

SUPER®

X10SLQ
X10SLQ-L

USER'S MANUAL

Revision 1.1a

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- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
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Preface

This manual is written for system integrators, IT technicians and knowledgeable end users. It provides information for the installation and use of the **SUPER[®]** X10SLQ/X10SLQ-L motherboard.

About This Motherboard

The **SUPER[®]** X10SLQ/X10SLQ-L supports the 4th generation Intel® Core™ i7/i5/i3, Pentium, and Celeron processor in an LGA 1150 (H3) socket. With the Intel® Q87 Express chipset built in, the X10SLQ(-L) motherboard offers substantial enhancement in system performance and storage capability for high-end, cost-effective system platforms in a sleek package. Please refer to our website (<http://www.supermicro.com/products/>) for processor and memory support updates. This product is intended to be installed and serviced by professional technicians.

Manual Organization

Chapter 1 describes the features, specifications and performance of the motherboard, and provides detailed information on the Intel Q87 Express chipset.

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

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

Appendix A provides BIOS Error Beep Codes.

Appendix B lists software program installation instructions.

Appendix C contains UEFI BIOS Recovery instructions.

Appendix D provides instructions on how to use the dual-block boot feature for emergency BIOS recovery.

Conventions Used in the Manual:

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

Warning: Critical information to prevent damage to the components or injury to yourself.

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

 **Note:** Additional Information is provided for correct system setup.

Contacting Supermicro

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)

Web Site: www.supermicro.com

Europe

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands

Tel: +31 (0) 73-6400390

Fax: +31 (0) 73-6416525

Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Web Site: www.supermicro.nl

Asia-Pacific

Address: Super Micro Computer, Inc.
3F, No. 150, Jian 1st Rd.
Zhonghe Dist., New Taipei City 235
Taiwan (R.O.C.)

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3992

Email: support@supermicro.com.tw

Web Site: www.supermicro.com.tw

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Chapter 1

Introduction

1-1 Overview

Checklist

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

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

The following items are included in the retail box:

- One (1) Supermicro Motherboard
- Five (5) SATA cables
- One (1) I/O shield
- One (1) Quick Reference Guide



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.

SMCI 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.

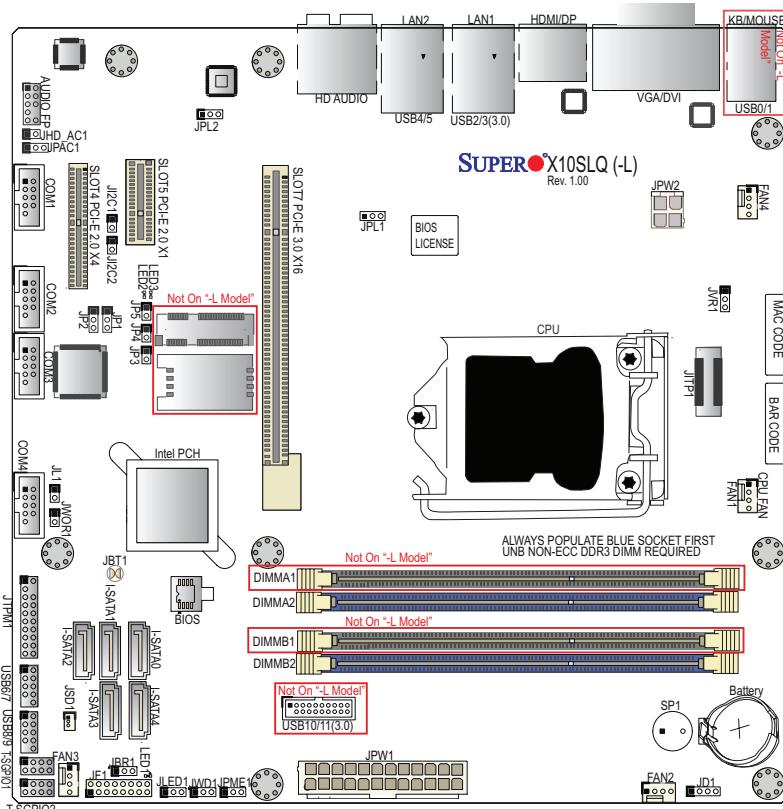
SUPERO® X10SLQ Motherboard Image



Notes:

1. All graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.
2. The following components are not available on the X10SLQ-L model: DIMM A1/ DIMM B1, PS/2 Keyboard/Mouse, USB2.0 (0/1) rear port, USB3.0 (10/11) header, and the mini-PCIe card with mSATA and 3G socket support.

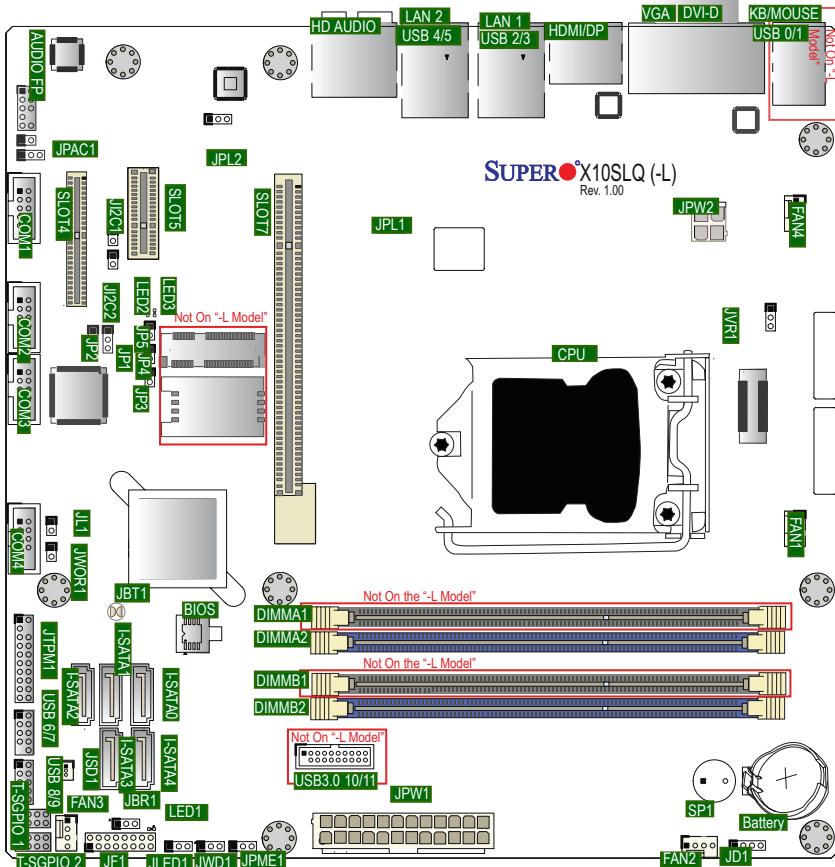
X10SLQ/X10SLQ-L Motherboard Layout



Important Notes to the User

- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "■" indicates the location of "Pin 1".
- Jumpers not indicated are for testing only.
- When LED1 (Onboard Power LED Indicator) is on, system power is on. Unplug the power cable before installing or removing any components.
- The following components are not available on the X10SLQ-L model: DIMM A1/DIMM B1, PS/2 Keyboard/Mouse, USB2.0 (0/1) rear port, USB3.0 (10/11) header, and the mini-PCIe card with mSATA and 3G socket support.

X10SLQ/X10SLQ-L Quick Reference



X10SLQ/X10SLQ-L Jumpers

| Jumper | Description | Default |
|---------------------------------------|-------------------------------|--------------------|
| JBR1 | BIOS Recovery | Pins 1-2 (Normal) |
| JBT1 | CMOS Clear | (See Chpt. 2) |
| JI ² C1/JI ² C2 | SMB to PCI Slots | Off (Disabled) |
| JPAC1 | Audio Enable | Pins 1-2 (Enabled) |
| JPL1/JPL2 | LAN1/LAN2 Enable | Pins 1-2 (Enabled) |
| JPM1 | Intel ME Recovery Mode Select | Pins 1-2 (Normal) |
| JWD1 | Watch Dog Enable | Pins 1-2 (Reset) |



Note: The following components are not available on the X10SLQ-L model: DIMM A1/DIMM B1, PS/2 Keyboard/Mouse, USB2.0 (0/1) rear port, USB3.0 (10/11) header, and the mini-PCIe card with mSATA and 3G socket support.

| X10SLQ/X10SLQ-L Headers/Connectors | |
|---|--|
| Connector | Description |
| Audio FP | Front Panel Audio Header |
| HD AUDIO | High-Definition Audio Connectors (on the I/O back panel) |
| Battery | Onboard Battery |
| COM1-COM4 | COM1/COM2/COM3/COM4 Port Headers |
| Fan1-Fan4 | System/CPU Fan Headers (Fan1: CPU Fan) |
| HDMI/DP | Backpanel HDMI/DisplayPort |
| JD1 | Speaker/buzzer (Pins 3-4: Buzzer, Pins 1-4: External Speaker) |
| JF1 | Front Panel Control Header |
| JL1 | Chassis Intrusion Header |
| JLED1 | Power LED Indicator Header |
| JP3 | WPAN LED Header (from mini PCI-E card) |
| JP4 | WLAN LED Header (from mini PCI-E card) |
| JP5 | WWAN LED Header (from mini PCI-E card) |
| JPW1 | 24-pin ATX Main Power Connector (Required) |
| JPW2 | +12V 4-pin CPU power Connector (Required) |
| JSD1 | SATA DOM (Device_On_Module) Power Connector |
| JTPM1 | Trusted Platform Module/Port 80 Connector |
| JWOR1 | Wake_On-Ring Header |
| KB/Mouse | Keyboard/Mouse Connectors (Not available on the -L model) |
| LAN1/LAN2 | Gigabit (RJ45) Ports (LAN1/2) |
| SP1 | Internal Speaker/Buzzer |
| I-SATA0-4 | Serial ATA (SATA 3.0) Ports 0-4 (6Gb/sec) from the Intel Q87 chipset |
| mini-PCIe slot | Mini-PCIe Slot with mSATA (Version 3.1) and 3G SIM card socket for WWAN card (Not available on the -L model) |
| Slot 5 | PCI-Express 2.0 x1 Slot |
| Slot 7 | PCI-Express 3.0 x16 Slot |
| Slot 4 | PCI-Express 2.0 x4 Slot |
| T-SGPIO 1/2 | Serial_Link General Purpose I/O Connection Headers 1/2 |
| USB 0/1, 4/5 | Backpanel USB 2.0 Ports (0/1, 4/5) (USB 0/1: Not available on the -L model) |
| USB 2/3, 10/11 | USB 3.0 Ports (Backpanel: 2/3, Onboard header: 10/11) (USB 10/11: Not available on the -L model) |
| USB 6/7, USB 8/9 | Onboard USB 2.0 Headers 6/7, 8/9 |
| VGA/DVI-D | Backpanel VGA/DVI-D (Digital Video Interface) Port |

X10SLQ/X10SLQ-L LED Indicators

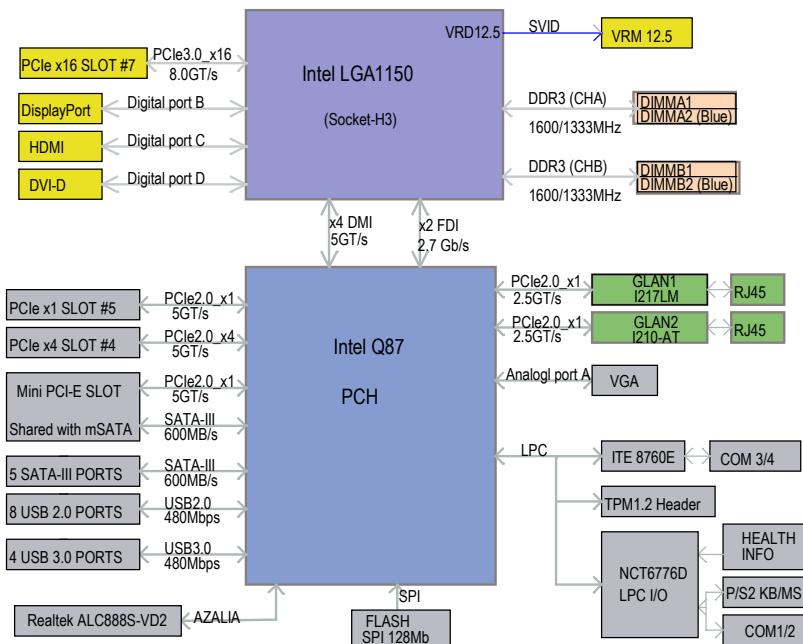
| LED | Description | Color/State | Status |
|------------|-------------------------|--------------------|---------------|
| LED1 | Onboard Standby PWR LED | Green: Solid on | Power On |
| LED2 | WLAN_LED | | |
| LED3 | Standby Power LED | Green: Solid on | Power On |

Motherboard Features

| | | |
|----------------------------|--|--|
| CPU | 4th Generation Intel® Core™ i7/i5/i3, Pentium, and Celeron processor in an LGA1150 socket. | |
| Memory | X10SLQ: Four (4) SDRAM slots support up to 32 GB of DDR3 Unbuffered, Non-ECC 1600/1333 MHz memory. X10SLQ-L: Two (2) SDRAM slots support up to 16 GB of DDR3 Unbuffered, Non-ECC 1600/1333 MHz memory. Dual-channel memory DIMM sizes UDIMM 1 GB, 2 GB, 4GB, and 8GB | |
| Chipset | Intel® Q87 Express | |
| Expansion Slots | One (1) PCI Express 3.0 x16 slot (Slot 7) One (1) PCI Express 2.0 x1 slot (Slot 5) One (1) PCI Express 2.0 x4 slot (Slot 4) | |
| Network Connections | Two (2) Gigabit Ethernet Controllers: LAN1: Intel i217LM gigabit LAN PHY LAN2: Intel i210AT gigabit LAN controller Two (2) RJ-45 rear I/O panel connectors with Link and Activity LEDs | |
| I/O Devices | SATA Connections SATA 3.0 (6Gb/s) Six (6) Ports: I-SATA 0-4 + mSATA (SATA5) via Intel® PCH Q87 RAID 0, 1, 5, 10 (MS Windows®) (USB2.0 0/1 and USB3.0 10/11) Not available on the -L model Four (4) USB 2.0 ports on the rear I/O panel (USB 0/1, 4/5), Two (2) USB 3.0 ports on the rear I/O panel (USB 2/3) Four (4) Front Accessible USB 2.0 ports on two headers (USB 6/7, 8/9), Two (2) Front Accessible USB 3.0 ports on one header (USB 10/11) PS/2 Keyboard/Mouse (Not available on the -L model) One shared PS/2 Keyboard/Mouse port on the I/O backpanel Serial (COM) Ports Four (4) Front Accessible Serial Port headers (COM1-COM4) (COM2 supports RS232/422/485) One (1) mini-PCI-Express socket shared with mSATA (Not available on the -L model). | |

| | |
|-----------------------------|---|
| | Video and Graphics One (1) High Definition Multimedia Interface (HDMI), one (1) DisplayPort, one (1) DVI-D, and one (1) VGA from Intel Processor Graphics, support three independent Displays. |
| | Audio One (1) High Definition Multimedia Interface (HDMI), one (1) DisplayPort, and one (1) High Definition Audio 7.1 channel connector on the back panel. One (1) Front Panel Audio Header |
| | Super I/O Nuvoton NCT6776D |
| BIOS | 128 Mb AMI BIOS [®] SPI Flash BIOS Plug and Play, PCI 2.3, ACPI 4.0a, UEFI 2.3.1, USB Keyboard and SMBIOS 2.7 |
| Power Configuration | ACPI/ACPM Power Management Main Switch Override Mechanism Keyboard Wake-up from Soft-Off External Modem Ring-On or USB 0/1, 6/7 Wake-up from S3/4/5 Power-on mode for AC power recovery |
| PC Health Monitoring | CPU Monitoring Onboard voltage monitors for VCCP, VCC3_3, AVCC, VCC3_3_ALW, VBAT, VCC12, V_DIMM, VCC5 and VCC1P05_PCH CPU 3-phase switching voltage regulator CPU/System overheat LED and control CPU Thermal Trip support Adaptive Thermal Monitor support Fan Control Fan status monitoring with firmware 4-pin fan speed control Low noise fan speed control |
| System Management | PECI (Platform Environment Configuration Interface) 3.0 support System resource alert via SuperDoctor [®] III SuperDoctor [®] III, Watch Dog, NMI, AMT 9.0 Chassis Intrusion header and detection |
| CD Utilities | Download from www.supermicro.com Drivers/Software for Intel [®] Q87 Express Chipset Utilities |

| | |
|-------------------|---|
| Other | ROHS (Full Compliance, Lead Free) |
| | Operating Temperature: 0-60C |
| Dimensions | Micro-ATX form factor (9.60" x 9.60") (243.84 mm x 243.84 mm) |

X10SLQ/X10SLQ-L Block Diagram**System Block Diagram**

Note 1: This is a general block diagram and may not exactly represent the features on your motherboard. See the Motherboard Features pages for the actual specifications of each motherboard.



