SUPER®

X9DRW-3F
X9DRW-iF

USER'S MANUAL

Revision 1.0

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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.

Preface

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the X9DRW-3F/X9DRW-iF motherboard.

About This Motherboard

The Super X9DRW-3F/X9DRW-iF motherboard supports dual Intel E5-2600 Series (Socket R) processors and Intel QPI (QuickPath Interface) Technology (V.1.1), providing point-to-point connections with transfer speeds of up to 8.0 TG/s. With the Intel PCH C606/C602 chipset built in, the X9DRW-3F/X9DRW-iF motherboard supports Intel® Intelligent Power Node Manager (IPNM), Manageability Engine (ME), Digital Media Interface (DMI), PCI-E Gen. 3.0, and 1600 MHz DDR3 memory. These features greatly enhance system performance for 1U/2U servers. This motherboard is ideal for high-end server platforms. Please refer to our Website (http://www.supermicro.com) for processor and memory support updates.

Manual Organization

Chapter 1 describes the features, specifications and performance of the motherboard. It also provides detailed information about the Intel PCH C606/C602 chipset.

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

Chapter 4 includes an introduction to the BIOS, and provides detailed information on how to configure the CMOS Setup settings.

Appendix A provides BIOS Error Beep Codes.

Appendix B lists software installation instructions**.**

Conventions Used in the Manual

Pay special attention to the following symbols to install your system properly and to prevent damage to your system or injury to yourself:

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

Warning: Important information given to ensure proper system installation or to avoid damaging the components

Note: Additional information provided to differentiate between various models or to provides information for proper system setup.

Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Website:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Inc.
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho 235, Taipei County
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Website:	www.supermicro.com.tw
Email:	support@supermicro.com.tw (Technical Support)
Tel:	+886-(2) 8226-5991

Table of Contents

Chapter 1

Overview

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

- Two (2) Serial ATA cables (CBL-0044Lx2)

- Two (2) I-Pass to Serial ATA cables (CBL-0097L-03 x2) (X9DRW-3F)

- One (1) I-Pass to Serial ATA cable (CBL-0097L-03) (X9DRW-iF)

- One (1) I/O Shield (MCP-260-00042-0N)

- One (1) Supermicro CD containing drivers and utilities

- One (1) User's/BIOS Manual (MNL#1278)

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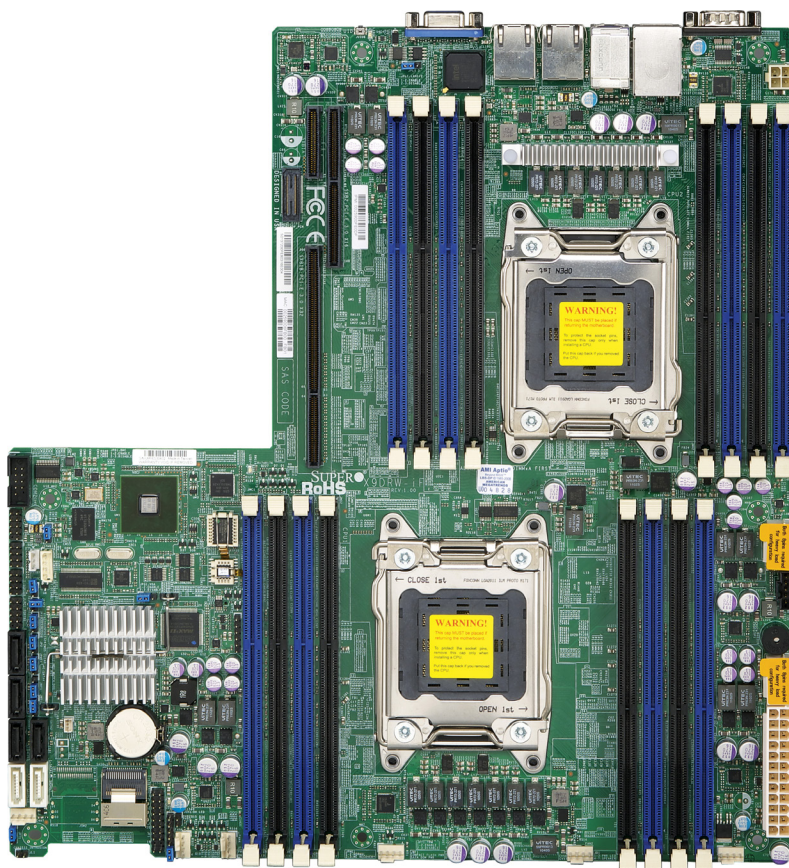
Note: All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

Motherboard Layout

SUPER●X9DRW-3F/iF
Rev.1.02
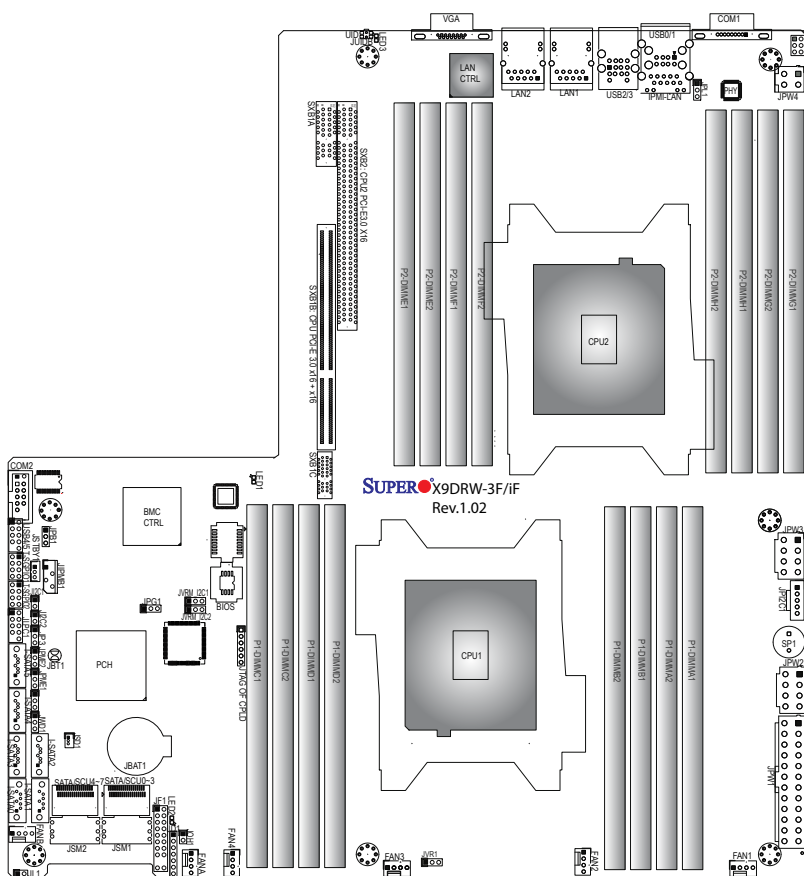
✏ **Notes:**

- See Chapter 3 for detailed information on jumpers, I/O ports and JF1 front panel connections.

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

- Jumpers/LED Indicators not indicated are for testing only. *Also, components that are not documented in this manual are reserved for internal use only.*

- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

X9DRW-3F/X9DRW-iF Quick Reference
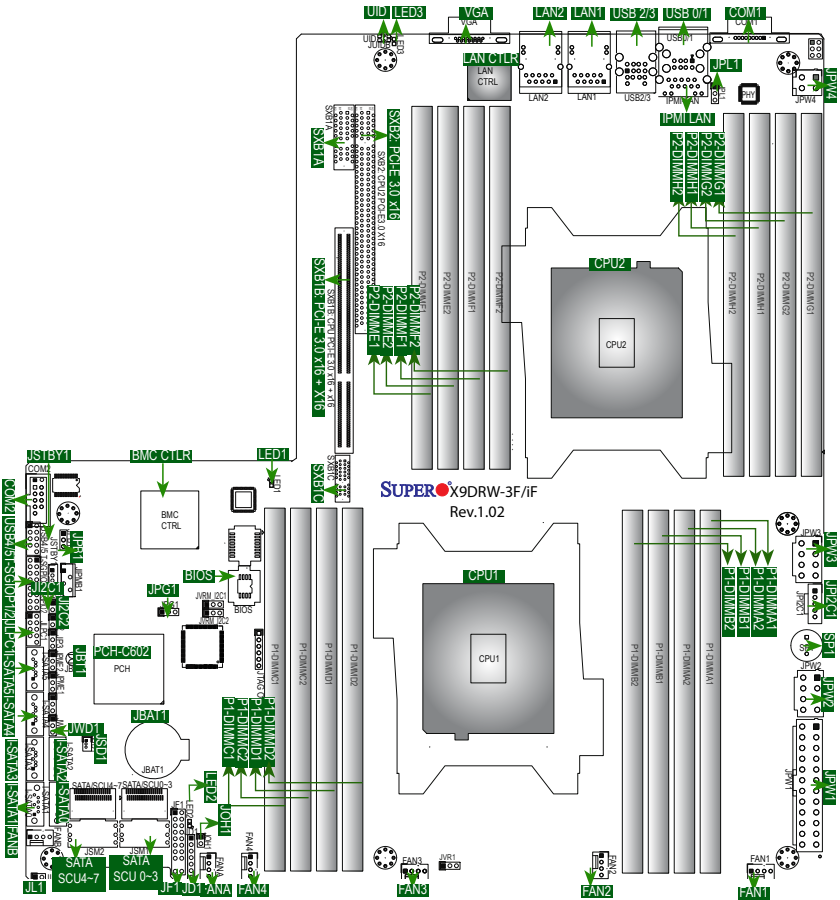
X9DRW-3F/X9DRW-iF Jumpers

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Chapter 3
JI²C1/JI²C2	SMB to PCI-E Slots	Open (Normal)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	LAN1/LAN2 Enable	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (Reset)

✐ Note: Components not documented are reserved for internal use only.

X9DRW-3F/X9DRW-iF Connectors

Connectors	Description
COM1/COM2	Backplane COM Port1/Front Accessible COM2 Header
FAN1~4,FANA, FANB	CPU/System Fan Headers
I-SATA 0~5	Intel PCH SATA Connectors 0~5
JBAT1	Onboard Battery (See Chpt. 4 for Used Battery Disposal)
JD1	Speaker/Power LED Connector (Pins 1~3: PWR LED, Pins 6~7: Onboard Buzzer/Pins 4~7: External Speaker)
JF1	Front Panel Control Header
JIPMB1	4-pin External BMC I²C Header (for an IPMI Card)
JL1	Chassis Intrusion
JLPC1	Port80 Header
JOH1	Overheat/Fan Fail LED
JPI²C1	Power Supply SMBbus I²C Header
JPW1	ATX 24-Pin Power Connector (See Warning on Pg. 1-6)
JPW2/3	12V 8-Pin Power Connectors (See Warning on Pg. 1-6)
JPW4	12V 4-Pin Power Connector (See Warning on Pg. 1-6)
JSD1	SATA DOM (Device_On_Module) Power Connector
JSTBY1	Standby Power Connector
LAN1/2	G-bit Ethernet Ports 1/2
(IPMI) LAN	IPMI_Dedicated LAN
SATA/SCU 0~3, 4~7	Serial_Link SATA/SCU Connections 0~3, 4~7 (for X9DRW-3F), SCU 0~3 (for X9DRW-iF)
SP1	Onboard Buzzer (Internal Speaker)
SXB1A	SMC-Proprietary SPEC Slot (See Note 1 below.)
SXB1B	SMC-Proprietary PCI-E 3.0 x16 + x16 Add-on Card Slot (Left) (See Note 1 below.)
SXB1C	SMC-Proprietary SPEC Slot (See Note 1 below.)
SXB2	SMC-Proprietary PCI-E 3.0 x16 Add-on Card Slot (Right) (See Note 2)
T-SGPI0 1/2	Serial-Link General_Purpose IO Headers 1/2
USB 0/1, 2/3	Back Panel USB 0/1, 2/3 Ports
USB 4/5	Front Panel Accessible USB 4/5 Connections
UID Switch	UID (Unit Identifier) Switch

🖉 **Note 1:** For SXB1A/SXB1B/SXB1C PCI-Exp. slots to work properly, please use an SMC-proprietary riser card (eg. RSC-RIUW-2E16) in the slots.

Note 2: For SXB2 PCI-Exp. slot to work properly, please use the SMC-proprietary riser card RSC-R2UW-2EBR or RSC-R1UW-E8R in the slot.

VGA1   Backpanel VGA Port 1/Front Panel VGA Port2

X9DRW-3F/X9DRW-iF LED Indicators

LED	Description	State	Status
LED1	BMC	Green: Blinking	Normal
LED2	Power LED	Green: On	SB Power On
LED3	UID LED	Blue: On	Unit Identified

⚠ **Warning**!

• To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin, two 8-pin power connectors and one 4-pin power connector. Be sure to connect these power supply connectors to the 24-pin power connector (JPW1), two 8-pin power connectors (JPW2/JPW3) and the 4-pin power connector (JPW4) on the motherboard. Failure in doing so will void the manufacturer warranty on your power supply and motherboard.

Motherboard Features

CPU	• Dual Intel® E5-2600 series (Socket R of up to 130W) processors; each processor supports two full-width Intel QuickPath Interconnect (QPI) links of up to 8.0 GT/s per QPI link and with data transfer rate of up to 16 GB/s direction peak bandwidth per port
Memory	1. 16 240-pin DDR3 ECC RDIMM modules with support for up to 512 GB of Registered/Unbuffered ECC DDR3 800/1066/1333/1600 MHz memory in two-channel memory bus 2. It supports 512 GB (max.) of LRDIMM (Reduced Load) DDR3 800/1066/1333/ MHz ✎ **Note**: For the latest CPU/memory updates, please refer to our Website at http://www.supermicro.com/products/motherboard.

