SUPER® C2SBX
SUPER® C2SBX+

USER'S MANUAL

Revision 1.1c

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California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate".

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.

Manual Revision 1.1c

Release Date: May 21, 2010

Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERO® C2SBX/C2SBX+ motherboard. The C2SBX+ supports a single Intel Core™ 2 Extreme, Quad, or Duo processor with a system bus speed of 1600/1330/1066/800 MHz. The C2SBX supports a single Intel Core™ 2 Extreme, Quad, or Duo processor with a system bus speed of 1330/1066/800 MHz. With a Core™2 processor built-in, both the motherboards support Wide Dynamic Execution, FSB Dynamic Bus Inversion (DBI), and Advanced Digital Media Boost. This motherboard 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 details. This product is intended to be professionally installed and serviced by a technician.

Manual Organization

Chapter 1 describes 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 the CMOS.

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

Appendix A provides BIOS POST Error Beep Codes. **Appendix B and C** list the Windows OS and other Software Installation Instructions.

Conventions Used in the Manual

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

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

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

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Preface

Chapter 1: Introduction

Chapter 2: Installation

Chapter 3: Troubleshooting

Chapter 4: BIOS

Appendices:

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 the following items are included in the retail box only:

One (1) Supermicro Mainboard

One (1) floppy drive ribbon cable (CBL-022L)

Six (6) SATA cables (CBL-0044L)

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

One (1) IEEE 1394a interface connector cable (CBL-0173L)

One (1) I/O Shield (MCP-260-0001-00)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual

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Email:	support@supermicro.com.tw
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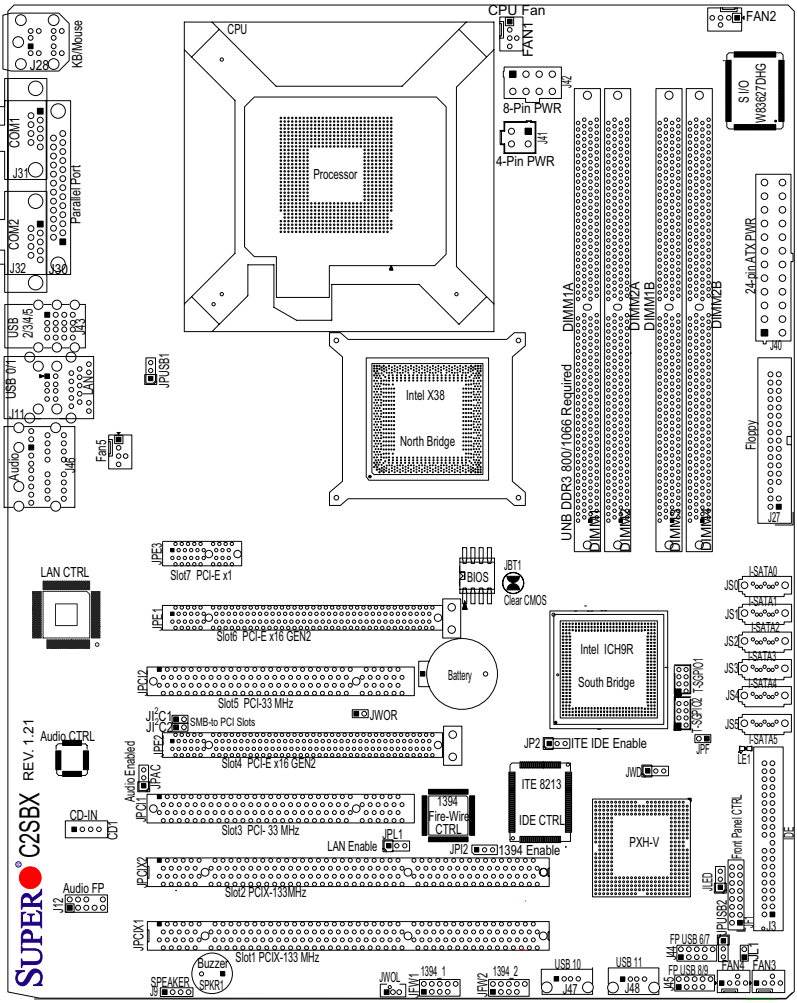
SUPER® C2SBX Image (for the PCB Rev. 1.21 or older models)

Note: This MB image and the layout shown on the next page represent the picture and layout drawing of a motherboard based upon the PCB Rev. 1.21 or an older model. The motherboard you've received may or may not look exactly the same as the ones shown in this manual.

Motherboard Layout (for the PCB Rev. 1.21 or older models)



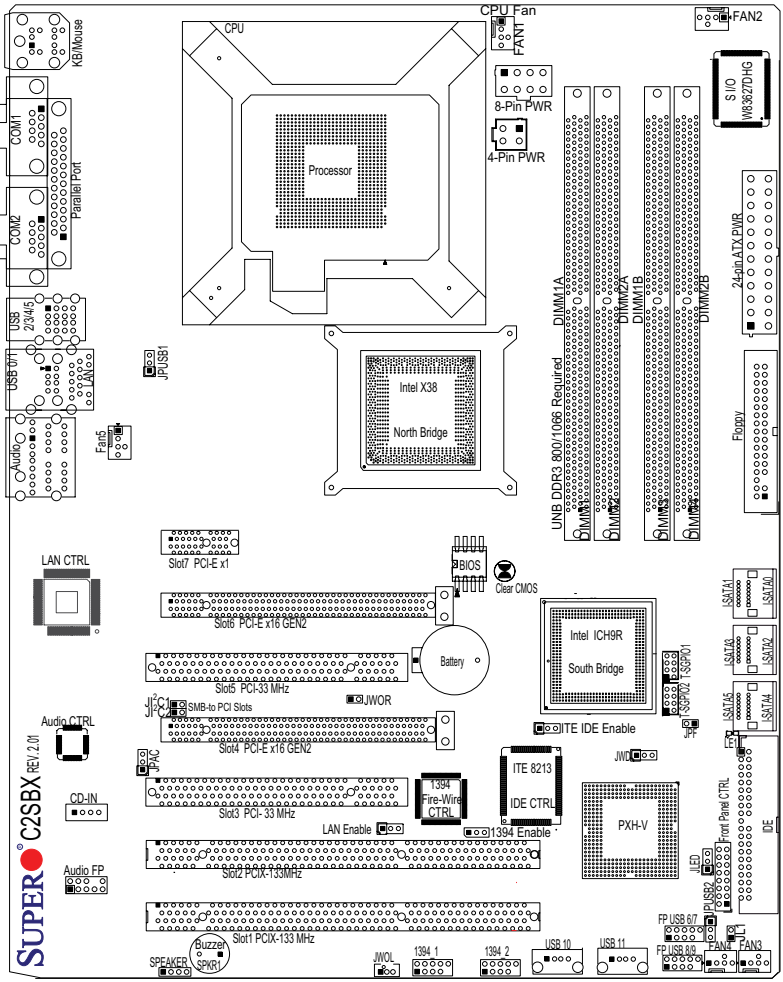
Important Notes to the User

- Jumpers not indicated are for testing only.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "■" indicates the location of "Pin 1".
- C2SBX+: supports the Intel X48 chipset, CPU FSB speeds of up to 1600 MHz, DDR3 DIMM of up to 1600 MHz.
- C2SBX: supports the Intel X38 chipset, CPU FSB speeds of up to 1333 MHz, DDR3 DIMM of up to 1333 MHz.

SUPER® C2SBX+ Image (for the PCB Rev. 2.01 or newer models)

Note: This MB image and the layout shown on the next page represent the picture and layout drawing of a motherboard based upon the PCB Rev. 2.01 or a newer-model. The motherboard you've received may or may not look exactly the same as the ones shown in this manual.

Motherboard Layout (for PCB Rev. 2.01 or newer models)



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- C2SBX: supports the Intel X38 chipset, CPU FSB speeds of up to 1333 MHz, DDR3 DIMM of up to 1333 MHz.

C2SBX/C2SBX+ Quick Reference

Jumpers	Description	Default Setting
JBT1	CMOS Clear	(See Chpt. 2)
JI^{2}C1/JI^{2}C2	SMB to PCI Slots	Open/Open (Disabled)
JP2	ITE IDE Enabled	Pins 1-2 (Enabled)
JP5	Audio Enabled	Pins 1-2 (Enabled)
JPI2	IEEE 1394a Enabled	Pins 1-2 (Enabled)
JPL1	Giga-bit LAN Enable	Pins 1-2 (Enabled)
JPUSB1/JPUSB2	USB Wake-up Enable	Pins 2-3/2-3 (Disabled)
JWD	Watch Dog Timer Out	Pins 1-2 (Reset)

Connectors	Description
1394-1/1394-2	IEEE 1394a Connection Headers (JFW1/JFW2)
Audio	Audio Port (J46)
Audio FP	Front Panel Audio Header (J12)
Buzzer	Internal Buzzer (SPKR1)
CD-In	Audio CD Input Header (CD1)
COM1/COM2	COM Port 1 & COM Port 2 Connectors (J31/J32)
Fans 1-5	Fan1: CPU Fan, Fans 2-5: Chassis/System Fans
Floppy	Floppy Disk Connector (J27)
IDE	IDE Hard Drive (J3)
J40	ATX 24-Pin Power Connector
J41/J42	12V 4-Pin/8-Pin Power Connectors (Required)
JF1	Front Control Panel Header
JL1	Chassis Intrusion Header
JLED	Onboard Power LED Indicator
JP4	Serial Peripheral Connection Header
JPCI 1/2	PCI-33 MHz Slots 1/2 (Slot3/Slot5)
JPCIX 1/2	PCI-X 133 MHz Slot1/2 (Slot1/Slot2)
JPE1/2/3	PCI-Ex16(JPE2:Slot4/JPE1:Slot6),PCI-Ex1(JPE3Slot7)
JPF	Power Force-On Header
JWOL	Wake-On-LAN Header
JWOR	Wake-On-Ring Header
KB/Mouse	PS/2 Keyboard/Mouse (J28)
LE1	Standby Power LED Indicator
Printer	Parallel Printer Port (J30)
Speaker	Speaker Header (J9)
T-SGPIO1/T-SGPIO1	SATA General Purpose I/O Connectors 0/1 (J6/J8)
USB 0/1, LAN 1	(Back Panel) USB Ports 0/1 & Gigabit LAN Connector
USB 2/3/4/5	(Back Panel) Universal Serial Ports 2/3/4/5 (J43)
(FP)USB 6/7, USB 8/9	(Front Panel) USB Ports 6/7 (J44) & 8/9 (J45)
USB 10/USB 11	Front-Accessible USB Ports 10 (J47) & 11 (J48)
I-SATA 0~I-SATA 5	Intel SATA Headers#0~5 (JS 0~5)

