SUPER®

# SUPER P3TSSA
# SUPER P3TSSR
# SUPER P3TSSE

## USER'S MANUAL

Revision 1.0c

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**Printed in the United States of America**

# Preface

## About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER SUPER P3TSSA/P3TSSR/P3TSSE motherboards. The SUPER P3TSSA/P3TSSR/P3TSSE supports single Intel® Pentium™ III FCPGA 500 MHz-1.4 GHz processors (including low power Pentium™ III processors) at front side bus speeds of 133 and 100 MHz, and FCPGA and FCPGA2 Celeron™ processors at front side bus speeds of 100 and 66 MHz. Please refer to the support section of our web site (http://www.supermicro.com/TechSupport.htm) for a complete listing of supported processors. Intel® FCPGA processors are housed in a 370-pin package.

## Manual Organization

**Chapter 1** includes a checklist of what should be included in your mainboard box, describes the features, specifications and performance of the SUPER P3TSSA/P3TSSR/P3TSSE mainboards and provides detailed information about the chipset.

**Chapter 2** begins with instructions on handling static-sensitive devices. Read this chapter when you want to install the processor and DIMM memory modules and when mounting the mainboard in the chassis. Also refer to this chapter to connect the floppy and hard disk drives, the IDE interfaces, the parallel and serial ports and the twisted wires for the power supply, the reset button, the keylock/power LED, the speaker and the keyboard.

If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the setup configuration stored in CMOS. For quick reference, a general FAQ (Frequently Asked Questions) section is provided. Instructions are also included for contacting technical support. In addition, you can visit our web site at www.supermicro.com/techsupport.htm for more detailed information.

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

**Appendix A** lists BIOS error beep codes.

**Appendix B** provides POST checkpoint codes.

# Table of Contents

## 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.

One (1) Supermicro Mainboard

One (1) ATA100/66/33 ribbon cable for IDE devices

One (1) floppy ribbon cable for (1) 5.25-inch floppy and (2) 3.5-inch floppy drives

One (1) serial COM 2 cable (retail box only)

One (1) Supermicro CD or diskettes containing drivers and utilities

One (1) User's/BIOS Manual

SCSI Accessories (P3TSSR only):

One (1) SCSI Manual

One (1) set of SCSI driver diskettes

One (1) 68-pin LVD SCSI cable (retail box only)

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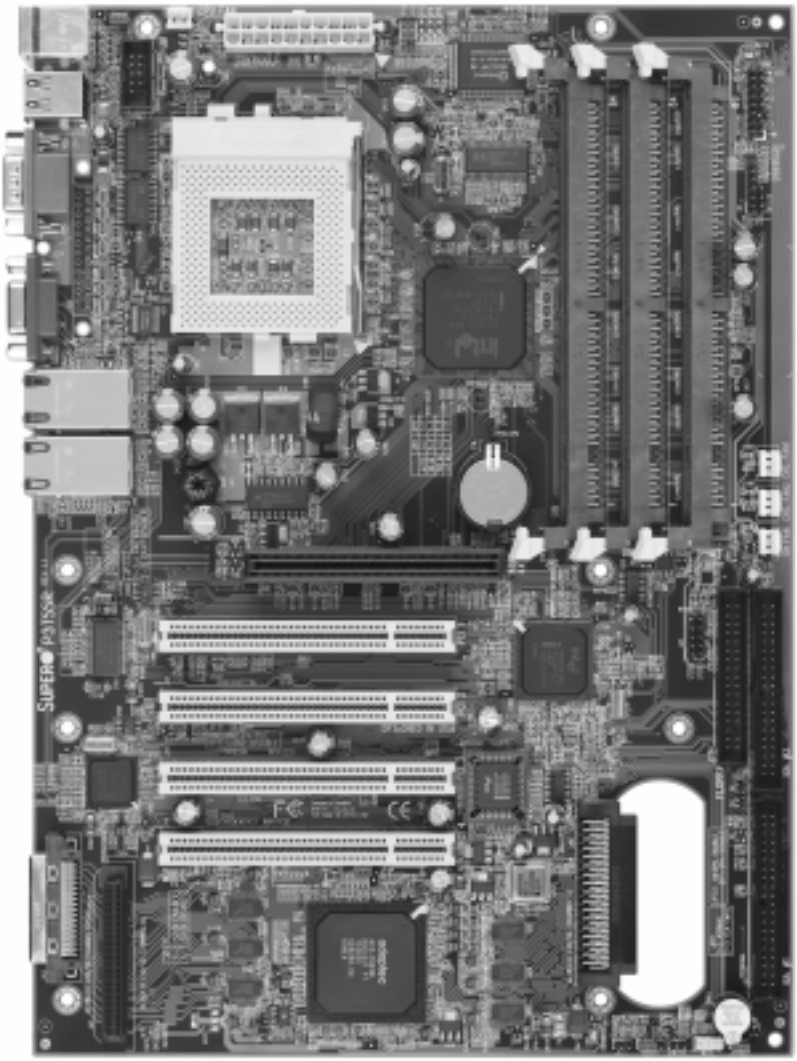
## SUPER P3TSSA