Note 2: The following components are not available on the X10SLQ-L model: DIMM A1/DIMM B1, PS/2 Keyboard/Mouse, USB2.0 (0/1) rear port, USB3.0 (10/11) header, and the mini-PCIe card with mSATA and 3G socket support.

1-2 Chipset Overview

The X10SLQ/X10SLQ-L supports a single 4th generation Intel® Core i7/i5/i3, Pentium, and Celeron processor in the LGA 1150 Socket. Built upon the functionality and the capability of the Q87 Express chipset, the motherboard provides substantial enhancement to system performance and storage capability for high performance platforms in a sleek package.

The high-speed Direct Media Interface (DMI) featured in the Intel Q87 Express chipset supports high-speed Direct Media Interface (DMI) for chip-to-chip true isochronous communication, providing up to 20 Gb/s of software-transparent data transfer rate on each read/write direction. The X10SLQ/X10SLQ-L supports Intel® HD Graphics through 4th generation processor with 3 independent displays. The Processor Graphics also features DirectX 11.1, OpenGL 4.0, HD content encode/transcode, Full AVC/VC1/MPEG2 Hardware Decode and Intel® Quick Sync Video Technologies. In addition, the X10SLQ/X10SLQ-L also supports Intel® VT-d, RST, vPro, TXT, and Anti-Theft technologies.

Intel Q87 Express Chipset Features

- Direct Media Interface (up 20 Gb/s transfer, Full Duplex)
- Intel® Smart Response Technology and Intel® Rapid Storage Technology
- Intel® I/O Virtualization (VT-d) Support
- Intel® Trusted Execution Technology Support
- PCI Express 2.0 Interface (up to 5.0 GT/s)
- SATA Controller (up to 6Gb/sec)
- Advanced Host Controller Interface (AHCI)
- Intel® Active Management Technology support
- XHCI USB controller support SuperSpeed USB 3.0 ports

1-3 Special Features

Recovery from AC Power Loss

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

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the board. All have an onboard System Hardware Monitoring chip that supports PC health monitoring. An onboard voltage monitor will scan these onboard voltages continuously: CPU Vcore, 3.3V, 3.3VSB, PCH 1.05V, 12V, AVCC, 5V, V_DIMM, and Battery voltages. Once a voltage becomes unstable, a warning is given, or an error message is sent to the screen. The user can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

PC health monitoring in the BIOS can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management.

Environmental Temperature Control

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

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

System Resource Alert

This feature is available when the system is used with SuperDoctor® III in the Windows OS environment or used with SuperDoctor II in Linux. SuperDoctor

is used to notify the user of certain system events. For example, you can also configure SuperDoctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond predefined thresholds.

1-5 ACPI Features

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

In addition to enabling operating system-directed power management, ACPI also provides a generic system event mechanism for Plug and Play, and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures, while providing a processor architecture-independent implementation that is compatible with Windows 7, Windows 8, and Windows 2008 Operating Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start to blink 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.

This motherboard accommodates 24-pin ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. In addition, the 12V 4-pin power connector located at JPW2 is also required to ensure adequate power supply to the system. Also your power supply must supply 1.5A for the Ethernet ports.

Warning: **1)** To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin and a 4-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the 4-pin (JPW2) power connectors on the motherboard. Failure in doing so will void the manufacturer warranty on your power supply and motherboard. **2)** To provide adequate power to SATA devices, please connect the SATA DOM PWR connector (JSD1) to the power supply.

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 web site at <http://www.ssiforum.org/>). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

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.

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 הייצור.

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
خلص من البطاريات المستعملة وفقاً 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 ontstekingsgevaar 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 وفقاً 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 your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

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 of the fan.

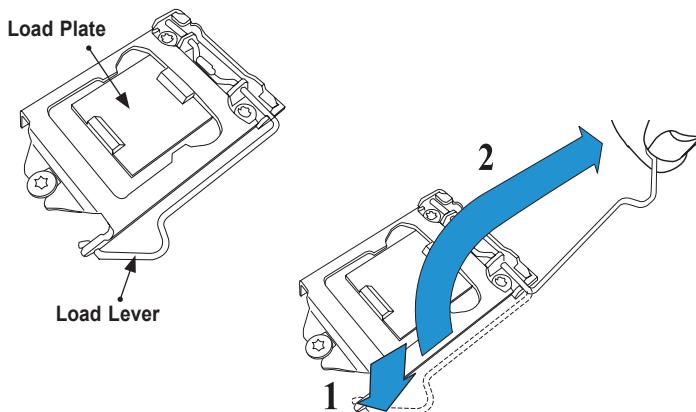


Important:

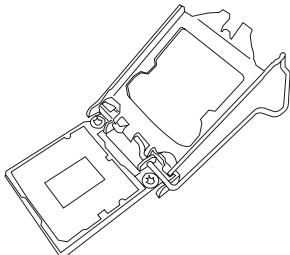
- Always connect the power cord last, and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the system board into the chassis before you install the CPU heatsink.
- When receiving a server board without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro website for updates on CPU support.

Installing the LGA1150 Processor

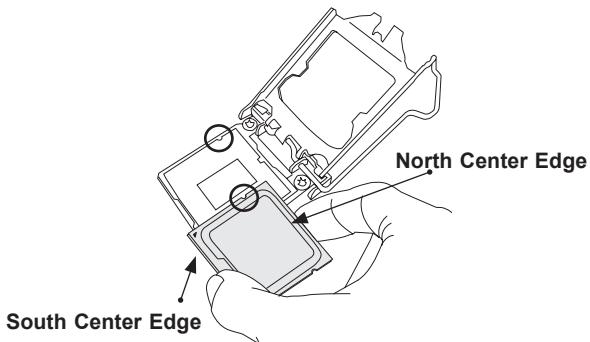
1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.



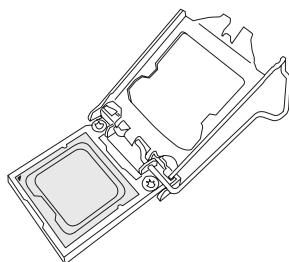
2. Gently lift the load lever to open the load plate. Remove the plastic cap.



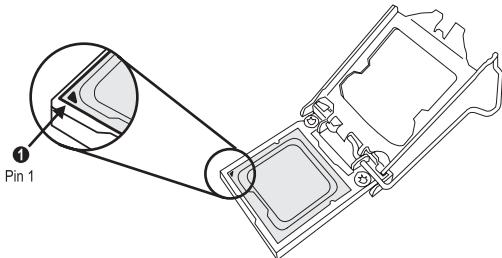
3. Use your thumb and your index finger to hold the CPU at the North center edge and the South center edge of the CPU.



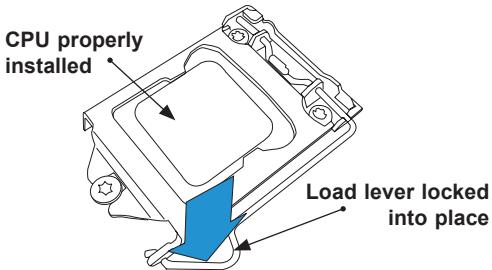
4. Align the CPU key that is the semi-circle cutouts against the socket keys. Once it is aligned, carefully lower the CPU straight down into the socket. Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically.



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



6. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.
7. Use your thumb to gently push the load lever down to the lever lock.



Warning: You can only install the CPU inside the socket only in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

Installing an Active CPU Heatsink with Fan

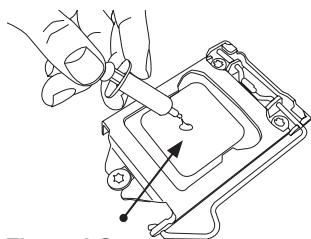
1. Locate the CPU Fan power connector on the motherboard. (Refer to the layout on the right for the CPU Fan location.)
2. Position the heatsink so that the heatsink fan wires are closest to the CPU fan power connector and are not interfered with other components.
3. Inspect the CPU Fan wires to make sure that the wires are routed through the bottom of the heatsink.
4. Remove the thin layer of the protective film from the heatsink.

Warning: CPU overheat may occur if the protective film is not removed from the heatsink.

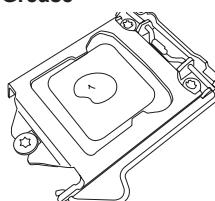
5. Apply the proper amount of thermal grease on the CPU.

 **Note:** If your heatsink came with a thermal pad, please ignore this step.

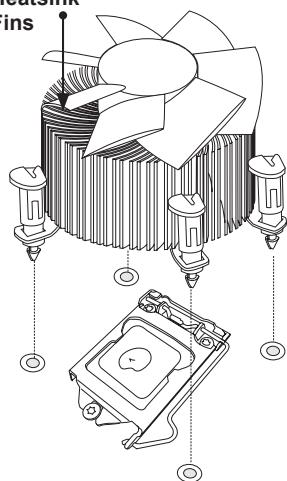
6. If necessary, rearrange the wires to make sure that the wires are not pinched between the heatsink and the CPU. Also make sure to keep clearance between the fan wires and the fins of the heatsink.



Thermal Grease

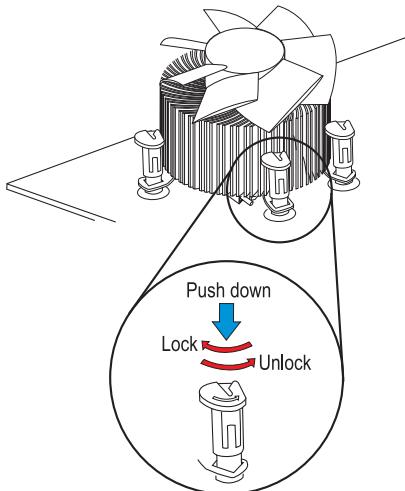


Heatsink
Fins



**Recommended Supermicro heatsink:
SNK-P0046A4 active heatsink**

7. Align the four heatsink fasteners with the mounting holes on the motherboard. Gently push the pairs of diagonal fasteners (#1 & #2, and #3 & #4) into the mounting holes until you hear a click. Also, make sure to orient each fastener so that the narrow end of the groove is pointing outward.
8. Repeat Step 7 to insert all four heatsink fasteners into the mounting holes.



9. Once all four fasteners are securely inserted into the mounting holes, and the heatsink is properly installed on the motherboard, connect the heatsink fan wires to the CPU Fan connector.

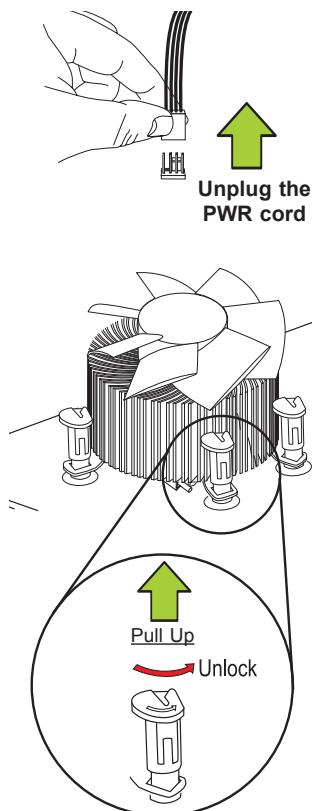


Removing the Heatsink

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

Active Heatsink Removal

1. Unplug the power cord from the power supply.
2. Disconnect the heatsink fan wires from the CPU fan header.
3. Use your finger tips to gently press on the fastener cap and turn it counterclockwise to make a 1/4 (90°) turn, and pull the fastener upward to loosen it.
4. Repeat Step 3 to loosen all fasteners from the mounting holes.
5. With all fasteners loosened, remove the heatsink from the CPU.



2-4 Installing DDR3 Memory



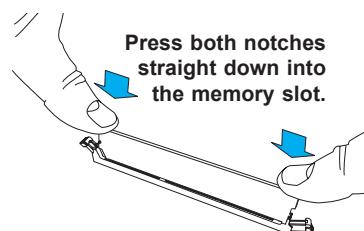
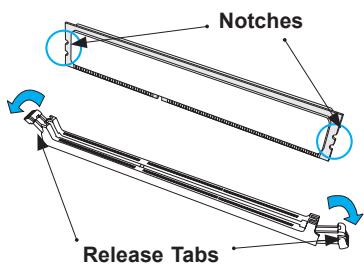
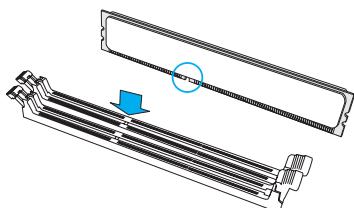
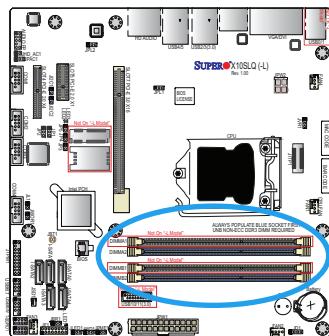
Note: Check the Supermicro website for recommended memory modules.

CAUTION

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

DIMM Installation

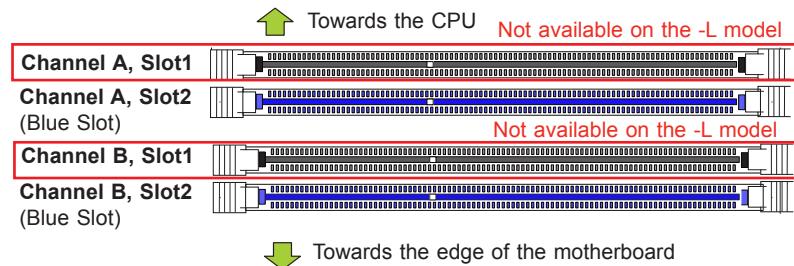
1. Insert the desired number of DIMMs into the memory slots, starting with DIMM A2 (Channel A, Slot 2, see the next page for the location). For the system to work properly, please use the memory modules of the same type and speed in the same motherboard.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.
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 lock positions to secure the DIMM module into the slot.



Removing Memory Modules

Reverse the steps above to remove the DIMM modules from the motherboard.

Memory Support



The X10SLQ supports up to 32GB of Unbuffered (UDIMM) DDR3 Non-ECC 1600/1333 MHz in 4 memory slots. Populating these DIMM modules with a pair of memory modules of the same type and same size will result in interleaved memory, which will improve memory performance.

The X10SLQ-L supports up to 16 GB of Unbuffered (UDIMM) DDR3 Non-ECC 1600/1333 MHz in 2 memory slots. Populating these DIMM modules with a pair of memory modules of the same type and same size will result in interleaved memory, which will improve memory performance.

