

**SUPER**  <sup>®</sup>

**X8DTG-QF+**

**USER'S MANUAL**

Revision 1.0

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## Preface

### About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the **SUPER** X8DTG-QF+ motherboard.

### About This Motherboard

The **SUPER** X8DTG-QF+ motherboard supports the Intel 5500/5600 Series Processor platform and the QuickPath Interconnect (QPI) Technology, providing the most advanced point-to-point system interface that replaces the current Front Side Bus. With the 5500/5600 Series Processor and dual Intel 5520 IOH-36D built in, the X8DTG-QF+ enhances system performance with increased bandwidth and unprecedented scalability. This motherboard is optimized for HPC/Cluster and GPU server platforms. Please refer to our website (<http://www.supermicro.com/products/>) for processor and memory 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 about the 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 CMOS.


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

**Appendix A** lists BIOS POST Error Codes. **Appendix B** provides Windows OS and Other Software Installation Instructions.

## Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent product damage or bodily injury.

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

 **Note:** Additional Information given to differentiate various models or to ensure correct system setup.

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# Chapter 1

## Introduction

### 1-1 Overview

#### Checklist


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

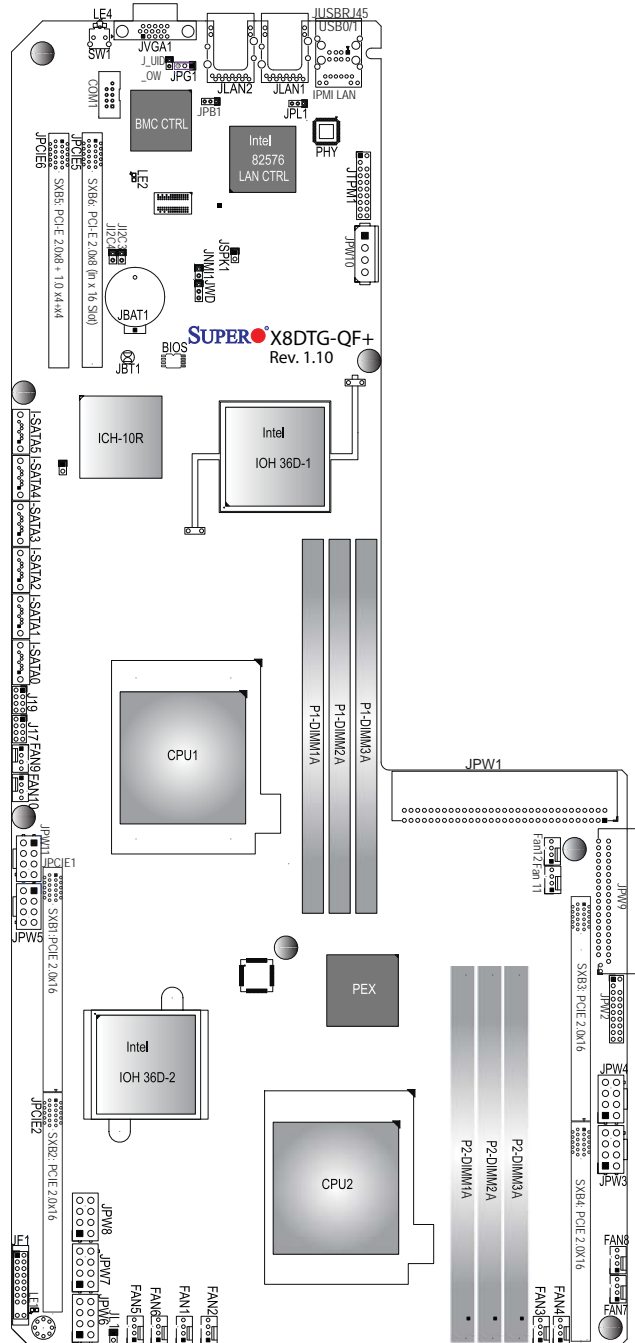
- One (1) Supermicro Server
- One (1) Supermicro CD containing drivers and utilities

SUPER<sup>®</sup> X8DTG-QF+ Motherboard Image



 **Note:** The drawings and pictures shown in this manual were based on 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 the manual.

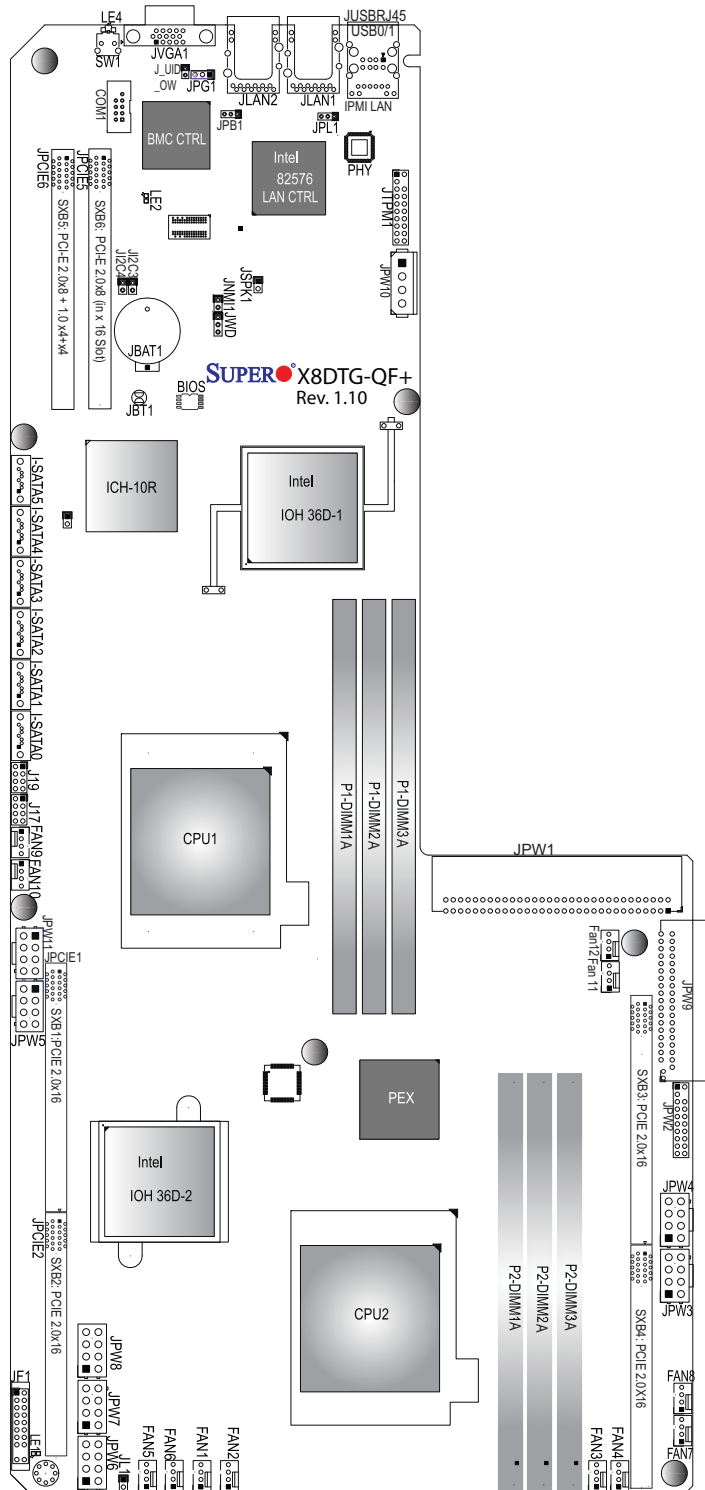
## SUPER® X8DTG-QF+ Motherboard Layout



### Notes:

1. Jumpers not indicated are for test purposes only. For more information on jumpers or components, refer to Chapter 2.
2. "■" indicates the location of Pin 1.
3. When LE1 LED is on, the onboard power connection is on. Make sure to unplug the power cables before removing or installing components.

SUPER X8DTG-QF+ Quick Reference



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

**X8DTG-QF+ Quick Reference (See Chapter 2 for Details)**

<b>Jumper</b>	<b>Description</b>	<b>Default Setting</b>
JBT1	CMOS Clear	(See Section 2-8)
J <sup>2</sup> C3/J <sup>2</sup> C4	SMB to PCI-Express Slots	Open (Disabled)
JPB1	BMC (Baseboard Management CTRL) Enable	Pins 1-2 (Enable)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1	LAN1/2 Enable	Pins 1-2 (Normal)
J_UID_OW	Red LED OW (Pins 7/8 of JF1)	Off (Overwrites)
JWD	Watch Dog	Pins 1-2 (Reset)

<b>Connector</b>	<b>Description</b>
FAN#1~12	System/CPU Fan Headers
I-SATA0 ~ 5	(Intel South Bridge) SATA Ports 0~5
J17/J19 (T_SGPIO 1/2)	Serial_Link General_Purpose I/O Headers 1/2
JBAT1	Onboard Battery (See Chapter 3 for Disposal Info.)
JCOM1	COM1 Serial Connection
JF1	Front Panel Connector
JL1	Chassis Intrusion
JLAN1/JLAN2	Gigabit Ethernet Ports 1/2
JNMI1	NMI (Non-Maskable Interrupt) Header
JPCIE 1~4	SXB 1/2/3/4 PCI-E 2.0 x16 Slots
JPCIE 5/JPCIE 6	JPCIE6: SXB5 PCI-E 2.0 x8 + 1.0 x 4, + 1.0 x 4, JPCIE5: PCI-E 2.0 x8 in x16
JPW1	SMC Proprietary Main Onboard Power Supply Connector
JPW2	SMC Proprietary Power Connector
JPW3/4	8-Pin Power Connectors for External Devices installed on Slots SXB3/4
JPW5/11/8	8-Pin Power Connectors for External Devices installed on Slot SXB1
JPW7	8-Pin Power Connectors for External Devices installed on Slot SXB2
JPW6	8-Pin Power Connectors for SATA Midplane
JPW9	SMC Proprietary Power Connector
JPW10	4-Pin Standard HDD Power Connector for optional for SATA use
JSPK1	Internal Speaker Header
JTPM1	TPM (Trusted Platform Module)/Port80 Header
JUSBRJ45	Back Panel IPMI LAN Port and USB 0/1 Connections
JVGA1	Video Port
SW1	UID (Unit Identifier) Switch

<b>LED</b>	<b>Description</b>
LE1	Onboard Standby PWR warning LED Indicator
LE2	BMC Heartbeat LED Indicator
LE4	UID LED Indicator

## Motherboard Features

### CPU

- Two Intel<sup>®</sup> 5500/5600 Series (LGA 1366) processors with support of two full-width Intel QuickPath Interconnect (QPI) links with a total of up to 51.2 GT/s Data Transfer Rate (6.4 GT/s per direction) per CPU

### Memory

- Six 240-pin DIMM sockets support up to 96\* GB of Registered ECC or up to 48 GB of Unbuffered ECC/Non-ECC DDR3 1333/1066/800 MHz Memory. (For Unbuffered ECC memory, maximum of 8 GB per DIMM is supported. See Section 2-4 in Chapter 2 for memory Population.) (Refer to our memory recommendation list posted on our website at [www.supermicro.com](http://www.supermicro.com).)

### Chipset

- Dual Intel 5520 chip platforms, including: dual 5520 (IOH-36D) chips and one ICH10R (South Bridge).

### Expansion Slots

- Four PCI-E Gen. 2.0 x16 slots (SXB 1~4) (JPCIE 1~4)
- One PCI-E Gen. 2.0 x8 in x16 slot (JPCIE5)
- One PCI-E Gen. 2.0 x8 + 1.0 x 4 + 1.0 x 4 slot (SXB5) (JPCIE6)

### BIOS

- 4 GB AMI SPI Flash ROM
- ACPI 1.0/2.0/3.0, Plug and Play (PnP), DMI 2.3, SMBIOS 2.3, RTC (Real Time-Clock) Wake-up, PCI 2.2, Hardware BIOS Virus protection, and USB Keyboard support

### PC Health Monitoring

- Onboard voltage monitors for CPU1 VCore, CPU2 VCore, +5V, +5.0 VSB, +12Vcc (V), +3.3Vcc (V), +3.3VSB, Memory Voltage, and Battery Voltage
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- Platform Environment Control Interface (PECI) ready
- CPU fan auto-off in sleep mode
- CPU slow-down on temperature overheat
- Pulse Width Modulation (PWM) Fan Control
- CPU thermal trip support for processor protection, power LED
- Power-up mode control for recovery from AC power loss
- Auto-switching voltage regulator for CPU cores
- System overheat/Fan Fail LED Indicator and control

- System resource alert via Supero Doctor III

### **ACPI Features**

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Keyboard Wakeup from Soft-off

### **Onboard I/O**

- Intel ICH10R supports six SATA ports (RAID0, RAID1, RAID10, RAID5 supported in the Windows OS Environment and RAID 0, RAID 1, RAID 10 supported by the Linux OS)
- Winbond WPCM450 BMC (Baseboard Management Controller) supports IPMI 2.0 with KVM support
- Intel 82576 Dual Gigabit Ethernet Controllers support dual Giga-bit LAN ports
- Onboard PHY Chip supports IPMI dedicated LAN
- One serial port header
- Two rear USB 2.0 (Universal Serial Bus) connections
- VGA port supported by the Winbond WPCM450 Controller (G200e)
- Super I/O: Winbond W83527

### **Other**

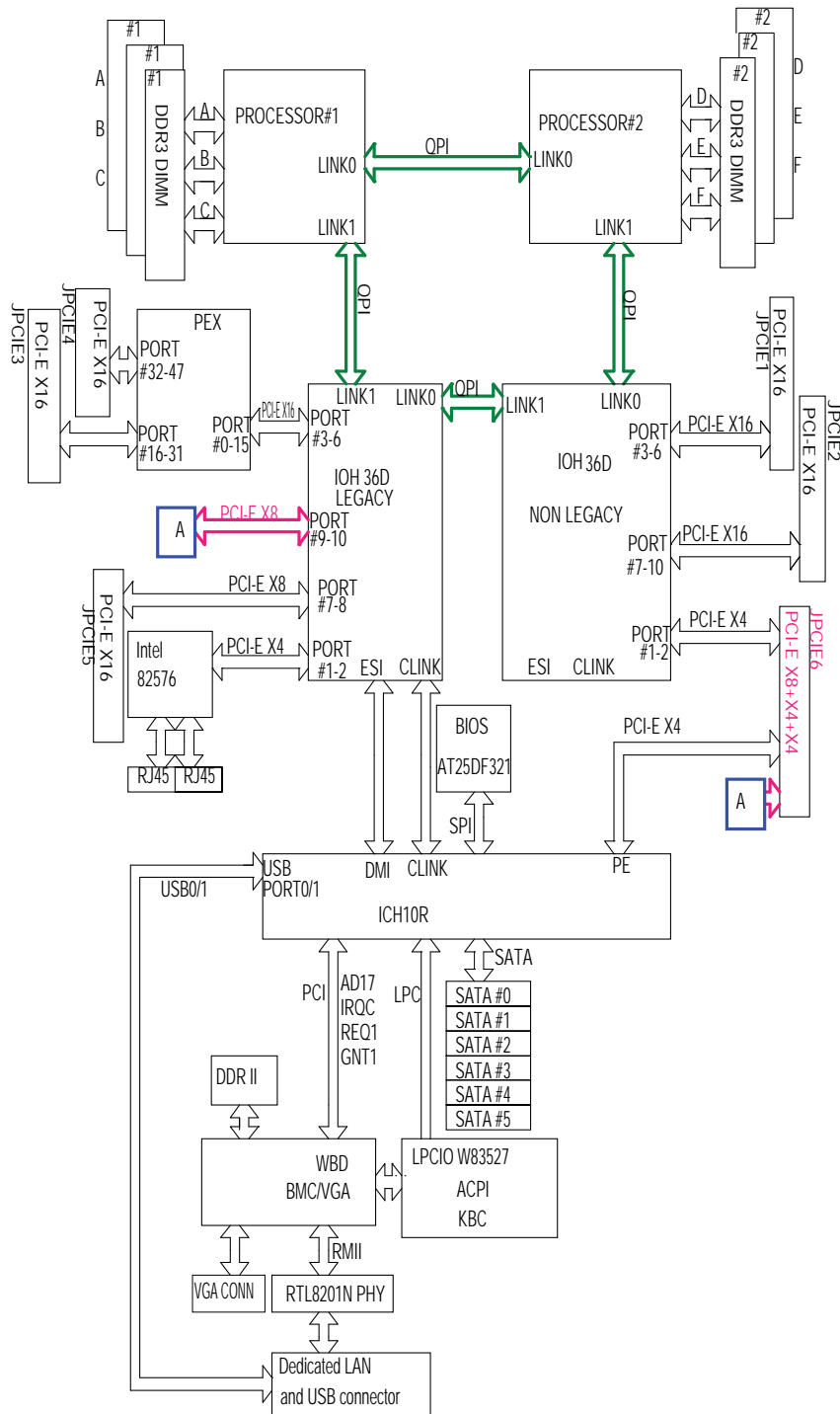
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS

### **CD/Diskette Utilities**


- BIOS flash upgrade utility and device drivers

### **Dimensions**

- Proprietary 19.7" (L) x 9.2" (W) (500.38 mm x 233.68 mm)



**System Block Diagram**

 **Note 1:** This is a general block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

**Note 2:** Components linked by colored lines do not have direct connections between them.



## 1-2 System Overview

Built upon the functionality and the capability of the Intel 5500/5600 Series Processors and Intel 5520 chipset, the X8DTG-QF+ motherboard provides the performance and feature set required for dual-processor-based high end servers. This motherboard is optimized for High Performance Computing (HPC)/Cluster platforms. The Intel 5520 platform consists of the 5500/5600 Series (LGA 1366) processor, the 5520 IO hub (IOH-36D), and the ICH10R South Bridge. With the Intel QuickPath interconnect (QPI) controller built in, the 5500/5600 Series Processor is the first dual-processor platform that offers the next generation point-to-point system interconnect, replacing the current Front Side Bus Technology, substantially enhancing system performance by utilizing serial link interconnections with increased bandwidth and scalability.