**Figure 1-1. SUPER P3TSSA Image**

## SUPER P3TSSR

**Figure 1-2. SUPER P3TSSR Image**



## SUPER P3TSSE

**Figure 1-3. SUPER P3TSSE Image**

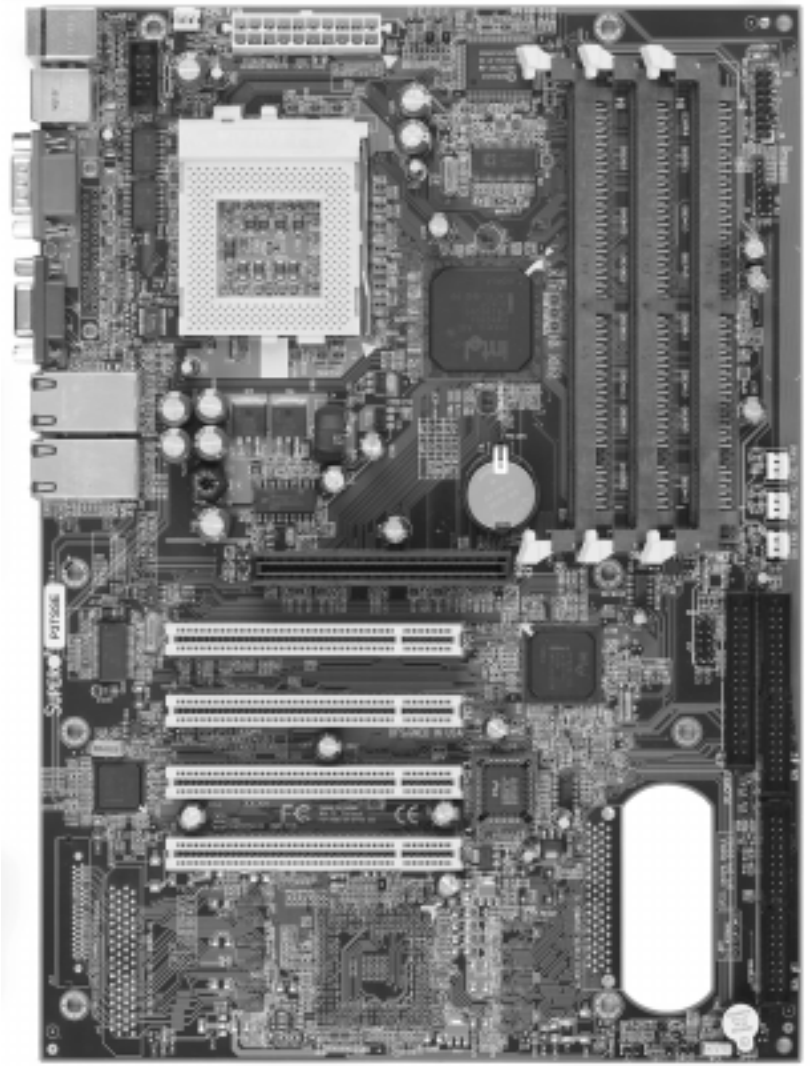
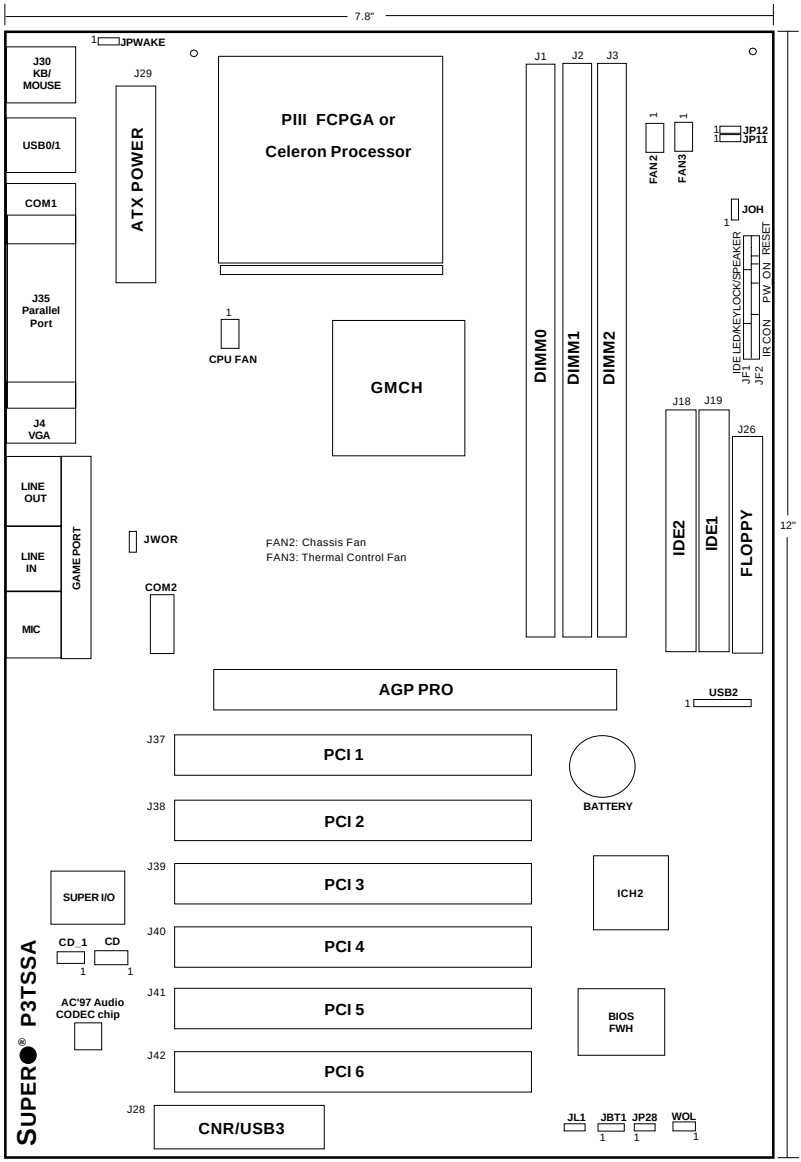