Please refer to the table below:

Memory Population Guidelines

Please follow the table below when populating the X10SLQ/X10SLQ-L.

| DDR3 Unbuffered Non-ECC (UDIMM) Memory | | | | |
|--|-----------------------------|-----------------|------------|----------------------------------|
| DIMM Slots per Channel | DIMMs Populated per Channel | DIMM Type | POR Speeds | Ranks per DIMM (any combination) |
| 2 | 1 | Unbuffered DDR3 | 1333, 1600 | Single Rank, Dual Rank |
| 2 | 2 | Unbuffered DDR3 | 1333, 1600 | Single Rank, Dual Rank |

Not available on the -L model



Notes:

- Be sure to use memory modules of the same type, same speed, same frequency on the same motherboard. Mixing of memory modules of different types and speeds is not allowed.

- Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. See the following table for details.
- For Microsoft Windows users: Microsoft implemented a design change in the Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the behavior of Physical Address Extension (PAE) mode which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: <http://support.microsoft.com/kb/888137>.

| Possible System Memory Allocation & Availability | | |
|---|-------------|--|
| System Device | Size | Physical Memory Remaining (-Available) (4 GB Total System Memory) |
| Firmware Hub flash memory (System BIOS) | 1 MB | 3.99 |
| Local APIC | 4 KB | 3.99 |
| Area Reserved for the chipset | 2 MB | 3.99 |
| I/O APIC (4 Kbytes) | 4 KB | 3.99 |
| PCI Enumeration Area 1 | 256 MB | 3.76 |
| PCI Express (256 MB) | 256 MB | 3.51 |
| PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary- | 512 MB | 3.01 |
| VGA Memory | 16 MB | 2.85 |
| TSEG | 1 MB | 2.84 |
| Memory available to OS and other applications | | 2.84 |

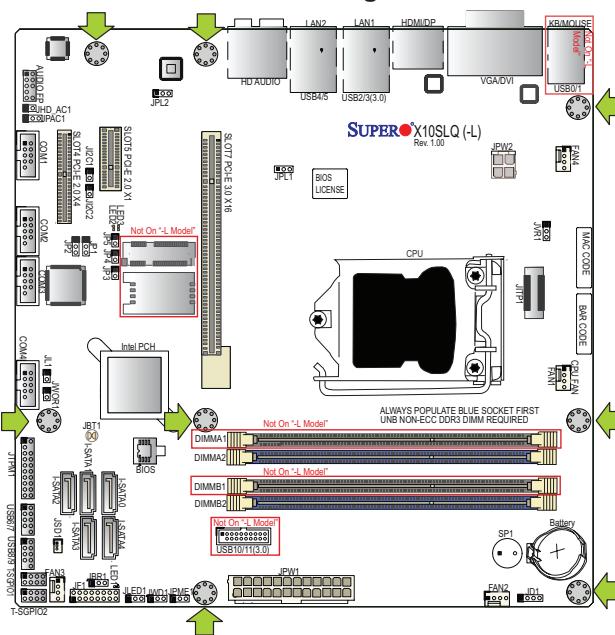
2-5 Motherboard Installation

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



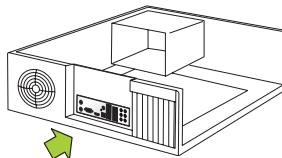
Location of Mounting Holes



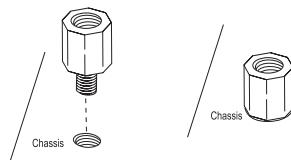
Caution: 1) To avoid damaging the motherboard and its components, please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2) Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when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

Installing the Motherboard

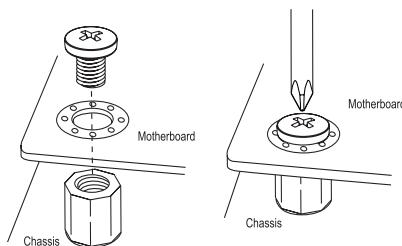
1. Install the I/O shield into the back of the chassis.



2. Locate the mounting holes on the motherboard. (See the previous page.)
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 other motherboard components.
6. Using the Phillips screwdriver, insert a Phillips 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.

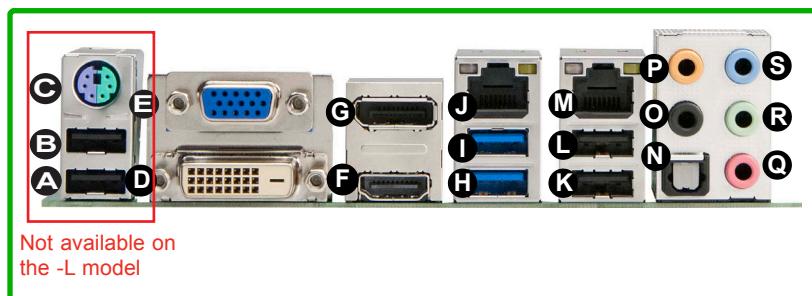
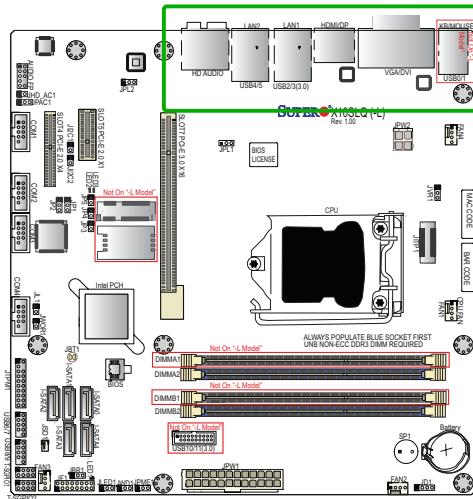


Note: Images displayed are for illustration only. Your chassis or components might look different from those shown in this manual.

2-6 Connectors/IO Ports

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

Backplane I/O Panel



| Backplane I/O Panel | | | |
|-----------------------|-------------------|------------------------------|-------------|
| A. USB 2.0 Port 1 | G. DisplayPort | M. Gb LAN Port 2 | |
| B. USB 2.0 Port 0 | H. USB 3.0 Port 2 | 7.1 HD Audio + S/PDIF | |
| C. PS2 Keyboard/Mouse | I. USB 3.0 Port 3 | N. SPDIF Out | Q. Mic In |
| D. DVI-D Port | J. Gb LAN Port 1 | O. Surround Out | R. Line_Out |
| E. VGA Port | K. USB 2.0 Port 5 | P. Center/LFE Out | S. Line_In |
| F. HDMI Port | L. USB 2.0 Port 4 | HD Audio | |



Note: PS/2 KB/Mouse and USB 0/1 are not available on the -L model.

PS/2 Keyboard/Mouse Ports

(Not available on the -L model)

The PS/2 keyboard and PS/2 mouse are located above Back Panel USB Ports 0/1 on the motherboard. See the table on the right for pin definitions.

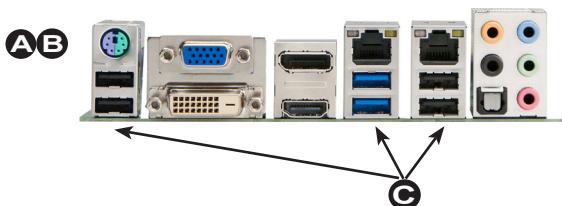
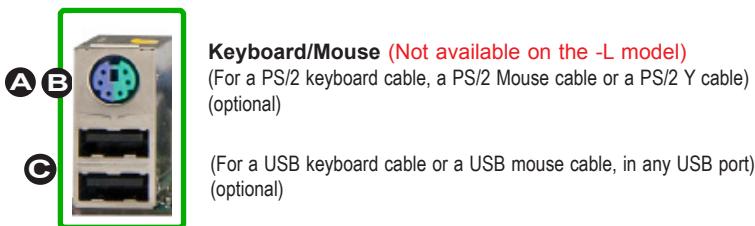
| PS/2 Keyboard/Mouse Pin Definitions | | | |
|-------------------------------------|--------------------|-----------|--------------------|
| PS2 Keyboard | | PS2 Mouse | |
| Pin# | Definition | Pin# | Definition |
| 1 | KB Data | 1 | Mouse Data |
| 2 | No Connection | 2 | No Connection |
| 3 | Ground | 3 | Ground |
| 4 | Mouse/KB VCC (+5V) | 4 | Mouse/KB VCC (+5V) |
| 5 | KB Clock | 5 | Mouse Clock |
| 6 | No Connection | 6 | No Connection |

VCC: with 1.5A PTC (current limit)



Notes: This motherboard offers three Keyboard/Mouse connection options as shown in the graphic below.

- **A.** Plug in a PS/2 keyboard or PS/2 Mouse cable to the PS2 Keyboard/Mouse port.
- **B.** Plug in a Y cable that includes a keyboard cable and mouse cable to the PS/2 Keyboard/Mouse port..
- **C.** Connect a USB keyboard cable or a USB mouse cable to any USB port.



Universal Serial Bus (USB)

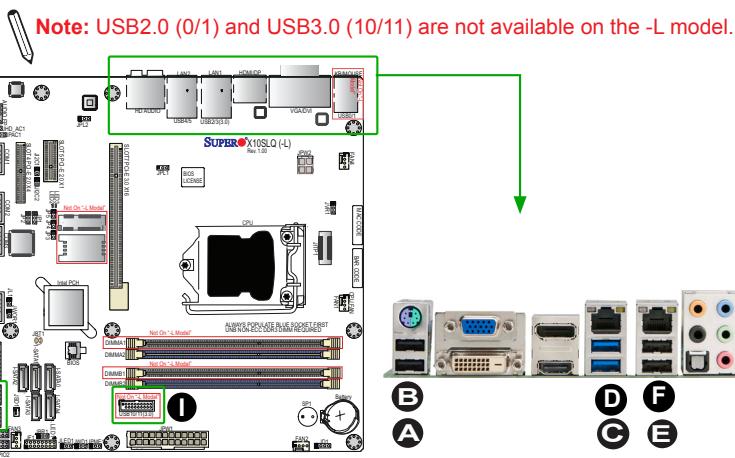
Four USB 2.0 ports (0/1, 4/5) and two USB 3.0 ports (2/3) are located on the I/O back panel. In addition, two USB 2.0 headers (four USB 2.0 connections: 6/7, 8/9), and one USB 3.0 header (two USB 3.0 connections: 10/11) are also located on the motherboard to provide front chassis access using USB cables (not included). See the tables below for pin definitions.

| Front Panel USB (2.0) #6/7, 8/9 Pin Definitions | | | |
|--|------------|-------|------------|
| Pin # | Definition | Pin # | Definition |
| 1 | +5V | 2 | +5V |
| 3 | USB_PN2 | 4 | USB_PN3 |
| 5 | USB_PP2 | 6 | USB_PP3 |
| 7 | Ground | 8 | Ground |
| 9 | Key | 10 | Ground |

| Back Panel USB (2.0) #0/1, 4/5 Pin Definitions | | | |
|---|------------|------|------------|
| Pin# | Definition | Pin# | Definition |
| 1 | +5V | 5 | +5V |
| 2 | USB_PN1 | 6 | USB_PN0 |
| 3 | USB_PP1 | 7 | USB_PP0 |
| 4 | Ground | 8 | Ground |

| USB (3.0) Back Panel USB#2/3, Front Panel USB#10/11 Pin Definitions | | | |
|--|------|-------------|----------------|
| Pin# | Pin# | Signal Name | Description |
| 1 | 19 | VBUS | Power |
| 2 | 18 | IntA_SSRX- | SuperSpeed Rx- |
| 3 | 17 | IntA_SSRX+ | SuperSpeed Rx+ |
| 4 | 16 | GND | Ground |
| 5 | 15 | IntA_SSTX- | SuperSpeed Tx- |
| 6 | 14 | IntA_SSTX+ | SuperSpeed Tx+ |
| 7 | 13 | GND | Ground |
| 8 | 12 | IntA_D- | USB2 D- |
| 9 | 11 | IntA_D+ | USB2 D+ |

- A. Backpanel USB 2.0 #1
- B. Backpanel USB 2.0 #0
- C. Backpanel USB 3.0 #2
- D. Backpanel USB 3.0 #3
- E. Backpanel USB 2.0 #5
- F. Backpanel USB 2.0 #4
- G. Front Panel USB 2.0 #6/7
- H. Front Panel USB 2.0 #8/9
- I. Front Panel USB 3.0 #10/11



Ethernet Ports

Two Gigabit Ethernet ports (LAN1/ LAN2) are located next to the HD Audio Connector on the I/O Backpanel to provide network connections. These ports accept RJ45 type cables.



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

| LAN Ports Pin Definition | | | |
|-----------------------------|------------|----|-----------------------------------|
| Pin# | Definition | | |
| 1 | P2V5SB | 10 | SGND |
| 2 | TD0+ | 11 | Act LED |
| 3 | TD0- | 12 | P3V3SB |
| 4 | TD1+ | 13 | Link 100 LED (Green, +3V3SB) |
| 5 | TD1- | 14 | Link 1000 LED (Yellow, +3V3SB) |
| 6 | TD2+ | 15 | Ground |
| 7 | TD2- | 16 | Ground |
| 8 | TD3+ | 17 | Ground |
| 9 | TD3- | 88 | Ground |

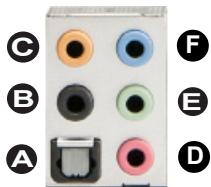
(NC: No Connection)

Back Panel High Definition Audio (HD Audio)

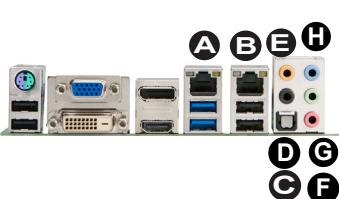
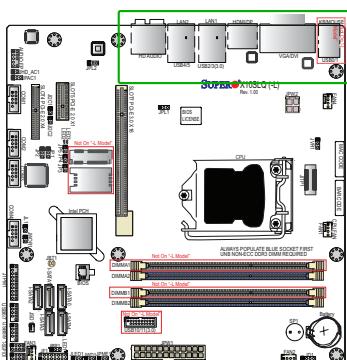
This motherboard features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously supports multiple-streaming 7.1 sound playback with 2 channels of independent stereo output through the front panel stereo out for front, rear, center and subwoofer speakers. Use the Advanced software included in the CD-ROM with your motherboard to enable this function.

| (BP) HD Audio | |
|---------------|--------------|
| Conn# | Signal |
| A | SPDIF_Out |
| B | Surround_Out |
| C | CEN/LFE_Out |
| D | Mic_In |
| E | Line_Out |
| F | Line_In |

HD Audio



- A. LAN1
- B. LAN2
- C. SPDIF_Out
- D. Surround_Out
- E. CEN/LFE_Out
- F. Mic_In
- G. Line_Out
- H. Line_In



Front Accessible Audio Header

A 10-pin Audio header is also located on the motherboard. This header allows you to use the onboard sound for audio playback. Connect an audio cable to the audio header to use this feature. See the table on the right for pin definitions for the header.

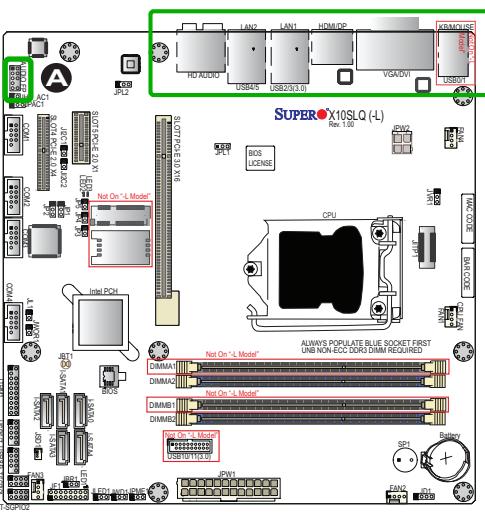
VESA DisplayPort

DisplayPort, developed by the VESA consortium, delivers digital display and fast refresh rate. It can connect to virtually any display device using a DisplayPort adaptor for devices such as VGA, DVI, or HDMI. The X10SLQ/-L supports the DisplayPort standard version 1.2a.

