SUPER®

X9DRD-iT+
X9DRD-CT+
X9DRD-CNT+

USER'S MANUAL

Revision 1.0

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Preface

This manual is written for system integrators, IT professionals, and knowledgeable end-users. It provides information for the installation and use of the X9DRD-iT+/-CT+/-CNT+ motherboard.

About This Motherboard

The Super X9DRD-iT+/-CT+/-CNT+ motherboard supports dual Intel E5-2600(v2) Series Processors (Socket R LGA 2011) that offer QPI (Intel QuickPath Interface) Technology, providing point-to-point connections with a transfer speed of up to 8.0 TG/s. With the C602 built in, the X9DRD-iT+/-CT+/-CNT+ motherboard supports Intel® Management Engine (ME), Rapid Storage Technology, Digital Media Interface (DMI), PCI-E Gen. 3.0 and up to 1866 MHz DDR3 memory. This motherboard is ideal for high-performance WIO server platforms optimized for Virtualization, Big Data and Enterprise applications. Please refer to our website (http://www.supermi-cro.com) for CPU and memory support updates.

Manual Organization

Chapter 1 describes the features, specifications and performance of the mother-board. It also provides detailed information about the Intel C602 chipset.

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

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

Appendix A provides BIOS Error Beep Codes.

Appendix B lists Software Installation Instructions**.**

Appendix C contains UEFI BIOS Recovery instructions.

Conventions Used in the Manual

Pay special attention to the following symbols for proper system installation and to prevent damage to the system or injury to yourself:

Warning: Important information given to ensure proper system installation or to prevent damage to the components

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

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Appendix B Software Installation Instructions

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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

- Six (6) Serial ATA cables (CBL-0044L) (X9DRD-iT+)

- Two (2) Serial ATA cables (CBL-0044L) (X9DRD-CT+/CNT+)

- Two (2) Internal Mini-SAS HD to Mini-SAS HD cables (CBL-SAST-0531) (X9DRD-CT+/CNT+)

- Two (2) Serial ATA cables (CBL-0044L) (X9DRD-CNT+)

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

- One (1) Quick Reference Guide (MNL-1612-QRG)

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

Supermicro product manuals: http://www.supermicro.com/support/manuals/

Product Drivers and utilities: ftp://ftp.supermicro.com/

If you have any questions, please contact our support team at support@supermicro.com.

S UPER● **X9DRD-iT+/-CT+/-CNT+ Series Motherboard Image**
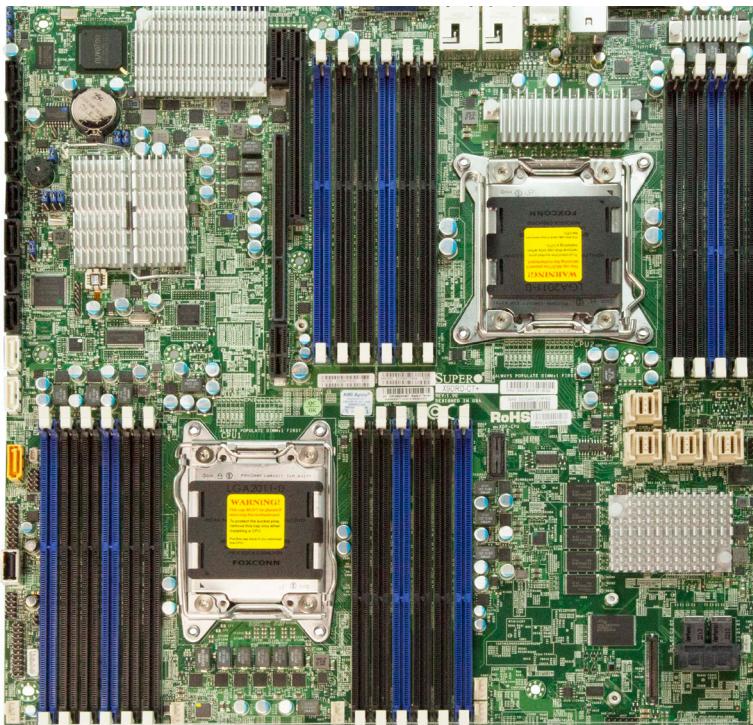
✎ **Note**: All graphics shown in this manual were based upon the latest PCB revision of the motherboard available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.

SUPER● X9DRD-iT+/-CT+/-CNT+ Motherboard Layout
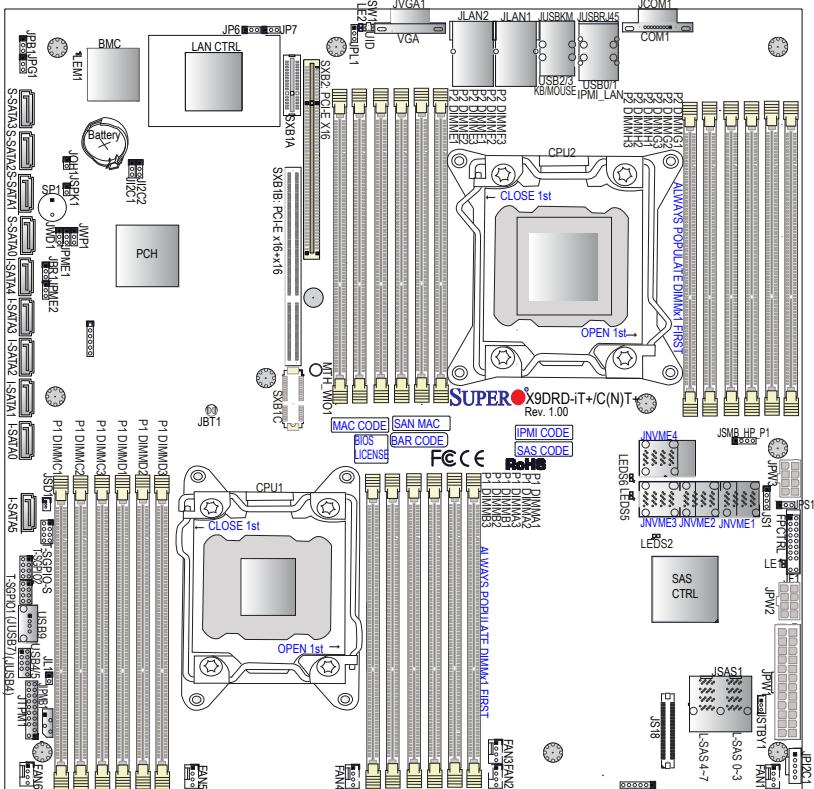
✎ **Note 1:** For the latest CPU/Memory updates, please refer to our website at http://www.supermicro.com/products/motherboard/ for details.

Note 2: Changing BMC log-in information is recommended during initial system power-on. The default username is ADMIN and password is ADMIN. For BMC best practices, please refer to: http://www.supermicro.com/products/nfo/files/IPMI/Best_Practices_BMC_Security.pdf

X9DRD-iT+/-CT+/-CNT+ Quick Reference

JVGA1 JLAN2 JLAN1 JUSBKM JUSBRJ45 JCOM1
JP6 JP7 VGA COM1
JB1 JPG1 BMC LAN CTRL
LEM1 SWM JPI1
S-SATA3 S-SATA2 SXB2: PCI-E X16 USB2/3 USB0/1
S-SATA1 S-SATA0 KB/MOUSE IPMI_LAN
Battery CPU2
SP1 JCH1 USPK1 JI2C2 SXB1A CLOSE 1st ALWAYS POPULATE DIMM1 FIRST
JMD1 JWD1 JI2C1
JWP1 SXB1B: PCI-E x16-x16
PCH JPME1 JPL1
OPEN 1st
MTH_WD1
SXB1C SUPER● X9DRD-iT+/C(N)T+
JBT1 Rev. 1.00
MAC CODE SAN MAC IPMI CODE
BIOS BAR CODE SAS CODE JSMB_HP_P1
LICENSE JNVME4 JPW3
P1 DIMMC1 FC CE RoHS LEDS6 LEDS5 JS1 RPS1
P1 DIMMC2 CPU1 JNVME3 JNVME2 JNVME1 LE
P1 DIMMC3 CLOSE 1st LEDS2 JPW2
P1 DIMMD1
ISATA5 P1 DIMMD2 SAS
P1 DIMMD3 CTRL
JSD1 DIMMB3 JSAS1
SGPIO-S DIMMB2 JPW1 STBY1
TSGPIO1 DIMMB1 I-SAS 4-7
USB3 OPEN 1st JS18 I-SAS 0-3
JL1 ALWAYS POPULATE DIMM1 FIRST
FAN6 FAN5 FAN4 FAN3 FAN2 FAN1 JP2C1

Notes:

- See Chapter 2 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.

X9DRD-iT+/-CT+/-CNT+ Jumpers

Jumper	Description	Default Setting
JBT1	Clear CMOS	See Chapter 2
JI²C1/JI²C2	SMB to PCI-E Slots	Pins 2-3 (Disabled)
JPB1	BMC Enable	Pins 1-2 (Enabled)
JBR1	BIOS Recovery Enable	Pins 1-2 (Normal)
JPG1	VGA Enabled	Pins 1-2 (Enabled)
JPL1	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JPME1	Manufacture Recovery Mode Enable	Pins 1-2 (Normal)
JPME2	Manufacture Mode Select	Pins 1-2 (Normal)
JPS1	SAS Enable (X9DRD-CT+/CNT+ only)	Pins 1-2 (Enabled)
JSPK1	Onboard Buzzer Enable	Pins 1-2 (Enabled)
JWD1	Watch Dog Timer Enable	Pins 1-2 (Reset)

Connectors

Connectors	Description
Battery (JBAT1)	Onboard CMOS Battery Socket (See Chapter 3 for battery disposal instructions.)
FAN1~6	CPU/System Fan Headers
JCOM1	Backplane COM Port 1
JIPMB1	4-pin External BMC I²C Header (for an IPMI Card)
JL1	Chassis Intrusion
JLAN1/JLAN2	10G_LAN Ethernet Ports 1/2
JNVME1/2/3/4	NVM Express PCI-Express 3.0 x4 Ports 1/2/3/4 (X9DRD-CNT+ Only)
JOH1	Overheat LED Indicator
JPI²C1	Power Supply SMBbus I²C Header
JPW1	24-Pin ATX Main Power Connector (Warning on Pg. 1-6.)
JPW2/3	12V 8-Pin Power Connectors (See Warning on Pg. 1-6.)
JS18	80-pin CVFM (Cache Vault Flash Module) Connector
JSAS1	SAS Connections 0-3, 4-7 supported by the LSI 3108 (X9DRD-CT+/CNT+)
JSD1	SATA DOM (Device on Module) Power Connector
JSTBY1	+5V Standby Power Header
JTPM1	TPM (Trusted Platform Module)/Port 80
JUSBRJ45	IPMI_Dedicated LAN & USB Ports 0/1
JUSBKM	USB Keyboard/Mouse & USB Ports 2/3
JUSB4	Front Panel Accessible USB Connections (4/5)
JUSB7	Type A USB Embedded Drive Connector
JVGA1	Rear VGA Port

I-SATA 0-5	Serial-Link ATA Ports 0-5 supported by the Intel PCH
S-SATA 0-3	Serial-Link ATA Ports 0-3 supported by the Intel SCU chip
SP1	Onboard Buzzer Header (Internal Speaker)
SXB1A/SXB1B/ SXB1C	SMCI-Proprietary PCI-Express 3.0 x32 slots for WIO riser cards
SXB2	PCI-Express 3.0 x16 SMCI-Proprietary WIO Slot
SW1 (UID)	UID (Unit Identification) Switch
T-SGPIO-S	Serial_Link General Purpose I/O Headers for S-SATA0-3 Connections
T-SGPIO1/2	Serial ATA (SATA) General Purpose I/O Headers for I-SATA0-5, T-SGPIO1: I-SATA0-3, T-SGPIO2: I-SATA4/5

LED Indicators			
LED	Description	State	Status
LE1	PWR LED	Green: On	MB PWR On
LE2	UID LED	Blue: On	Unit Identified
LEDS2 (X9DRD-CT+/CNT+ only)	SAS Heartbeat LED	Green: Blinking	SAS Normal
LEDS5 (X9DRD-CT+/CNT+ only)	SAS Activity	Green: Blinking	SAS Active
LEDS6 (X9DRD-CT+/CNT+ only)	SAS Fault	Red: On	SAS: In Fault Condition
LEM1	BMC Heartbeat LED	Green: Blinking	BMC Normal

Warning: To avoid damaging your motherboard and components, please use a power supply that supports a 24-pin and two 8-pin power connectors. Be sure to connect the 24-pin and the 8-pin power connectors to your power supply for adequate power delivery to your system.