DIMM sizes	
• RDIMM	1GB, 2GB, 4GB, 8GB,16GB and 32GB @ 1.35V/1.5V

	• Virtualization: VT-x, VT-d, and VT-c
Chipset	• Intel® PCH 606/602 Chipset
Expansion Slots	• One (1) SMC-Proprietary PCI-E 3.0 x16 slot (Right) (SXB2) (See Note 2 on Page 1-5), • One (1) SMC-Proprietary PCI-E 3.0 x16 + x16 slot (Left) (SXB1B) (See Note 1 on Page 1-5), • Two (2) SMC-Proprietary SPEC slot (SXB1A/SXB1C) (See Note 1 on Page 1-5.)
Graphics	• Renesas BMC Video Controller
Network	• One Intel I350 Gigabit Dual-Channel Ethernet Controller for LAN1/LAN2 ports. • Renesas Baseboard (BMC) Controller (SH7757) supports IPMI_LAN 2.0

I/O Devices	SATA Connections	
	• SATA Ports	Six (6) SATA ports total: two SATA 3.0 and four SATA 2.0 ports
	• RAID (Windows)	RAID 0, 1, 5, 10
	• RAID (Linux)	RAID 0, 1, 10

	SAS/SATA/SCU Connection
	• Eight (8) Connections 0~3, 4~7 (For X9DRW-3F),
	• Four (4) Connections 0~3 (For X9DRW-iF)
	• RAID 0, 1, 10
	IPMI 2.0
	• IPMI 2.0 supported by the Renesas BMC
	Serial (COM) Port
	• Two (2) Fast UART 16550 connections: 9-pin RS-232 port 🖉 **Note**: COM2 does not support modem function)
	VGA
	• Backplane VGA Port 1
Peripheral Devices	**USB Devices**
	• Four (4) USB ports on the rear I/O panel (USB 0/1, USB 2/3),
	• Two (2) Front Panel USB headers (USB 4/5)
BIOS	• 16 MB AMI BIOS® Flash EEPROM
	• APM 1.2, PCI 2.3, ACPI 1.0/2.0/3.0/4.0, USB Keyboard, Plug & Play (PnP) and SMBIOS 2.3
Power Management	• ACPI/ACPM Power Management
	• Main switch override mechanism
	• Power-on mode for AC power recovery
	• Keyboard Wake-up from Soft-off
	• Intel® Intelligent Power Node Manager (Available when the NMView utility is installed in the system)
	• Manageability Engine
PC Health Monitoring	**CPU Monitoring**
	• Onboard voltage monitors for onboard chipset, memory, processors, standby power, and other critical components.
	• CPU 6-Phase switching voltage regulator
	• CPU/System overheat LED and control
	• CPU Thermal Trip support
	• Thermal Monitor 2 (TM2) support

	Fan Control	
	• Fan status monitoring with firmware 4-pin (Pulse Width Modulation) fan speed control	
	• Low noise fan speed control	
	LED Indicators	
	• System/CPU Overheat LED	
	• Suspend-state LED	
	System Management	
	• UID/Remote UID LED	
System Management	• PECI (Platform Environment Configuration Interface) 2.0 support	
	• System resource alert via SuperDoctor III	
	• Dual Cooling Zones	
	• Thermal Monitor 2 (TM2) support	
	• PECI (Platform-Environment Configuration Interface) support	
	• SuperDoctor III, Watch Dog, NMI	
	• Chassis Intrusion Header and Detection	
Dimensions	• 13.05" (L) x 12.29" (W) (331.47 mm x 312.17 mm)	

Note: For IPMI Configuration Instructions, please refer to the Embedded IPMI Configuration User's Guide available @http://www.supermicro.com/support/manuals/.
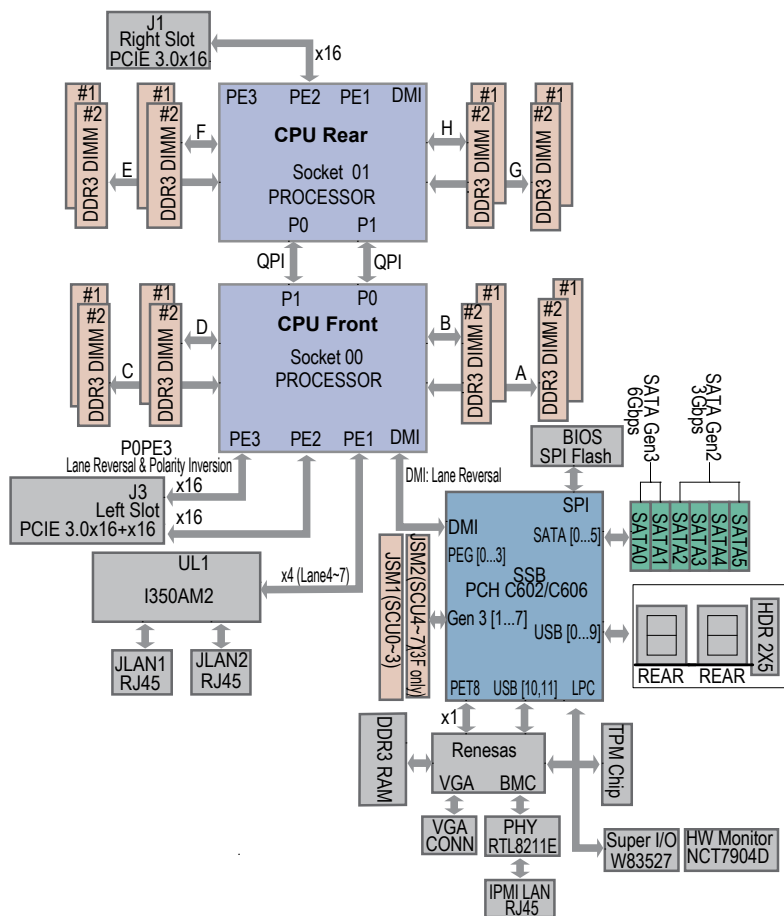
System Block Diagram

Notes: 1. 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. 2. This block diagram is intended for your reference only.

1-2   Processor and Chipset Overview

Built upon the functionality and the capabilities of the Intel E5-2600 Series Processor (Socket R) and the PCH-C606/C602 chipset, the X9DRW-3F/X9DRW-iF motherboard provides the performance and feature sets required for dual_processor-based, high-performance WIO platforms.

With support of Intel QuickPath interconnect (QPI) Technology, the X9DRW-3F/ X9DRW-iF motherboard offers point-to-point serial interconnect interface with a transfer speed of up to 8.0 GT/s, providing superb system performance.

The PCH C606/C602 chipset provides extensive IO support, including the following functions and capabilities:

- PCI-Express Rev. 2.0 support

- PCI-Express Gen. 3 uplink supported by some SKUs

- ACPI Power Management Logic Support Rev. 3.0b or Rev. 4.0

- USB host interface backplane and front access support

- Intel Rapid Storage Technology supported

- Intel Virtualization Technology for Directed I/O (Intel VT-d) supported

- Intel Trusted Execution Technology supported

- Serial Peripheral Interface (SPI) Supported

- Digital Media Interface (DMI) supported

- Advanced Host Controller Interface (AHCI) supported

1-3   Special Features

Recovery from AC Power Loss

The Basic I/O System (BIOS) provides a setting that determines 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 the power-on state. See the Advanced BIOS Setup section for this setting. The default setting is **Last State**.

1-4   PC Health Monitoring

This section describes the features of PC health monitoring of the motherboard. This motherboard has an onboard System_Hardware_Monitor chip that supports PC health monitoring. An voltage monitor will scan the voltages of onboard chips, memory modules, processors, battery, and other critical components continuously. 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

The PC health monitor chip can check the RPM status of a cooling fan. The onboard CPU and chassis fans are controlled by the BIOS Thermal Management under the Hardware Monitoring in the Advanced Setting.

Environmental Temperature Control

A 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 it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control 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 used with SuperDoctor III in the Windows OS environment or used with SuperDoctor II in Linux. SuperDoctor is used to notify

the user of certain system events. For example, you can configure SuperDoctor to provide you with warnings when system temperature, CPU temperature, voltages and fan speeds go beyond a predefined range.

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 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 Windows Vista, Windows 2008 and Windows 7 Operating Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will "wake up" and the LED will automatically stop blinking and remain on.

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.

The X9DRW-3F/X9DRW-iF motherboard accommodates 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, two 12V 8-pin power connections (JPW2/JPW3) and a 4-pin power connector are also required to ensure adequate power supply to the system. Your power supply must also supply 1.5A for the Ethernet ports.

> **Warning!** To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin, two 8-pin power and a 4-pin connectors. Be sure to connect these power supply connectors to the 24-pin (JPW1), two 8-pin power connectors (JPW2/JPW3), and a 4-pin power connector (JPW4) on the motherboard. Failure to do so will void the manufacturer warranty on your power supply and motherboard.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant. (For more information, please refer to the website 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.

1-7 Super I/O

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 an SMI or SCI function pin. It also features auto power management to reduce power consumption.

1-8 Advanced Power Management

The new advanced power management features supported by the motherboard includes the following:

Intel® Intelligent Power Node Manager (NM) (Available when the NMView utility is installed in the system)

The Intel® Intelligent Power Node Manager (IPNM) provides your system with real-time thermal control and power management for maximum energy efficiency. Although IPNM Specification Version 1.5/20 is supported by the BMC (Baseboard Management Controller), your system must also have IPNM-compatible Manageability Engine (ME) firmware installed to use this feature.

> **Note:** Support for IPNM Specification Version 1.5 or Version 2.0 depends on the power supply used in the system.

Manageability Engine (ME)

The Manageability Engine, which is an ARC controller embedded in the PCH, provides Server Platform Services (SPS) to your system. The services provided by SPS are different from those provided by the ME on client platforms.

1-9 Introduction to the IPMI Controller

This motherboard incorporates the Renesas IPMI Controller, which integrates a RISC (Reduced _Instruction_Set_Computing) CPU Core with peripheral capabilities required for a Baseboard Management Controller (BMC). The Renesas IPMI

Controller offers the user a superb solution to manage PC server systems with great efficiency.

The BMC controller supports a 32Kb_instruction cache and a 32Kb_operand cache, which can be switched between write-back and write-through. The instruction cache offers a 4-way full-associative instruction TBL (Translation Lookaside Buffer) and a 64-way full-associative shared TBL. The memory management unit, which is embedded on the chip, provides access to 4 Gb virtual address space. In addition, this controller also supports 32 Kb on-chip SRAM, allowing for faster access which is especially critical to time-sensitive, high-density/high-performance server platforms.

The BMC supports VGA Graphic Cores for remote video displaying and editing. It also provides a video data compressor for Keyboard/Video/Mouse (KVM) support if keyboard/mouse are installed in the system. With two Ethernet controllers built in, the BMC controller supports USB media hosting, an LPC bus interface, an I²C bus interface, a NAND Flash Timer Interface and serial communication interfaces. The BMC controller offers great system enhancement at a low cost.

BMC Subsystem Features

- CPU speed: 576MHz

- System Memory: 256MB

- Flash Memory: 32MB

- Network connections: Two Gigabit connections (One dedicated LAN connection and one shared LAN with an on-board LAN controller)

- Resolutions:

  - Supports   1680 x 1200 resolution at 32 bpp and 75 Hz

  - Supports 1680 x 1050 wide screen resolution at 32 bpp and 60 Hz

    Note: The term "IPMI controller" and the term "BMC controller" can be used interchangeably in this section.

Notes

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging 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 that your system chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure that 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 in-
stall 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.

Installing the LGA2011 Processor

1. There are two load levers on the LGA2011 socket. To open the socket cover,
first press and release the load lever labeled 'Open 1st'.
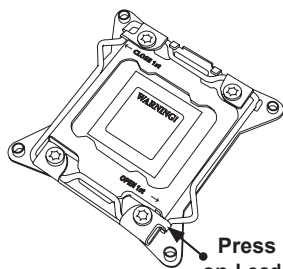
**Press down
on Load Lever
labeled 'Open 1st'.**
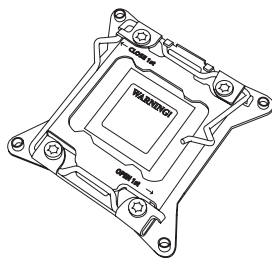
1. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.

1   **Press down on Load Lever 'Close 1st'**   **2** **Pull lever away from the socket**
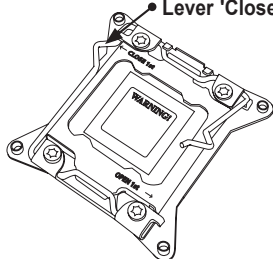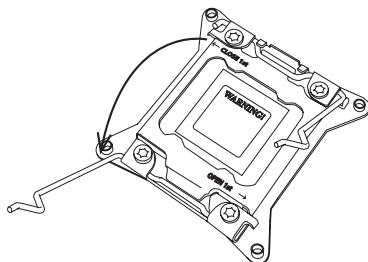
2. With the lever labled 'Close 1st' fully retracted, gently push down on the 'Open 1st' lever to open the load plate. Lift the load plate to open it completely.

Gently push down to pop the load plate open.
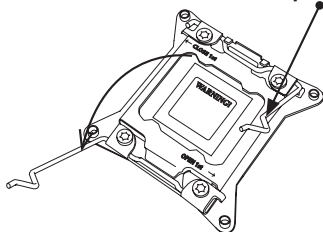
1   **2**
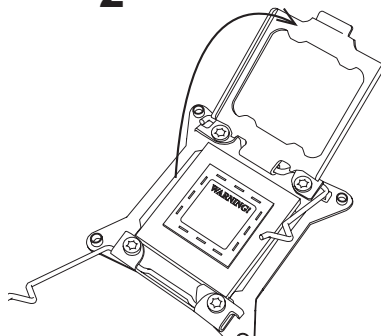
1. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.
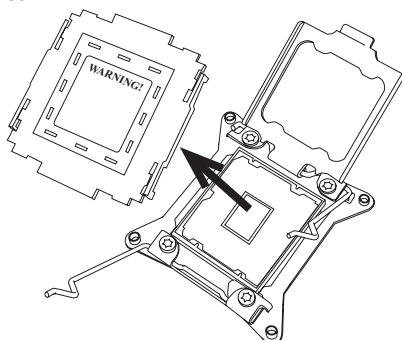
2. Use your thumb and index finger to hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

Socket Keys

CPU Keys
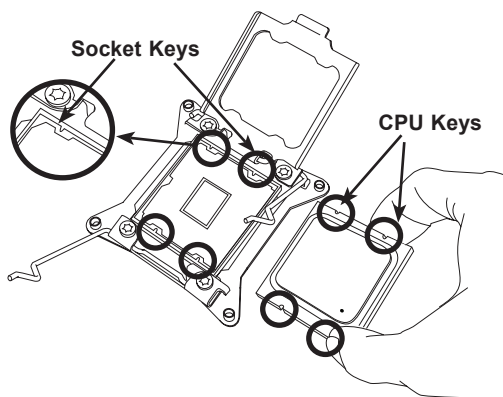
3. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)
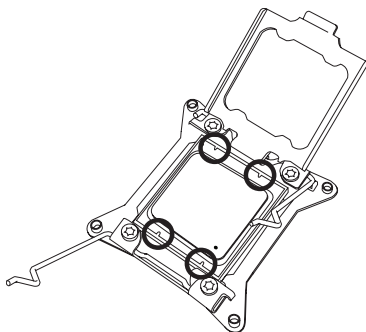
Warning: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

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

2. Close the load plate with the CPU inside the socket. Lock the lever labeled 'Close 1st' first, then lock the lever labeled 'Open 1st'. Use your thumb to gently push the load levers down to the lever locks.

