SUPER®

X9SCD-F

USER'S MANUAL

Revision 1.0b

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

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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 1.0b

Release Date: October 8, 2013

Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER● X9SCD-F motherboard product series. This product is intended to be professionally installed and serviced by a technician.

About This Motherboard

The X9SCD-F motherboard is a small form factor, high density motherboard de-signed for micro cloud node applications.

The X9SCD-F series features support for an Intel® Xeon E3-1200 series CPU on an H2 socket (LGA 1155), and the Intel C204 PCH chipset. This motherboard also offers many features, including up to 32 GB DDR3 ECC UDIMMM support, two SATA 3.0 ports on the backplane (6 Gb/sec), one 10/100 IPMI LAN and a KVM connector on the I/O panel. This enables the X9SCD-F to deliver cost-effective microcloud solution in a small form-factor package.

Manual Organization

Chapter 1 describes the features, specifications and performance of the mother-board and provides detailed information about the 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 Driver Installation Instructions.

Appendix C provides 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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Table of Contents

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 and 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.

All the following items are included in the retail box only.

- One (1) Supermicro Mainboard

- One (1) Supermicro CD containing drivers and utilities

- One (1) User's/BIOS Manual

Super● X9SCD-F Image
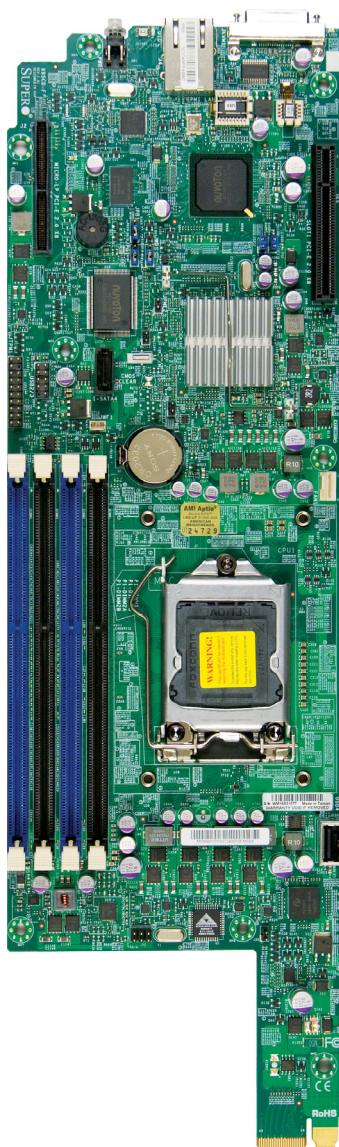
Note: All graphics and images shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the image shown in this manual.

Motherboard Layout
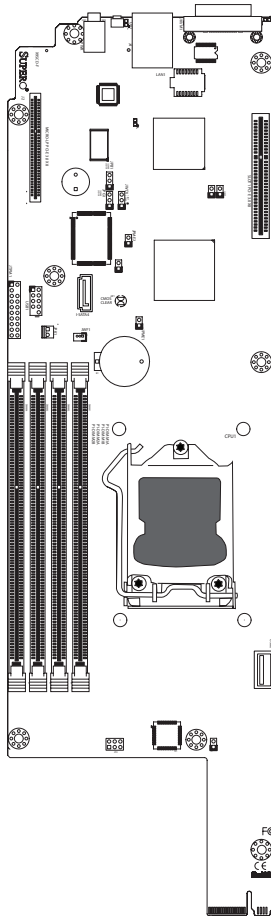
Important Notes to the User

- Jumpers not indicated are for testing only.

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

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

X9SCD-F Quick Reference

(not drawn to scale)