Motherboard Features

CPU

• Single Intel® Core™2 Extreme, Quad, or Duo processor with an FSB speed of up to 1600 MHz (for C2SBX+) or up to 1330 MHz (for C2SBX)

Memory

• C2SBX+: Supports Non-ECC unbuffered DDR3 1600 MHz up to 4 GB in two DIMMs, or DDR3 1333/1066/800 MHz up to 8GB in four DIMMs. When one DDR3 module is used, install it in DIMM2A or DIMM2B. If two DDR3 modules are used, install these modules in DIMM2A and DIMM2B.

• C2SBX: Supports ECC/Non-ECC unbuffered DDR3 single/dual channel 1333/1066/800 MHz up to 8GB in four DIMMs.

Chipset

- C2SBX+: Intel X48 MCH (North Bridge), ICH9R (South Bridge), and PXH-V
- C2SBX: Intel X38 MCH (North Bridge), ICH9R (South Bridge), and PXH-V

Expansion Slots

- Two (2) PCI-Express x16 (Gen2) (JPE1, JPE2)
- One (1) PCI-Express x1 (JPE3)
- Two (2) PCI-X 133 MHz (JPCIX1, JPCIX2)
- Two (2) 32-bit PCI 33MHz (JPCI1, JPCI2)

BIOS

- 16 Mb Phoenix BIOS® SPI (Serial Peripheral Interface) 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, +3.3V standby, +5V, Vbat (battery voltage) and ±12V
- Fan status monitor with firmware, PWM (Pulse Width Modulation) 4-pin fan speed control
- CPU 4-Phase-switching voltage regulator
- Supero Doctor 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
- SMT support
- PECI (Platform Environment Configuration Interface) 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 ICH9R SATA Controller, 6 connectors for 6 devices
- 1 floppy port interface (up to 2.88 MB)
- 1 Fast UART 16550 compatible serial port/header
- Intel 82566 Gigabit Ethernet Controller
- PS/2 mouse and PS/2 keyboard ports
- ITE 8213 IDE Controller supports up to two devices
- Up to 12 USB (Universal Serial Bus) 2.0 ports for a speed of up to 480Mbps (6 rear ports, 4 front ports and 2 onboard headers)
- Realtek ALC 883 7.1 Channel High Definition Audio (HDA) codecs supports 10 DAC Channels
- Winbond Super I/O 83627DHG

Other

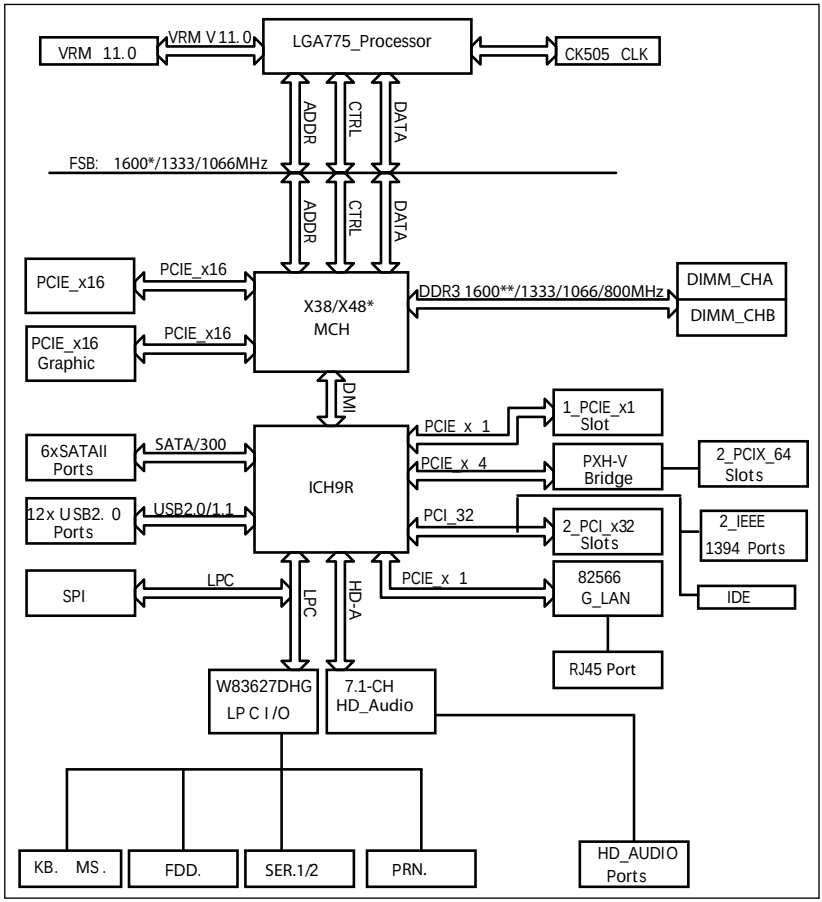
- Wake-on-LAN
- Wake-on-Ring (WOR)
- Suspend-to-RAM
- Onboard +3V Standby Power Warning LED ("LE1")
- IEEE 1394a
- Pb Free

CD Utilities

- BIOS flash upgrade utility
- Drivers and software for Intel X38/X48 chipset utilities

Dimensions

- ATX form factor, 11.6" x 9.6" (294.64 x 243.8 mm)



C2SBX/C2SBX+ 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.

Notes

* FSB 1600MHz, DDR3 1600MHz, and the X48 MCH are supported by the C2SBX+ only.

** When DDR3 1600MHz memory is used, only one memory channel is available.

1-2 Chipset Overview

The Intel X38/X48 Chipset is specially designed for use with Intel® Core™2 Extreme, Quad, or Duo processors in the LGA775 Land Grid Array Package and the ICH9R-based workstations. It consists of three primary components: the Memory Controller Hub (MCH), the I/O Controller Hub (ICH9R) and the PXH-V chip.

Memory Controller Hub (MCH)

The MCH (North Bridge) manages the data flow between the CPU interface (FSB), the System Memory interface, the PCI-Express interface, and the I/O Controller through the Direct Media Interface (DMI). The ICH9R (South Bridge) provides a multitude of I/O related functions. The MCH supports one or two channels of DDR2/DDR3 memory SDRAM and a dual PCI-Express x16 (2.0) external graphics port.

Intel ICH9R System Features

The Intel 9th Generation I/O Controller Hub (ICH9R) supports various I/O related functions and PCI devices. It provides the data buffering, interface arbitration and bandwidth needed to maximize system interface efficiency and maintain peak performance at the same time. The ICH9R supports PCI-Express ports compatible with the PCI-Express Base Specification, Rev.1.1. It also supports SATA connections at generation 1 and 2 speeds and USB 2.0 ports.

Additionally, the ICH9R features an integrated High Definition Audio Controller to support extreme multimedia applications, accommodating a variety of third-party audio codecs. It also supports the Intel Matrix Storage Technology which provides the user with a wide array of RAID options for data security and signal transmission efficiency. Furthermore, the ICH9R offers next generation client management capability through the use of Intel Active Management Technology in conjunction with the use of the most advanced Gigabit Ethernet controller. The Intel 82566 LAN controller supports a single compact Gigabit LAN port. The GLAN Controller connects to the ICH via an Intel proprietary Serial GLAN connection link.

The Direct Media Interface (DMI)

Providing the high-speed, chip-to-chip connection between the MCH and ICH9R 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.

(For more information regarding the X38/X48 chipset, please refer to Intel's web site @ http://www.intel.com.)

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 C2SBX/C2SBX+. The motherboard has an onboard System Hardware Monitor chip that supports PC health monitoring.

Onboard Voltage Monitoring

The onboard voltage monitor will scan the following voltages continuously: the CPU Core, Memory Core +1.5V (for DDR3 up to 1333 MHz), +1.8V (for DDR3 up to 1600 MHz), +3.3V, +3.3V standby, +5V, Vbat and ±12V. 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 ICH9R chip provides advanced power management functions that will greatly improve the performance of various low-power (suspend) states and

enhance 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, updates 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. 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 1000 MHz and faster.

The SUPER® C2SBX/C2SBX+ 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 ICH9R 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 C2SBX/C2SBX+ provides the user with a surreal audio experience that is larger than life.

I/O Virtualization Technology (VT-d)

With the Intel ICH9R built in, the C2SBX/C2SBX+ 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 floppy disk drive controller that is compatible with industry standard 82077/765, 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 wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. 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 two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with the Advanced Configuration and Power Interface (ACPI), 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 explosions.

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. (**Caution:** 1. Please do not use a force greater than 8 lb/inch on each mounting screw during motherboard installation. 2. Some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.)

