

**SUPER**  <sup>®</sup>

**SUPER**  <sup>®</sup> C2SBM-Q

## USER'S MANUAL

Revision 1.0

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**WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.**

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Manual Revision 1.0

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## Preface

### About This Manual

This manual is written for system integrators, PC technician and knowledgeable PC users. It provides information for the installation and use of the SUPER● C2SBM-Q motherboard. The C2SBM-Q supports a single Core 2 Duo/Core 2 Quad processor with a system bus speed of 1333/1066/800 MHz. The Intel Core 2 Duo/Core 2 Quad processor supports the 775-Land Grid Array Package that interfaces with the motherboard via an LGA775 socket. With support of the Dual-Core Technology, the Intel Hyper-Threading (HT) Technology, Wide Dynamic Execution, FSB Dynamic Bus Inversion (DBI), Advanced Digital Media Boost, Smart Memory Access, and Thermal Management 2 (TM2), the C2SBM-Q delivers unparalleled system performance and great power efficiency in a slim package. Please refer to the motherboard specifications pages on our web site (<http://www.supermicro.com/Products/>) for updates on supported processors. This product is intended to be professionally installed.

### Manual Organization

**Chapter 1** describes the features, specifications and performance of the mainboard 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 the video, the memory and the system setup stored in CMOS.

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

**Appendix A** provides BIOS POST Messages.

**Appendix B** lists BIOS POST Codes.

**Appendix C** provides software installation instructions.

### Conventions Used in the Manual:

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



**Warning:** Important information given to ensure proper system installation, to prevent bodily injury or 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.

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

All of the following items are included in the Retail Box Only:

One (1) Supermicro Mainboard

Four (4) SATA cables (CBL-0044L)

One (1) IDE hard drive cable (CBL-0036L-3)

One (1) I/O Shield (MCP-260-00015-ON)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual

## Contacting Supermicro

### Headquarters

Address: Super Micro Computer, Inc.  
980 Rock Ave.  
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Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3991

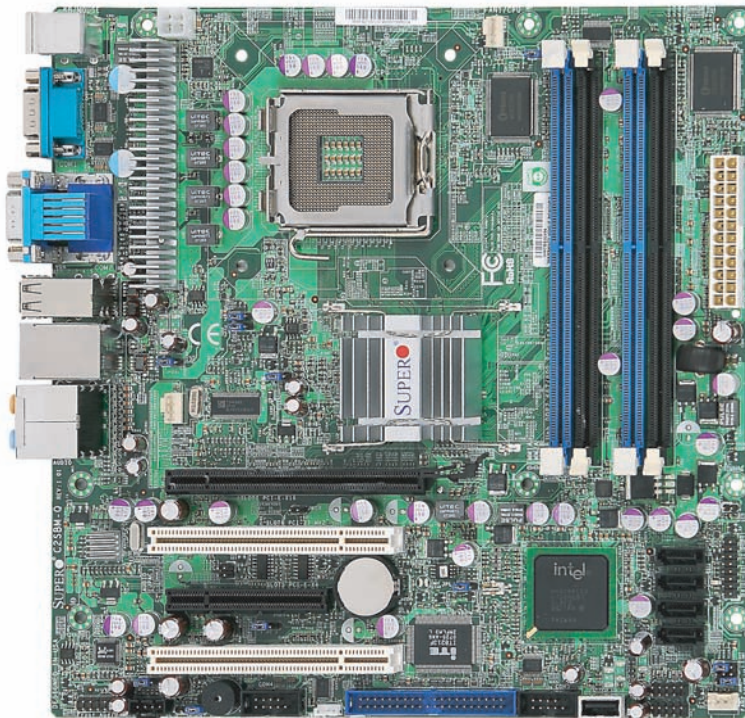
Web Site: [www.supermicro.com.tw](http://www.supermicro.com.tw)

#### Technical Support:

Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

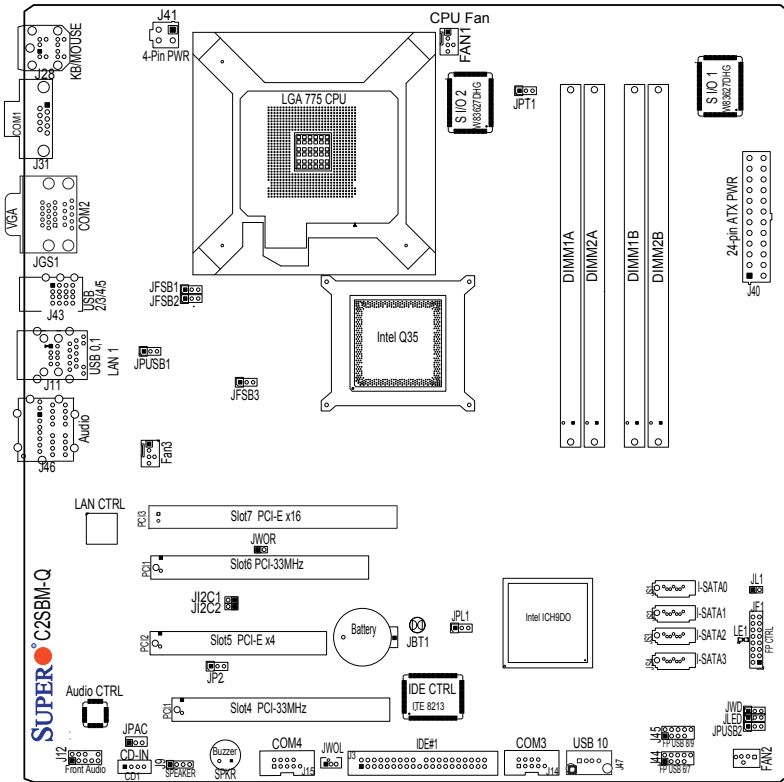
Tel: 886-2-8228-1366, ext.132 or 139



**SUPER** C2SBM-Q Image

**Note:** All pictures and drawings shown in this manual were based upon the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as those in this manual.

## Motherboard Layout



### Important Notes to the User

- Jumpers not indicated are for test purposes only.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "■" indicates the location of "Pin 1."

### Overclocking Considerations



**Warning:** Please be aware of the following conditions when "overclocking" is used: Setting a high CPU FSB speed (overclocking), DRAM frequency or selecting a high CPU V-Core voltage, memory voltage, chipset voltage, ICH chipset voltage, or FSB termination voltage may result in system instability. If this occurs, revert to the default settings. In addition, extra fans may be needed for proper system cooling. The C2SBM-Q offers the option of "overclocking" however, Supermicro is not responsible for any damage caused by the use of overclocking.

## C2SBM-Q Quick Reference

| <u>Jumpers</u>                        | <u>Description</u>             | <u>Default Setting</u> |
|---------------------------------------|--------------------------------|------------------------|
| JBT1                                  | CMOS Clear                     | (See Chapter 2)        |
| JFSB1/JFSB2/JFSB3                     | Front Side Bus Frequency       | All Pins 1-2 (Auto)    |
| JI <sup>2</sup> C1/JI <sup>2</sup> C2 | SMB to PCI Slots               | Open/Open (Disabled)   |
| JPAC                                  | Audio Enable                   | Pins 1-2 (Enabled)     |
| JPL1                                  | Giga-bit LAN Enable            | Pins 1-2 (Enabled)     |
| JPT1                                  | Trusted Platform Module Enable | Pins 1-2 (Enabled)     |
| JPUSB1                                | USB Wake-up Enable             | Pins 1-2 (Enabled)     |
| JPUSB2                                | USB Wake-up Disable            | Pins 2-3 (Disabled)    |
| JP2                                   | IDE Device Enable              | Pins 1-2 (Enabled)     |
| JWD                                   | Watch Dog Timer Out            | Pins 1-2 (Reset)       |

| <u>Connectors</u>   | <u>Description</u>   |
|---------------------|--|
| ATX PWR             | ATX 24-Pin Power Connector   |
| CD1                 | Audio CD Input Header  |
| COM1-4              | COM Port/Serial Port 1-4 Connectors                                  |
| DIMM 1A, 2A, 1B, 2B | Memory Slots   |
| Fans 1-3            | Fan 1: CPU Fan, Fan 2/3: Chassis Fan Headers                         |
| IDE                 | IDE # 1 Connector  |
| JF1                 | FP Control Panel Header  |
| JL1                 | Chassis Intrusion Header   |
| JLED                | Onboard Power LED Indicator  |
| JWOL                | Wake-on-LAN Header   |
| JWOR                | Wake-on-Ring Header  |
| J9                  | Buzzer/Speaker (Pins 3-4 Internal Buzzer, Pins 1-4 External Speaker) |
| J12                 | Front Panel Audio Connector  |
| J28                 | PS/2 Keyboard/Mouse  |
| J41                 | 12V 4-Pin Power Connector  |
| J46                 | Audio Port   |
| LAN                 | Ethernet (Gigabit LAN) Connector                                     |
| LE1                 | Standby Power LED Indicator  |
| SATA 0,1,2,3        | SATA Headers (See note page 1-7)                                     |
| Slot 4, 6           | PCI 33 MHz Slots   |
| Slot 5              | PCI-Express x4 Slot (x8 physical)                                    |
| Slot 7              | PCI-Express x16 Slot   |
| USB 0-1             | (Back Panel) USB Ports   |
| USB 2-5             | (Back Panel) USB Ports   |
| USB 6/7,8/9         | (Front Panel) USB Headers 6-7 (J44), 8-9 (J45)                       |
| USB 10              | Vertical USB Port (J47)  |
| VGA                 | Video/Graphics Connector (JG1)                                       |

## Motherboard Features

### **Processor**

- Single Intel Core 2 Duo/Core 2 Quad Processor with a system bus speed of 1333/1066/800 MHz.
- Supports Intel Dual Core Technology, Hyper-Threading, Wide Dynamic Execution, FSB Dynamic Bus Inversion (DBI), Advanced Digital Media Boost, Smart Memory Access, and Thermal Management 2 (TM2)

### **Memory**

- Supports single or dual channel unbuffered Non-ECC DDR2 up to 8GB at 800/667 MHz for single channel mode or dual-channel interleaved mode in four DIMM sockets. **Note:** See Section 2-4 for details.

### **Chipset**

- Intel Q35 GMCH
- ICH9DO with support for RAID 0,1,5,10 in Windows and 0,1,10 in Linux

### **Expansion Slots**

- One (1) PCI-Express x16 (Slot 7)
- One (1) PCI-Express x4 (x8 physical) (slot 5)
- Two (2) 32-bit PCI 33MHz (Slot 4 and 6)

### **BIOS**

- 16 Mb Firmware SPI Phoenix BIOS® Flash BIOS
- DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, and Plug and Play (PnP)

### **PC Health Monitoring**

- Onboard voltage monitors for CPU core voltage, memory voltage, +1.8V, +3.3V +5V standby, +5V,  $\pm 12V$ , Vbat (battery voltage), and Hyper-Threading
- Fan status monitor with firmware 4 pin fan speed control
- CPU 4-Phase-switching voltage regulator
- SuperDoctor III, Watch Dog, NMI
- Power-up mode control for recovery from AC power loss
- CPU/System overheat LED and control
- System resource alert via Supero Doctor III
- Auto-switching voltage regulator for the CPU core
- CPU Thermal Trip support
- Thermal Monitor 2 (TM2) support

### **ACPI Features**

- Slow blinking LED for suspend state indicator
- BIOS support for USB keyboard
- Main switch override mechanism
- External modem ring-on

**Onboard I/O**

- Built in ICH9DO SATA Controller, four connectors for up to four devices



*Note: The onboard SATA 0,1,4,5 may be displayed as SATA 0,1,2,3 as the order on the silkscreen may differ from the one shown in the BIOS (see Chapter 4).*

- Four Fast UART 16550 compatible serial port/header
- Intel 82566DM Gigabit Ethernet controller
- PS/2 mouse and keyboard ports
- IT8213 ITE controller supports up to two IDE devices
- 11 USB 2.0 ports for a speed of up to 480Mbps
- Realtek ALC 883 7.1 Channel High Definition Audio (HDA) codecs supports 10 DAC Channels
- Built-in GMCH and Onboard VGA Connector

**Other**

- Trusted Platform Module (TPM) support
- Wake-on-LAN
- Wake-on-Ring (WOR)
- System Bus Clock Frequency Selection (Overclocking) Support
- Suspend-to-RAM
- Onboard +5V Standby Power Warning LED ("LE1")
- Pb Free

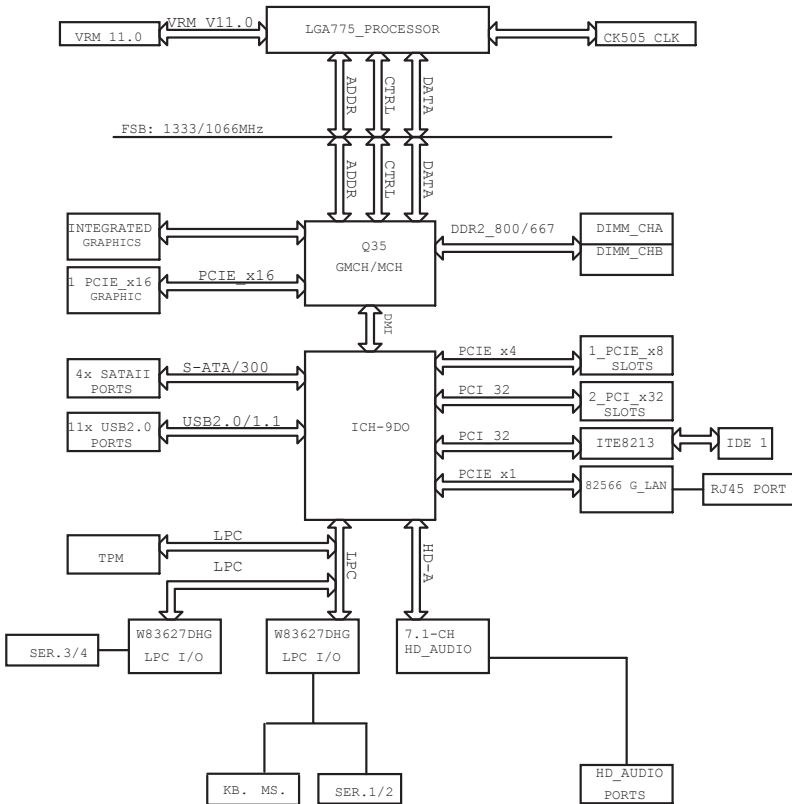
**CD Utilities**

- BIOS flash upgrade utility
- Drivers and software for Intel Q35 chipset utilities

**Dimensions**

- Micro ATX form factor, 9.6" x 9.6" (243.8 mm x 243.8 mm)

## Block Diagram



**C2SBM-Q System Block Diagram**

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



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## 1-2 Chipset Overview

The Intel Q35 Chipset is specially designed for use with Intel Core 2 Duo and Quad processors. It consists of two primary components: the Graphic Memory Controller Hub (GMCH) and the I/O Controller Hub (ICH9DO). The GMCH manages the data flow between the CPU interface, the System Memory interface, the External Graphics interface, and the I/O Controller through the DMI (Direct Media) Interface. The ICH9DO provides a multitude of I/O related functions.