**Figure 1-4. SUPER P3TSSA Layout**
(not drawn to scale)



## P3TSSA Quick Reference

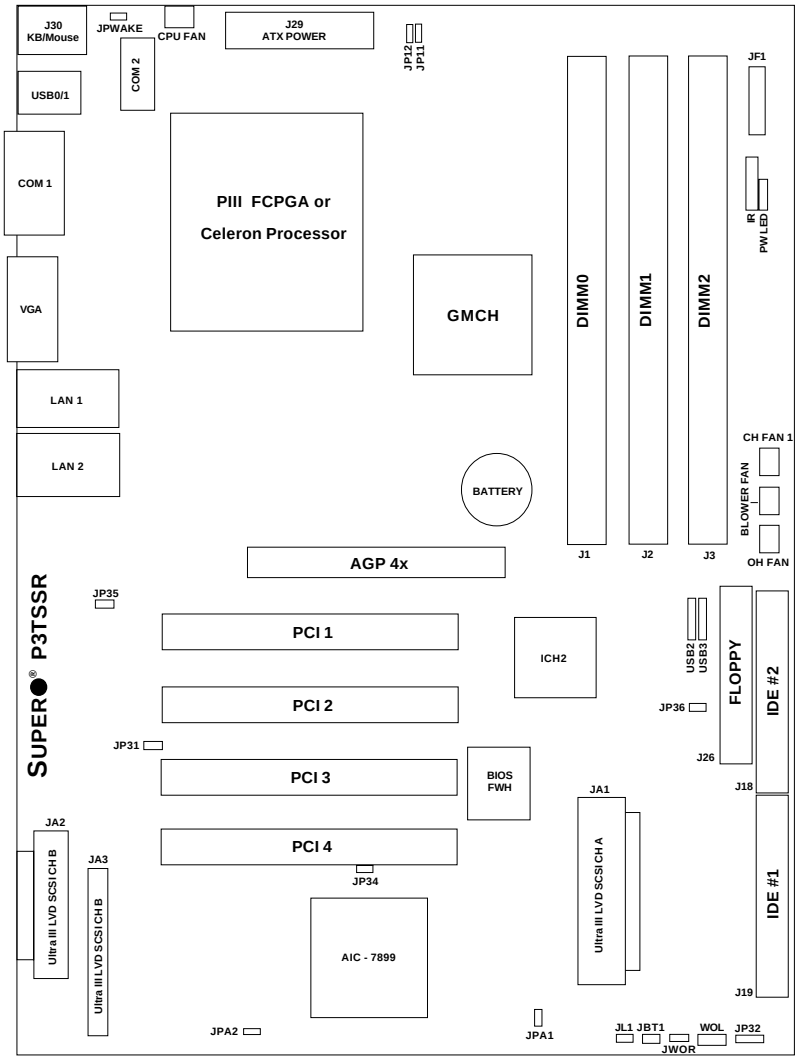
| Jumpers | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | Pins 1-2 (Normal) |
| JP11/12 | Front Side Bus Speed | Both: Pins 1-2 (Auto) |
| JP28 | AC97 Audio | Pins 1-2 (Enabled) |
| JPWAKE | Keyboard Wake-Up | Pins 1-2 (Disabled) |

| Connectors | Description |
|---|---|
| CD | Audio CD Input (large connector) |
| CD_1 | Audio CD Input (small connector) |
| CNR | Communications/Networking Riser |
| COM1/COM2 | COM1/COM2 Serial Port Connector |
| CPU FAN | CPU Fan Header |
| FAN2 | Chassis Fan Header |
| FAN3 | Thermal Control Fan Header |
| GAME | Game Port |
| J1, J2, J3 | Memory (DIMM) Slots |
| J18, J19 | IDE Hard Disk Drive Connectors |
| JP26 | Floppy Disk Drive Connector |
| J29 | ATX Power Connector |
| J30 | PS/2 Keyboard/Mouse |
| J35 | Parallel Printer Port |
| JF1, JF2 | Front Control Panel |
| JL1 | Chassis Intrusion Header |
| JOH | Overheat LED |
| JWOR | Wake-On-Ring Header |
| LINE IN | Audio In Connector |
| LINE OUT | Audio Out (Speaker) Connector |
| MIC | Microphone Input |
| USB0/1 | Universal Serial Bus Ports |
| USB2 | Universal Serial Bus Header |
| WOL | Wake-on-LAN Header |

See Chapter 2 for details on the above jumpers and connectors and the Front Control Panel connectors (JF1JF2).