HDMI Port

One HDMI (High-Definition Multimedia Interface) port is located in the middle of the I/O backpanel. Refer to the board layout below for the location. This connector is used to display both high definition video and digital sound through an HDMI-capable display, using the same HDMI cable. The X10SLQ/-L supports HDMI Specification version 1.4a

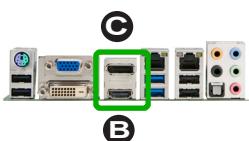
| 10-in Audio Pin Definitions | |
|-----------------------------|------------------|
| Pin# | Signal |
| 1 | Microphone_Left |
| 2 | Audio_Ground |
| 3 | Microphone_Right |
| 4 | Audio_Detect |
| 5 | Line_2_Right |
| 6 | Ground |
| 7 | Jack_Detect |
| 8 | Key |
| 9 | Line_2_Left |
| 10 | Ground |



A. Audio Header

B. HDMI Port

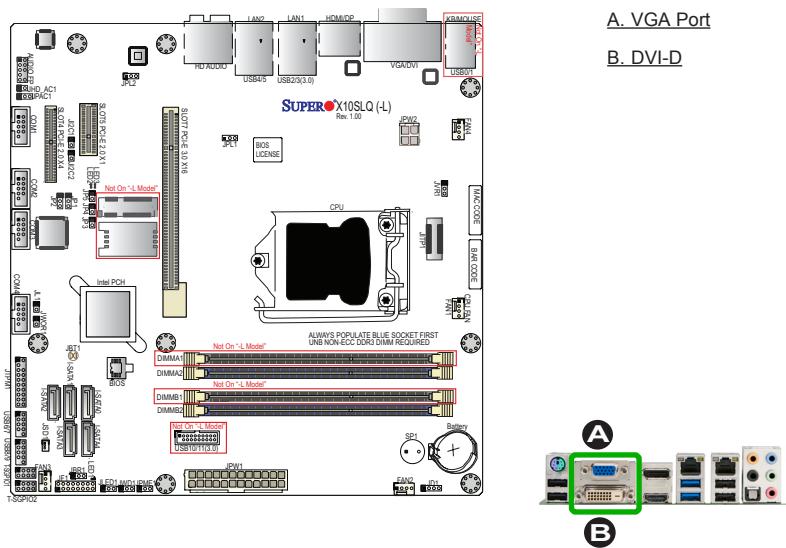
C. DisplayPort



VGA/DVI-D Connections

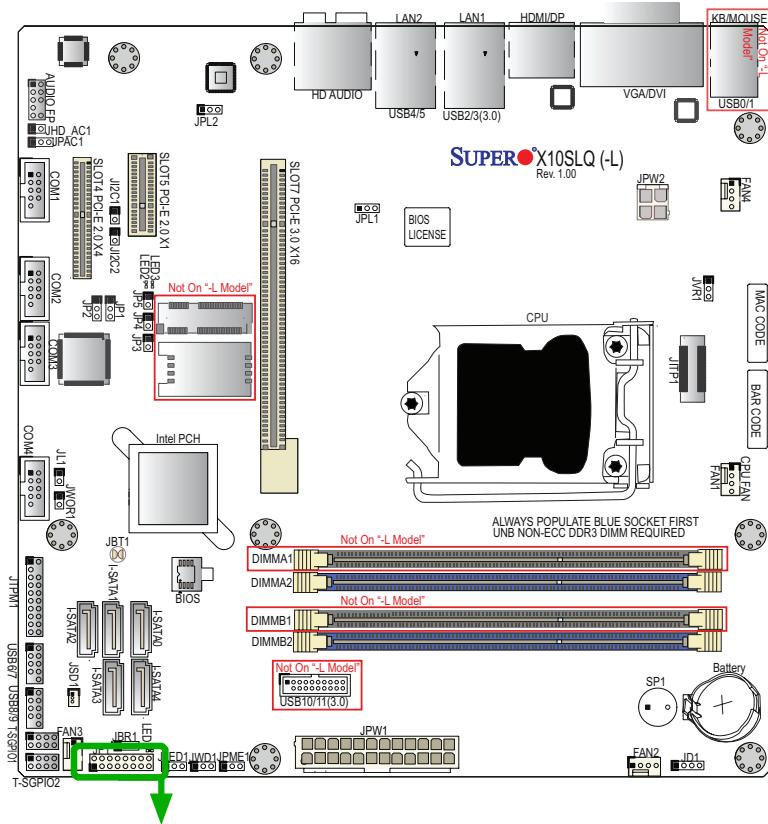
A VGA port and a DVI-D connector are located next to USB Ports 0/1 on the I/O backpanel. Use these connections for VGA and DVI-D displays.

 **Note:** DVI-D is single link and supports a maximum resolution of 1920x1200 @ 60Hz.

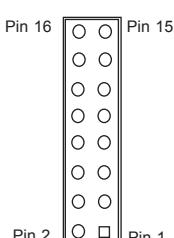


Front Control Panel

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 chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.



| | | | |
|-------------------|---|---|-----------|
| Power LED | ○ | ○ | 3.3V Stby |
| HDD LED | ○ | ○ | 3.3V Stby |
| NIC1 Activity LED | ○ | ○ | 3.3V Stby |
| NIC2 Activity LED | ○ | ○ | 3.3V Stby |
| OH/Fan Fail LED | ○ | ○ | 3.3V Stby |
| X | X | X | X |
| Ground | ○ | ○ | Reset |
| Ground | ○ | ○ | Power |



JF1 Header Pins

Front Control Panel Pin Definitions

Power LED

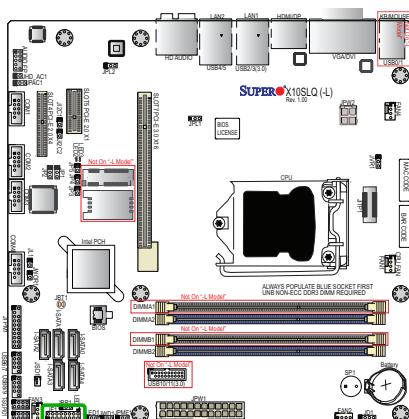
The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

| Power LED Pin Definitions (JF1) | |
|------------------------------------|------------|
| Pin# | Definition |
| 15 | 3.3V Stby |
| 16 | Power LED |

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable here to indicate the status of HDD-related activities, including IDE, SATA activities. See the table on the right for pin definitions.

| HDD LED Pin Definitions (JF1) | |
|----------------------------------|------------|
| Pin# | Definition |
| 13 | 3.3V Stby |
| 14 | HDD LED |



A. PWR LED

B. HDD LED

| | | | |
|--------------------|---|-----|------------------|
| A Power LED | { | ○ ○ | 3.3V Stby |
| B HDD LED | { | ○ ○ | 3.3V Stby |
| NIC1 Activity LED | { | ○ ○ | 3.3V Stby |
| NIC2 Activity LED | { | ○ ○ | 3.3V Stby |
| OH/Fan Fail LED | { | ○ ○ | 3.3V Stby |
| X | { | ○ ○ | X |
| Ground | { | ○ ○ | Reset Button |
| Ground | { | ○ ○ | PWR Power Button |
| | | 2 1 | |

NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and the LED connection for LAN Port 2 is on Pins 9 and 10. NIC1 LED and NIC2 LED are 2-pin NIC LED headers. Attach NIC LED cables to NIC1 and NIC2 LED indicators to display network activities. Refer to the table on the right for pin definitions.

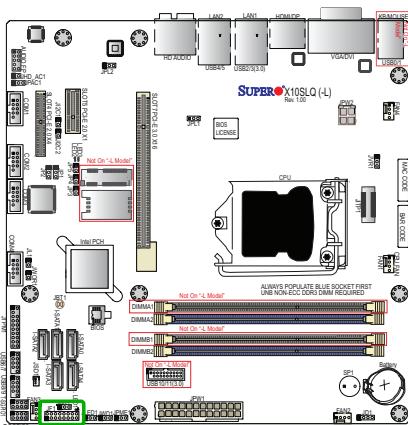
| LAN1/LAN2 LED Pin Definitions (JF1) | |
|-------------------------------------|------------------|
| Pin# | Definition |
| 9/11 | 3.3V Stby |
| 10/12 | NIC Activity LED |

Overheat (OH)/Fan Fail

Connect an LED cable to OH/Fan Fail connections on pins 7 and 8 of JF1 to provide warnings for chassis overheat/fan failure. Refer to the table on the right for pin definitions.

| OH/Fan Fail LED Pin Definitions (JF1) | |
|---------------------------------------|-----------------|
| Pin# | Definition |
| 7 | 3.3V Stby |
| 8 | OH/Fan Fail LED |

| OH/Fan Fail Indicator Status | |
|------------------------------|------------|
| State | Definition |
| Off | Normal |
| On | Overheat |
| Flashing | Fan Fail |

**A. NIC1 Activity LED****B. NIC2 Activity LED****C. OH/Fan Fail**

| | | | |
|----------------------------|---|-----|--------------|
| Power LED | { | ○ ○ | 3.3V Stby |
| HDD LED | { | ○ ○ | 3.3V Stby |
| A NIC1 Activity LED | { | ○ ○ | 3.3V Stby |
| B NIC2 Activity LED | { | ○ ○ | 3.3V Stby |
| C OH/Fan Fail LED | { | ○ ○ | 3.3V Stby |
| | X | X | |
| Ground | { | ○ ○ | Reset |
| Ground | { | ○ ○ | 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 to reset the system. Refer to the table on the right for pin definitions.

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

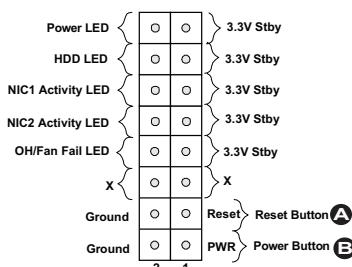
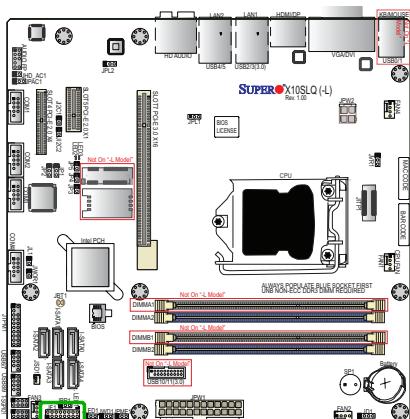
Power Button

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 in the suspend mode, press the button for at least 4 seconds. 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

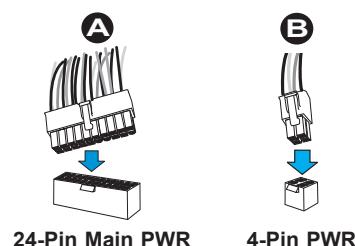


2-7 Connecting Cables

This section provides brief descriptions and pin-out definitions for onboard headers and connectors. Be sure to use the correct cable for each header or connector. For information on Backpanel USB and Front Panel USB ports, refer to Section 2-6.

ATX Main PWR & CPU PWR Connectors (JPW1 & JPW2)

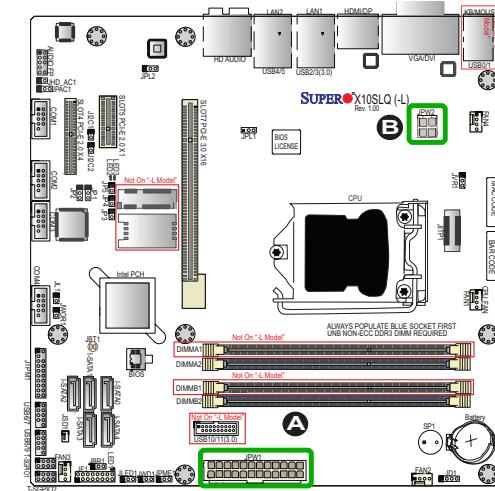
The 24-pin main power connector (JPW1) is used to provide power to the motherboard. The 4-pin CPU PWR connector (JPW2) is also required for the processor. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions.



| ATX Power 24-pin Connector Pin Definitions (JPW1) | | | |
|---|------------|-------|------------|
| 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 4-pin Power Connector Pin Definitions | |
|---|------------|
| Pins | Definition |
| 1/2 | Ground |
| 3/4 | +12V |

(Required)



A. 24-Pin ATX Main PWR

B. 4-Pin PWR

Fan Headers (Fan 1 - Fan 4)

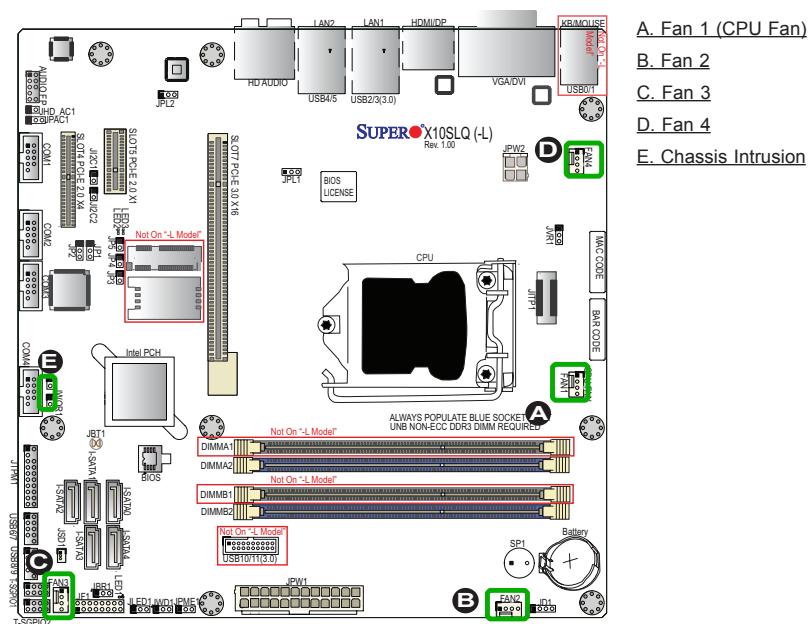
The X10SLQ/X10SLQ-L has four fan headers (Fan 1-Fan 4). These fans are 4-pin fan headers. Although pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans, we recommend the use 4-pin fans to take advantage of the fan speed control. This allows the fan speeds to be automatically adjusted based on the motherboard temperature. Refer to the table on the right for pin definitions.

| Fan Header Pin Definitions | |
|----------------------------|----------------|
| Pin# | Definition |
| 1 | Ground (Black) |
| 2 | 1A/+12V (Red) |
| 3 | Tachometer |
| 4 | PWM_Control |

| Chassis Intrusion Pin Definitions (JL1) | |
|---|-----------------|
| Pin# | Definition |
| 1 | Intrusion Input |
| 2 | Ground |

Chassis Intrusion (JL1)

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



Internal Buzzer (SP1)

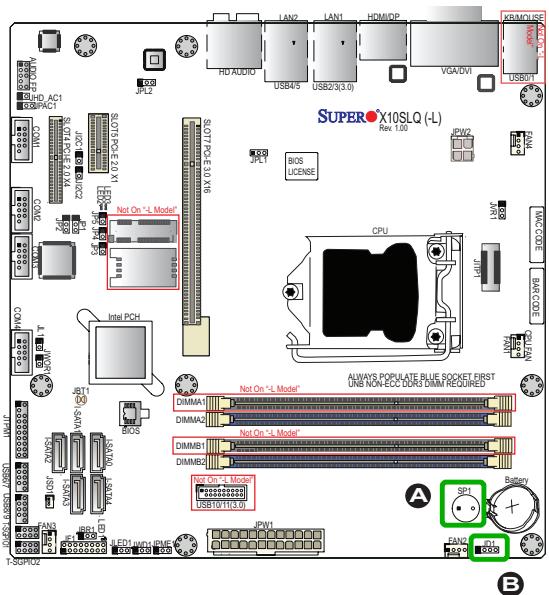
The Internal Buzzer (SP1) can be used to provide audible indications for various beep codes. See the table on the right for pin definitions.

| Internal Buzzer Pin Definition | | |
|--------------------------------|-------------|---------------|
| Pin# | Definitions | |
| Pin 1 | Pos. (+) | Beep In |
| Pin 2 | Neg. (-) | Alarm Speaker |

Speaker (JD1)

On the JD1 header, pins 3-4 are used for internal speaker. Close pins 3-4 with a cap to use the onboard speaker. If you wish to use an external speaker, close pins 1-4 with a cable. See the table on the right for pin definitions.

| Speaker Connector Pin Definitions | |
|-----------------------------------|------------------|
| Pin Setting | Definition |
| Pins 3-4 | Internal Speaker |
| Pins 1-4 | External Speaker |



A. Internal Buzzer

B. Speaker Header

Onboard Power LED (JLED1)

An onboard Power LED header is located at JLED1. This Power LED header is connected to Front Control Panel located at JF1 to indicate the status of system power. See the table on the right for pin definitions.

| Onboard PWR LED Pin Definitions | |
|---------------------------------|------------------------------|
| Pin# | Definition |
| 1 | VCC |
| 2 | No Connection |
| 3 | Connection to PWR LED in JF1 |

Serial Ports (COM1-COM4)

There are four serial (COM) port headers on the motherboard. Refer to the layout below for COM port locations. See the tables on the right for pin definitions.