The IOH connects to each processor through an independent QPI (QuickPath interconnect) link. Each link consists of 20 pairs of unidirectional differential lanes for transmission and receiving in addition to a differential forwarded clock. A full-width QPI link pair provides 84 signals. Each processor supports two QuickPath links, one going to the other processor, and the other to the 5520 chips.

The 5520 chipset supports PCI Express Gen2 lanes peer-to-peer read and write transactions. The ICH10R provides multiple PCI-Express, SATA and USB connections.

In addition, the 5520 platform also offers a wide range of RAS (Reliability, Availability and Serviceability) features. These features include memory interface ECC, x4/x8 Single Device Data Correction (SDDC), Cyclic Redundancy Check (CRC), parity protection, memory mirroring, and memory sparing.

### **Main Features of the 5500/5600 Series Processor and the 5520 Chipset**

- Each processor supports four/six CPU cores; these CPU cores share 8MB cache among them.
- Two full-width Intel QuickPath interconnect links, up to 6.4 GT/s of data transfer rate in each direction
- Virtualization Technology, Integrated Management Engine supported
- Point-to-point cache coherent interconnect, Fast/narrow unidirectional links, and Concurrent bi-directional traffic

## 1-3 Special Features

### Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must 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 X8DTG-QF+. All have an onboard System Hardware Monitor chip that supports PC health monitoring. An onboard voltage monitor will scan these onboard voltages continuously: CPU1 VCore, CPU2 VCore, +5V, +5VSB, +12Vcc (V), +3.3Vcc (V), +3.3VSB, Memory Voltage, and Battery Voltage. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

### Fan Status Monitor with Firmware Control

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

### Environmental Temperature Control

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



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

### System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, you can also configure

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Supero Doctor to provide you with warnings when the system temperature, CPU temperatures, voltages and fan speeds go beyond a pre-defined range.

## 1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including 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 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 2008/Windows Vista/Windows 7 Operating Systems.

### **Slow Blinking LED for Suspend-State Indicator**

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

### **Main Switch Override Mechanism**


When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system "alive." In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

## 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.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (For more

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

 **Note 1.** For the main power connectors (JPW1/JPW2/JPW9) to work properly, please use Supermicro proprietary power supplies.

**Note 2.** For the PCI-Exp. GPU addon cards installed on Slots SXB 1 to work properly, be sure to connect your power cable to JPW8.

**Note 2.** For the PCI-Exp. GPU addon cards installed on Slot SXB 2 to work properly, please connect your power cable to JPW7.

**Note 3.** For SATA connections on the SATA midplane to work properly, please connect the power connector at JPW6 to the power supply.


**Note 4.** Please use a SATA power cable to convert the standard 4-pin HDD connector located at JPW10 to provide power to optional SATA devices installed on the motherboard.

## 1-7 Overview of the Winbond WPCM450 Controller

The Winbond WPCM450, a Baseboard Management Controller (BMC), supports the 2D/VGA-compatible Graphics Core with the PCI interface, Virtual Media, and Keyboard/Video/Mouse (KVM) Redirection modules.

The WPCM450 BMC interfaces with the host system via a PCI interface to communicate with the graphics core. It supports USB 2.0 and 1.1 for remote keyboard/mouse/virtual media emulation. It also provides LPC interface to control Super IO functions. The WPCM450 is connected to the network via an external Ethernet PHY module.

The WPCM450 communicates with onboard components via SMBus interface, fan control, Platform Environment Control Interface (PECI) buses.

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

## 1-8 Super I/O

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

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## Chapter 2

### Installation

#### 2-1 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

##### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure that 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 as specified by the manufacturer. 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 the person handling it is static protected.

## 2-2 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. **Note:** Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.


### Tools Needed

1. Phillips Screwdriver
2. Eight (8) Pan head #6 screws

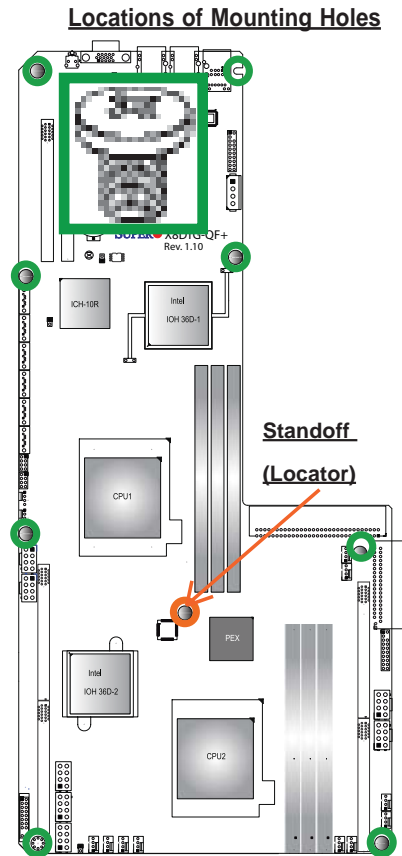


### Installation Instructions

1. Install the IO shield into the chassis.
2. Locate the mounting holes (8) on the motherboard and the matching mounting holes on the chassis. Align the mounting holes on the motherboard with their corresponding mounting holes on the chassis.
3. Locate the standoff locator hole on the motherboard and the standoff locator on chassis.
4. Install standoffs on the chassis as needed.
5. Install the motherboard into the chassis carefully to avoid damage to motherboard components.

 **Warning:** To avoid damaging the motherboard and its components, please do not apply any force greater than 8 *lb/sq.in* (8 lbs. per square inch) when installing a screw into a mounting hole.

6. Insert a Pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis, using a Phillips screwdriver.
7. Repeat Step 4 to insert #6 screws to all mounting holes, making sure that the motherboard is securely placed on the chassis.



## 2-3 Processor and Heatsink Installation



When handling the processor package, avoid placing direct pressure on the label area of the fan.

### Notes:

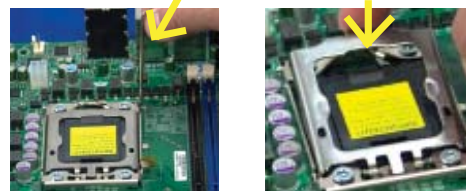
1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
2. Make sure to install the motherboard into the chassis before you install the CPU heatsink and heatsink fans.
3. When purchasing a motherboard without the 5500/5600 Series processor pre-installed, make sure that the CPU socket plastic cap is in place, and none of the CPU socket pins are bent; otherwise, contact the retailer immediately.
4. Refer to the MB Features Section for more details on CPU support.

### Installing an LGA 1366 Processor

1. Press the socket clip to release the load plate, which covers the CPU socket, from its locking position.
2. Gently lift the socket clip to open the load plate.
3. Hold the plastic cap at its north and south center edges to remove it from the CPU socket.



**Socket Clip**      **Load Plate**



**Plastic Cap**



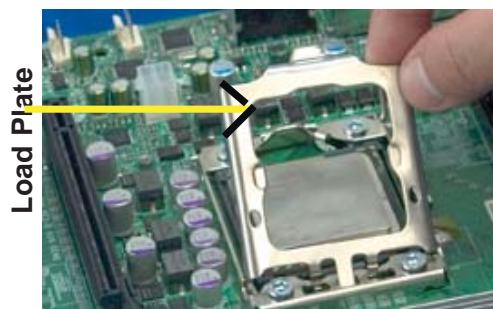
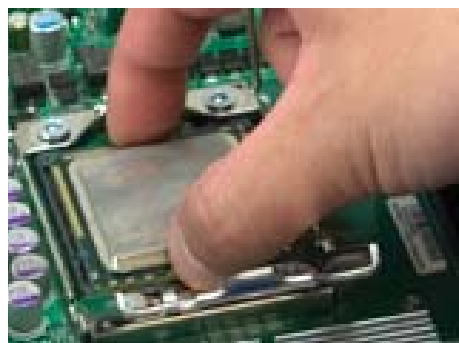
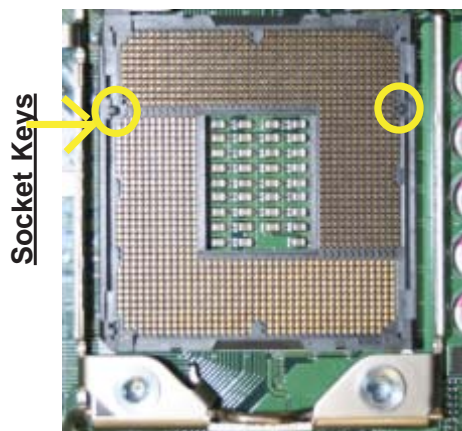
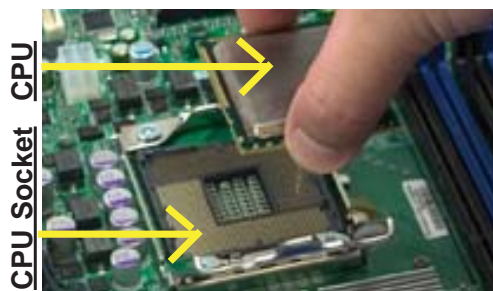
**Hold the north & south edges of the plastic cap to remove it**



4. After removing the plastic cap, using your thumb and the index finger, hold the CPU at the north and south center edges.
5. Align the CPU key, the semi-circle cutout, against the socket key, the notch below the gold color dot on the side of the socket.
6. Once both the CPU and the socket are aligned, carefully lower the CPU straight down into the socket. (Do not rub the CPU against the surface of the socket or its pins to avoid damaging the CPU or the socket.)
7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.
8. Once the CPU is securely seated on the socket, lower the CPU load plate to the socket.
9. Use your thumb to gently push the socket clip down to the clip lock.



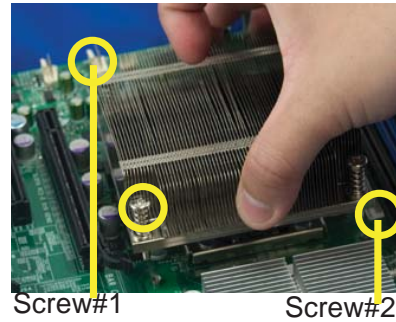
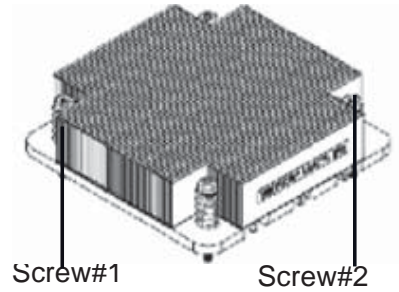
**Warning:** Please save the plastic cap. The motherboard must be shipped with the plastic cap properly installed to protect the CPU socket pins. Shipment without the plastic cap properly installed will cause damage to the socket pins.



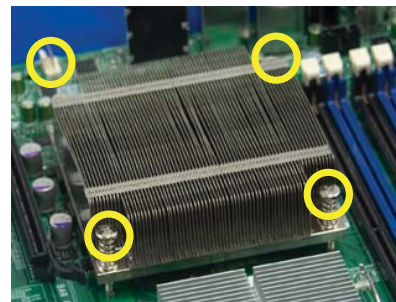
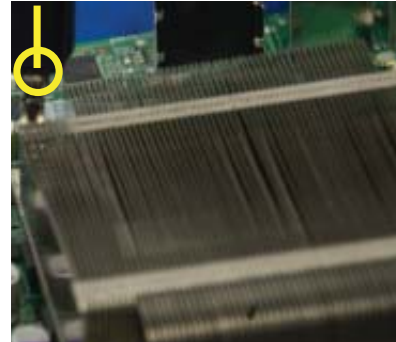


## Installing a CPU Heatsink

1. Do not apply any thermal grease to the heatsink because the required amount has already been pre-applied.
2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism. Also, orient the heatsink so that you can maximize air flow for best cooling.
3. Install two diagonal screws (ie the #1 and the #2 screws) and tighten them until just snug (-do not fully tighten the screws to avoid possible damage to the CPU.)
4. Finish the installation by fully tightening all four screws.



Install Screw#1

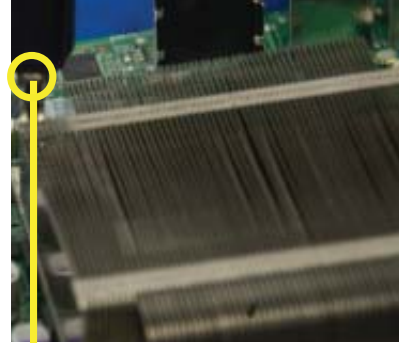


## Removing the Heatsink

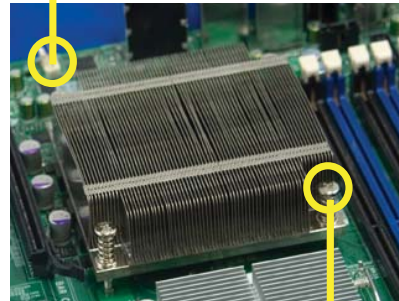


**Warning:** We do not recommend that the CPU or the heatsink be removed. However, if you do need to remove the heatsink, please follow the instructions below to uninstall the heatsink and prevent damage to the CPU or other components.

1. Unplug the power cord from the power supply.
2. Disconnect the heatsink fan wires from the CPU fan header.
3. Using a screwdriver, loosen and remove the heatsink screws from the motherboard in the sequence as show in the picture on the right.
4. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink.)
5. Once the heatsink is loosened, remove it from the CPU socket.
6. To reinstall the CPU and the heatsink, clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before reinstalling them on the motherboard.



Using a screwdriver to remove Screw#1



Remove Screw#2



## 2-4 Memory Installation

**Note:** Check the Supermicro website for recommended memory modules.

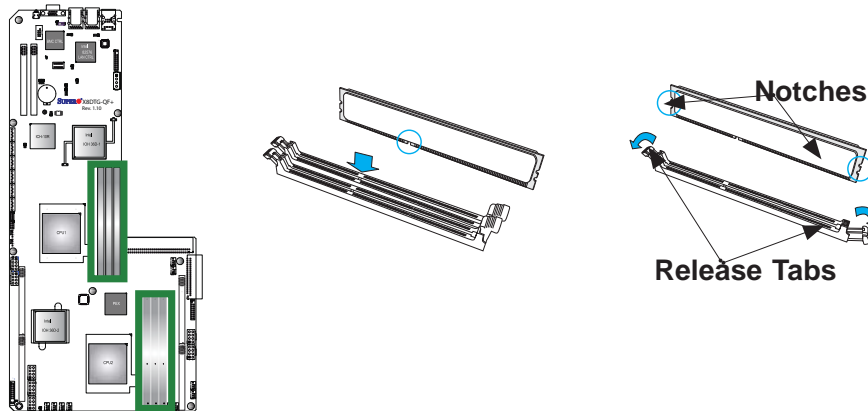
### CAUTION



Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance.

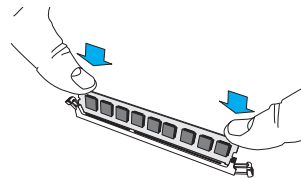
### Installing & Removing DIMMs

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

Press both notches straight down into the memory slot at the same time.



### Removing Memory Modules

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


Memory Population for Optimal Performance -For a motherboard with One CPU (CPU1) installed			
	Branch 0	Branch 1	Branch 2
3 DIMMs	P1 DIMM1A	P1 DIMM2A	P1 DIMM3A

Memory Population for Optimal Performance -For a motherboard with One CPU (CPU2) installed			
	Branch 0	Branch 1	Branch 2
3 DIMMs	P2 DIMM1A	P2 DIMM2A	P2 DIMM3A

Memory Population for Optimal Performance -For a motherboard with Two CPUs installed						
	CPU1			CPU2		
	Branch 0	Branch 1	Branch 3	Branch 0	Branch 1	Branch 3
6 DIMMs	P1 DIMM1A	P1 DIMM2A	P1 DIMM3A	P2 DIMM1A	P2 DIMM2A	P2 DIMM3A

### Memory Support

The X8DTG-QF+ supports up to 96 GB\* of Registered ECC or up to 48 GB of Unbuffered ECC/Non-ECC DDR3 1333/1066/800 MHz Memory in 6 DIMMs.