1 **Gently close the load plate.**
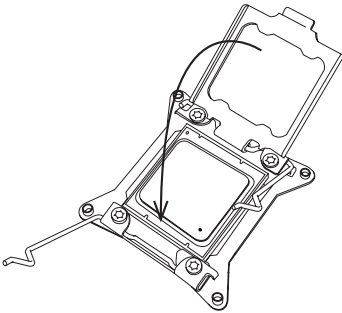
2 **Push down and lock lever labeled 'Close 1st'.**
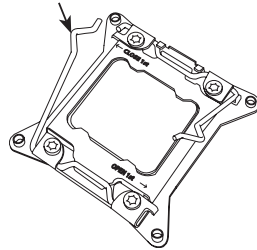
3 **Lever Lock**

Push down and lock lever labeled 'Open 1st'.

4 **Lever Lock**
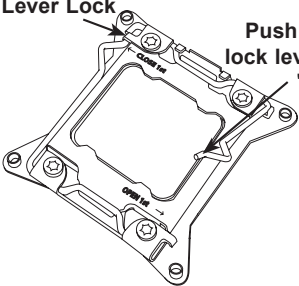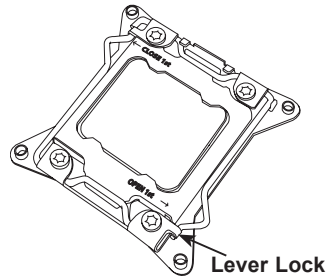
Installing a Passive CPU Heatsink

1. Apply the proper amount of thermal grease (with thickness of up to 0.13 mm) to the heatsink.

2. Place the heatsink on top of the CPU so that the two mounting holes on the heatsink are aligned with those on the retention mechanism.

3. Insert two push-pins on the sides of the heatsink through the mounting holes on the motherboard, and turn the push-pins clockwise to lock them.
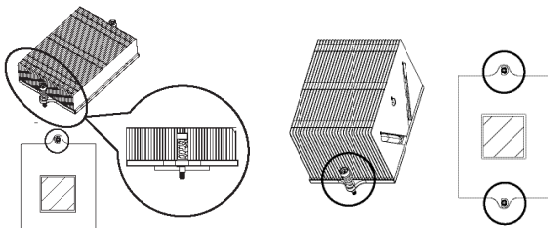
1U Heatsink (SNK-P0044P)   **2U/4U Heatsink (SNK-P0045P)**

Note: For instructions on CPU/Heatsink installation and removal, please refer to the CPU/Heatsink Instructions posted on our website at http://www.supermicro.com/support/manuals/.

Removing the Passive Heatsink

Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to uninstall the heatsink to avoid damaging the CPU or other components.

1. Unplug the power cord from the power supply.

2. Press down the push-pin on the heatsink, and turn counter-clock-wise to loosen it. Repeat the same step to loosen the second push-pin.

3. Hold the heatsink as shown in the picture below, and <u>gently</u> wriggle the heatsink to loosen it. (Do not use excessive force when wriggling the heatsink.)
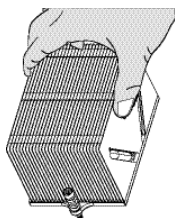
4. Once the heatsink is loosened, remove it from the motherboard.

    Note: To reinstall the CPU and/or the heatsink, clean the surface of the CPU and/or the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before reinstalling them on the motherboard.

2-3 Installing and Removing the Memory Modules

    Note: Check Supermicro's Website for recommended memory modules.

CAUTION

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

Installing & Removing DIMMs

1. Insert the desired number of DIMMs into the memory slots, starting with P1-DIMM #A1. (For best memory performance, please use the modules of the same type and speed in the same bank.)

2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
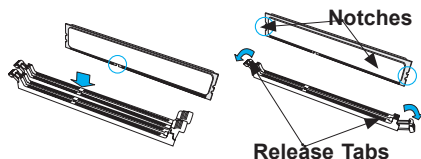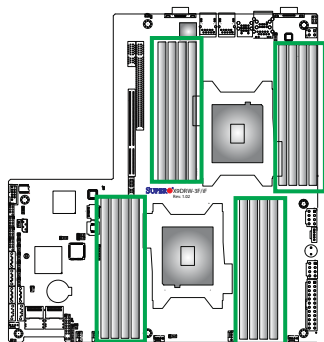
3. Align the DIMM module key with the receptive point on the memory slot.

4. Align the notches on the both ends of the module with the receptive points on ends of the slot.

5. Use two thumbs together to press the notches of the module straight down into the slot until the module snaps into place.

6. Press the release tabs to the locked positions to secure the DIMM module into the slot.

> Press both notches straight down into the memory slot at the same time.
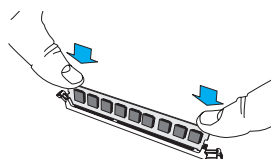
✎ **Notes:**

1. For proper memory installation, be sure to install a DIMM module into the P2-DIMMG1 slot before inserting a 4-pin power connector into JPW4 as shown in the graphics below.
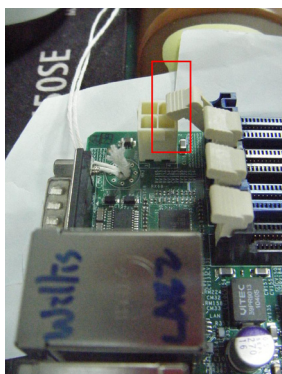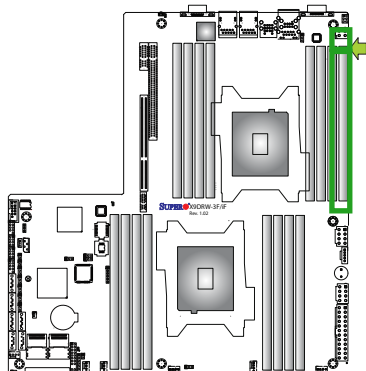
2. To provide clearance for proper memory installation, please lock the release tab at the end of P1-DIMMA1, marked "A", into the locking position before inserting a DIMM module into the P2-DIMMH2 slot. Also, lock the tab, marked "B", before installing a DIMM module into P1-DIMMA1.
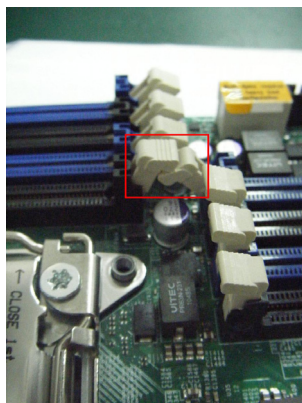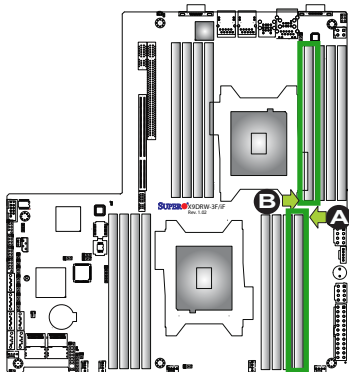
Removing Memory Modules

Press both notches on the ends of the DIMM module to unlock it. Once it is loosened, remove it from the memory slot.

Memory Support for the X9DRW-3F/X9DRW-iF Motherboard

TheX9DRW-3F/X9DRW-iF Motherboard supports up to 512 GB Registered/Unbuffered ECC DDR3 memory with speeds of 800/1066/1333/1600 MHz in 16 DIMM slots via a memory buffer. It also supports 512 GB (max.) of LRDIMM (Reduced Load) DDR3 800/1066/1333/ MHz memory modules. For the latest memory updates, please refer to our Website a at http://www.supermicro.com/products/motherboard.

Processor & Memory Module Population Configuration

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

Processors and their Corresponding Memory Modules								
CPU#	Corresponding DIMM Modules							
CPU 1	P1-DIMMA1	P1-DIMMA2	P1-DIMMB1	P1-DIMMB2	P1-DIMMC1	P1-DIMMC2	P1-DIMMD1	P1-DIMMD2
CPU2	P2-DIMME1	P2-DIMME2	P2-DIMMF1	P2-DIMMF2	P2-DIMMG1	P2-DIMMG2	P2-DIMMH1	P2-DIMMH2

Processor and Memory Module Population	
Number of CPUs+DIMMs	CPU and Memory Population Configuration Table (*For memory to work proper, please install DIMMs in pairs)
1 CPU & 2 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1
1 CPU & 4 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1
1 CPU & 5~8 DIMMs	CPU1 P1-DIMMA1/P1-DIMMB1, P1-DIMMC1/P1-DIMMD1, P1-DIMMA2/P1-DIMMB2, P1-DIMMC2/P1-DIMMD2
2 CPUs & 4 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1
2 CPUs & 6 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1, P1-DIMMC1/P1-DIMMD1
2 CPUs & 8 DIMMs	CPU1 + CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1, P1-DIMMC1/P1-DIMMD1, P2-DIMMG1/P2-DIMMH1
2 CPUs & 9~12 DIMMs	CPU1/CPU2 P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1, P1-DIMMC1/P1-DIMMD1, P2-DIMMG1/P2-DIMMH1, P1-DIMMA2/P1-DIMMB2, P2-DIMME2/P2-DIMMF2
2 CPUs & 13 DIMMs~16 DIMMs	CPU1/CPU P1-DIMMA1/P1-DIMMB1, P2-DIMME1/P2-DIMMF1, P1-DIMMC1/P1-DIMMD1, P2-DIMMG1/P2-DIMMH1, P1-DIMMA2/P1-DIMMB2, P2-DIMME2/P2-DIMMF2, P1-DIMMC2/P1-DIMMD2, P2-DIMMG2/P2-DIMMH2

UDIMM Support on the Intel E5-2600 Series Processor Platform			
DIMMs Populated per DDR Channel	UDIMM Type (Unb. DIMM)	POR Speeds (in MHz)	Ranks per DIMM (Any Combination)
1	ECC/Non-ECC DDR3	1066, 1333	SR, DR
2	ECC/Non-ECC DDR3	1066, 1333	SR, DR

RDIMM Support on the Intel E5-2600 Series Processor Platform			
DIMMs Populated per DDR Channel	**RDIMM Type (Reg. DIMM)**	**POR Speeds (in MHz)**	**Ranks per DIMM (Any Combination)**
1	Reg. ECC DDR3	1066, 1333, 1600	SR, DR
2	Reg. ECC DDR3	1066, 1333,1600	SR, DR
1	Reg. ECC DDR3	1066	QR
2	Reg. ECC DDR3	800	QR

LRDIMM Support on the Intel E5-2600 Series Processor Platform			
DIMMs Populated per DDR Channel	**LRDIMM Type (Load Reduced DIMM)**	**POR Speeds (in MHz)**	**Ranks per DIMM (Any Combination)**
1	LR ECC DDR3	1066, 1333	QR
2	LR ECC DDR3	1066, 1333	QR

✏️ *Other Notes and Restrictions*

- For the memory modules to work properly, please install DIMM modules in pairs (with even number of DIMMs installed).

- All channels in a system will run at the fastest common frequency.

- Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. See the following table for details.

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

2-4   Motherboard Installation

All motherboards have standard mounting holes to fit different types of 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.

Tools Needed

- Phillips Screwdriver

- Pan head screws (7 pieces)

- Standoffs (7 pieces, if needed)
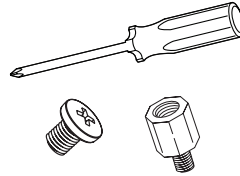
Location of Mounting Holes

There are seven (7) mounting holes on this motherboard indicated by the arrows.
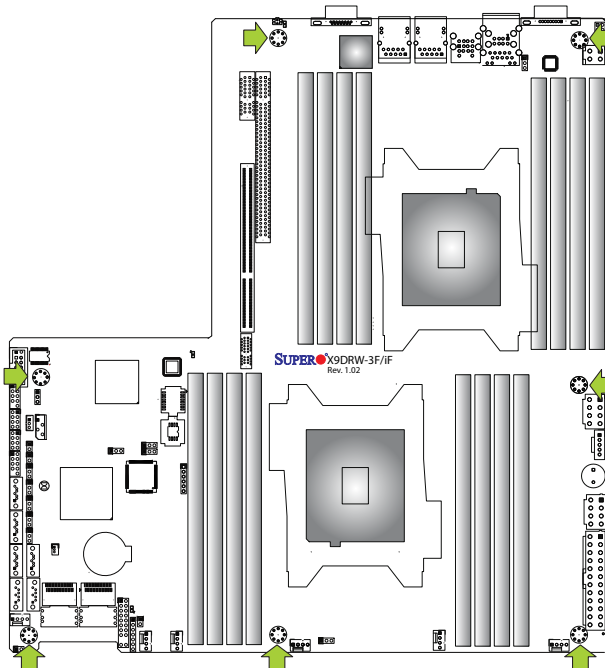
⚠ **Caution:** 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging components when installing the motherboard to the chassis.

Installing the Motherboard

1. Install the I/O shield into the chassis.
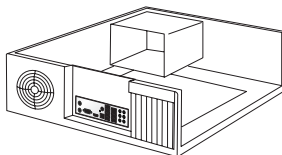
2. Locate the mounting holes on the motherboard.

3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard with the mounting holes on the chassis.

4. Install standoffs in the chassis as needed.
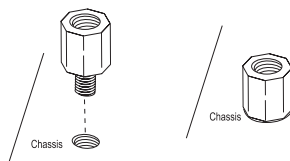
5. Install the motherboard into the chassis carefully to avoid damaging mother-board components.

6. Using the Phillips screwdriver, insert a Pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.
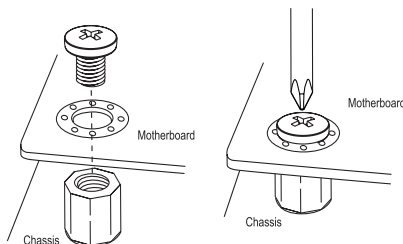
7. Repeat Step 5 to insert #6 screws into all mounting holes.

8. Make sure that the motherboard is securely placed in the chassis.

Note: Images displayed are for illustration only. Your chassis or compo-nents might look different from those shown in this manual.