### Graphic Memory Controller Hub (GMCH)

Utilizing a single LGA 775 socket processor, the Q35 GMCH supports an FSB frequency of 1333/1066/800 MHz. Host-initiated I/O cycles are decoded to the PCI-Express, the DMI, or the GMCH configuration space. Host-initiated memory cycles are decoded to PCI-Express, DMI or system memory. The GMCH supports 36-bit host bus addressing and a Cache Line Size of 64 bytes.

The GMCH supports one or two channels of DDR2 memory with up to two DIMMs per channel with a maximum bandwidth of 6.4 GB/s in asymmetric mode or 12.8 GB/s in symmetric mode using DDR2 800 MHz memory. It also supports an opportunistic refresh scheme, a memory thermal management scheme and Partial Writes to Memory using Data Mask (DM) signals.

The GMCH contains one PCI-Express x16 port intended for an external PCI-Express graphics card that is compatible with the PCI Express Base Specification revision 1.1. This PCI-E x16 port runs at a frequency of 2.5 GB/s on each lane and supports a maximum theoretical bandwidth of 40 GB/s in each direction for an aggregate of 8 GB/s @ x16. It supports traditional PCI-/AGP-style traffic and a PCI-Exp. Enhanced Addressing Mechanism with advanced capabilities in automatic discovery, negotiation and training of link out of reset.

Providing the high-speed, chip-to-chip connection between the GMCH and ICH9 is the Direct Media Interface (DMI). The DMI integrates advanced priority-based servicing, allowing for concurrent traffic, true isochronous transfer capabilities and permitting current as well as legacy software to function seamlessly.

### Intel ICH9DO System Features

The Intel 9th Generation I/O Controller Hub (ICH9DO) supports a variety of I/O related functions and PCI devices, including the following:

- DMI-to PCI Bridge
- LPC Controller
- SATA Controllers #1 and #2
- Thermal Subsystem
- SMBus Controller
- USB FS/LS UHCI Controllers #1, #2



**Note:** For more information on the ICH9DO, please refer to Intel's website.

## 1-3 Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power on state. See the Power Lost Control setting in the BIOS chapter of this manual to change this setting. The default setting is **Last State**.

## 1-4 PC Health Monitoring

This section describes the PC health monitoring features of the C2SBM-Q. The motherboard has an onboard System Hardware Monitor chip that supports PC health monitoring.

The onboard voltage monitor will scan the voltages of the Onboard Voltage Monitors for the CPU Core, +1.8V, +3.3V, +5V standby, +5V, Vbat and  $\pm 12V$  continuously. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor by using SuperO Doctor III.

## 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 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. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

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 2000, Windows XP, Windows 2003, Windows 2003 Servers.

### **Enhanced Power Management**

The onboard ICH9 chip provides advanced power management functions that will greatly improve the performance of various low-power (suspend) states and en-



hance clock control. A hardware-based component provides software-independent thermal management that is compatible with the ACPI Revision 3.0a.

### **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.

### **BIOS Support for USB Keyboard**

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

### **Wake-On-LAN (WOL)**

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. In addition, an onboard LAN controller can also support WOL without any connection to the WOL header. The 3-pin WOL header is to be used with a LAN add-on card only.



**Note:** *Wake-On-LAN requires an ATX 2.01 (or above) compliant power supply.*

## **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 of 1 GHz and faster.

The **SUPER**® C2SBM-Q accommodates 12V ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. A 2-Amp of current supply on a 5V Standby rail is strongly recommended.

It is strongly recommended that you use a high quality power supply that meets 12V ATX power supply Specification 1.1 or above. It is also required that the 12V 4-pin power connection (J41) be used for high-load configurations. In areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## 1-7 Versatile Media Capabilities

### High Definition Audio

The High Definition Audio Controller embedded in the ICH9 delivers up to 4 codecs that can be used for different types of codecs, such as audio and modem codecs. Operating at 3.3V or 1.5V, the embedded Audio Controller supports a multi-channel audio stream, 32-bit sample depth, up to 192 kHz of same rate, and can be used with a variety of microphones for input. With these versatile audio capabilities built in, the C2SBM-Q provides the user with a surreal audio experience that is larger than life.

### I/O Virtualization Technology (VT-d)

With the Intel ICH9 built in, the C2SBM-Q supports I/O Virtualization Technology (VT-d) that enables multiple operating systems and applications to run in independent partitions. Each partition uses its own subset of host physical memory, and behaves like a virtual machine (VM), providing isolation and protection across multiple partitions. This feature is available when a processor that supports the virtualization of platforms is installed on the motherboard.

## 1-8 Super I/O

The disk drive adapter functions of the Super I/O chip include a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The Super I/O supports two 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.

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

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

## Chapter 2

# Installation

### 2-1 Static-Sensitive Devices

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 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



**Note:** Be sure to mount the motherboard into the chassis before you install the CPU onto the motherboard.

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. 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.

## 2-3 Processor and Heatsink Installation



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



### Notes:

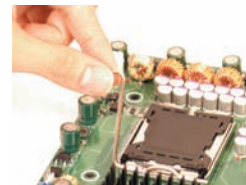
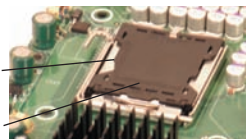
1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU LGA 775 socket before you install the CPU heatsink.
2. The Intel LGA 775 Processor package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel-certified multi-directional heatsink and fan.
3. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.
4. When purchasing an LGA 775 Processor or when receiving a motherboard with an LGA 775 Processor pre-installed, make sure that the CPU plastic cap is in place and none of the CPU pins are bent; otherwise, contact the retailer immediately.
5. Refer to the MB Features Section for more details on CPU support.

### Installation of the LGA 775 Processor

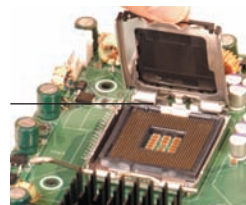
1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.

2. Gently lift the load lever to open the load plate.

Load lever  
PnP cap on  
top of the load  
plate



Load plate  
(with PnP cap  
attached)



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

4. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner that is marked with a triangle cutout.

5. Align the CPU key that is the semi-circle cutout below a golden dot against the socket key, the Notch on the same side of the triangle cutout on the socket.

6. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to 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.

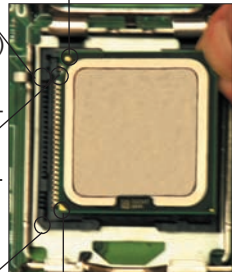
8. Use your thumb to gently push the load lever down to the lever lock.

9. If the CPU is properly installed into the socket, the plastic PnP cap will be automatically released from the load plate when the load lever is pushed in the lever lock. Remove the PnP cap from the motherboard.



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

Top Center Edge

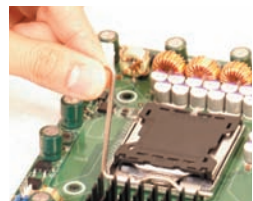
Bottom Center Edge  
golden dotSocket Key  
(Socket Notch)CPU Key (semi-  
circle cutout)  
below the circle.Corner with a  
triangle cutout

CPU Pin1

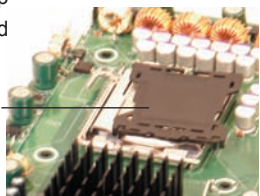
Load Lever



CPU in the CPU socket



Plastic cap  
is released  
from the  
load plate  
if CPU  
properly  
installed.



## Installation of the Heatsink

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



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

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



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

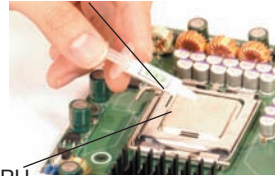
6. If necessary, rearrange the wires to make sure that the wires are not pinched between the heatsink and the CPU. Also make sure to keep clearance between the fan wires and the fins of the heatsink.

7. Align the four heatsink fasteners with the mounting holes on the motherboard. Gently push the pairs of diagonal fasteners (#1 & #2, and #3 & #4) into the mounting holes until you hear a click.



**Note:** Make sure to orient each fastener in a way that the narrow end of the groove is pointing outward.

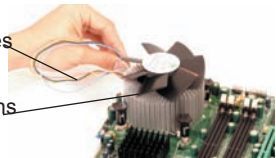
Thermal Grease



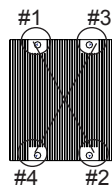
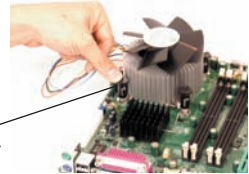
CPU

Fan Wires

Heatsink Fins



Heatsink Fastener



Narrow end of the groove points outward

8. Repeat Step 6 to insert all four heatsink fasteners into the mounting holes.
9. Once all four fasteners are securely inserted into the mounting holes and the heatsink is properly installed on the motherboard, connect the heatsink fan wires to the CPU Fan connector.

## Heatsink Removal

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



## 2-4 Installing DIMMs



**Note:** Check the Supermicro web site for recommended memory modules.



**Warning:** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

### DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A. The memory scheme is interleaved so you must install two modules at a time, beginning with DIMM1A, DIMM1B, then, DIMM2A and DIMM2B.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

### Memory Support

The C2SBM-Q supports up to 8 GB Unbuffered Non-ECC DDR2 800/677 MHz in 4 DIMMs. Populating DIMM#1A, DIMM#1B, and/or DIMM#2A, DIMM#2B with memory modules of the same size and of the same type will result in dual channel, two-way interleaved memory that is faster than the single channel, non-interleaved memory.



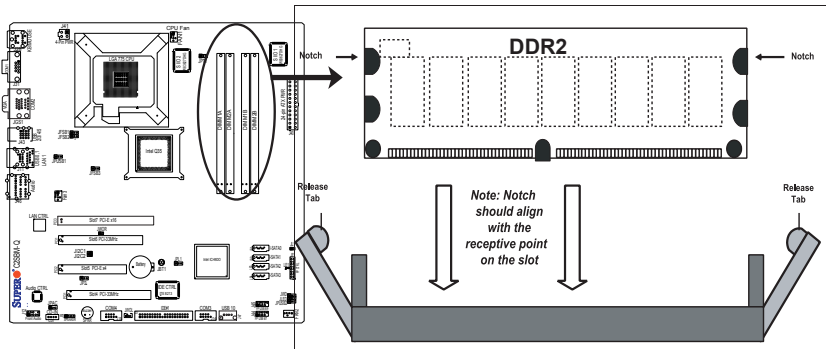
#### **Notes:**

1. Due to the OS limitations, some operating systems may not show more than 4GB of memory.
2. Both Unbuffered ECC and Non-ECC memory modules can be installed in the memory slots. However, the functionality of ECC is not supported by the chipset.
3. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the following Memory Availability Table for details.)



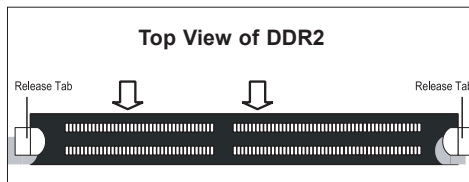
| Possible System Memory Allocation & Availability                   |        |   |
|--|--------|---|
| System Device  | Size   | Physical Memory Remaining (-Available) (4 GB Total System Memory) |
| Firmware Hub flash memory (System BIOS)                            | 1 MB   | 3.99  |
| Local APIC  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

### Installing and Removing DIMMs



**To Install:** Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

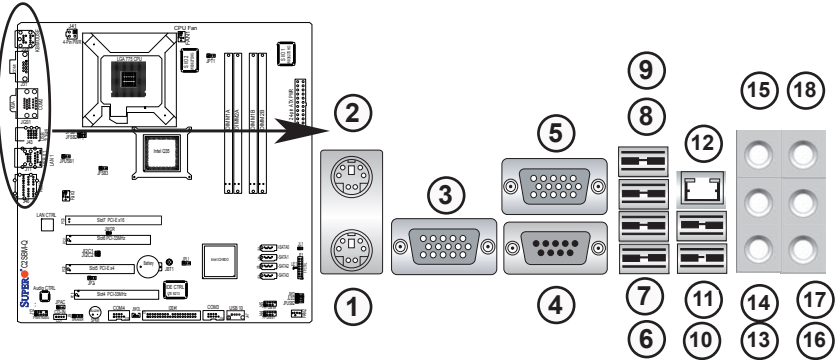
**To Remove:**  
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



## 2-5 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various I/O ports.

### 1. Back Panel Connectors/IO Ports



**Back Panel I/O Port Locations and Definitions**

#### **Back Panel Connectors**

1. Keyboard (Purple)
  2. PS/2 Mouse (Green)
  3. COM 1
  4. VGA
  5. COM 2
  6. USB 2
  7. USB 3
  8. USB 4
  9. USB 5
  10. USB Port 0
  11. USB Port 1
  12. Gigabit LAN
  13. Side Surround (Grey)
  14. Back Surround (Black)
  15. CEN/LFE (Orange)
  16. Microphone-In (Pink)
  17. Front (Green)
  18. Line-In (Blue)
- (See Section 2-5 for details.)