Motherboard Features

CPU	• Dual Intel® E5-2600(v2) Series Processors (Socket R LGA 2011); each processor supports four full-width Intel QuickPath Interconnect (QPI) links (with Data Transfer Rate of up to 8.0 GT/s per direction).
Memory	• Integrated memory controller supports 768GB (max.) of Registered (RDIMM)-ECC, or 128 GB (max.) of Unbuffered (UDIMM)-ECC/Non-ECC, and 1.5 TB (max.) of 64GB Load Reduced (LRDIMM)-ECC DDR3 800/1066/1333/1600/1866 MHz 240-pin 3-channel memory modules in 24 DIMM slots (w/12 slots per CPU). 🖉 **Note 1:** 1866 MHz memory speed is dependent on Intel E5-2600v2 CPUs. **Note 2:** For the latest memory updates, please refer to the Tested Memory List posted on our website (http://www.supermicro.com/products/motherboard).
	• Virtualization: VT-x, VT-d, and VT-c
Chipset	• Intel® C602 Chipset
Expansion	• One (1) PCI Express 3.0 x16 + x16 SMCI-proprietary slot for WIO riser cards (SXB1A/1B/1C) • One (1) PCI Express 3.0 x16 SMCI-Proprietary slot (SXB2)
Graphics	• Nutovon BMC (WPCM 450) Video Controller (Matrox G200eW)
Network	• One Intel X540 10G Ethernet Dual Port Controller for LAN 1/LAN 2 ports. • Nuvoton WPCM450 Base-board Controller (BMC) supports IPMI_LAN 2.0
I/O Devices	**Serial_Link Connections**
	• SATA Ports Two (2) SATA 3.0 Ports (I-SATA0/1) supported by Intel PCH Four (4) SATA 2.0 Ports (I-SATA2-5) supported by Intel PCH Four S-SATA 0-3 Connections supported by Intel SCU

	• SAS 3.0 Connections	Eight (8) SAS Connections L-SAS 0-3, 4-7 supported by LSI 3108 SAS controller (X9DRD-CT+/CNT+ only)
	• RAID	RAID 0, 1, 5, 10 (from PCH SATA), RAID 0, 1, 5, 6, 10, 50 & 60 (from LSI with optional SuperCAP battery support)
	NVM Express Connections (X9DRD-CNT+ Only)	
	• NVM Express Ports	Four (4) NVM Express PCI-Exp 3.0 x4 Ports 1/2/3/4 (JNVME1/2/3/4)
	Integrated IPMI 2.0	
	• IPMI 2.0 supported by the WPCM450R BMC	
	Serial (COM) Port	
	• One (1) Backplane COM port	
	Super I/O	
	• Nuvoton 83527HG	
Peripheral Devices	**USB Devices**	
	• Four (4) USB ports on the rear I/O panel (USB 0/1, USB 2/3) (Rear USB 0/1, 2/3)	
	• Two (2) USB connections for front access (USB 4/5)	
	• One (1) Type A USB connection for front access (USB 9)	
BIOS	• 16 MB SPI AMI BIOS® SM Flash BIOS	
	• 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 Config.	• ACPI/APM Power Management	
	• Main switch override mechanism	
	• Keyboard Wake-up from Soft-Off	
	• Power-on mode for AC power recovery	
	• Intel® Intelligent Power Node Manager (NM) (Available when the NMView utility is installed in the system)	
	• Management Engine (ME)	
System Health Monitoring	**CPU Monitoring**	
	• Onboard voltage monitors for 1.8V, +3.3V, 3.3VSB, +5V, +5V SB, +/-12V, Chipset Voltage, HT and Battery Voltage.	
	• CPU 5-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	
System Management	• PECI (Platform Environment Configuration Interface) 2.0 support	
	• UID (Unit Identification)/Remote UID	
	• System resource alert via SuperDoctor® 5	
	• SuperDoctor® 5, Watch Dog, NMI	
	• Chassis Intrusion Header and Detection	
Dimensions	• 13.68" (W) x 13.40" (L) (347.47 mm x 340.36 mm)	

Note 1: For IPMI Configuration Instructions, please refer to the Embedded IPMI Configuration User's Guide available @ http://www.supermicro.com/support/manuals/.

Note 2: Changing BMC log-in information is recommended during initial system power-on. The default username is ADMIN and password is ADMIN. For BMC best practices, please refer to: http://www.supermicro.com/products/nfo/files/IPMI/Best_Practices_BMC_Security.pdf

X9DRD-iT+/-CT+/-CNT+ Block Diagram
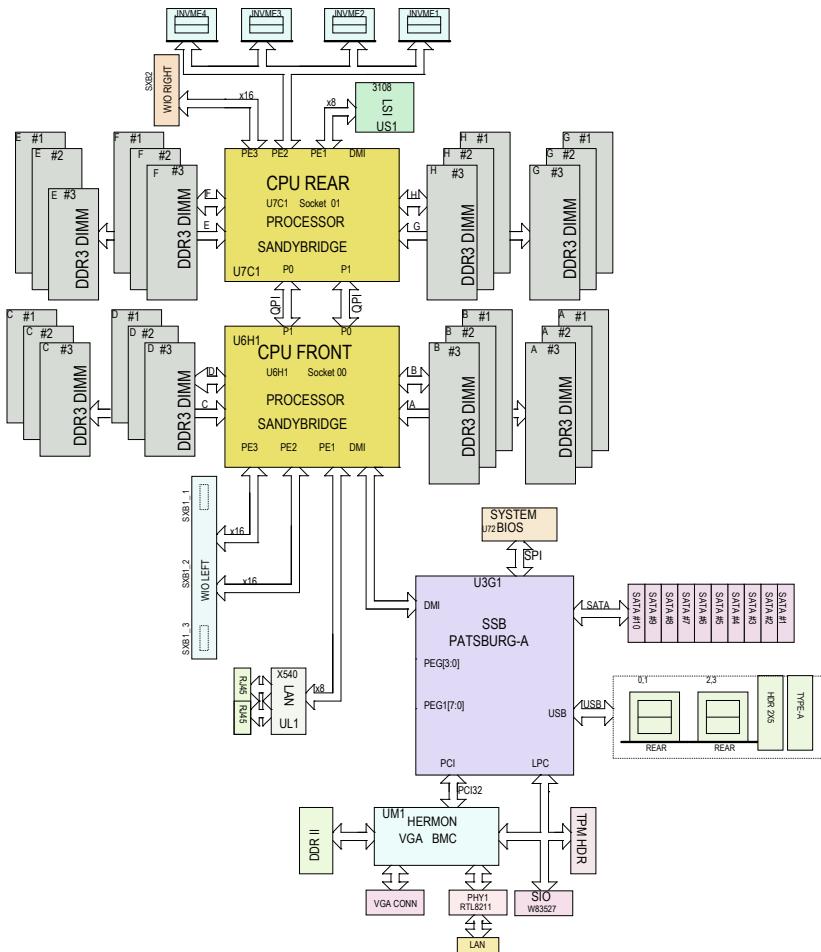
System Block Diagram

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

1-2 Processor and Chipset Overview

Built upon the functionality and the capability of Intel E5-2600(v2) Series Processors (Socket R LGA 2011) and the C602 chipset, the X9DRD-iT+/-CT+/-CNT+ motherboard provides performance and feature sets that are ideal for use in Virtualization, Big Data, and Enterprise applications.

With support of Intel QuickPath interconnect (QPI) Technology, the X9DRD-iT+/-CT+/-CNT+ offers point-to-point serial interconnect interface with a transfer speed of up to 8.0 GT/s, providing superb system performance.

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

• ACPI Power Management Logic Support, Rev. 4.0

• USB host interface with support of up to 9 connections

• 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

🖉 **Note:** For Intel E5-2600(v2) processor support, BIOS version 3.0 or above is required.

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   System Health Monitoring

This section describes the features of system health monitoring of the motherboard. This motherboard has an onboard BMC (Baseboard Management Controller) chip that supports system health monitoring. An onboard voltage monitor will scan voltages and power usage 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.

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 in IPMI settings. When the CPU temperature becomes too high, thermal fan control will be automatically turned on to prevent the CPU from overheating.

🖉 **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 5 in the Windows OS environment and 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 the system temperature, CPU temperatures, voltages, and fan speeds go beyond a predefined range.

1-5   ACPI Features

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

In addition to 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 7, Windows 8 and Windows 2012
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 X9DRD-iT+/-CT+/-CNT+ motherboard accommodates 24-pin ATX power sup-
plies. Although most power supplies generally meet the specifications required by
the CPU, some are inadequate. In addition, two 12V 8-pin power connections 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 avoid damaging your motherboard and components, please use a power
supply that supports a 24-pin and two 8-pin power connectors. Be sure to connect
the 24-pin and the 8-pin power connectors to your power supply for adequate power
delivery to your system.

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

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

1-8   Advanced Power Management

The following advanced power management features are supported by this motherboard:

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 1.5/2.0 is supported by the BMC (Baseboard Management Controller).

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

Management Engine (ME)

The Management 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   Overview of the Nuvoton WPCM450 Controller

The Nuvoton WPCM450R Controller, a Baseboard Management Controller (BMC), supports 2D/VGA-compatible Graphic Cores with PCI interface, creating multi-media virtualization via Keyboard/Video/Mouse Redirection (KVMR). The WPCM450R Controller is ideal for remote system management.

The WPCM450R Controller interfaces with the host system via PCI connections to communicate with the graphics cores. It supports USB 2.0 and 1.1 for remote

keyboard/mouse/virtual media emulation. It also provides LPC interface support to control Super IO functions. The WPCM450R Controller is connected to the network via an external Ethernet PHY module or shared NCSI connections.

The WPCM450R communicates with onboard components via six SMBus interfaces, PECI (Platform Environment Control Interface) buses, and General Purpose I/O ports.

Additional Features Supported by the BMC Controller

- IPMI 2.0

- Serial over LAN

- KVM over LAN

- LAN Alerting-SNMP Trap

- Event Log

- X-Bus parallel interface for I/O expansion

- Multiple ADC inputs, Analog and Digital Video outputs

- SPI Flash Host BIOS and firmware bootstrap program supported

- Reduced Media Independent Interface (RMII)

- OS (Operating System) Independency

- Provides remote Hardware Health Monitoring via IPMI. Key features

- Provides Network Management Security via remote access/console redirection.

- Supports the following Management tools: IPMIView, CLI (Command Line Interface)

- RMCP+ protocol supported

    Note 1: For more information on IPMI configuration, please refer to the IPMI User's Guide posted on our website at http://www.supermicro.com/support/manuals/.

    Note 2: The term "IPMI controller" and the term "BMC controller" can be used interchangeably in this section.

Notes

Chapter 2

Installation

2-1 Standardized Warning Statements

The following statements are industry-standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this section in its entirety before installing or configuring components in the Supermicro chassis.

Battery Handling

Warning!

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

電池の取り扱い

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

警告

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

警告

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

Warnung

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

Attention

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

¡Advertencia!

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

אזהרה !
קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

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

경고!

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

Waarschuwing

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

Product Disposal

⚠ **Warning!**

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

製品の廃棄

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

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

Attention

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

סילוק המוצר

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

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

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

2-2   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.

2-3   Processor and Heatsink Installation

Warning: When handling the processor package, avoid placing direct pressure on the label area. Also, improper CPU installation or socket/pin misalignment can cause serious damage to the CPU or the motherboard that will require RMA repairs. Be sure to read and follow all instructions thoroughly before installing your CPU and heatsink.

📝 **Notes:**

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

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

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

* When receiving a motherboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.

* Refer to the Supermicro 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'.
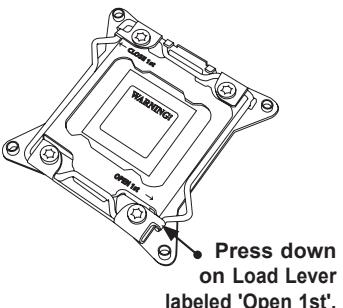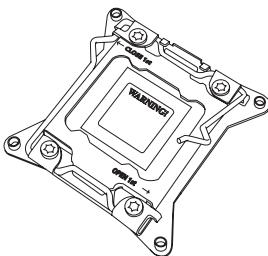
2. Press the second load lever labeled 'Close 1st' to release the load plate that covers the CPU socket from its locking position.

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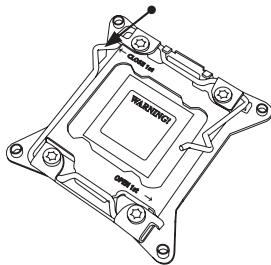
2   **Pull lever away from
      the socket**
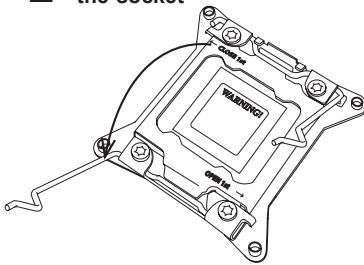
3. With the lever labeled 'Close 1st' fully retracted, gently push down on the lever labelled 'Open 1st' to open the load plate. Lift the load plate to open it completely.

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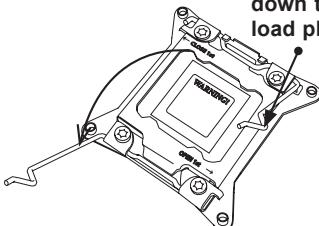
2
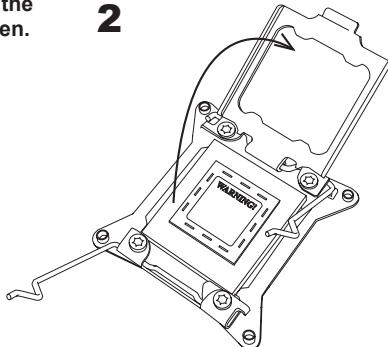
1. Using your thumb and the index finger, remove the 'WARNING' plastic cap from the socket.
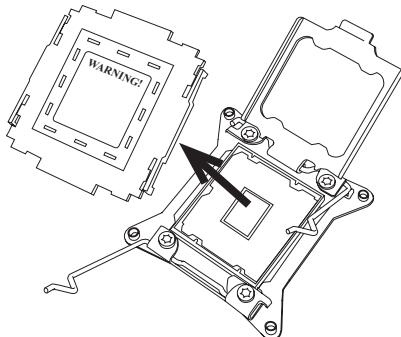
2. Using your thumb and index finger, hold the CPU on its edges. Align the CPU keys, which are semi-circle cutouts, against the socket keys.