2-5 Control Panel Connectors and I/O Ports

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

Back Panel Connectors and I/O Ports
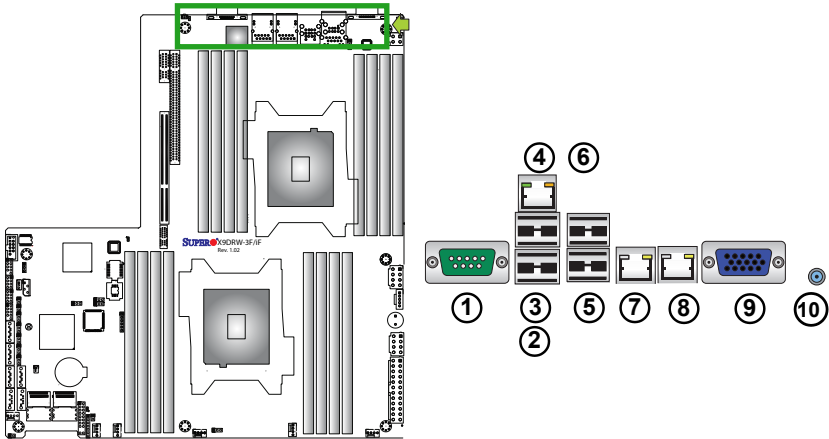
Back Panel I/O Port Locations and Definitions

1. COM Port 1 (Turquoise)
2. Back Panel USB Port 0
3. Back Panel USB Port 1
4. IPMI_LAN
5. Back Panel USB Port 2
6. Back Panel USB Port 3
7. Gigabit LAN 1
8. Gigabit LAN 2
9. VGA (Blue)
10. UID Switch

Universal Serial Bus (USB)

Four Universal Serial Bus ports (USB 0/1, 2/3) are located on the I/O back panel. In addition, one USB header, located next to COM2 port, provides two front-accessible USB connections (USB 4/5). (Cables are not included). See the tables on the right for pin definitions.

Backplane USB (USB 0/1, 2/3) Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground
5	NA

FP USB (4/5) Pin Definitions			
USB 4 Pin #	Definition	USB 5 Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	NC	5	Key
(NC= No connection)			

1. Backpanel USB 0
2. Backpanel USB 1
3. Backpanel USB 2
4. Backpanel USB 3
5. Front Accessible USB 4/5
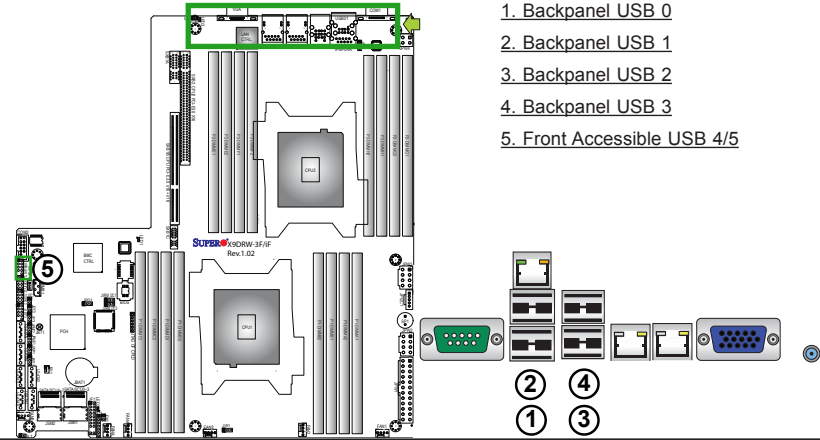
Serial Ports

Two COM connections (COM1 & COM2) are located on the mother-board. COM1 is located on the Back-plane I/O panel. COM2, located next to Front Accessible USB 4/5, is used to provide front access serial support. See the table on the right for pin definitions.

Serial COM) Ports Pin Definitions			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	N/A
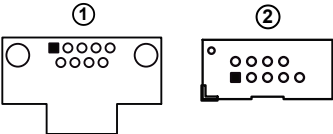
Video Connection

One video (VGA) port (VGA1) is lo-cated next to LAN Port 2 on the I/O backplane. Refer to the board layout below for the location.

1. COM1
2. COM2
3. VGA1
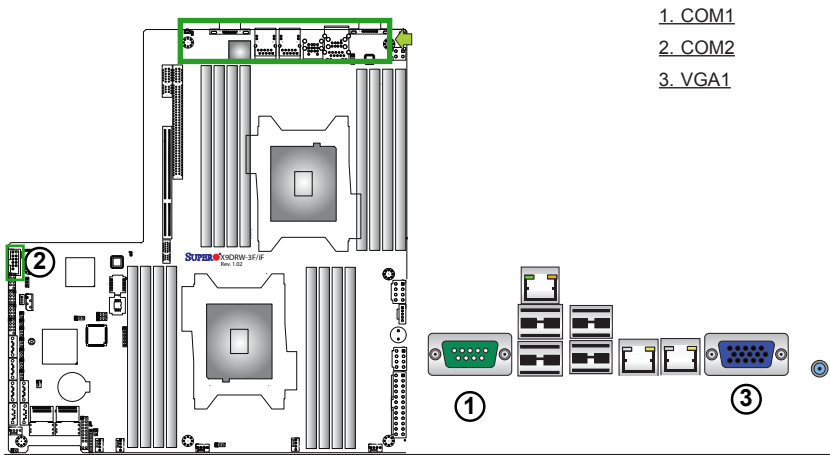
Ethernet Ports

Two Gigabit Ethernet ports (LAN1/2) are located on the I/O backplane on the motherboard to provide internet connections. In addition, an IPMI_ Dedicated LAN, located above USB 0/1 ports on the backplane, provides KVM support for IPMI 2.0. All these ports accept RJ45 type cables.

> ✎ **Note**: Please refer to the LED Indicator Section for LAN LED information.

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

(NC: No Connection)
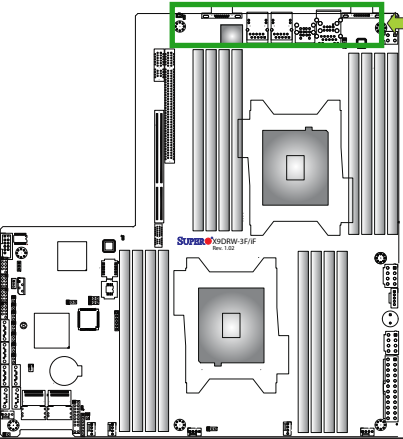
1. GLAN1
2. GLAN2
3. IPMI_LAN
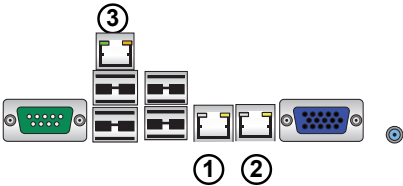
Unit Identifier Switch

A Unit Identifier (UID) Switch and two LED Indicators are located on the motherboard. The UID Switch is located next to the VGA port. The Rear UID LED (LED3) is located next to the UID Switch. The Front Panel UID LED is located at Pins 7/8 of the Front Control Panel at JF1. Connect a cable to Pin 8 on JF1 for Front Panel UID LED indication. When you press the UID switch, both Rear UID LED and Front Panel UID LED Indicators will be turned on. Press the UID switch again to turn off both LED Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

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

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

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

```
             20   19
Ground      ○    ○    NMI
X           ○    ○    X
FP PWRLED   ○    ○    3.3 V
HDD LED     ○    ○    ID_UID_SW/3/3V Stby
NIC1 Link LED ○  ○    NIC1 Activity LED
NIC2 Link LED ○  ○    NIC2 Activity LED
Blue+ (OH/Fan Fail/
PWR FaiL/UID LED) ○ ○  Red+ (Blue LED Cathode)
Power Fail LED ○  ○    3.3V
Ground      ○    ○    Reset   Reset Button
Ground      ○    ○    PWR     Power Button
             2     1
```
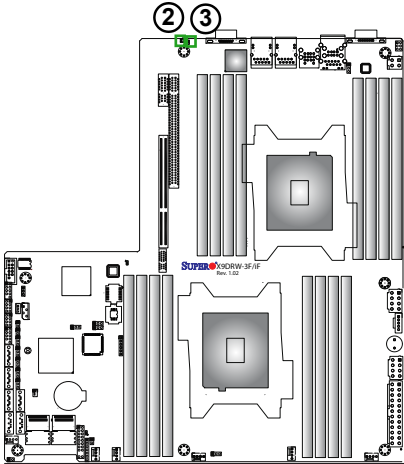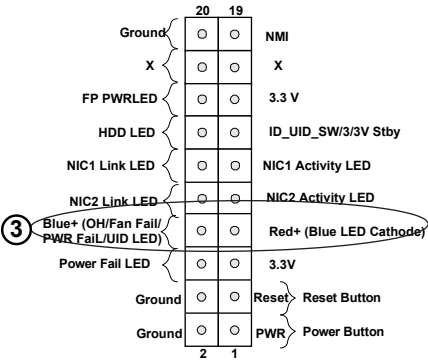

1. UID Switch
2. Rear UID LED (LED3)
3. Front UID LED

Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro's server chassis. See the figure below for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

JF1 Header Pins

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	3.3 V
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link LED	○	○	NIC1 Activity LED
NIC2 Link LED	○	○	NIC2 Activity LED
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	3.3V
Ground	○	○	Reset / Reset Button
Ground	○	○	PWR / Power Button
	2	1	
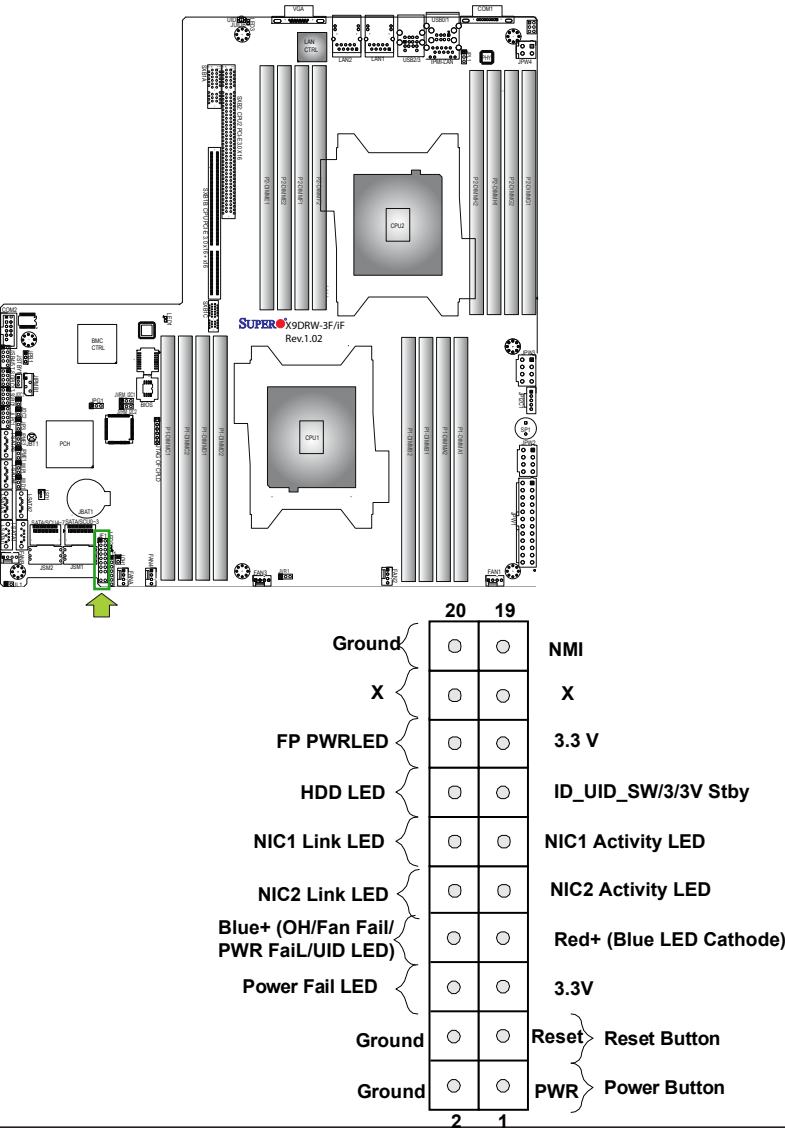
Front Control Panel Pin Definitions

NMI Button

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

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

Power LED

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

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

A. NMI

B. PWR LED

	20	19	
Ground	○	○	NMI Ⓐ
X	○	○	X
Ⓑ FP PWRLED	○	○	3.3 V
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link LED	○	○	NIC1 Activity LED
NIC2 Link LED	○	○	NIC2 Activity LED
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	3.3V
Ground	○	○	Reset Reset Button
Ground	○	○	PWR Power Button
	2	1	

2-19
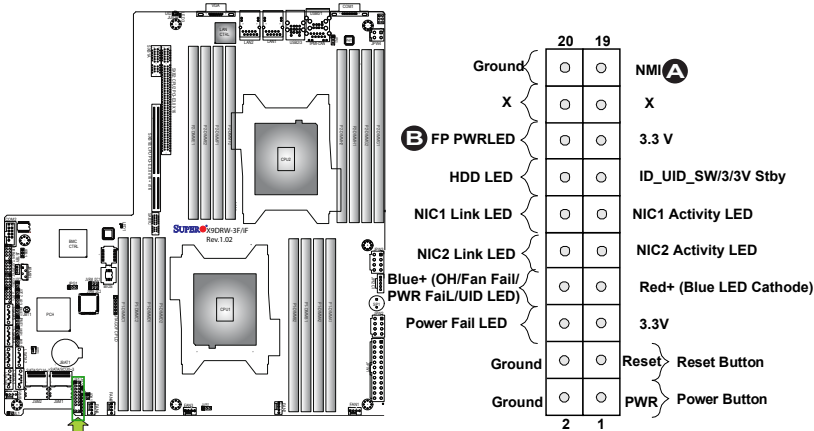
HDD LED

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

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	3.3V Standby
14	HD Active

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connections for GLAN port 1 are located on pins 11 and 12 of JF1, and the LED connection for GLAN Port 2 are on Pins 9 and 10. Attach the NIC LED cables here to display network activity. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9	NIC 2 Activity LED
10	NIC 2 Link LED
11	NIC 1 Activity LED
12	NIC 1 Link LED

A. HDD LED
B. NIC1 Link LED
C. NIC1 Activity LED
D. NIC2 Link LED
E. NIC2 Activity LED

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	3.3 V
A HDD LED	○	○	ID_UID_SW/3/3V Stby
B NIC1 Link LED	○	○	NIC1 Activity LED **C**
D NIC2 Link LED	○	○	NIC2 Activity LED **E**
Blue+ (OH/Fan Fail/ PWR Fail/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	3.3V
Ground	○	○	Reset — Reset Button
Ground	○	○	PWR — Power Button
	2	1	
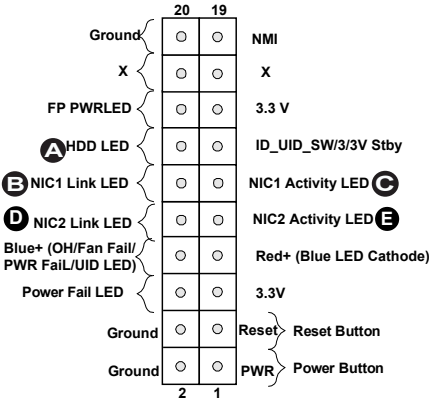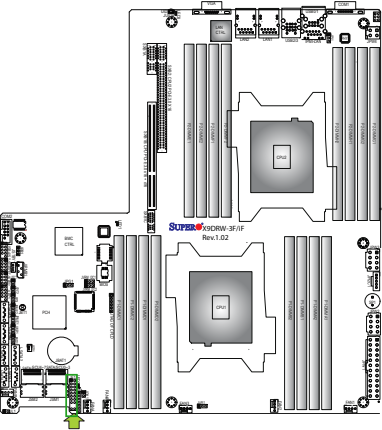
Overheat (OH)/Fan Fail/PWR Fail/ UID LED

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

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

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

Power Fail LED

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

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

A. OH/Fail/PWR Fail LED (Red)/UID (Blue)

B. Blue LED Cathode

C. PWR Supply Fail
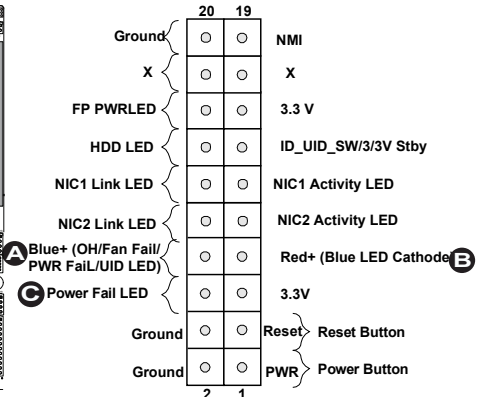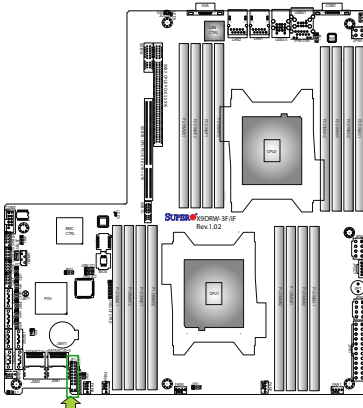
Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

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

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be con-figured to function as a suspend button (with a setting in the BIOS - See Chapter 5). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer. Refer to the table on the right for pin definitions.