PWR BTN/LED

IPMI

JKVM1

LED5

UID LED

UID BUTTON

LED4

MICRO LP

JPB1

SPKR1

JPG1

JWD1

SLOT1

JI2C1

JI2C2

JBT1

JTPM1

JUSB2

I-SATA4

BATT

JWF1

DIMM

CPU

JUSB1

IF +PWR
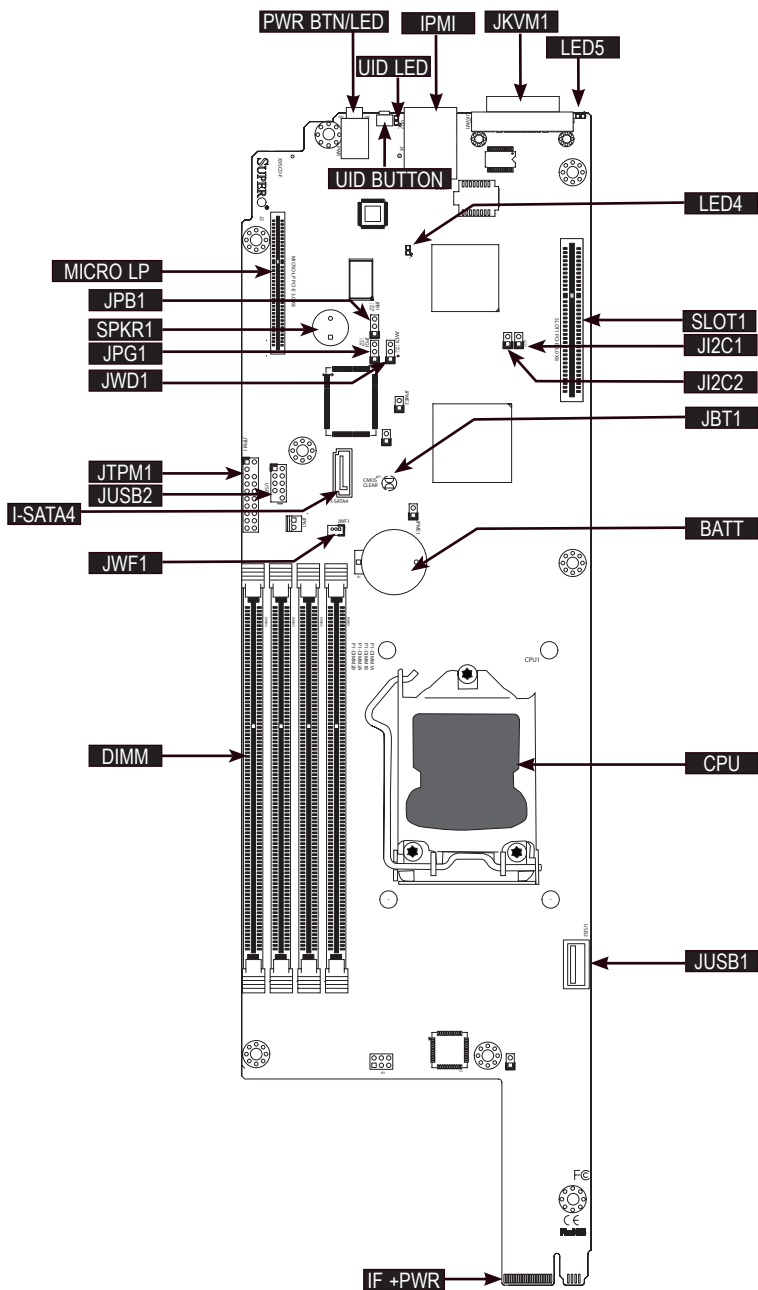
Ports and Connectors

Connectors/LED	Description
MICRO LP SLOT	PCI-E 2.0 (Micro LP Slot & Slot 1)
SPKR1	Internal Speaker / Buzzer
JTPM1	Trusted Platform Module (TPM) Header
JUSB2	USB Header
I-SATA4	Internal SATA Port
JWF1	SATA Disk On Module (DOM) Power Connector
DIMM	DIMM Memory Slots
IF + PWR	Back Panel Edge Connector (SATA/Power)
JUSB1	Internal (Type A) USB Port
CPU	Socket H2 (LGA1155) for a single Xeon E3-1200 series CPU
BATT	Onboard Battery
SLOT1	PCI-E 2.0 x 8 Slot
LED4	IPMI Heartbeat (Green: Blinking = Normal)
LED5	Fail LED
JKVM1	USB / VGA / UART Interface
IPMI	RJ45 IPMI Port
UID LED	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)
JBT1	CMOS Clear	(See Chapter 2)
JI2C1, JI2C2	SMB to PCI Slots	(See Chapter 2)

.

Motherboard Features

CPU	Single Intel® Xeon E3-1200 series (Socket H2)
Memory	Four (4) DIMM slots support up to 32 GB of DDR3, unbuffered, 1333/1066 MHz, ECC memory
	Supports dual-channel memory bus
	DIMM sizes
	DIMM / 1 GB, 2 GB, 4 GB and 8GB
Chipset	Intel® C204 PCH
Expansion Slots	One (1) PCI-E 2.0 x 8 Slot, One (1) PCI-E 2.0 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 2.0 Ports / One (1) (I-SATA 4)
	SATA 3.0 Ports / Two (2) (SATA 0/1)
	(on IF Backpanel)
	USB Devices
	One (1) Internal USB header for two USB ports and one (1) Internal Type A USB connector. 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, +5V Stdby, VBAT, VCCP, Memory, Chipset
	Tachometer Monitoring
	CPU Thermal Trip support
	Thermal Monitor 2 (TM2) support

System Management	PECI (Platform Environment Configuration Interface) 2.0 support
	System resource alert via SuperDoctor® III
	SuperDoctor® III, Watch Dog
	Unit ID LED, System/CPU overheat LED
CD Utilities	BIOS flash upgrade utility
	Drivers and software for Intel® C204 PCH chipset utilities
Other	ROHS 6/6 (Full Compliance, Lead Free)
	One (1) TPM Header
Dimensions	4.75" x 15.95"

BLOCK DIAGRAM _{RoHS 6/6}
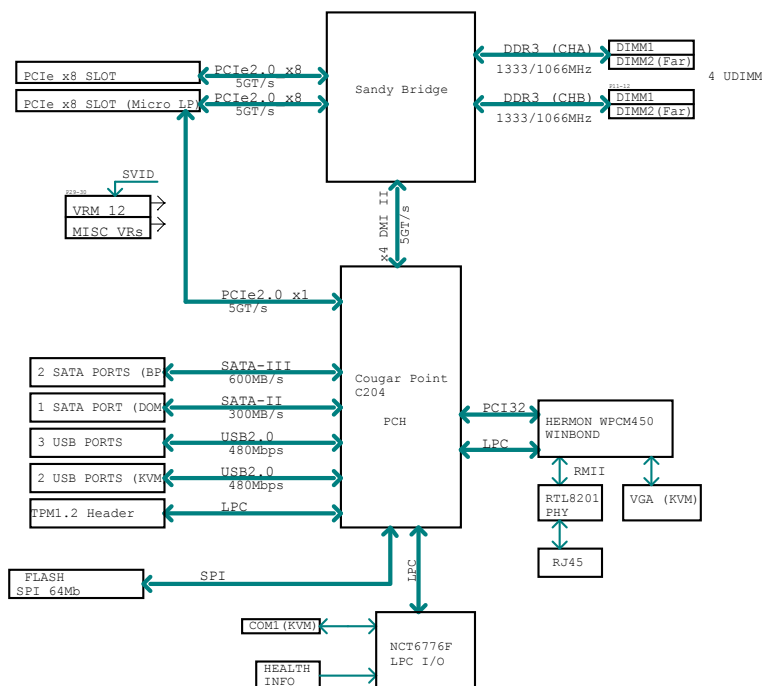
X9SCD-F Block Diagram

Note: This is a general block diagram. Please see the Motherboard Features pages for details on the features of the motherboard.

1-2   Chipset Overview

The X9SCD-F supports a single Intel® Xeon E3-1200 series processor in an H2 Socket (LGA 1155). Built around the Intel C204 chipset, the X9SCD-F motherboard provides substantial enhancement to system performance and storage capability for entry-level to mid-range blade servers in a microcloud server environment.

The high-speed Direct Media Interface (DMI) featured in the Intel C204 chipset supports high-speed Direct Media Interface (DMI) for chip-to-chip true isochronous communication, providing up to 2 Gb/s of software-transparent data transfer rate on each read/write direction. In addition, the X9SCD-F also features a TCO (Time Controlled Operations) timer which allows the system to recover from a software/ hardware lock and perform tasks, including ECC Error Reporting, Function Disable and Intruder Detect.

Intel C204 Express Chipset Features

- Direct Media Interface (up 4 Gb/s transfer, Full Duplex)

- Intel® 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 Controller

    - 6 Gb/s on up to two ports

    - 3 Gb/s on all ports

- Advanced Host Controller Interface (AHCI)

1-3   PC Health Monitoring

This section describes the PC health monitoring features of the X9SCD-F. The motherboard has an onboard System Hardware Monitor chip that supports PC health monitoring.

Recovery from AC Power Loss

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 hit the power switch to turn it back on) or for it to automatically return to a power on state. See the Power Lost Control setting in the BIOS chapter of this manual to change this setting. The default setting is **Last State**.

Onboard Voltage Monitoring

The onboard voltage monitor will scan the following voltages continuously: CPU core, +3.3V,+5V, +12V, +3.3V Stdby, +5V Stdby, VBAT, VCCP, Memory, Chipset. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. The User can adjust the voltage thresholds to define the sensitivity of the voltage monitor by using SD III.

Fan Status Monitor with Software

The PC health monitor can check the RPM status of the cooling fans via Supero Doctor III.

1-4 Power Configuration Settings

This section describes features of your motherboard that deal with power and power settings.

BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, it will function like a normal keyboard during system boot-up.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user presses the power button, the system will enter a Soft Off state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake up. During the Soft Off state, the ATX power supply provides power to keep the required circuitry in the system "alive." In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. The power will turn off and no power will be provided to the motherboard.

1-5 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 of 1 GHz and faster.

The SUPER● X9SCD-F accommodates the SMC 1620W power supply through the PDB and SATA back plane.

1-6   Super I/O

The Super I/O provides one high-speed, 16550 compatible serial communication ports (UARTs). This UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. It also provides legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a SMI or SCI function pin. It also features auto power management to reduce power consumption.