2-3 Processor and Heatsink Installation

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

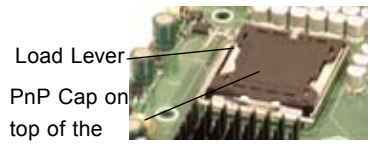
Notes:

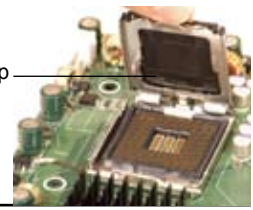
1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components.
2. Make sure that you install the processor into the CPU LGA 775 socket before you install the CPU heatsink.
3. The Intel LGA 775 Processor package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only an Intel-certified multi-directional heatsink and fan.
4. Make sure to install the motherboard into the chassis before you install the CPU heatsink and fan.
5. 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. Refer to the MB Features Section for more details on CPU support.

Installing the LGA775 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.





3. Use your thumb and index finger to hold the CPU at the North Center Edge and the South 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.

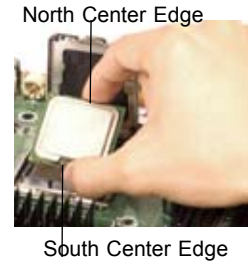
5. Align the CPU key that is the semi-circle cutout below a golden dot against the socket key, the notch on the same side of the triangle cutout on the socket.

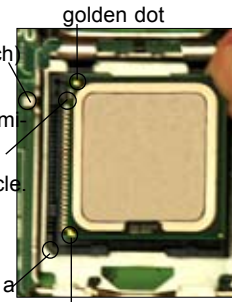
6. Once aligned, carefully lower the CPU straight down to the socket. (Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage to the CPU or the socket.)

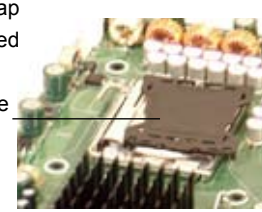
7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed. Use your thumb to gently push the load lever down to the lever lock.

8. 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.

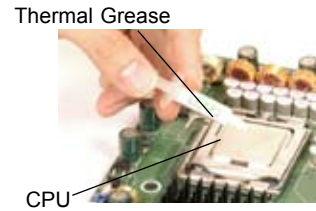


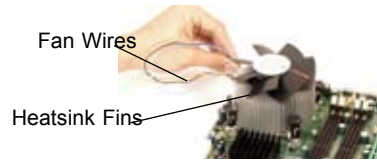


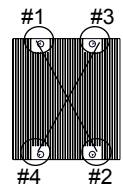


Installing the Heatsink

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 interfering 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. **(Note**: CPU overheat may occur if the protective film is not removed from the heatsink.) Apply the proper amount of thermal grease on the CPU. If your heatsink came with a thermal pad, please ignore this step. 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.
5. Align the four heatsink fasteners with the mounting holes on the motherboard.
6. 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.
7. Repeat Step 6 to insert all four heatsink fasteners into the mounting holes.







Narrow end of the groove points outward

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

Removing the Heatsink

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 (90^0) turn, and then pull the fastener upward to loosen it.
4. Repeat Step 3 to loosen all fasteners from the mounting holes. With all fasteners loosened, remove the heatsink from the CPU.

2-4 Installing DIMMs

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

CAUTION

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

DIMM Installation

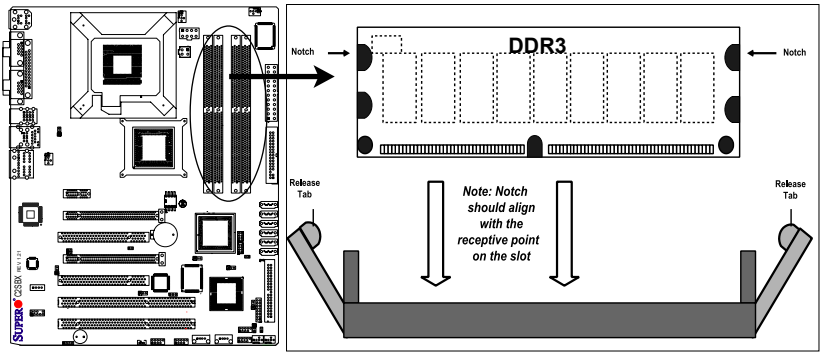
1. Insert the desired number of DIMMs into the memory slots, starting with DIMM1A. Populating DIMM 1A, DIMM 1B, and/or DIMM 2A, DIMM 2B with memory modules of the same size and of the same type will result in dual channel, two-way interleaved memory which is faster than the single channel, non-interleaved memory.
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the memory 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

1. Due to the OS limitations, some operating systems may not show more than 4 GB of memory.
2. C2SBX+ supports Non-ECC DDR3 1600 MHz up to 4GB in two DIMMs, or Non-ECC DDR3 1333 MHz up to 8 GB in four DIMMs. When one 1600 MHz DDR3 is used, install it in DIMM2A or DIMM2B. When two 1600 MHz DIMMs are used, install the DIMMs in DIMM2A and DIMM2B.
3. C2SBX supports ECC/Non-ECC DDR3 up to 1333 MHz up to 8 GB in four DIMMs.
4. 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. (See the following Table.) For Microsoft Windows users: Microsoft implemented a design change in Windows XP with Service Pack 2 (SP2) and Windows Vista. This change is specific to the Physical Address Extension (PAE) mode behavior which improves driver compatibility. For more information, please read the following article at Microsoft's Knowledge Base website at: http://support.microsoft.com/kb/888137.
5.

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

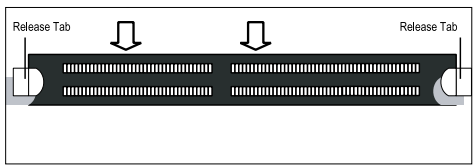
Installing and Removing DIMMs



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.

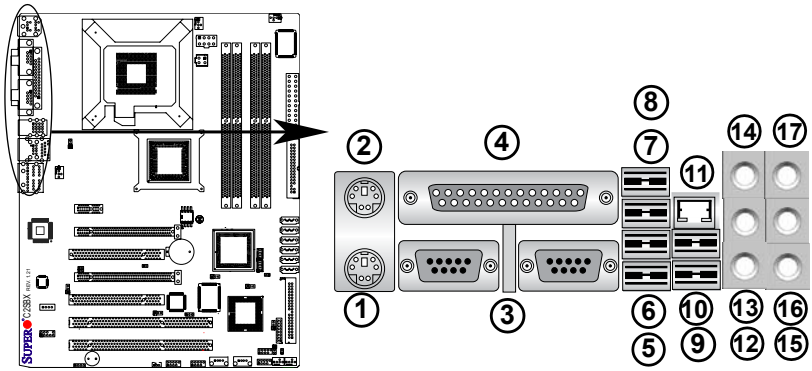
Top View of DDR3 Slot



2-5 Control Panel Connectors/IO Ports

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

Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

Back Panel Connectors

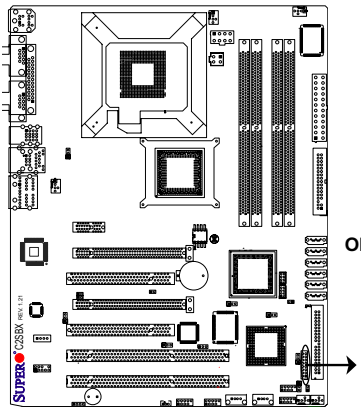
1. Keyboard (Purple)
2. PS/2 Mouse (Green)
3. COM Ports 1/2 (Turquoise)
4. Parallel Port (Printer)
5. Back Panel USB Port 2
6. Back Panel USB Port 3
7. Back Panel USB Port 4
8. Back Panel USB Port 5
9. Back Panel USB Port 0
10. Back Panel USB Port 1
11. Gigabit LAN 1
12. Side_Surround (Grey)
13. Back_Surround (Black)
14. CEN/LFE (Orange)
15. Microphone-In (Pink)
16. Front (Green)
17. Line-In (Blue)

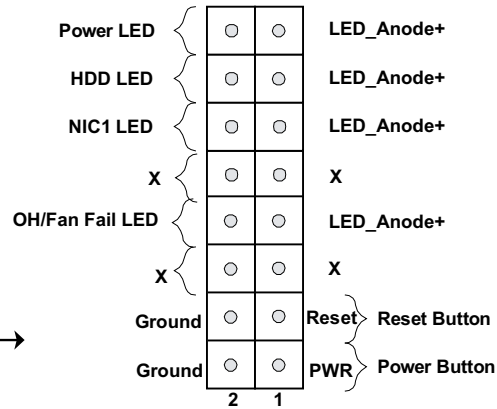
(See Section 2-5 for details.)

Front Control Panel

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

JF1 Header Pins





Front Control Panel Pin Definitions

Power LED

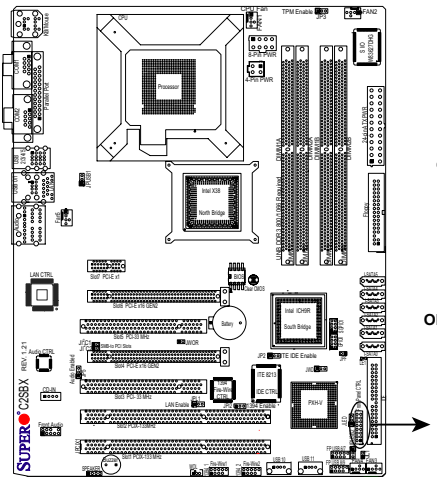
The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	LED_Anode
16	PWR LED Signal

HDD LED

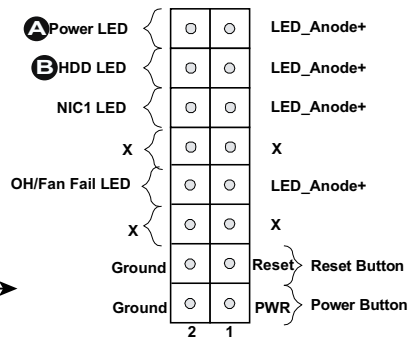
The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS and Serial ATA). See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	LED_Anode
14	HD Active



A. PWR LED

B. HDD LED



NIC1 Indicator

The NIC (Network Interface Controller) LED connection for GLAN port1 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.