Jumpers not indicated are for test purposes only.

**Figure 1-5. SUPER P3TSSR Layout**
(not drawn to scale)



## P3TSSR Quick Reference

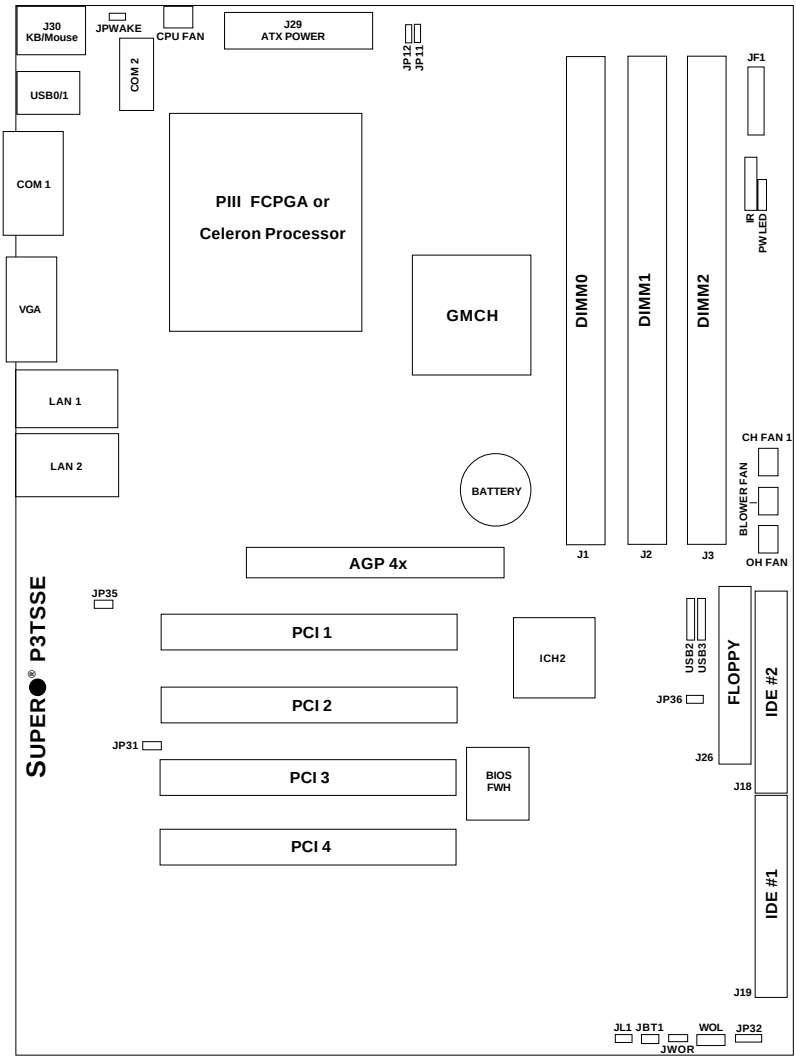
| Jumpers | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | Pins 1-2 (Normal) |
| JPA1 | SCSI Channel A Termination | Open (Terminated) |
| JPA2 | SCSI Channel B Termination | Open (Terminated) |
| JP11/12 | Front Side Bus Speed | Both: Pins 1-2 (Auto) |
| JP31 | LAN2 Enable/Disable | Closed (Enabled) |
| JP34 | SCSI Enable/Disable | Pins 1-2 (Enabled) |
| JP35 | LAN1 Enable/Disable | Closed (Enabled) |
| JP36 | Speaker/Watchdog Enable | Closed (Speaker) |
| JPWAKE | Keyboard Wake-Up | Pins 1-2 (Disabled) |

| Connectors | Description |
|---|---|
| CH FAN 1 | Chassis Fan Header |
| COM1/COM2 | COM1/COM2 Serial Port Connector |
| CPU FAN | CPU Fan Header |
| IR | Infrared Device Header |
| J1, J2, J3 | Memory (DIMM) Slots |
| J18, J19 | IDE Hard Disk Drive Connectors |
| J29 | ATX Power Connector |
| J30 | PS/2 Keyboard/Mouse Ports |
| J35 | Parallel Printer Port |
| JF1 | Front Control Panel Header |
| JL1 | Chassis Intrusion Header |
| JP26 | Floppy Disk Drive Connector |
| JP32 | Speaker Header |
| JWOR | Wake-On-Ring Header |
| LAN1/LAN2 | Ethernet Ports |
| OH FAN | Overheat Fan Header |
| PW LED | Power LED Header |
| USB0/1 | Universal Serial Bus Ports |
| USB2/3 | Universal Serial Bus Headers |
| VGA | VGA (Monitor) Port |
| WOL | Wake-on-LAN Header |

See Chapter 2 for details on the above jumpers and connectors and the Front Control Panel connectors (JF1).

Jumpers not indicated are for test purposes only.