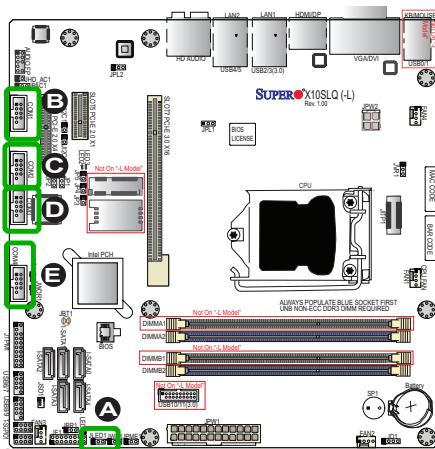
Note: COM2 supports RS232/RS422/RS485 function selection via BIOS.



COM Port Pin Layout

| Serial Ports COM1/COM3/COM4 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 |

| Serial Port COM2 Pin Definitions | | | |
|----------------------------------|--------|--------|--------|
| Pin | RS-232 | RS-422 | RS-485 |
| 1 | DCD | TX- | Data- |
| 2 | RXD | TX+ | Data+ |
| 3 | TXD | RX+ | - |
| 4 | DTR | RX- | - |
| 5 | Ground | - | - |
| 6 | DSR | - | - |
| 7 | RTS | - | - |
| 8 | CTS | - | - |
| 9 | RI | - | - |
| 10 | N/A | - | - |



A. PWR LED

B. COM1

C. COM2

D. COM3

E. COM4

DOM PWR Connector (JSD1)

The Disk-On-Module (DOM) power connector, located at JSD1, provides 5V power to a solid state DOM storage device connected to one of the SATA ports. See the table on the right for pin definitions.

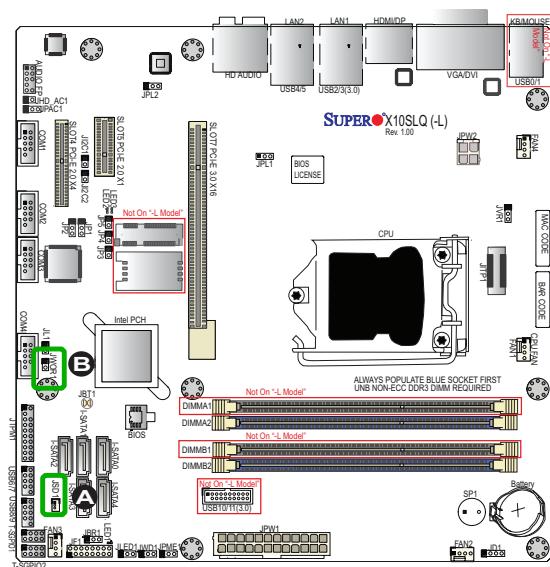
 **Note:** Supermicro recommends that the DOM Power connector be used for SATA DOM support via I-SATA2.

| DOM PWR Pin Definitions | |
|-------------------------|------------|
| Pin# | Definition |
| 1 | 5V |
| 2 | Ground |
| 3 | Ground |

Wake-On-Ring (JWOR1)

The Wake-On-Ring header is located at JWOR1. This feature allows your computer to wake up when receiving an incoming call to the modem while in the suspend state. This header is provided to support legacy devices. See the table on the right for pin definitions.

| Wake-On-Ring Pin Definitions | |
|------------------------------|------------|
| Pin# | Definition |
| 1 | Ground |
| 2 | Wake-up |



A.DOM PWR

B. JWOR1

TPM Header/Port 80 Header

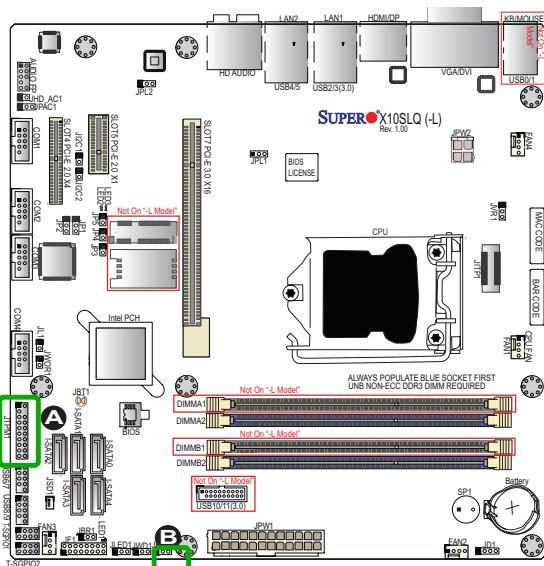
A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. See the table on the right for pin definitions.

| 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) |

Standby Power Header

The Standby Power header is located at STBY1 on the motherboard. See the table on the right for pin definitions.

| Standby Power Pin Definitions | |
|-------------------------------|---------------|
| Pin# | Definition |
| 1 | +5V Standby |
| 2 | Ground |
| 3 | No Connection |



A. TPM/Port 80

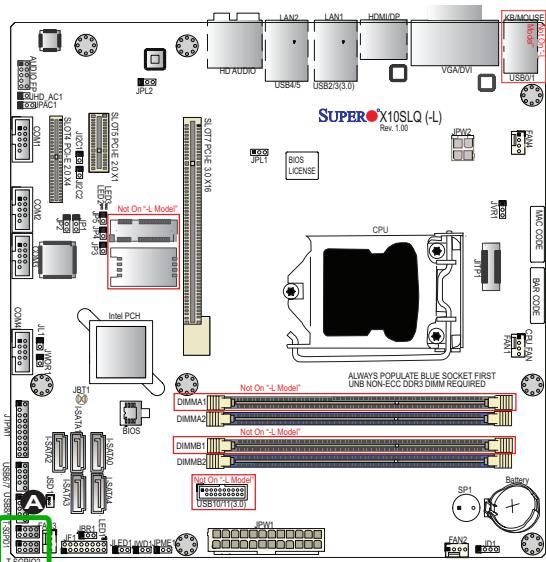
B. Standby PWR Header

T-SGPIO 1/2 Headers

Two Serial-Link General Purpose Input/Output headers (T-SGPIO 1/2) are located on the motherboard to enhance system performance. T-SGPIO 1/2 supports up to five SATA HDDs (I-SATA0~4). See the table on the right for pin definitions.

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

Note: NC= No Connection



A. T-SGPIO 1

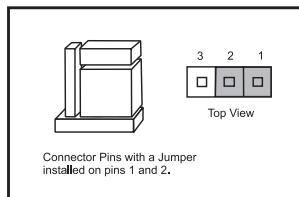
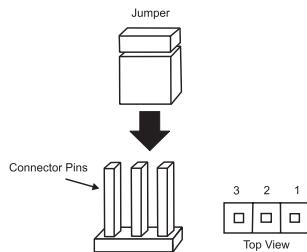
B. T-SGPIO 2

2-8 Jumper Settings

Explanation of Jumpers

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

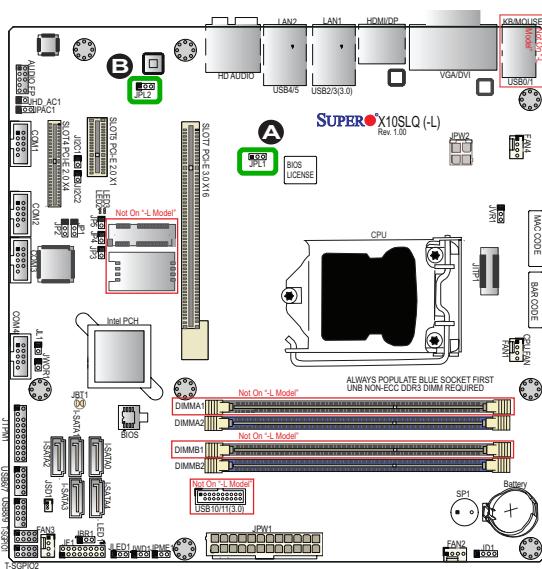
 **Note:** On two-pin jumpers, "Closed" means the jumper is on, and "Open" means the jumper is off the pins.



LAN1/LAN2 Enable/Disable

Jumpers JPL1/JPL2 enable or disable LAN ports 1/2 on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

| GLAN Enable Jumper Settings | |
|-----------------------------|-------------------|
| Pin# | Definition |
| 1-2 | Enabled (default) |
| 2-3 | Disabled |



A. JPL1: LAN1 Enable

B. JPL2: LAN2 Enable

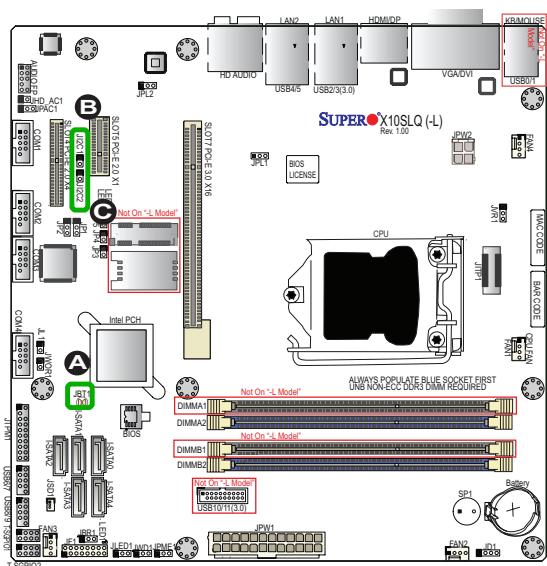
CMOS Clear (JBT1)

JBT1 is used to clear the saved system setup configuration stored in the CMOS chip. To clear the contents of the CMOS, completely shut down the system, remove the AC power cord and then short JBT1 with a jumper. Remove the jumper before powering on the system again. This will erase all user settings and revert everything to their factory-set defaults.

PCI Slot SMB Enable (I²C1/I²C2)

Use Jumpers I²C1/I²C2 to enable PCI SMB (System Management Bus) support to improve system management for the PCI slots. See the table on the right for jumper settings.

| PCI Slot_SMB Enable Jumper Settings | |
|--|------------|
| Jumper Setting | Definition |
| Short | Enabled |
| Open (Default) | Disabled |



A. Clear CMOS

B. JI²C1

C. JI²C2

Audio Enable (JPAC1)

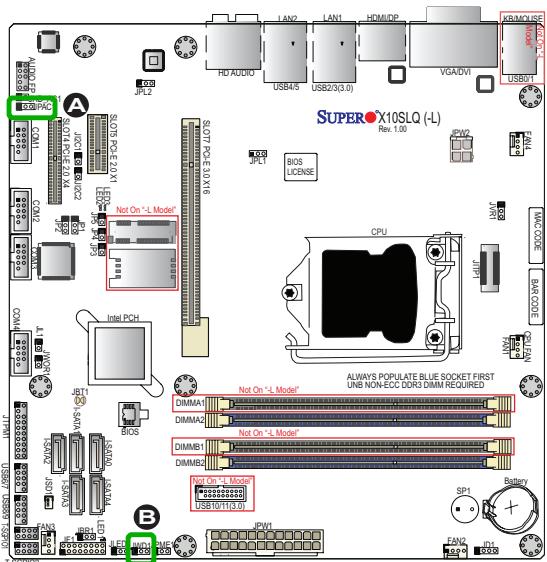
JPAC1 allows you to enable or disable the onboard audio support. The default position is on pins 1 and 2 to enable onboard audio connections. See the table on the right for jumper settings.

| Audio Enable/Disable Jumper Settings | |
|--------------------------------------|------------|
| Both Jumpers | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

Watch Dog Enable/Disable

Watch Dog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

| Watch Dog Jumper Settings | |
|---------------------------|-----------------|
| Jumper Setting | Definition |
| Pins 1-2 | Reset (default) |
| Pins 2-3 | NMI |
| Open | Disabled |



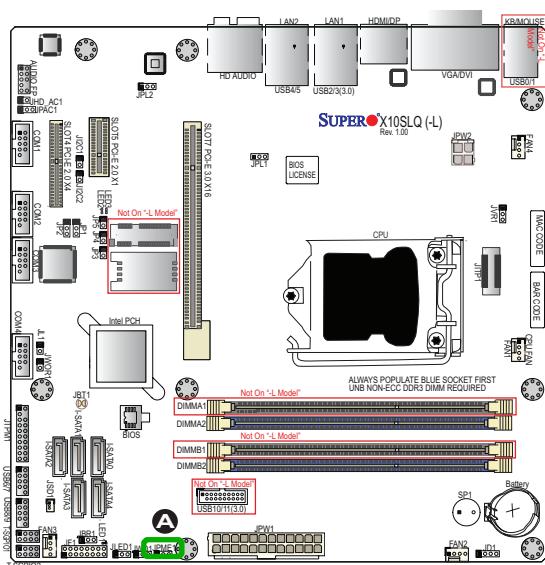
A. Audio Enable

B. Watch Dog Enable

Management Engine (ME) Recovery

Use Jumper JPME1 to select ME Firmware Recovery mode, which will limit resource allocation for essential system operation only in order to maintain normal 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 |

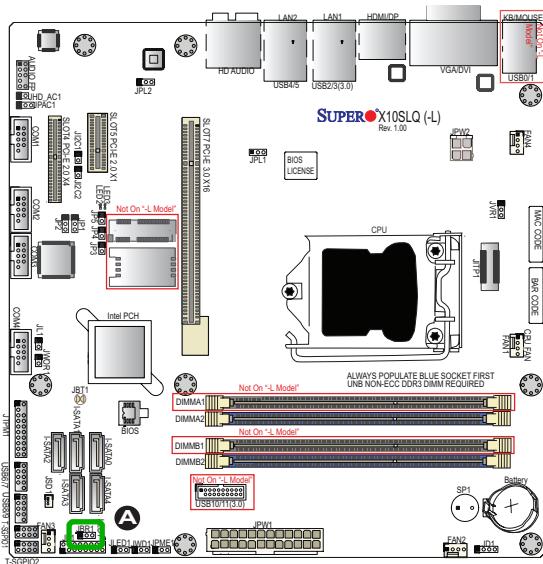


A. ME Recovery

BIOS Recovery (JBR1)