 **Note 1:** For Unbuffered ECC/Non-ECC memory, maximum of 8 GB per DIMM is supported.

**Note 2:** memory speed support is dependent on the type of CPU used on the board.

**Note 3:** For memory support updates, please refer to our memory recommendation list posted on our website at [www.supermicro.com](http://www.supermicro.com).

### DIMM Module Population Configuration

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

#### Memory Support for the Motherboard w/5500 Processors Installed

RDIMM Population for the Motherboard with 5500 Processors Installed			
DIMMs Populated per Channel	DIMM Type (Reg.= Registered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
1	Reg. DDR3 ECC	800,1066,1333	SR or DR
1	Reg. DDR3 ECC	800,1066 (Note 1)	QR

**Note 1:** 1333 RDIMMs will run at 1066 MHz (-BIOS automatic downgrading).  
**Note 2:** 1333/1066 RDIMMs will run at 800 MHz (-BIOS automatic downgrading).

<b>UDIMM Population for the Motherboard with 5500 Processors Installed</b>			
<b>DIMMs Populated per Channel</b>	<b>DIMM Type (Unb.= Unbuffered)</b>	<b>Speeds (in MHz)</b>	<b>Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)</b>
1	Unb. DDR3 ECC/Non-ECC	800,1066,1333	SR or DR
1	Unb. DDR3 ECC/Non-ECC	800,1066 (Note)	Mixing SR, DR
<b>Note:</b> 1333 UDIMMs will run at 800 MHz (-BIOS automatic downgrading)			

### *Memory Support for the Motherboard w/5600 Processors Installed*

- 1.5V DIMMs


<b>1.5V RDIMM Population for the Motherboard w/5600 Processors Installed</b>			
<b>DIMMs Populated per Channel</b>	<b>DIMM Type (Reg.= Registered)</b>	<b>Speeds (in MHz)</b>	<b>Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)</b>
1	Reg. DDR3 ECC	800,1066,1333	SR or DR
1	Reg. DDR3 ECC	800 , 1066	QR
<b>Note 1:</b> 1333 RDIMMs MHz will run at 1066 MHz (-BIOS automatic downgrading)			
<b>Note 2:</b> 1333/1066 RDIMMs MHz will run at 800 MHz (-BIOS automatic downgrading)			
<b>Note 3:</b> Mixing of 1.35V and 1.5V DIMMs is not recommended.			

<b>1.5V UDIMM Population for the Motherboard w/5600 Processors Installed</b>			
<b>DIMMs Populated per Channel</b>	<b>DIMM Type (Unb.= Unbuffered)</b>	<b>Speeds (in MHz)</b>	<b>Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)</b>
1	Unb. DDR3 ECC/Non-ECC	800,1066,1333	SR or DR
<b>Note 1:</b> 1333 MHz for two DIMMs per channel is supported when Unbuf./ECC DIMMs are used.			
<b>Note 2:</b> Mixing of 1.35V and 1.5V DIMMs is not recommended.			

- 1.35V DIMMs

<b>1.35V RDIMM Population for the Motherboard w/5600 Processors Installed</b>			
<b>DIMMs Populated per Channel</b>	<b>DIMM Type (Reg.= Registered)</b>	<b>Speeds (in MHz)</b>	<b>Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)</b>
1	Reg. DDR3 ECC	800,1066,1333	SR or DR
1	Reg. DDR3 ECC	800 (Note 1)	QR
<b>Note 1:</b> 1333/1066 QR RDIMMs MHz will run at 800 MHz (-BIOS automatic downgrading)			
<b>Note 2:</b> 1333 SR/DR RDIMMs MHz will run at 800 MHz (-BIOS automatic downgrading)			
<b>Note 3:</b> 1333 SR/DR/QR RDIMMs MHz will run at 800 MHz (-BIOS automatic downgrading)			
<b>Note 4:</b> Mixing of 1.35V and 1.5V DIMMs is not recommended.			

1.35V UDIMM Population for the Motherboard w/5600 Processors Installed			
DIMMs Populated per Channel	DIMM Type (Unb.= Unbuffered)	Speeds (in MHz)	Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)
1	Unb. DDR3 ECC	800,1066,1333	SR or DR
<b>Note 1:</b> 1333 MHz for two DIMMs per channel is supported when Unbuf./ECC DIMMs are used. <b>Note 2:</b> Mixing of 1.35V and 1.5V DIMMs is not recommended.			

 **Note 1:** Due to OS limitations, some operating systems may not show more than 4 GB of memory.

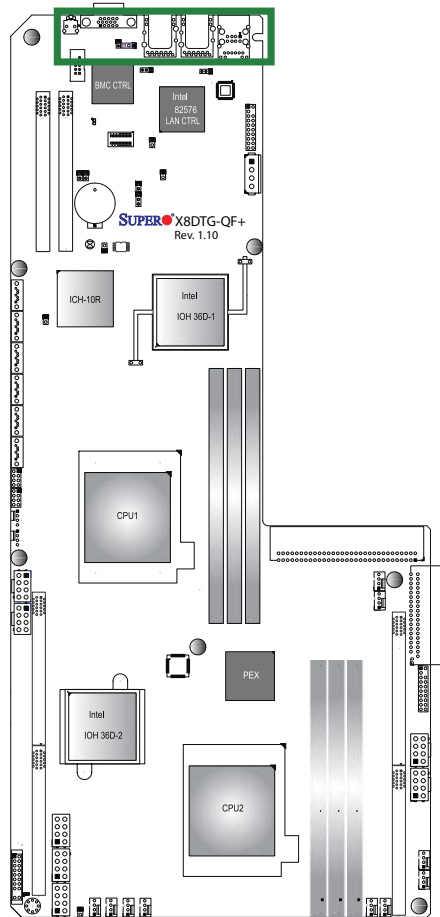
**Note 2:** Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional.

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

## 2-5 Control Panel Connectors/I/O Ports

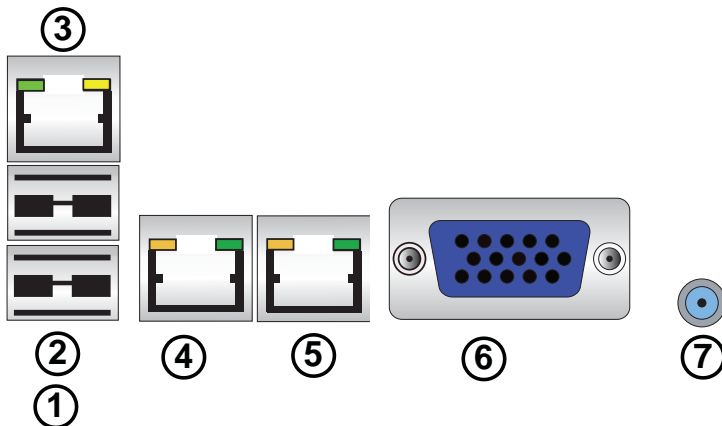
The I/O ports are color coded in conformance with the PC 99 specification. See the picture below for the colors and locations of the various I/O ports.

### Back Panel Connectors/I/O Ports



#### Back Panel Connectors

- |                       |
|-----------------------|
| 1. Backplane USB 0    |
| 2. Backplane USB 1    |
| 3. IPMI_Dedicated LAN |
| 4. LAN 1              |
| 5. LAN 2              |
| 6. VGA (Blue)         |
| 7. UID Switch         |



## Back Panel Connector Pin Definitions


### Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB 0/1) are located at JUSB RJ45 on the I/O back panel. Connect USB cables to these USB ports to use USB connections. (USB cables are not included). See the tables on the right for pin definitions.

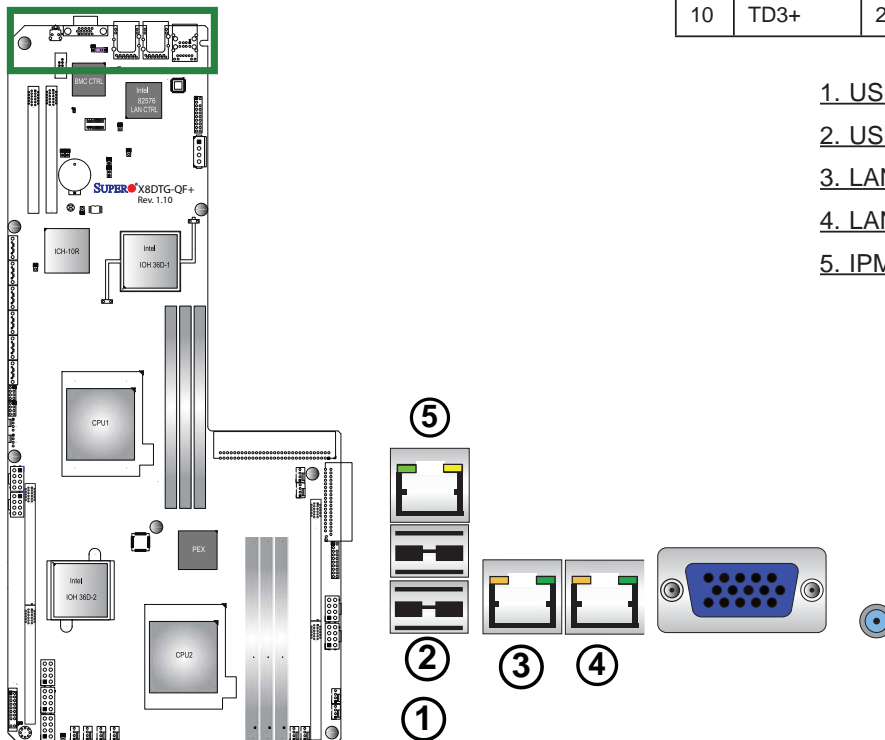
USB Pin Definitions			
1	+5V	2	+5V
3	USB_PN2	4	USB_PN3
5	USB_PP2	6	USB_PP3
7	Ground	8	Ground
9	Key	10	No Connection

### Ethernet Ports

Two Ethernet ports are located next to the USB 0/1 on the IO Backplane. In addition, an IPMI Dedicated LAN is located above the USB ports 0/1. These ports accept RJ45 type cables.

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

LAN Ports Pin Definition			
Pin#	Definition	Pin#	Definitions
1	TD0+	11	TD3-
2	TD0-	12	PIV8_NIC
3	PIV8_NIC	13	ACT LED-
4	TD1+	14	ACT LED+
5	TD1-	15	Link 100 LED (Green)
6	PIV8_NIC	16	Link 1000 LED (Yellow)
7	TD2+	17	Ground
8	TD2-	18	Ground
9	PIV8_NIC	19	Ground
10	TD3+	20	Ground



- 1. USB 0
- 2. USB 1
- 3. LAN 1
- 4. LAN 2
- 5. IPMI LAN



## Video Connector


A Video (JVGA1) connector is located next to the UID switch on the IO backplane. This connector provides video and CRT display. Refer to the board layout below for the location.

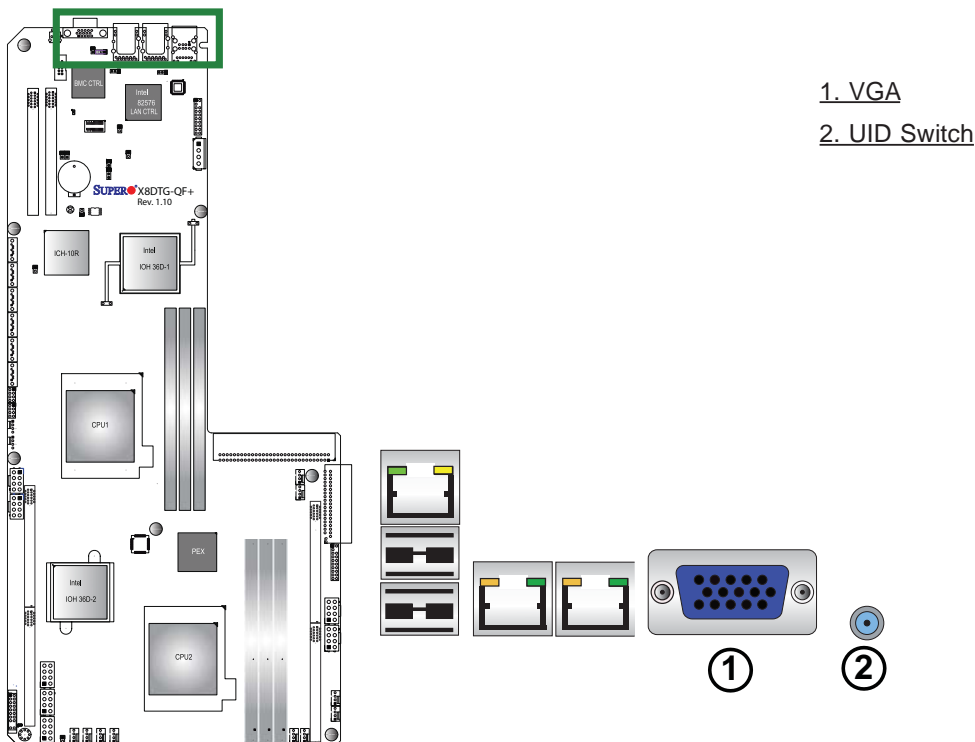
## Unit Identifier Switch

A Unit Identifier (UID) switch and two LED Indicators are located on the motherboard. The Rear UID LED (LE4) is located next to the UID switch on the backplane. The Front Panel UID LED is located at Pins 7/8 of the Front Control Panel at JF1. Connect a cable to Pins 7/8 on JF1 for Front Panel UID LED indication. When you press the UID switch, both Rear UID LED and Front Panel UID LED Indicators will be turned on. Press the UID switch again to turn off both LED Indicators. These UID Indicators provide easy identification of a system unit that may be in need of service.

UID LED (LE4) Status		
Color/State	OS	Status
Blue: On	Windows OS	Unit Identified
Blue: Blinking	Linux OS	Unit Identified

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

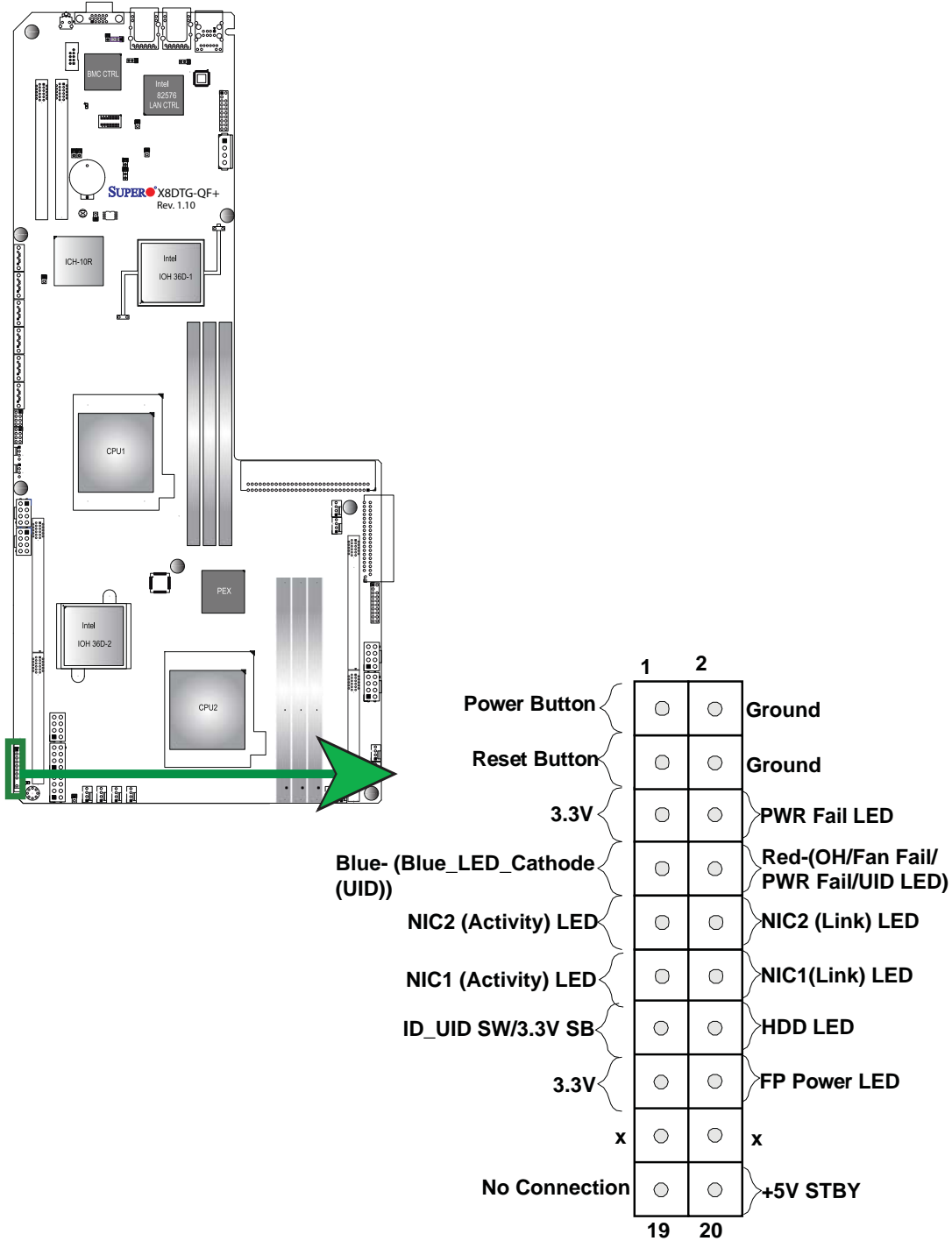
 **Note:** UID can also be triggered via IPMI on the motherboard. Please refer to the IPMI User's Guide posted on our website @<http://www.supermicro.com>.