Chapter 2

Installation

2-1   Static-Sensitive Devices

STOP Electrostatic-Discharge (ESD) can damage electronic components. To pre-
vent 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   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
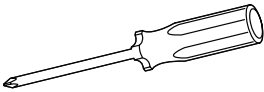
Philips Screwdriver

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 X9SCD-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.

Image rotated 90°
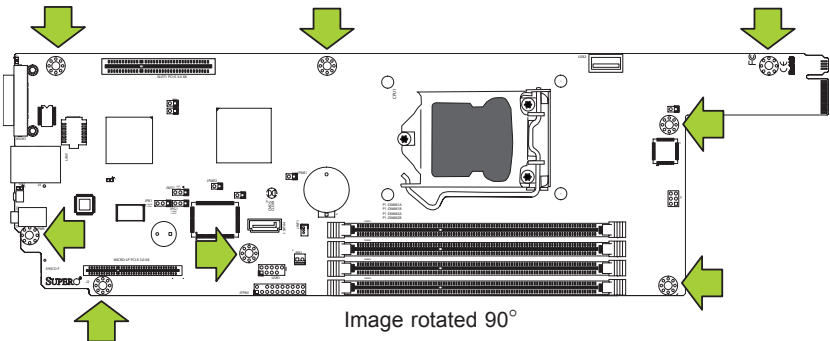
STOP **Caution:** To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation.

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
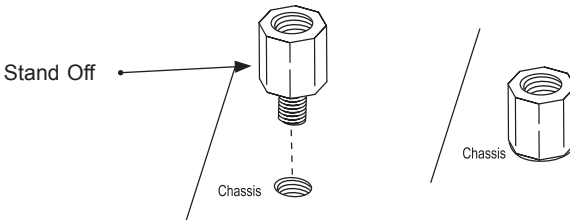
Chassis

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
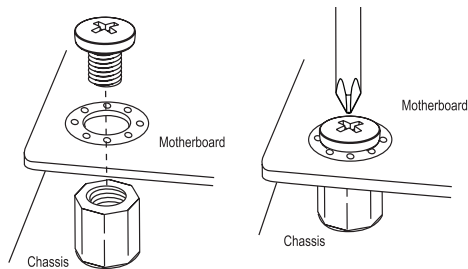
Chassis

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 X9SCD-F mounted on a motherboard tray, ready to be inserted into a Supermicro CSE-938H-R1620B 3U chassis.

Riser Card

Micro LP Network Card
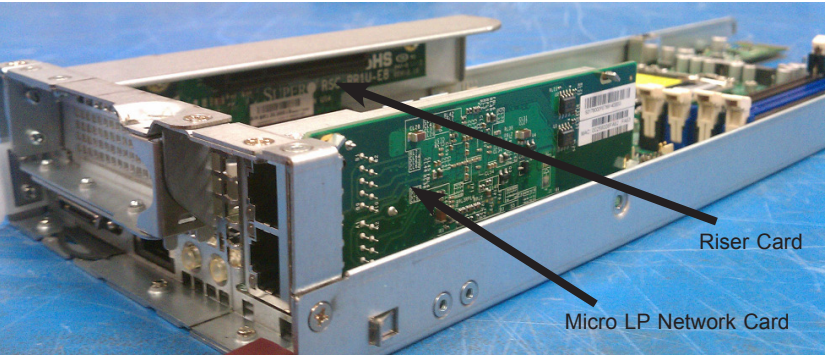
The image above shows the X9SCD-F and tray on a different angle, showing a riser card and a Micro LP network card installed.
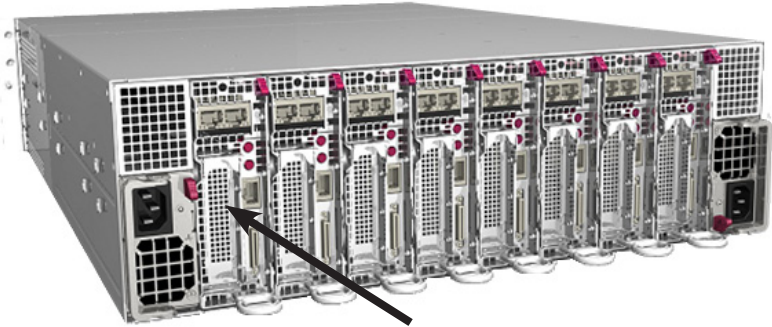
The image above shows the X9SCD-F on a motherboard tray and how it is installed as one of the nodes in a server chassis.

Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the re-quired 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 under-neath.

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.

Screw#1   **Screw#2**

Motherboard

Mounting Holes

Recommended Supermicro heatsink:
SNK-P0046P heatsink with BKT-0028L bottom bracket

Heatsink Bracket
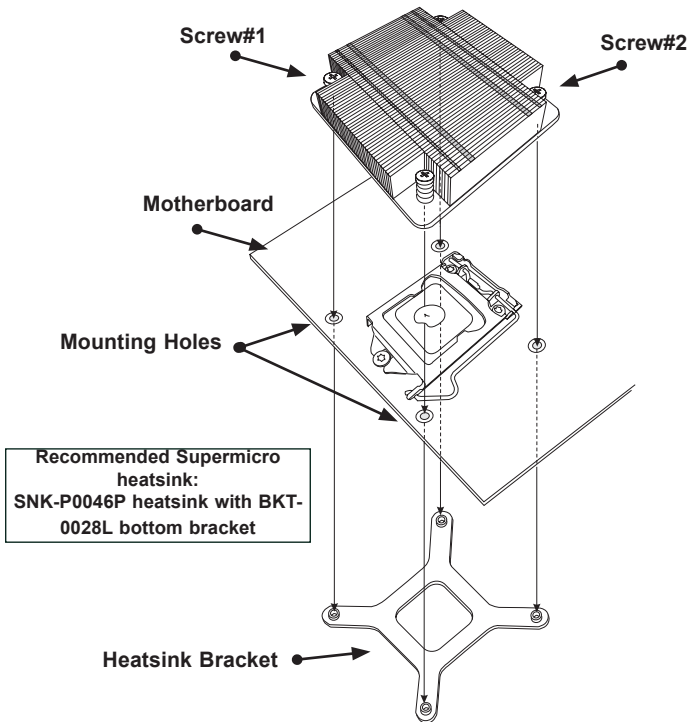
Notes: 1. For optimized air flow, please follow your chassis air flow di-rection to install the correct CPU heatsink direction. 2. Graphic drawings included in this manual are for reference only. They might look different from the components installed in your system.