### 3. Front Control Panel Pin Definitions

#### Power LED

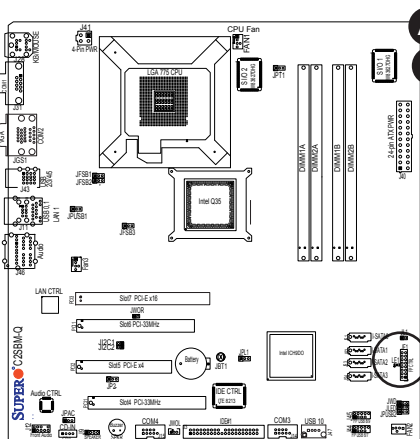
The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

| Power LED<br>Pin Definitions (JF1) |                |
|------------------------------------|----------------|
| Pin#                               | Definition     |
| 15                                 | LED_Anode+     |
| 16                                 | PWR LED Signal |

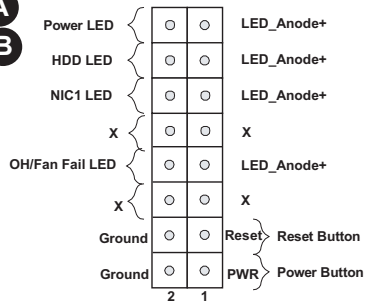
#### HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS and Serial ATA). See the table on the right for pin definitions.

| HDD LED<br>Pin Definitions (JF1) |            |
|----------------------------------|------------|
| Pin#                             | Definition |
| 13                               | LED_Anode+ |
| 14                               | HD Active  |



#### Header Pins



A. PWR LED connector

B. HDD LED connector

### NIC1 Indicator

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

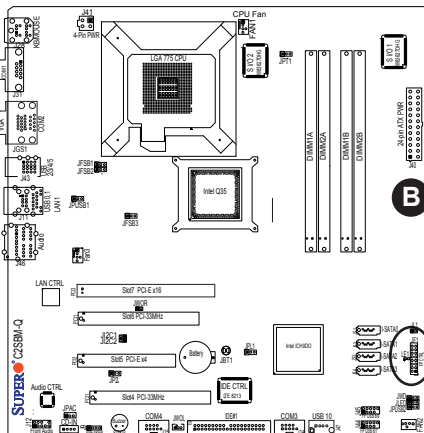
| GLAN 1 LED<br>Pin Definitions (JF1) |                    |
|-------------------------------------|--------------------|
| Pin#                                | Definition         |
| 11                                  | LED_Anode+         |
| 12                                  | NIC1 LED<br>Signal |

### Overheat/Fan Fail LED (OH)

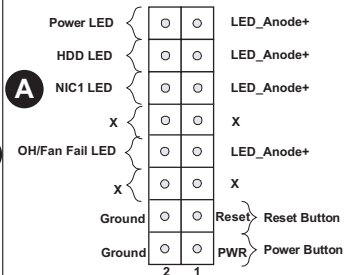
Connect an LED to the OH/Fan Fail LED connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

| OH/Fan Fail LED<br>Pin Definitions (JF1) |                           |
|--|---------------------------|
| Pin#                                     | Definition                |
| 7  | LED_Anode+                |
| 8  | OH/Fan Fail<br>LED Signal |

| OH/Fan Fail Indicator<br>Status |            |
|---------------------------------|------------|
| State                           | Definition |
| Off                             | Normal     |
| On                              | Overheat   |
| Flash-<br>ing                   | Fan Fail   |



### Header Pins



- A. NIC1 LED
- B. OH/Fan Fail LED

### 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<br>Pin Definitions (JF1) |            |
|---------------------------------------|------------|
| Pin#                                  | Definition |
| 3                                     | Reset      |
| 4                                     | Ground     |

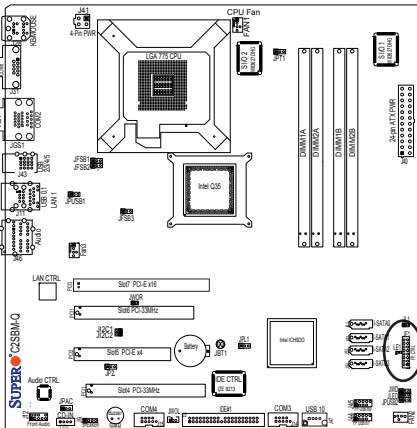
### Power Button

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

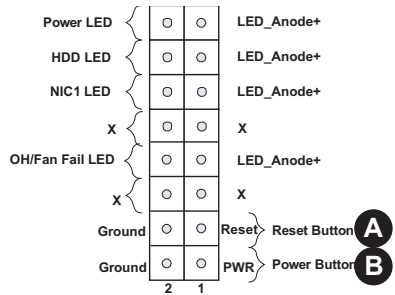
| Power Button<br>Pin Definitions (JF1) |             |
|---------------------------------------|-------------|
| Pin#                                  | Definition  |
| 1                                     | Signal      |
| 2                                     | +3V Standby |



**Note:** Do not close or short Pins 1 & 2 since this will cause the system to continuously reboot.



### Header Pins



- A. Reset
- B. PWR Button

## 2-6 Connecting Cables

### ATX/Auxiliary Power Connectors

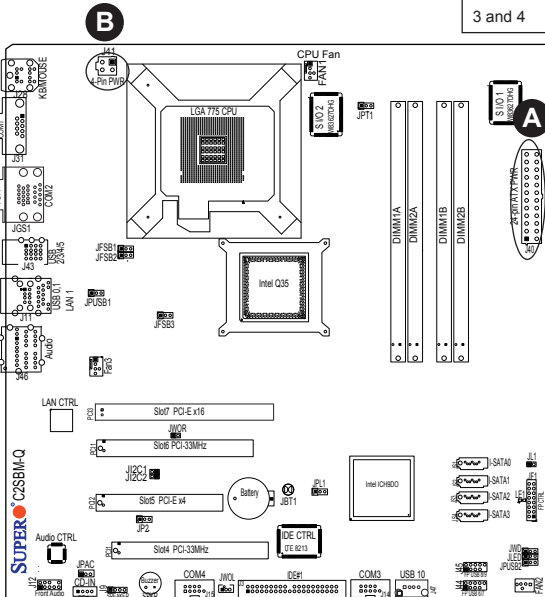
A 24-pin main power connector is located at J40. This power connector meet the SSI EPS 12V specification. See the table on the right for pin definitions.

### 4-pin CPU Power Connector

A 4-pin 12V power connector is located at J41 on the motherboard. This power connector also meets the SSI EPS 12V specification, and is required to ensure adequate power to the processor. See the table on the right for pin definitions.

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

| 12V 4-pin Power Connector<br>Pin Definitions |            |
|--|------------|
| Pins   | Definition |
| 1 and 2                                      | Ground     |
| 3 and 4                                      | +12V       |



- A. 24-pin ATX PWR  
B. 4-pin PWR

### Universal Serial Bus (USB)

There are 11 USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. Six of them are Back Panel USB ports: USB 0/1 (J11) and USB 2/3/4/5 (J43). The other four are headers that can be used for front panel connections: USB 6/7 (J44), USB 8/9 (J45) and one vertical USB port, USB 10. See the tables on the right for pin definitions.

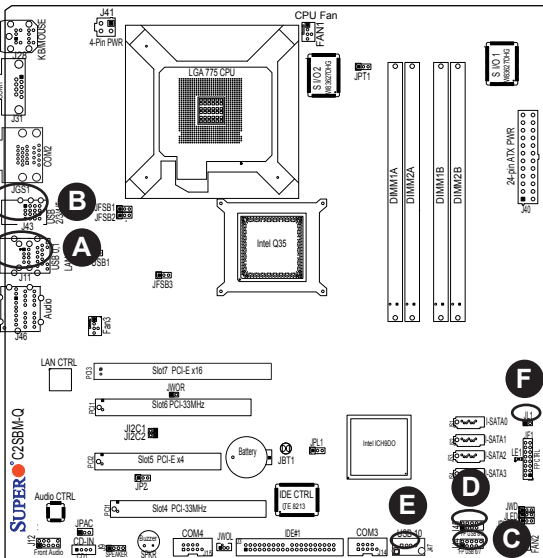
| Back Panel USB (0-5) |             |
|----------------------|-------------|
| Pin#                 | Definitions |
| 1                    | +5V         |
| 2                    | PO-         |
| 3                    | PO+         |
| 4                    | Ground      |
| 5                    | N/A         |

| Front Panel USB (6/7/8/9) and Front-Accessible Onboard USB (10) Connections |            |       |               |
|---|------------|-------|---------------|
| Pin #   | Definition | Pin # | Definition    |
| 1   | +5V        | 1     | +5V           |
| 2   | PO-        | 2     | PO-           |
| 3   | PO+        | 3     | PO+           |
| 4   | Ground     | 4     | Ground        |
| 5   | Key        | 5     | No connection |

### 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 it is opened.

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



- A. Back panel USB Ports 0/1
- B. Back panel USB Ports 2/3/4/5
- C. Front Panel USB 6/7
- D. Front Panel USB 8/9
- E. One board vertical USB port 10
- F. Chassis Intrusion



## Fan Headers

The C2SBM-Q has three chassis fan headers (Fan 1 to Fan 3). Fan 1 is the CPU Fan. Fan 2 to Fan 3 are system/chassis fans.

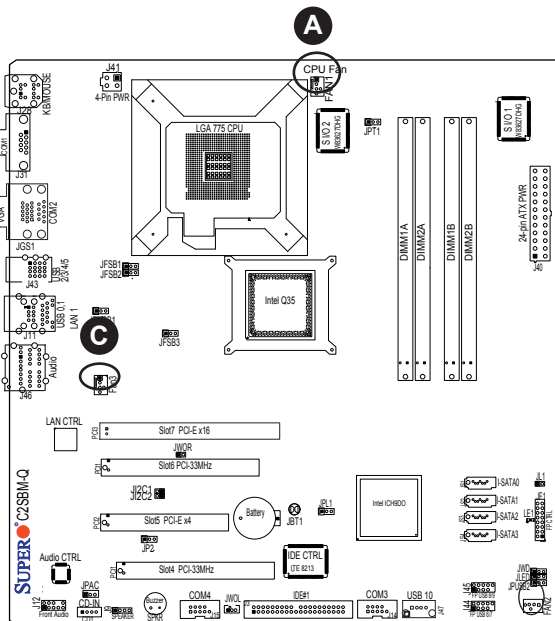


**Note:** Pins 1-3 of a 4-pin fan headers are backward compatible with the traditional 3-pin fans.) See the table on the right for pin definitions. *\*The onboard fan speeds are controlled by Thermal Management via BIOS Hardware Monitoring in the Advanced Setting. (Default: Disabled. When using Thermal Management settings, please use all 3-pin fans or all 4-pin fans on the motherboard.)*

| Fan Header<br>Pin Definitions (Fan1-3) |                |
|--|----------------|
| Pin#                                   | Definition     |
| 1                                      | Ground         |
| 2                                      | +12V           |
| 3                                      | Tachometer     |
| 4                                      | PWR Modulation |

## VGA Connector

A VGA connector (JG1) is located next to the USB ports on the IO backplane. Refer to the board layout below for the location.



- A. Fan 1 (CPU Fan)
- B. Fan 2
- C. Fan 3

### ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located at J28. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

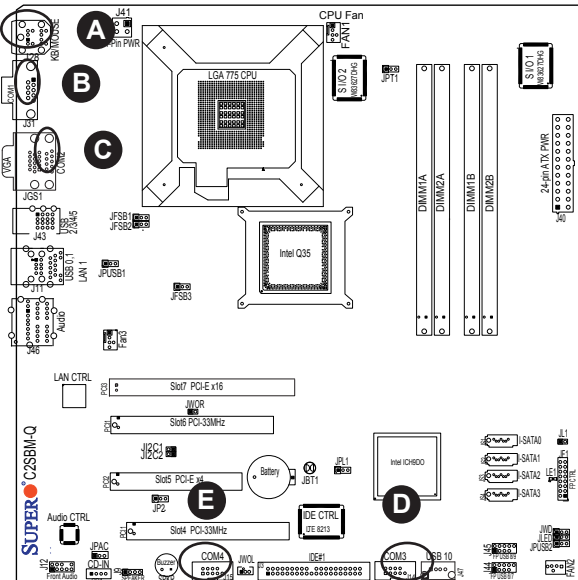
| PS/2 Keyboard and Mouse Port Pin Definitions |            |
|--|------------|
| Pin#   | Definition |
| 1  | Data       |
| 2  | NC         |
| 3  | Ground     |
| 4  | VCC        |
| 5  | Clock      |
| 6  | NC         |

### Serial Ports

COM 1 (JGS1) and COM 2 (JGS1) are connectors located on the IO Backpanel, COM 3 (J14) and COM 4 (J15) are headers. See the table on the right for pin definitions.