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

JF1 Header Pins



## Front Control Panel Pin Definitions

### +5V Standby Power

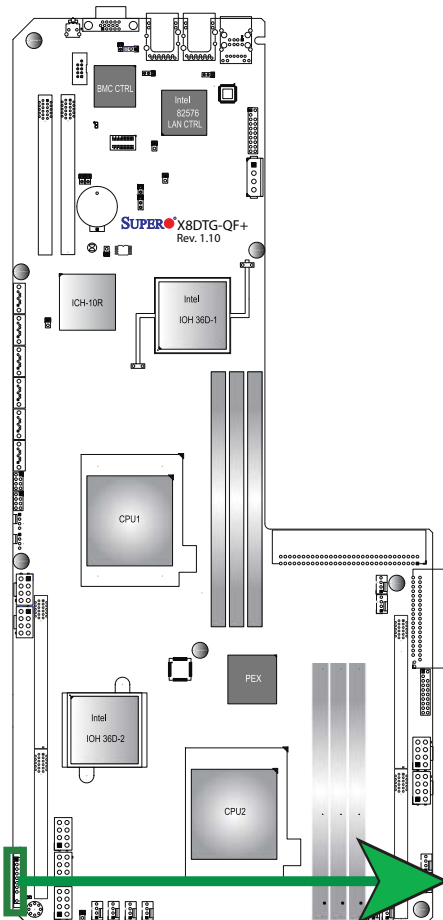
The 5V Standby Power is located on pins 20 of JF1. Refer to the table on the right for pin definitions.

+5V Standby PWR Pin Definitions (JF1)	
Pin#	Definition
19	No Connection
20	+5V Standby PWR

### Power LED

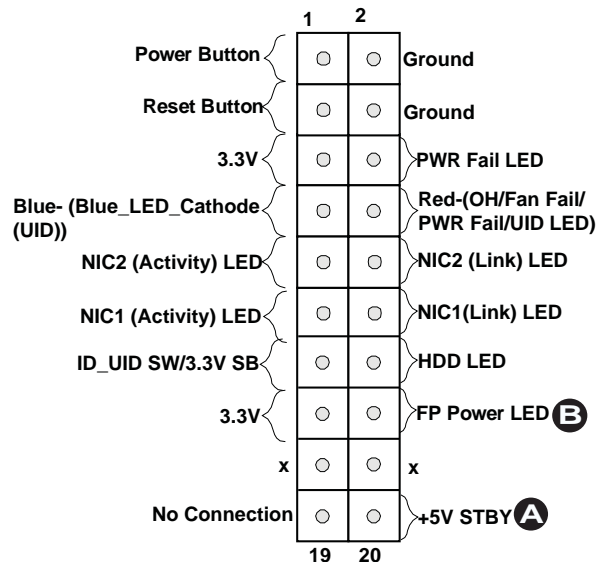
The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

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



A. +5V Standby PWR

B. PWR LED



### HDD LED

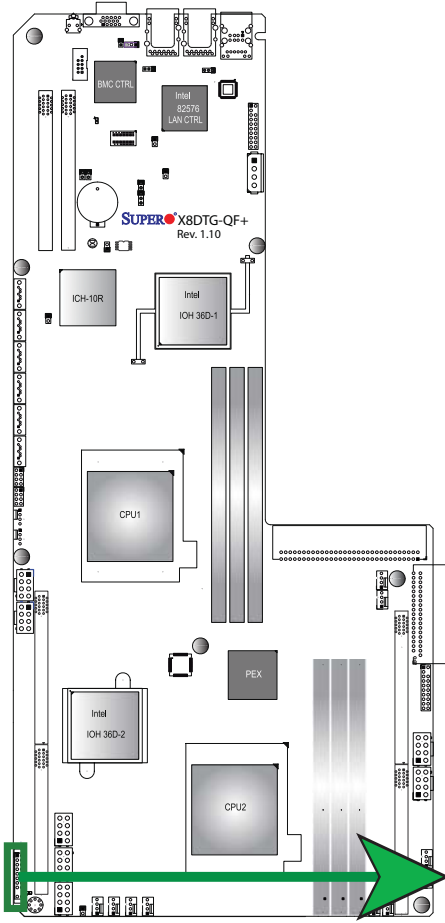
The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display any South Bridge-related HDD activities, including SAS, Serial ATA and IDE. See the table on the right for pin definitions.

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

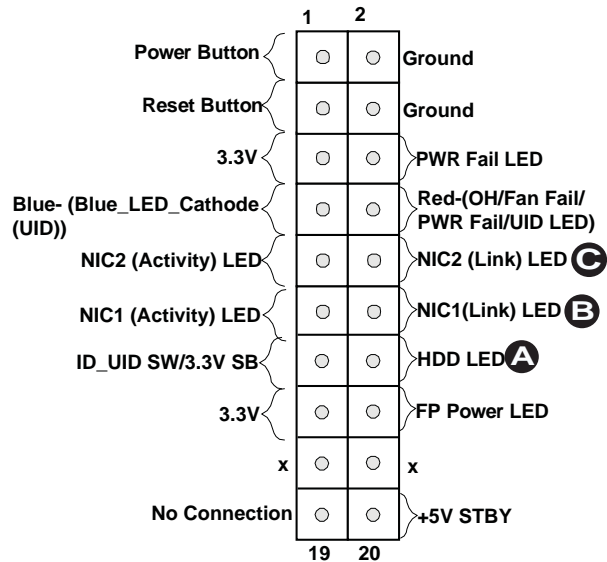
### NIC1/NIC2 LED Indicators

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

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



- A. HDD LED
- B. NIC1 Link/Activity LED
- C. NIC2 Link/Activity LED



### Overheat (OH)/Fan Fail/PWR Fail/UID LED

Connect an LED cable to OH/Fan Fail/FP UID connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheat or fan failure. It also works as the front panel UID LED indicator. The Red LED takes precedence over the Blue LED by default. Refer to the table on the right for pin definitions.

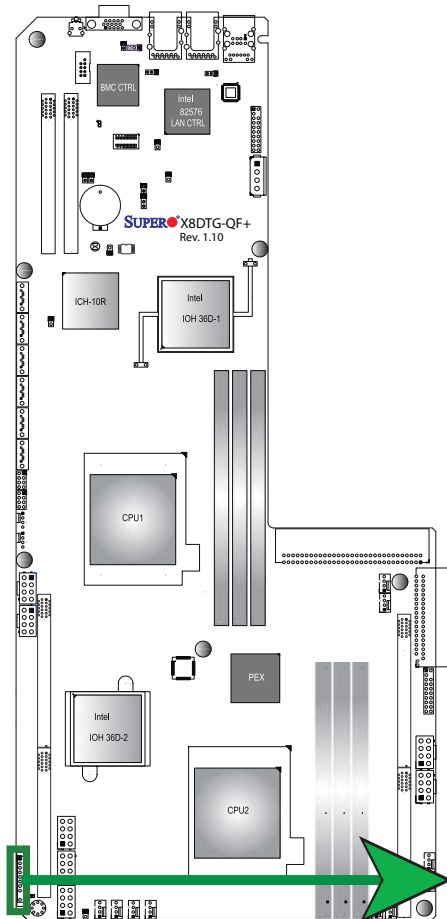
OH/Fan Fail/PWR Fail/UID LED Pin Definitions (JF1)	
Pin#	Definition
7	Blue- (Blue LED Cathode) (UID)
8	Red- (OH/Fan Fail/PWR Fail/UID LED)

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

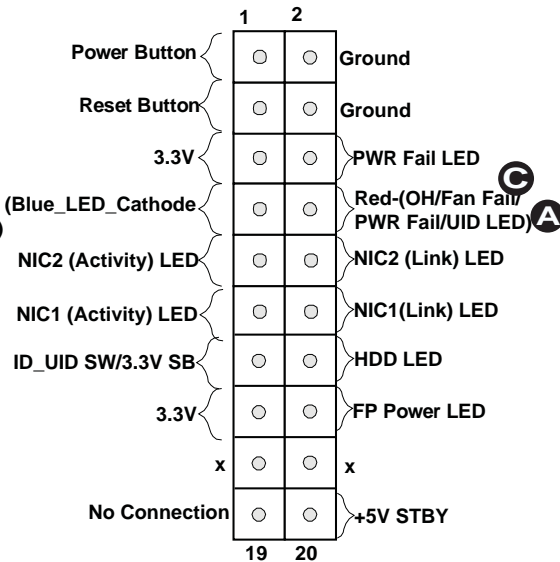
### Power Fail LED

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

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



- A. Front UID LED (Blue)
- B. OH/Fail/PWR Fail LED (Red)
- C. PWR Supply Fail



### Reset Button

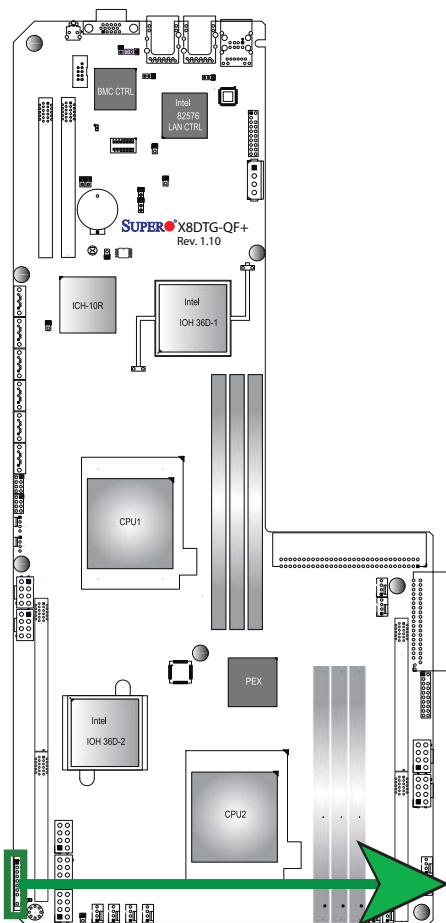
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

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

### Power Button

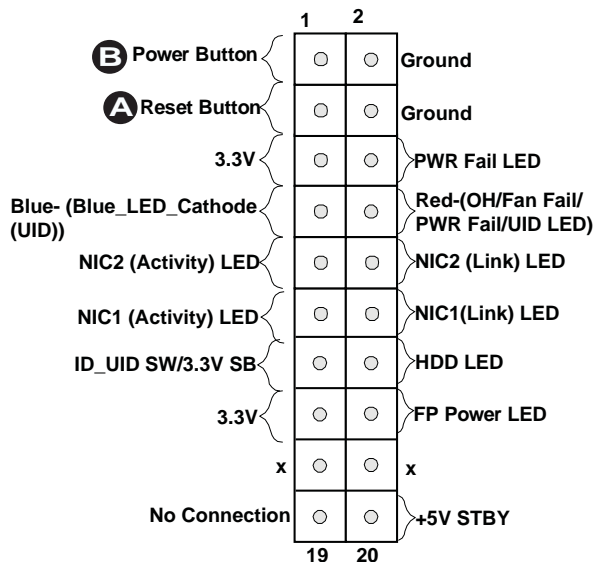
The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in BIOS - See Chapter 5). To turn off the power when the system is set to suspend mode, press 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



## 2-6 Connecting Cables

### Power Connectors

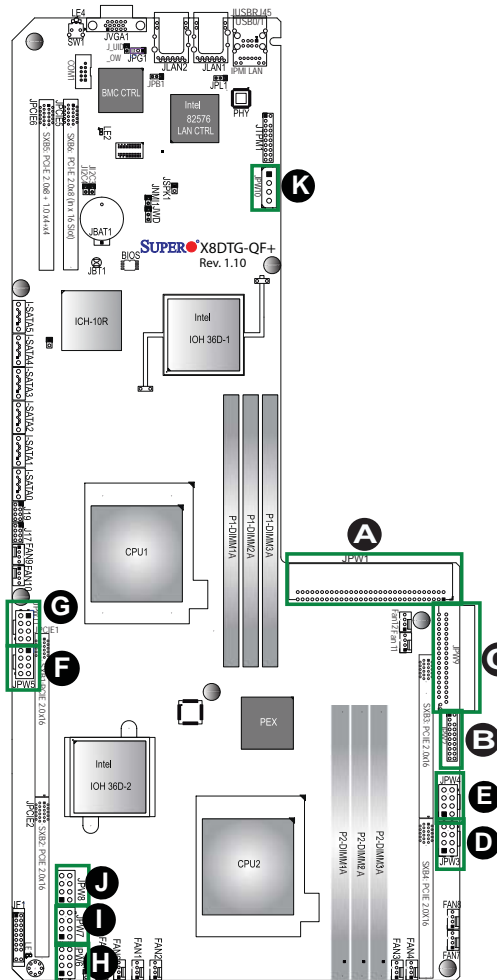
Three SMC-proprietary power connectors (JPW1/JPW2/JPW9) provides main power to the motherboard. Special cables are needed for these connectors. Power Connectors JPW3/4 are used to provide power to the PCI-E cards installed in Slots SXB3/4. Connect your power cables to JPW5, JPW8, JPW11 to provide power to the addon card installed on Slot SXB1. For the addon card installed on Slot SXB2 to function properly, connect JPW7 to the power supply. The 8-pin power connector, located at JPW6, is used for SATA devices located on the midplane. Also, be sure to use a standard SATA power cable to convert the 4-pin HDD power connector located at JPW10 for additional SATA drive use. See the layout below for power connector locations.

**12V 8-pin PWR Connector Pin Definitions**

Pins	Definition
1 through 3	+12V
4 through 8	Ground

**4-pin HDD PWR Connector (JPW10) Pin Definitions**

Pins	Definition
1	+12V
2	Ground
3	Ground
4	+5V



- A. JPW1: SMC-Proprietary Main PWR
- B. JPW2: SMC-Proprietary Main PWR
- C. JPW9: SMC-Proprietary Main PWR
- D. JPW3: 8-Pin PWR for PCI-E GPU card in Slot SXB4
- E. JPW4: 8-Pin PWR for PCI-E GPU card in Slot SXB3
- F. JPW5: 8-Pin PWR for PCI-E GPU card in Slot SXB1
- G. JPW11: 8-Pin PWR for PCI-E GPU card in Slot SXB1
- H. JPW7: 8-Pin PWR used for SXB2
- I. JPW8: 8-Pin PWR used for SXB1
- J. JPW6: 8-Pin PWR used for SATA Midplane
- K. JPW10: 4-Pin PWR used for additional SATA drive

### Fan Headers

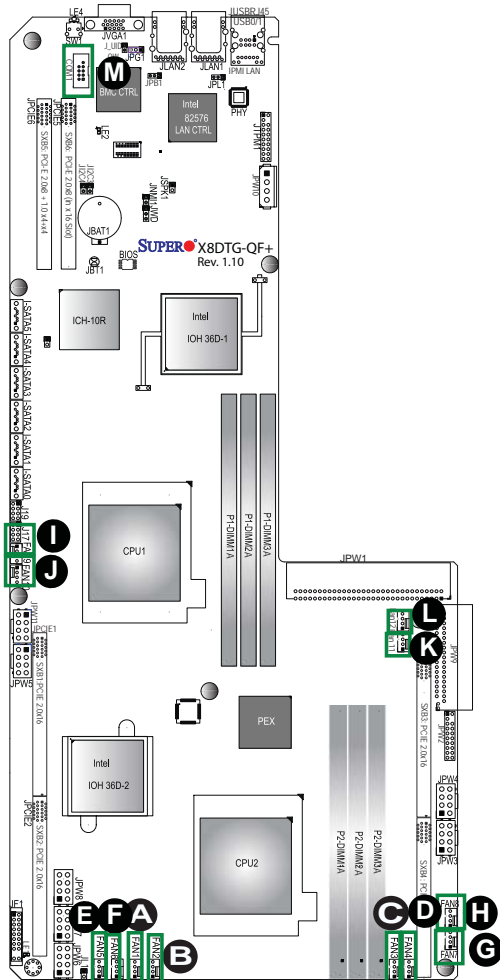
The X8DTG-QF+ has twelve CPU/system fan headers (Fan1 ~ Fan12) on the motherboard. All these are 4-pin fans headers, which are backward compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in the BIOS. (The Default setting is Disabled.) See the table on the right for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	Pulse Width Modulation (PWM)

### Serial Ports

A COM Port (JCOM1) is located next to the UID switch on the motherboard to provide serial port support. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1)			
Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC



- A. Fan 1
- B. Fan 2
- C. Fan 3
- D. Fan 4
- E. Fan 5
- F. Fan 6
- G. Fan 7
- H. Fan 8
- I. Fan 9
- J. Fan 10
- K. Fan 11
- L. Fan 12
- M. COM Port1



### NMI Header

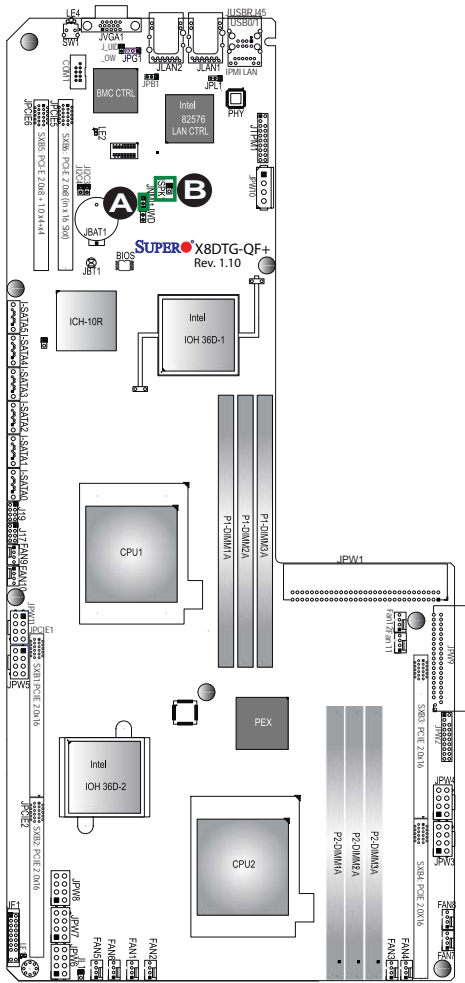
The non-maskable interrupt header is located at JNMI1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions	
Pin#	Definition
1	Control
2	Ground

### Internal Buzzer

The Speaker header, located at JSPK1, can be used to provide audible alarms for various beep codes. See the table on the right for pin definitions. Refer to the layout below for the locations of the Internal Speaker/Buzzer.