**Figure 1-6. SUPER P3TSSE Layout**
(not drawn to scale)



## P3TSSE Quick Reference

| Jumpers | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | Pins 1-2 (Normal) |
| JP11/12 | Front Side Bus Speed | Both: Pins 1-2 (Auto) |
| JP31 | LAN2 Enable/Disable | Closed (Enabled) |
| JP35 | LAN1 Enable/Disable | Closed (Enabled) |
| JP36 | Speaker/Watchdog Enable | Closed (Speaker) |
| JPWAKE | Keyboard Wake-Up | Pins 1-2 (Disabled) |

| Connectors | Description |
|---|---|
| CH FAN 1 | Chassis Fan Header |
| COM1/COM2 | COM1/COM2 Serial Port Connector |
| CPU FAN | CPU Fan Header |
| IR | Infrared Device Header |
| J1, J2, J3 | Memory (DIMM) Slots |
| J18, J19 | IDE Hard Disk Drive Connectors |
| J29 | ATX Power Connector |
| J30 | PS/2 Keyboard/Mouse Ports |
| J35 | Parallel Printer Port |
| JF1 | Front Control Panel Header |
| JL1 | Chassis Intrusion Header |
| JP26 | Floppy Disk Drive Connector |
| JP32 | Speaker Header |
| JWOR | Wake-On-Ring Header |
| LAN1/LAN2 | Ethernet Ports |
| OH FAN | Overheat Fan Header |
| PW LED | Power LED Header |
| USB0/1 | Universal Serial Bus Ports |
| USB2/3 | Universal Serial Bus Headers |
| VGA | VGA (Monitor) Port |
| WOL | Wake-on-LAN Header |

See Chapter 2 for details on the above jumpers and connectors and the Front Control Panel connectors (JF1).

Jumpers not indicated are for test purposes only.

## Motherboard Features

**CPU**

- Single Pentium® III 500 MHz - 1.4 GHz processors at front bus speeds of 133/100 MHz, and single FCPGA and FCPGA2 Celeron processors at 100/66 MHz front side bus speeds

  **Note: Please refer to the support section of our web site for a complete listing of supported processors. http://www.supermicro.com/TechSupport.htm**

**Memory**

- Three 168-pin DIMM sockets to support up to 512 MB unbuffered SDRAM. PC133 and PC100 SDRAM are fully supported.
  P3TSSR only: DIMM sockets are positioned at 25 degrees for use in rackmount systems.

**Chipset**

- Intel 815E B-Step

**Expansion Slots**

| P3TSSA | P3TSSR | P3TSSE |
|---|---|---|
| • 6 32-bit PCI | 4 32-bit PCI | 4 32-bit PCI |
| • 1 4xAGP Pro | 1 4xAGP Pro | 1 4xAGP |
| • 1 CNR | | |

**BIOS**

- 4 Mb Firmware Hub AMI® Flash BIOS
- APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0, Plug and Play (PnP)

**PC Health Monitoring**

- Six onboard voltage monitors for CPU core, chipset voltage, +3.3v, +5v and ±12v
- Three-fan status monitor with firmware/software on/off control
- Environmental temperature monitor and control
- CPU fan auto-off in sleep mode
- Power-up mode control for recovery from AC power loss
- System overheat LED and control
- System resource alert
- Hardware BIOS virus protection
- Auto-switching voltage regulator for the CPU core

**ACPI/PC 98 Features**

- Microsoft® OnNow
- Slow blinking LED for suspend state indicator
- BIOS support for USB keyboard
- Real-time clock wake-up alarm
- Main switch override mechanism
- External modem ring-on

**Onboard I/O**

- AIC-7899 controller for dual channel Ultra 160 SCSI (P3TSSR only)
- Intel 82559 for onboard Ethernet (P3TSSR/P3TSSE only)
- 2 EIDE bus master interfaces support UDMA/100
- 1 floppy port interface (up to 2.88 MB)
- 2 Fast UART 16550A compatible serial ports
- 1 EPP/ECP (Enhanced Parallel Port/Extended Capabilities Port)
- 1 (each) PS/2 mouse and PS/2 keyboard ports
- 1 infrared port
- 4 USB ports (up to 3 on P3TSSA)

**Other**

- Selectable CPU and chassis fan speed control (set in BIOS)
- Internal/external modem ring-on
- Recovery from AC power loss control
- Wake-on-LAN (WOL)
- Multiple FSB clock frequency selections (set in BIOS)
- Direct AGP with optional AIMM 4 MB display cache

**CD Utilities**

- BIOS flash upgrade utility
- Drivers for 815/815E chipset utilities

**Dimensions**

- P3TSSA: ATX 12" x 7.8" (305 x 198 mm)
- P3TSSR: ATX 12" x 8.7" (305 x 221 mm)
- P3TSSE: ATX 12" x 7.8" (305 x 198 mm)