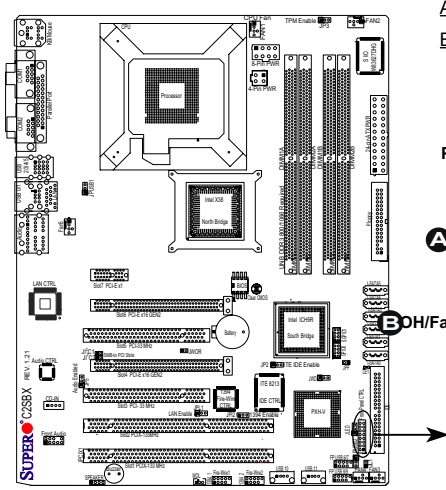
GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
11	LED_Anode
12	NIC1 LED Signal

Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan Fail 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.

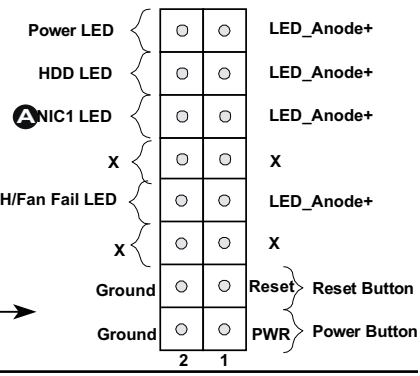
OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	LED_Anode
8	OH/Fan Fail LED Signal

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



A. NIC1 LED

B.OH/Fan Fail LED



Reset Button

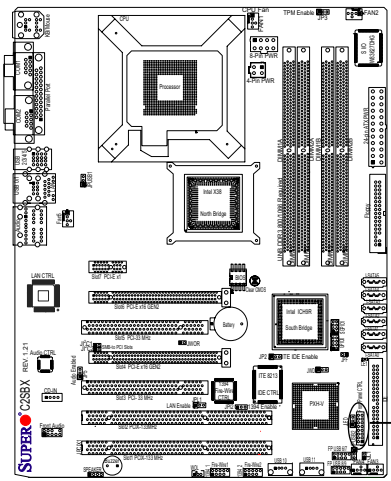
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

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

Power Button

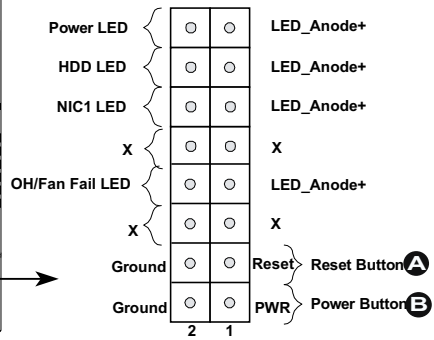
The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button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

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	+3V Standby



A. Reset

B. PWR Button



2-6 Connecting Cables

ATX Main Power and Auxiliary Power Connectors

A 24-pin main power connector is located at J40, and a 4-pin power connector is located at J41 on the motherboard. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions.

ATX Power 24-pin Connector Pin Definitions

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

Processor Power Connector

In addition to the 24-pin Primary ATX PWR (J40) and the 4-pin PWR (J41), the 12V 8-pin power connector at J42 must also be connected to your power supply. See the table on the right for pin definitions.

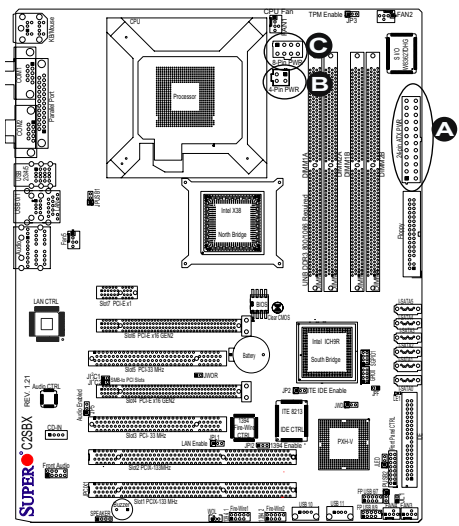
12V 4-pin Power Connector Pin Definitions

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

12V 8-pin Power CPU Connector Pin Definitions

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

Required Connection



A. 24-pin ATX PWR
B. 4-pin PWR
C. 8-pin PWR

Universal Serial Bus (USB)

There are 12 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). Another four connectors: USB 6/7 (J44) and USB 8/9 (J45) are Front Panel Connectors. Additionally, USB 10 (J47) and USB 11 (J48) are onboard USB connectors that can be accessed from the front side of the chassis. See the tables on the right for pin definitions.

Back Panel USB (USB# 0-5)

Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Front Panel USB (#6-9) and Front-Accessible Onboard USB (#10/11) Connections

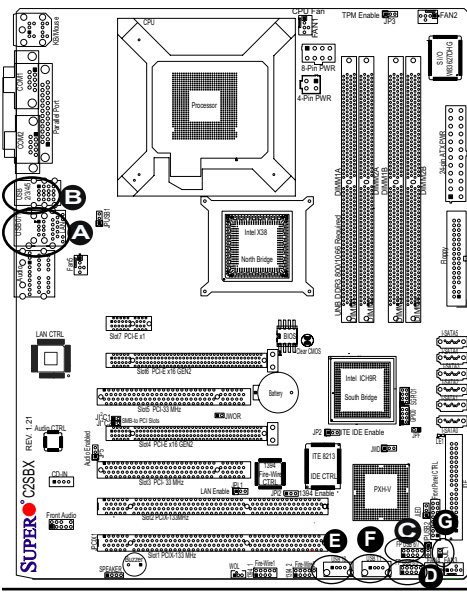
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

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

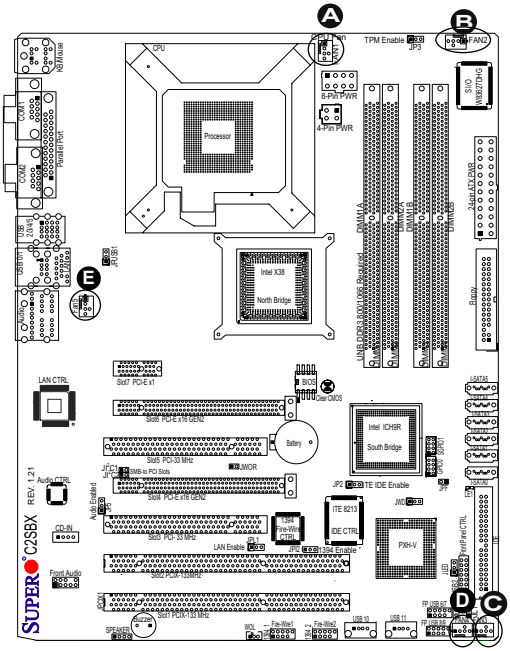


A. Back panel USB Ports 0/1
B. Back panel USB Ports 2/3/4/5
C. Front Panel USB 6/7
D. Front Panel USB 8/9
E. Front Panel USB 10
F. Front Panel USB 11
G.Chassis Intrusion

Fan Headers

The C2SBX/C2SBX+ has five chassis fan headers (Fan1 to Fan5). Fan 1 is the CPU Fan. Fan 2 to Fan 5 are system/chassis fans. **(Note**: Pins 1-3 of a 4-pin fan header are backward compatible with a traditional 3-pin fan.) See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management via Hardware Monitoring in the Advanced Setting in the BIOS. (**Note**: Default: Disabled When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans on the motherboard.)

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



A. Fan 1 (CPU Fan)

B. Fan 2

C. Fan 3

D. Fan 4

E. Fan 5

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

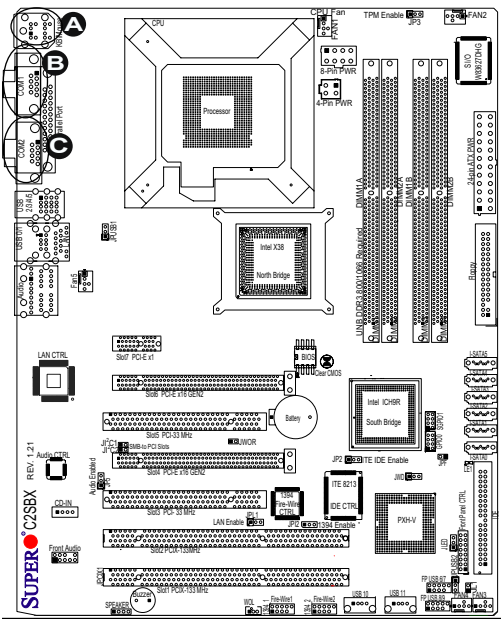
Serial Ports

COM1 (J31) and COM2 (J32) are serial ports located on the IO backpanel. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	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

Power Force On

Jumper JPF allows you to enable or disable the Power Force-On function. If enabled, the power will always stay on automatically. If this function is disabled (the normal setting), the user needs to press the power button to power on the system.

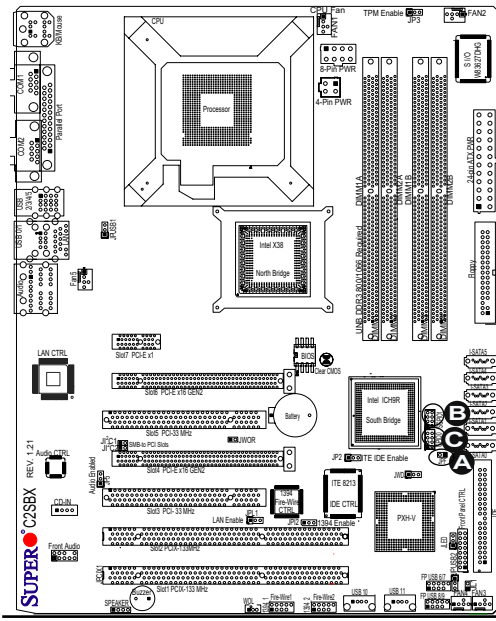
Power Force On Jumper Settings (JPF)	
Jumper Setting	Definition
Open	Normal (default)
Closed	Force On

T-SGPIO Headers

Two Serial ATA General Purpose Input/Output (GPIO) headers are located between the ICH9R South Bridge and I-SATA ports on the motherboard. These headers are used to communicate with the System Monitoring Chip on the backplane. See the table on the right for pin definitions. Refer to the board layout below for the locations of the headers.