Socket Keys

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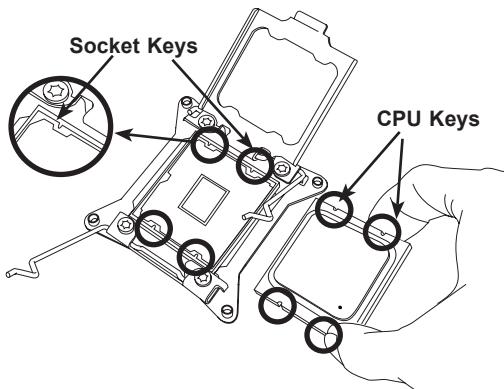
3. Once they are aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.)
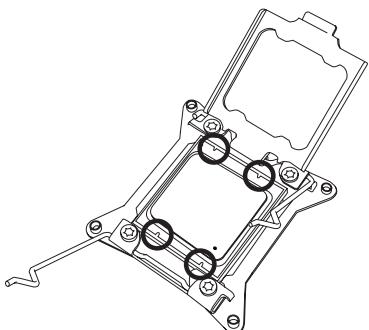
Warning: You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again to make sure that the CPU is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

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

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

1   **Gently close the load plate.**

2   **Push down and lock the lever labelled 'Close 1st'.**

3

Lever Lock

Push down and lock the lever labelled 'Open 1st'.

4
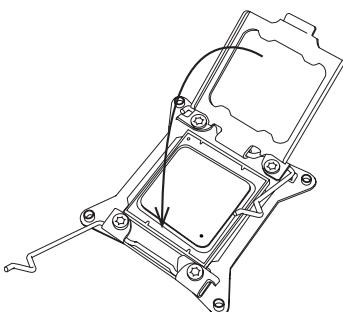
Lever Lock
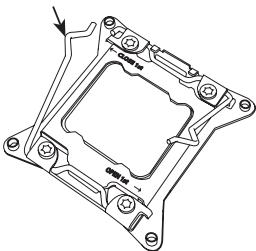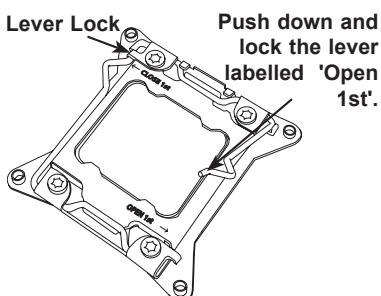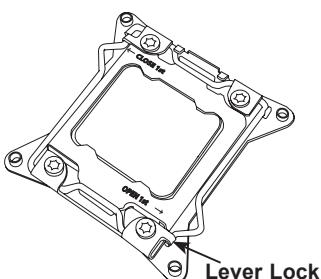
Installing a Passive CPU Heatsink

1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the Motherboard's and the Heatsink Bracket underneath.

3. Screw in two diagonal screws (i.e., the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.
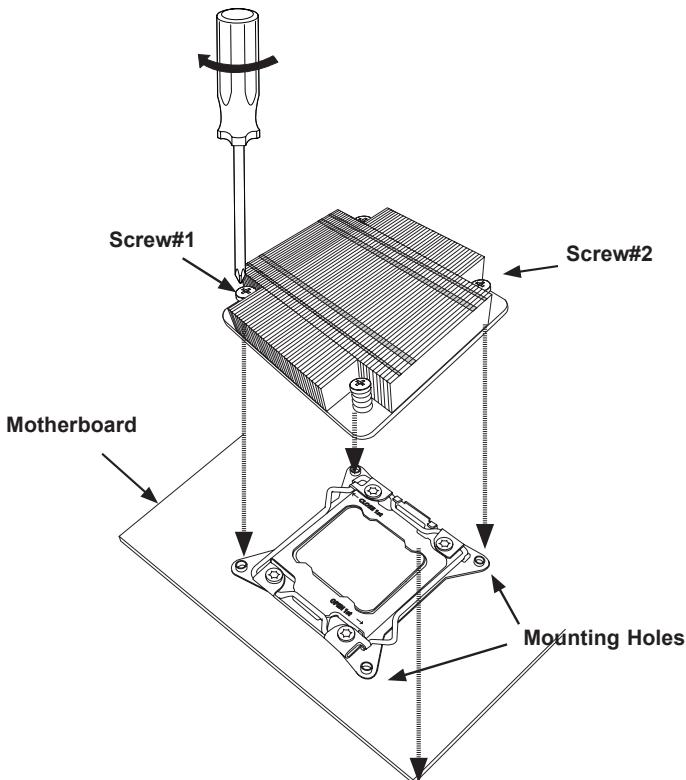
/ **Note:** For optimized airflow, please follow your chassis airflow direction to install the correct CPU heatsink direction. Graphic drawings included in this manual are for reference only. They might look different from the components installed in your system

Removing the Heatsink

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

1. Unscrew the heatsink screws from the motherboard in the sequence as shown in the illustration below.

2. <u>Gently</u> wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)

3. Once the CPU is loosened, remove the CPU from the CPU socket.

4. Remove the used thermal grease and clean the surface of the CPU and the heatsink, Reapply the proper amount of thermal grease on the surface before reinstalling the CPU and the heatsink. (Do not reuse old thermal grease.)

Loosen screws in sequence as shown.

Screw#4

Screw#1

Screw#2

Motherboard

Screw#3
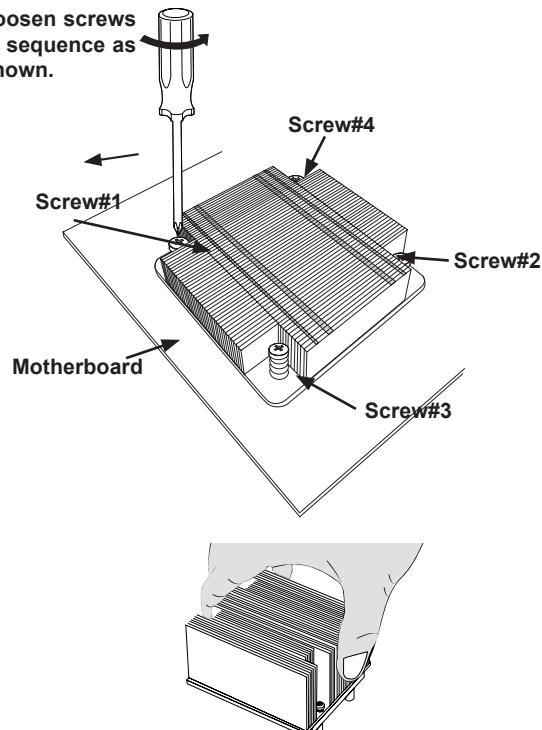
2-4   Installing and Removing the Memory Modules

✏ **Note**: Check Supermicro's website for recommended memory modules.

CAUTION
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-DIMMA1.

2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

Notches

Release Tabs
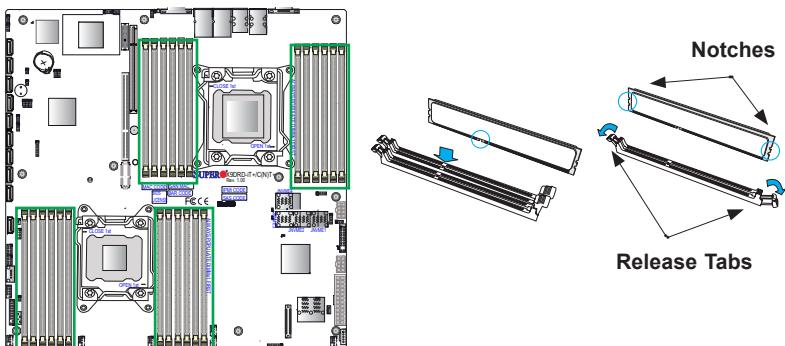
3. Align the key of the DIMM module with the receptive point on the memory slot.

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

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

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

> Press both notches straight down into the memory slot at the same time.
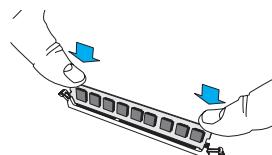
Removing Memory Modules

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

Memory Support for the X9DRD-iT+/-CT+/-CNT+ Motherboard

The X9DRD-iT+/-CT+/-CNT+ motherboard supports 768GB (max.) of Registered (RDIMM)-ECC, 128 GB (max.) of Unbuffered (UDIMM)-ECC/Non-ECC, and 1.5 TB (max.) of 64GB Load Reduced (LRDIMM)-ECC DDR3 800/1066/1333/1600/1866 MHz 240-pin 3-channel memory modules in 24 DIMM slots (w/12 slots per CPU).

> **Note:** For the latest memory updates, please refer to the Tested Memory List posted on our website (http://www.supermicro.com/products/motherboard).

Processor & Memory Module Population Configuration

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

Processors and their Corresponding Memory Modules												
CPU#	**Corresponding DIMMs**											
CPU1 (P1-DIMM)	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
CPU2 (P2-DIMM)	E1	F1	G1	H1	E2	F2	G2	H2	E3	F3	G3	H3

> **Notes:** 1866 MHz memory speed is dependent on Intel E5-2600v2 CPUs.

Populating UDIMM (ECC/Non-ECC) Memory Modules

Intel E5-2600(v2) Series Processor UDIMM Memory Support										
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)						
				2 Slots Per Channel				3 Slots Per Channel			
				1DPC		2DPC		1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333, 1600, 1866	NA	1066, 1333, 1600	N/A	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333, 1600, 1866	NA	1066, 1333, 1600	N/A	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333, 1600, 1866	NA	1066, 1333, 1600	N/A	1066, 1333, 1600, 1866	N/A	1066, 1333, 1600
SRx8 ECC	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Intel E5-2600 Series Processor UDIMM Memory Support										
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)						
				2 Slots Per Channel				3 Slots Per Channel			
				1DPC		2DPC		1DPC		2DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8 Non-ECC	1GB	2GB	4GB	NA	1066, 1333	NA	1066, 1333	N/A	1066, 1333,	N/A	1066, 1333
DRx8 Non-ECC	2GB	4GB	8GB	NA	1066, 1333	NA	1066, 1333	N/A	1066, 1333,	N/A	1066, 1333
SRx16 Non-ECC	512MB	1GB	2GB	NA	1066, 1333	NA	1066, 1333	N/A	1066, 1333	N/A	1066, 1333
SRx8 ECC	1GB	2GB	4GB	1066, 1333	1066, 1333	1066	1066, 1333	1066	1066, 1333,	1066, 1333	1066, 1333
DRx8 ECC	2GB	4GB	8GB	1066, 1333	1066, 1333	1066	1066, 1333	1066	1066, 1333,	1066, 1333	1066, 1333

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Populating RDIMM (ECC) Memory Modules

Intel E5-2600(v2) Series Processor RDIMM Memory Support												
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)								
				2 Slots Per Channel				3 Slots Per Channel				
				1DPC		2DPC		1 DPC		2DPC		3DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
DRx4	4GB	8GB	16GB	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600, 1866	1066, 1333	1066, 1333, 1600	800	800, 1066
QRx4	8GB	16GB	32GB	800	800, 1066	800	800	800	800, 1066	800	800	N/A	N/A
QRx8	4GB	8GB	16GB	800	800, 1066	800	800	800	800, 1066	800	800	N/A	N/A

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Intel E5-2600 Series Processor RDIMM Memory Support												
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)			Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)								
				2 Slots Per Channel				3 Slots Per Channel				
				1DPC		2DPC		1 DPC		2DPC		3DPC	
				1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5v
SRx8	1GB	2GB	4GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
DRx8	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
SRx4	2GB	4GB	8GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
DRx4	4GB	8GB	16GB	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	1066, 1333	1066, 1333, 1600	N/A	800, 1066
QRx4	8GB	16GB	32GB	800	1066	800	800	800	1066	800	800	N/A	N/A
QRx8	4GB	8GB	16GB	800	1066	800	800	800	1066	800	800	N/A	N/A

Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.

Populating LRDIMM (ECC) Memory Modules

Intel E5-2600(v2) Series Processor LRDIMM Memory Support											
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)		Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)									
			2 Slots Per Channel				3 Slots Per Channel					
			1DPC		2DPC		1DPC		2DPC		3DPC	
			1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V
QRx4 (DDP)	16GB	32GB	1066, 1333, 1600	1066, 1333, 1600, 1866	1066, 1333, 1600	1066, 1333, 1600	1066, 1333, 1600	1066, 1333, 1600, 1866	1066, 1333, 1600	1066, 1333, 1600	1066	1066
8Rx4 (QDP)	32GB	64GB	1066	1066	1066	1066	1066	1066	1066	1066	1066	1066
Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.												