Close pins 2-3 of JBR1 to reset the BIOS configuration to the manufacturer default setting for the emergency BIOS recovery. Refer to Appendix D in this manual. See the table on the right for jumper settings.

| BIOS Recovery Jumper Settings | |
|----------------------------------|------------------|
| Settings | Definition |
| Pins 1-2 | Normal (Default) |
| Pins 2-3 | BIOS Recovery |



A. BIOS Recovery

2-9 Onboard Indicators

LAN 1/LAN 2 LEDs

Two LAN ports (LAN 1/LAN 2) are located on the I/O backplane of the motherboard. Each Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber, or off to indicate the speed of the connections. See the tables on the right for more information.



| Link LED | | Activity LED | |
|----------|------|--------------|--|
| LAN1 | LAN2 | | |

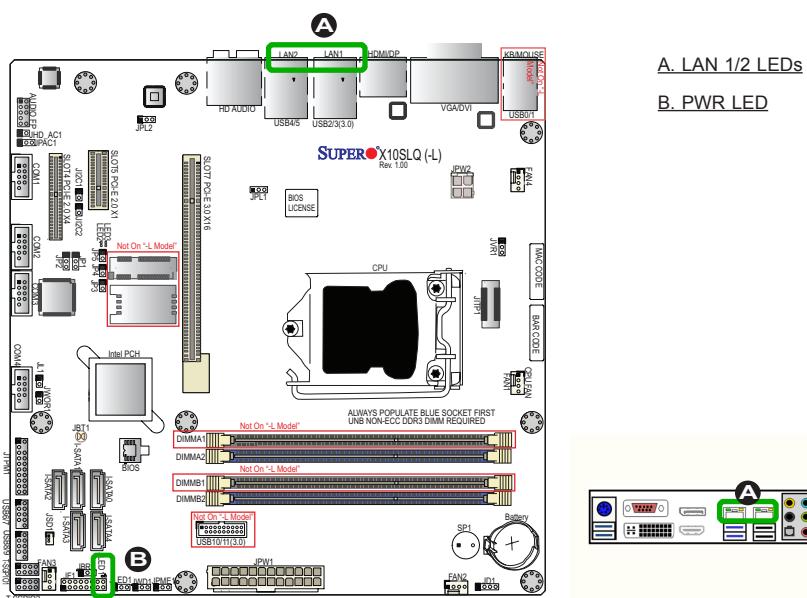
| GLAN 1/2 Activity Indicator LED Settings | | |
|--|----------|------------|
| Color | Status | Definition |
| Yellow | Flashing | Active |

| GLAN Ports 1/2 Link Indicator LED Settings | |
|--|-----------------------|
| LED Color | Definition |
| Off | No Connection/10 Mbps |
| Amber | 1 Gbps |
| Green | 100 Mbps |

Onboard Power LED (LED1)

An Onboard Power LED is located at LED1 on the motherboard. When LED1 is on, the AC power cable is connected. Make sure to disconnect the power cable before removing or installing any component. See the layout below for the LED location.

| Onboard PWR LED Indicator LED Status | |
|--------------------------------------|--|
| Status | Definition |
| Off | System Off |
| On | System on, or System off and PWR Cable Connected |



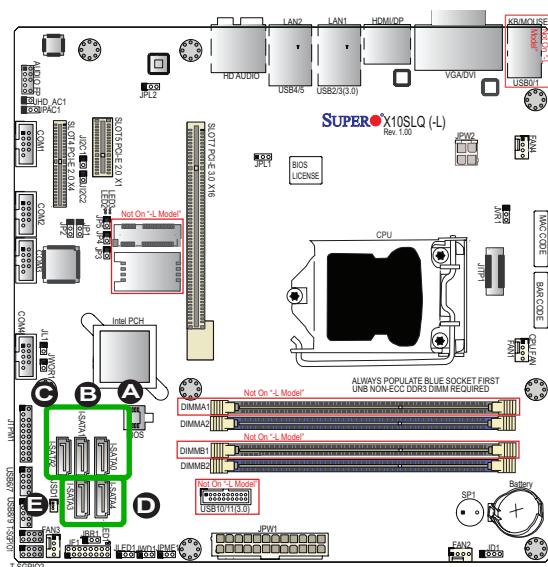
2-10 SATA Connections

SATA Connections (I-SATA0~4) and mSATA (SATA5)

Five Serial ATA (SATA) 3.0 connectors (I-SATA 0~4), supported by the Intel Q87 PCH chip, are located on the board. The SATA 3.0 ports support RAID 0, 1, 5 & 10. In addition, an mSATA port is supported by the mini PCI-E slot. These Serial Link connections provide faster data transmission than legacy Parallel ATA. See the table below for pin definitions.

| SATA 3.0 Connectors Pin Definitions | |
|--|----------|
| Pin# | Signal |
| 1 | Ground |
| 2 | SATA_TXP |
| 3 | SATA_TXN |
| 4 | Ground |
| 5 | SATA_RXN |
| 6 | SATA_RXP |
| 7 | Ground |

 **Note:** mSATA is not available on the -L model.



- A. I-SATA 3.0 #0
- B. I-SATA 3.0 #1
- C. I-SATA 3.0 #2
- D. I-SATA 3.0 #4
- E. I-SATA 3.0 #3

Notes

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

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

Before Power On

1. Make sure that the Standby PWR LED is not on. (**Note:** If it is on, the onboard power is on. Be sure to unplug the power cable before installing or removing the components.)
2. Make sure that there are no short circuits between the motherboard and chassis.
3. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse. Also, be sure to remove all add-on cards.
4. Install a CPU and heatsink (-be sure that it is fully seated) and then connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.

No Power

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Make sure that all jumpers are set to their default positions.
3. Check if the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you have no video--in this case, you will need to remove all the add-on cards and cables first.
2. Use the speaker to determine if any beep codes exist. (Refer to Appendix A for details on beep codes.)
3. Remove all memory modules and turn on the system. (If the alarm is on, check the specifications of memory modules, reset the memory or try a different one.)

Memory Errors

1. Make sure that the DIMM modules are properly installed and fully seated in the slots.
2. You should be using unbuffered Non-ECC DDR3 (1.5V) 1600/1333 MHz memory recommended by the manufacturer. Also, it is recommended that you use the memory modules of the same type and speed for all DIMMs in the system. Do not use memory modules of different sizes, different speeds and different types on the same motherboard.
3. Check for bad DIMM modules or slots by swapping modules between slots to see if you can locate the faulty ones.
4. Check the switch of 115V/230V power supply.

Losing the System's Setup Configuration

1. Please be sure to use a high quality power supply. A poor quality power supply may cause the system to lose CMOS setup information. Refer to Section 1-5 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2 Technical Support Procedures

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

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/support/faqs/>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website at (<http://www.supermicro.com/support/bios/>).



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

3. If you've followed the instructions above to troubleshoot your system, and still cannot resolve the problem, then contact Supermicro's technical support and provide them with the following information:
 - Motherboard model and PCB revision number
 - BIOS release date/version (this can be seen on the initial display when your system first boots up)
 - System configuration
 - An example of a Technical Support form is on our website at (<http://www.supermicro.com/support/contact.cfm>).
4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com, by phone at: (408) 503-8000, option 2, or by fax at (408)503-8019.

3-3 Frequently Asked Questions

Question: What type of memory does my motherboard support?

Answer: The X10SLQ/X10SLQ-L supports unbuffered Non-ECC DDR3 SDRAM (1.5V, 1600/1333 MHz). See Section 2-4 for details on installing memory.

Question: How do I update my BIOS?

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

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



Note: Always use the file named "ami.bat" to update the BIOS, and insert a space between "ami.bat" and the filename. The BIOS-filename will bear the motherboard name (i.e., X10SLQ/X10SLQ-L) and build version as the extension. For example, "X10SLQ.115". When completed, your system will automatically reboot.

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

When the BIOS flashing screen is completed, the system will reboot and will show "Press F1 or F2". At this point, you will need to load the BIOS defaults. Press <F1> to go to the BIOS setup screen, and press <F9> to load the default settings. Next, press <F10> to save and exit. The system will then reboot.

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



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

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

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

Question: What's on the CD that came with my motherboard?

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

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

Answer: To solve this issue, disable the IPMI jumper when an IPMI jumper is available on the motherboard. Another solution is to use a USB floppy drive instead of the onboard floppy drive. For the IPMI jumper location, please check Chapter 1.

Question: What is the heatsink part number for my X10SLQ/X10SLQ-L motherboard?

Answer: For the 1U passive heatsink, ask for SNK-P0046P (back plate is included). For the 2U active heatsink, use SNK-P0046A4.

3-4 Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.

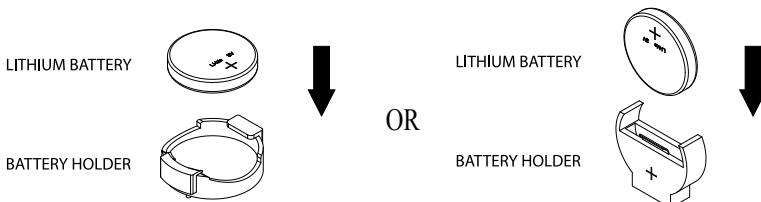
Proper Battery Disposal

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



3-5 Returning Merchandise for Service

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

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

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

Chapter 4

BIOS

4-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X10SLQ (-L). The ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

 **Note:** For AMI BIOS Recovery, please refer to the UEFI BIOS Recovery Instructions in Appendix C.

Starting BIOS Setup Utility

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

 **Note:** In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

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

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F4>, <Enter>, <ESC>, arrow keys, etc.

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

How To Change the Configuration Data

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

How to Start the Setup Utility

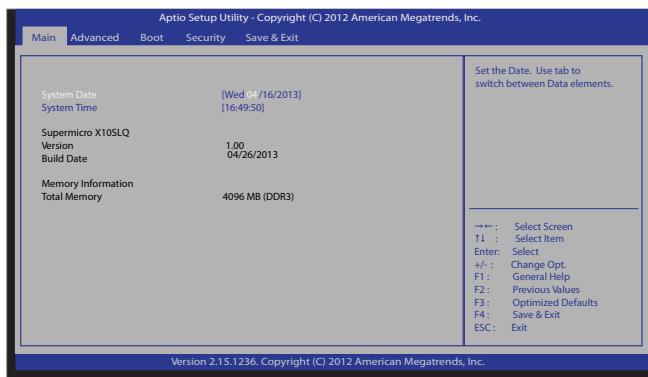
Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the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

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

4-2 Main Setup

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

The following Main menu items will be displayed:



System Date/System Time

Use this option to change the system date and time. Highlight *System Date* or *System Time* using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in Day MM/DD/YYYY format. The time is entered in HH:MM:SS format.



Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

The following BIOS items will also be displayed:

Supermicro X10SLQ

Version

Build Date

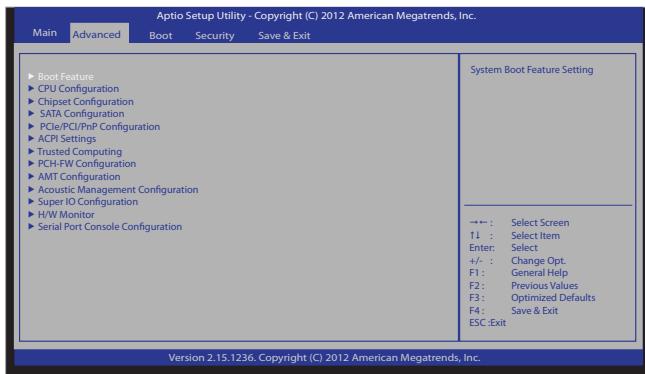
Memory Information

Total Memory

This displays the total size of memory available in the system.

4-3 Advanced Setup Configurations

Use the arrow keys to select Advanced Setup and press <Enter> to access the submenu items:



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

►Boot Feature

Quiet Boot

This feature selects the screen display between POST messages or the OEM logo at bootup. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and **Disabled**.

AddOn ROM Display Mode

This feature sets the display mode for 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

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

Wait For 'F1' If Error

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

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at 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

If this item is enabled, the BIOS will automatically reboot the system from a specified 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

This feature controls how the system shuts down when the power button is pressed. Select 4 Seconds Override for the user to power off the system after pressing and holding the power button for 4 seconds or longer. Select Instant Off to instantly power off the system as soon as the user presses the power button. The options are **4 Seconds Override** and **Instant Off**.

Restore on AC Power Loss

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

►CPU Configuration

The following CPU information will be displayed:

- Type of CPU

- CPU Signature
- Microcode Patch
- Max (Maximum) CPU Speed
- Min (Minimum) CPU Speed
- CPU Speed
- Processor Cores
- Intel HT(Hyper-Threading) Technology
- Intel VT-x (Virtualization) Technology
- Intel SMX (Trusted Execution) Technology
- 64-bit
- EIST Technology
- CPU C3 State
- CPU C6 State
- CPU C7 State
- L1 Data Cache
- L1 Code Cache
- L2 Cache
- L3 Cache

Clock Spread Spectrum

If this feature is set to Enabled, the BIOS will monitor the level of electromagnetic interference caused by the components and will attempt to reduce the interference whenever needed. The options are **Enabled** and **Disabled**.

Hyper-threading

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

Active Processor Cores

This feature determines how many CPU cores will be activated for each CPU. When all is selected, all cores in the CPU will be activated. (Please refer to Intel's web site for more information.) The options are **All**, 1, 2, and 3.

Limit CPUID Maximum

Select Enabled to set the maximum CPU ID value and to boot a legacy OS 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)

Set to Enabled to enable the Execute Disable Bit to 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® Virtualization Technology (Available when supported by the CPU)

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

Hardware Prefetcher (Available when supported by the CPU)

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

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

Select Enabled for the CPU to prefetch both cache lines for 128 bytes as comprised. Select Disabled for the CPU to prefetch both cache lines for 64 bytes. The options are **Disabled** and **Enabled**.



Note: If there is any change to this setting, you will need to power off and reboot the system for the change to take effect. Please refer to Intel's web site for detailed information.

CPU AES

Select Enable for Intel CPU Advanced Encryption Standard (AES) Instructions support to enhance data integrity. The options are **Enabled** and **Disabled**.

EIST

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

Turbo Mode

This feature allows processor cores to run faster than the frequency recommended by the manufacturer. The options are **Disabled** and **Enabled**. If this feature is set to Enabled, the following items will display:

CPU Power Limit1 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for CPU1. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

CPU Power Limit1 Time (Available when "Turbo Mode" is set to Enabled)

This item allows the user to determine how long CPU1 should operate at the power limit set by the user for the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

CPU Power Limit2 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for CPU2. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

DDR Power Limit1 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for DDR1. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

DDR Power Limit1 Time (Available when "Turbo Mode" is set to Enabled)

This item allows the user to determine how long DDR1 should operate at the power limit set by the item above. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

DDR Power Limit2 (Available when "Turbo Mode" is set to Enabled)

Use this feature to set the power limit for DDR2. Use the number keys on your keyboard to enter the value. Enter 0 to use the manufacture default setting.

1-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This increases (multiplies) 1 clock speed in the CPU core in relation to the bus speed when one CPU core is active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

2-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This increases (multiplies) 2 clock speeds in the CPU core in relation to the bus speed when two CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

3-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This increases (multiplies) 3 clock speeds in the CPU core in relation to the bus speed when three CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

4-Core Ratio Limit (Available when "Turbo Mode" is set to Enabled)

This increases (multiplies) 4 clock speeds in the CPU core in relation to the bus speed when four CPU cores are active. Press "+" or "-" on your keyboard to change the value. Enter 0 to use the manufacture default setting.

Energy Performance

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

VR Current Value

Use this feature to set the limit on the current voltage regulator (VR). Press "+" or "-" on your keyboard to change this value. Enter 0 to use the manufacture default setting.