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

A. Reset Button
B. PWR Button

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	3.3 V
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link LED	○	○	NIC1 Activity LED
NIC2 Link LED	○	○	NIC2 Activity LED
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	3.3V
Ground	○	○	Reset — Reset Button Ⓐ
Ground	○	○	PWR — Power Button Ⓑ
	2	1	
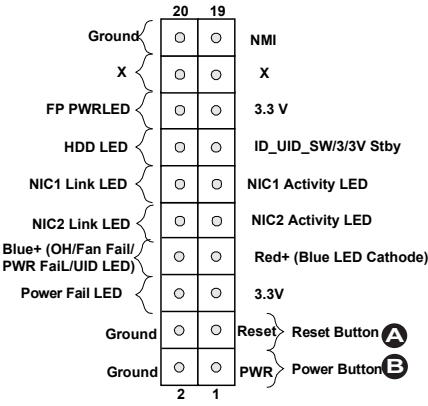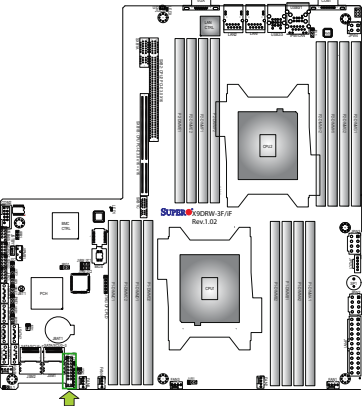
2-6   Connecting Cables

Power Connectors

A 24-pin main power supply connector(JPW1), two 8-pin CPU power connectors (JPW2/JPW3) and a 4-pin power connector are located on the motherboard. These power connectors meet the SSI EPS 12V specification. These power connectors must also be connected to your power supply. See the table on the right for pin definitions.

Warning: To provide adequate power supply to the motherboard, be sure to connect the 24-pin ATX PWR (JPW1), *two* 8-pin PWR connectors (JPW2/JPW3) and the 4-pin PWR connector to the power supply. Failure to do so will void the manufacturer warranty on your power supply and motherboard.

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

12V 8-pin PWR Connector Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

(Required)
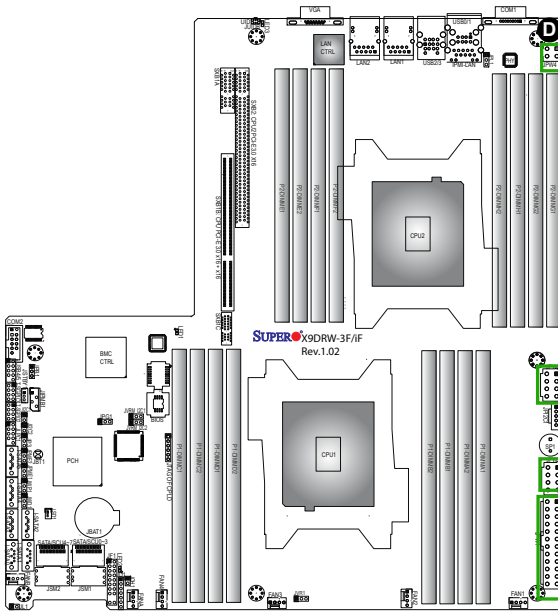
A. JPW1: 24-pin ATX PWR (Req'd)
B. JPW2: 8-pin Processor PWR (Req'd)
C. JPW3: 8-pin Processor PWR, or
D. JPW4: 4-pin PWR (required)

Fan Headers

This motherboard has six system/CPU fan headers (Fan 1~Fan 4, Fan A, Fan B) on the motherboard. All these 4-pin fans headers are backward compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in the BIOS. (See Chapter 5 for more details.) See the table on the right for pin definitions.

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

Chassis Intrusion

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

Chassis Intrusion Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground
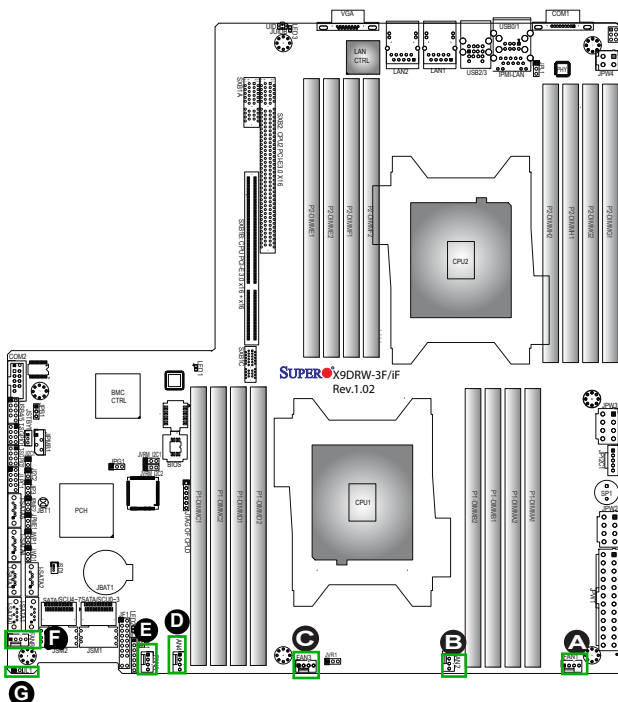
A. Fan 1
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan A
F. Fan B
G. Chassis Intrusion

Internal Speaker

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

Internal Buzzer (SP1) Pin Definition		
Pin#		Definitions
Pin 1	Pos. (+)	Beep In
Pin 2	Neg. (-)	Alarm Speaker
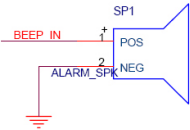
Overheat/Fan Fail LED

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

OH/Fan Fail LED Status	
State	Message
Solid	Overheat
Blinking	Fan Fail
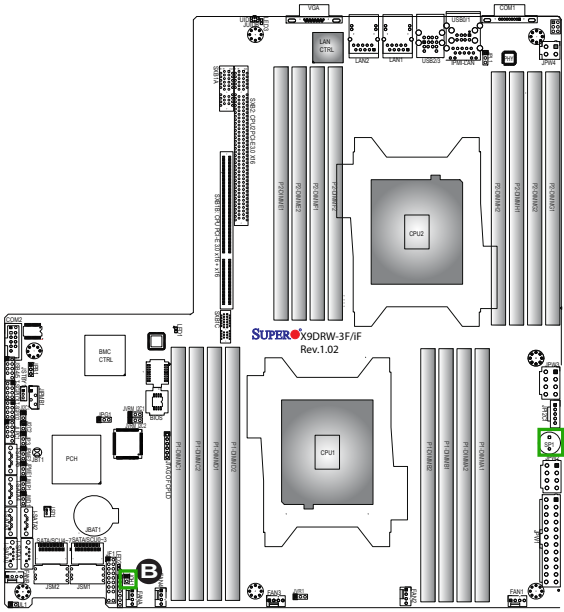
A. Internal Speaker (Buzzer)

B. OH LED

Port 80 Header

A Port 80 header, located at JLPC1, provides Port 80 support. Port 80 is an "Ask and Respond" port between a client machine and a host server. Port 80 allows the HTML (Hyper Text Markup Language) codes to be translated into web page displays so that you will see the web pages instead of the HTML codes when you browse the internet. See the table on the right for pin definitions.

Port 80 Header Pin Definitions	
Pin #	Definition
1	+3.3V
2	LFRAME#
3	LCLK
4	LAD 3
5	LRESET#
6	LAD2
7	Ground
8	LAD0

Standby Power Connector

The Standby Power connection header is located at JSTBY1 on the motherboard. See the table on the right for pin definitions. (You must also have a cable to use this feature.)

Standby Power Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up
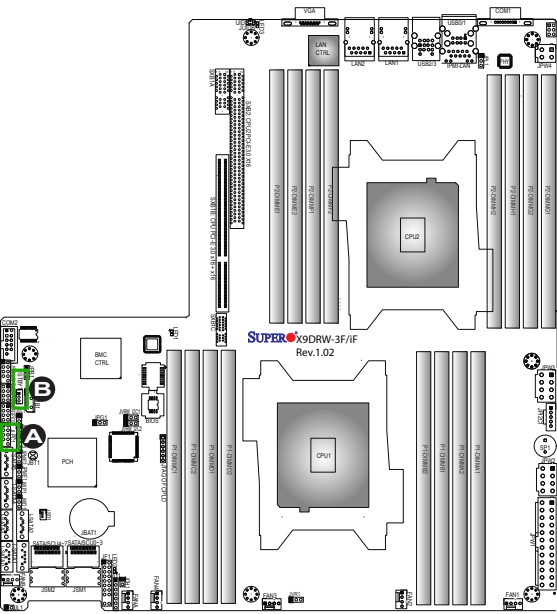
A. Port 80 Header
B. Standby PWR Connector

Power SMB (I²C) Connector

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

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

IPMB

A System Management Bus header for IPMI 2.0 is located at JIPMB1. Connect the appropriate cable here to use the IPMB I²C connection on your system.

IPMB Header Pin Definitions	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection
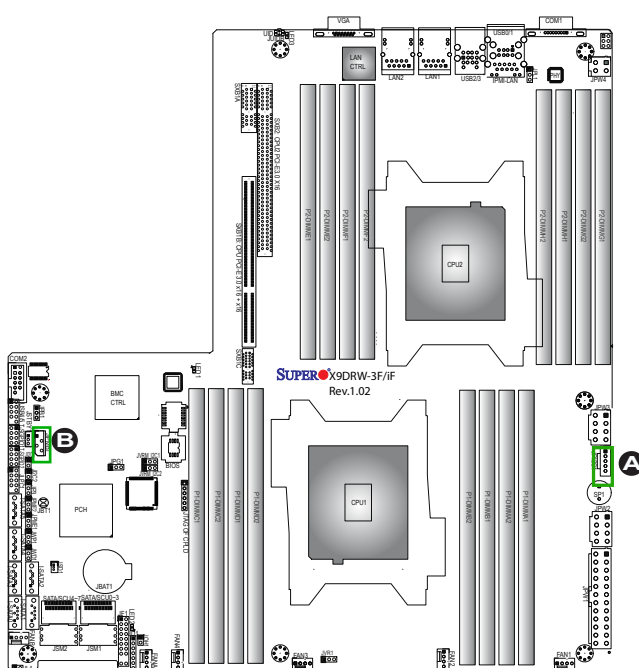
A. JPI²C1
B. IPMB

T-SGPIO 1/2 Headers

Two SGPIO (Serial-Link General Purpose Input/Output) headers are located on the motherboard. These headers support Serial_Link interface for onboard SATA connections. See the table on the right for pin definitions.

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

Note: NC= No Connection

DOM Power Connector

A power connector for SATA DOM (Disk_On_Module) devices is located at JSD1. Connect an appropriate cable here to provide power support for your DOM devices.

DOM PWR Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground
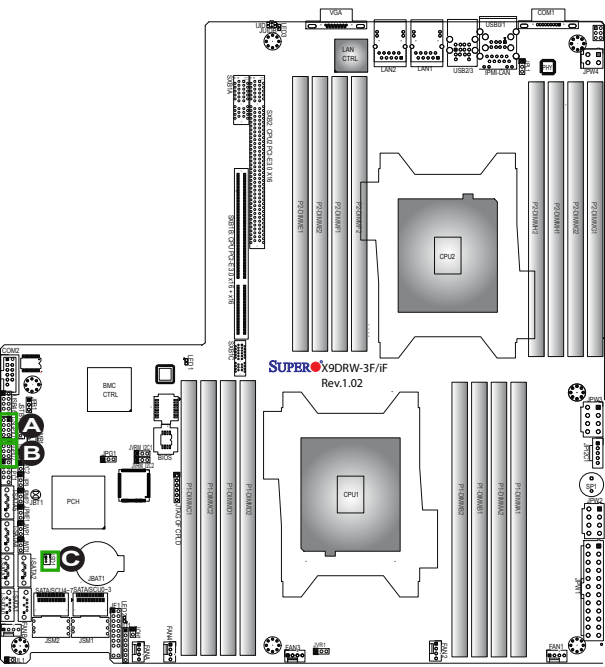
A. T-SGPIO1
B. T-SGPIO2
C. SATA DOM PWR

Power LED/Speaker

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

PWR LED Connector Pin Definitions	
Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

Speaker Connector Pin Settings	
Pin Setting	Definition
Pins 4-7	External Speaker
Pins 6-7	Internal Speaker
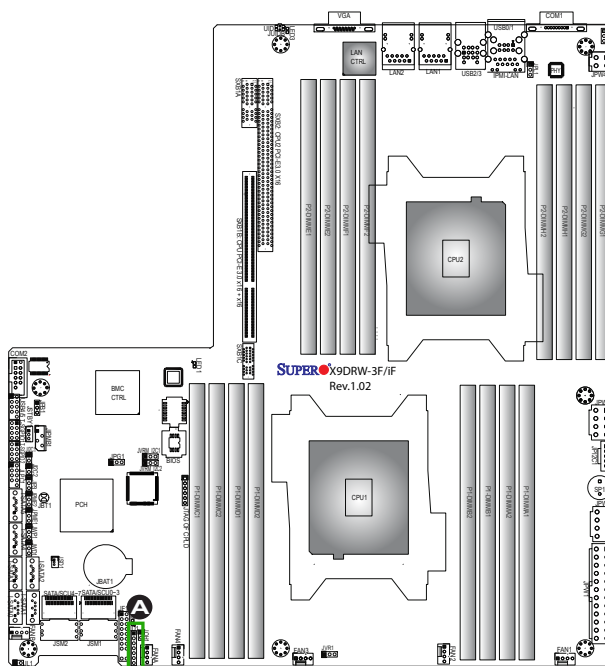
A. PWR LED/Speaker