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. Remove the heatsink, then 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

Remove the Heatsink Bracket from underneath the motherboard.
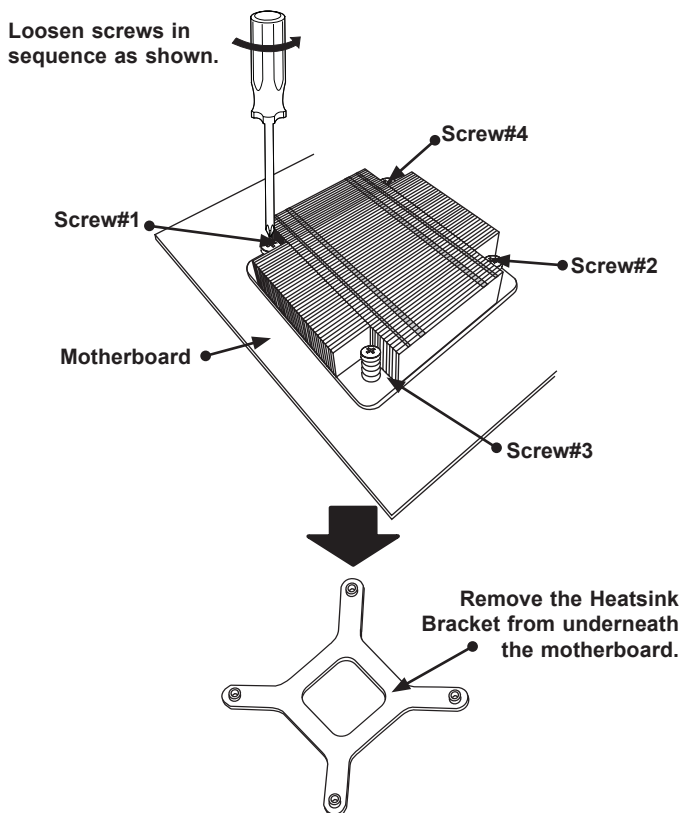
2-3   System Memory

> ### *CAUTION*
> **STOP** 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 X9SCD-F motherboard.

How to Install DDR3 DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with
    DIMM1A, then DIMM2A, DIMM1B, DIMM2B. 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 X9SCD-F supports up to 32GB of unbuffered ECC DDR3 DIMMs (1066/1333
MHz in 4 DIMM slots).

Installing and Removing DIMMs

Image rotated 90°

DIMM1A
DIMM1B
DIMM2A
DIMM2B
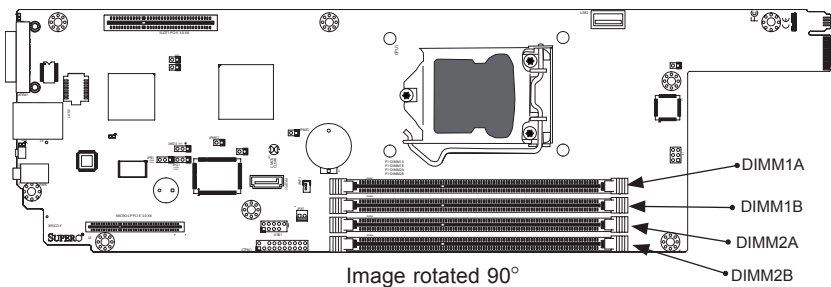
Installing and Removing DIMMs

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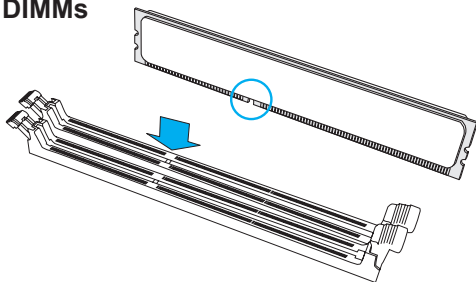
Notches

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
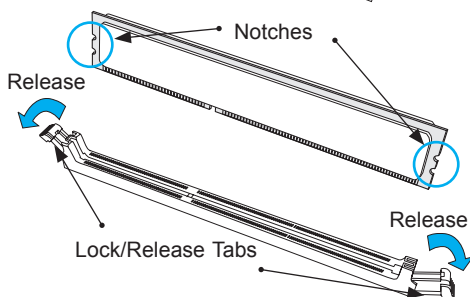
Lock/Release Tabs

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

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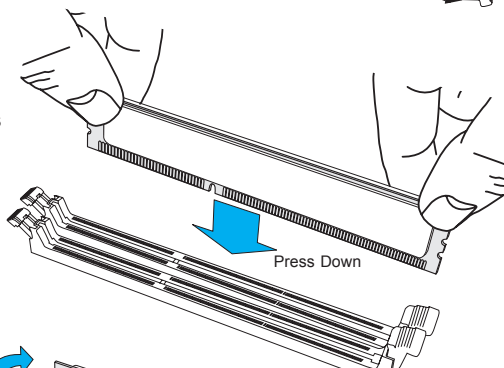
4 When the module is properlly inserted, the Lock/Release tabs will automatically secure the DIMM module, locking it into place.
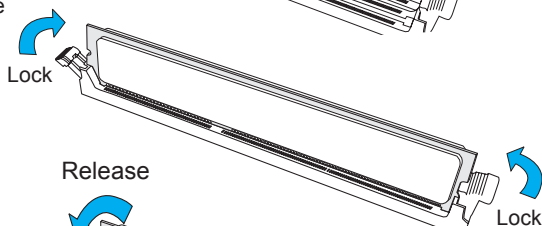
Lock

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
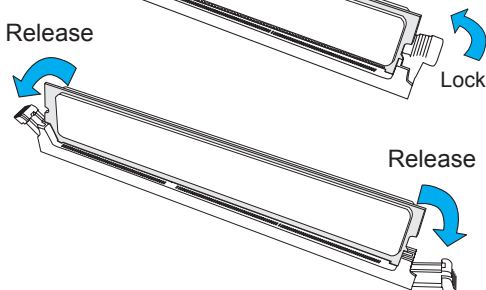
Memory Population Guidelines

When installing memory modules, the DIMM slots should be populated in the following order: DIMM1B, DIMM2B, DIMM1A and DIMM2A.

- 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)				
DIMM2A Slot	DIMM2B Slot	DIMM1A Slot	DIMM1B Slot	Total System Memory
	2GB DIMM		2GB DIMM	4GB
2GB DIMM	2GB DIMM	2GB DIMM	2GB DIMM	8GB
	4GB DIMM		4GB DIMM	8GB
4GB DIMM	4GB DIMM	4GB DIMM	4GB DIMM	16GB
	8GB DIMM		8GB DIMM	16GB
8GB DIMM	8GB DIMM	8GB DIMM	8GB DIMM	32GB

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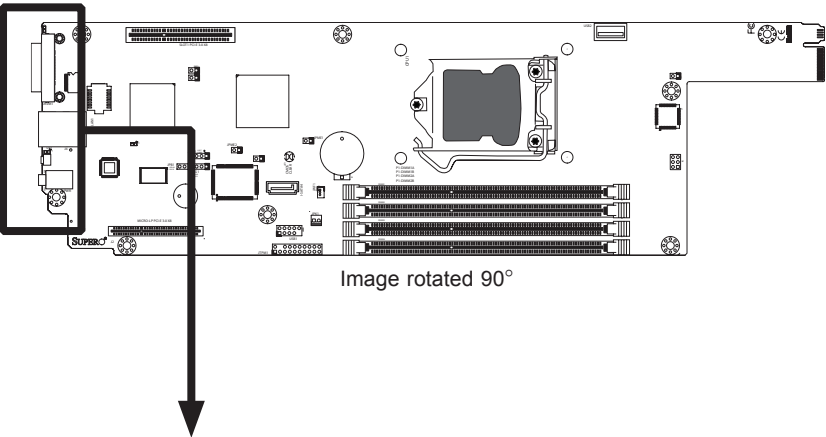
I/O Port Locations and Definitions
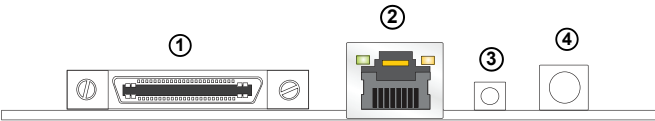
1. KVM Port
2. IPMI Port
3. UID Button
4. Power Button and LED

