

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

▶SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the SATA Devices and displays the following items:

SATA Port0~Port5

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

SATA Mode

This item selects the mode for the installed drives. The options are Disabled, IDE Mode, **AHCI Mode** and RAID Mode. The following are displayed depending on your selection:

IDE Mode

The following items are displayed when IDE Mode is selected:

Serial-ATA Controller 0~1

This feature is used to activate/deactivate the SATA controller, and sets the compatibility mode. The options are Disabled, Enhanced, and Compatible. The default of Serial-ATA Controller 0 is **Compatible**. The default of Serial-ATA Controller 1 is **Enhanced**.

AHCI Mode

The following items are displayed when AHCI Mode is selected:

Aggressive Link Power Management

When 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.

Port 0~5 Hot Plug

Set this item to Enabled to enable hot-plugging for the particular port. The options are **Enabled** and Disabled.

Staggered Spin Up

Set this item to Enabled to enable Staggered Spin-up support. The options are Enabled and **Disabled**.

RAID Mode

The following items are displayed when RAID Mode is selected:

Port 0~5 Hot Plug

Set this item to Enabled to enable hot-plugging for the particular port. The options are **Enabled** and Disabled.

▶PCIe/PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

PCI ROM Priority

In case of multiple Option ROMs (Legacy and EFI-compatible), this feature specifies what ROM to launch. The options are **Legacy ROM** and EFI Compatible ROM.

PCI Latency Timer

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

Above 4G Decoding

Set this item to Enabled to activate 64-bit capable devices to be decoded above the 4G address space. This works only if the system supports 64-bit PCI decoding. The options are Enabled and **Disabled**.

PERR# Generation

Set this item to Enabled to allow PCI devices to generate PERR# error codes. The options are Enabled and **Disabled**.

SERR# Generation

Set this item to Enabled to allow PCI devices to generate SERR# error codes. The options are Enabled and **Disabled**.

Maximum Payload

This feature selects the setting for the PCIE maximum payload size. The options are **Auto,** 128 Bytes**, and** 256 Bytes.

Maximum Read Request

This feature selects the setting for the PCIE maximum Read Request size. The options are **Auto,** 128 Bytes**,** 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, and 4096 Bytes**.**

ASPM Support

Set this item to the desired ASPM (Active State Power Management) level. The options are **Disabled,** Auto and Force L0s.

Onboard LAN Option ROM Select

This feature selects whether to load the iSCSI or PXE onboard LAN option ROM. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM / Load Onboard LAN2 Option ROM

This feature is to enable or disable the onboard option ROMs. The default for LAN 1 is **Enabled**. The default for LAN 2 is **Disabled**.

Load Onboard SAS Option ROM

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

VGA Priority

This option allows the user to specify which graphics controller to be used as the primary boot device. The options are **Onboard** and Offboard.

▶**Super IO Configuration**

▶**Serial Port 1 Configuration**

Serial Port 1

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

Serial Port 1 Settings

This option specifies the base I/O port address and the Interrupt Request address of the serial port. The options for Serial Port 1 are listed below.

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;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

▶**Serial Port Console Redirection**

These submenus allow the user to configure Console Redirection settings.

COM 1/SOL

Console Redirection

Select Enabled to use a COM Port selected by the user for Console Redirection. The options are Enabled and Disabled. (The default setting for COM1 is **Disabled**, and for SOL is **Enabled**.)

▶**Console Redirection Settings**

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

Terminal Type

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

Bits Per Second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection 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

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

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

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

Console Redirection

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

▶Console Redirection Settings

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

Out-of-Band-Mgmt Port

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

Terminal Type

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

Bits Per Second

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

Flow Control

This feature allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop send-

ing data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None,** Hardware RTS/CTS, and Software Xon/Xoff.

Data Bits, Parity, Stop Bits

The status of these features is displayed.

▶ACPI Configuration

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

ACPI Sleep State

This setting allows you to configure the ACPI (Advanced Configuration and Power Interface) sleep state for your system when it is in the Suspend mode. The options are Suspend Disabled, **S1 (CPU Stop Clock)**.

High Precision Event Timers

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

▶ME Subsystem

This item displays the ME Subsystem information.

4-4 Event Logs

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

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




















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



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```

▶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**.

PCI Error Logging Support

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

Erase Event Log

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

When Log is Full

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

Log System Boot Event

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

MECI

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

METW

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

View SmBIOS Event Log

This feature displays the contents of the SmBIOS Event Log.