2-7   Jumper Settings

Explanation of Jumpers

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

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

Connector Pins

Jumper Cap

Setting

3   2   1

3   2   1

Pin 1-2 short
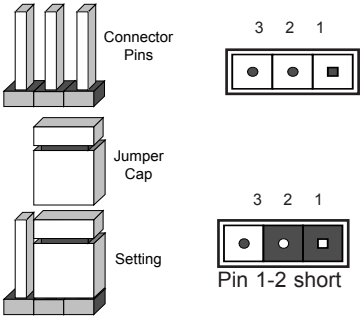
GLAN Enable/Disable

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

LAN1/2 Enable Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (default)
2-3	Disabled

A. GLAN1/2 Enable
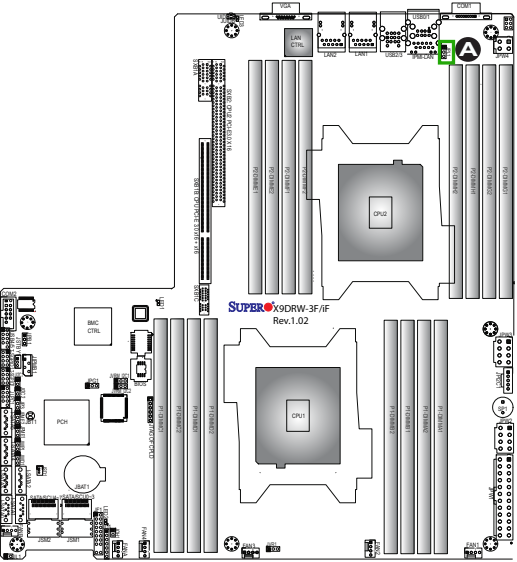
CMOS Clear

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

> **Note 1.** For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.
>
> **Note 2.** Be sure to remove the onboard CMOS Battery before you short JBT1 to clear CMOS.
>
> **Note 3.** Clearing CMOS will also clear all passwords.

Watch Dog Enable/Disable

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
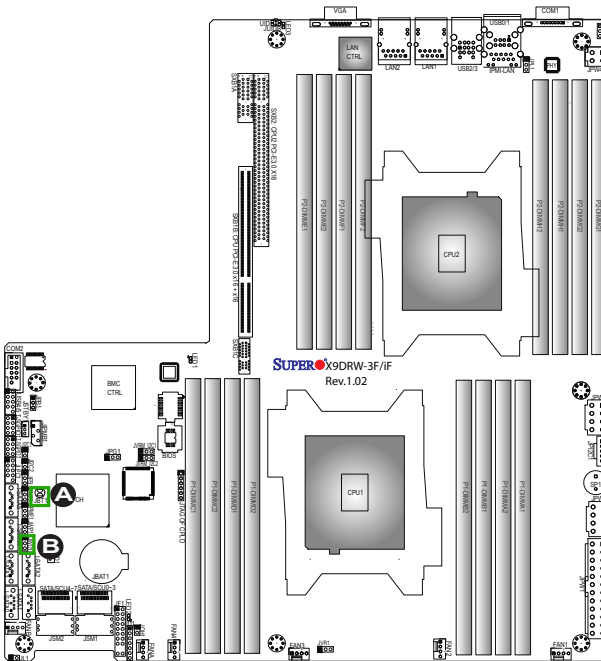
A. Clear CMOS
B. Watch Dog Enable

VGA Enable

Jumper JPG1 allows the user to enable the onboard VGA connector. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

VGA Enable Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (Default)
2-3	Disabled

BMC Enable

Jumper JPB1 allows you to enable the embedded the Renesas BMC (Base-board Management) Controller to provide IPMI 2.0/KVM support on the motherboard. See the table on the right for jumper settings.

BMC Enable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	BMC Enable
Pins 2-3	Normal (Default)
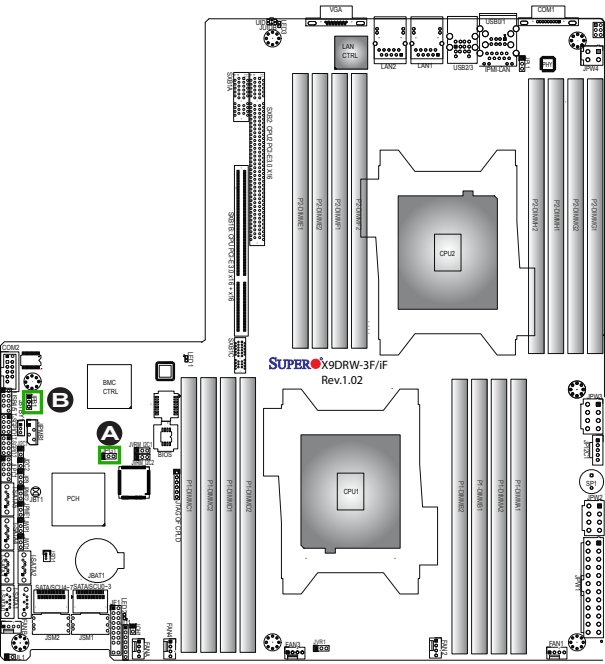
A. VGA Enabled
B. BMC Enabled

I²C Bus to PCI-Exp. Slots

Jumpers JI²C1 and JI²C2 allow you to connect the System Management Bus (I²C) to PCI-Express slots. The default setting is Open to disable the connection. See the table on the right for jumper settings.

I²C to PCI-Exp Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (Default)
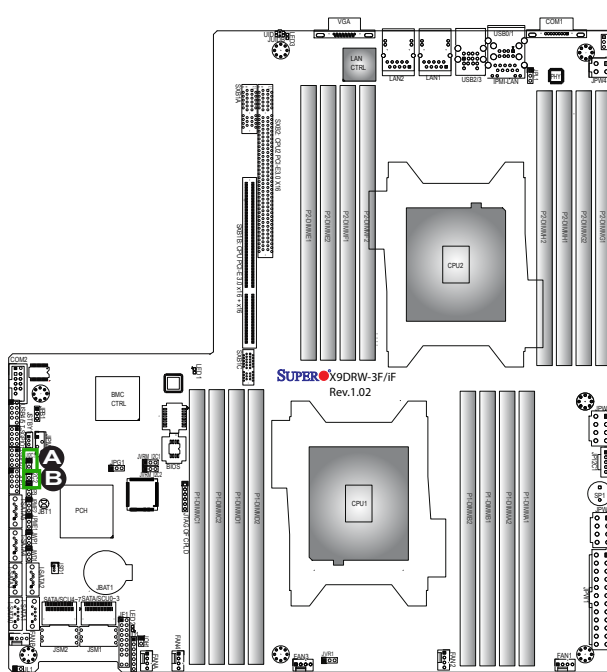
A. JI²C1
B. JI²C2

2-8   Onboard LED Indicators

GLAN LEDs

The LAN 1/2 ports are located on the IO Backplane. Each Ethernet LAN port has two LEDs. The Yellow LED on the right indicates activity. The Link LED on the left may be green, amber or off to indicate the speed. See the tables at right for more information.

Link LED   Activity LED

Rear View (when facing the rear side of the chassis)

GLAN Activity Indicator (Right) LED Settings		
Color	Status	Definition
Yellow	Flashing	Active

GLAN Link Indicator (Left) LED Settings	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

IPMI_Dedicated_LAN LEDs

In addition to the Gigabit Ethernet ports, an IPMI Dedicated LAN is also located above the Backplane USB ports 0/1 on the motherboard. The amber 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.

IPMI LAN

Link LED   Activity LED
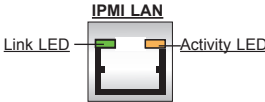
IPMI LAN Link LED (Left) & Activity LED (Right)		
	Color/State	Definition
Link (Left)	Green: Solid Amber: Solid	100 Mbps 1 Gbps
Activity (Right)	Amber: Blinking	Active
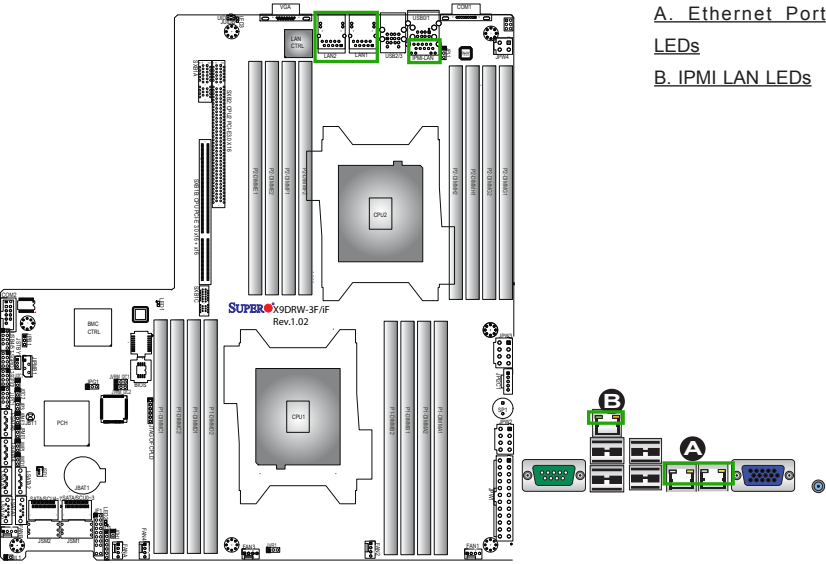
A. Ethernet Port LEDs
B. IPMI LAN LEDs

Onboard Power LED

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

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

Rear UID LED

The rear UID LED is located at LED3 on the rear of the motherboard. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service. Refer to UID Switch on Page 2-17 for more information.

UID LED Status	
Color/State	Status
Blue: On	Unit Identified
Blue: On	Unit Identified
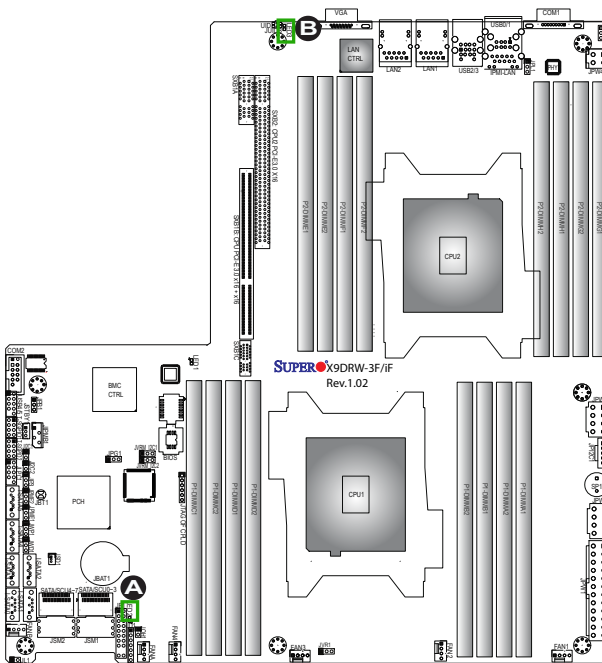
A. PWR LED
B. Rear UID LED

BMC Heartbeat LED

A BMC Heartbeat LED is located at LED1 on the motherboard. When LED1 is blinking, BMC functions normally. See the table at right for more information.

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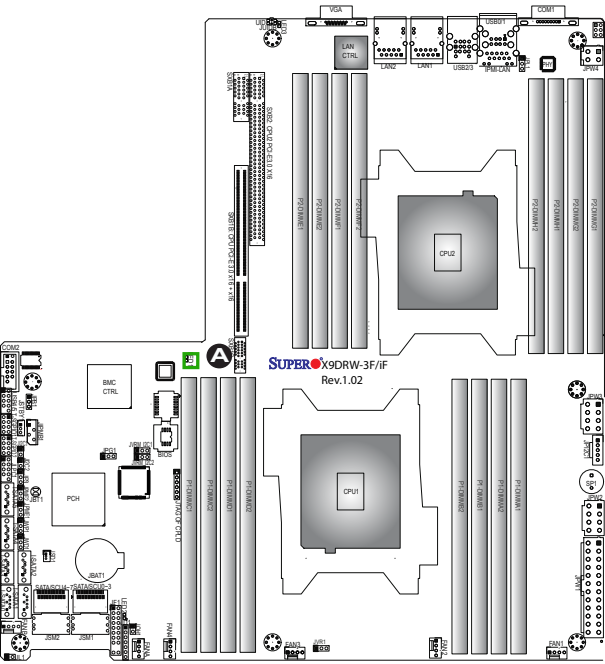
A. BMC Heartbeat LED

2-9   SATA/SCU Connections

SATA/SC8U Ports

There are six Serial ATA ports (I-SATA0~I-SATA 5) located on the motherboard, including four SATA2 ports and two SATA3 ports. There are also eight SCU ports (0~3, 4~7) located on the X9DRW-3F, and four SCU ports (SCU 0~3) located on the X9DRW-iF. These ports provide serial-link signal connections, which are faster than the connections of Parallel ATA. See the table on the right for pin definitions.

SATA/SCU Pin Definitions	
Pin#	Definition
1	Ground
2	TX_P
3	TX_N
4	Ground
5	RX_N
6	RX_P
7	Ground

> **Note:** For more information on SATA HostRAID configuration, please refer to the Intel SATA HostRAID User's Guide posted on our Website @ http://www.supermicro.com.
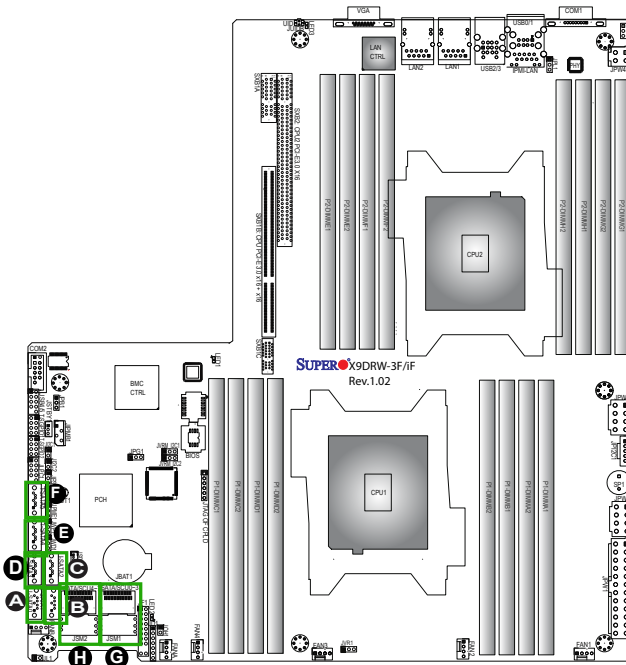
A. I-SATA0
B. I-SATA1
C. I-SATA2
D. I-SATA3
E. I-SATA4
F. I-SATA5
G. SCU 0~3 (for X9DRW-3F/iF)
H. SCU 4~7 (for X9DRW-3F)

Notes

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

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

Before Power On

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

2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse, if any.