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.
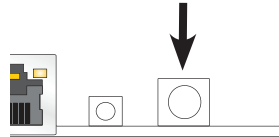
UID Button

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.
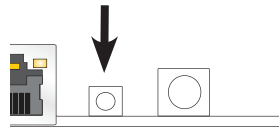
Back Panel Connectors

TPM Header

This header is used to connect a Trusted Plat-
form 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 com-
municate with the rest of the system (hard drives, warning lamps, etc).

Ⓐ TPM Header

Ⓑ IF + Power

Image rotated 90°
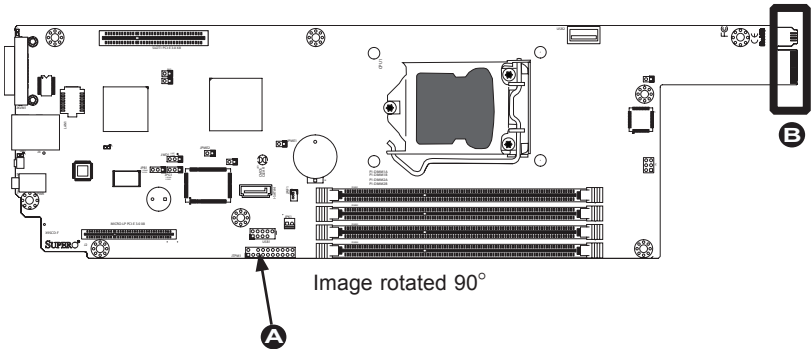
2-5   Connecting Cables

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.

SATA DOM Power (JWF1)

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

A SATA DOM Power

Image rotated 90°

B
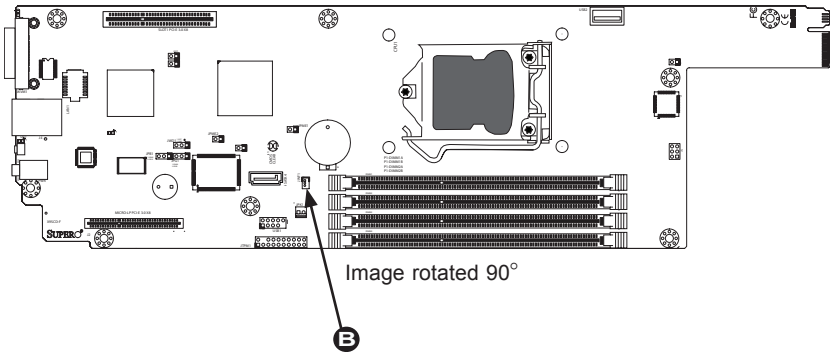
Universal Serial Bus (USB)

Three Universal Serial Bus ports (USB 2~3) are located on the on the mother-board. Two of these are available on a header, and one on a Type A connector. There are also two ports (USB 0/1) avail-able through the KVM port (Cables are not included). See the tables on the right for pin definitions.

Type A USB Pin Definition			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_PN	6	USB_PN
3	USB_PP	7	USB_PP
4	Ground	8	Ground

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

Ⓐ USB 2/3
Ⓑ USB 4 (Type A)
Ⓒ USB 0/1 (on KVM Port)

Image rotated 90°
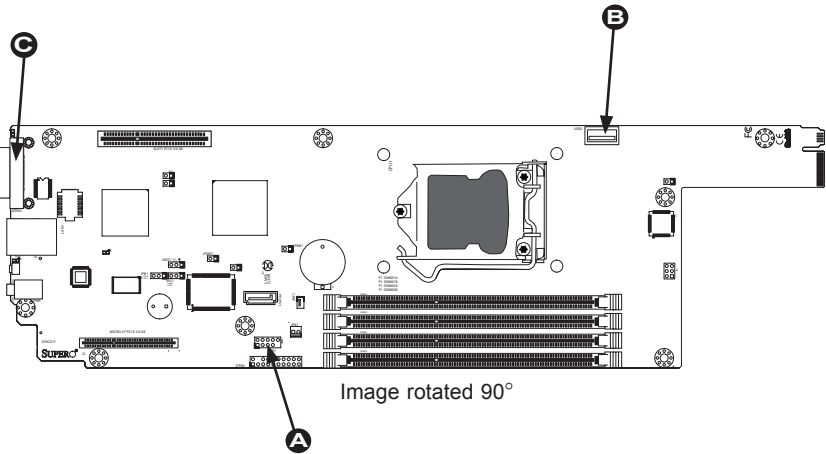
2-6   Jumper Settings

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

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

3   2   1

Top View
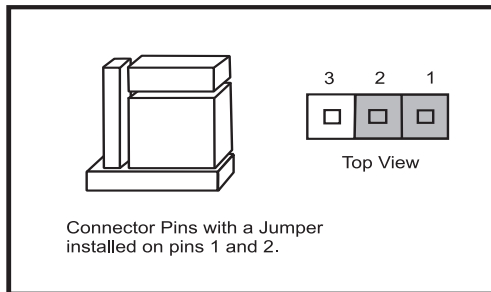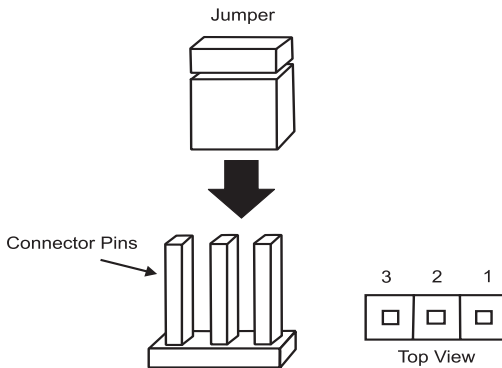
CMOS Clear (JBT1)

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.