Intel E5-2600 Series Processor LRDIMM Memory Support											
Ranks Per DIMM & Data Width	Memory Capacity Per DIMM (See the Note Below)		Speed (MT/s) and Voltage Validated by Slot per Channel (SPC) and DIMM Per Channel (DPC)									
			2 Slots Per Channel				3 Slots Per Channel					
			1DPC		2DPC		1DPC		2DPC		3DPC	
			1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V	1.35V	1.5V
QRx4 (DDP)	16GB	32GB	1066	1066, 1333	1066	1066, 1333	1066	1066, 1333	1066	1066, 1333	1066	1066
QRx8 (QDP)	8GB	16GB	1066	1066, 1333	1066	1066, 1333	1066	1066	1066	1066	1066	1066
Note: For detailed information on memory support and updates, please refer to the SMC Recommended Memory List posted on our website at http://www.supermicro.com/support/resources/mem.cfm.												

2-5   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 (10 pieces)

* Standoffs (10 pieces, if needed)
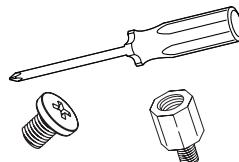
Location of Mounting Holes

There are ten (10) mounting holes on this motherboard. See the layout on the right.
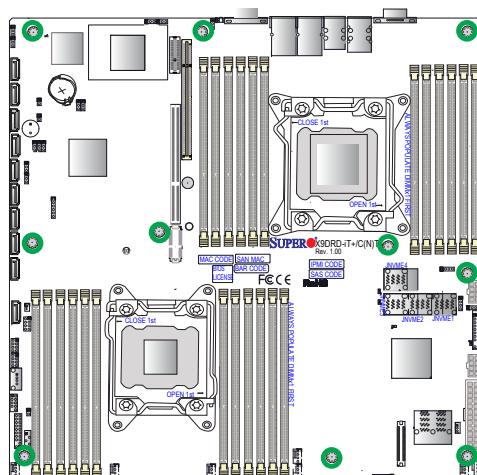
Warning: 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.

Installing the Motherboard

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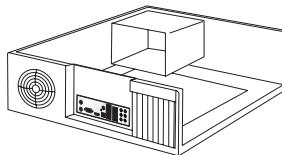
2. Locate the mounting holes on the motherboard.

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

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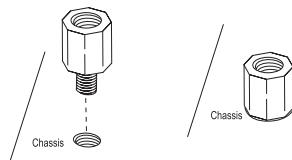
5. Install the motherboard into the chassis carefully to avoid damaging motherboard components.

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.
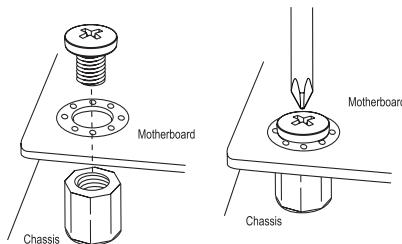
7. Repeat Step 5 to insert #6 screws into all mounting holes.

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

   📝 **Note:** Images displayed are for illustration only. Your chassis or components might look different from those shown in this manual.

2-6   Control Panel Connectors and I/O Ports

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

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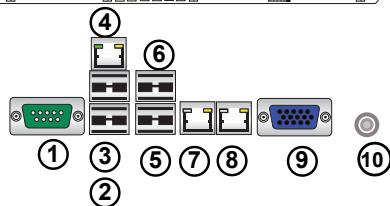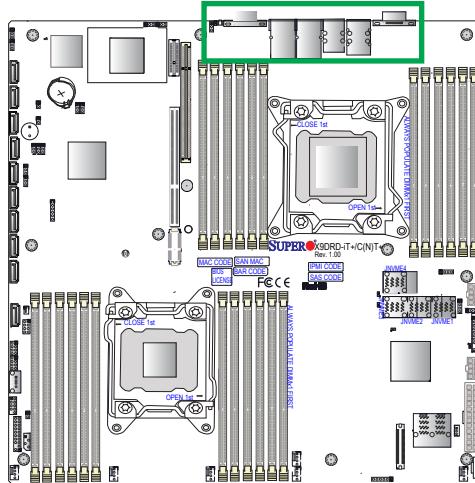
Back Panel I/O Port Locations and Definitions

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

Serial Port

A serial port (COM1) is located on the Backplane I/O panel. See the table on the right for pin definitions.

Serial Port (COM1) 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

A Video (VGA) port is located next to LAN2 on the I/O back panel. Refer to the board layout below for the location.
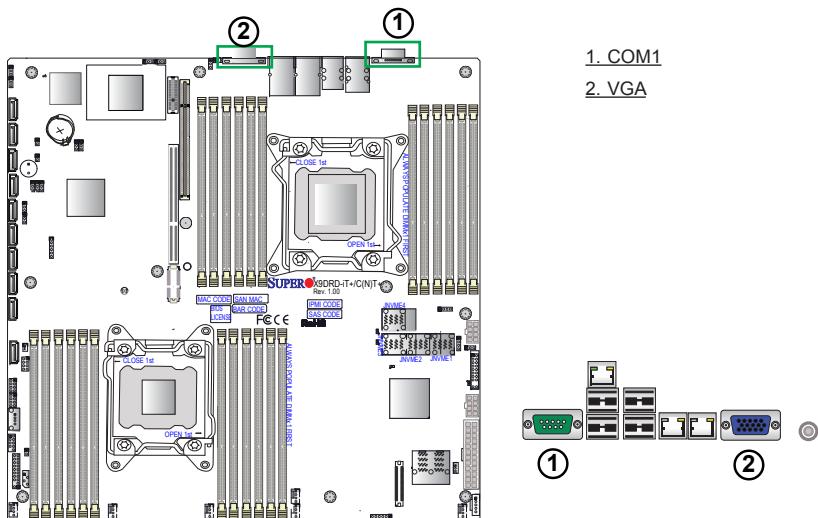
1. COM1
2. VGA

Universal Serial Bus (USB)

Four Universal Serial Bus ports (USB 0/1, USB 2/3) are located on the I/O back panel. In addition, a USB header, located close to the P1-DIMMC1 slot, provides two front-accessible USB connections (USB 4/5). One Type A connector (USB9), located next to USB header 4/5, also provides front panel USB support. (Cables are not included). See the tables on the right for pin definitions.

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

FP USB (2.0) (#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	Key	5	Ground

Type A USB 9 Pin Definitions	
Pin#	Definition
1	+5V
2	PO-
3	PO+
4	Ground

Keyboard/Mouse Support

A keyboard/mouse connector is located above USB 2/3 on the I/O backpanel. See the layout below for the location.
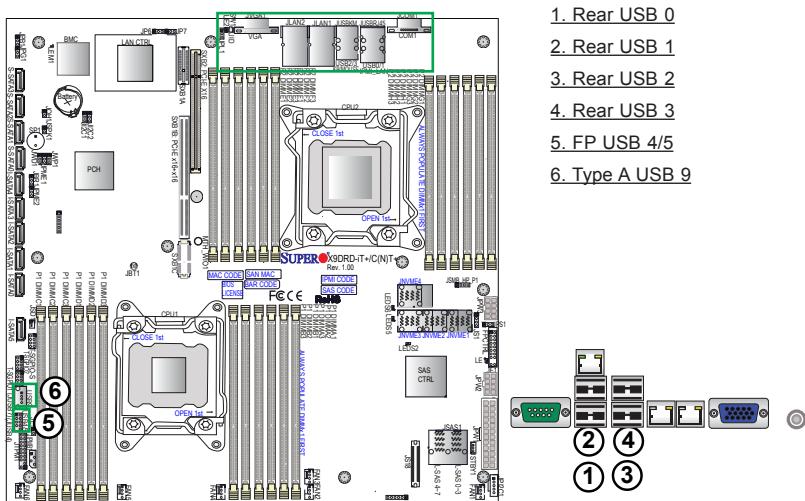
1. Rear USB 0
2. Rear USB 1
3. Rear USB 2
4. Rear USB 3
5. FP USB 4/5
6. Type A USB 9

Ethernet Ports

Two 10G Ethernet ports (LAN1, LAN2) are located on the I/O backplane on the motherboard. In addition, an IPMI_Dedicated LAN is located above USB 0/1 ports on the backplane to provide KVM support for IPMI 2.0. All these ports accept RJ45 type cables. Please refer to the LED Indicator Section for LAN LED information.

1. 10GLAN1
2. 10GLAN2
3. IPMI_LAN
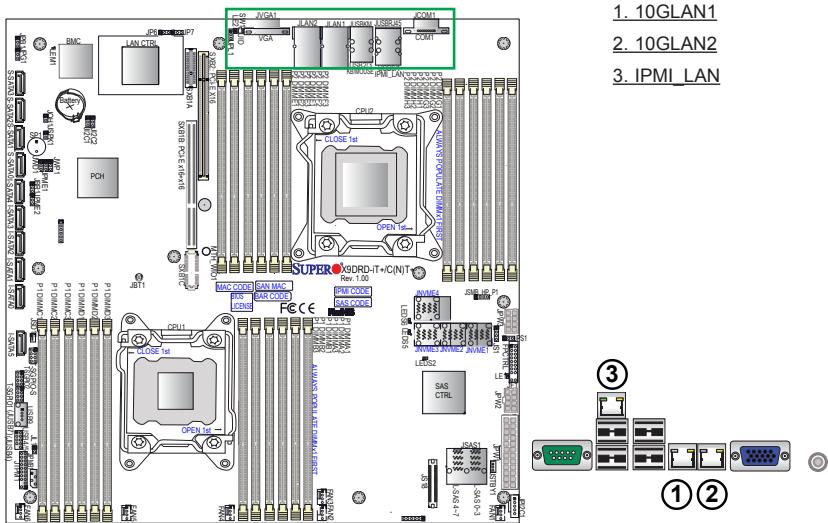
Unit Identifier Switch/UID LED Indicators

A Unit Identifier (UID) switch and two LED indicators are located on the motherboard. The UID switch is located next to the VGA port on the backplane. The rear UID LED (LE2) is located next to the UID switch. The front 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 UID LED indication. When you press the UID switch, both front and rear UID LED indicators will be turned on. Press the UID switch again to turn off both UID LEDs. These UID indicators provide easy identification of a system unit that may be in need of service.

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

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

> **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.

1. UID Switch
2. Rear UID LED (LE2)
3. Front UID LED
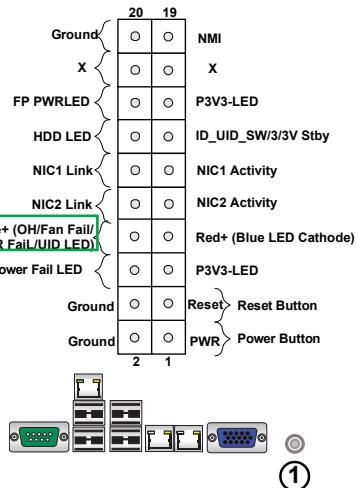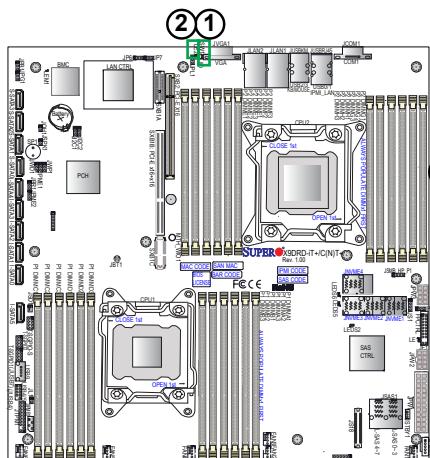
Front Control Panel

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.
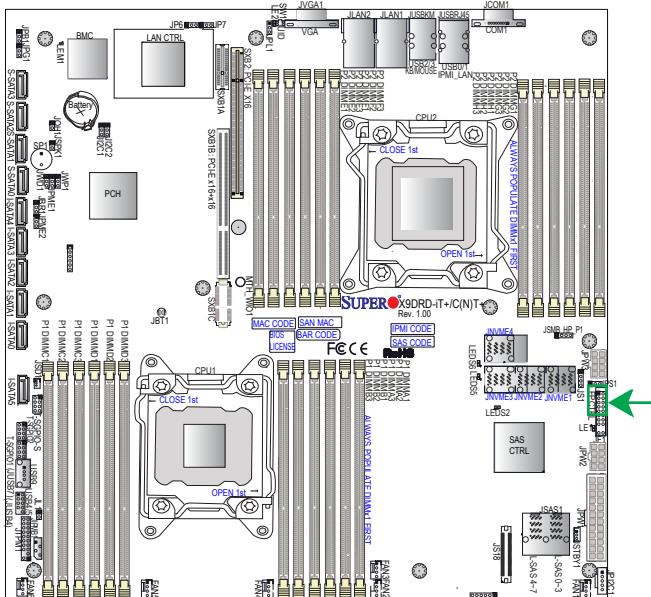
JF1 Header Pins