CPU C States

C-States architecture, a processor power management platform developed by Intel, can further reduce power consumption from the basic C1 (Halt State) state that blocks clock cycles to the CPU. Select Enabled for CPU C-States support. The options are **Enabled** and Disabled. If this feature is set to Enabled, the following items will display:

Enhanced C1 State (Available when "CPU C-States" is set to Enabled)

Select Enabled to enable Enhanced C1 Power State to boost system performance. The options are **Enabled** and Disabled.

CPU C3 Report (Available when "CPU C-States" is set to Enabled)

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 "CPU C-States" is set to Enabled)

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 caches is turned off. The options are **Enabled** and **Disabled**.

C6 Latency (Available when "CPU C-States" is set to Enabled)

Select Short to set a short delay time(period) during which the BIOS reports CPU C6 State (ACPI C3) to the operating system. Select Long to set a long delay time(period) during which the BIOS reports CPU C6 State (ACPI C3) to the operating system. The options are **Short** and **Long**.

CPU C7 Report (Available when "CPU C-States" is set to Enabled)

Select Enabled to allow the BIOS to report the CPU C7 State (ACPI C3) to the operating system. CPU C7 State is a processor-specific low C-State. The options are **Disabled**, **CPU C7**, and **CPU C7s**.

C7 Latency (Available when "CPU C-States" is set to Enabled)

Select Short to set a short delay time(period) during which the BIOS reports CPU C7 State (ACPI C3) to the operating system. Select Long to set a long delay time(period) during which the BIOS reports CPU C7 State (ACPI C3) to the operating system. The options are **Short** and **Long**.

C1 State Auto Demotion

When this item is enabled, the CPU will conditionally demote C3, C6 or C7 requests to C1 State based on un-cored auto-demote information. The options are **Disabled** and **Enabled**.

C3 State Auto Demotion

When this item is enabled, the CPU will conditionally demote C6 or C7 requests to C3 State based on un-cored auto-demote information. The options are **Disabled** and **Enabled**.

C-State Pre-Wake

Select Enabled to support C State Pre-Wake State features. The options are **Enabled** and **Disabled**

Package C State limit

Select Auto for the AMI BIOS to automatically set the limit on the C-State package register. The options are C0/C1, C2, C3, C6, C7 and **Auto**.

LakeTiny Feature

Select Enabled for LakeTiny feature support for C-State configuration. The options are **Enabled** and **Disabled**.

ACPI T State

Select Enabled to support Advanced Configuration and Power Interface (ACPI) Throttling States (T State), which will lower the power consumption level for the system as to the power consumption level set for CPU Performance State 1 to achieve power efficiency. The options are **Enabled** and **Disabled**.

►Chipset Configuration

Warning: Setting the wrong values in the following sections may cause the system to malfunction.

►System Agent (SA) Configuration

The following System Agent (SA) information will be displayed:

- System Agent Bridge Name
- VT-d Capability

VT-d

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

►Graphics Configuration

This item displays the following graphics information:

Graphics Configuration

- IGFX VBIOS Version
- IGfx Frequency

Graphics Turbo IMON Current

Use this feature to set the limit on the current voltage regulator. Press "+" or "-" on your keyboard to change this value.

Primary Display

Use this feature to select the graphics device to be used as the primary display. You can select from a device installed on the CPU IGFX, CPU SLOT, or PCH SLOT. The options are **Auto**, CPU IGFX, CPU SLOT, and PCH SLOT.

CPU SLOT (Available when Primary Display is set to Auto)

Use this item to select the graphics device installed in an expansion slot supported by the CPU to be used as the primary display. The options are **Auto**, SLOT6 and SLOT4.

PCH SLOT (Available when Primary Display is set to Auto)

Use this item to select the graphics device installed in an expansion slot supported by the PCH to be used as the primary display. The options are **Auto**, SLOT5, SLOT7, and SLOT1/2.

CPU IGFX

Select Auto to keep an internal graphics device installed on an expansion slot supported by the CPU to be automatically enabled. The options are **Auto**, Disabled, and Enabled.

GTT Size

Use this feature to set the memory size to be used by the graphics translation table (GTT). The options are **1MB** and **2MB**.

Aperture Size

Use this feature to set the Aperture size, which is the size of system memory reserved by the BIOS for graphics device use. The options are **128MB**, **256MB** and **512 MB**.

DVMT Pre-Allocated

Dynamic Video Memory Technology (DVMT) allows dynamic allocation of system memory to be used for video devices to ensure best use of available system memory based on the DVMT 5.0 platform. The options are **32M**, **64M**, **96M**, **128M**, **160M**, **192M**, **224M**, **256M**, **288M**, **320M**, **352M**, **384M**, **416M**, **448M**, **480M**, **512M**, and **1024M**.

DVMT (Dynamic Video Memory Technology) Total Gfx Mem

Use this feature to set the total memory size to be used by internal graphics devices based on the DVMT 5.0 platform. The options are **128MB**, **256MB** and **MAX**.

Gfx (Graphics) Low Power Mode

Select Enabled to use the low power mode for internal graphics devices installed in a small form factor (SFF) computer. The options are Enabled and Disabled.

Gfx (Graphics) Low Power Mode

►PCI-E Configuration

This item displays the information of the (graphics) device installed on a PCI-E slot.

- Slot7 PCI-E 3.0 x16

Slot7 PCI-E 3.0 x16 Gen X

This feature allows the user to select PCI-E support for the device installed on Slot7. The options are **Auto**, Gen1 (Generation 1), Gen 2 and Gen 3.

Detect Non-Compliance Device

Select Enabled for the AMI BIOS to automatically detect a PCI-E device that is not compliant with the PCI-E standards. The options are Enabled and **Disabled**.

Program PCI-E ASPM After OpROM

PCI-E ASPM, the Active State Power Management for PCI-Express slots, is a power management protocol used to manage power consumption of serial-link devices installed on PCI-Exp slots during a prolonged off-peak time. If this item is set to Enabled, PCI-E ASMP will be programmed after OpROM. If this item is set to Disabled, the PCI-E ASPM will be programmed before OpROM. The options are **Enabled** and **Disabled**.

Slot7 PCI-E 3.0 x 16 ASPM/Slot5 PCI-E 2.0 x1 ASPM/Slot4 PCI-E 2.0 x4 ASPM

Use this feature to set the ASPM (Active State Power Management) level for the graphics device installed on a PCI-E slot specified by the user. The options are **Disabled**, **Auto**, ASPM L0s, ASPM L1, and, ASPM L0sL1.

►Memory Configuration

This item displays the following information on the memory modules installed on the motherboard.

- Memory RC Version
- Memory Frequency
- Total Memory

- Memory Voltage
- DIMM A1 (Not available on the -L model)
- DIMM A2
- DIMM B1 (Not available on the -L model)
- DIMM B2
- CAS Latency (tCL)
- Minimum Delay Time
 - CAS to RAS (tRCDmin)
 - Row Precharge (tRPmin)
 - Active to Precharge (tRASmin)

Memory Frequency Limiter

This feature sets the limit on the memory frequency for DIMM modules installed on the the motherboard. The options are 1067 (MHz), 1333 (MHz), 1600 (MHz), and **Auto**.

Max TOLUD (Top of Low Usable DRAM)

This feature sets the maximum TOLUD value, which specifies the "Top of Low Usable DRAM" memory space to be used by internal graphics devices, GTT Stolen Memory, and TSEG, respectively, if these devices are enabled. The options are **Dynamic**, 1 GB, 1.25 GB, 1.5 GB, 1.75 GB, 2 GB, 2.25 GB, 2.5 GB, 2.75 GB, 3 GB and 3.25 GB.

 **Note:** TSEG is a block of memory that is only accessible by the processor while operating in System Management Mode (SMM).

Memory Scrambler

This feature enables or disables memory scrambler support for memory error correction. The settings are **Enabled** and **Disabled**.

►PCH-IO Configuration

This item displays the information for the PCH-IO Chip.

- Intel PCH Rev ID
- USB Configuration
- USB Devices

EHCI1

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 1 for USB 2.0 support. One EHCI controller must always be enabled. The settings are **Enabled** and **Disabled**.

EHCI2

Select Enabled to enable EHCI (Enhanced Host Controller Interface) Controller 2 for USB 2.0 support. One EHCI controller must always be enabled. The settings are **Enabled** and **Disabled**.

Legacy USB Support

Select Enabled to support legacy USB devices. Select Auto to disable legacy support when legacy USB devices are not present. If Disable is selected, legacy USB devices will not be supported. The options are **Enabled**, **Disabled** and **Auto**.

Port 60/64 Emulation

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

XHCI Hand-Off

This item is a work-around solution for operating systems that do not support XHCI (Extensible Host Controller Interface) hand-off. The XHCI ownership change should be claimed by the XHCI driver. The settings are **Enabled** and **Disabled**.

EHCI Hand-Off

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

XHCI Mode

This feature handles the operation mode for the XHCI (Extensible Host Controller Interface) controller. The settings are **Smart Auto**, **Auto**, **Enabled**, **Disabled** and **Manual**.

Frontside Audio Mode

This feature selects the type of audio output for the front_side audio header/connection. Select **HD Audio** for High Definition; otherwise, select AC '97 for legacy audio. The options are **HD Audio** and **AC' 97**.

Deep Sx

Use this feature to configure the deep sleep state modes for computer systems that are compliant with Advanced Configuration and Power Interface (ACPI) standards. The options are **Disabled**, Enabled in S5, and Enabled in S4-S5.

►SATA Configuration

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

SATA Controllers

This item Enables or Disables the built-in SATA controllers on the motherboard. The options are **Enabled** and **Disabled**.

SATA Mode Selection

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

SATA RAID Option ROM/UEFI Driver (Available if the item above - SATA Mode Select is set to AHCI or RAID)

Select Enabled to use the SATA RAID Option ROM/UEFI driver for system boot. The options are **Enabled** and **Disabled**.

If the item above -SATA Mode Select is set to AHCI, the following items are displayed:

Serial ATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

Port 0 ~ Port 5 Hot Plug

This feature designates the port specified for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA disk drive without shutting down the system. The options are **Enabled** and **Disabled**.

Port 0 ~ Port 1 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. The options are **Hard Disk Drive** and **Solid State Drive**.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization sequence to the device. The options are **Enabled** and **Disabled**.

If the item above - **SATA Mode Select** is set to **IDE**, the following items are displayed:

Serial ATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

If the item above - **SATA Mode Select** is set to **RAID**, the following items are displayed:

Serial ATA Port 0~ Port 5

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

- Model number of drive and capacity
- Software Preserve Support

Port 0 ~ Port 5 Hot Plug

This feature designates this port for hot plugging. Set this item to Enabled for hot-plugging support, which will allow the user to replace a SATA drive without shutting down the system. The options are **Enabled** and **Disabled**.

Port 0 ~ Port 1 SATA Device Type

This feature configures the selected SATA port to support either a solid state drive or hard disk drive. Set this item to Enabled to enable hot-plugging. The options are **Hard Disk Drive** and **Solid State Drive**.

Port 0 ~ Port 5 Spin Up Device

On an edge detect from 0 to 1, set this item to allow the PCH to start a COMRESET initialization sequence to the device. The options are **Enabled** and **Disabled**.

►PCIe/PCI/PnP Configuration

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

Above 4G Decoding

Select Enabled for 64-bit devices to be decoded above the 4GB address space If 64bit PCI decoding is supported by the system. The options are **Disabled** and **Enabled**.

VGA Palette Snoop

Select Enabled to support VGA palette register snooping which will allow the PCI cards that do not contain their own VGA color palette to examine the video cards palette and mimic it for proper color display. The options are **Disabled** and **Enabled**.

PERR# Generation

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

SERR# Generation

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

Slot4 PCI-E 2.0 x4 OPROM/Slot5 PCI-E 2.0 x1 OPROM/Slot7 PCI-E 3.0 x16 OPROM

Use this feature to enable or disable PCI-Express slot Option ROM support to boot the computer using a device installed on a slot specified by the user. The options are **Disabled**, **Legacy** and **EFI**.

Launch Storage OPROM Policy

This feature controls how the system executes UEFI (Unified Extensible Firmware Interface), and legacy storage OPROM. Select Legacy Only to boot the system using a legacy device installed in a PCI slot. The options are **Do Not Launch**, **UEFI Only** and **Legacy Only**.

Other PCI Device ROM Priority

This feature selects a PCI device OPROM to launch for system boot if this device is not a network, mass storage, or video device. The options are **UEFI Only** and **Legacy Only**.

Onboard LAN1 Option ROM/Onboard LAN2 Option ROM

Select iSCSI to use the iSCSI Option ROM to boot the computer using an iSCSI device installed in a LAN port specified. Select PXE (Preboot Execution Environment) to boot the computer using a PXE device installed in a LAN port specified. Select Disabled to prevent system boot using a device installed in a LAN port. The options for Onboard LAN1 Option ROM are Disabled, **PXE** and iSCSI. The options for Onboard LAN2 Option ROM are **Disabled**, **PXE** and iSCSI.

Network Stack

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

Ipv4 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv4 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv4 PXE boot option will not be supported. The options are **Enabled** and **Disabled**.

Ipv6 PXE Support (Available when Network Stack is set to Enabled)

Select Enabled to enable Ipv6 PXE (Preboot Execution Environment) for boot support. If this feature is set to Disabled, Ipv6 PXE boot option will not be supported. The options are **Enabled** and **Disabled**.

►ACPI Settings

High Precision Timer

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

ACPI Sleep State

This feature selects the ACPI Sleep State that the system will enter into when the suspend button is activated. The options are Suspend **Disabled**, **S1 only (CPU Stop Clock)**, S3 only (Suspend to RAM), and Both S1 and S3 available for OS to choose from.

►Trusted Computing (Available when a Trusted Platform Module is Detected)

Configuration

Security Device Support

Select Enable for the AMI BIOS to automatically download the drivers needed to provide Trusted Computing platform support for this machine to ensure data integrity and network security. The options are **Disable** and **Enable**.

TPM State

Select Enabled to use TPM (Trusted Platform Module) settings for system data security. The options are **Disabled** and **Enabled**.



Note: The system will reboot for the change on TPM State to take effect.

Pending Operation

Use this item to schedule a TPM-related operation to be performed by a security device for TPM support. The options are **None**, **Enable Take Ownership**, **Disable Take Ownership**, and **TPM Clear**.



Note: The computer will reboot to carry out a pending TPM operation and change TPM state for a TPM device.

Current Status Information

This feature indicates the status of the following TPM items:

TPM Enabled Status

TPM Active Status

TPM Owner Status

Intel TXT (LT) Support

Intel TXT (Trusted Execution Technology) helps protect against software-based attacks to ensure the security, confidentiality, and integrity of all data stored in the system. The options are **Enabled** and **Disabled**.

►PCH-FW Configuration

The following information are displayed:

- ME FW Version
- ME Firmware Mode

- ME Firmware Type
- ME Firmware SKU
- PTT Capability/State

►Firmware Update Configuration

ME FW Image Re-Flash

Select Enable to re-flash the ME (Management Engine) Firmware. The options are **Disable** and **Enable**.

►AMT (Active Management Technology) Configuration

Intel AMT

Select Enabled to use Intel Active Management Technology (AMT) to enhance system performance. The options are **Enabled** and **Disabled**.

Activate Remote Assistance Process

Select Enabled for Remote Assistance support, which can trigger CIRA boot, allowing the system to boot via Client-Initiated Remote Access. The options are **Enabled** and **Disabled**.

AMT CIRA Timeout

Use this item to set the AMT CIRA Timeout value. Enter 0 to use the manufacture default setting.

Watch Dog Timer

Select Enabled to allow AMT (Advanced Management Technology) to reset or power down the system if the operating system or BIOS hangs or crashes. The options are **Disabled**, and **Enabled**.

OS Timer / BIOS Timer

These options appear if Watch Dog Timer (above) is enabled. This is a timed delay in seconds, before a system power down or reset after a BIOS or operating system failure is detected. Directly enter the value, in seconds.