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

Motherboard

Metal contact pads
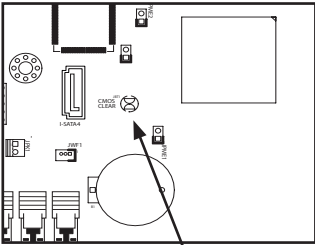
BMC Enable/Disable (JPB1)

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

Ⓐ CMOS Clear
Ⓑ BMC Enable/Disable

Image rotated 90°
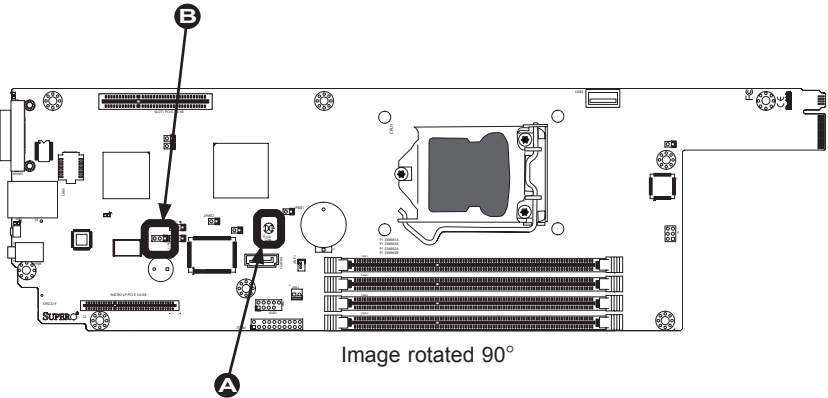
VGA Enable (JPG1)

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°
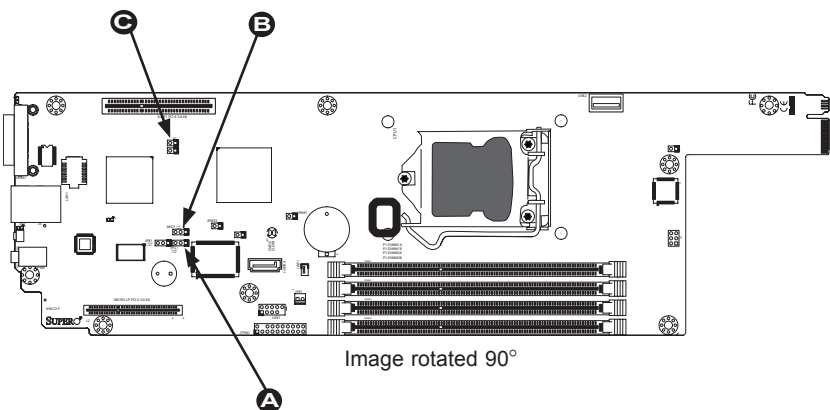
2-7   Onboard Indicators

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
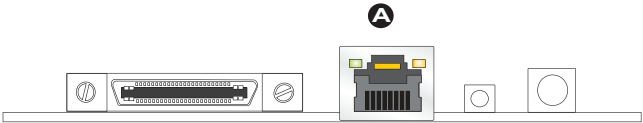
Back Panel Connectors

Image rotated 90°

A
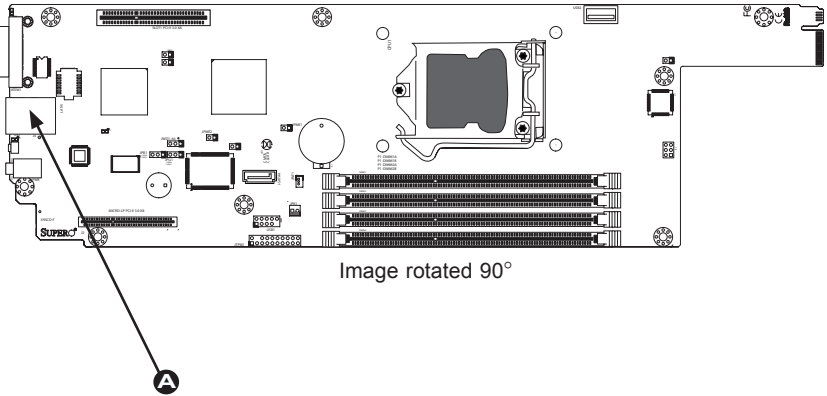
IPMI Heartbeat LED

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

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

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

Ⓐ IPMI Hearbeat
Ⓑ Fail LED
Ⓒ Unit ID LED

Image rotated 90°
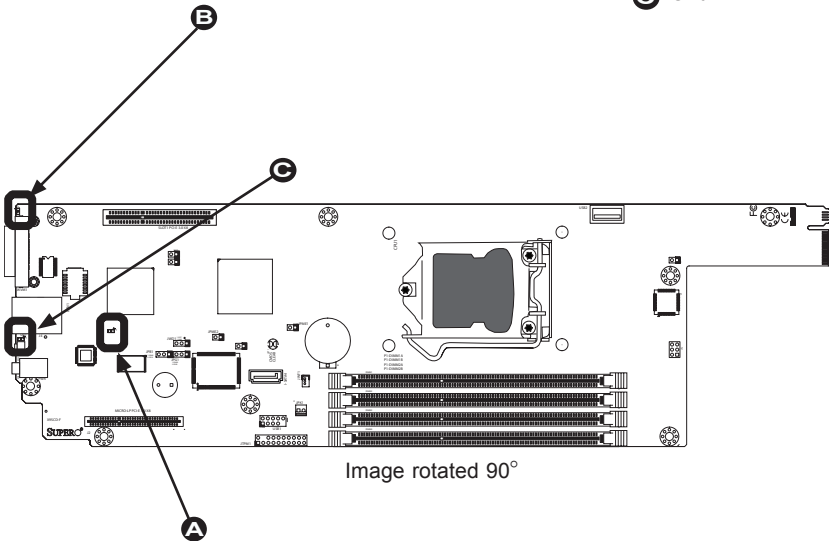
2-8   Serial ATA and HDD Connections

Note the following conditions when connecting the Serial ATA and hard disk drive cables:

•   Be sure to use the correct cable for each connector. Refer to Page 1-1 for cables that came with your shipment.

SATA Connections (SATA4)

One Serial ATA (SATA) 2.0 connector (I-SATA 4) is located on the motherboard. In addition, two SATA 3.0 (SATA 0/1) ports are supported through the IF port. 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,	SATA 2.0 (3 Gb/s)
I-SATA 0/1	SATA 3.0 (6 Gb/s)

SATA 2.0/3.0 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 (2.0)
B SATA 0/1 (3.0) - supported
    through the IF port.
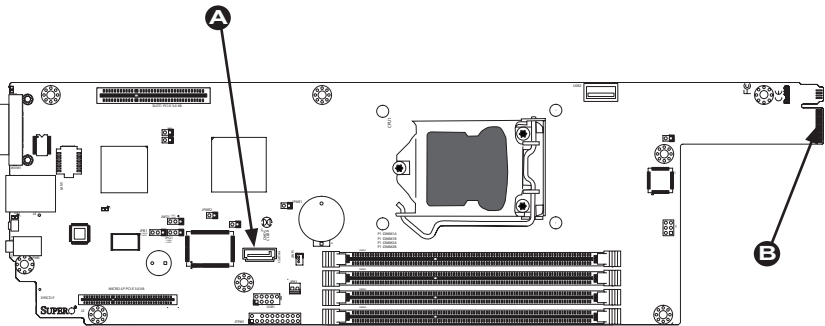
Image rotated 90°

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. 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. 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 remove 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 SO-DIMM modules are properly installed and fully seated in the slots.

2. Please check Section 2-3 and make sure that you are using the correct memory. Also, it is recommended that you use the memory modules of the same type and speed for all DIMMs in the system.