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

Note: NC= No Connections



A. Power Force-On
B. SGPIO#1 (J6)
C. SGPIO#2 (J8)

Wake-On-Ring

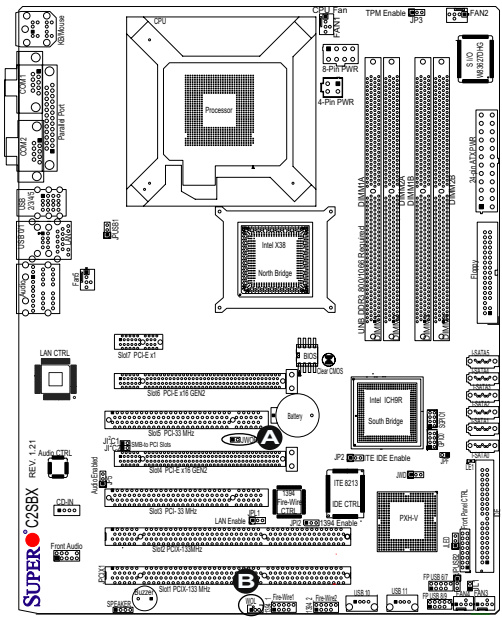
The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and be "awakened" by an incoming call to the modem when the system is in the suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-On-Ring Pin Definitions	
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 have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

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



A. WOR

B. WOL

GLAN 1 (Giga-bit Ethernet Port)

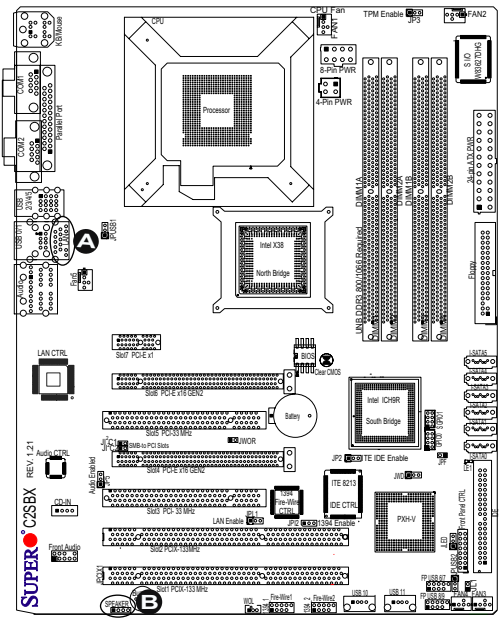
A G-bit Ethernet port is located at J11 on the IO backplane. This port accepts RJ45 type cables.

GLAN1

Speaker

A Speaker header is located at J9 on the motherboard. See the table on the right for speaker pin definitions. **Note**: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you need to close pins 3-4 with a jumper.

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

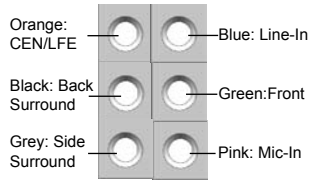


A. GLAN1

B. Speaker

High Definition Audio (HDA)

The C2SBX/C2SBX+ features a 7.1+2 Channel High Definition Audio (HDA) (J46) codec that provides 10 DAC channels, simultaneously supporting 7.1 sound playback and two channels of independent stereo sound output (multiple streaming) through the front panel stereo out for the front L&R, rear L&R, center and subwoofer speakers. This feature is activated with an Advanced software included 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.)

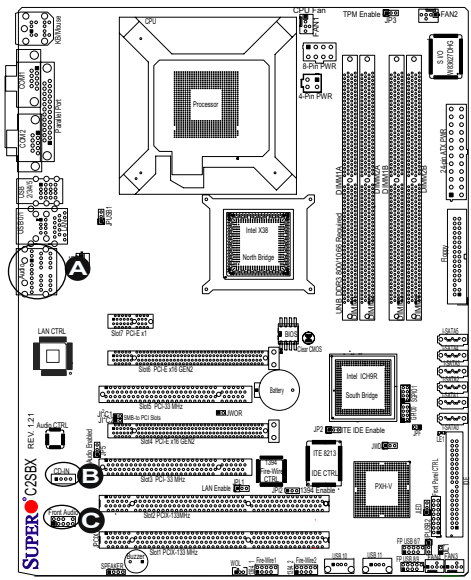


CD and Auxiliary Audio Headers

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 Definitions

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

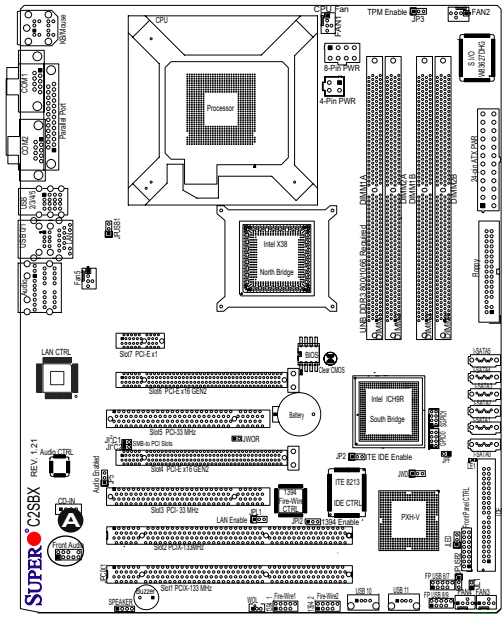


A. HD Audio
B. CD-In
C. Front Panel Audio

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 at right for pin definitions.

HD Front Panel Audio Pin Definitions	
Pin#	Signal
1	MIC_L
2	AUD_GND
3	MIC_R
4	FP_Audio-Detect
5	Line_2_R
6	Ground
7	FP_Jack-Detect
8	Key
9	Line_2_L
10	Ground



A. Front Panel Audio

IEEE 1394a Connection

JFW1 and JFW2 provide the IEEE 1394a connections on the motherboard. See the tables on the right for pin definitions.

JFW1
Pin Definitions

Pin#	Defin.	Pin#	Defin
1	PTPA0+	2	PTPA0-
3	GND	4	GND
5	PTPB0+	6	PTPB0-
7	PWR 1394a	8	PWR 1394a
		10	ZX

JFW2
Pin Definitions

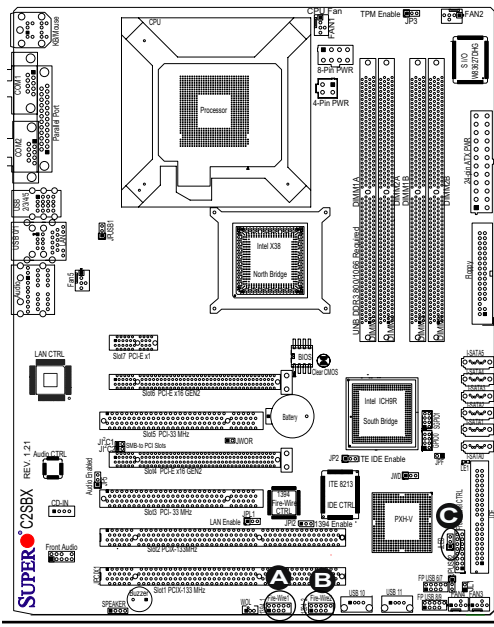
Pin#	Defin.	Pin#	Defin
1	PTPA1+	2	PTPA1-
3	GND	4	GND
5	PTPB1+	6	PTPB1-
7	PWR 1394a	8	PWR 1394a
		10	ZY

Power LED

The Power LED connector is designated JLED. This connection is used to indicate that power is 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

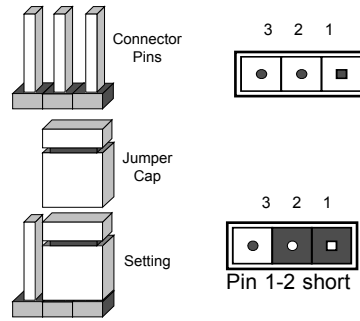


A. IEEE 1394 1
B. IEEE 1394 2
C. PWR LED

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 the pins, and "Open" means the jumper is off the pins.