3. Remove all add-on cards.

4. Install CPU 1 first (making sure it is fully seated) and connect the front panel connectors to the motherboard.

No Power

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

2. Make sure that the ATX power connectors are properly connected

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

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

5. 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.

No Video

1. If the power is on, but you have no video, remove all the add-on cards and cables.

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

System Boot Failure

If the system does not display POST or does not respond after the power is turned on, check the following:

1. Check for any error beep from the motherboard speaker.

- If there is no error beep, try to turn on the system without DIMM modules in-stalled. If there is still no error beep, try to turn on the system again with only one processor installed in CPU Socket#1. If there is still no error beep, replace the motherboard.

- If there are error beeps, clear the CMOS settings by unplugging the power cord and contracting both pads on the CMOS Clear Jumper (JBT1). (Refer to Section 2-7 in Chapter 2.)

2. Remove all components from the motherboard, especially the DIMM mod-ules. Make sure that the system's power is on, and memory error beeps are activated.

3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this Chapter.

Losing 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.

Memory Errors

When a No-Memory Beep Code is issued by the system, check the following:

1. Make sure that the memory modules are compatible with the system and that the DIMM modules are properly and fully installed. (For memory compatibility, refer to the Memory Compatibility Chart posted on our Website @ http://www.supermicro.com.)

2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM speed for all DIMMs in the system.

3. Make sure that you are using the correct type of DDR3 Registered ECC DDR3 UDIMM/RDIMM/LRDIMM modules recommended by the manufacturer.

4. Check for bad DIMM modules or slots by swapping a single module among all memory slots and check the results.

5. Make sure that all memory modules are fully seated in their slots. Follow the instructions given in Section 2-3 in Chapter 2.

6. Please follow the instructions given in the DIMM Population Tables listed in Section 2-3 to install your memory modules.

When the System Becomes Unstable

A. When the system becomes unstable during or after OS installation, check the following:

1. CPU/BIOS support: Make sure that your CPU is supported, and you have the latest BIOS installed in your system.

2. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.

    🖉 **Note**: Refer to the product page on our website http:\\www.supermicro.com for memory and CPU support and updates.

3. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.

4. System cooling: Check system cooling to make sure that all heatsink fans, and CPU/system fans, etc. work properly. Check Hardware Monitoring settings in the BIOS to make sure that the CPU and System temperatures are

within the normal range. Also check the front panel Overheat LED, and make sure that the Overheat LED is not on.

5. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Please refer to our website for more information on minimum power requirement.

6. Proper software support: Make sure that the correct drivers are used.

B. When the system becomes unstable before or during OS installation, check the following:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD disc, CD/DVD-ROM.

2. Cable connection: Check to make sure that all cables are connected and working properly.

3. Using minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use minimum configuration (with a CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above for proper troubleshooting procedures.

4. Identifying bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.

5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.

6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

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/) before contacting Technical Support.

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

3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:

• 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

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

• 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.

3-3   Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

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

2. Locate the onboard battery as shown below.

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

4. Remove the battery.
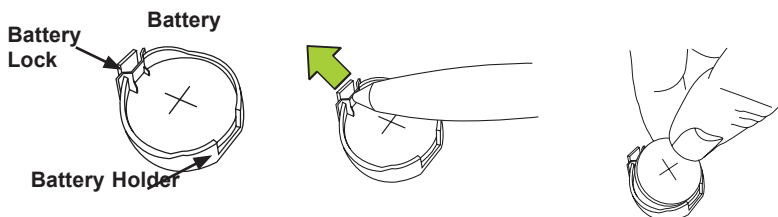
Proper Battery Disposal

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

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 Holder

This side up

1
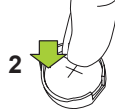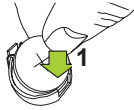
2   **Press down until you hear a click.**

3-3   Frequently Asked Questions

Question: What are the various types of memory that my motherboard can support?

Answer: The motherboard supports Registered ECC DDR3 DIMM modules. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2-3 in Chapter 2.

Question: How do I update my BIOS?

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. 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 file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable USB device. Run the batch file using the format AMI.bat filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically 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 used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, please refer to the AMI BIOS Recovery Instructions posted at http://www.supermicro.com.

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 the Windows OS, security and audio drivers.

Question: How do I handle the used battery?

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

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. When returning the motherboard to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete. For faster service, You can also request a RMA authorization online (http://www.supermicro.com).

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

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

Chapter 4

BIOS

4-1   Introduction

This chapter describes the AMI BIOS Setup utility for the X9DRW-3F/X9DRW-iF. It also provides the instructions on how to navigate the AMI BIOS Setup utility screens. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated.

Starting BIOS Setup Utility

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

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

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

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

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

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

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

> **Note 3**: For AMI UEFI BIOS Recovery, please refer to the UEFI BIOS Recovery User Guide posted @http://www.supermicro.com/support/manuals/.

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

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.

The AMI BIOS main menu displays the following information:

```
         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 elements.
 System Date                    [Fri 01/28/2011]
 System Time                    [19:31:43]

 Supermicro X9DRW
 Version                        1.00
 Build Date                     01/09/2012

 Memory Information
 Total Memory                   8192 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 Date

This item displays the system date in Day MM/DD/YY format (e.g. Wed 10/12/2011).

System Time

This item displays the system time in HH:MM:SS format (e.g. 15:32:52).

Supermicro X9DRW (Motherboard Model Name)

Version

This item displays the SMC version of the BIOS ROM used in this system.

Build Date

This item displays the date that the BIOS ROM was built.

Memory Information

Total Memory

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

4-3   Advanced Setup Configurations

Use the arrow keys to select Advanced Setup and press <Enter> to access the following submenu items.
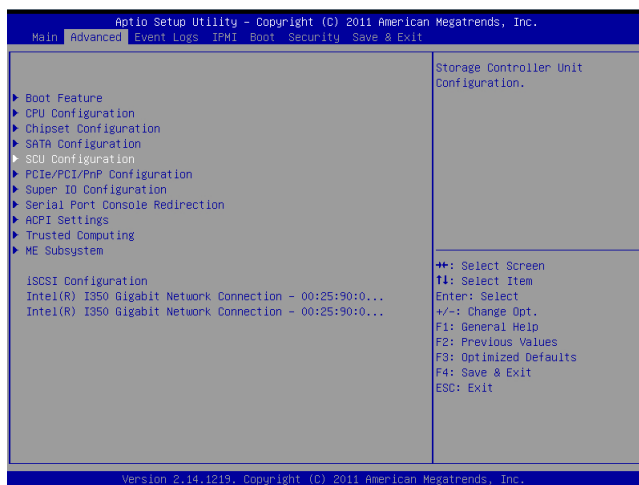
▶Boot Features

Quiet Boot

This feature allows the user to select 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

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

Bootup Num-Lock

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

Wait For 'F1' If Error

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

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 bootup 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.

Power Configuration

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

If this feature is set to Instant Off, the system will power off immediately as soon as the user presses the power button. If this feature is set to 4 Seconds Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant Off** and 4 Seconds Override.

Restore on AC Power Loss

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

CPU Configuration

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

▶Socket 1 CPU Information/Socket 2 CPU Information

This submenu displays the following information regarding the CPUs installed in Socket 1/ Socket 2.

- Type of CPU

- CPU Signature

- Microcode Patch

- CPU Stepping

- Maximum CPU Speed

- Minimum CPU Speed

- Processor Cores

- Intel HT (Hyper-Threading) Technology

- Intel VT-x Technology

- Intel SMX Technology

- L1 Data Cache

- L1 Code Cache

- L2 Cache

- L3 Cache

CPU Speed

This item displays the speed of the CPU installed in Socket 1/Socket 2.

64-bit

This item indicates if the CPU installed in Socket 1 or Socket 2 supports 64-bit technology.

Clock Spread Spectrum

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

Hyper-threading

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

Active Processor Cores

Set to Enabled to use a processor's second core and above. (Please refer to Intel's website for more information.) The options are **All,** 1, 2, and 4.

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 **Disabled** (for the Windows OS), and Enabled.

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

Select 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 options are **Enabled** and Disabled. (Refer to Intel and Microsoft Web sites for more information.)

Intel® AES-NI

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

Hardware Prefetcher (Available when supported by the CPU)

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

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

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

DCU Streamer Prefetcher (Available when supported by the CPU)

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

DCU IP Prefetcher

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

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

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

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

▶ CPU Power Management Configuration

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

Power Technology

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

EIST (Available when Power Technology is set to Custom)

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

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

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

C1E (Available when Power Technology is set to Custom)

Select Enabled to enable Enhanced C1 Power State to maximize energy efficiency. The options are **Enabled** and Disabled.

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

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

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

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

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

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

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

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

Factory Long Duration Power Limit

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

Long Duration Power Limit

This item displays the user-defined power limit (in watts) during which long duration power is maintained.

Factory Long Duration Maintained (Available when Power Technology is set to Custom)

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

Long Duration Maintained

This item displays the period of time in seconds during which long duration power is maintained.

Recommended Short Duration Power

This item displays the short duration power settings recommended by the manufacturer.

Short Duration Power Limit

This item displays the time period during which short duration power is maintained.

▶Chipset Configuration

▶North Bridge

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

▶Integrated IO Configuration

Intel VT-d

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

Intel I/OAT

The Intel I/OAT (I/O Acceleration Technology) significantly reduces CPU over-head by leveraging CPU architectural improvements, freeing the system resource for other tasks. The options are Disabled and **Enabled**.

DCA Support

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

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

This submenu configures the following IO PCIe Port Bifurcation Control settings for IIO 1 PCIe ports or IIO 2 PCIe ports to determine how the available PCI-Express lanes are distributed between the PCI-Express Root Ports.

IIO 2 PCIe Port

This item configures IOU2-PCIe Port settings. The options are: x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16 and **Auto**.

IIO 3 PCIe Port

This item configures IOU3-PCIe Port settings. The options are: x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16 and **Auto**.

▶QPI Configuration

Current QPI Link

This item displays the current status of the QPI Link.

Current QPI Frequency

This item displays the frequency of the QPI Link.

Isoc

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

QPI (Quick Path Interconnect) Link Speed Mode

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

QPI Link Frequency Select

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

▶DIMM Configuration

This section displays the following DIMM information.

Current Memory Mode

This item displays the current memory mode.

Current Memory Speed

This item displays the current memory speed.

Mirroring

This item displays if memory mirroring is supported by the motherboard. Memory mirroring creates a duplicate copy of the data stored in the memory to enhance data security.

Sparing

This item displays if memory sparing is supported by the motherboard. Memory sparing enhances system performance.

▶**DIMM Information**

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

CPU Socket 1 DIMM Information

P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMMA2/P1-DIMMB2/
P1-DIMMC2/P1-DIMMD2

CPU Socket 2 DIMM Information

P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1/P2-DIMME2/P2-DIMMF2/
P2-DIMMG2/P2-DIMMH2

Memory Mode

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

DRAM RAPL Mode

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

DDR Speed

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

Channel Interleaving

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

Rank Interleaving

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

Patrol Scrub

Patrol Scrubbing is a process that allows the CPU to correct correctable memory errors detected on a memory module and send the correction to the requestor (the original source). When this item is set to Enabled, the IO hub will read and write back one cache line every 16K cycles, if there is no delay caused by internal

processing. By using this method, roughly 64 GB of memory behind the IO hub will be scrubbed every day. The options are **Enabled** and Disabled.

Demand Scrub

Demand Scrubbing is a process that allows the CPU to correct correctable memory errors found on a memory module. When the CPU or I/O issues a demand-read command, and the read data from memory turns out to be a correctable error, 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

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

Device Tagging

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

Thermal Throttling

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

▶South Bridge Configuration

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

PCH Information

This feature displays the following PCH information.

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

Stepping: This item displays the status of PCH stepping.

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

All USB Devices

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

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

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

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

Select Enabled to support legacy USB devices. Select Auto to disable legacy support if USB devices are not present. Select Disable to have USB devices available for EFI (Extensive Firmware Interface) applications only. The settings are Disabled, **Enabled** and Auto.

Port 60/64 Emulation

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

EHCI Hand-Off

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

▶SATA Configuration

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

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

SATA Mode

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

IDE Mode

The following items are displayed when IDE Mode is selected:

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

Use this feature to activate/deactivate and to set the SATA mode for SATA Controller 0 or SATA Controller 1. The options for Controller 0 are Disabled, Enhanced and **Compatible.** The Options for Controller 1 are Disabled and **Enhanced**.

AHCI Mode

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

Aggressive Link Power Management

Select Enabled to enable Aggressive Link Power Management support for Cougar Point B0 stepping and beyond. The options are **Enabled** and Disabled.

Port 0~5 Hot Plug

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

Staggered Spin Up

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

RAID Mode

The following items are displayed when RAID Mode is selected:

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for the particular port. The options are **Enabled** and Disabled.

▶SCU (Storage Control Unit) Configuration

Storage Controller Unit

Select Enabled to enable PCH SCU storage devices. The options are Disabled and **Enabled**.

OnChip SCU Option ROM

Select Enabled to support the onboard SCU Option ROM to boot up the system via a storage device. The options are Disabled and **Enabled**.

SCU Port 0~CU Port 7: The AMI BIOS will automatically detect the onboard SCU devices and display the status of each SCU device as detected.

▶PCIe/PCI/PnP Configuration

PCI ROM Priority

Use this feature to select the Option ROM to boot the system when there are multiple Option ROMs available in the system. The options are EFI Compatible ROM and **Legacy ROM**.

PCI Latency Timer

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

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

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

PERR# Generation

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

SERR# Generation

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

Maximum Payload

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

Maximum Read Request

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

ASPM Support

This feature allows the user to set the Active State Power Management (ASPM) level for a PCI-E device. Select Force L0 to force all PCI-E links to operate at L0 state. Select Auto to allow the system BIOS to automatically set the ASPM level for the system. Select Disabled to disable ASPM support. The options are **Disabled**, Force L0, and Auto.

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

CPU1 SXB 1A OPROM/CPU1 SXB 1B OPROM/CPU1 SXB 1C OPROM/CPU2 SXB2 PCI-E 3.0 x16 OPROM

Select Enabled to enable Option ROM support to boot the computer using a network interface from the slots specified above. The options are **Enabled** and Disabled.

Onboard LAN Option ROM Select

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

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

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

VGA Priority

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

Network Stack

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

▶Super IO Configuration

Super IO Chip: This item displays the Super IO chip used in the motherboard.

▶Serial Port 1 Configuration

Serial Port

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

Device Settings

This feature indicates whether or not a reset is required for a serial port specified.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. The options for Serial Port 1 are: **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12.

▶Serial Port 2 Configuration

Serial Port

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

Device Settings

This item displays the settings of Serial Port 2.

Change Settings

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. The options for Serial Port 2 are: **Auto**, IO=2F8h; IRQ=3; IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12.

Serial Port 2 Attribute

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

▶Serial Port Console Redirection

- **COM 1 and SOL/COM 2**

These two submenus allow the user to configure the following Console Redirection settings for a COM Port selected by the user.

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 COM2 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

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection

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

Putty KeyPad

This feature selects Function Keys and KeyPad settings for Putty, which is a terminal emulator designed for the Windows OS. The options are **VT100**, Linux, XTERMR6, SC0, ESCN, and VT400.

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

The submenu allows the user to configure Console Redirection settings to support Out-of-Band Serial Port management. The options are **Enabled** and Disabled.

Console Redirection Settings

The feature allows the user to configure console redirection settings for a local machine to communicate with a remote server.

►ACPI Setting

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

ACPI Sleep State

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

High Precision Event Timer

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

▶ Trusted Computing (Available when a TPM device is detected by the BIOS)

Configuration

TPM Support

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

TPM State

Select Enabled to enable TPM security settings to improve data integrity and network security. The options are **Disabled** and Enabled.

Pending Operation: This item displays the status of a pending operation.

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

TPM Enable Status

This item displays the status of TPM Support to indicate if TPM is currently enabled or disabled.

TPM Active Status

This item displays the status of TPM Support to indicate if TPM is currently active or deactivated.

TPM Owner Status

This item displays the status of TPM Ownership.

▶ Intel TXT (LT-SX) Configuration

Intel TXT (LT-SX) Hardware Support

This feature indicates if the following hardware components support the Intel Trusted Execution Technology.

CPU: TXT (Trusted Execution Technology) Feature

Chipset: TXT (Trusted Execution Technology) Feature

Intel TXT (LT-SX) Configuration

This feature displays the following TXT configuration setting.

TXT (LT-SX) Support: This item indicated if the Intel TXT support is enabled or disabled.

Intel TXT (LT-SX) Dependencies

This feature displays the features that need to be enabled for the Intel Trusted Execution Technology to work properly in the system.

VT-d Support: Intel Virtualization Technology with Direct I/O support

VT Support: Intel Virtualization Technology support

TPM Support: Trusted Platform support

TPM State: Trusted Platform state

▶Intel ME Subsystem Configuration

This feature displays the following ME Subsystem Configuration settings.

- **ME BIOS Interface Version**

- **ME Version**

iSCSI Configuration: This item displays iSCSI configuration information:

iSCSI Initiation Name: This item displays the name of the iSCSI Initiator, which is a unique name used in the world.

▶Add an Attempt

▶Delete Attempts

▶Commit Changes and Exit

Save the changes and exit from the page.

▶Discard Changes and Exit

Discard the changes and exit from the page.

▶Change Attempt Order

▶Commit Changes and Exit

Save the changes and exit from the page.

▶Discard Changes and Exit

Discard the changes and exit from the page.

Intel® I350 Gigabit Network Connections: These items display the following information on the Intel I350 LAN connections.

Port Configuration Menu

▶NIC Configuration

Link Speed

This item allows the user to set the link speed for your network connections. The Options are **AutoNeg (Auto Negotiation)**, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, and 10 Mbps Full.

Wake On LAN (WOL)

Select Enabled to wake up the system with a device (a magic packet). The options are Disabled and **Enabled**.

Blink LEDs (Range 0~15 seconds)

This item sets the duration of blinking for NIC LEDs. The range of duration is from 0 second to 15 seconds. The default setting is **0** second.

Port Configuration Information

This menu displays the following information for a NIC port specified.

- UEFI Driver

- Adapter PBA

- Chip Type

- PCI Device ID

- PCI Bus: Device: Function:

- Link Status: This item displays the link status of network connections.

- Factory MAC Address

● Alternate MAC Address

4-3 Event Logs

Use this feature to configure Event Log settings.

▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

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

Runtime Error Logging Support

Select Enabled to support Runtime Error Logging. The options are **Enabled** and Disabled.

Memory Correctable Error Threshold

This feature allows the user to enter the threshold value for correctable memory errors. The default setting is **10**.

PCI Error Logging Support

Select Enabled to support error event logging for PCI slots. The options are Enabled and **Disabled**.

Erasing Settings

Erase Event Log

Select Enabled to erase the SMBIOS (System Management BIOS) Event Log, which is completed before a event logging is initialized upon system reboot. The options are **No**; Yes, next Reset; and Yes, every reset.

When Log is Full

Select Erase Immediately to immediately erase SMBIOS error event logs that exceed the limit when the SMBIOS event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event

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

MECI (Multiple Event Count Increment)

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

METW (Multiple Event Count Time Window)

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

View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log as shown below:

Date/Time/Error Code/Severity

View System Event Log

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

Date/Time/Sensor/Type

4-4   IPMI

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

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

       IPMI Firmware Revision          1.44                Press <Enter> to change the
       IPMI STATUS                     Working             SEL event log configuration.
     ▶ System Event Log
     ▶ 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


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

IPMI Firmware Revision

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

IPMI Status

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

▶System Event Log

Enabling/Disabling Options

SEL Components

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

Erasing Settings

Erase SEL

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

When SEL is Full

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

Customize EFI Logging Options

Log EFI Status Codes

Select Enabled to log EFI (Extensible Firmware Interface) Status Codes, Error Codes or Progress Codes. The options are **Enabled** and Disabled.

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

▶BMC Network Configuration

LAN Channel 1: This feature allows the user to configure the settings for LAN1 Port.

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, BIOS will configure the following settings to IPMI at next system boot:

Configuration Address Source

This feature allows the user to select the source of the IP address for this computer. If Static is selected, you will need to know the IP address of this computer and enter it to the system manually in the field. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network that is attached to and request the next available IP address for this computer. The options are **DHCP** and Static. The following items are assigned IP addresses automatically if DHCP is selected.

Station IP Address

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

Subnet Mask

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

Station MAC Address

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

Gateway IP Address

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

4-5 Boot

This submenu allows the user to configure the following boot settings for the system.
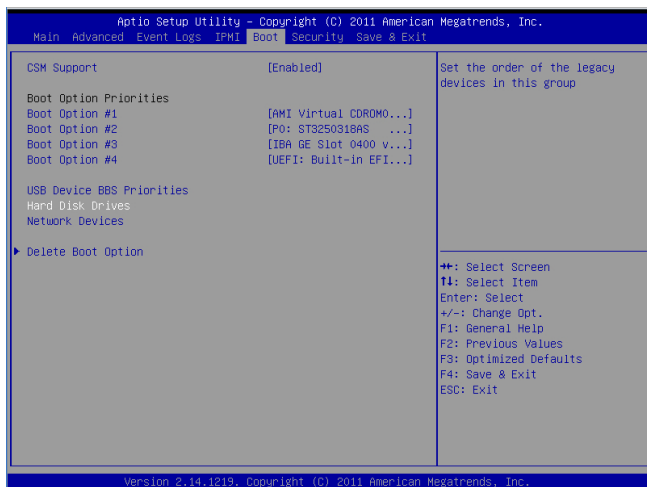
CSM Support

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

Boot Option Priorities

Boot Option #1~ Boot Option #4

This item allows the user to select the first boot drive. Select a LAN device to boot the system from the network connection. Select UEFI to boot the system from the UEFI: Built-in EFI Shell. The options are LAN Device, UEFI: Built-in EFI Shell, and Disabled.

USB Device BBS Priorities

Hard Disk Drives

Boot Option #1~ Boot Option #3

This item displays the first boot device.

Network Drives

Boot Option #1

This item displays the first boot device.

▶**Delete Boot Options**

Delete Boot Option

This item allows the user to select a boot device to delete from the boot priority list. Select UEFI: Built-in EFI Shell to delete it from the boot priority list which will prevent system boot from the UEFI Shell. The options are Select One to Delete and **UEFI: Built-in EFI Shell**.

4-6   Security

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