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

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

If You Lose the System's Setup Configuration

1. Please be sure to use a high quality power supply. A poor quality power supply may cause the system to lose the 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 supplies ~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 modifications to the boot block code.

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 (OS version, peripheral devices, power supply type, etc)

  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:

The X9SCD-F supports up to 32GB of **unbuffered** ECC DDR3 1066/1333 MHz, two-way interleaved or non-interleaved DIMM memory. See Section 2-3 for details on installing memory.

Question: Why does Microsoft Windows show less memory than what is physically installed?

Answer: Microsoft implemented a design change in Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the Physical Address Extension (PAE) mode behavior which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: http://support.microsoft.com/kb/888137.

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 web site at http://www.supermicro.com/support/bios/. Please check our

BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS (.rom) file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You may choose the zip file or the .exe file. If you choose the zipped BIOS file, 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>

Notes: 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., X9SCD) and build version as the extension. For example, "X9SCD0.526".

When completed, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, boot the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

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

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 <F9> to load the default settings. Next, press <F10> to save and exit. The system will then reboot.

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.

If your BIOS crashes and your motherboard will no longer boot, please read Appendix C - UEFI BIOS Recovery Instructions for 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 and audio drivers.

3-4   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. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

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

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

Notes

Chapter 4

BIOS

4-1   Introduction

This chapter describes the AMI BIOS Setup Utility for the X9SCD-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 a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

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

                                                      Set the Time. Use Tab to
 System Time                   [17:31:26]             switch between Time elements.
 System Date                   [Thu 05/26/2011]

 Supermicro X9SCD
 Version                       1.00
 Build Date                    05/21/2011

 Processor
        Intel(R) Xeon(R) CPU E31240 @ 3.30GHz
 Speed                         3300 MHz
 Physical Count                1
 Logical Count                 8

 System Memory
 Size                          2048 MB                ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Opt.
                                                      F1: General Help
                                                      F2: Previous Values
                                                      F3: Optimized Defaults
                                                      F4: Save & Exit
                                                      ESC: Exit


         Version 2.12.1211. 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 X9SCD

Version

Build Date

Processor

The AMI BIOS will automatically display the status of processor as shown below:

Processor

Speed

Physical Count

Logical Count

System Memory

This displays the size of memory available in the system:

Size

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  Exit
 ┌─────────────────────────────────────────────┬─────────────────────────────┐
 │                                               │ System Boot Feature Setting.│
 │ ▶ Boot Feature                                │                             │
 │ ▶ Processor & Clock Options                   │                             │
 │ ▶ Chipset Configuration                       │                             │
 │ ▶ IDE/SATA Configuration                      │                             │
 │ ▶ PCIe/PCI/PnP Configuration                  │                             │
 │ ▶ Super IO Configuration                      │                             │
 │ ▶ Remote Access Configuration                 │                             │
 │ ▶ Hardware Health Configuration               │                             │
 │ ▶ ACPI Configuration                          │                             │
 │                                               │                             │
 │                                               │─────────────────────────────│
 │                                               │ ↔: Select Screen            │
 │                                               │ ↑↓: Select Item             │
 │                                               │ Enter: Select               │
 │                                               │ +/-: Change Opt.            │
 │                                               │ F1: General Help            │
 │                                               │ F2: Previous Values         │
 │                                               │ F3: Optimized Defaults      │
 │                                               │ F4: Save & Exit             │
 │                                               │ ESC: Exit                   │
 │                                               │                             │
 └─────────────────────────────────────────────┴─────────────────────────────┘
            Version 2.12.1211. Copyright (C) 2011 American Megatrends, Inc.
```

▶BOOT Feature

Quiet Boot

This feature allows the user to select the bootup screen display between POST messages and 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 feature 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

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

Interrupt 19 Capture

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

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

This feature controls how the system shuts down when the power button is pressed. Select 4-Second 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 instanty power off when the Power Button is pressed. The options are 4 Second 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, Power-Off and **Last State**.

▶Processor & Clock Options

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.

Clock Spread Spectrum

Select Enabled to allow 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.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware prefetcher will prefetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

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

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

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.

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® Hyper Threading Technology

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 and 3.

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.

P-STATE Coordination

This feature selects the type of coordination for the P-State of the processor. P-State is a processor operational state that reduces the processor's voltage and frequency. This makes the processor more energy effiicient, resulting in further gains. The options are **HW_ALL**, SW_ALL and SW-ANY.

CPU C3 Report, CPU C6 Report

This BIOS feature enables or disables C3 (ACPI C2) or C6 (ACPI C3) reporting to the operating system. The options are **Disabled** and Enabled.

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**, C1, C6, C7 and No Limit.

▶Turbo Boost Technology (Available if Intel® EIST technology is Enabled)

Turbo Mode

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

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.

▶CPU Bridge Configuration

This item displays the current CPU Revision, Current CPU1 Memory Frequency, Memory Type and Memory Reference Code Revision.

Memory Frequency

This feature allows the user to select the memory speed. Under normal conditions, please set this to Auto. The options are **Auto**, Force DDR-800, Force DDR-1067, Force DDR-1333, and Force DDR-1600.

▶Integrated I/O Configuration

This item displays the current North Bridge Revision.

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**.

Active State Power Management

Select Enabled to start Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus. This maximizes power-saving and transaction speed. The options are Enabled and **Disabled**.

PCIE Maximum Payload Size

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

PCI Express Port

This feature enables or disables the PCI Express port. The options are Disabled, Enabled and **Auto.**

PEG Force Gen1

This feature forces Gen1 support on the PCI Express Graphics (PEG) port. The options are **Disabled**, and Enabled**.**

Detect Non-Compliant Device

This feature enables or disables the detection of a non-compliant device that is attached to the PCI Express Graphics (PEG) port. The options are **Disabled**, and Enabled**.**

▶**South Bridge Configuration**

This item displays the current South Bridge Revision.

USB Functions

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are Disabled and **Enabled**.

Legacy USB Support (available if USB Functions above is Enabled)

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vise versa. The settings are Disabled, Enabled and **Auto**.

Port 60/64 Emulation (available if USB Functions above is Enabled)

Select Enabled to activate I/O port 60h/64h emulation support. This must be enabled for complete USB keyboard legacy support for Operating Systems that are not compatible with USB devices. The settings are **Enabled** and Disabled.

BIOS EHCI Hand-Off (available if USB Functions above is Enabled)

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.

▶**IDE/SATA Configuration**

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

SATA Mode

This item selects the mode for the installed drives. The options are Disabled, IDE Mode, **AHCI Mode** and RAID Mode.

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 Enhanced and **Compatible.** The default of Serial-ATA Controller 1 is **Enhanced**.

SATA Port0~Port5

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

AHCI Mode

The following items are displayed when AHCI Mode is selected:

Aggressive Link Power Management

This feature Enables or Disables Agressive Link Power Management support for Cougar Point B0 stepping and later. The options are **Enabled** and Disabled.

SATA Port0~Port5

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

Staggered Spin Up

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

Hot Plug

Set this item to Enabled for hot-plugging support. The options are Enabled and **Disabled**.

RAID Mode

The following items are displayed when RAID Mode is selected:

PCH RAID CodeBase

Select Intel to enable the Intel SATA Host RAID Utility. Select LSI to use the LSI Host RAID Utility. The options are **Intel** and LSI.

SATA Port0~Port5

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

Hot Plug

Set this item to Enabled to enable hot-plugging. 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, **64**, 96, 128, 160, 192, 224 and 248.

▶Super IO Device 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 Serial Port 1. Select **Auto** to allow the serial port to automatically assign system resources. The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12),. (IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12), (IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12),

▶Remote Access Configuration

COM1 Console Redirection

Use this feature to enable console redirection for the COM1 port. The options are **Enabled** and Disabled. The default for all ports are Disabled.

▶Console Redirection Settings

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Terminal Type : Select **ANS**I, VT100, VT100+, or VT-UTF8

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

Flow Control: **None** or Hardware RTS/CTS

Recorder Mode: **Disabled** or Enabled

Resolution 100x31: **Disabled** or Enabled

Legacy OS Redirection Resolution: **80x24** or 80x25

SOL Console Redirection

Use this feature to enable console redirection for SOL (Serial Over LAN). The options are **Enabled** and Disabled. The default for all ports are Disabled.

▶**Console Redirection Settings**

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Terminal Type : Select **ANS**I, VT100, VT100+, or VT-UTF8

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

Flow Control: **None** or Hardware RTS/CTS

Recorder Mode: **Disabled** or Enabled

Resolution 100x31: **Disabled** or Enabled

Legacy OS Redirection Resolution: **80x24** or 80x25

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

Use this feature to enable console redirection. The options are **Enabled** and Disabled. The default is Disabled.

▶**Console Redirection Settings**

Configure the following options for the Console Redirection Settings. The most common settings are set as default:

Out-of-Band Mgmt Port: **COM1**, SOL

Terminal Type : Select ANSI, VT100, VT100+, or **VT-UTF8**

Bits per Second (BPS): 9600, 19200, 57600, or **115200**

Data Bits: **8** or 7

Parity: **None**, Even, Odd, Mark, or Space

Stop Bits: **1** or 2

▶Hardware Health Configuration

Fan Speed Control Mode

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed" to allow the onboard fans to run at full speed (of 100% Pulse Width Modulation Duty Cycle) for maximum cooling. This setting is recommended for special system configuration or debugging. Select "Standard" for the onboard fans to run at 50% of the Initial PWM Cycle in order to balance the needs between system cooling and power saving. This setting is recommended for regular systems with normal hardware configurations. Select "Optimal" for the onboard fans to run at 30% of the Initial PWM Cycle for best power efficiency and maximum quietness. The options are Full Speed (@100% of PWM Cycle), **Standard** (@50% of PWM Cycle), and Optimal (@30% of PWM Cycle).

CPU Temperature, System Temperature

This feature displays the current temperature of the above monitors.

Fan1 Speed

This feature displays the fan speed reading from the Fan 1 interface.

VCORE, 12V, VDIMM, 5VCC, VCC PCH, AVCC, 3.3VCC, VSB, VBAT

This feature displays the current voltages of the above voltage monitors.

▶ACPI Configuration

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

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 Instruc-

tion embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

Suspend Mode

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 and **S1 (POS)**.

WHEA Support

This feature Enables the Windows Hardware Error Architecture (WHEA) support for the Windows 2008 operating system (and later versions). The options are **Enabled** and Disabled.

4-4   Event Logs

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

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




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



                 Version 2.12.1211. Copyright (C) 2011 American Megatrends, Inc.
```