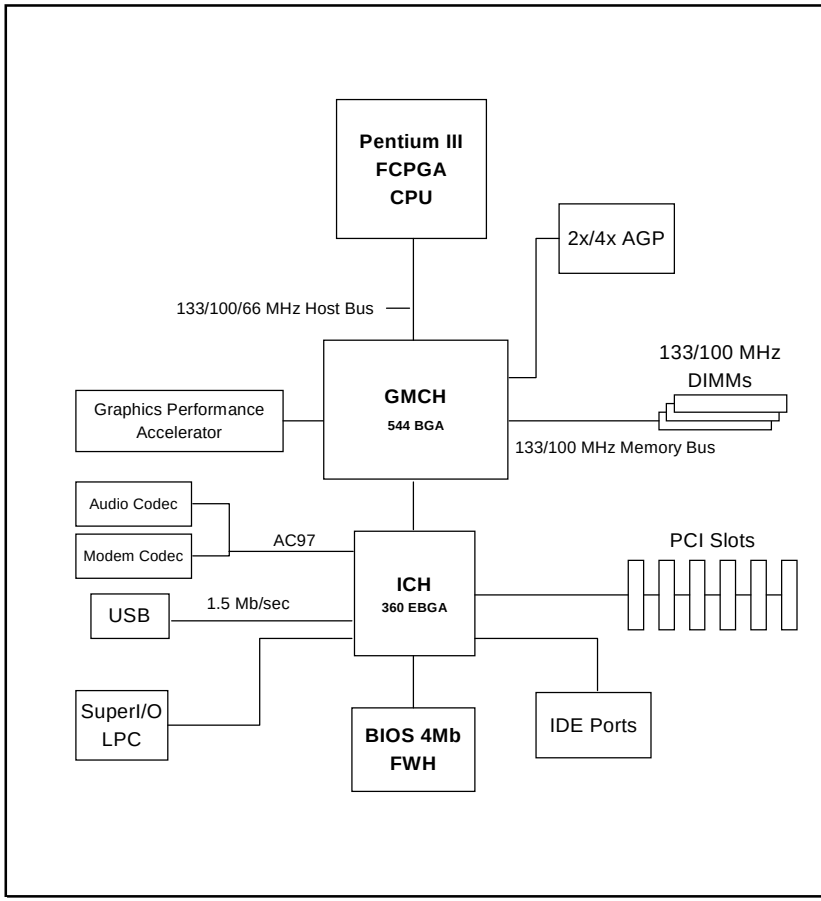



**Figure 1-7. 815E B-Step Chipset: System Block Diagram**

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

## 1-2 Chipset Overview

Intel's 815E B-Step chipset is made up of three main components: the Graphics and Memory Controller Hub (GMCH), the I/O Controller Hub (ICH) and the Firmware Hub (FWH). The GMCH integrates a 133/100/66 MHz system bus controller, a 2D/3D graphics accelerator (AGP2x/4x) discrete graphics card, a 133/100 MHz SDRAM controller and a high-speed hub architecture interface that communicates with the ICH2. The ICH2 integrates a UDMA/100 controller, USB controllers and other I/O functions (see below). The FWH stores both system and video BIOS and includes a Random Number Generator (RNG).

### Graphics and Memory Controller Hub (GMCH)

The GMCH includes the host (CPU) interface, DRAM interface, ICH2 interface and 4xAGP interface for the 815/815E chipset. It contains advanced power management logic and supports dual channels for DRAM. The AGP 2.0 interface supports 4x data transfers and operates at a peak bandwidth of 266 MB/sec. The MCH host interface bus runs at 133/100/66 MHz.

### I/O Controller Hub (ICH2)

The P3TSSA/P3TSSR/P3TSSE is based on the 815E B-Step chipset and has the more powerful ICH2, which includes UDMA/100 IDE controllers and two USB controllers that offer 24 Mbps of bandwidth across four USB ports. ICH2 also features an enhanced AC'97 interface that supports full surround sound for the Dolby Digital Audio used on DVDs.

### Firmware Hub (FWH)

The FWH is a component that brings added security and manageability to the PC platform infrastructure. This device includes an integrated Random Number Generator (RNG) for stronger encryption, digital signing and security protocols. The FWH stores both the system BIOS and video BIOS thereby eliminating a redundant nonvolatile memory component.

### 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 Loss Control" setting in the BIOS chapter of this manual to change this setting. The default setting is "Always OFF."

## 1-3 Special Features

### Communication and Networking Riser (P3TSSA only)

The CNR slot supports audio, modem and networking cards and provides interfaces that support multichannel audio, V.90 analog modems, home networking through a telephone line, Ethernet 10/100 T-base networking and future communications technologies.
Separating the sound and communications systems from the motherboard makes them less sensitive to noise.

## 1-4 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER P3TSSA/P3TSSR/P3TSSE.

### Seven Onboard Voltage Monitors for the CPU Core Voltage, Chipset Voltage, +3.3v, +5v and ±12v

The onboard voltage monitor scans these seven voltages continuously. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

### Three-Fan Status Monitor with Firmware/Software On/Off Control

The PC health monitor can check the RPM status of the cooling fans. The onboard 3-pin CPU and chassis fans are controlled by the power management functions. The thermal fan is controlled by the overheat detection logic.

### Environmental Temperature Control

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

### CPU Fan Auto-Off in Sleep Mode

The CPU fan activates when the power is turned on. It can be turned off when the CPU is in sleep mode. When in sleep mode, the CPU will not run at full power, thereby generating less heat.

### CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature is exceeded, both the overheat fan and the warning LED are triggered.

### System Resource Alert

This feature is available when used with Intel's LANDesk Client Manager (optional). It is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem.

### Hardware BIOS Virus Protection

The system BIOS is protected by hardware so that no virus can infect the BIOS area. The user can only change the BIOS content through the flash utility provided by SUPERMICRO. This feature can prevent viruses from infecting the BIOS area and destroying valuable data.