```
            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
                                               Enter: Select
  Administrator Password                       +/-: Change Opt.
  User Password                                F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit


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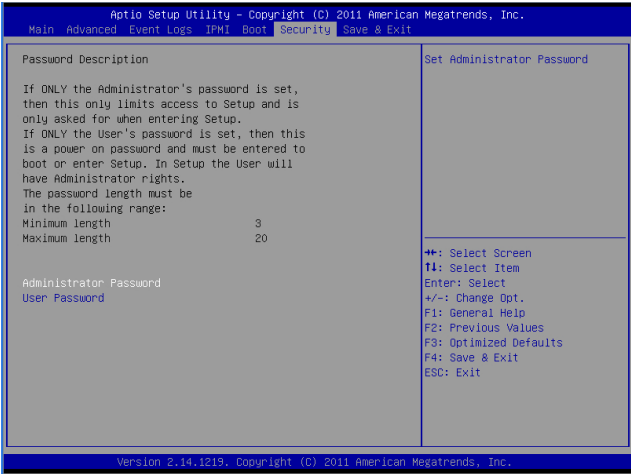
Administrator Password

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

User Password

Use this feature to set a User Password which is required to log into the system and to enter the BIOS setup utility. The length of the password should be from 3 characters to 20 characters long.

4-7   Save & Exit

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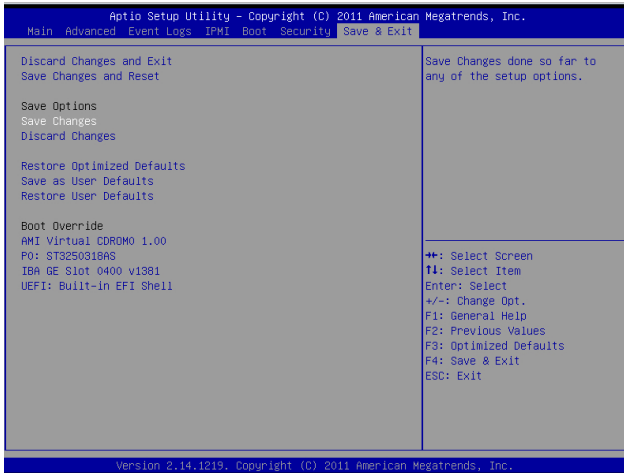
Discard Changes and Exit

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

Save Changes and Reset

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

Save Options

Save Changes

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

Discard Changes

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

Restore Optimized Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Boot Override

This feature allows the user to temporarily override the original boot order and boot the system to a selected device immediately:

- LAN Device

- UEFI: Built-in EFI Shell

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed at each system boot, errors may occur.

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

Fatal errors will not allow the system to continue with bootup procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

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

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 long beeps + 2 short 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 Software Programs

After you've installed the 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 programs, click the icons to the right of these items.

Note: To install the Windows OS, please refer to the instructions posted on our Website at http://www.supermicro.com/support/manuals/.
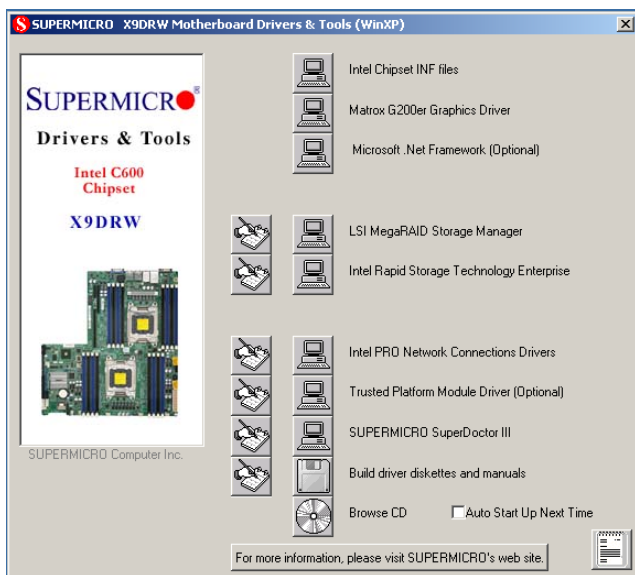
Driver/Tool Installation Display Screen

Note 1. 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 reboot 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.

Note 2. When making a storage driver diskette by booting into a Driver CD, please set the SATA Configuration to "Compatible Mode" and configure SATA as IDE in the BIOS Setup. After making the driver diskette, be sure to change the SATA settings back to your original settings.
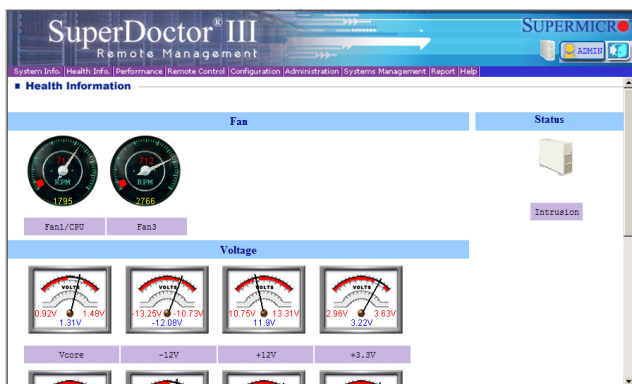
B-2 Configuring SuperDoctor III

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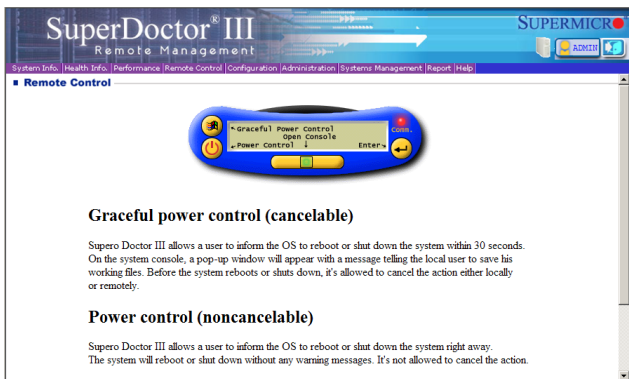
Note: 1 The default user name and password are ADMIN.

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 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 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.

The SDIII utility and the user guide can be downloaded from our web-site at: http://www.supermicro.com/products/accessories/software/SuperDoctorIII.cfm. For Linux, we will still recommend that you use SuperDoctor II.

Notes

(Disclaimer Continued)

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