4-5   IPMI Settings

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that IT administrators can use to monitor system health and to manage the system as a whole. For more information on the IPMI specifications, please visit Intel's website at www.intel.com.

```
         Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
   Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

   IPMI Firmware Revision            1.61               Press <Enter> to change
   IPMI STATUS                       Working            the SEL event log
 ▶ System Event Log                                     configuration.
 ▶ BMC network configuration



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



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```

▶**System Event Log**

This feature is used to change the System Event Log (SEL) configuration.

SEL Components - Change this item to enable or disable all features of System Event Logging. The options are **Enabled** and Disabled. When Enabled, the following can be configured:

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

When SEL Full

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

Log EFI Status Codes

This option enables or disables the logging of Extensible Firmware Interface (EFI) status codes. The options are **Enabled** and Disabled.

▶**BMC Network Configuration**

Set this feature to configure the IPMI LAN adapter with a network address.

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   Boot Settings

Use this feature to configure Boot Settings:

```
           Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main   Advanced   Event Logs   IPMI   Boot   Security   Save & Exit

                                                              Sets the system boot
   Boot Option Priorities                                     order
   Boot Option #1                      [ Flash Disk 5.00]
   Boot Option #2                      [UEFI:  Flash Dis...]
   Boot Option #3                      [UEFI: Built-in E...]

   USB Device BBS Priorities

   Add New Boot Option
 ▶ Delete Boot Option

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

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```

Boot Options Priorities

This feature allows the user to specify which devices are boot devices and the order of priority from which the systems boots during startup.

Boot Option #1, Boot option #2, etc.

The settings are [**any detected boot device**] and Disabled.

USB Device BBS Priorities

This option sets the order of the legacy USB devices detected by the motherboard.

Add New Boot Option

This feature allows the user to add a new boot device.

Add Boot Option

Use this item to enter the name of the new boot option.

Select Filesystem

Use this item to select from a list of available filesystems.

Path for Boot Option

Use this item to enter the boot option path, using the following format:

fs0:\path\filename.efi.

Create

Use this item to create the new boot option based on the settings above.

▶**Delete Boot Option**

This feature allows the user to delete a previously defined boot device from the boot priorities list. The settings are [any pre defined boot device]