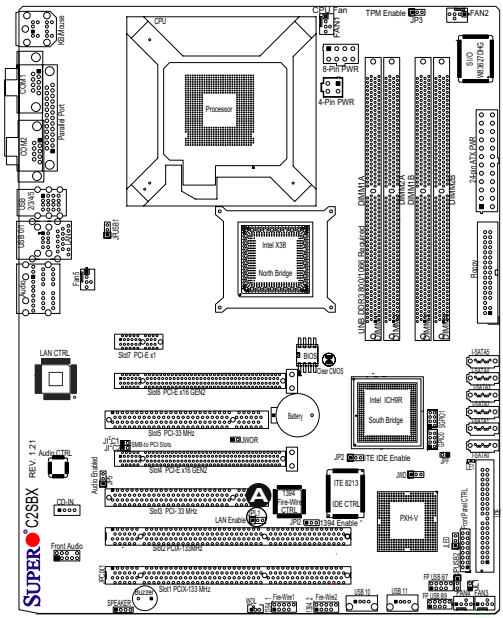


GLAN Enable/Disable

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

A. GLAN Port Enable



CMOS Clear

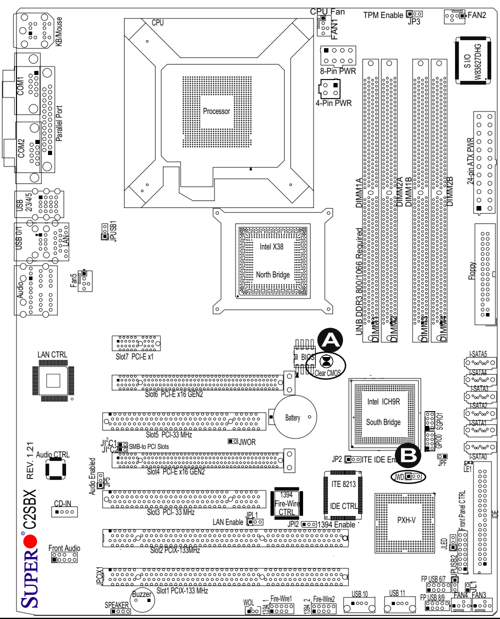
JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before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

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord, and then short JBT1 to clear CMOS.

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

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



A. Clear CMOS

B. Watch Dog Enable

Audio Enable

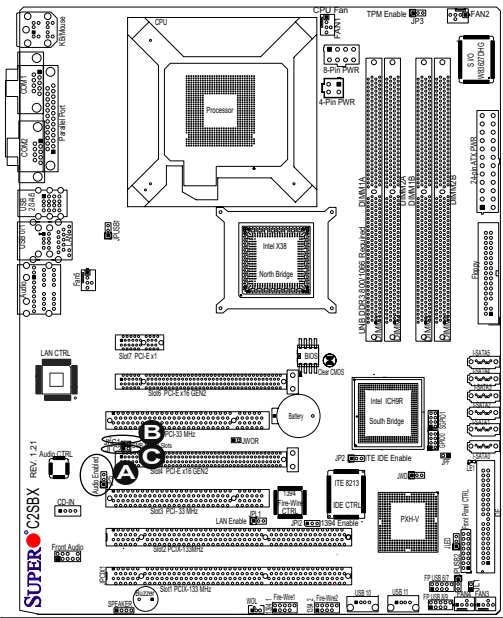
JPAC enables or disables the onboard audio connections. See the table on the right for jumper settings.The default setting is Enabled.

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

SMBus to PCI/PCI-E Slots

Jumpers JI^{2}C1/JI^{2}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. Audio Enable

B. JI^{2}C1

C. JI^{2}C2

IDE Enable/Disable

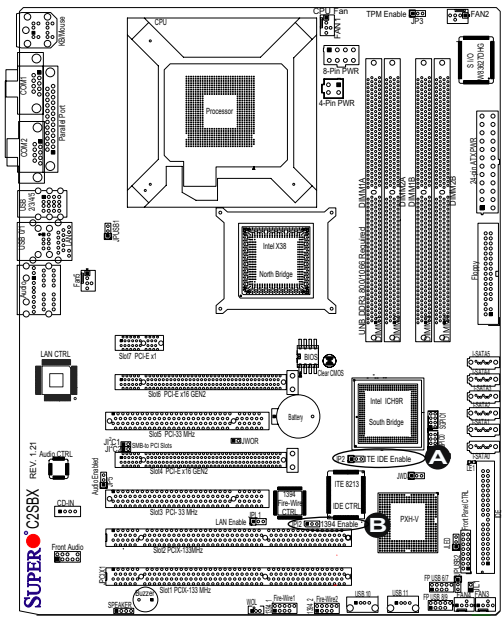
JP2 enables or disables the IDE connector on the motherboard. See the table on the right for jumper settings. The default setting is Enabled.

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

IEEE 1394a Enable

JPI2 allows the user to use the onboard IEEE 1394a connections. Close Pins 1 and 2 of this jumper to use this feature. See the table on the right for jumper settings. The default setting is Enabled.

1394a Enable Jumper Settings	
Pin#	Definition
1-2	Enabled (default)
2-3	Disabled



A. IDE Enable

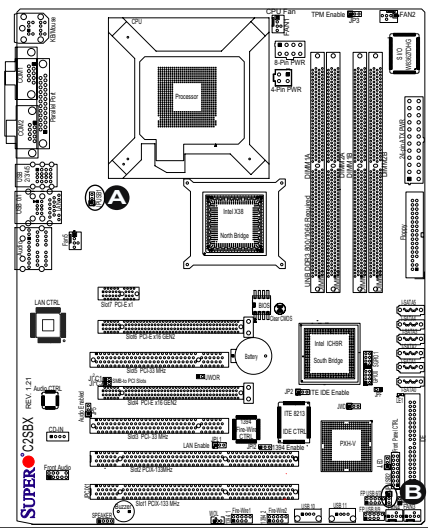
B. IEEE 1394a Enable

USB Wake-Up

Use JPUSB jumpers to enable the function of "System Waking-Up via USB devices". These jumpers allow 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. See the table on the right for jumper settings and jumper connections. **Note**: JPUSB1 is for Back Panel USB ports: 0/1/2/3/4/5, and JPUSB2 is for Front Panel USB ports: 6/7/8/9/10/11.

Note: The default jumper setting for JPUSB1/ JPUSB2 is set to "Disabled" by closing both Pin 2 and Pin 3. However, when the USB Wake-Up feature is enabled in the BIOS, and the selected USB ports are also enabled via the JPUSB jumpers, please be sure to remove all other USB devices from the USB ports whose USB jumpers are set to Disabled before the system goes into the standby mode.

USB Wake-Up Enable Jumper Settings	
Pin#	Definition
1-2	Enabled
2-3	Disabled (default)



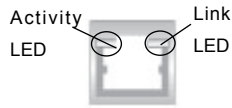
A. JPUSB1

B. JPUSB2

2-8 Onboard Indicators

GLAN LEDs

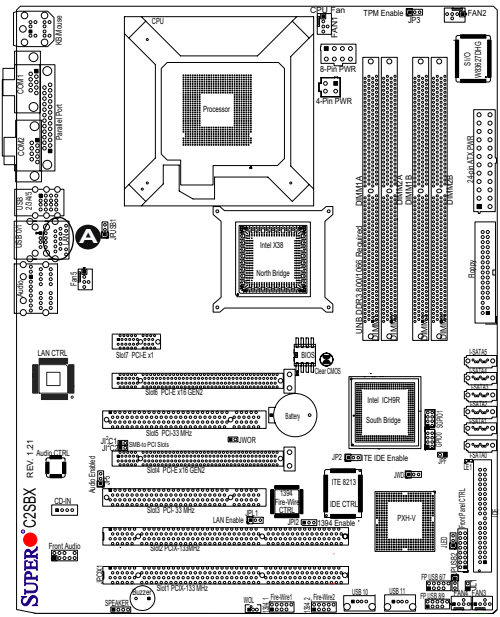
A Gigabit-LAN port is (J11) located above USB Port 1/2 on the I/O Backpanel. This Gigabit Ethernet LAN port has two LEDs. The green LED indicates activity, while the Link LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.



(Rear View: When facing the rear side of the chassis)

GLAN Activity Indicator LED Setting		
Color	Status	Definition
Green	Flashing	Active

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

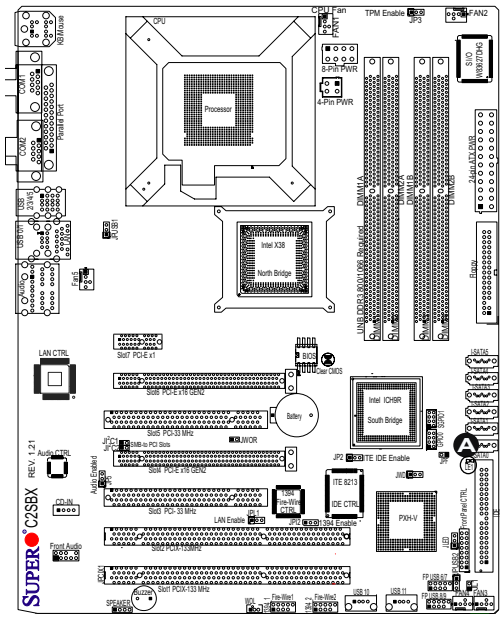


A. GLAN Port1 LEDs

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 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) Pin Definitions	
LED Color	Definition
Off	System Off
On	Standby Power On
Green	System On



A. Power LED

2-9 Parallel Port, Floppy Drive and IDE Hard Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

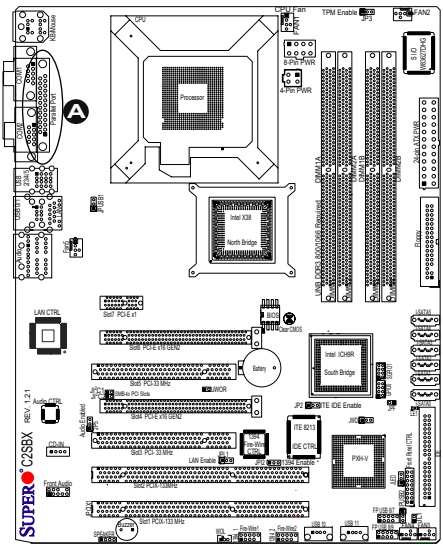
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Parallel (Printer) Port Connector

The parallel (printer) port is located at J30. See the table on the right for pin definitions.