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

(Pin 10 is available on COM2 only. NC: No Connection.)



- A. Keyboard/Mouse
- B. COM1
- C. COM2
- D. COM3
- E. COM4

## Wake-On-Ring

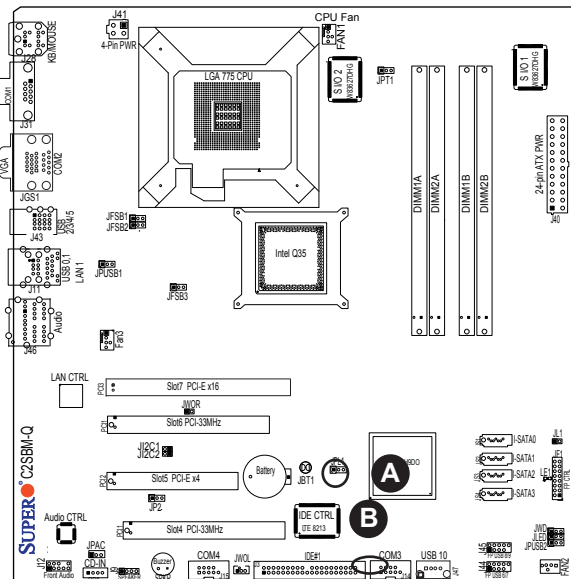
The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and be "awakened" by an incoming call when in the suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

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

## Wake-On-LAN

The Wake-On-LAN header is located at JWOL on the motherboard. See the table on the right for pin definitions. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

| Wake-On-LAN Pin Definitions (JWOL) |             |
|------------------------------------|-------------|
| Pin#                               | Definition  |
| 1                                  | +5V Standby |
| 2                                  | Ground      |
| 3                                  | Wake-up     |



A. WOR

B. WOL

## GLAN 1 (Gigabit Ethernet Port)

A G-bit Ethernet port is located at J11 on the IO backplane. This port accepts RJ45 type cables.



GLAN1

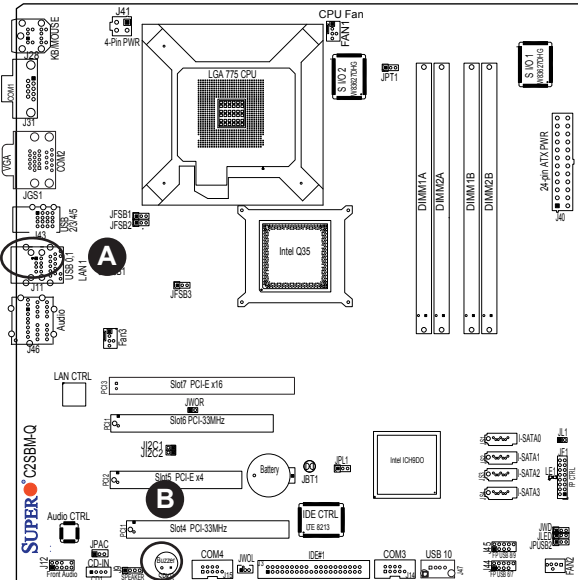
## Speaker

A Speaker/Buzzer header (J9) is located on the motherboard. See the table on the right for speaker pin definitions.

| Speaker Connector (J9) |                  |
|------------------------|------------------|
| Pin Setting            | Definition       |
| Pins 3-4               | Internal Speaker |
| Pins 1-4               | External Speaker |



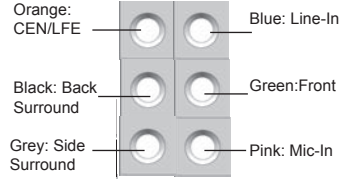
**Note:** The speaker connectors are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 3-4 with a jumper.



- A. GLAN1
- B. Speaker/Buzzer

## High Definition Audio (HDA)

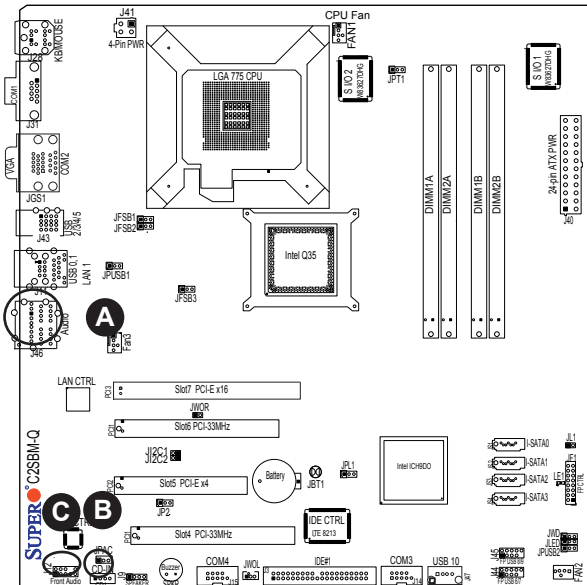
The C2SBM-Q features a 7.1+2 Channel High Definition Audio (HDA) (J46) codec that provides 10DAC channels, simultaneously supporting 7.1 sound playback and two channels of independent stereo sound output (multiple streaming) through the front panel stereo out for front L&R, rear L&R, center and subwoofer speakers. This feature is activated with the Advanced software in the CD-ROM that came with your motherboard. Sound is then output through the Line In, Line Out and MIC jacks (See at the picture at right).



## CD Header

A 4-pin CD header is located at CD1, and an Auxiliary header is located at J12 on the motherboard. These headers allow you to use the onboard sound for audio CD playback. Connect an audio cable from your CD drive to the header that fits your cable's connector. Only one CD header can be used at any one time. See the tables at right for pin definitions.

| CD1 Pin Definition |                     |
|--------------------|---------------------|
| Pin#               | Definition          |
| 1                  | Left Stereo Signal  |
| 2                  | Ground              |
| 3                  | Ground              |
| 4                  | Right Stereo Signal |



- A. HD Audio
- B. CD-In
- C. Front Panel Audio

### Front Panel Audio Control

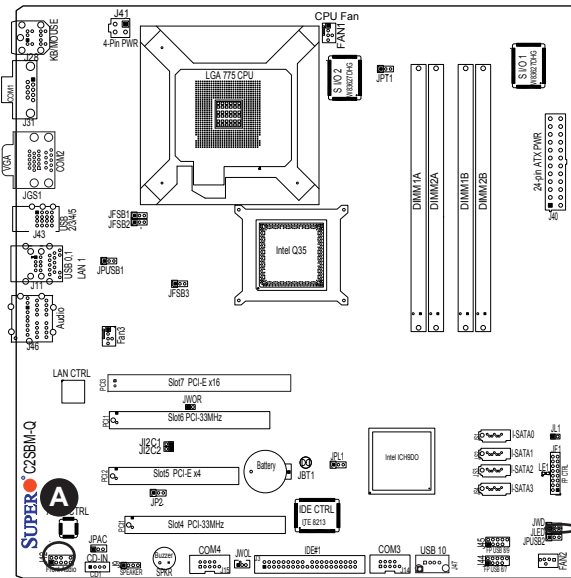
When front panel headphones are plugged in, the back panel audio output is disabled. This is done through the FP Audio header (J12). If the front panel interface card is not connected to the front panel audio header, jumpers should be installed on the header (J12) pin pairs: 1-2, 5-6, and 9-10. If these jumpers are not installed, the back panel line out connector will be disabled and microphone input Pin 1 will be left floating, which can lead to excessive back panel microphone noise and cross talk. See the table below for pin definitions.

| High Definition Front Panel Audio |                 |
|-----------------------------------|-----------------|
| Pins#                             | Signal          |
| 1                                 | MC_L            |
| 2                                 | AUD_GND         |
| 3                                 | MC_R            |
| 4                                 | FP_Audio-Detect |
| 5                                 | Line_2_R        |
| 6                                 | Ground          |
| 7                                 | FP_Jack-Detect  |
| 8                                 | Key             |
| 9                                 | Line_2_L        |
| 10                                | Ground          |

### Power LED

The Power LED connector is designated JLED. This connection is used to provide LED Indication of power supplied to the system. See the table on the right for pin definitions.

| PWR LED Pin Definitions |            |
|-------------------------|------------|
| Pin#                    | Definition |
| 1                       | +5V        |
| 2                       | Key        |
| 3                       | Ground     |

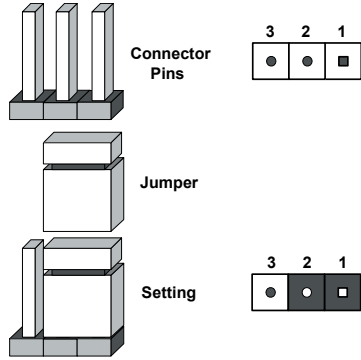


- A. Front Panel Audio
- B. PWR LED

## 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.

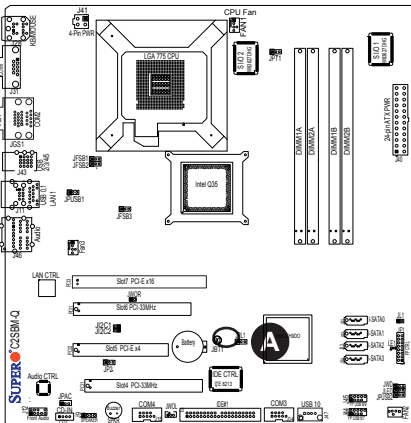


**Note:** On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

### GLAN Enable/Disable

JPL1 enables or disables the GLAN Port on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

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



#### A. GLAN Port1 Enable

### Audio Enable

JPAC enables or disables the onboard audio connections. See the table on the right for jumper settings. The default setting is Enabled.

| IDE Enable (JPAC) |                    |
|-------------------|--------------------|
| Pin#              | Definition         |
| 1-2               | Enabled (*default) |
| 2-3               | Disabled           |

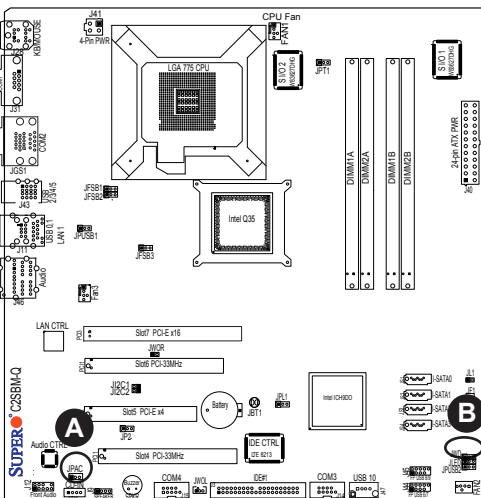
### Watch Dog Enable/Disable

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

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



**Note:** When enabled, the user needs to write his/her own application software to disable the Watch Dog Timer.





## CPU Front Side Bus Speed

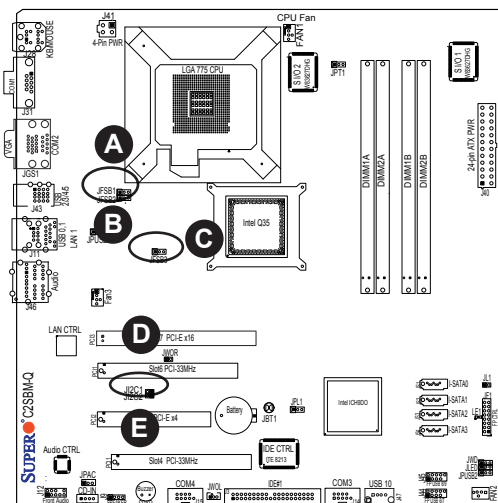
JFSB1, JFSB2 and JFSB3 allow you to set the Front Side Bus Frequency. See the table on the right for pin definitions. (\*Default: Auto.)

| CPU FSB Jumper Settings |       |       |           |
|-------------------------|-------|-------|-----------|
| JFSB3                   | JFSB2 | JFSB1 | Frequency |
| 1-2                     | 1-2   | 1-2   | *Auto     |
| Open                    | 2-3   | 2-3   | 333MHz    |
| 2-3                     | 2-3   | 2-3   | 266MHz    |
| 2-3                     | Open  | 2-3   | 200MHz    |
| 2-3                     | 2-3   | Open  | 133MHz    |

## PCI/PCI-E Slots to SMB Speeds

Jumpers JI<sup>2</sup>C1/JI<sup>2</sup>C2 allow you to connect PCI/PCI-Exp. Slots to the System Management Bus. The default setting is open to disable the connection. See the table on the right for jumper settings.

| SMBus to PCI-X/PCI-Exp Slots Jumper Settings |                     |
|--|---------------------|
| Jumper Setting                               | Definition          |
| Closed                                       | Enabled             |
| Open   | Disabled (*Default) |

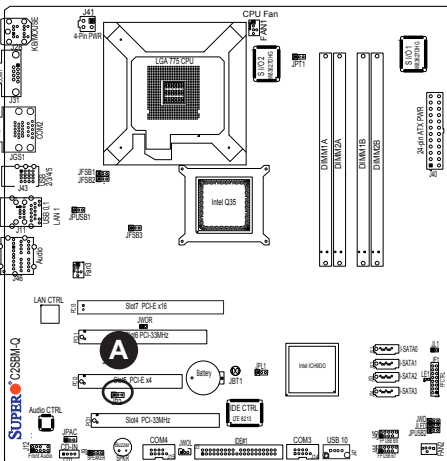


- A. JFSB1
- B. JFSB2
- C. JFSB3
- D. JI<sup>2</sup>C1
- E. JI<sup>2</sup>C2

### IDE Enable/Disable

JP2 enables or disables IDE#1 on the C2SBM-Q. See the table on the right for jumper settings. The default setting is enabled.

| IDE Enable (JP2) |                    |
|------------------|--------------------|
| Pin#             | Definition         |
| 1-2              | Enabled (*default) |
| 2-3              | Disabled           |



A. IDE Enable

## USB Wake-Up

Use JPUSB jumpers to enable the function of "System Wake-Up via USB devices", which allows you to "wake-up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. The JPUSB jumpers are used together with the USB Wake-Up function in the BIOS. Enable both the jumpers and the BIOS setting to allow the system to "wake-up via USB Devices". See the table on the right for jumper settings and jumper connections.