### Auto-Switching Voltage Regulator for the CPU Core

The auto-switching voltage regulator for the CPU core can support up to 20A of current and auto-sense voltage IDs ranging from 1.3v to 3.5v. This will allow the regulator to run cooler and thus make the system more stable.

## 1-5 ACPI/PC 99 Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system automatically to turn peripherals, such as CD-ROMs, network cards, hard disk drives and printers, on and off. This feature 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 both Windows 98, Windows NT and Windows 2000. You can check to see if ACPI has been properly installed by looking for it in the Device Manager, which is located in the Control Panel in Windows.

### Microsoft OnNow

The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for a PC that is always on but appears to be off and responds immediately to user or other requests.

### 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 a USB keyboard is the only keyboard in the system, it can be set to function as a normal keyboard during system boot-up.

### Real Time Clock Wake-Up Alarm

Although the PC may be perceived to be off when not in use, it is still capable of responding to preset wake-up events. In the BIOS, the user can set a timer to wake-up the system at a predetermined time.

### Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user depresses the power button, the system will enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Depressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just depress and hold the power button for four seconds. The power will turn off and the main power will not be provided to the motherboard.

### External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

### 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 motherboards have a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in BIOS. Note that Wake-On-Lan can only be used with 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.

The SUPER P3TSSA/P3TSSR/P3TSSE accommodates ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## 1-7 Super I/O

The 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 four 360 KB, 720 KB, 1.2 MB, 1.44 MB or 2.88 MB disk drives and data transfer rates of 250 Kbps, 500 Kbps or 1 Mbps.

It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. 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 rates of up to 115.2 Kbps as well as advanced speeds with baud rates of 250 Kbps, 500 Kbps or 1 Mbps to support higher speed modems.

The Super I/O supports one PC-compatible printer port (SPP), Bi-directional Printer Port (BPP), Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

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

The IRQs, DMAs and I/O space resources of the Super I/O can flexibly adjust to meet ISA PnP requirements, which suppport ACPI and APM (Advanced Power Management).

## Notes

# Chapter 2
# Installation

## 2-1 Static-Sensitive Devices

Electric-Static-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.

### 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 Processor Installation

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

The following pages cover the installation procedure. You should install the processor in the motherboard first, then install the motherboard in the chassis, then the memory and add-on cards, and finally the cables and drivers. Following the installation procedures in the order they appear in this chapter should eliminate the most common problems encountered when installing a system.

**IMPORTANT: Always connect the power cord last and always remove it before adding, removing or changing any hardware components.**

### Heat Sink

Follow the instructions that came with your processor or heat sink to attach a heat sink to the processor. Your heat sink should have a 3-pin fan, which connects to the CPU FAN header. Make sure that good contact is made between the CPU chip and the heat sink. Insufficient contact will cause the processor to overheat, which may crash the system.

### Processor

You are now ready to install the processor. Your motherboard has a 370-pin, FCPGA type socket, which supports Single Pentium™ III FCPGA 500 MHz-1.26+ GHz processors at front bus speeds of 133/100 MHz, and single FCPGA and FCPGA2 Celeron™ processors at 100/66 MHz front side bus speeds. Lift the lever on the FCPGA socket and install with the notched corner of the processor oriented with pin 1. Fully seat the processor into the socket and then close the lever.

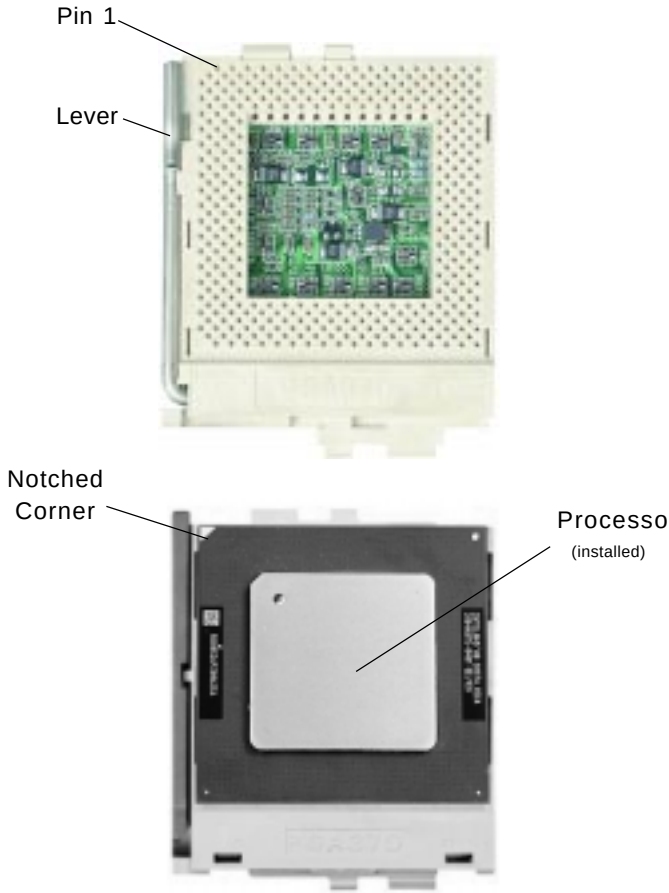



**Figure 2-1. FCPGA Socket: Empty and with Processor Installed**

## 2-3 Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis. Chassis may include a variety of mounting fasteners made of metal or plastic. Although a chassis may have both types, metal fasteners are the most highly recommended because they ground the motherboard to the chassis. For this reason, it is best to use as many metal fasteners as possible.