Parallel (Printer) Port Connector Pin Definitions

Pin#	Definition	Pin #	Definition
1	Strobe-	2	Auto Feed-
3	Data Bit 0	4	Error-
5	Data Bit 1	6	Init-
7	Data Bit 2	8	SLCT IN-
9	Data Bit 3	10	GND
11	Data Bit 4	12	GND
13	Data Bit 5	14	GND
15	Data Bit 6	16	GND
17	Data Bit 7	18	GND
19	ACK	20	GND
21	BUSY	22	Write Data
23	PE	24	Write Gate
25	SLCT	26	NC



A. Parallel Port

I-SATA Connectors

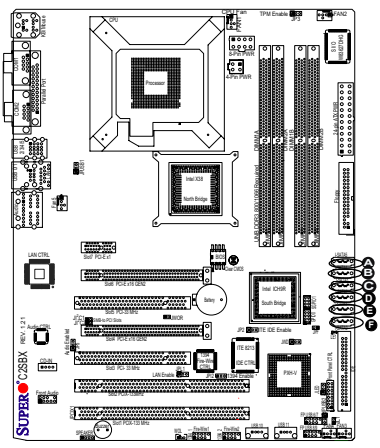
Six Serial ATA (SATA) Connectors (JS0-JS5) are located on the motherboard to provide serial link connections for faster data transmission than that of the traditional Parallel ATA. These SATA connectors are supported by the Intel ICH9R Chip (South Bridge). See the table on the right for pin definitions.

SATA Connectors Pin Definitions

Pin#	Signal
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	Ground

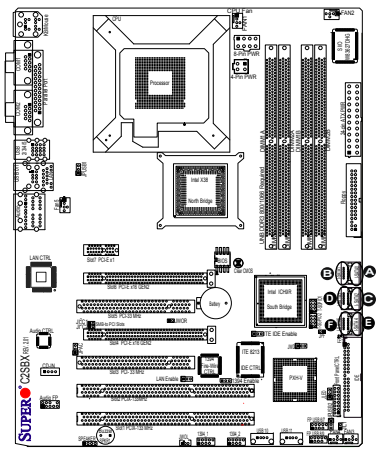
(For the PCB Rev. 1.21 or older models)

A. I-SATA 0
B. I-SATA 1
C. I-SATA 2
D. I-SATA 3
E. I-SATA 4
F. I-SATA 5



(For the PCB Rev. 2.01 or new models)

A. I-SATA 0
B. I-SATA 1
C. I-SATA 2
D. I-SATA 3
E. I-SATA 4
F. I-SATA 5

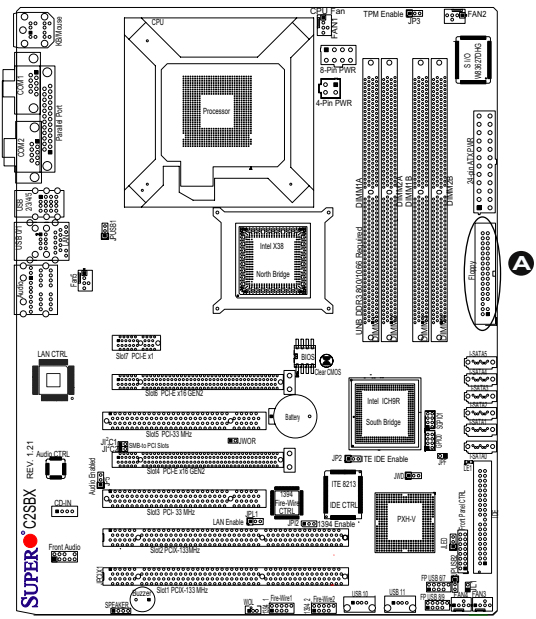


Floppy Connector

The floppy connector is located at J27. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions (Floppy)

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette



A. Floppy

IDE Connector

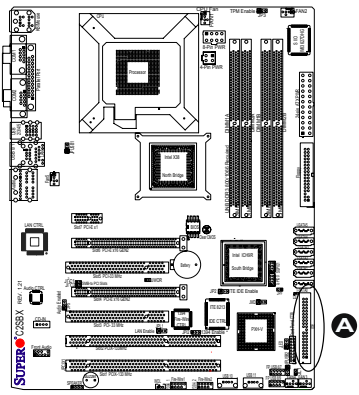
An ITE IDE Connector is located at J3 on the C2SBX/C2SBX+. Be sure to close Pin 1 and Pin 2 of JP2 to enable the IDE connectors before using this connector. (Please refer to the jumper section for more details.) See the table on the right for pin definitions.

IDE Drive 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

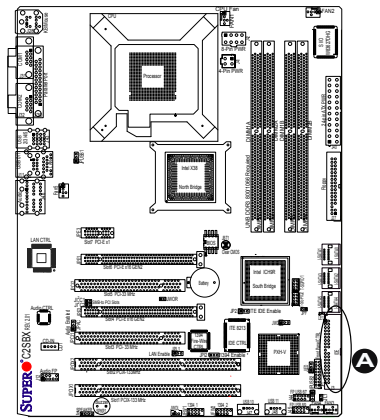
(For the PCB Rev. 1.21 or older models)

A. IDE



(For the PCB Rev. 2.01 or new models)

A. IDE



Notes

Chapter 3
Troubleshooting

3-1 Troubleshooting Procedures

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

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
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. Make sure the 8-pin 12v power connector at J42 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.

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.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. You should be using unbuffered DDR3 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, Supermicro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our 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 Supermicro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration

  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, 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 C2SBX/C2SBX+ supports **unbuffered,** DDR3 1600/1333/1066/800 MHz memory modules. See Section 2-4 for details on installing memory.

Question: When I plug in my 1600 MHz XMP DDR3 memory into my C2SBX/C2SBX+ motherboard, it only shows that it's running at 1333MHz or 1066 MHz. How can I make it work at 1600MHz?

Answer: The C2SBX motherboard does not support 1600MHz XMP memory. However for the C2SBX+, please enable 1600MHz XMP mode in the BIOS:

Enter the BIOS setup, go to Advanced -> Advanced Chipset Control -> XMP Function and select “Extreme”.

Note: If the C2SBX+ motherboard detects that the memory installed is not suited for 1600MHz XMP operation, the BIOS activates a protection routine to lower its clock speed to 1066MHz or 1333MHz automatically. This is to protect the system so it can still boot with the proper clock speed.

Question: When I plug in my 1600 MHz XMP DDR3 memory into my C2SBX+ motherboard, the system hangs. How can I make it work at 1600MHz?

Answer: This is an issue with some memory vendors. Insert the memory module in the motherboard's black-colored slots.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our 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. Select your motherboard model and download the BIOS (.rom) file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You may choose the zip file or the .exe file. If you choose the zipped BIOS file, please unzip the BIOS file onto a bootable device or a USB pen/thumb drive. To flash the BIOS, run the batch file named "flash.bat" with the new BIOS .rom file from your bootable device or USB pen/thumb drive. Use the following format:

F:\> flash xxxxxxxx.rom <Enter>

Note: Be sure to insert a space immediately after "flash" and use only the file named “flash.bat” to update the BIOS.

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

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

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

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

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

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

Question: How do I utilize the onboard HD sound?

Answer: The onboard HD sound available on the C2SBX/C2SBX+ 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: 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.

Notes

Chapter 4
BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the C2SBX/C2SBX+. 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 Supermicro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

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 BIOS to prevent possible boot failure.

Note: The SPI BIOS chip used in the C2SBX/C2SBX+ is not removable. To replace a damaged SPI BIOS chip, please send the motherboard to Supermicro for repair.

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 the 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

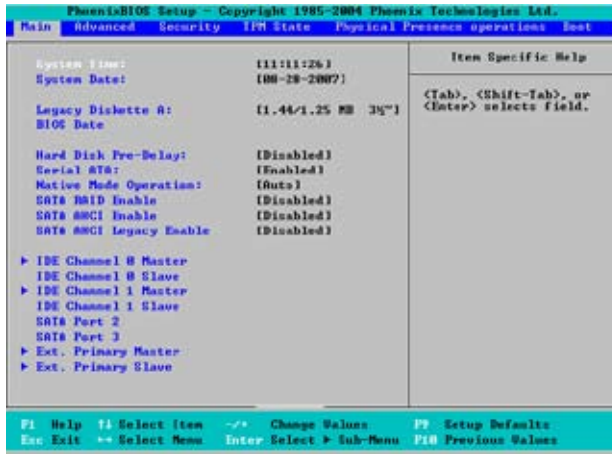
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

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.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

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 need 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 Serial ATA. The options are Disabled and **Enabled.**

Native Mode Operation

Select Serial ATA to use the SATA mode, or select Auto to use the 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 become available. If 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 SATA Host RAID firmware. Select Intel to use the Intel HostRAID firmware. The default setting is **Intel.**

SATA AHCI

Select Enable to enable the function of Serial ATA Advanced Host Interface. (Take caution when 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

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

▶IDE Primary Master/Slave, IDE Secondary Master/Slave, SATA Port3 and SATA Port4, Extended Primary Master/Slave

These settings allow the user to set the parameters of IDE Primary Master/Slave, IDE Secondary Master/Slave, SATA Port3/SATA Port4 and Extended Primary Master/Slave slots. 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:

Type

This option allows the user to select the type of IDE hard drive. Select **Auto** to allow the BIOS to automatically configure the parameters of the HDD installed on a slot. Enter a number between 1 to 39 to select a predetermined HDD type. Select User to allow the user to enter the parameters of the HDD installed. 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 drive.

Cylinders: This item indicates the number of cylinders detected by the BIOS.

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.

LBA Format

The following items will be displayed by the BIOS:

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 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 Primary 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 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 configure the Ultra DMA Mode setting. 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 detected in the system.

Extended Memory

This display informs you how much extended memory is detected 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

Access the submenu to make changes to the following settings.

Quiet Mode

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

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

Select Yes to **use** the ACPI (Advanced Configuration and Power Interface) power management feature on your system. The options are **Yes** and No.

ACPI Sleep Mode

This feature allows you to decide which ACPI (Advanced Configuration and Power Interface) power management mode to use when in the sleep mode. The options are **S1,** S3 and S1S3.