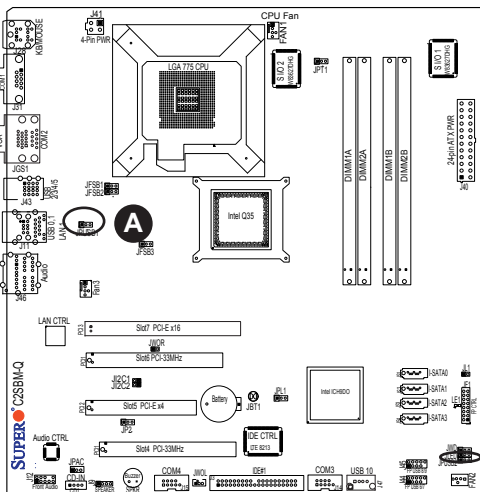
**Note 1:** JPUSB1 is for Back Panel USB ports:0/1/2/3/4/5, and JPUSB2 is for Front Panel USB ports:6/7/8/9/10.)



**Note 2:** The default jumper setting for the USB ports is "Disabled". However, when the "USB Wake-Up" function is enabled in the BIOS and the desired USB ports are enabled via the JPUSB jumper, please be sure to remove all USB devices from the USB ports whose USB jumpers are set to "Disabled" before the system goes into the standby mode.

| JPUSB2 (Front Panel USB Wake-up) |                     |
|----------------------------------|---------------------|
| Pin#                             | Definition          |
| 1-2                              | Enabled             |
| 2-3                              | Disabled (*default) |

| JPUSB1 (Back Panel USB Wake-up) |                    |
|---------------------------------|--------------------|
| Pin#                            | Definition         |
| 1-2                             | Enabled (*default) |
| 2-3                             | Disabled           |



A. JPUSB1

B. JPUSB2

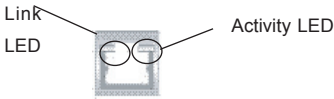
## 2-8 Onboard Indicators

### GLAN LEDs

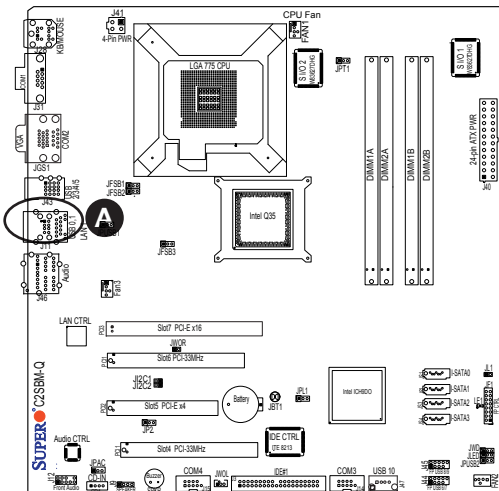
There is one Gigabit-LAN port (J11). This Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the Link LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

| GLAN Activity Indicator |          |            |
|-------------------------|----------|------------|
| Color                   | Status   | Definition |
| Yellow                  | Flashing | Active     |

| GLAN Link Indicator |                          |
|---------------------|--------------------------|
| LED Color           | Definition               |
| Off                 | No Connection or 10 Mbps |
| Green (On)          | 100 Mbps                 |
| Amber (On)          | 1 Gbps                   |



**Rear View**  
(When viewing from the rear side of the chassis.)

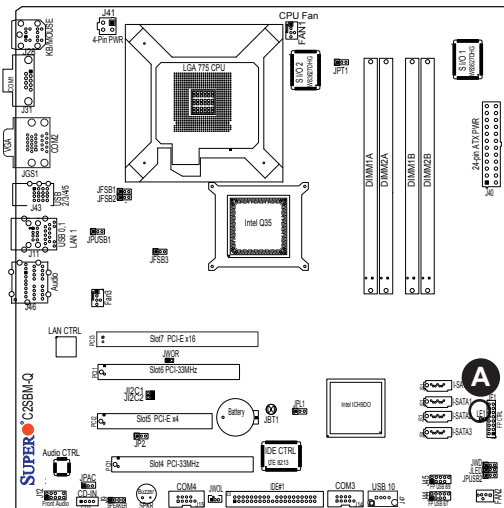


A. GLAN Port1 LEDs

## Onboard Power LED (LE1)

The Onboard 3.3V Standby Power LED is located at LE1 on the motherboard. When LE1 is off, the system is off. When the green light is on, the system is on. When the LED is on, the power is on. Unplug the power cable before removing or installing components. See the layout below for the LED location.

| Onboard PWR LED Indicator (LE1) |                  |
|---------------------------------|------------------|
| LED Color                       | Definition       |
| Off                             | System Off       |
| On                              | Standby Power On |
| Green                           | System On        |



A. Power LED

## 2-9 IDE Hard Drive Connections

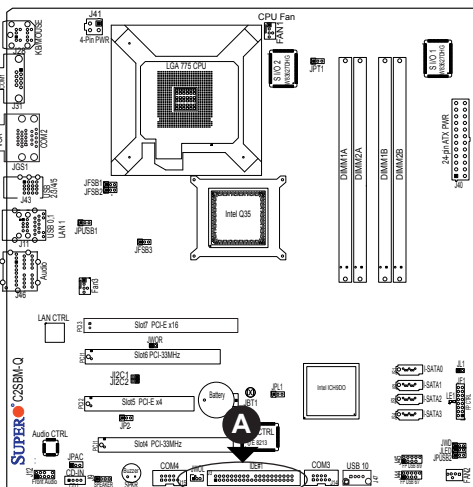
Note the following when connecting the hard disk drive cables:

- A red mark on a wire typically designates the location of pin 1.

### IDE Connector

There is one IDE Connector on the C2SBM-Q. Be sure to close Pin 1 and Pin 2 of JP2 to enable the IDE connector before using it. (Please refer to the jumper section for more details.) See the table on the right for pin definitions.

| IDE Connector Pin Definitions |               |       |               |
|-------------------------------|---------------|-------|---------------|
| Pin#                          | Definition    | Pin # | Definition    |
| 1                             | Reset IDE     | 2     | Ground        |
| 3                             | Host Data 7   | 4     | Host Data 8   |
| 5                             | Host Data 6   | 6     | Host Data 9   |
| 7                             | Host Data 5   | 8     | Host Data 10  |
| 9                             | Host Data 4   | 10    | Host Data 11  |
| 11                            | Host Data 3   | 12    | Host Data 12  |
| 13                            | Host Data 2   | 14    | Host Data 13  |
| 15                            | Host Data 1   | 16    | Host Data 14  |
| 17                            | Host Data 0   | 18    | Host Data 15  |
| 19                            | Ground        | 20    | Key           |
| 21                            | DRQ3          | 22    | Ground        |
| 23                            | I/O Write     | 24    | Ground        |
| 25                            | I/O Read      | 26    | Ground        |
| 27                            | IOCHRDY       | 28    | BALE          |
| 29                            | DACK3         | 30    | Ground        |
| 31                            | IRQ14         | 32    | IOCS16        |
| 33                            | Addr1         | 34    | Ground        |
| 35                            | Addr0         | 36    | Addr2         |
| 37                            | Chip Select 0 | 38    | Chip Select 1 |
| 39                            | Activity      | 40    | Ground        |



A. IDE

## Chapter 3

### Troubleshooting

#### 3-1 Troubleshooting Procedures

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

##### **Before Power On**

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install a CPU and heatsink (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. Check all jumper settings as well.
5. Use the correct type of onboard CMOS battery as specified by the Manufacturer. Do not install the CMOS battery upside down to avoid possible explosion.
6. Make sure the 4-pin 12v power connector at J41 is connected to your power supply.

##### **No Power**

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Verify that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to 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.



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**Note:** *If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.*

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## Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. You should be using unbuffered DDR2 memory (see the next page). Also, it is recommended that you use the same memory speed for all DIMMs in the system. See Section 2-4 for memory limitations.
3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
4. Check the power supply voltage 115V/230V switch.

## 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 1-6 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.

## 3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Super Micro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

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



**Note:** *Not all BIOS can be flashed; it depends on the modifications to the boot block code.*



*3. If you still cannot resolve the problem, include the following information when contacting Super Micro 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

An example of a Technical Support form is on our web site at (<http://www.supermicro.com/support/contact.cfm>).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at [support@supermicro.com](mailto:support@supermicro.com), by phone at:(408) 503-8000, option 2, or by fax at (408)503-8019.

### 3-3 Frequently Asked Questions

**Question: What type of memory does my motherboard support?**

**Answer:** The C2SBM-Q supports **unbuffered**, DDR2 667/800 MHz memory modules. See Section 2-4 for details on installing memory.

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

**Answer:** It is recommended that you **not** upgrade your BIOS if you are not experiencing problems with your system. Updated BIOS files are located on our web site at (<http://www.supermicro.com/support/bios/>). Please check our BIOS warning message and the information on how to update your BIOS on our web site. Also, check the current BIOS revision and make sure it is newer than your current BIOS before downloading. Select your mainboard model and download the BIOS file to your computer. Unzip the BIOS update file and follow the readme.txt to flash the BIOS.

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

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

**Question: How do I utilize the onboard HD sound?**

**Answer:** The onboard HD sound available on the C2SBM-Q can be enabled with the audio driver software that was included in your motherboard package. When activated, sound will be routed through the jacks next to the LAN Port according to the audio connection descriptions listed on Page 2-8. You must also set the HD Audio setting to "Auto" in the Advanced Chipset section of the BIOS setup.

**Question: I installed my microphone correctly but I can't record any sound. What should I do?**

**Answer:** Go to <Start>, <Programs>, <Accessories>, <Entertainment> and then <Volume Control>. Under the Properties tab, scroll down the list of devices in the menu and check the box beside "Microphone".

**Question: After I have installed 4 pieces of 1GB Memory, why does the BIOS only detect about 3.145 GB of memory during POST?**

**Answer:** Because the chipset does not support memory remapping, and PCI-E memory requires a great deal of memory, so there is a memory hole located around the 4GB memory address.

**Question: How do I connect the ATA100/66 cable to my IDE device(s)?**

**Answer:** The 80-wire/40-pin high-density ATA100/66 IDE cable that came with your system has two connectors to support two drives. This special cable must be used to take advantage of the speed the ATA100/66 technology offers. **Connect the blue connector to the onboard IDE header and the other connector(s) to your hard drive(s).** Consult the documentation that came with your disk drive for details on actual jumper locations and settings.

### 3-4 Returning Merchandise for Service

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

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

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

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## Chapter 4

### BIOS

#### 4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the C2SBM-Q. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.



**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Super Micro web site <<http://www.supermicro.com>> for any changes to the BIOS not reflected in this manual.

#### System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS logic, enabling it to retain system parameters. Each time the computer is powered on, the computer is configured with the values stored in the CMOS logic by the system BIOS, which gains control at boot-up.

#### How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

#### Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.



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

## 4-2 Running Setup

*\*Default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or
2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu.

**Press the <Delete> key to enter Setup**

## 4-3 Main BIOS Setup

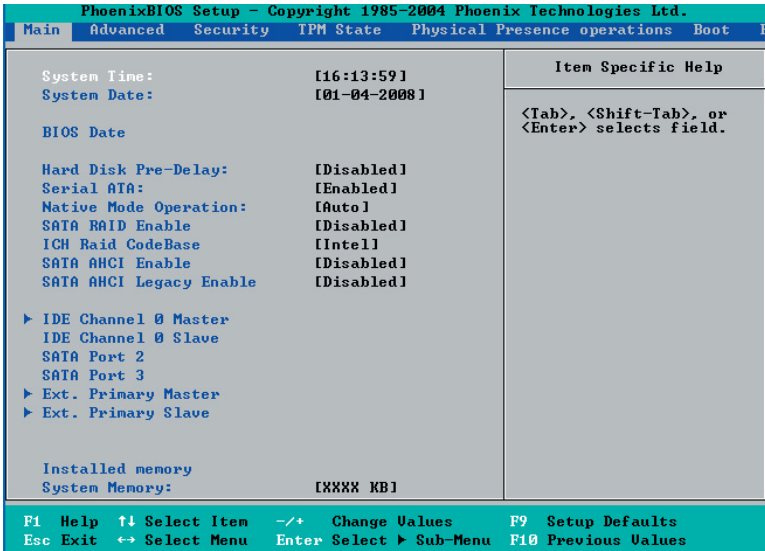
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ► icon. With the item highlighted, press the <Enter> key to access the submenu.

## Main BIOS Setup Menu



### Main Setup Features

#### System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

#### System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

#### BIOS Date

The item displays the date that the BIOS was built.

#### Hard Disk Pre-Delay

When enabled, this feature will add a delay to provide time needed for HDD self-initialization before the HDD is accessed by the BIOS for the first time. Some HDDs will hang if accessed by the BIOS without proper initialization. The options are Enabled and **Disabled**.

#### Serial ATA

This setting allows the user to enable or disable the function of the Serial ATA. The options are Disabled and **Enabled**.

### **Native Mode Operation**

Select Serial ATA for SATA or select Auto (Native Mode) for ATA. The options are: Serial ATA and **Auto**.