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	P3V3-LED
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link	○	○	NIC1 Activity
NIC2 Link	○	○	NIC2 Activity
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	P3V3-LED
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	P3V3-LED
16	PWR LED
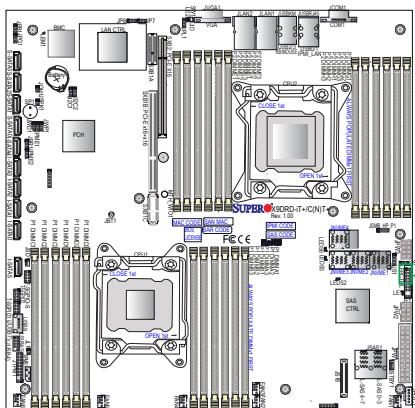
A. NMI
B. PWR LED

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	P3V3_LED_SW
14	HD Active

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for GLAN Port 2 is 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	NIC2_ACT_N
10	NIC2_LINK_N
11	NIC1_ACT_N
12	NIC1_LINK_N

A. HDD LED
B. NIC1 LED
C. NIC2 LED

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	P3V3-LED
A HDD LED	○	○	ID_UID_SW/3/3V Stby
B NIC1 Link	○	○	NIC1 Activity
C NIC2 Link	○	○	NIC2 Activity
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	P3V3-LED
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	(Blue_LED_ON_N)
8	(RED_LED_ON_N)

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	P3V3_LED
6	PWR Supply Fail_N

A. OH/Fail/PWR Fail LED

B. PWR Supply Fail

	20	19	
Ground	○	○	NMI
X	○	○	X
FP PWRLED	○	○	P3V3-LED
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link	○	○	NIC1 Activity
NIC2 Link	○	○	NIC2 Activity
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	P3V3-LED
Ground	○	○	Reset Reset Button
Ground	○	○	PWR Power Button
	2	1	

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 configured to function as a suspend button (with a setting in the BIOS - See Chapter 4). 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	○	○	P3V3-LED
HDD LED	○	○	ID_UID_SW/3/3V Stby
NIC1 Link	○	○	NIC1 Activity
NIC2 Link	○	○	NIC2 Activity
Blue+ (OH/Fan Fail/ PWR FaiL/UID LED)	○	○	Red+ (Blue LED Cathode)
Power Fail LED	○	○	P3V3-LED
Ground	○	○	Reset Reset Button
Ground	○	○	PWR Power Button
	2	1	

2-7   Connecting Cables

Power Connectors

A 24-pin main power supply connector(JPW1), and two 8-pin CPU power connectors (JPW2/3) are located on the motherboard. These power connectors meet the SSI EPS 12V specification and must be connected to your power supply to provide adequate power to the system. See the table on the right for pin definitions.

Warning: To avoid damaging your motherboard and components, please use a power supply that supports a 24-pin and two 8-pin power connectors. Be sure to connect the 24-pin and the 8-pin power connectors to your power supply for adequate power delivery to your system.

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 Con-nector Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

(Required)
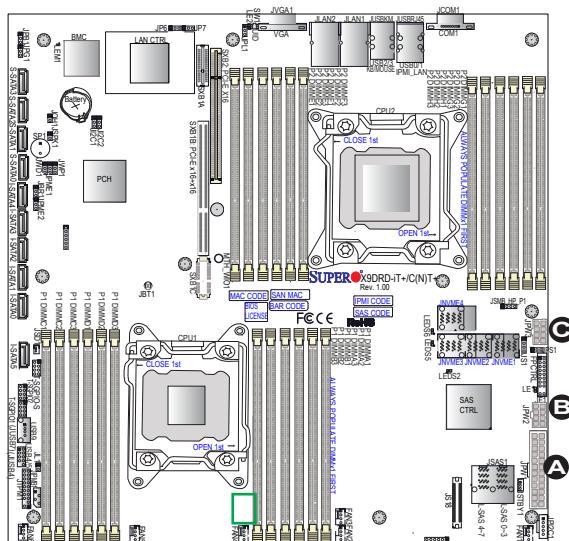
A. JPW1: 24-pin ATX PWR (Req'd)
B. JPW2: 8-pin Processor PWR (Req'd)
C. JPW3: 8-pin Processor

Fan Headers

This motherboard has eight system/CPU fan headers (FAN 1~FAN 6) 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 IPMI interface. See the table on the right for pin definitions.

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

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
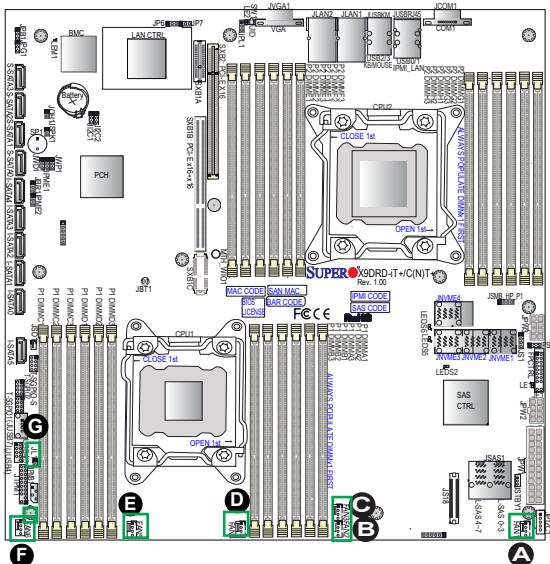
A. Fan 1
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan 5
F. Fan 6
G. Chassis Intrusion

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. (+)	P5V_SPK
Pin 2	Neg. (-)	SPKR_IN

Standby Power Header

The +5V Standby Power header is located at JSTBY1 on the motherboard. See the table on the right for pin definitions. (You must also have a card with a Standby Power connector and a cable to use this feature.)

Standby PWR Pin Definitions	
Pin#	Definition
1	+5V Standby
2	Ground
3	Not Connected
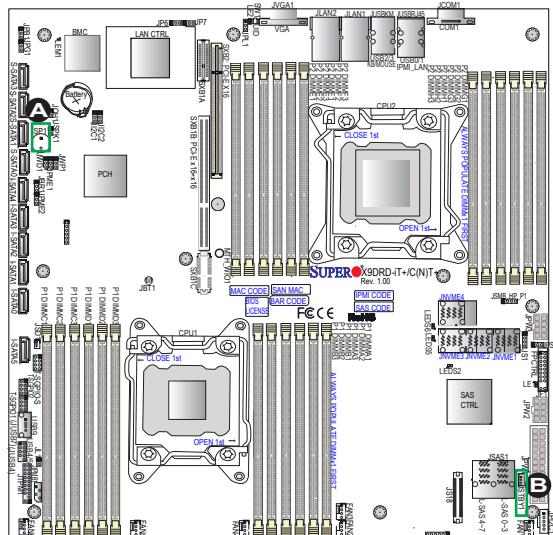
A. Internal Speaker (Buzzer)
B. Standby PWR Header

TPM Header/Port 80

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

TPM/Port 80 Header Pin Definitions			
Pin #	Definition	Pin #	Definition
1	LCLK	2	GND
3	LFRAME#	4	<(KEY)>
5	LRESET#	6	+5V (X)
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK4	14	SMB_DAT4
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	LDRQ# (X)

Overheat LED/Fan Fail

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.

Overheat LED Pin Definitions	
Pin#	Definition
1	P5V_LED
2	OH Active

OH/Fan Fail LED Status	
State	Message
Solid	Overheat
Blinking	Fan Fail
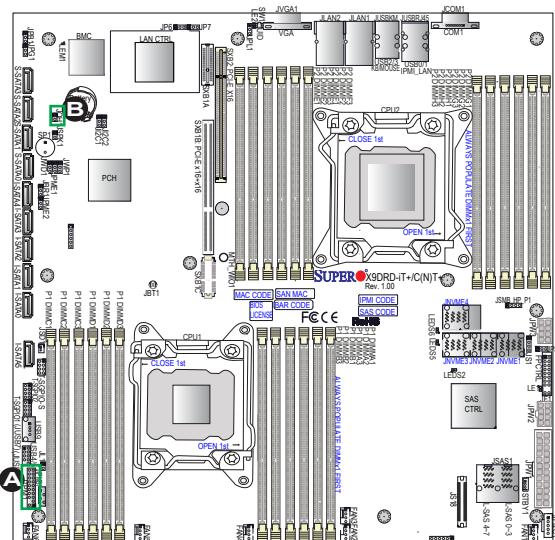
A. TPM/Port 80 Header
B. JOH1

2-31

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	P3V3_PSU

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
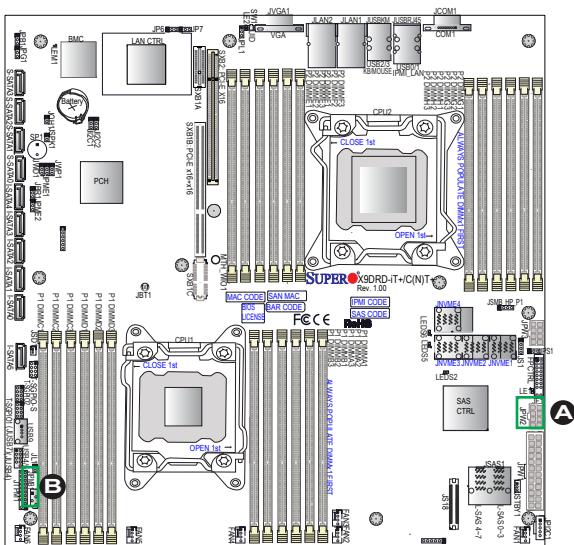
A. JPI²C1
B. JIPMB1

T-SGPIO1/2 & T-SGPIO-S Headers

Three SGPIO (Serial Link General Purpose Input/Output) headers are located on the motherboard. T-SGPIO1/2 support I-SATA ports 0-5, and T-SGPIO-S supports S-SATA ports 0-3. See the table on the right for pin definitions.

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

Note: NC= No Connection

SuperDOM Connector

A powered SATADOM (Device-on-Module) connector is located at JSD1 on the motherboard. This connector is used with Supermciro SuperDOMs to provide backward-compatible power support to non-Supermicro SATA-DOMs that require external power supply.

SuperDOM Connector Pin Definitions	
Pin#	Definition
1	+5V
2	Ground
3	Ground
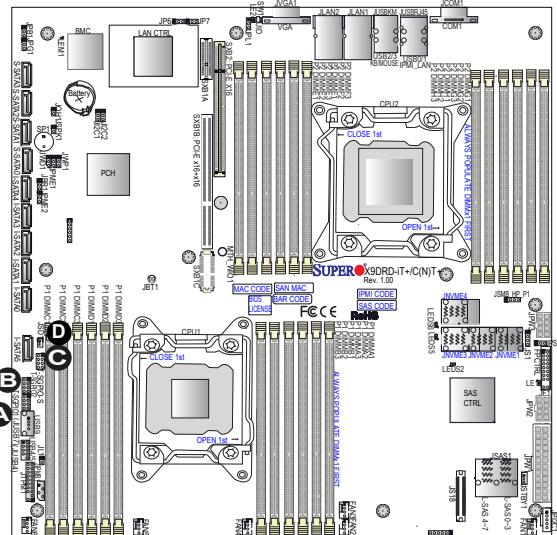
A. T-SGPIO1
B. T-SGPIO2
C. T-SGPIO-S
D. DOM PWR

2-8   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

LAN1/2 Enable/Disable

JPL1 enables or disables the 10G_LAN
ports 1/2 on the motherboard. See the
table on the right for jumper settings. The
default setting is Enabled.
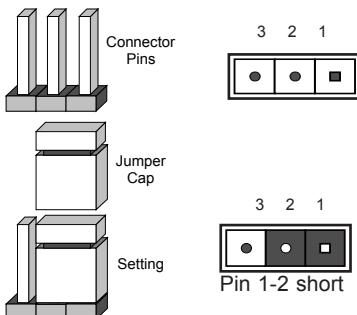
LAN Enable Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (default)
2-3	Disabled
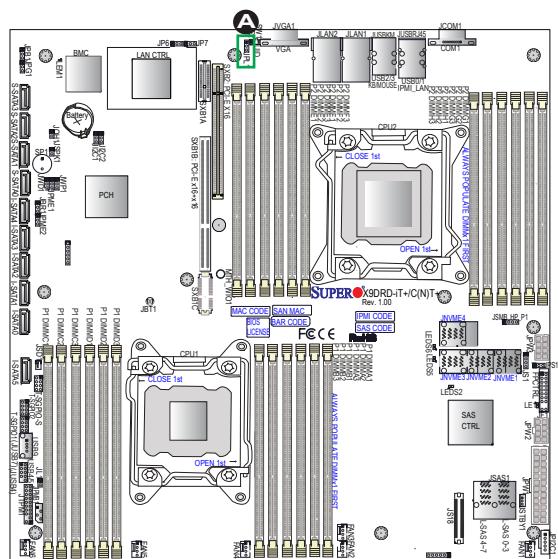
A. LAN1/2 Enable

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 will 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
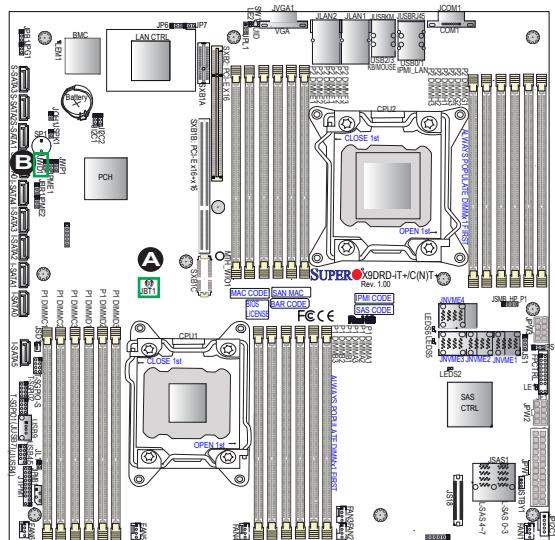
A. Clear CMOS
B. Watch Dog Enable

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 WPCM 450 BMC (Baseboard 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 (Default)
Pins 2-3	Normal
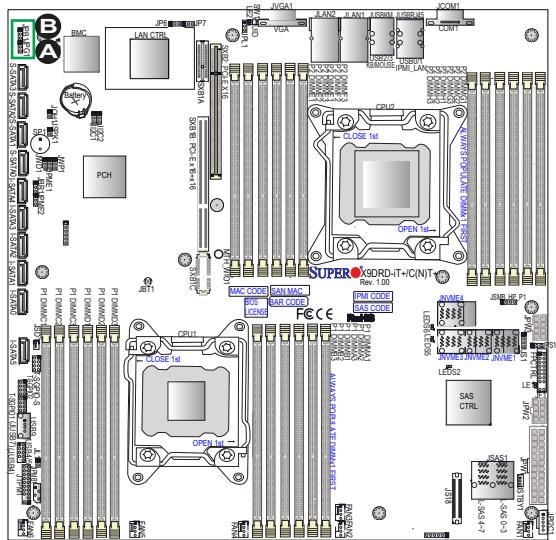
A. VGA Enabled
B. BMC Enabled

Management Engine (ME) Recovery

Use Jumper JPME1 to select ME Firm-ware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain nor-mal power operation and management. In the single operation mode, online upgrade will be available via Recovery mode. See the table on the right for jumper settings.