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



A. NMI Header

B. Speaker Header

### Chassis Intrusion

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

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

### T-SGPIO Headers

Two SGPIO (Serial General Purpose Input/Output) headers (T-SGPIO-1/T-SGPIO-2) are located at J17/J19 on the motherboard. These headers support serial link interfaces for the onboard SATA connectors. See the table on the right for pin definitions. Refer to the board layout below for the location.

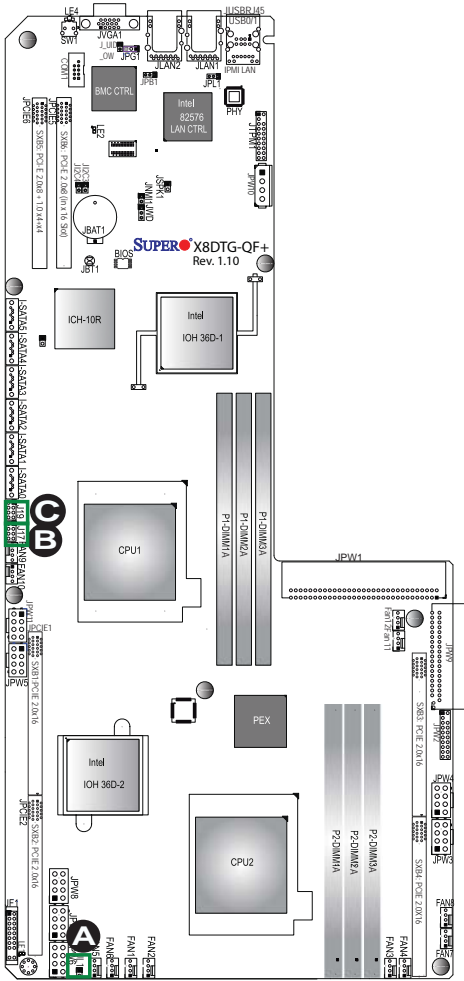
T-SGPIO Pin Definitions			
Pin#	Definition	Pin	Definition
2	NC	1	NC
4	Ground	3	Data
6	Load	5	Ground
8	CLK	7	NC

**Note:** NC= No Connections

A. Chassis Intrusion

B. T-SGPIO-1

C. T-SGPIO-2

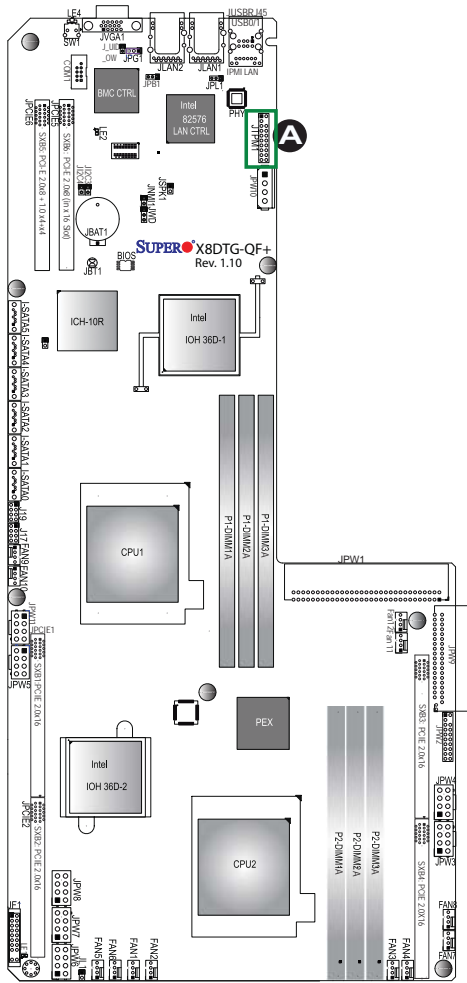


### TPM Header/Port 80

A Trusted Platform Module/Port 80 header is located at JTPM1 to provide TPM and Port 80 support, which will 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	NC
7	LAD 3	8	LAD 2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	NC	14	NC
15	+3V_DUAL	16	SERIRQ
17	GND	18	CLKRUN# (X)
19	LPCPD#	20	NC

(Note: NC=No Connection)



A. TPM/Port80

## 2-7 Jumper Settings

### Explanation of Jumpers

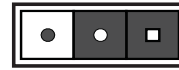
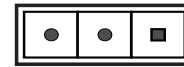
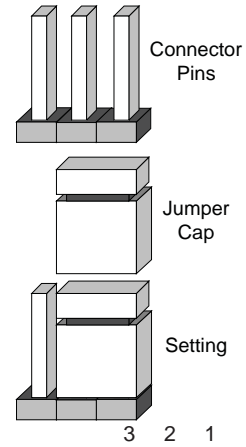
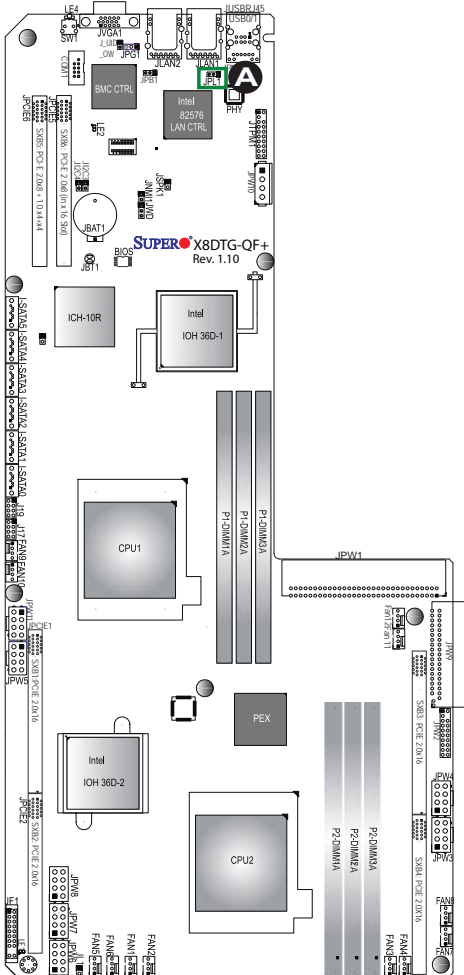
To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.



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

### GLAN Enable/Disable

JPL1 enables or disables the GLAN Ports 1/2 on the motherboard. See the table on the right for jumper settings.



Pin 1-2 short

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

A. JPL1

## CMOS Clear

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



**Note:** For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS. Also, be sure to remove the onboard CMOS Battery before you short JBT1 to clear CMOS.

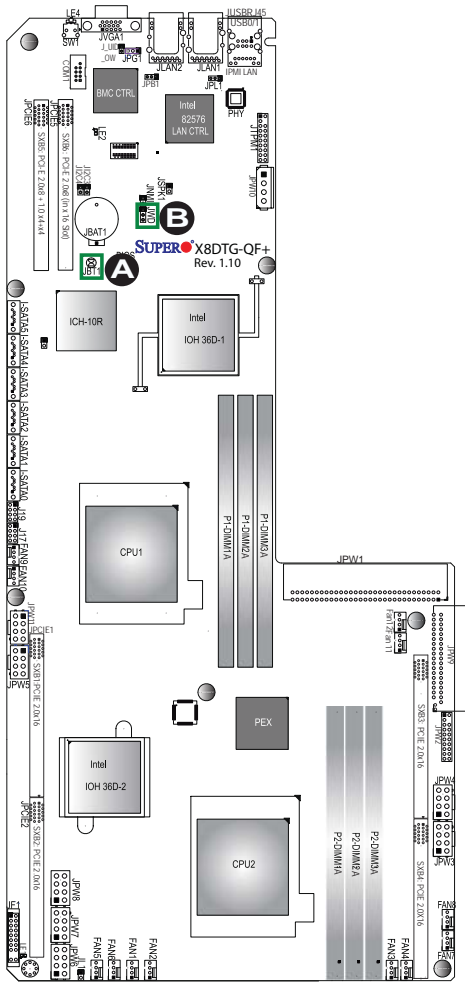
## Watch Dog Enable/Disable

Watch Dog (JWD) is a system monitor that can re-boot 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	Definition
Pins 1-2	Reset (default)
Pins 2-3	NMI
Open	Disabled

A. CMOS Clear

B. WD



### I<sup>2</sup>C Bus to PCI-Exp. Slots

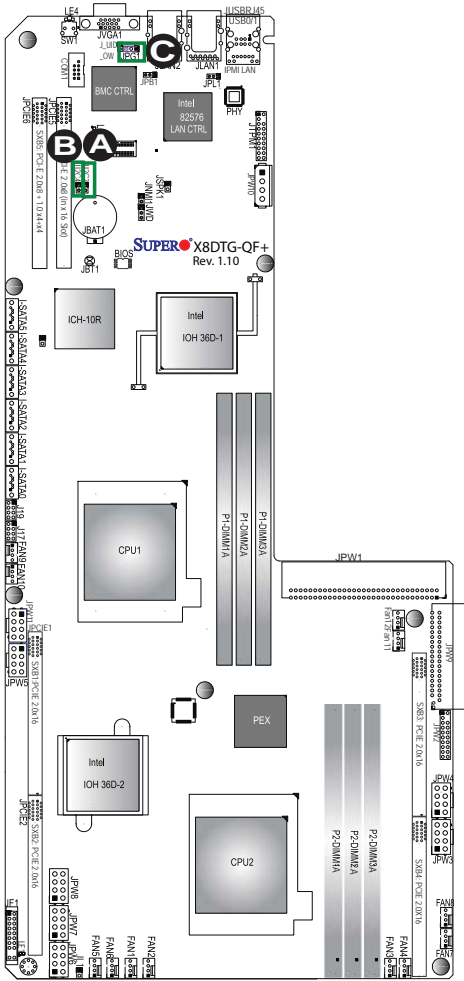
Jumpers JI<sup>2</sup>C3 and JI<sup>2</sup>C4 allow you to connect the System Management Bus (I<sup>2</sup>C) to PCI-Express slots. These two jumpers are to be set at the same time. The default setting is Open to disable the connections. See the table on the right for jumper settings.

I <sup>2</sup> C for PCI-E slots Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (Default)

### VGA Enable

JPG1 allows you to enable or disable the onboard VGA connection supported by the onboard VGA Controller. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

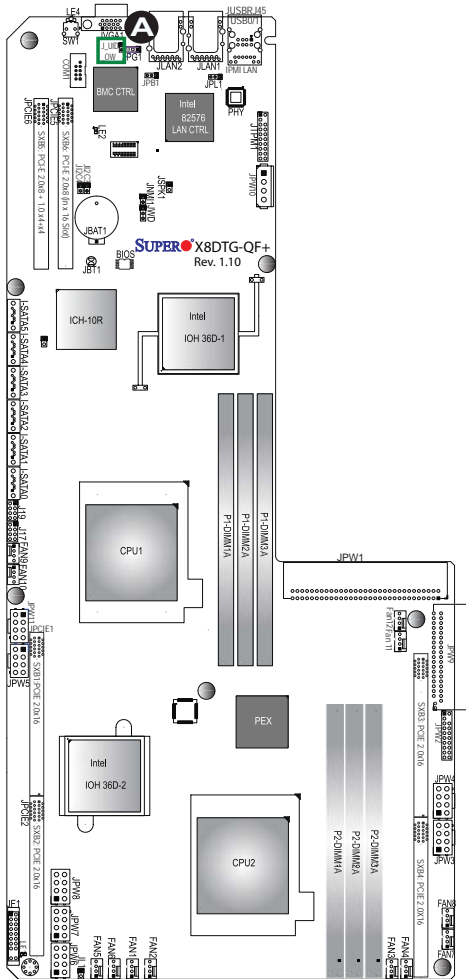


- A. JI<sup>2</sup>C3
- B. JI<sup>2</sup>C4
- C. VGA Enable

### J\_UID\_OW (-Overwriting)

When the jumper J\_UID\_OW is set to Off (default), the Red LED (Overheat/Fan Fail/PWR Fail/UID LED) on Pin 8 of the Front Control Panel (JF1) will take precedence over the Blue UID\_LED located on Pin 7 of JF1. In this case, when the Red LED is on, the Blue LED will be turned off. When the RED LED is off, the Blue UID\_LED can be on or off. In other words, the Red LED signal overwrites the Blue UID\_LED signal if J\_UID-OW is set to off. When the jumper J\_UID\_OW is On, the Red LED (OH/Fan Fail/PWR Fail/UID LED) and the Blue\_UID\_LED work independently. The Red LED will have no effects on the Blue LED. See the table on the right for jumper settings.

J_UID-OW (-Overwriting) Jumper Settings	
Jumper	Definition
Off (Default)	Red OH/Fan Fail/PWR Fail LED (Pin 8 of JF1) takes precedence over (overwrites) the Blue UID_LED (Pin 7 of JF1).  Red LED: On, Blue LED: Off, Red LED: Off, Blue LED: On or Off
On	Red LED (OH/Fan Fail/PWR Fail LED) and the Blue UID_LED function independently. Red LED does not overwrite the Blue LED. The Red LED has no effects on the Blue_UID LED  Red LED: On, Blue LED: On,Off Red LED: Off, Blue LED: On, Off

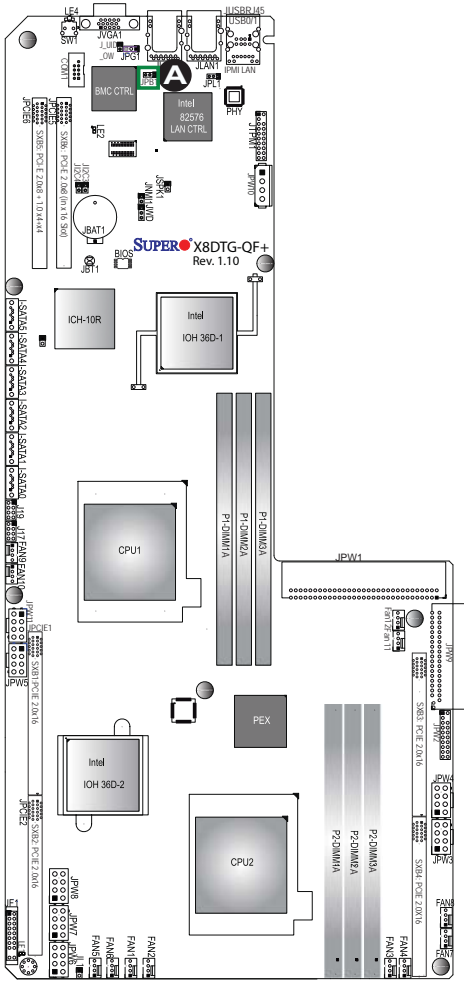


A. J UID OW

### BMC Enable

Jumper JPB1 allows you to enable the embedded BMC (Baseboard Management) Controller for IPMI 2.0/KVM support. See the table on the right for jumper settings.

BMC Enable Jumper Settings	
Jumper Setting Definition	
Pins 1-2	BMC Enable
Pins 2-3	Normal (Default)



A. BMC Enable



## 2-8 Onboard Indicators

### GLAN LEDs

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

### IPMI Dedicated LAN LEDs

Additionally, an IPMI\_LAN is also located on the I/O Backplane. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. Please note that the IPMI LAN does not support 1Gbps connections. See the table at right for more information.