### **Serial ATA (SATA) RAID Enable**

Select Enable to enable Serial ATA RAID Functions. (\*For the Windows OS environment, use the RAID driver if this feature is set to Enabled. When this item is set to Enabled, the item: ICH RAID Code Base will be available for you to select either Intel or Adaptec HOST RAID firmware to be activated. Is this item is set to **Disabled**, the item SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

### **ICH RAID Code Base**

Select Intel to enable the Intel SATA RAID firmware. Select Adaptec to use the Adaptec HostRAID firmware. The options are **Intel** and Adaptec.

### **SATA AHCI Enable**

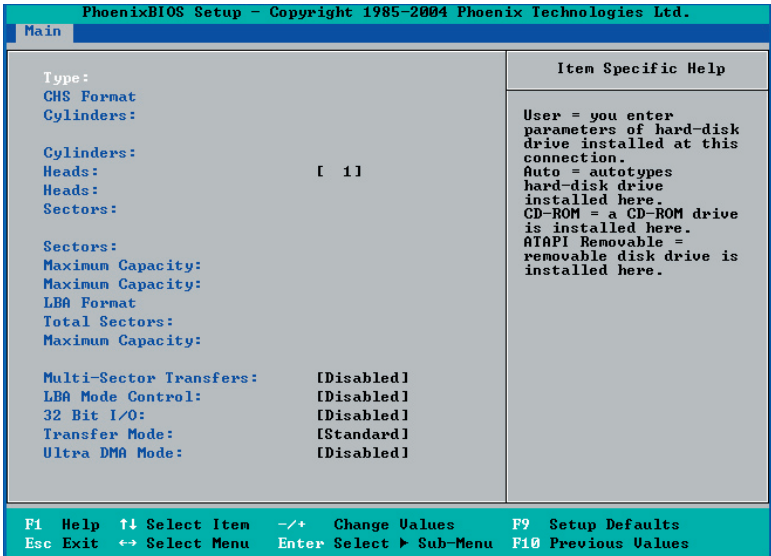
Select Enable to enable the function of Serial ATA Advanced Host Interface. (\*Take caution whe using this function. This feature is for advanced programmers only. The Enhanced AHCI mode is available when the Windows XP-SP1 OS and the IAA driver is used.) The options are Enabled and **Disabled**.

### **SATA AHCI Legacy Enable**

Select Enable to use Legacy Mode for SATA Advanced Host Interfacing. When the feature is set to Enabled, SATA Port 5 and SATA Port 6 are disabled. (\*Take caution enable the function of Serial ATA Advanced Host Interface.(\*Take caution whe using this function. This feature is for advanced programmers only.) The options are Enabled and **Disabled**.

## ► IDE Channel 0 Master/Slave/SATA Port2/SATA Port3/Ext. Primary Master/Slave

These settings allow the user to set the parameters of slots indicated above. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are the following:



### Type

This option allows you to select the type of IDE hard drive. The option: **Auto** allows the BIOS to automatically determine the hard drive's capacity, number of heads, etc.). The option **User** allows the user to enter the parameters for the HDD installed at this connection. Enter a number between 1 to 39 to select a predetermined HDD type. Select **CDROM** if a CDROM drive is installed. Select **ATAPI** if a removable disk drive is installed.

### CHS Format

The following items will be displayed by the BIOS:

**TYPE:** This item displays the type of IDE or SATA Device.

**Cylinders:** This item indicates the status of Cylinders.

**Headers:** This item indicates the number of headers.

**Sectors:** This item displays the number of sectors.

**Maximum Capacity:** This item displays the maximum storage capacity of the system.

The following items will be displayed by the BIOS:

### **LBA Format**

**Total Sectors:** This item displays the number of total sectors available in the LBA Format.

**Maximum Capacity:** This item displays the maximum capacity in the LBA Format.

### **Multi-Sector Transfers**

This item allows the user to specify the number of sectors per block to be used in the multi-sector transfer. The options are Disabled, 4 Sectors, 8 Sectors, and **16 Sectors**.

### **LBA Mode Control**

This item determines whether the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are **Enabled** and Disabled.

### **32 Bit I/O**

This option allows the user to enable or disable the function of a 32-bit data transfer. The options are Enabled and **Disabled**.

### **Transfer Mode**

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

### **Ultra DMA Mode**

This option allows the user to select Ultra DMA Mode. The options are Disabled, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and **Mode 5**.

### **System Memory**

This display informs you how much system memory is recognized as being present in the system.

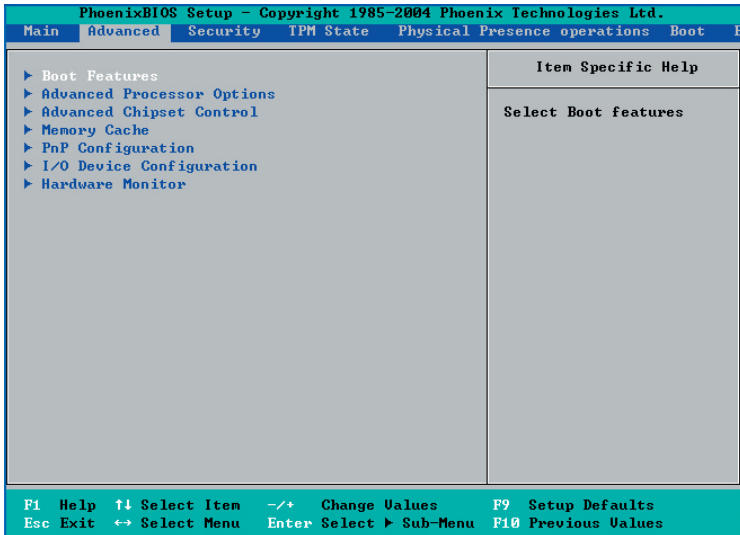
### **Extended Memory**

This display informs you how much extended memory is recognized as being present in the system.



## 4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub- menus that can be accessed by highlighting the item and pressing <Enter>.



### ► Boot Features

#### Quiet Mode

This setting allows you to **Enable** or Disable the graphic logo screen display during bootup.

#### QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

#### ACPI Mode

Use the setting to determine whether you want to use the ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

### **ACPI Sleep Mode**

Use the setting to determine if you want to use the ACPI (Advanced Configuration and Power Interface) power management on your system when the system enters into the sleep mode. The options are **S1**, **S3** and **S1S3**.

### **High Precision Event Time**

Select **Yes** to activate the High Precision Event Timer (HPET), which is capable of producing periodic interrupts at a much higher frequency than a Real-time Clock (RTC) can in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in a CPU. The High Precision Event Timer is used to replace the 8254 Programmable Interval Timer. The default setting is **No**.

### **Power Button Behavior**

If set to **Instant-Off**, the system will power on or power off immediately as soon as the user hits the power button. The options are **Instant-Off** and **4-second Override**.

### **Resume On Modem Ring**

Select **On** to “wake your system up” when an incoming call is received by your modem. The options are **On** and **Off**.

### **Resume On PME#**

Select **On** to “wake your system up” from the PME#. The options are **On** and **Off**.

### **PS2 KB/MS Wake Up**

Select **Enabled** to “wake your system up” from the S1 and S3 state. The options are **Enabled** and **Disabled**.

### **USB Wake Up**

Select **Enabled** to “wake your system up” from the S1 and S3 state. The options are **Enabled** and **Disabled**.

### **Power Loss Control**

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are **Stay Off**, **Power On**, and **Last State**.

### **Legacy USB Support**

Select **Enabled** to enable the functionality of the Legacy USB Support. The options are **Enabled** and **Disabled**.

## Watch Dog

Select Enabled to automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

## Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootstrap.

## ► Advanced Processor Options

Access the submenu to make changes to the following settings.

### CPU Speed

This is a display that indicates the speed of the installed processor.

### Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default**, x6, x7, x8, x9, x10 and x11.

### Frequency High Ratio (Available when supported by the CPU.)

The feature allows the user to set the high ratio internal frequency multiplier for the Intel SpeedStep CPUs. The default setting is X12.



*Note: If a wrong ratio that is not supported by the CPU is selected, the system may hang. If this happens, clear the CMOS to recover the system.*

### Hyperthreading (Available when supported by the CPU.)

Set to Enabled to use the Hyperthreading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled**.

### Core-Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond (Please refer to Intel's web site for more information). The options are Disabled and **Enabled**.

### Intel Enhanced Debug (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond (Please refer to Intel's web site for more information). The options are Disabled and **Enabled**.

### Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

### Fast String Operations (Available when supported by the CPU.)

Set to **Enabled** to enable the fast string operations for special CPU instructions. The options are Disabled and **Enabled**.

**Compatible FPU Code (Available when supported by the CPU.)**

Set to **Enabled** to keep the content of the last instruction Operating Code (OPCode) in the floating point (FP) state. The options are **Disabled** and **Enabled**.

**Split Lock Operation**

Set to **Enabled** to mask alignment check exceptions for split-lock transactions. The options are **Disabled** and **Enabled**.

**L3 Cache (Available when supported by the CPU.)**

Set to **Enabled** to enable the function of L3 Cache to optimize the system and CPU performance. The options are **Disabled** and **Enabled**.

**Thermal Management 2 (Available when supported by the CPU.)**

Set to **Enabled** to use Thermal Management 2 (TM2,) which will lower the CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to **Disabled** to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via the CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold. The options are **Disabled** and **Enabled**.

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

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

**Set Maximum Ext. CPUID=3**

When set to **Enabled**, the Maximum Extended CPUID will be set to 3. The options are **Disabled** and **Enabled**.

**Echo TPR**

Set to **Enabled** to prevent xTPR messages from being sent to the system. The options are **Disabled** and **Enabled**.

**C1 Enhanced Mode (Available when supported by the CPU.)**

Set to **Enabled** to enable the Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are **Enabled** and **Disabled**.



*Note: Please refer to Intel's web site for detailed information.*

**Intel <R> Virtualization Technology (Available when supported by the CPU.)**

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



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

### **No Execute Mode Memory Protection (Available when supported by the CPU and the OS.)**

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.



**Note:** *This feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are Disabled and **Enabled**. (Note: For more information regarding the hardware/software support for this function, please refer to Intel's and Microsoft's web sites.*

### **Intel Speed Step Support (Available when supported by the CPU.)**

Select Enabled to use the Enhanced Intel SpeedStep Technology and allows the system to automatically adjust the processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled (-C States, GV1/GV3 are enabled), **GV1/GV3 Only** (C States: Disabled), C-States Only (-G1/G3: Disabled), and Disabled (-C States, GV1/GV3 are disabled). Please refer to Intel's web site for detailed information.

### **► Advanced Chipset Control**

Access the submenu to make changes to the following settings.



**Warning:** Be cautious when changing the Advanced settings. An incorrect setting, a very high DRAM frequency or an incorrect DRAM timing may result in system instability. When this occurs, revert to the default setting.

### **► Integrated Device Control Sub-menu**

#### **Memory Reclaiming**

Select Enable to enable the functionality of Memory Remapping above 4GB. The settings are **Enabled** and Disabled.

#### **Enable VT-d**

Select Enable to enable the functionality of the Intel Virtualization Technology for Direct I/O support, which 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**.

### **Default Primary Video Adapter**

This feature allows the user to select the video device used by the BIOS during POST. If set to **Auto**, PEG, PCI, IGD (Internal Graphics Device) devices will be selected. If set to IGD (Internal Graphics Device), IGD and PCI devices will be selected. If set to PEG, PEG and PCI devices will be selected. If set to PCI, PCI, PEG and IGD devices will be selected.

### **IGD-Device 2**

This feature allows the user to enable or disable Internal Graphics Device#2 by entering a specified value.

### **IGD-Device 2, Function 1**

This feature allows the user to enable or disable Function#1 of Internal Graphics Device#2 by entering a specified value.

### **DVMT 4.0 Mode**

This feature allows the user to configure the DVMT 4.0 Graphics Memory to be used by the Internal Graphics Device. The options are Fixed, **DVMT** and Auto.

### **Pre-allocated Memory Size**

This feature allows the user to set the total amount of Pre-allocated graphics memory to be used by the Internal Graphics Device. The options are **1 MB** and 8 MB.

### **IGD Memory Size**

This feature allows the user to set the total amount of graphics memory to be used by the Internal Graphics Device. The settings are 128 MB, **256 MB** and MAXDVMT.

### **Fixed Graphics Memory**

This feature allows the user to display the Fixed Graphics settings.

### **DVMT Graphics Memory**

This feature allows the user to display the DVMT Graphics settings.

### **Azalia Audio**

Select **Auto** to enable Azalia Audio. The settings are **Auto** and Disabled.

### **Route Port 80h Cycles to**

This feature allows the user to decide which bus to send debug information to. The options are Disabled, **PCI** and LPC.

## ► Memory Cache

### Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer and allow BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select **Uncached** to disable this function and make this area available for other devices.

### Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer and allow BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable the function and this area will be reserved for Video BIOS ROM access only. Select **Uncached** to disable this function and make this area available for other devices.

### Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select **Uncached** to disable this function. Select **Write Through** to allow data to be cached into the buffer and written into the system memory at the same time. Select **Write Protect** to prevent data from being written into the base memory area of Block 0-512K. Select **Write Back** to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are **Uncached**, **Write Through**, **Write Protect**, and **Write Back**.

### Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select **Uncached** to disable this function. Select **Write Through** to allow data to be cached into the buffer and written into the system memory at the same time. Select **Write Protect** to prevent data from being written into the base memory area of Block 512K-640K. Select **Write Back** to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are **Uncached**, **Write Through**, **Write Protect**, and **Write Back**.

## Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1 MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

## ► PNP Configuration

Access the submenu to make changes to the following settings for PNP (Play & Plug) devices.