►Acoustic Management Configuration

Acoustic Management Configuration

Automatic Acoustic Management

Select Enabled to support automatic acoustic management for your system. The options are Enabled and **Disabled**.

►Super IO Configuration

Super IO Chip NCT6776F (for Serial Port1/Serial Port2 Configuration)/Super IO Chip IT8760 (for Serial Port3/Serial Port4 Configuration)

►Serial Port 1 Configuration/Serial Port 2 Configuration/Serial Port 3 Configuration//Serial Port 4 Configuration

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

Device Settings

This item displays the base I/O port address and the Interrupt Request address of a serial port specified by the user.

Change Settings

This feature specifies the base I/O port address and the Interrupt Request address of Serial Port 1, Serial Port 2, Serial Port 3, or Serial Port 4. Select Auto to allow the BIOS to automatically assign the base I/O and IRQ address to a serial port specified.

The options for Serial Port 1 are **Auto**, (IO=3F8h; IRQ=4), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

The options for Serial Port 2 are **Auto**, (IO=2F8h; IRQ=3), (IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), (IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12), and (IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12).

The options for Serial Port 3 are **Auto**, (IO=3E8h; IRQ=11), (IO=3D0h; IRQ=11), (IO=3D8h; IRQ=11), and (IO=3E0h; IRQ=11).

The options for Serial Port 4 are **Auto**, (IO=2E8h; IRQ=10), (IO=2D0h; IRQ=10), (IO=2D8h; IRQ=10), and (IO=2E0h; IRQ=10).

Transmit Mode (Available for Serial Port2 via Chip NCT6776F only)

Use this feature to select data transmission mode for a serial port specified. The options are **RS232** Mode, RS485 Mode, and RS422 Mode.

►H/W (Hardware) Monitor**PC Health Status****Fan Speed Control Mode**

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

The following items will be displayed:

- CPU Temperature (PECI)
- System Temperature
- Peripheral Temperature
- PCH Temperature
- Fan 1 Speed/Fan 2 Speed/Fan 3 Speed/Fan 4 Speed
- VCORE
- 12V
- VDIMM
- 5Vcc
- PCH 1.05V
- AVCC
- 3.3Vcc

- VSB
- VBAT

►Serial Port Console Redirection

COM1/COM2

Use this feature to enable console redirection for COM1 and COM2 ports. The options are Enabled and Disabled. The default setting is **Disabled**.

►Console Redirection Settings

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

Terminal Type

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

Bits Per second

Use this feature to set the transmission speed for a serial port used in Console Redirection. Make sure that the same speed is used in the host computer and the client computer. A lower transmission speed may be required for long and busy lines. The options are 9600, 19200, 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 allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None** and Hardware RTS/CTS.

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Legacy OS Redirection Resolution

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

Putty KeyPad

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

Use this feature to enable or disable legacy console redirection after BIOS POST. When set to Bootloader, legacy console redirection is disabled before booting the OS. When set to Always Enable, legacy console redirection remains enabled when booting the OS. The options are **Always Enable** and **Bootloader**.

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

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

Console Redirection (for EMS)

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

►Console Redirection Settings (for EMS)

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

Out-of-Band Management Port

The feature selects a serial port used by the Microsoft Windows Emergency Management Services (EMS) to communicate with a remote server. The options are **COM1** and **COM2**.

Terminal Type

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

Bits Per Second

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

Flow Control

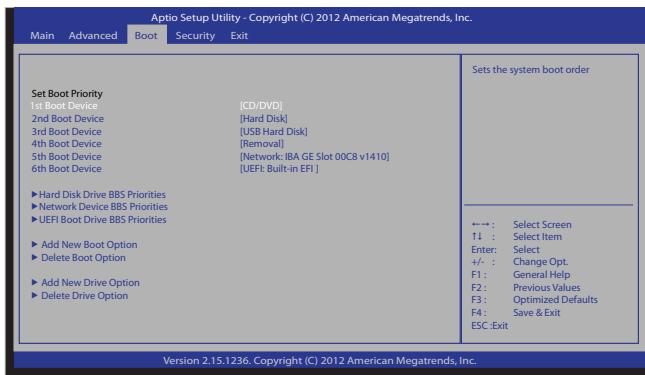
This feature allows the user to set the flow control for Console Redirection to prevent data loss caused by buffer overflow. Send a "Stop" signal to stop sending data when the receiving buffer is full. Send a "Start" signal to start sending data when the receiving buffer is empty. The options are **None**,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

Data Bits, Parity, Stop Bits

The status of each item above is displayed.

4-4 Boot Settings

Use this feature to configure Boot Settings:



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
- 2nd Boot Device
- 3rd Boot Device
- 4th Boot Device
- 5th Boot Device
- 6th Boot Device

► Hard Disk Drive BBS Priorities

- 1st Device
- 2nd Device

► Network Device BBS Priorities

- 1st Device

► UEFI Boot Drive BBS Priorities

- 1st Boot Device

►Delete Boot Option

Use this feature to remove a pre-defined boot device from which the system will boot during startup.

The settings are [any pre-defined boot device]

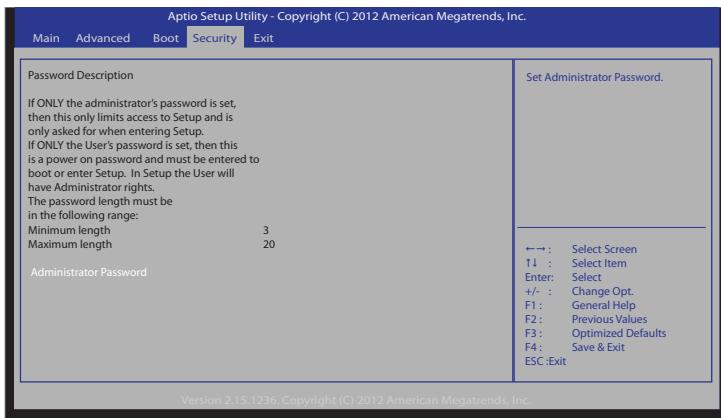
►Delete Driver Option

Use this feature to remove a pre-defined driver from which the system will boot during startup.

The settings are [any pre-defined boot device]

4-5 Security Settings

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



- If the Administrator password is defined ONLY - this controls access to the BIOS setup ONLY.
- If the User's password is defined ONLY - this password will need to be entered upon each system boot, and will also have Administrator rights in the setup.
- Passwords must be at least 3 and up to 20 characters long.

Administrator Password

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

4-6 Save & Exit

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



Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Save Changes and Reset

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

Save Options

Save Changes

When you have completed the system configuration changes, select this option to save all changes made. This will not reset (reboot) the system.

Discard Changes

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

Restore Optimized Defaults

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

Save As User Defaults

To set this feature, select Save as User Defaults from the Exit menu and press <Enter>. This enables the user to save any changes to the BIOS setup for future use.

Restore User Defaults

To set this feature, select Restore User Defaults from the Exit menu and press <Enter>. Use this feature to retrieve user-defined settings that were saved previously.

Boot Override

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

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

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

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

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

A-1 BIOS Error Beep Codes

| BIOS Error Beep Codes | | |
|-----------------------------|---------------------------------|--|
| Beep Code/LED | Error Message | Description |
| 1 beep | Refresh | Circuits have been reset. (Ready to power up) |
| 5 short beeps + 1 long beep | Memory error | No memory detected in the system |
| 8 beeps | Display memory read/write error | Video adapter missing or with faulty memory |
| OH LED On | System OH | System Overheat |

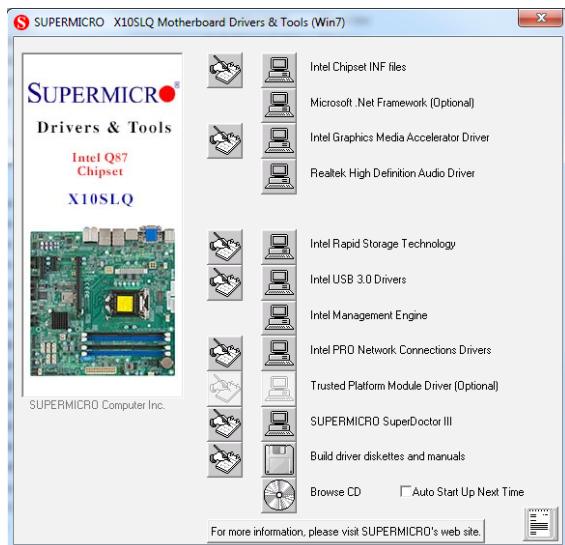
Notes

Appendix B

Software Installation Instructions

B-1 Installing Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items. (**Note:** To install the Windows Operating System, please refer to the instructions posted on our website at <http://www.supermicro.com/support/manuals/.>)



Driver/Tool Installation Display Screen



Note 1: Click the icons showing a hand writing on the paper to view the readme files for each item. Click on a computer icon to the right of an item to install this item (from top to the bottom), one at a time. After installing each item, you must reboot the system before proceeding with the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

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

B-2 Configuring SuperDoctor® III

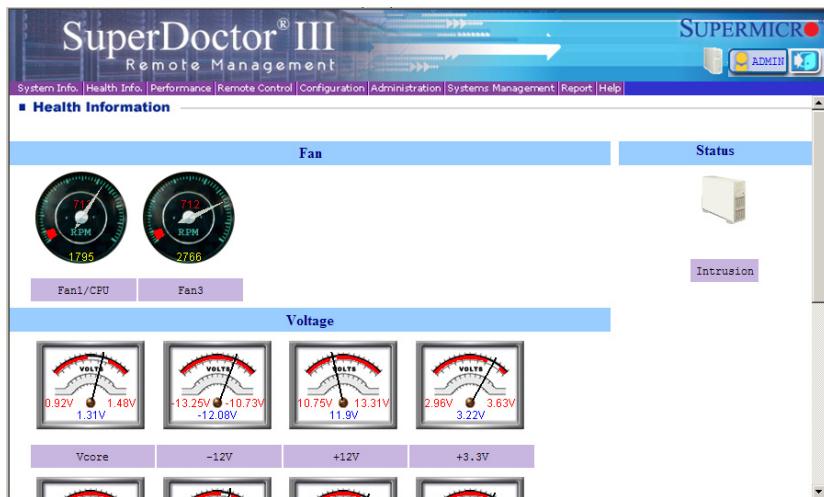
The SuperDoctor® III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management tool is called the SD III Client. The SuperDoctor III program included on the CDROM that came with your motherboard allows you to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

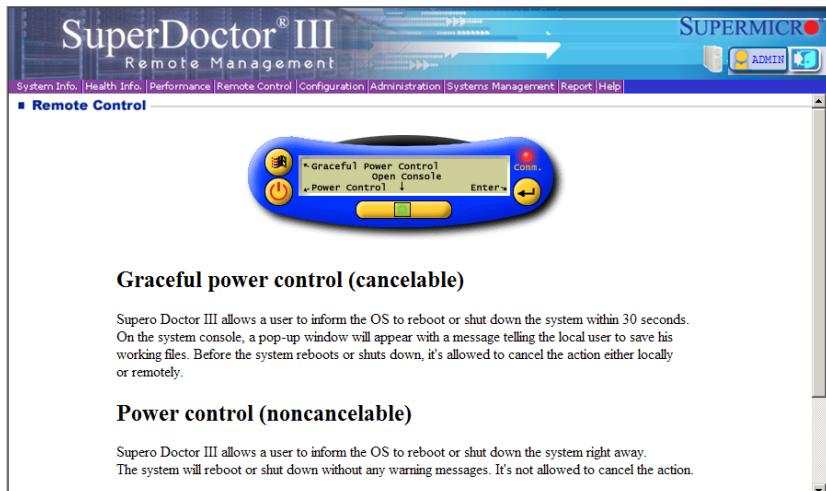


Note 1: The default user name and password are ADMIN.

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

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



SuperDoctor® III Interface Display Screen-II (Remote Control)**Graceful power control (cancelable)**

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

Power control (noncancelable)

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



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

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

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

Notes

Appendix C

UEFI BIOS Recovery Instructions

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flushing 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, hand-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, which consists 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 it is completed, the main BIOS code will continue with system initialization and bootup.



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

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.

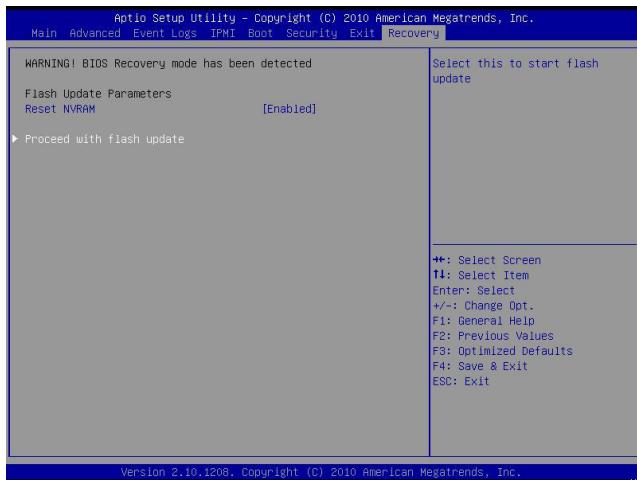


Note: If you cannot locate the "Super.ROM" file in your driver disk, visit our website at www.supermicro.com to download the BIOS image into a USB flash device and rename it to "Super ROM" for BIOS recovery use.

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and power on the system
3. While powering on the system, keep pressing <Ctrl> and <Home> simultaneously on your keyboard until you 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.



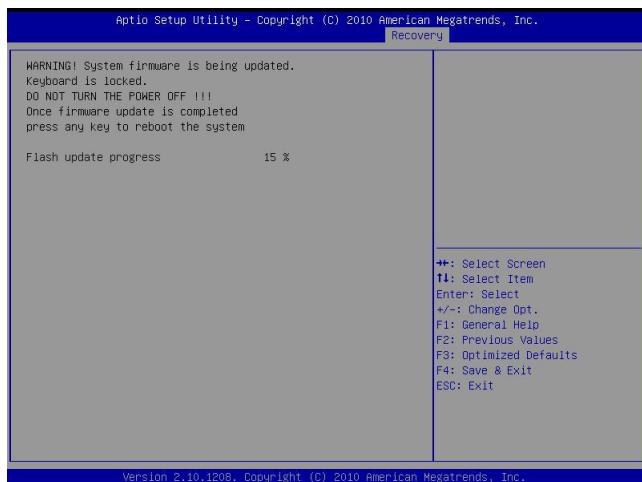
Note: At this point, you may decide if you want to start with BIOS Recovery. If you decide to proceed with BIOS Recovery, follow the procedures below.



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.



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



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

Appendix D

Dual Boot Block

D-1 Introduction

This motherboard supports the Dual Boot Block feature, which is the last-ditch mechanism to recover the BIOS boot block. This section provides an introduction to the feature.

BIOS Boot Block

A BIOS boot block is the minimum BIOS loader required to enable necessary hardware components for the BIOS crisis recovery flash that will update the main BIOS block. An on-call BIOS boot-block corruption may occur due to a software tool issue (see image below) or an unexpected power outage during BIOS updates.



BIOS Boot Block Corruption Occurrence

When a BIOS boot block is corrupted due to an unexpected power outage or a software tool malfunctioning during BIOS updates, you can still reboot the system by closing pins 2 and 3 using a cap on Jumper JBR1. When JBR1 is set to pins 2 and 3, the system will boot from a backup boot block pre-loaded in the BIOS by the manufacturer.

D-2 Steps to Reboot the System by Using Jumper JBR1

1. Power down the system.
2. Close pins 2-3 on Jumper JBR1, and power on the system.
3. Follow the BIOS recovery SOP listed in the previous chapter (Appendix C).
4. After completing the steps above, power down the system.
5. Close pins 1-2 on Jumper JBR1, and power on the system.

(Disclaimer Continued)

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