ME Recovery Jumper Settings	
Jumper Setting	Definition
1-2	Normal (Default)
2-3	ME Recovery

Manufacture Mode Select

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

ME Mode Select Jumper Settings	
Jumper Setting	Definition
1-2	Normal (Default)
2-3	Manufacture Mode
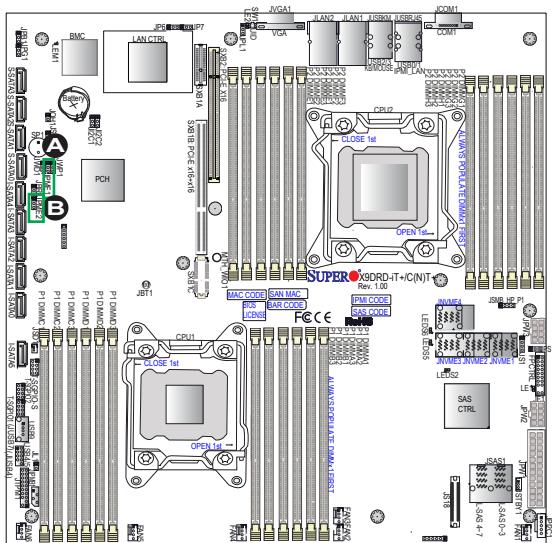
A. JPME1
B. JPME2

I²C Bus to PCI-Exp. Slots

Use Jumpers JI²C1 and JI²C2 to connect the System Management Bus (I²C) to PCI-Express slots in order to improve PCI slot performance. These two jumpers are to be set at the same time. The default setting is Closed to enable the connections. See the table on the right for jumper settings.

I²C to PCI-E slots Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled (Default)

SAS Enable (X9DRD-CT+/CNT+ only)

Use Jumper JPS1 to enable onboard SAS connections. The default setting is 1-2 to enable the connection. See the table on the right for jumper settings.

SAS Enable Jumper Settings	
Jumper Setting	Definition
1-2	Enabled (Default)
2-3	Disabled
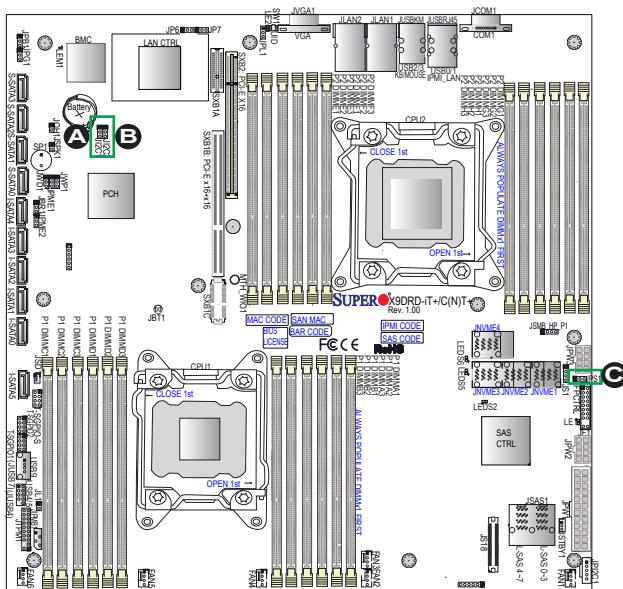
A. JI²C1
B. JI²C2
C. JPS1

BIOS Recovery

Close pins 2/3 of Jumper JBR1 to force the system into the BIOS Recovery mode to recover BIOS in a crisis situation. The default setting is to close pins 1/2 to use normal system operation mode. See the table on the right for jumper settings.

BIOS Recovery Jumper Settings	
Jumper Setting	Definition
1-2	Normal (Default)
2-3	Force BIOS Recovery

Onboard Buzzer Enable

Close pins 1/2 of Jumper JSPK1 to use the onboard buzzer. The default setting is to close pins 1/2 to use normal system operation mode. See the table on the right for jumper settings.

Onboard Buzzer Enable Jumper Settings	
Jumper Setting	Definition
On (1-2)	Enabled (Default)
Off	Disabled
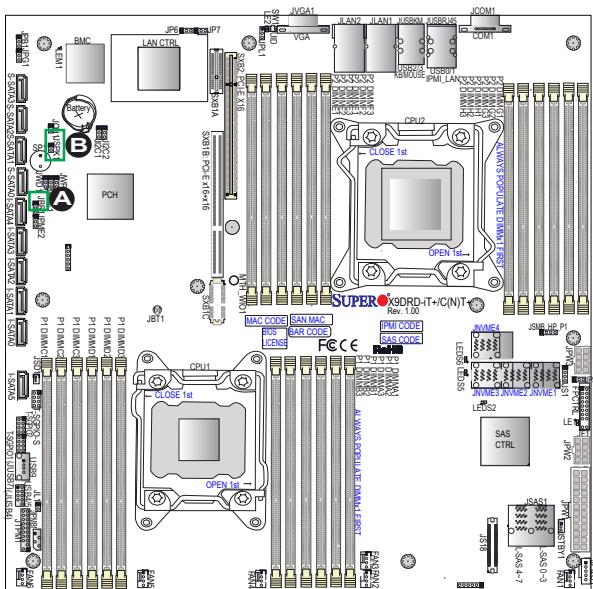
A. BIOS Recovery
B. Onboard Buzzer Enable

2-39

2-9   Onboard LED Indicators

GLAN LEDs

There are two 10G_LAN ports on the motherboard. Each 10G Ethernet LAN port has two LEDs. The green LED on the right indicates activity. The Link LED on the left side may be green, amber or off to indicate the speed of the connection. See the table on the 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
Green	Flashing	Active

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

IPMI Dedicated LAN LEDs

In addition to LAN1/LAN2, an IPMI_dedicated LAN is also located on the I/O Backplane of 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 table on the right for more information.

IPMI LAN

Link LED — Activity LED
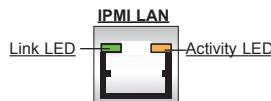
IPMI LAN Link LED (Left) & Activity LED (Right)		
	Color/State	Definition
Link (Left)	Green: Solid	100 Mbps
Activity (Right)	Amber: Blinking	Active
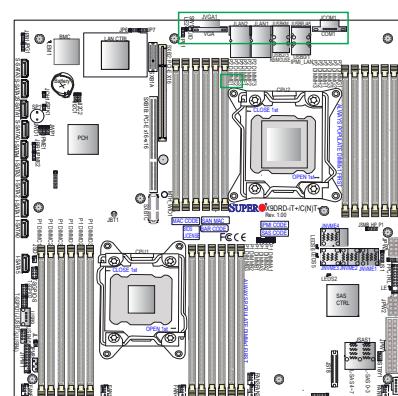
A. LAN1/2 LEDs
B. IPMI LAN LEDs
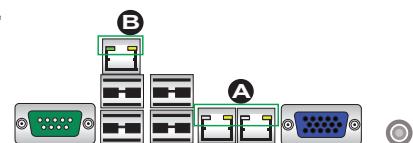
Onboard Power LED

An Onboard Power LED is located at LE1 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 table on the right for more information.

Onboard PWR LED Indicator LED States	
LED Color	Definition
Off	Normal PWR Off (w/PWR cable connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State

BMC Heartbeat LED

A BMC Heartbeat LED is located at LEM1 on the motherboard. When LEM1 is blinking, BMC functions normally. See the table on the right for more information.

BMC Heartbeat LED States	
Color/State	Definition
Green: Blinking	BMC: Normal
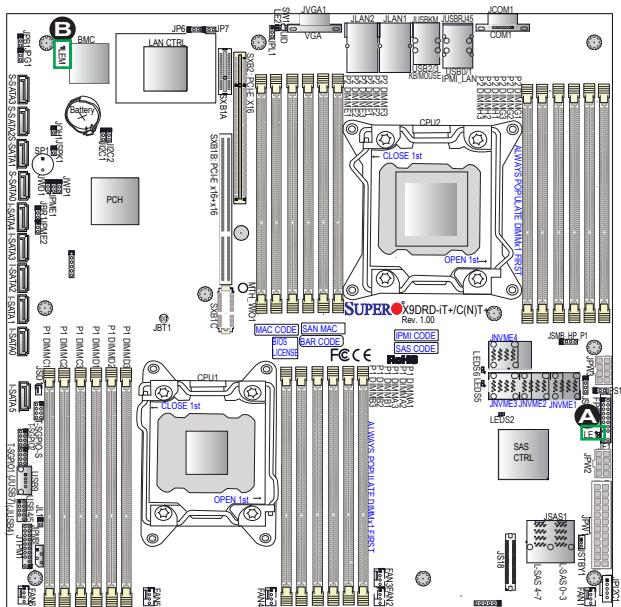
A. PWR LED
B. BMC LED

SAS Heartbeat LED (X9DRD-CT+/CNT+ only)

A SAS Heartbeat LED is located at LEDS2 on the motherboard. When LEDS2 is blinking, SAS is normal. See the table on the right for more information.

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

SAS Activity LED (X9DRD-CT+/CNT+ only)

A SAS Activity LED is located at LEDS5 on the motherboard. When LEDS5 is blinking, SAS is active. See the table on the right for more information.

SAS Activity LED States	
Color/State	Definition
Green: Blinking	SAS: Active
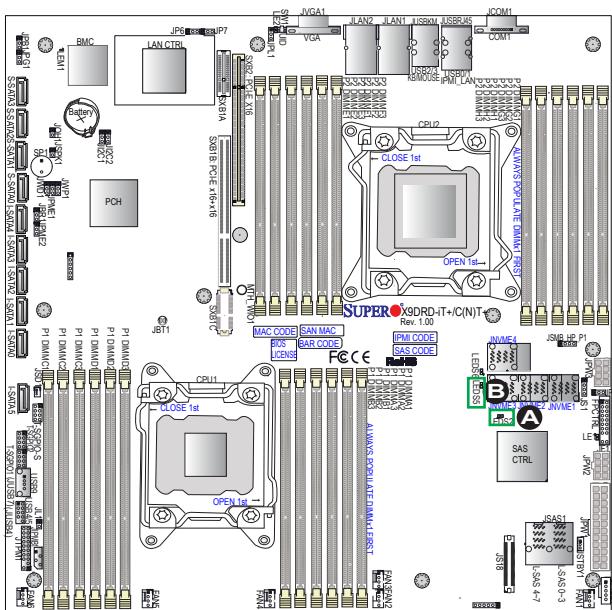
A. SAS Heartbeat LED
B. SAS Activity LED

SAS Fault LED (X9DRD-CT+/CNT+ only)

A SAS Fault LED is located at LEDS6 on the motherboard. When LEDS6 is on, SAS errors occur. See the table on the right for more information.