### ► PCI 32 Device Slot#4 - PCI Device Slot#6

Access the submenu for each of the settings above to make changes to the following:

#### Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

#### Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

#### Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

## ► PCI-E x4 Slot 5

Access the submenu for each of the settings above to make changes to the following:

### PCI Express Port#1

Select Enabled to always enable PCI-Ex1 Port#1. Select Disabled to disable PCI-Ex1 Port#1 and all other PCI-E ports. When set to Auto, PCI-Ex1 Port#1 will be enabled if a PCI add-on card is detected. The options are **Auto**, Enabled and Disabled.



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### Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

#### Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

#### Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate.

### ► PEG (PCI-Express Graphics) Port Sub-menu

Access the submenu for each of the settings above to make changes to the following:

#### PCI-Express Graphics (PEG) Port (This submenu is for debugging only.)

Select **Auto** to automatically enable the PCI-Express Graphics Port if a PCI add-on card is detected. Select Disabled to always disable the PEG Port. Select Enabled to always enable the PEG Port. (Debugging is enabled if a Debug card is detected.) The default setting is **Auto**.

When the PCI-Exp. Graphics Port is enabled, the following items will be displayed:

**PEG Port Enabled=**  
**PEG Port Number=**  
**PEG Port Width=**  
**PEG Port Slot Number=**  
**PEG Port Power Limit=**  
**PEG Port Slot Detect=**

### ► Onboard IDE/Onboard LAN

#### Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

### **Enable Master**

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

### **Latency Timer**

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughput device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novelle and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you may want to change this setting and try again. A different OS requires a different Bus Master clock rate.

### **► I/O Device Configuration**

Access the submenu to make changes to the following settings.

#### **KBC Clock Input**

This setting allows you to select the clock frequency for the Keyboard Controller. The options are 6MHz, 8MHz, **12MHz**, and 16MHz.

#### **Serial Port A**

This setting allows you to decide how the system controls Serial Port A. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS-controlled).

#### **Base I/O Address**

This setting allows you to select the base I/O address for Serial Port A. The options are **3F8**, 2F8, 3E8, and 2E8.

#### **Interrupt**

This setting allows you to select the IRQ (interrupt request) for Serial Port A. The options are IRQ3 and **IRQ4**.

#### **Serial Port B**

This setting allows you to decide how the system controls Serial Port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

#### **Mode**

This setting allows you to set the type of device that will be connected to Serial Port B. The options are **Normal** and IR (for an infrared device).

#### **Base I/O Address**

This setting allows you to select the base I/O address for Serial Port B. The options are 3F8, **2F8**, 3E8 and 2E8.

### **Interrupt**

This setting allows you to select the IRQ (interrupt request) for Serial Port B. The options are **IRQ3** and IRQ4.

### **Serial Port C**

This setting allows you to decide how the system controls Serial Port C. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

### **Base I/O Address**

This setting allows you to select the base I/O address for Serial Port C. The options are **220** and 238.

### **Interrupt**

This setting allows you to select the IRQ (interrupt request) for Serial Port B. The options are **IRQ5** and IRQ10.

### **Serial Port D**

This setting allows you to decide how the system controls Serial Port C. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

### **Base I/O Address**

This setting allows you to select the base I/O address for Serial Port C. The options are 220 and **238**.

### **Interrupt**

This setting allows you to select the IRQ (interrupt request) for Serial Port B. The options are IRQ5 and **IRQ10**.

## **► Hardware Monitoring**

### **CPU Temperature Threshold**

This option allows the user to set a CPU temperature overheat threshold that will activate the alarm system when the CPU temperature reaches this pre-set temperature threshold. The Default setting is **80°C**. (\*See the note below.)

Highlight this and hit <Enter> to see monitor data for the following items:

### **CPU1 Temperature/System Temperature**

#### **Fan1 - Fan 5**

If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fan as specified.

### **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, and vice versa. If the option is set to "4-pin", the fan speed will be controlled by Pulse Width

Modulation (PWM). Select "Workstation" if your system is used as a Workstation. Select "Disable" to disable the fan speed control function to allow the onboard fans to constantly run at full speed (12V). The Options are: **1. Disable** and **2. Optimized for Workstations with 4-pin.**



**Note:** *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 the 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 the BIOS.*

### **Voltage Monitoring**

The following items will be monitored and displayed:

Vcore A

12V

V\_DIMM

5V

3.3V

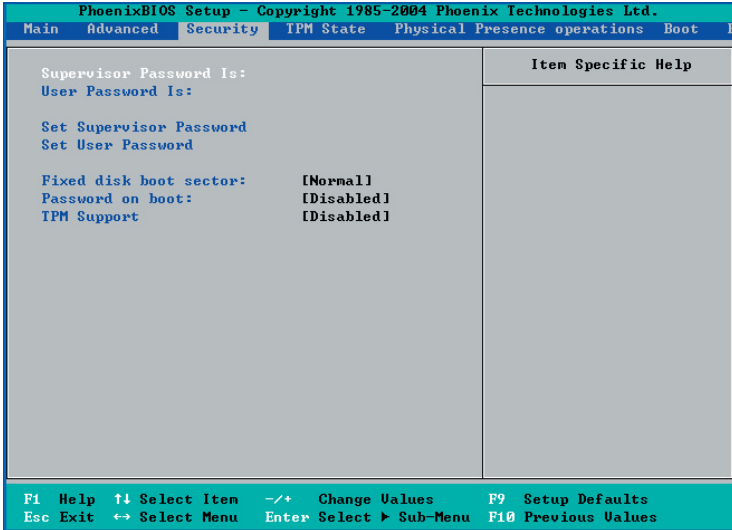
-12V

3V Standby

Vbatt.

## 4-5 Security Settings

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.



### Supervisor Password Is:

This item indicates if a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

### User Password Is:

This item indicates if a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

### Set Supervisor Password

When the item Set Supervisor Password is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

### Set User Password

When the item Set User Password is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

### **Fixed Disk Boot Sector**

Select **Normal** to enable the function of Write-Protect to protect the boot sector on the hard drives against viruses.

### **Password on Boot**

When this feature is set to Enabled, a password is required for a user to enter the system at bootup. The options are Enabled (password required) and Disabled (password not required).

### **Trusted Platform Support**

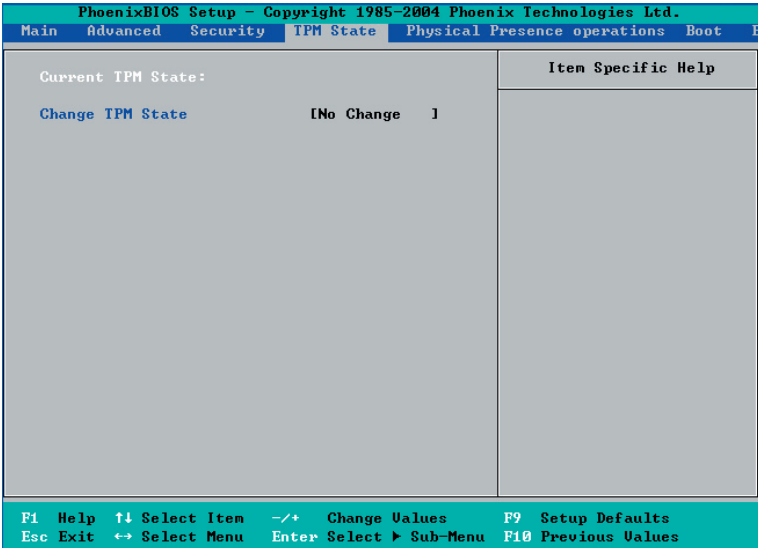
Select Enabled to enable support for trusted platforms and allow the BIOS to automatically download the drivers needed to provide support for the platforms specified. The options are Enabled and **Disabled**.

If set to Enabled, the TPM State screen displays. (See the next section.)

## 4-6 Trusted Platform Module (TPM) State

(Available if the TPM Support Option is enabled in the Security Setting)

Choose the TPM State menu from the Phoenix BIOS Setup Utility with the arrow keys. You should see the following display.



### Current TPM State

This item shows the current TPM State only.

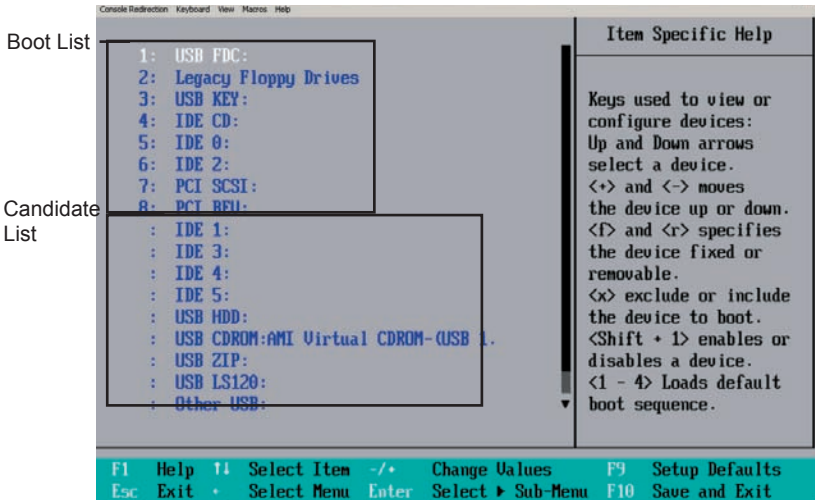
### Change TPM State

Select "Enabled & Activate" to enable TPM support for the system. Select De-activate & Disabled to disable the function of TPM support. If "No Change" is selected, no changes will be done to the current TPM State. Select Clear to clear or erase all information related to TPM support.

If set to "Clear", the sub-menu: Physical Presence Operations will appear. Select Reject to cancel the selection. Select Execute to proceed with selection. All information related to TPM Support will be erased.

## 4-7 Boot Settings

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.



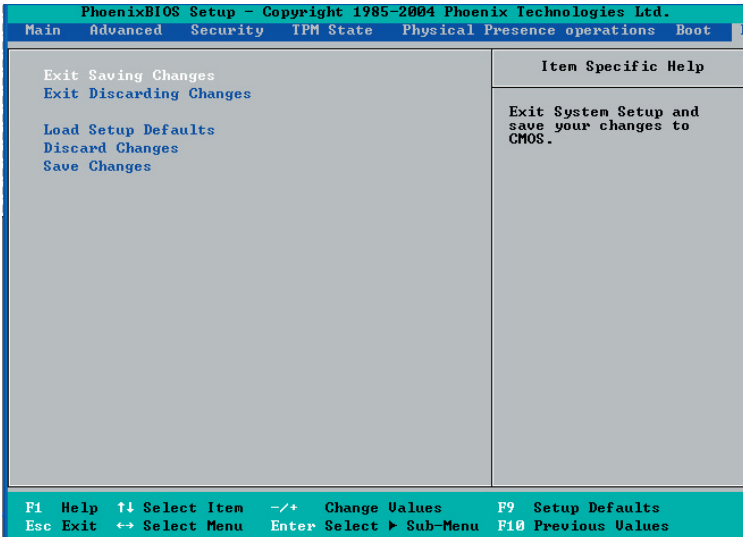
### Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the Item Specific Help window.



## 4-9 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



### Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

### Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

### Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

### Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

### Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

## Notes

## Appendix A

### BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

**Failure Fixed Disk**

Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.

**Stuck key**

Stuck key on keyboard.

**Keyboard error**

Keyboard not working.

**Keyboard Controller Failed**

Keyboard controller failed test. May require replacing keyboard controller.

**Keyboard locked - Unlock key switch**

Unlock the system to proceed.

**Monitor type does not match CMOS - Run SETUP**

Monitor type not correctly identified in Setup

**Shadow Ram Failed at offset: nnnn**

Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.

**System RAM Failed at offset: nnnn**

System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.

**Extended RAM Failed at offset: nnnn** Extended memory not working or not configured properly at offset **nnnn**.

**System battery is dead - Replace and run SETUP**

The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.

---

**System CMOS checksum bad - Default configuration used**

System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.

**System timer error**

The timer test failed. Requires repair of system board.

**Real time clock error**

Real-Time Clock fails BIOS hardware test. May require board repair.

**Check date and time settings**

BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

**Previous boot incomplete - Default configuration used**

Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.

**Memory Size found by POST differed from CMOS**

Memory size found by POST differed from CMOS.

**Diskette drive A error**

**Diskette drive B error**

Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.

**Incorrect Drive A type - run SETUP**

Type of floppy drive A: not correctly identified in Setup.

**Incorrect Drive B type - run SETUP**

Type of floppy drive B: not correctly identified in Setup.

**System cache error - Cache disabled**

RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.

**CPU ID:**

CPU socket number for Multi-Processor error.

**EISA CMOS not writable**

ServerBIOS2 test error: Cannot write to EISA CMOS.

**DMA Test Failed**

ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.

**Software NMI Failed**

ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).

**Fail-Safe Timer NMI Failed**

ServerBIOS2 test error: Fail-Safe Timer takes too long.

**device Address Conflict**

Address conflict for specified **device**.

**Allocation Error for: device**

Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.

**CD ROM Drive**

CD ROM Drive identified.

**Entering SETUP ...**

Starting Setup program

**Failing Bits: nnnn**

The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.

**Fixed Disk n**

Fixed disk n (0-3) identified.

**Invalid System Configuration Data**

Problem with NVRAM (CMOS) data.

**I/O device IRQ conflict**

I/O device IRQ conflict error.

**PS/2 Mouse Boot Summary Screen:**

PS/2 Mouse installed.

**nnnn kB Extended RAM Passed**

Where **nnnn** is the amount of RAM in kilobytes successfully tested.

**nnnn Cache SRAM Passed**

Where **nnnn** is the amount of system cache in kilobytes successfully tested.