4-7   Security Settings

```
                Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

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



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```

- If the Administrator password is defined ONLY - this controls access to the BIOS setup ONLY.

- If the User's password is defined ONLY - this password will need to be entered during each system startup or boot, and will also have Administrator rights in the setup.

- Passwords must be at least 3 and up to 20 characters long.

Administrator Password

Press Enter to create a new, or change an existing Administrator password.

User Password:

Press Enter to create a new, or change an existing User password.

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) 2011 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

  Discard Changes and Exit                              Exit system setup
  Save Changes and Reset                                without 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
   Flash Disk 5.00
  UEFI:  Flash Disk 5.00                                →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit


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```

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 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)
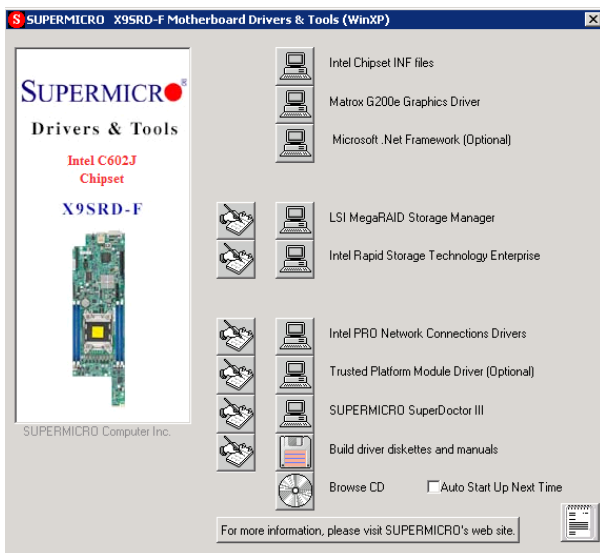
Driver/Tool Installation Display Screen

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   Configuring SuperDoctor® III

The SuperDoctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management tool is called the SD III Client. The SuperDoctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. SuperDoctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the SuperDoctor III interface.

Note: 1 The default user name and password are ADMIN.

Note 2: In the Windows OS environment, the SuperDoctor III settings take precedence over the BIOS settings. When first installed, SuperDoctor III adopts the temperature threshold settings previously set in BIOS. Any subsequent changes to these thresholds must be made within SuperDoctor, since the settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SD III Client settings to be the same as those set in BIOS.

SuperDoctor III Interface Display Screen-I (Health Information)
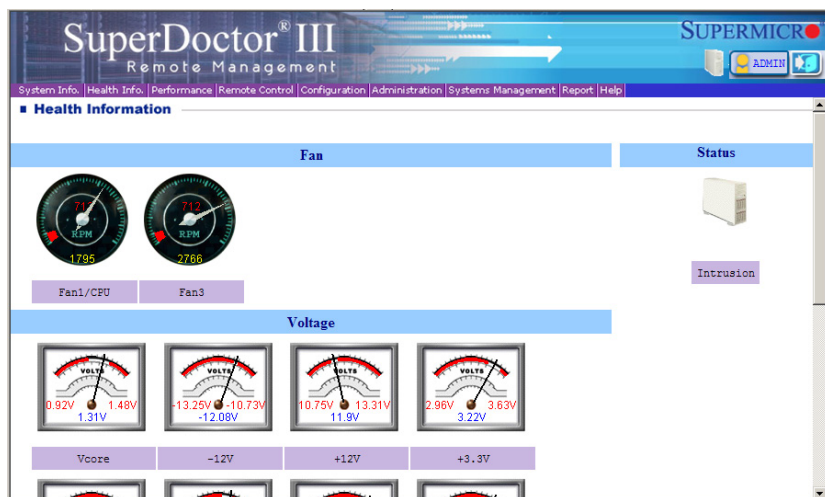
SuperDoctor III Interface Display Screen-II (Remote Control)

Graceful power control (cancelable)

Supero Doctor III allows a user to inform the OS to reboot or shut down the system within 30 seconds. On the system console, a pop-up window will appear with a message telling the local user to save his working files. Before the system reboots or shuts down, it's allowed to cancel the action either locally or remotely.

Power control (noncancelable)

Supero Doctor III allows a user to inform the OS to reboot or shut down the system right away. The system will reboot or shut down without any warning messages. It's not allowed to cancel the action.

Note: The SuperDoctor III software and manual may be downloaded from our Website at:

http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm.

For Linux, we still recommend that you use SuperDoctor II, this version is also available for download at the link above.

Notes

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.

An Overview to the UEFI BIOS

The Unified Extensible Firmware Interface (UEFI) specification 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 up the system. UEFI offers a clean, hand-off control to a computer system at bootup.

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

An AMIBIOS flash chip consists of a boot sector block and a main BIOS code block (a main BIOS image). The boot sector block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a new BIOS image if the original BIOS image is corrupted. When the system power is on, the boot sector 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 block crashes. However, when the BIOS Boot sector crashes, you will need to send the motherboard back to Supermicro for RMA repair.

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.

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 to "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, keep pressing <Ctrl> and <Home> simultaneously on your PS2 or USB keyboard until your hear two short beeps. This may take from a few seconds to one minute.

4. After locating the new BIOS binary image, the system will enter the BIOS Recovery page as shown below.
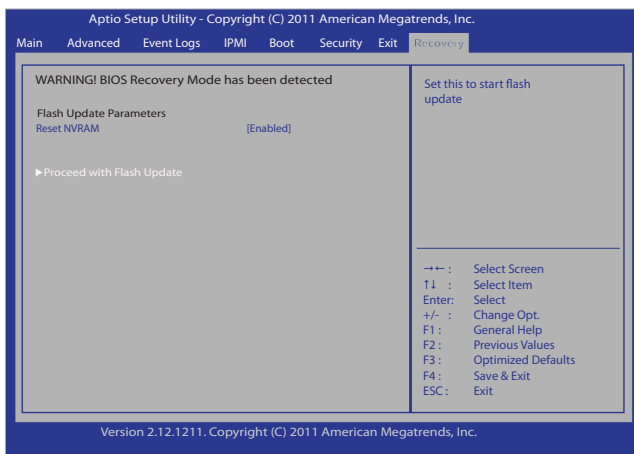
Note: At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.

```
                Aptio Setup Utility - Copyright (C) 2011 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              47%

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

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```

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.

```
                Aptio Setup Utility - Copyright (C) 2011 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

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```

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

6. After the process of BIOS Recovery is complete, press any key to reboot the system.

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

8. When a DOS prompt appears, type AMI.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 to clear CMOS, and then plug in the AC power cable 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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