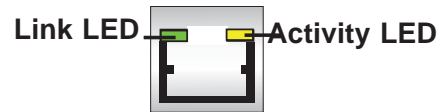


**Rear View** (when facing the rear side of the chassis)

GLAN Activity Indicator LED States		
Color	Status	Definition
Green	Flashing	Activity

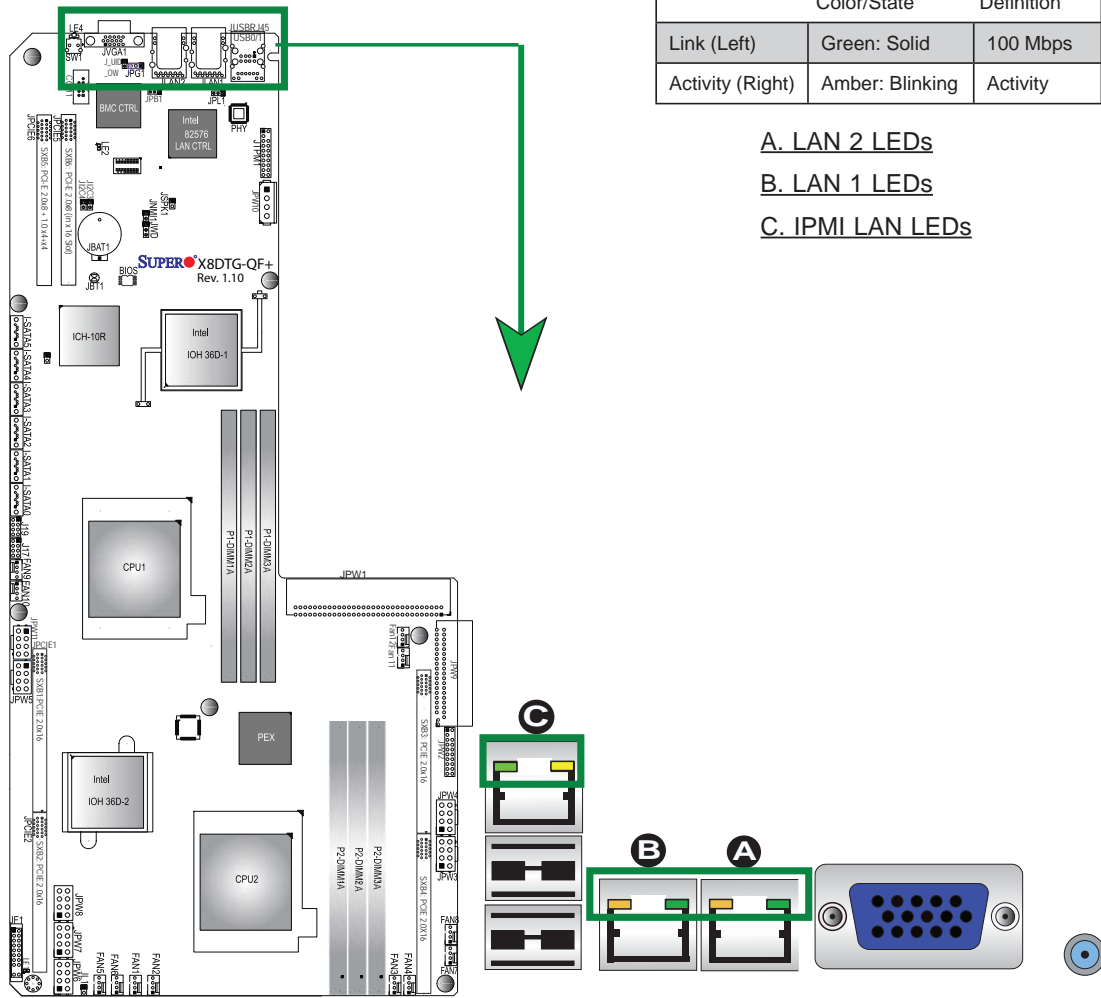
GLAN Link Indicator LED States	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

### IPMI\_LAN LEDs



IPMI LAN Link LED (Left) & Activity LED (Right)		
	Color/State	Definition
Link (Left)	Green: Solid	100 Mbps
Activity (Right)	Amber: Blinking	Activity

- A. LAN 2 LEDs
- B. LAN 1 LEDs
- C. IPMI LAN LEDs



### Onboard Power LED

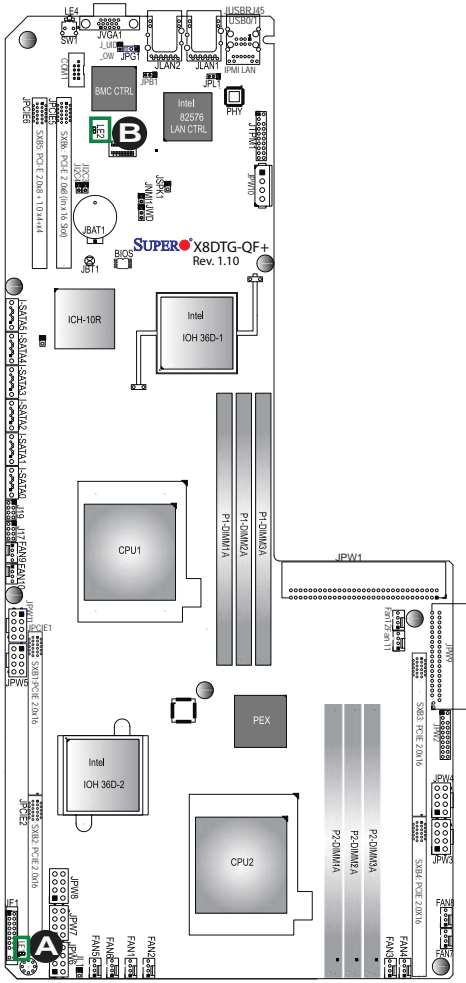
An Onboard Power LED is located at LE1 on the motherboard. When this LED is on, the system power is on. Be sure to turn off the system and unplug the power cord before removing or installing components. See the tables at right for more information.

Onboard PWR LED Indicator States	
LED Color	Definition
Off	System Off (PWR cable is not connected or the power switch is off )
Green	System On
Green: Flashing	ACPI S1 State

### BMC Heartbeat LED

A BMC Heartbeat LED is located at LE2 on the motherboard. When LE2 is on, BMC (Baseboard Management Controller) functions normally. See the tables at right for more information.

BMC Heartbeat LED Indicator LED Status	
Green: Blinking	BMC: Normal



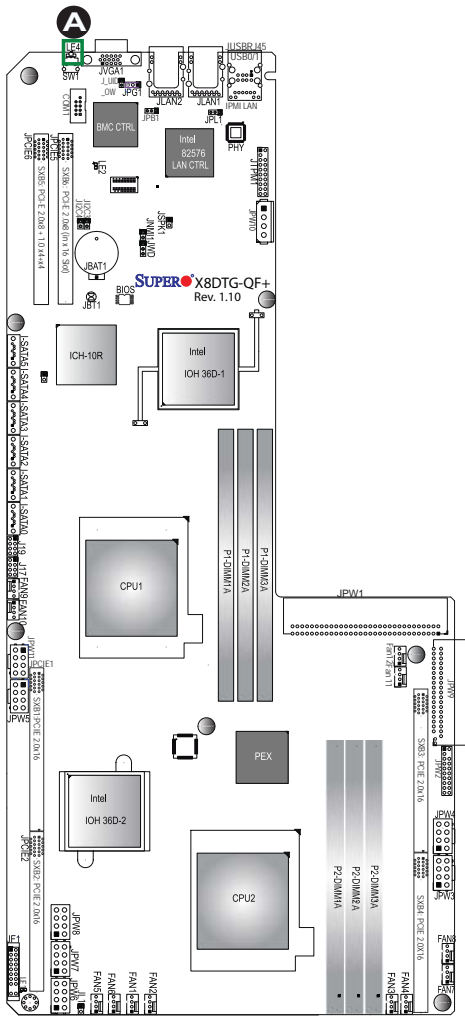
A. PWR LED (LE1)

B. BMC LED (LE2)

### Rear UID LED

The rear UID LED is located at LE4 on the backplane. This LED is used in conjunction with the rear UID switch to provide easy identification of a system that might be in need of service. Refer to UID Switch on Page 2-13 for more information.

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



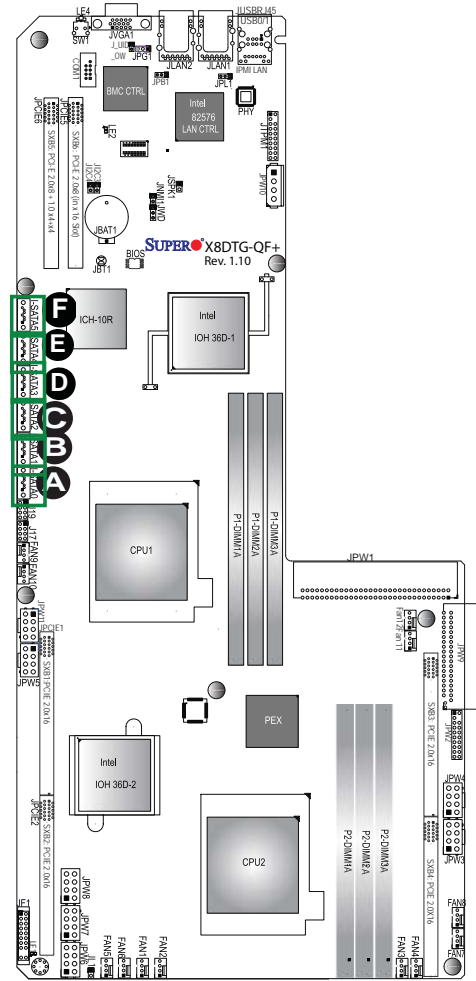
A.UID LED (LE4)

## 2-9 Serial ATA Connections

### Serial ATA Ports

Six Serial ATA Ports (I-SATA0~I-SATA 5) are located next to the ICH-10R chip on the motherboard. These ports, supported by Intel ICH10R (South Bridge), provide serial-link signal transmission, which is faster than that of the traditional Parallel ATA. See the table on the right for pin definitions.

Serial ATA Pin Definitions	
Pin#	Definition
1	Ground
2	TX_P
3	TX_N
4	Ground
5	RX_N
6	RX_P
7	Ground



- A. I-SATA0
- B. I-SATA1
- C. I-SATA2
- D. I-SATA3
- E. I-SATA4
- F. I-SATA5

## Chapter 3

# Troubleshooting

### 3-1 Troubleshooting Procedures

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

#### **Before Power On**

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install CPU 1 first (-making sure it is fully seated) and connect the front panel connectors to the motherboard.

#### **No Power**

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

## **No Video**

1. If the power is on, but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to Appendix A for details on beep codes.

## **System Boot Failure**

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

1. Check for any error beep from the motherboard speaker.
  - If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, try to turn on the system again with only one processor installed in CPU Socket#1. If there is still no error beep, replace the motherboard.
  - If there are error beeps, clear the CMOS settings by unplugging the power cord and contracting both pads on the CMOS Clear Jumper (JB1). (Refer to Section 2-7 in Chapter 2.)
2. Remove all components from the motherboard, especially the DIMM modules. Make sure that the system's power is on, and memory error beeps are activated.
3. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this Chapter.

## **Losing the System's Setup Configuration**

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 2-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

## Memory Errors


When a No\_Memory\_Beep\_Code is issued by the system, check the following:

1. Make sure that the memory modules are compatible with the system and that the DIMM modules are properly and fully installed. (For memory compatibility, refer to the Memory Compatibility Chart posted on our Website @ <http://www.supermicro.com>.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DDR3 Registered/Unbuffered ECC DDR3 DIMM modules recommended by the manufacturer.
4. Check for bad DIMM modules or slots by swapping a single module among all memory slots and check the results.
5. Make sure that all memory modules are fully seated in their slots. Follow the instructions given in Section 2-3 in Chapter 2.
6. Please follow the instructions given in the DIMM Population Tables listed in Section 2-3 to install your memory modules.

## When the System Becomes Unstable

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

1. CPU/BIOS support: Make sure that your CPU is supported, and you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.

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

3. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.
4. System cooling: Check system cooling to make sure that all heatsink fans, and CPU/system fans, etc., work properly. Check Hardware Monitoring settings in the BIOS to make sure that the CPU and System temperatures are

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

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

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

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD disc, CD/DVD-ROM.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Using minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use minimum configuration (with a CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above for proper troubleshooting procedures.
4. Identifying bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

## **3-2 Technical Support Procedures**

Before contacting Technical Support, please take the following steps. Also, please note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for



troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

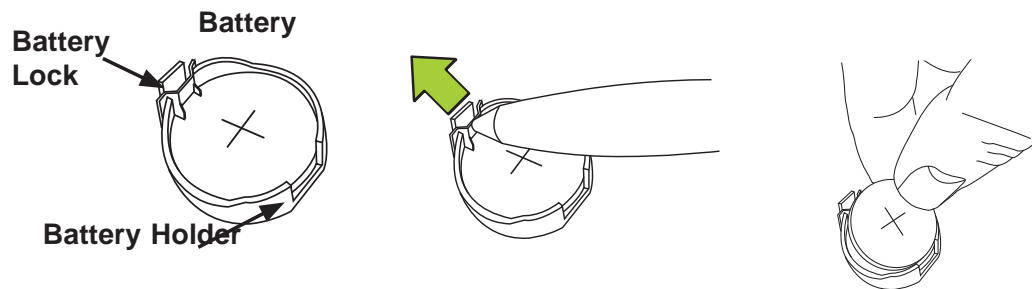
1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (<http://www.supermicro.com/>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (<http://www.supermicro.com>).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
  - Motherboard model and PCB revision number
  - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
  - System configuration
4. An example of a Technical Support form is on our website at (<http://www.supermicro.com>).
- Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at [support@supermicro.com](mailto:support@supermicro.com).

### 3-3 Battery Removal and Installation

#### Battery Removal

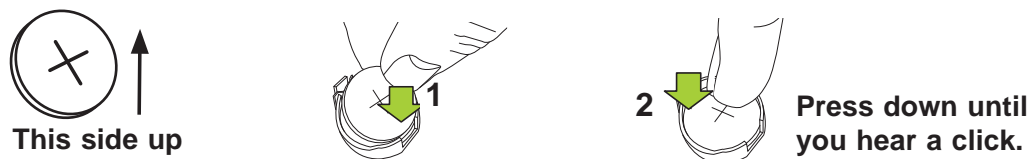
To remove the onboard battery, follow the steps below:

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



#### Proper Battery Disposal

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



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## 3-4 Frequently Asked Questions

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

**Answer:** The motherboard supports Registered ECC or Unbuffered ECC/Non-ECC DDR3 DIMM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 2-3 in Chapter 2.

**Question: How do I update my BIOS?**

It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at <http://www.supermicro.com>. Please check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable USB device. Run the batch file using the format AMI.bat filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.



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



**Note:** The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, please refer to the AMI BIOS Recovery Instructions posted at <http://www.supermicro.com>.

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

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

**Question: How do I handle the used battery?**

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

### 3-5 Returning Merchandise for Service

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

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

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

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## Chapter 4

### BIOS

#### 4-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X8DTG-QF+. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

#### 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. The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.



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

**Note 2:** the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.

#### How To Change the Configuration Data

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


#### Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu

of the AMI BIOS Setup Utility. From the main menu, you can access other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

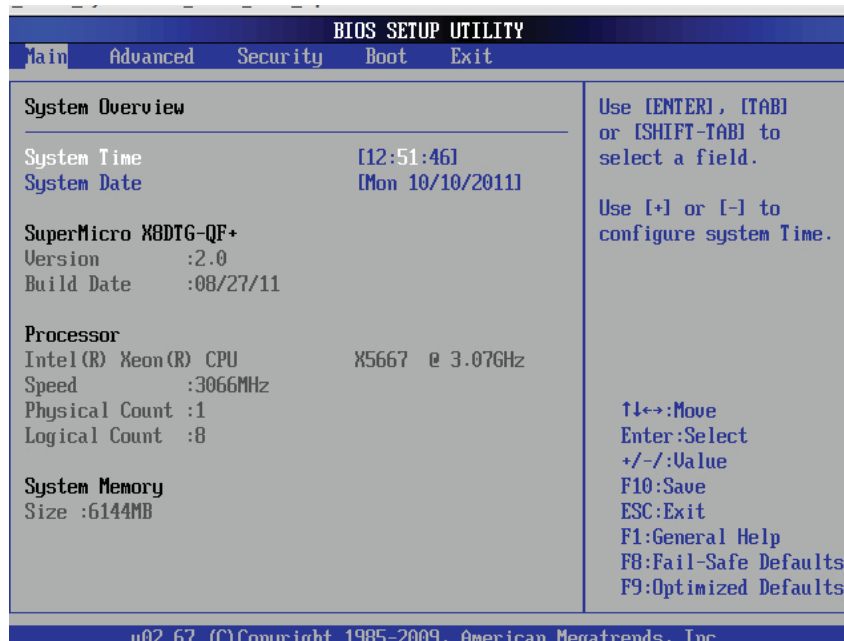


**Warning!** Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update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

 **Note:** For AMI BIOS Recovery, please refer to the AMI BIOS Recovery Instructions posted on our website at <http://www.supermicro.com/support/manuals/>.