SAS Fault LED States	
Color/State	Definition
Red: On	SAS in Fault Condition
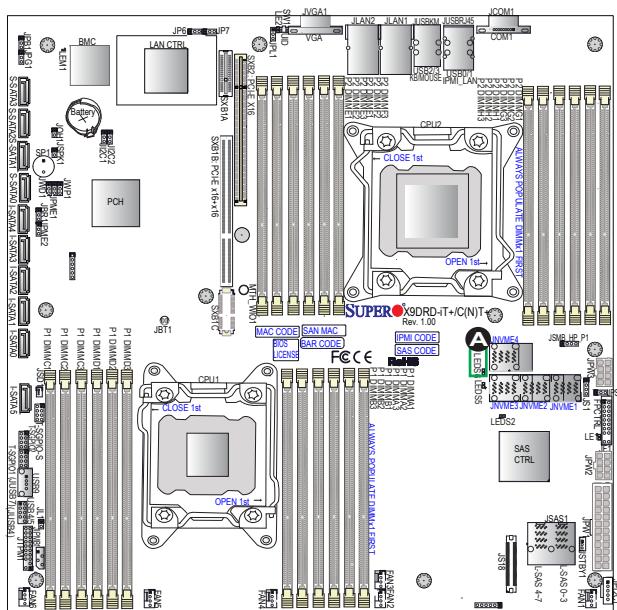
A. SAS Fault LED

2-10 SATA/SAS Connections

I-SATA/S-SATA Connections

Four SATA 2.0 ports (I-SATA2-5) and two SATA 3.0 (I-SATA0/1) are located on the motherboard. These SATA connections are supported by the Intel PCH. In addition, four S-SATA Connectors (S-SATA0-3), supported by Intel SCU, are also located on the motherboard. 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.

I-SATA/S-SATA/SAS Pin Definitions	
Pin#	Definition
1	Ground
2	TX_P
3	TX_N
4	Ground
5	RX_N
6	RX_P
7	Ground

SAS Connections (X9DRD-CT+/CNT+ only)

Eight SAS connections (L-SAS0-3, L-SAS4-7) are located on the motherboard. These SAS connections are supported by the LSI 3018 SASA controller. See the table on the right for pin definitions.

✏️ **Note** For more information on SATA HostRAID and SAS MegaRAID configurations, please refer to the Intel SATA HostRAID and LSI MegaRAID User's Guides 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. S-SATA0
H. S-SATA1
I. S-SATA2
J. S-SATA3
K. SAS0-3
L. SAS4-7
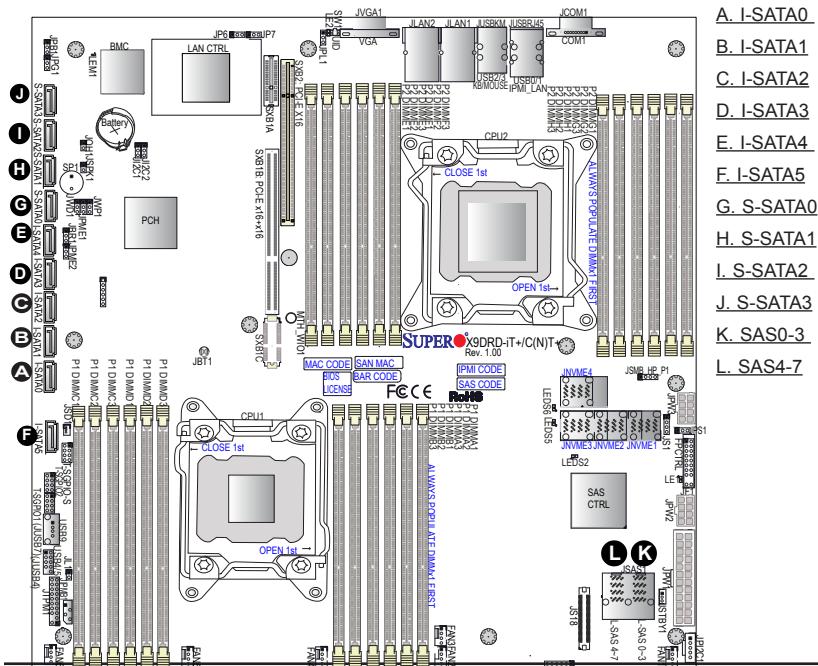
2-11 NVM Express Connections

NVM Express Connections (X9DRD-CNT+ only)

Four NVM Express ports (JNVME1-4) are located on the X9DRD-CNT+. Each NVM port provides a PCI-Exp. 3.0 x4 connection supported by CPU2. The NVM Express ports provide high-speed low-latency connections directly from the CPU to NVMe Solid State (SSD) drives. This greatly increases SSD data-throughput performance and significantly reduces PCI-E latency by simplifying driver/software requirements resulted from direct PCI-E interface from the CPU to the NVMe SSD drives.
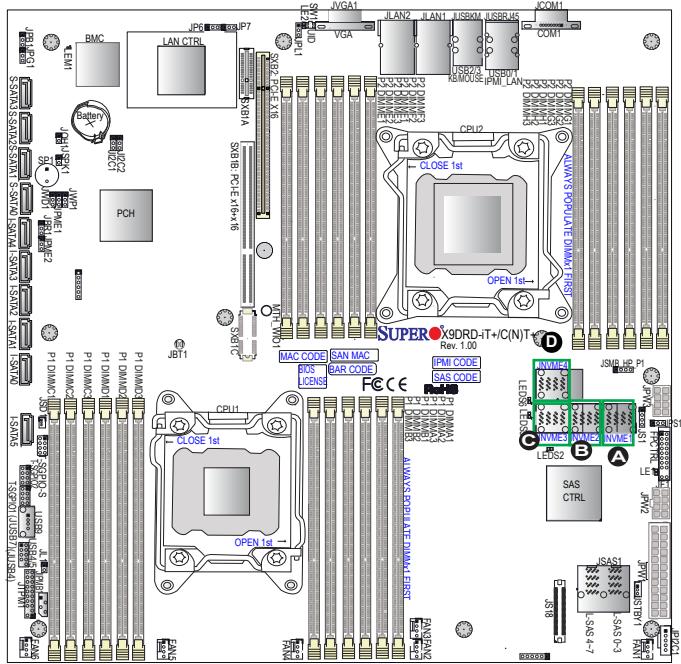
A. JVME1

B. JVME2

C. JVME3

D. JVME4

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. Note: Always disconnect the 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.

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 installed. 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 2-8 in Chapter 2.)

2. Remove all components from the motherboard, especially the DIMM modules. Make sure that system 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. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 2-7 for details on recommended power supplies.

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

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

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 (RDIMM) ECC, Unbuffered (UDIMM) ECC/Non-ECC, or Load-Reduced (LRDIMM) ECC 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 2-4 in Chapter 2.

6. Please follow the instructions given in the DIMM Population Tables listed in Section 2-4 to install your memory modules.

When the System Becomes Unstable

A. The system becomes unstable during or after OS installation

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 set-

tings 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 require- ment.

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

B. The system becomes unstable <u>before or during</u> OS installation

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 proce- dures.

4. Identifying bad components by isolating them: If necessary, remove a compo- nent 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 take the following steps. Also, please note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, 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 outwards to unlock it. Once unlocked, the battery will pop out from the holder.

4. Remove the battery.

Proper Battery Disposal

Warning: Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release 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.

LITHIUM BATTERY

BATTERY HOLDER

OR

LITHIUM BATTERY

BATTERY HOLDER
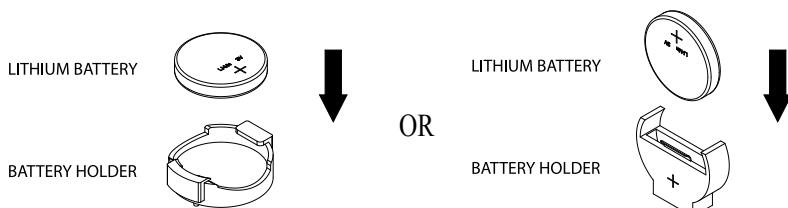
3-4   Frequently Asked Questions

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

Answer: The motherboard supports 240-pin DDR3 Registered (RDIMM) ECC, Unbuffered (UDIMM) ECC/Non-ECC, or Load-Reduced (LRDIMM) ECC modules. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2-4 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: 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. (Refer to Section 3-3 on Page 3-6.)

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/RmaForm/).

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 X9DRD-iT+/CT/CNT+. 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.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS setup utility. This BIOS setup utility can be accessed by pressing <F2> at the appropriate time during system boot.

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

Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <F2> key to enter the main menu of the AMI BIOS setup utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall 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.
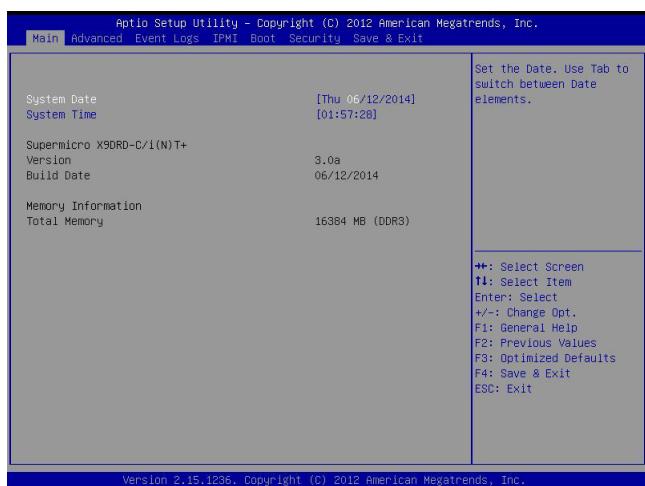
The AMI BIOS main menu displays the following information:

System Date

This item displays the system date in Day MM/DD/YY format (e.g. Wed 05/28/2014).