▶Change Smbios Event Log Settings

The following options are available:

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.

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.

MECI

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

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.

View Smbios Event Log

Displays the Smbios Event Log stored in memory.

4-5   IPMI Configuration

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  Exit

  ▶ System Event Log                                Configure BMC network
  ▶ BMC network configuration                       parameters






                                                    ↔: 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 Sytem 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.

▶BMC Network Configuration

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

Update IPMI LAN Configuration

Select Yes to update the IPMI LAN configuration. The options are Yes and **No**.

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". If Static is selected, the IP Address, Subnet Mask and Gateway Address must be manually entered below. The options are Static, Dynamic and **Do Nothing**. The following items are displayed when Static is selected:

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 this machine will use (i.e., 192.168.10.1).

4-6   Boot Settings

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

   Setup Prompt Timeout              1                          Number of seconds to wait for
                                                                setup activation key.
 ▶ Boot Options Priority                                        65535(0xFFFF) means indefinite
 ▶ Delete Boot Option                                           waiting.







                                                                ↔: 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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```

Use this feature to configure Boot Settings:

▶Boot Options Priority

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

Boot Option #1, Boot option #2, Boot Option #3, etc

The settings are **Built-in EFI Shell**, [any detected boot device] and Disabled.

▶Delete Boot Option

This feature allows the user to delete any previously-defined boot device from the Boot Options Priority.

4-7   Security Settings

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

   Password Description                                  Set Setup 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 must be 3 to 20 characters long.


   Access Level                   Administrator         →←: Select Screen
   Administrator Password                               ↑↓: Select Item
   User Password                                        Enter: Select
                                                        +/-: Change Opt.
   Boot Sector Virus Protection        [Disabled]       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.

Boot Sector Virus Protection

When this item is Enabled, the BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

4-8   Exit Options

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

   Save Changes and Exit                                    Exit system setup after saving
   Discard Changes and Exit                                 the changes.
   Discard Changes

   Restore Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   UEFI: Built-in EFI Shell
 ▶ Set ME to disable Mode

                                                          ←→: 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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```

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

Save Changes and Exit

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

Discard Changes and Exit

Select this option to quit 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>.

Discard Changes

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

Restore Defaults

To set this feature, select Restore Defaults from the Exit menu and press <Enter>. These are factory settings designed for maximum system 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

Set this feature to override a previously defined boot device. The available devices will be listed below.

Notes

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the AMI BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep with the front panel Overheat LED on - system overheat

8 short beeps - display memory read/write error

Notes

Appendix B

Software Installation Instructions

B-1   Installing Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. 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.

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 a computer icon to the right of an item to install an item (from top to the bottom) one at a time. After installing each item, you must re-boot the system before proceeding with the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

B-2 Configuring Supero Doctor III

The SuperDoctor® III program is a Web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management 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: Both 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 the BIOS. Any subsequent changes to these thresholds must be made within SuperDoc-tor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

SuperDoctor® III Interface Display Screen-I (Health Information)

SuperDoctor® III Interface Display Screen-II (Remote Control)

Note: SD III Software Revision 1.0 can be downloaded from our web-site at: ftp://ftp.supermicro.com/utility/Super_Doctor_III/.   You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use SuperDoctor II.

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.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

| Main | Advanced | Event Logs | IPMI | Boot | Security | Exit | Recovery |

WARNING! BIOS Recovery Mode has been detected

Flash Update Parameters
Reset NVRAM   [Enabled]

▶ Proceed with Flash Update

Set this to start flash update

→ ← : 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: 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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