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# of PCI slots. The options are On and **Off**.

PS2 Keyboard (KB)/Mouse Wake Up

Select Enable to "wake your system up" from the S3, S4 or S5 state. If this feature is set to Enabled, you will also need to enable the JPWAKE jumper by closing pins 1-2. (Please refer to Pg. 1-5 and Chapter 2 for more details). The default setting is **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**.

Watch Dog

If enabled, this option will 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 bootup.

▶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 default setting is **Default**.

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

The feature allows the user to set high ratio internal frequency multiplier for 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 CMOS to recover the system.)

Hyper-threading (Available when supported by the CPU.)

Set to Enabled to use the Hyper-Threading 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.**

Single Logical Processing

Set to Enabled if you want to use a single-core processor. The options are Enabled and **Disabled.**

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.

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

Set to Enabled to keep the content of the last instruction Operating Code (OP Code) in the floating point (FP) state. 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 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 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 CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

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 Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are E**nabled** and Disabled. **Note:** please refer to Intel's web site for detailed information.

Intel® 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 physical computer. The options are Enabled and **Disabled**. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's 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 hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

Enhanced 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 processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The default setting is **GV1/GV3**. Please refer to Intel's web site for detailed information.

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

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

Memory Reclaiming

Select Enable to enable the functionality of Memory Remapping above 4GB. 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 and PCI devices will be selected. If set to PEG, PEG devices will be selected. If set to PCI, PCI devices will be selected.

XMP Function (C2SBX+ Only)

This item allows the user to choose the Intel Extreme Memory Profile (XMP) Specification which enables DDR3 memory to operate beyond the standard JEDEC (Joint Electron Device Engineering Council) SPD specification. Select Extreme for 1600 MHz XMP memory operation and better system performance. Otherwise, leave this setting at **Auto**. The options are **Auto**, Extreme and Disabled.

Azalia Audio

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

High Precision Event Timer

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 options for this feature are Yes and **No**.

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.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

USB Host Controller 1

This feature allows the user to configure the USB Host Controller setting for USB Device #29 Functions 0, 1, 2, 3, 7. The options are **Enabled** and Disabled.

USB Host Controller 2

This feature allows the user to configure the USB Host Controller setting for USB Device #26 Functions 0, 1, 2, 7. The options are **Enabled** and Disabled.

▶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 to allow the 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 to allow the 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 the 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 the 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 the 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 PCI devices.

PCI-X(s) Frequency

When set to **Enabled,** this feature allows the user to set the bus frequency for a PCI-X slot for it to work properly. The options are **Auto,** PCI 33MHz, PCI 66MHz, PCI-X 66MHz, PCI-X 100MHz and PCI-X 133MHz.

▶PCI-X Slot#1- PCI-X Slot#2

Access the submenu to change to the following items:

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-throughout 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 32 Slot#3- PCI 32 Slot#5

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-throughout 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 x1

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-throughout 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**.**

▶Onboard LAN

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-throughout 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**.**

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

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

Serial Port A

This setting allows you to assign control of 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 assign control of 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.

Parallel Port

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS- or OS- controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

Interrupt

This setting allows you to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

Mode

This feature allows you to specify the parallel port mode. The options are Output only, Bi-Directional, EPP and **ECP**.

DMA Channel

This item allows you to specify the DMA channel for the parallel port. The options are DMA1 and **DMA3**.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- and OS- controlled).

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set the BAUD rate for the console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

Console Type

This item allows you to set the console redirection type. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, VT-UTF8 and ASCII.

Flow Control

This item allows you to select the flow control option for the console. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to decide how console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

This feature allows you to decide if you want to continue with console redirection after the POST routine. The options are On and **Off**.

▶Hardware Monitoring

CPU Overheat Alarm

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

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

The options are:

The **Default Alarm Setting**: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5ºC above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling.

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

CPU Temperature

The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

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

User intervention: No action required.

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

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

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

The Default Alarm – the Overheat LED and system buzzer will activate if the High condition continues for some time after it is reached. The CPU fan will run at full speed to bring the CPU temperature down. If the CPU temperature still increases even with the CPU fan running at full speed, the system buzzer will activate and the Overheat LED will turn on.

The Early Alarm – the Overheat LED and system buzzer will be activated exactly when the High level is reached. The CPU fan will run at full speed to bring the CPU temperature down.

Note: In both the alarms above, please take immediate action as shown below. See CPU Overheat Alarm to modify the above alarm settings.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems. Note: the system may shut down if it continues for a long period to prevent damage to the CPU.

Notes: The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is that each CPU is embedded by a unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline by which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send its 'Temperature Tolerance' to the motherboard resulting in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature

This feature displays the absolute system temperature (i.e., 34°C).

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.*

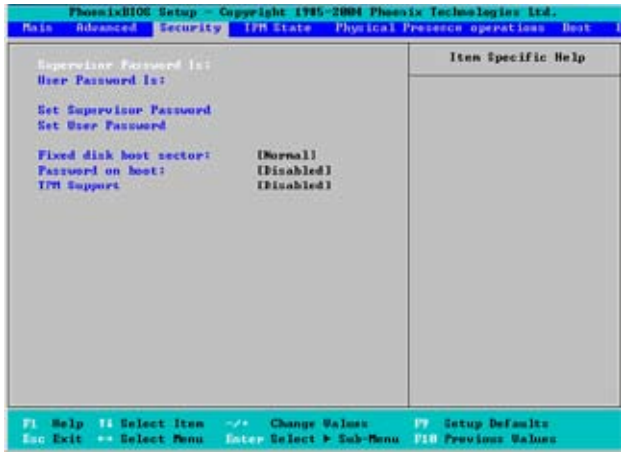
Voltage Monitoring

The following items will be monitored and displayed:

Vcore A
VDIMM
-12V/+12V
+5V
+3.3VDD/+3.3Vsb
Vbat

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

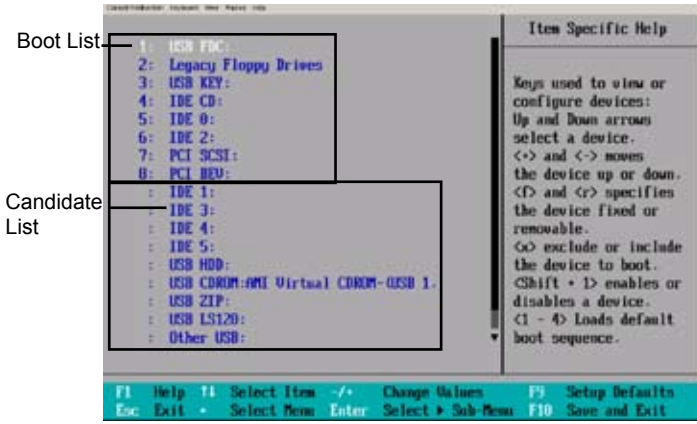
Select **Normal** to enable the feature of Write-Protect to protect the boot sector on the hard drives from virus intrusion.

Password on Boot

When set to Enabled, a user will need to key-in a password to enter the system at system boot. The options are Enabled (password required) and Disabled (password not required).

4-6 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.

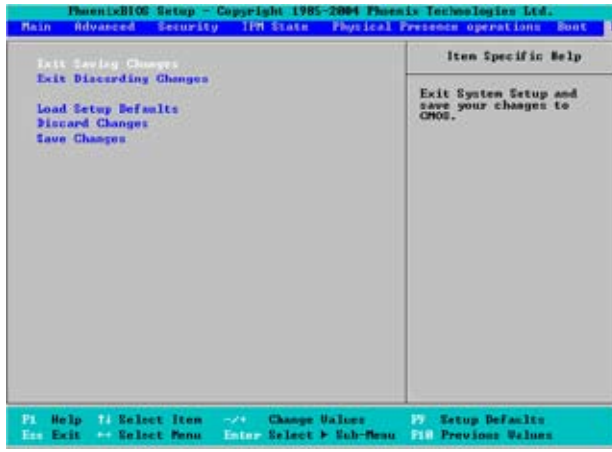


Boot Priority Order/Excluded from Boot Orders

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.

4-7 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

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a 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

1 continuous beep with front panel Overheat LED on - system overheat

Notes

Appendix B

Installing the Windows OS

After all the hardware has been installed, you must first configure Intel South Bridge RAID settings before you install the OS and other software drivers. To install the Linux OS or to configure RAID settings, please refer to the OS Installation or RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1 Installing the Windows XP/2003 OS for systems with RAID Functions

1. Insert Microsoft's Windows XP/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"ITE RAID XP/2003 Driver for IDE" into Drive A: and press the <Enter> key.

5. When the Windows XP/2003 Setup screen appears, press "S" to specify additional device(s).

6. Insert the driver diskette-"Intel AA RAID XP/2003 Driver for ICH9R into Drive A: and press the <Enter> key.

7. Select the Intel(R)82801GR/GH *SATA RAID Controller* from the list indicated in the XP/2003 Setup Screen, and press the <Enter> key.

8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

9. From the Windows XP/2003 Setup screen, press the <Enter> key. The XP/2003 Setup will automatically load all device files and then, continue the Windows XP/2003 installation.

1. After the Windows XP/2003 Installation is completed, the system will automatically reboot.

2. Insert the Supermicro Setup CD that came with the package into the CD Drive during system reboot, and the main screen will appear.

B-2 Installing the Windows XP/2000/2003 OS to Systems without RAID Functions

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"ITE RAID XP/2000/2003 Driver for IDE" into Drive A: and press the <Enter> key.

5. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

6. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

7. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

Appendix C

Installing Other Software Programs and Drivers

C-1 Installing Drivers

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

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.

2. To configure ITE RAID settings, please refer to the ITE RAID documentation included in this CD.

C-2 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)

Note: SD III Software Revision 1.0 can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.

Notes

(Disclaimer Continued)

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