System Time

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

Supermicro X9DRD-iT+/CT+/CNT+

 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 setuputility 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 setupand press <Enter> to access the following submenu items.

```
           Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
      Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                         System Boot Feature
  ▶ Boot Feature                                         Setting.
  ▶ CPU Configuration
  ▶ Chipset Configuration
  ▶ SATA Configuration
  ▶ SCU Configuration
  ▶ PCIe/PCI/PnP Configuration
  ▶ Super IO Configuration
  ▶ Serial Port Console Redirection
  ▶ ACPI Settings
  ▶ ME Subsystem

  ▶ Intel RSTe SCU Controller
                                                         ➡➡: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit


           Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

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

Re-try Boot

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

Power Configuration

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

▶CPU Configuration

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

RTID (Record Types IDs)

This feature displays the total number of Record Type IDs for local and remote pools. The options are **Optimal** and Alternate.

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, 3, 4, and 5.

Limit CPUID Maximum

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

Execute Disable Bit (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 default is **Enabled**. (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.

MLC Streamer Prefetcher (Available when supported by the CPU)

If set to Enabled, the MLC (mid-level cache) streamer prefetcher will prefetch streams of data and instructions from the main memory to Level 2 (L2) Cache to improve CPU performance. The options are Disabled and **Enabled**.

MLC Spatial Prefetch (Available when supported by the CPU)

If this feature is set to Disabled, the MLC (mid-level cache) spatial prefetcher will prefetch the cache line for 64 bytes. If this feature is set to Enabled, the MLC (mid-level cache) spatial prefetcher will prefetch both cache lines for 128 bytes as comprised. The options are Disabled and **Enabled**.

DCU Streamer Prefetcher (Available when supported by the CPU)

Select Enabled to support Data Cache Unit (DCU) prefetch of L1 data 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.)

PPIN Support

Select Enabled to use the Protected-Processor Inventory Number (PPIN) in the system which will the processor to return a 64-bit IO number via the PPIN MSR. The options are **Enabled** and Disabled.

▶ **CPU Power Management Configuration**

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

Power Technology

Select Energy Efficiency to support power-saving mode. Select Custom to customize system power settings. Select Disabled to disable power-saving settings. The options are Disabled, **Energy Efficiency**, 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 Support (Available when Power Technology is set to Custom)

Select Enabled to enable Enhanced C1 Power State to boost system performance. 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.

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.

Energy/Performance Bias

This setting allows the user to adjust the fan speed based on performance (maximum cooling) or energy efficiency (maximum energy savings). The options are Performance, **Balanced Performance**, Balanced Energy, and Energy Efficient.

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 power limit set by the manufacturer 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 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 **Enabled** and Disabled.

Ageing Timer Rollover

Use this feature to determine how long to set the Ageing timer. Set this feature to default to follow the BIOS setting. The options are Disabled, 32 us, **128 us**, and 512 us.

Intel® I/OAT

Select Enabled to enable Intel I/OAT (I/O Acceleration Technology), which significantly reduces CPU overhead by leveraging CPU architectural improvements and freeing the system resource for other tasks. The default setting is **Enabled**.

DCA Support

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

MMCFG Base

Use this setting to set the default PCI MMIO base address. The default setting is **0x90000000**.

Left Riser Card/Right Riser Card

When detected by the BIOS, these items display riser card information.

IIO 1 PCIe Port Bifurcation Control

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

II0 1 IOU2-PCIe Port

This feature allows the user to set the bus speed between the IOU1 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

II0 1 IOU3-PCIe Port

If this feature allows the user to set the bus speed between the IOU3 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

II0 2 PCIe Port Bifurcation Control

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

II0 2 IOU3-PCIe Port

If this feature allows the user to set the bus speed between the IOU3 and the PCI-Exp port. The options are x4x4x4x4, x4x4x8, x8x4x4, x8x8, x16, and **Auto**.

▶QPI Configuration

Current QPI Link Speed

This item displays the current speed of the QPI Link.

Current QPI Frequency

This item displays the frequency of the QPI Link.

Isoc

Select Enabled to enable Ischronous 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 each memory module will be displayed as detected by the BIOS.

P1-DIMM1/P1-DIMM2/P1-DIMM3

P2-DIMM1/P2-DIMM2/P2-DIMM3

Memory Mode

When Independent is selected, all DIMMs are available to the operating system. The options are **Independent**, Mirroring, and Lock Step.

DRAM RAPL Mode

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

DDR Speed

Use this 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, Force DDR3 1866, 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.

A7 Address Mode

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

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).

Double Refresh

Select Enabled for Double Refresh support which will achieve memory stability when the memory temperature is high. The options are **Auto**, Enabled, and Disabled.

▶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 the 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 is 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:

Serial-ATA (Serial-ATA) Controller 0~1

Use this feature to activate or deactivate the SATA controller, and set the compatibility mode. The options for Controller 0 are Enhanced and **Compatible**. The default for SATA Controller 0 is Compatible. The default of SATA Controller 1 is **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:

SATA RAID Option ROM/UEFI Driver

Select Enabled to support onboard SATA RAID Option ROM which will allow the user to bootup the system using a SATA RAID device. Select Disabled for UEFI device support. The options are **Enabled** and Disabled.

Port 0~5 Hot Plug

Select Enabled to enable hot-plug support for the particular port, which will allow the user to change the device installed in a port specified by the user without turning off the system power. 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**.

SCU RAID Option ROM/UEFI Driver

Select Enabled to support onboard SCU RAID Option ROM which will allow the user to bootup the system using a SCU RAID device. Select Disabled for UEFI device support. The options are **Enabled** and Disabled.

▶PCIe/PCI/PnP Configuration

Launch Storage OpROM Policy

Use this feature to select the device which you want to use Option ROM to boot the system from when there are multiple Option ROM devices available in the system. The options are Legacy Only and **UEFI Only**.

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 (PCI Bus Clocks).

PERR# Generation

Select Enabled to allow a PCI device to generate a PERR (PCI/PCIE Parity Error) 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 (System Error) 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 and 256 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**, and Auto.

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

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**.

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 and 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 settings 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 item displays the settings of Serial Port 1.

Change Settings

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

Device Mode

Use this feature to select the desired mode for a serial port specified. The options are **Normal** and High Speed.

▶Serial Port 2 Configuration

SOL (Serial-Over-LAN) Serial Port

Select Enabled to enable a serial port specified by the user to be used as a Serial-Over-LAN port. 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 COM Port 2. The options are **Auto**, IO=3F8h; IRQ=4; IO=3F8h; IRQ=3; IO=2F8h; IRQ=3; IO=3E8h; IRQ=5; IO=2E8h; IRQ=7; IO=3F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12; and IO=2E8h; IRQ=3, 4, 5, 6, 7, 10, 11, 12.

SOL (Serial-Over-LAN) Device Mode

Use this feature to select the desired mode for the serial port specified. The options are **Normal** and High Speed.

Serial Port 2 Attribute

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

▶Serial Port Console Redirection

- **COM1, COM2/SOL**

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

▶Serial Port Console Redirection

COM1 and SOL

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

COM1 Console Redirection/SOL Console Redirection

Select Enabled to use a serial port selected by the user to be used for Console Redirection. The options are Enabled and Disabled. The default setting for COM1 is **Disabled**, and for SOL is **Enabled**.

▶Console Redirection Settings

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

Terminal Type

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

Bits Per second

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

Data Bits

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

Parity

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

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Redirection After BIOS POST (Power-On Self-Test)

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

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

The submenu is used to configure Console Redirection settings to support Out-of-Band Serial Port management for Windows Emergency Management Services (EMS) support.

EMS Console Redirection

The feature is used to configure Console Redirection settings for a local machine to communicate with a remote server for EMS support. The options are Enabled and **Disabled**. If this option is set to Enabled, the following items will display:

▶Console Redirection Settings (for EMS)

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

Out-of-Band Management Port

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

Terminal Type

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

Bits Per Second

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

Flow Control

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

Data Bits, Parity, Stop Bits

The status of these features is displayed.

▶ACPI Settings

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.

NUMA (NON-Uniform Memory Access)

Select Enabled to enable the Non-Uniform Memory Access ACPI support. The options are **Enabled** 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 dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

▶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.

▶ME (Management Engine) Subsystem Configuration

This feature displays the following Intel ME Subsystem Configuration settings.

● ME BIOS Interface Version

● ME Version

▶Intel RSTe SCU (Storage Controller Unit) Controller (Available on the X9DRD-CNT+ Only)

This submenu is used to configure the SCU settings. The SCU information will be displayed as well.

Intel RSTe 3.8.0.1029 SCU Driver

▶Super_DOM, RAID0(Stripe)/Super_DOM1, RAID0(Stripe)

This submenu will display SuperDOM information and allow the user to configure the SuperDOM settings as follows:

RAID Volume Info

This item displays RAID volume information for the SuperDOM device specified by the user.

RAID Actions

This item displays the status of RAID Actions for the SuperDOM device specified by the user.

▶Delete

Delete

Select Yes to delete the RAID volume from a SuperDOM device specified by the user. All data stored in the RAID volume will be deleted. The options are Yes and No.

The following information are displayed as well:

Name:

RAID Level:

Strip Size:

Status:

Bootable

▶Port 0

The following information will be displayed:

Physical Disk Information

Disk Actions

▶Reset to Non-RAID

Select Yes to reset the RAID drive installed in a SuperDOM device specified by the user to non-RAID. All RAID configuration settings will be removed from this disk drive. The options are Yes and No.

The following information are displayed as well:

Port:

Model Number:

Serial Number:

Size:

Status:

4-4   Event Logs

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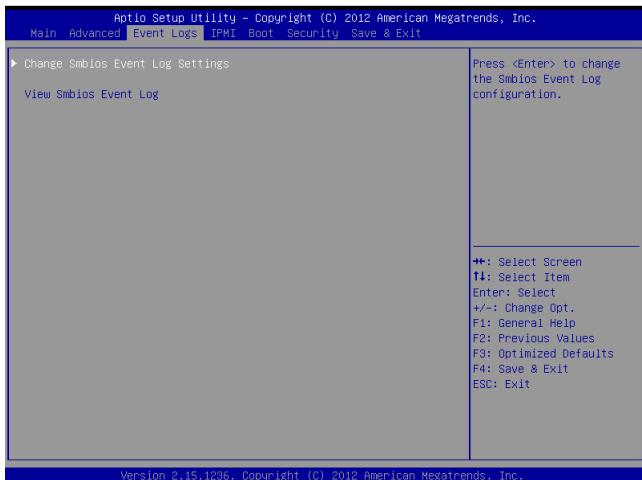
▶Change SMBIOS Event Log Settings

This feature allows the user to configure SMBIOS Event settings.

Enabling/Disabling Options

SMBIOS Event Log

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

Runtime Error Logging Support

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

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

View SMBIOS Event Log

This item allows the user to view the event in the SMBIOS event log. Select this item and press <Enter> to view the status of an event in the log. The following categories are displayed:

Date/Time/Error Code/Severity

4-5   IPMI

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

```
              Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

     IPMI Firmware Revision              03.24                  Press <Enter> to change
     IPMI STATUS                         Working                the SEL event log
   ▶ System Event Log                                           configuration.
   ▶ BMC Network Configuration









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

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```

The following IPMI information will be displayed:

IPMI Firmware Revision

IPMI Status

▶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.

IPMI LAN Selection: This feature is used to configure the IPMI_LAN settings.

Update IPMI LAN Configuration

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

4-6   Boot

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

```
     Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

                                                    Set Boot Priority.
     Set Boot Priority
     1st Boot Device              [CD/DVD]
     2nd Boot Device             [Hard Disk]
     3rd Boot Device             [USB Hard Disk]
     4th Boot Device             [Removable]
     5th Boot Device             [Network:IBA XE S1...]
     6th Boot Device             [UEFI: Built-in EF...]

   ▶ Delete Boot Option

   ▶ Network Device BBS Priorities
   ▶ UEFI Boot Drive BBS Priorities
                                                    ←→: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



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```

Set Boot Priority

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

1st Boot Device ~ 6th Boot Device

▶**Delete Boot Option**

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

Delete Boot Option

Select the target boot device to delete.

▶**Network Device BBS Priorities**

1st Boot Device

▶**UEFI Device BBS Priorities**

1st Boot Device

4-7 Security

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

Password Check

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

Administrator Password

Use this feature to set the Administrator Password which is required to enter the BIOS setup utility. The length of the password should be from 3 characters to 8 characters in length.

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 8 characters in length.

4-8   Save & Exit

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

```
              Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
    Main  Advanced  Event Logs  IPMI  Boot  Security  Save & Exit

    Discard Changes and Exit                              Save Changes done so far
    Save Changes and Reset                                to any of the setup
                                                          options.
    Save Options
    Save Changes
    Discard Changes

    Restore Optimized Defaults
    Save as User Defaults
    Restore User Defaults

    Boot Override
    IBA XE Slot 0100 v2304
    UEFI: Built-in EFI Shell
                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit

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```

Discard Changes and Exit

Select this option to quit the BIOS setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit, 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 saving, 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 is used to enter a new setting to overwrite the original setting that was saved for the following devices:

- IBA XE Slot 0100 v2304

- UEFI: Built-in EFI Shell

Notes

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

X9 Motherboard BIOS Error Beep Codes		
Beep Code/LED	**Error Message**	**Description**
1 beep	Refresh	Ready to boot
5 short beeps + 1 long beep	Memory error	No memory detected in the system
5 beeps	No Con-In or No Con-Out devices	Con-In includes USB or PS/2 keyboard, PCI or Serial Console Redirection, IPMI KVM or SOL. Con-Out includes Video Controller, PCI or Serial Console Redirection, IPMI SOL.
1 beep per device	Refresh	1 beep or each USB device detected
X9 IPMI Error Codes		
1 Continuous Beep	System OH	System Overheat

Notes

Appendix B

Software Installation Instructions

B-1   Installing Software Programs

The Supermicro ftp site contains drivers and utilities for your system at ftp://ftp.supermicro.com. Some of these must be installed, such as the chipset driver.

After accessing the ftp site, go into the CDR_Images directory and locate the ISO file for your motherboard. Download this file to create a CD/DVD of the drivers and utilities it contains. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro Website at http://www.supermicro.com/products/. Find the product page for your motherboard here, where you may download individual drivers and utilities.

After creating a CD/DVD with the ISO files, insert the disk into the CD/DVD drive on your system and the display shown below should appear.
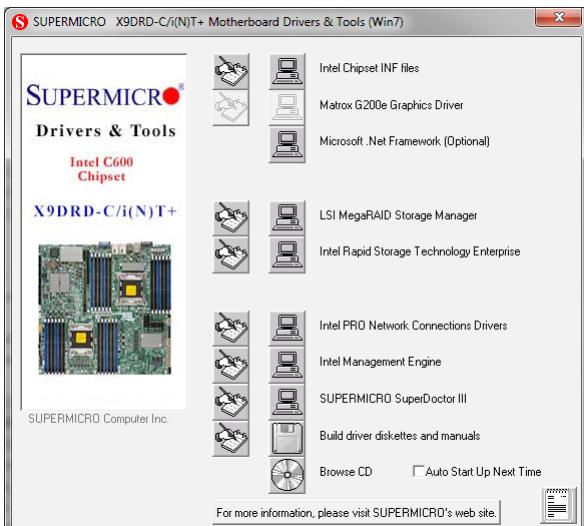
Driver/Tool Installation Display Screen

✎ **Note:** Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

B-2   Installing SuperDoctor5

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

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or IPMI. SD5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

> 🖉 **Note:** The default User Name and Password for SuperDoctor 5 is admin /admin.

SuperDoctor 5 Interface Display Screen (Health Information)

> 🖉 **Note:** The SuperDoctor 5 program and user's manual can be downloaded from the Supermicro web site at http://www.supermicro.com/products/nfo/sms_sd5.cfm.

Appendix C

UEFI BIOS Recovery Instructions

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

C-1   An Overview to the UEFI BIOS

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

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

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

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

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

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

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

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

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

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

3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your keyboard until your hear two short beeps. This may take from a few seconds to one minute.

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

   🖉 **Note**: At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.
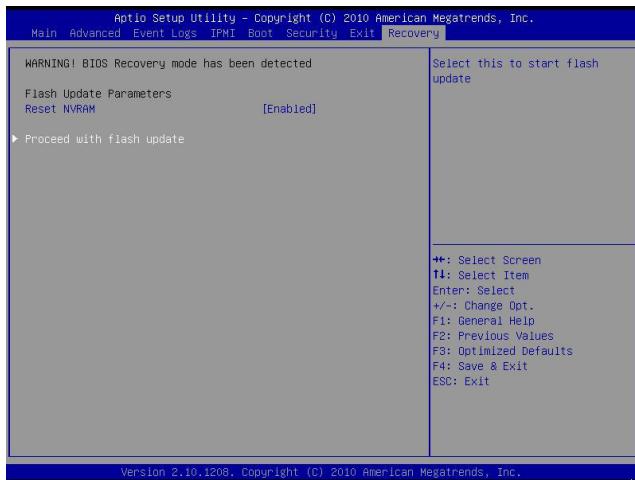
5. When the screen as shown above displays, using the arrow key, select the item- "Proceed with flash update" and press the <Enter> key. You will see the progress of BIOS Recovery as shown in the screen below.

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

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

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

 Flash update progress              15 %



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


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```

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

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

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

 Flash update progress              completed.



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


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```

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

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

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

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

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

11. Press <F3> to load default settings.

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

(Disclaimer Continued)

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