## 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.



**System Overview:** The following BIOS information will be displayed:

### System Time/System Date

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

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

### **Supermicro X8DTG-QF+**

- Version: This item displays the BIOS revision used in your system.
- Build Date: This item displays the date when this version of BIOS was completed.

### **Processor**

The AMI BIOS will automatically display the status of the processor used in your system:

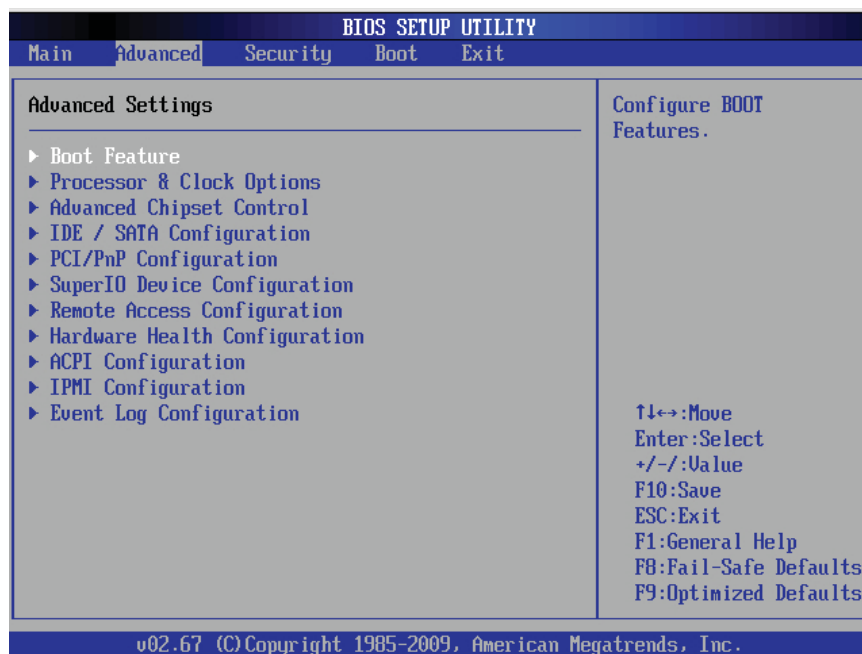
- CPU Type: This item displays the type of CPU used in the motherboard.
- Speed: This item displays the speed of the CPU detected by the BIOS.
- Physical Count: This item displays the number of processors installed in your system as detected by the BIOS.
- Logical Count: This item displays the number of CPU Cores installed in your system as detected by the BIOS.

### **System Memory**

This displays the memory size available in the system.

## 4-3 Advanced Setup Configurations

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



### ► Boot Features

#### Quick Boot

If Enabled, this feature will skip certain tests during POST (Power-On Self Test) to reduce the time needed for system boot. The options are **Enabled** and Disabled.

#### Quiet Boot

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

#### AddOn ROM Display Mode

This 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 allows the user to select the Power-on state for the Numlock key. The options are Off and **On**.



**Wait For 'F1' If Error**

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

**Hit 'Del' Message Display**

Select Enable to display "Press DEL to run Setup" during POST. The options are **Enabled** and Disabled.

**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 the 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 the adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

***Power Configuration*****Watch Dog Function**

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

**Power Button Function**

If this feature is set to Instant\_Off, the system will power off immediately as soon as the user press the power button. If this feature is set to 4\_Second\_Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant\_Off** and 4\_Second\_Override.

**Restore on AC Power Loss**

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

**► Processor and Clock Options**

This submenu allows the user to configure the Processor and Clock settings.

**CPU Ratio**

Select Manual to manually configure the CPU Ratio. Select Auto to allow the BIOS to automatically configure the CPU Ratio. The options are **Auto** and Manual.

---

### **Clock Spread Spectrum**

When this feature is enabled, BIOS will monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and **Enabled**.

### **Hardware Prefetcher (Available when supported by the CPU)**

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

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

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

### **DCU Prefetcher (Available when supported by the CPU)**

Select **Enabled** to activate Level 1 Data Prefetcher to enhance system performance. For DP servers, enable or disable this feature based on application specifications. The options are **Enabled** and **Disabled**.

### **Data Reuse Optimization (Available when supported by the CPU)**

Select **Enabled** to maximize Data Reuse support to enhance system performance for DP platforms. For DP servers, enable or disable this feature based on application specifications. The options are **Enabled** and **Disabled**.

### **MPS and ACPI MADT Ordering**

This feature allows you to decide how the Multiple APIC Description Table (MADT) is ordered. Select **Modern Ordering** for Microsoft Windows XP or later, Select **Legacy Ordering** for Microsoft Windows 2000 or earlier. The options are **Modern Ordering** and **Legacy Ordering**.

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

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



**Note:** Please reboot the system for any change on this setting to take effect. Please refer to Intel's website for detailed information.

### **Execute-Disable Bit Capability (Available if supported by the OS and CPU)**

Select **Enabled** to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and

where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

#### **Intel AES-NI**

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

#### **Simultaneous Multi-Threading (Available when supported by the CPU)**

Select Enabled to use Intel Simultaneous Multi-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

#### **Active Processor Cores**

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

#### **Intel® EIST Technology**

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 website for detailed information.** The options are Disable (Disable GV3) and **Enable (Enable GV3)**.

#### **Intel® TurboMode Tech.**

Select Enabled to allow the processor cores to run faster than normal under special circumstances to improve performance. The options are Disable and **Enabled**.

#### **C1E Support**

Select Enabled for Enhanced Halt State support. C1E significantly reduces the CPU's power consumption by reducing the CPU's clock cycle and voltage during a Halt State. The options are Disabled and **Enabled**.

#### **Intel® C-State Tech**

If this feature is enabled, C-State is set by the system automatically to either C2, C3 or C4 state. The options are Disabled and **Enabled**.

#### **C-State package limit setting (Available when Intel® C-State Tech is enabled)**

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are **Auto**, C1, C3, C6 and C7.

### **C1 Auto Demotion**

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

### **C3 Auto Demotion**

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

### **ACPI T State**

Select **Enabled** to report processor throttling in ACPI. The options are **Disabled** and **Enabled**.

## **► Advanced Chipset Control**

The items included in the Advanced Settings submenu are listed below:

### **► CPU Bridge Configuration**

#### **Request Transaction ID (Available for the Intel Xeon 5600 platform only)**

QuickPath Interconnect (QPI) is the connection between the CPUs and the I/O hub (IOH). For a transaction to be processed in the QPI, a "Transaction ID" is required, and it is assigned by an agent (CPU1, CPU2 or the IOH). Each agent is allocated a number of Transaction IDs based on the QPI IO Bandwidth and the Request Transaction ID (RTID) setting (32-24-32 or 32-16-40). Once Transaction IDs are allocated to an agent, it will assign a Transaction ID to an event so that it can be processed in the QPI. Select **Balanced** to allocate transaction IDs to an agent based on the setting 32-24-32. Select **IO Bias** to allocate RTIDs based on the setting 32-16-40. The options are **Balanced** and **IO Bias**.

#### **QPI Links Speed**

This feature selects QPI's data transfer speed. The options are **Slow-mode** and **Full Speed**.

#### **QPI Frequency (Available when QPI Links Speed is set to 'Full Speed')**

This feature selects the desired QPI frequency. The options are **Auto**, 4.800 GT, 5.866GT, 6.400 GT.

#### **QPI L0s and L1**

Select **Enabled** to lower the QPI power state. L0s and L1 are automatically selected by the motherboard. The options are **Disabled** and **Enabled**.

### **Memory Frequency**

This feature forces a DDR3 frequency slower than what the system has detected to run at the frequency as specified. The options are **Auto**, Force DDR-800, Force DDR-1066, Force DDR-1333 and Force SPD.

### **Memory Mode**

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

### **Demand Scrubbing**

This is a memory error-correction scheme which the processor to write corrected data back into the memory block from where it was read by the Processor. The options are Enabled and **Disabled**.

### **Patrol Scrubbing**

This is a memory error-correction scheme that works in the background looking for and correcting resident errors. The options are **Enabled** and Disabled.

### **Throttling - Closed Loop**

Throttling improves reliability and reduces power use in the processor by automatic voltage control during processor idle states. The options are Disabled and **Enabled**.

## **►North Bridge Configuration**

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

### **Intel I/O AT**

This feature works with Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. TOE devices are specialized, dedicated processors that are installed on add-on cards or network cards to handle packet processing of the add-on cards. When this feature is set to Enabled, it will enhance overall system performance by providing direct memory access for data transferring. The options are **Enabled** and Disabled.

### **DCA (Direct Cache Access) Technology (Available when Intel I/O AT is enabled)**

This feature works in conjunction with Intel I/O AT (Acceleration Technology) to accelerate the performance of the TOE device. When this feature set to Enabled, it

will enhance overall system performance by providing direct cache access for data transferring. The options are **Enabled** and Disabled.

#### **DCA Prefetch Delay**

A DCA Prefetch is used with TOE components to prefetch data to shorten execution cycles and maximize data processing efficiency. Prefetching too frequently can saturate the cache directory and delay necessary cache accesses. This feature reduces or increases the frequency the system prefetches data. The options are [8], [16], [24], **[32]**, [40], [48], [56], [64], [72], [80], [88], [96], [104], [112], [120]

#### **Intel VT-d**

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

#### **Active State Power Management**

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

#### **IOH PCIE Max Payload Size**

Some add-on cards perform faster with the coalesce feature, which limits the payload size to 128B; while others, with a payload size of 256B which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are **256B** and 128MB.

### **► South Bridge Configuration**

This feature allows the user to configure Intel South Bridge settings.

#### **USB Functions**

Select Enabled for onboard USB connection support. The Options are: Disabled, and **Enabled**. (If this item is set to Enabled, USB 2.0 Controller will be enabled.)

#### **Legacy USB Support**

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

### **USB 2.0 Controller**

Select Enabled to activate the USB 2.0 controller. The options are **Enabled** and Disabled. (**Note:** If the item - USB Functions is enabled, USB 2.0 Controller will always be enabled. When the item - USB Functions is disabled, the user has the option to enable or disable USB 2.0 Controller.)

### **USB 2.0 Controller Mode**

This setting allows you to select the USB 2.0 Controller mode. The options are **Hi-Speed (480 Mbps)** and Full Speed (12 Mbps).

### **BIOS EHCI Hand-Off**

Select Enabled to enable BIOS Enhanced Host Controller Interface support to provide a workaround solution for an operating system that does not support EHCI Hand-Off. When enabled, the EHCI Interface will be changed from the BIOS-controlled to the OS-controlled. The options are Disabled and **Enabled**.

## **► IDE/SATA/Floppy Configuration**

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

### **SATA#1 Configuration**

If Compatible is selected, it sets SATA#1 to legacy compatibility mode. Select Enhanced to set SATA#1 to native SATA mode. The options are Disabled, Compatible and **Enhanced**.

#### **Configure SATA#1 as (Not available when SATA#1 Configuration is disabled)**

This feature allows the user to select the drive type for SATA#1. The options are **IDE**, RAID and AHCI. (When the option-RAID is selected, the item-ICH RAID Code Base will appear. When the option-AHCI is selected, the item-ICH AHCI Codebase will be available.)

#### **ICH RAID Code Base (Available when the option-RAID is selected.)**

Select Intel to support Intel SATA RAID firmware to configure Intel' SATA RAID settings. Select Adaptec to enable Adaptec SATA RAID firmware to configure Adaptec's SATA RAID settings. The options are **Intel** and Adaptec.

#### **ICH AHCI Codebase (Available when the option-AHCI is selected.)**

Use this feature to select the AHCI Codebase for the ICH South Bridge. The options are BIOS Native Module and **Intel AHCI ROM**.

### **SATA#2 Configuration (Available when the option-IDE is selected)**

Selecting Enhanced will set SATA#2 to native SATA mode. The options are Disabled, and **Enhanced**.

### **IDE Detect Timeout (sec)**

Use this item to set the time\_out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and **35**.

### **Primary IDE Master/Slave, Secondary IDE Master/Slave, Third IDE Master, and Fourth IDE Master**

These settings allow the user to set the parameters of the IDE slots as specified. Press <Enter> to activate the following submenu items. Set the correct configurations accordingly.

#### **Type**

This feature allows the user to select the type of device connected to the slot. Select Auto to allow the BIOS to automatically select the device type as it is detected on the slot. Select CD/DVD to configure the slot for CD/DVD devices. Select ARMD to use this slot for removable devices. The options are Not Installed, **Auto**, CD/DVD and ARMD.

#### **LBA/Large Mode**

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

#### **Block (Multi-Sector Transfer)**

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

#### **PIO Mode**

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.



Select 0 ~ 4 to allow the AMI BIOS to use PIO mode 0 ~ 4. It has a data transfer rate of 3.3 MB/s ~ 16.6 MB/s. See the table below.

#### PIO Mode Select Options

Option Selected	PIO Mode	Max. Transfer Rate
0	PIO Mode 0	3.3 MB/s
1	PIO Mode 1	5.2 MB/s
2	PIO Mode 2	8.3 MB/s
3	PIO Mode 3	11.1 MB/s
4	PIO Mode 4	16.6 MB/s

#### DMA Mode

Select Auto to allow the BIOS to automatically detect IDE DMA mode when the IDE disk drive support cannot be determined. The options are **Auto**, SWDMA, MWDMA, and UDMA. See the table below for DMA Mode Select Options.

#### DMA Mode Select Options

Option Selected	DMA Mode	Max. Transfer Rate
SWDMA 0	Single-Word DMA 0	2.1 MB/s
SWDMA1	Single-Word DMA 1	4.2 MB/s
SWDMA 2	Single-Word DMA 2	8.3MB/s
MWDMA 0	Multi-Word DMA 0	4.2 MB/s
MWDMA1	Multi-Word DMA 1	13.3 MB/s
MWDMA 2	Multi-Word DMA 2	16.6 MB/s
UDMA 0	Ultra DMA 0	16.6 MB/s
UDMA 1	Ultra DMA 1	25 MB/s
UDMA 2	Ultra DMA 2	33.3 MB/s
UDMA 3	Ultra DMA 3	44.4 MB/s
UDMA 4	Ultra DMA 4	66.6 MB/s
UDMA5	Ultra DMA 5	100 MB/s
UDMA 6	Ultra DMA 6	133 MB/s

#### S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMI BIOS to automatically detect hard disk drive support. Select Disabled to prevent the AMI BIOS from using the S.M.A.R.T. Select Enabled to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

#### 32Bit Data Transfer

Select Enable to enable 32-bit IDE data transferring support. The options are **Enabled** and Disabled.

## ► PCI/PnP Configuration

### Clear NVRAM

Select Yes to clear the NVRAM (Non-volatile random-access memory) during system boot. The options are **No** and Yes.

### Plug & Play OS

Selecting Yes allows the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

### PCI Latency Timer

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

### PCI IDE BusMaster

When enabled, the BIOS uses PCI bus mastering for reading/writing to IDE drives. The options are Disabled and **Enabled**.

### SR-IOV Support

Single Root I/O Virtualization is an industry-standard mechanism that enables a device to share its resources among several virtual machines. SR-IOV is capable of partitioning a PCI function into several virtual interfaces for sharing the resources of a PCI Express device under a virtual environment. The options are **Disabled** and Enabled.

### PCI-E Slot 1~Slot 4 x16, PCI-E Slot 5~Slot 6 x8, PCI-E Slot 7~Slot 8 x4

Use this setting to enable or disable any of the PCI slots indicated above. The options are Disabled and **Enabled**.

### Onboard LAN 1 Option ROM 1 Select

Use this item to select the type of onboard option ROM to load. The options are **PXE** and iSCSI.

### Load Onboard LAN 1 Option ROM/Load Onboard LAN 2 Option ROM

Select Enabled to enable onboard LAN1/LAN2 Option ROMs support which will allow you to boot your systems using a network interface. The default option for LAN1 is **Enabled**, and for LAN2 is **Disabled**.

### **Boot Graphics Adapter Priority**

This feature allows the user to specify which graphics controller to be used as the primary boot graphics controller. The options are **Onboard VGA**, PCI Slot 6 and Offboard VGA.

## **► Super IO Device Configuration**

### **Serial Port1 Address, Serial Port2 Address**

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3 and 2F8/IRQ3. The options for Serial Port2 are Disabled, **2F8/IRQ3**, 3E8/IRQ4, 3F8/IRQ4, and 2E8/IRQ3.

## **► Remote Access Configuration**

### **Remote Access**

Select Enabled to enable Remote Access support. The options are Disabled and **Enabled**. If Remote Access is set to Enabled, the following items will display:

#### **Serial Port Number**

This feature allows the user decide which serial port to be used for Console Redirection. The options are COM 1 and **COM2**.

#### **Base Address, IRQ**

This item displays the base address and IRQ of the serial port used for Console Redirection. This setting is configured via the item-Serial Port 1 Address/IRQ or Serial Port 2 Address/IRQ in the Super I/O submenu.