**nnnn kB Shadow RAM Passed**

Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.

**nnnn kB System RAM Passed**

Where **nnnn** is the amount of system RAM in kilobytes successfully tested.

**One or more I2O Block Storage Devices were excluded from the Setup Boot Menu**

There was not enough room in the IPL table to display all installed I2O block-storage devices.

**Operating system not found**

Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

**Parity Check 1 nnnn**

Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.

**Parity Check 2 nnnn**

Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**.

**Press <F1> to resume, <F2> to Setup, <F3> for previous**

Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.

**Press <F2> to enter Setup**

Optional message displayed during POST. Can be turned off in Setup.

**PS/2 Mouse:**

PS/2 mouse identified.

**Run the I2O Configuration Utility**

One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).

**System BIOS shadowed**

System BIOS copied to shadow RAM.

**UMB upper limit segment address: *nnnn***

Displays the address *nnnn* of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.

**Video BIOS shadowed**

Video BIOS successfully copied to shadow RAM.

## Notes



## Appendix B

### BIOS POST Codes

This section lists the POST (Power On Self Test) codes for the PhoenixBIOS. POST codes are divided into two categories: recoverable and terminal.

#### Recoverable POST Errors

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

- 1 long and two short beeps - video configuration error
- 1 repetitive long beep - no memory detected

#### Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to port 80h, attempt to initialize video and write the error in the top left corner of the screen. The following is a list of codes that may be written to port 80h.

| POST Code | Description                                       |
|-----------|---|
| 02h       | Verify Real Mode                                  |
| 03h       | Disable Non-Maskable Interrupt (NMI)              |
| 04h       | Get CPU type                                      |
| 06h       | Initialize system hardware                        |
| 07h       | Disable shadow and execute code from the ROM.     |
| 08h       | Initialize chipset with initial POST values       |
| 09h       | Set IN POST flag                                  |
| 0Ah       | Initialize CPU registers                          |
| 0Bh       | Enable CPU cache                                  |
| 0Ch       | Initialize caches to initial POST values          |
| 0Eh       | Initialize I/O component                          |
| 0Fh       | Initialize the local bus IDE                      |
| 10h       | Initialize Power Management                       |
| 11h       | Load alternate registers with initial POST values |
| 12h       | Restore CPU control word during warm boot         |
| 13h       | Reset PCI Bus Mastering devices                   |
| 14h       | Initialize keyboard controller                    |
| 16h       | 1-2-2-3 BIOS ROM checksum                         |
| 17h       | Initialize cache before memory Auto size          |

| <b>POST Code</b> | <b>Description</b>  |
|------------------|---|
| 18h              | 8254 timer initialization   |
| 1Ah              | 8237 DMA controller initialization                                      |
| 1Ch              | Reset Programmable Interrupt Controller                                 |
| 20h              | 1-3-1-1 Test DRAM refresh   |
| 22h              | 1-3-1-3 Test 8742 Keyboard Controller                                   |
| 24h              | Set ES segment register to 4 GB   |
| 28h              | Auto size DRAM  |
| 29h              | Initialize POST Memory Manager  |
| 2Ah              | Clear 512 kB base RAM   |
| 2Ch              | 1-3-4-1 RAM failure on address line <b>xxxx*</b>                        |
| 2Eh              | 1-3-4-3 RAM failure on data bits <b>xxxx*</b> of low byte of memory bus |
| 2Fh              | Enable cache before system BIOS shadow                                  |
| 32h              | Test CPU bus-clock frequency  |
| 33h              | Initialize Phoenix Dispatch Manager                                     |
| 36h              | Warm start shut down  |
| 38h              | Shadow system BIOS ROM  |
| 3Ah              | Auto size cache   |
| 3Ch              | Advanced configuration of chipset registers                             |
| 3Dh              | Load alternate registers with CMOS values                               |
| 41h              | Initialize extended memory for RomPilot (optional)                      |
| 42h              | Initialize interrupt vectors  |
| 45h              | POST device initialization  |
| 46h              | 2-1-2-3 Check ROM copyright notice                                      |
| 48h              | Check video configuration against CMOS                                  |
| 49h              | Initialize PCI bus and devices  |
| 4Ah              | Initialize all video adapters in system                                 |
| 4Bh              | QuietBoot start (optional)  |
| 4Ch              | Shadow video BIOS ROM   |
| 4Eh              | Display BIOS copyright notice   |
| 4Fh              | Initialize MultiBoot  |
| 50h              | Display CPU type and speed  |
| 51h              | Initialize EISA board (optional)  |
| 52h              | Test keyboard   |
| 54h              | Set key click if enabled  |
| 55h              | Enable USB devices  |
| 58h              | 2-2-3-1 Test for unexpected interrupts                                  |
| 59h              | Initialize POST display service   |

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|     |   |
|-----|---|
| 5Ah | Display prompt "Press <ESC> to enter SETUP" |
| 5Bh | Disable CPU cache                           |

| <b>POST Code</b> | <b>Description</b> |
|------------------|--------------------|
|------------------|--------------------|

|     |   |
|-----|---|
| 5Ch | Test RAM between 512 and 640 kB                       |
| 60h | Test extended memory                                  |
| 62h | Test extended memory address lines                    |
| 64h | Jump to UserPatch1                                    |
| 66h | Configure advanced cache registers                    |
| 67h | Initialize Multi Processor APIC                       |
| 68h | Enable external and CPU caches                        |
| 69h | Setup System Management Mode (SMM) area               |
| 6Ah | Display external L2 cache size                        |
| 6Bh | Load custom defaults (optional)                       |
| 6Ch | Display shadow-area message                           |
| 70h | Display error messages                                |
| 72h | Check for configuration errors                        |
| 76h | Check for keyboard errors                             |
| 7Ch | Set up hardware interrupt vectors                     |
| 7Dh | Initialize Intelligent System Monitoring (optional)   |
| 7Eh | Initialize coprocessor if present                     |
| 80h | Disable onboard Super I/O ports and IRQs (optional)   |
| 81h | Late POST device initialization                       |
| 82h | Detect and install external RS232 ports               |
| 83h | Configure non-MCD IDE controllers                     |
| 84h | Detect and install external parallel ports            |
| 85h | Initialize PC-compatible PnP ISA devices              |
| 86h | Re-initialize onboard I/O ports.                      |
| 87h | Configure Motherboard Configurable Devices (optional) |
| 88h | Initialize BIOS Data Area                             |
| 89h | Enable Non-Maskable Interrupts (NMIs)                 |
| 8Ah | Initialize Extended BIOS Data Area                    |
| 8Bh | Test and initialize PS/2 mouse                        |
| 8Ch | Initialize floppy controller                          |
| 8Fh | Determine number of ATA drives (optional)             |
| 90h | Initialize hard-disk controllers                      |
| 91h | Initialize local-bus hard-disk controllers            |
| 92h | Jump to UserPatch2                                    |
| 93h | Build MPTABLE for multi-processor boards              |
| 95h | Install CD ROM for boot                               |
| 96h | Clear huge ES segment register                        |
| 97h | Fix up Multi Processor table                          |

---

98h 1-2 Search for option ROMs and shadow if successful. One long, two short beeps on checksum failure

**POST Code Description**

|      |  |
|------|--|
| 99h  | Check for SMART Drive (optional)                 |
| 9Ch  | Set up Power Management                          |
| 9Dh  | Initialize security engine (optional)            |
| 9Eh  | Enable hardware interrupts                       |
| 9Fh  | Determine number of ATA and SCSI drives          |
| A0h  | Set time of day                                  |
| A2h  | Check key lock                                   |
| A4h  | Initialize typematic rate                        |
| A8h  | Erase <ESC> prompt                               |
| AAh  | Scan for <ESC> key stroke                        |
| ACh  | Enter SETUP                                      |
| A Eh | Clear Boot flag                                  |
| B0h  | Check for errors                                 |
| B1h  | Inform RomPilot about the end of POST (optional) |
| B2h  | POST done - prepare to boot operating system     |
| B4h  | 1 One short beep before boot                     |
| B5h  | Terminate QuietBoot (optional)                   |
| B6h  | Check password (optional)                        |
| B7h  | Initialize ACPI BIOS and PPM Structures          |
| B9h  | Prepare Boot                                     |
| BAh  | Initialize SMBIOS                                |
| BCh  | Clear parity checkers                            |
| BDh  | Display MultiBoot menu                           |
| BEh  | Clear screen (optional)                          |
| BFh  | Check virus and backup reminders                 |
| C0h  | Try to boot with INT 19                          |
| C1h  | Initialize POST Error Manager (PEM)              |
| C2h  | Initialize error logging                         |
| C3h  | Initialize error display function                |
| C4h  | Initialize system error flags                    |
| C6h  | Console redirection init.                        |
| C7h  | Unhook INT 10h if console redirection enabled    |
| C8h  | Force check (optional)                           |
| C9h  | Extended ROM checksum (optional)                 |
| CDh  | Reclaim console redirection vector               |

**POST Code Description**

|     |  |
|-----|--|
| D2h | Unknown interrupt                            |
| D4h | Check Intel Branding string                  |
| D8h | Alert Standard Format initialization         |
| DEh | Log error if micro-code not updated properly |

**The following are for boot block in Flash ROM****POST Code Description**

|     |                                      |
|-----|--------------------------------------|
| E0h | Initialize the chipset               |
| E1h | Initialize the bridge                |
| E2h | Initialize the CPU                   |
| E3h | Initialize system timer              |
| E4h | Initialize system I/O                |
| E5h | Check force recovery boot            |
| E6h | Checksum BIOS ROM                    |
| E7h | Go to BIOS                           |
| E8h | Set Huge Segment                     |
| E9h | Initialize Multi Processor           |
| EAh | Initialize OEM special code          |
| EBh | Initialize PIC and DMA               |
| ECh | Initialize Memory type               |
| EDh | Initialize Memory size               |
| EEh | Shadow Boot Block                    |
| EFh | System memory test                   |
| F0h | Initialize interrupt vectors         |
| F1h | Initialize Run Time Clock            |
| F2h | Initialize video                     |
| F3h | Initialize System Management Manager |
| F4h | Output one beep                      |
| F5h | Clear Huge Segment                   |

\* If the BIOS detects errors on 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (**xxxx**) indicating the address line or bits that have failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the low-order byte of the error. It repeats this sequence continuously.

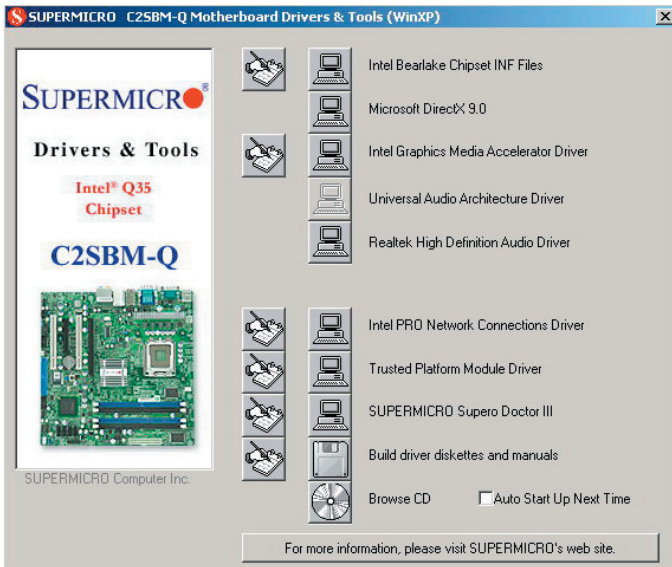
## Notes

## Appendix C

### Software Installation Instructions

#### A. Installing Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.



#### Driver/Tool Installation Display Screen



#### Notes:

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

## B. Configuring Supero Doctor III

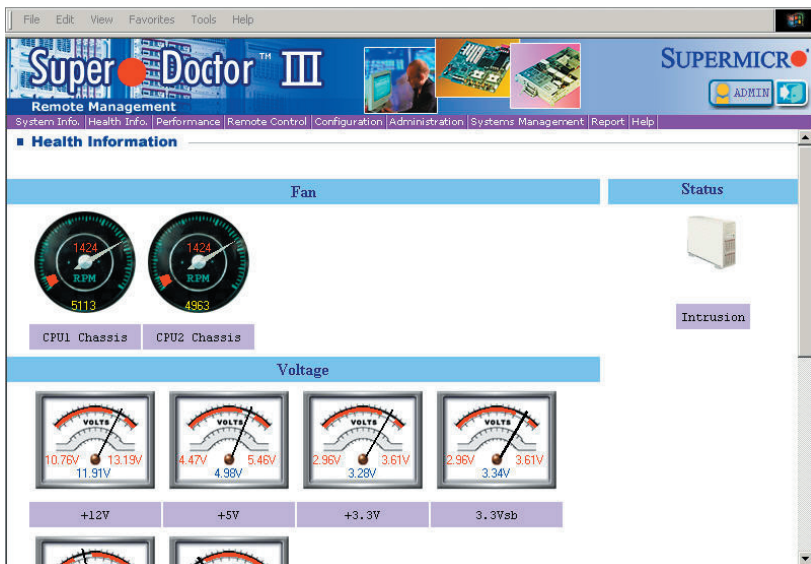
The Supero Doctor III program is a Web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor 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:** Both 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 the 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 the BIOS.

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





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

**Graceful power control**

Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.

**Requirements**

Keep Supero SD3Service Daemon running at all times on this system.  
Provide TCP/IP connectivity.

**Power control**



**Note:** SD III Software Revision 1.0 can be downloaded from our Web site 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/User-Guide.pdf>. For Linux, we will still recommend that you use Supero Doctor II.

**Notes**