#### **Serial Port Mode**

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, n 1**; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

#### **Flow Control**

This feature allows the user to set the flow control for Console Redirection. The options are **None**, Hardware, and Software.

### Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power-On Self-Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and **Always**.

### Terminal Type

This feature allows the user to select the target terminal type for Console Redirection. The options are ANSI, **VT100**, and VT-UTF8.

### VT-UTF8 Combo Key Support

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

### Sredir Memory Display Delay

This feature defines the length of time in seconds to display memory information. The options are **No Delay**, Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

## ► Hardware Health Configuration

This feature allows the user to monitor system health and review the status of each item as displayed.

### CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

#### Warning!



1. Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.

2. To avoid possible system overheating, please be sure to provide adequate airflow to your system.

The options are:

- The Early Alarm: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

- **The Default Alarm:** Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5°C above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling. In both the alarms above, please take immediate action as shown below.

### **CPU 1 Temperature/CPU 2 Temperature/System Temperature (TR2)/ System Temperature (TR1)**

This feature displays current temperature readings for the CPU and the System.

The following items will be displayed for your reference only:

#### **CPU 1 Temperature/CPU 2 Temperature**

The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading. The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

**Low** – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

**Medium** – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

**High** – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems.



**Notes:** 1. The system may shut down if it continues for a long period to prevent damage to the CPU.

2. The information provided above is for your reference only. For more information on thermal management, please refer to Intel's website at [www.Intel.com](http://www.Intel.com).

### **System Temperature (TR2)/System Temperature (TR1)**

The temperature for each sensor indicated will be displayed (in degrees in Celsius and Fahrenheit) as detected by the BIOS.

### **Fan1 ~ Fan 12 Reading**

This feature displays the fan speed readings from Fan1 through Fan8. (Fan1 is CPU1 Fan and Fan2 is CPU2 Fan.)

### **Fan Speed Control Modes**

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/FS" to allow the onboard fans to run at full speed for maximum cooling. The FS setting is recommended for special system configuration or debugging. Select "Performance/PF" for better system cooling. The PF setting is recommended for high-power-consuming and high-density systems. Select "Balanced/BL" for the onboard fans to run at a speed that will balance the needs between system cooling and power saving. The BL setting is recommended for regular systems with normal hardware configurations. Select "Energy Saving/ES" for best power efficiency and maximum quietness. The Options are: Full Speed/FS, Performance/PF, **Balanced/BL**, and Energy Saving/ES.

### **Voltage Monitoring**

CPU1 Vcore, CPU2 Vcore, ICH 1.5V, 5V, 12V, 5Vsb, CPU1 DIMM, CPU2 DIMM, 3.3V, 3.3Vsb, Vbat, IOH 1.1V

### **►ACPI Configuration**

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

**High Precision Event 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 Aware O/S**

Select Yes to enable ACPI support if it is supported by the OS to control ACPI through the Operating System; otherwise, disable this feature. The options are **Yes** and No.

**ACPI APIC Support (Available ACPI Aware O/S='Yes')**

Select Enabled to include the ACPI APIC Table Pointer in the RSDT (Root System Description Table) pointer list. The options are **Enabled** and Disabled.

**APIC ACPI SCI IRQ**

When this item is set to Enabled, APIC ACPI SCI IRQ is supported by the system. The options are Enabled and **Disabled**.

**Headless Mode (Available ACPI Aware O/S='Yes')**

This feature is used to enable system to function without a keyboard, monitor or mouse attached. The options are Enabled and **Disabled**.

**ACPI Version Features (Available ACPI Aware O/S='Yes')**

The options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0. Please refer to ACPI's website for further explanation: <http://www.acpi.info/>.

**NUMA Support**

If this feature is enabled, Non-Uniform Memory Access will enhance CPU performance. The options are **Enabled**, Disabled and NUMA for SLES11 (SUSE Linux Enterprise Server 11).

**WHEA Support**

Select Enabled to enable Windows Hardware Error Architecture (WHEA) support which will provide a common infrastructure to handle hardware errors on Windows platforms to reduce system crashes due to hardware errors and to improve system recovery and health monitoring. The default setting is **Enabled**.

## ► Trusted Computing (Optional)

### TCG/TPM Support

Select Yes to support trusted platforms (TPM 1.1/1.2) which will allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Yes and **No**.

### Indicate Physical

Select Yes for the BIOS to indicate the physical presence of a component to the TPM device at system boot. The options are **No** and Yes.

### TPM Deactivated/Activated

This feature activates or disables the TPM device. The options are **Don't Change**, Set and Clear.

### TPM Owner

This feature installs or clears TPM ownership. The options are **Don't Change**, Enable Install, Disable Install and Clear.

### Execute TPM Command

Select Enabled to send an executable command to a TPM device. The options are **Don't Change**, Enabled and Disabled.

### Clear the TPM

Press <Enter> to clear the TPM memory. This will erase all information related to TPM support.

If TCG/TPM Support is set to Yes, TPM Status will display:

#### TPM Enable/Disable Status

#### TPM Owner Status

## ► IPMI Configuration

Intelligent Platform Management Interface (IPMI) is a set of common interfaces that are used for hardware health monitoring and system management. For more information on the IPMI specifications, please visit Intel's website at [www.intel.com](http://www.intel.com).

### IPMI Firmware Revision

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

### Status of BMC

Baseboard Management Controller (BMC) manages the interface between system management software and hardware. This displays the BMC status code.



## ►View BMC System Event Log

This feature displays the BMC System Event Log (SEL). It shows the total number of entries of BMC System Events.

To view an event, select an Entry Number and press <Enter> to display the information as shown in the screen.

- SEL Entry Number
- SEL Record ID
- SEL Record Type
- Event Timestamp
- Generator ID
- Event Message Format Ver
- Event Sensor Type
- Event Sensor Number,
- Event Dir Type
- Event Data.

## Clear BMC System Event Log

### Clear BMC System Log

Select OK and press <Enter> to clear the BMC system log. Select Cancel to keep the BMC System log. The options are **OK** and Cancel.



**Caution:** Any cleared information is unrecoverable. Make absolutely sure that you no longer need any data stored in the log before clearing the BMC Event Log.

## ►Set LAN Configuration

Use this feature to configure the IPMI LAN adapter with a network address as shown in the following graphics.

**Channel Number** - This feature displays the channel number.

**Channel Number Status** - This feature displays the channel status for the Channel Number selected above: "Channel Number is OK" or "Wrong Channel Number".

---

### **IP Address Source**

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

### **IP Address**

BIOS will automatically enter the IP address of the machine you are using; however the IP address may be overwritten. The IP address should be in decimal and in dotted quad form (i.e., 192.168.10.253). The value of each three-digit number separated by dots should not exceed 255.

### **Subnet Mask**

This item displays the current subnet mask setting for your IPMI connection. The value of each three-digit number separated by dots should not exceed 255.

### **Gateway Address**

BIOS will automatically enter the Gateway address of this machine; however it may be overwritten. Gateway addresses are 4-decimal numbers in dotted quad form (i.e., 192.168.10.253). The value of each 3-digit number separated by dots should not exceed 255.

### **Mac Address**

The BIOS will automatically enter the Mac address of this machine; however it may be overwritten. Mac addresses are 6 two-digit hexadecimal numbers (Base 16, 0 ~ 9, A, B, C, D, E, F) separated by dots. (i.e., 00.30.48.D0.D4.60).

## **► Event Log Configuration**

### **View Event Log**

Use this option to view the System Event Log.

### **Mark all events as read**

Select OK to mark all events as read. The options are **OK** and Cancel.

### **Clear event log**

Select OK to clear all messages in the event log. The options are **OK** and Cancel.

**PCI-E Error Log**

Select Yes to log PCI-E Errors. The options are Yes and **No**.

**Memory ECC Error Log**

Select Yes to enable ECC memory error logging . The options are **Yes** and No.

**4-4 Security Settings**

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

**Supervisor Password**

This item indicates if a supervisor password has been entered for the system. "Not Installed" means a supervisor password has not been used.

**User Password**

This item indicates if a user password has been entered for the system. "Not Installed" means that a user password has not been used.

**Change Supervisor Password**

Select this feature and press <Enter> to access the submenu, and then enter a new Supervisor Password.

**User Access Level** (Available when Supervisor Password is set as above)

Use this feature to set the user's access level. Select **Full Access** to grant the user full read and write access to the BIOS Setup Utility. Select View Only to allow the user to view the Setup Utility displays without making any changes. Select Limited

to allow the user to make changes on limited items such as Date and Time, Select No Access to prevent the user from entering the Setup Utility.

### Change User Password

Select this feature and press <Enter> to enter a new User Password.

### Clear User Password (Available only if User Password has been set)

This item allows you to clear a user password after it has been entered.

### Password Check

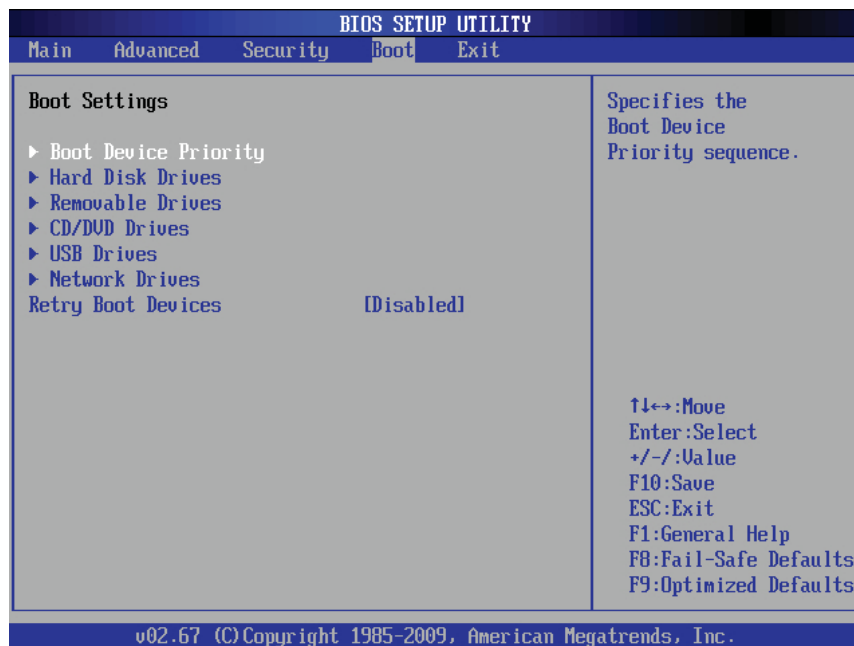
Select Setup for the system to check for a password when entering the BIOS Setup utility. Select Always for the system to check for a password at bootup. The options are **Setup** and Always.

### Boot Sector Virus Protection

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

## 4-5 Boot Configuration

Use this feature to configure boot priority settings.



### ▶ Boot Device Priority

Use this feature to specify the sequence of boot priority for onboard devices. The settings are 1st boot device~5th boot device and Disabled.

- 1st Boot Device/2nd Boot Device/3rd Boot Device

### ▶Hard Disk Drives

Use this feature to specify the boot sequence from all bootable HDD devices. The settings are Disabled and a list of all hard disk drives that have been detected.

- 1st Boot Device/2nd Boot Device/3rd Boot Device

### ▶Removable Drives

Use this feature to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.

- 1st Boot Device/2nd Boot Device/3rd Boot Device

### ▶CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD Drives (i.e., 1st Drive, 2nd Drive, etc).

- 1st Boot Device/2nd Boot Device/3rd Boot Device

### ▶USB Drives

Use this feature to specify the boot sequence from available USB drives. The settings are 1st boot device, 2nd boot device, and Disabled.

- 1st Boot Device/2nd Boot Device/3rd Boot Device

### ▶Network Drives

Use this feature to specify the boot sequence from available network drives. The settings are 1st boot device, 2nd boot device, and Disabled.

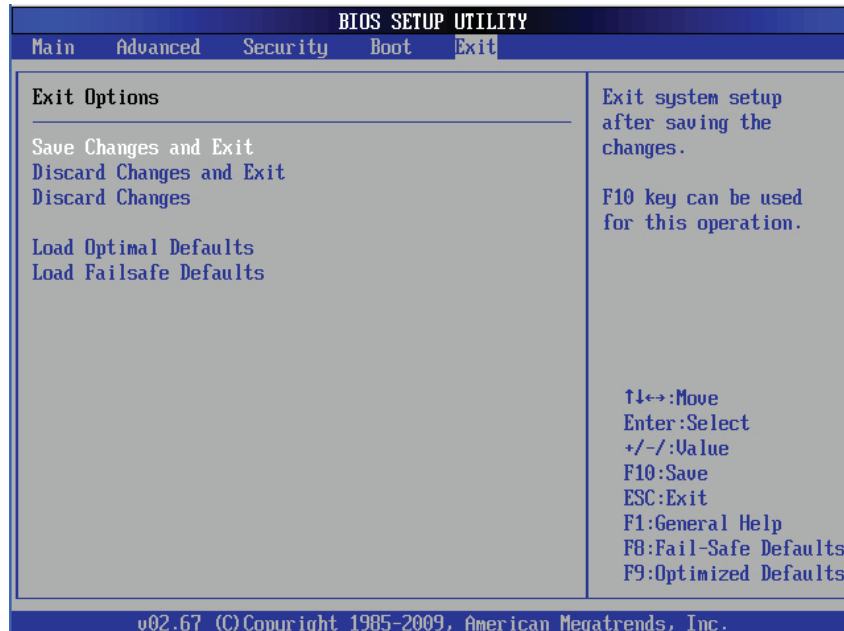
- 1st Boot Device/2nd Boot Device

### Retry Boot Devices

Select Enabled to enable Retry Boot Devices support to allow the system to attempt to boot from a specific boot device after a boot failure. The options are Enabled and **Disabled**.

## 4-6 Exit Options

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



### Save Changes and Exit

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

### Discard Changes and Exit

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

### Discard Changes

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

### Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

### Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

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## 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 the boot-up process. The error messages normally appear on the screen.

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

#### A-1 BIOS Error Beep Codes

BIOS Error Beep Codes		
Beep Code	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
1 long beep + 8 short beeps	Display memory read/write error or no video	No video display, video adapter missing or with faulty memory
Continuous high (pitch) + low (pitch)	System Overheat	System overheat

## Notes

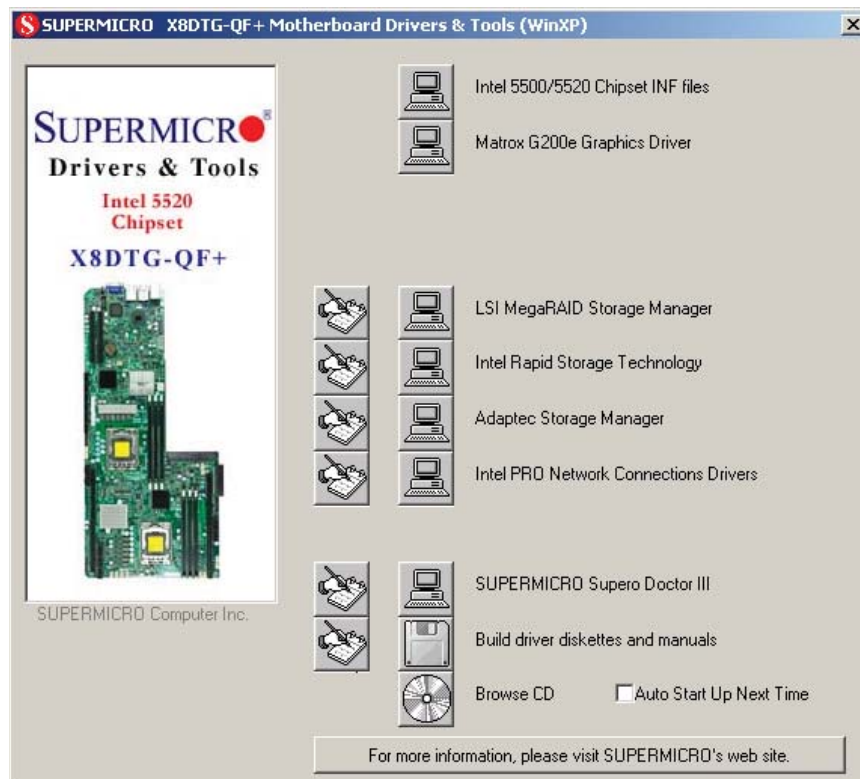


## Appendix B


### Software Installation Instructions

#### B-1 Installing Software Programs

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 OS, please refer to the instructions posted on our website at <http://www.supermicro.com/support/manuals/>.)



#### Driver/Tool Installation Display Screen

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

**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 Supero Doctor III

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



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


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

### Supero Doctor III Interface Display Screen-I (Health Information)



## Supero Doctor III Interface Display Screen-II (Remote Control)



 **Note:** SD III Software Revision 1.0 can be downloaded from our website at: [ftp://ftp.supermicro.com/utility/Supero\\_Doctor\\_III/](ftp://ftp.supermicro.com/utility/Supero_Doctor_III/). You can also download SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will still recommend that you use Supero Doctor II.

## Notes

(Disclaimer Continued)

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