## 2-4 Installing DIMMs

***CAUTION***

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

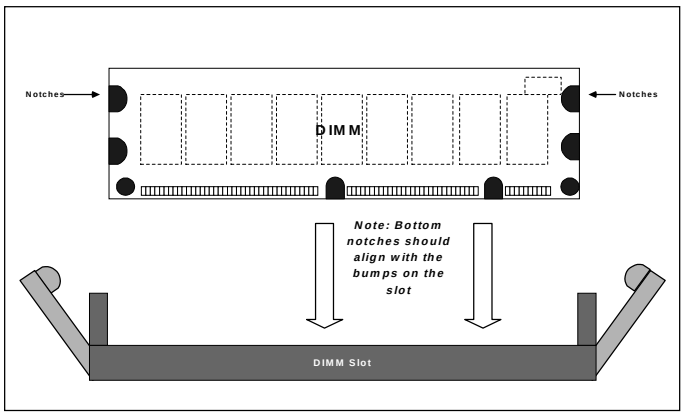
**Note:** Check the Supermicro web site for recommended memory modules:
http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm

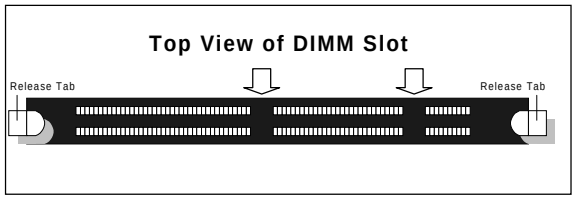
### DIMM Installation (See Figure 2-2)

1. Insert DIMMs in Bank 0 through Bank 2 as required for the desired system memory.
2. Insert each DIMM module vertically into its slot. Pay attention to the two notches along the bottom of the module to prevent inserting the DIMM incorrectly.
3. Gently press down on the DIMM module until it snaps into place.
4. If installing only a single DIMM, you may use any Bank. The P3TSSA/P3TSSR/P3TSSE will support a total of 512 MB of unbuffered SDRAM in its three DIMM slots. ECC type memory is not supported. PC133 and PC100 memory are both fully supported at their respective speeds. However, if three DIMM modules are installed, the memory will run at 100 MHz, even if PC133 memory is used (this is a chipset limitation).

**Figure 2-2. Side View of DIMM Installation into Slot**

**To Install:**
Insert module vertically and press down until it snaps into place. Pay attention to the two notches.






**To Remove:**
Use your thumbs to gently push each release tab outward to release the DIMM from the slot.

## 2-5 Port/Control Panel Connector Locations

The I/O ports are color coded in conformance with the PC99 specification to make setting up your system easier. See Figure 2-3 below for the colors and locations of the various I/O ports.

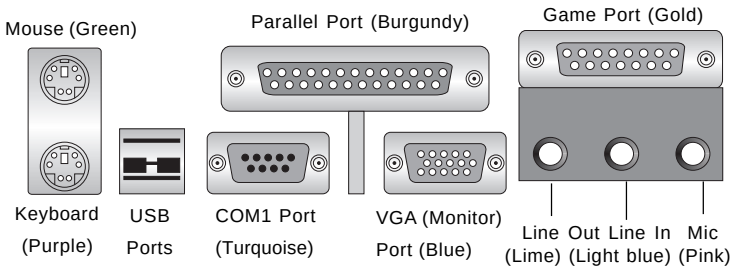



**Figure 2-3a. I/O Port Locations: P3TSSA**

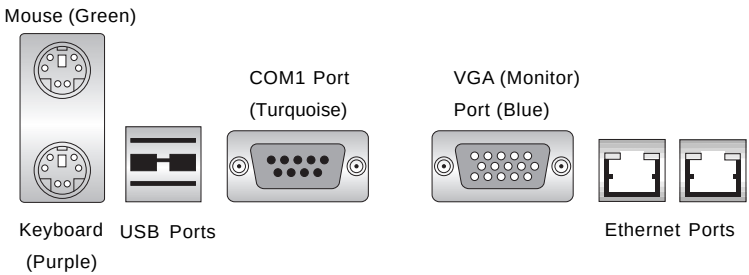


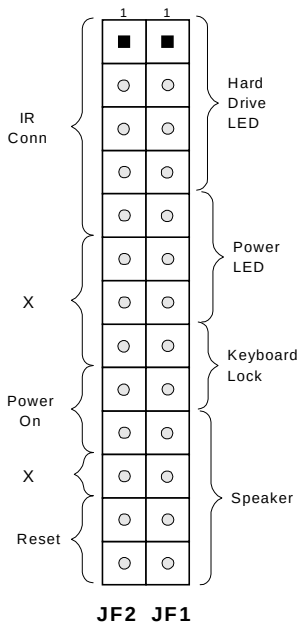

**Figure 2-3b. I/O Port Locations: P3TSSR/P3TSSE**

### Front Control Panel

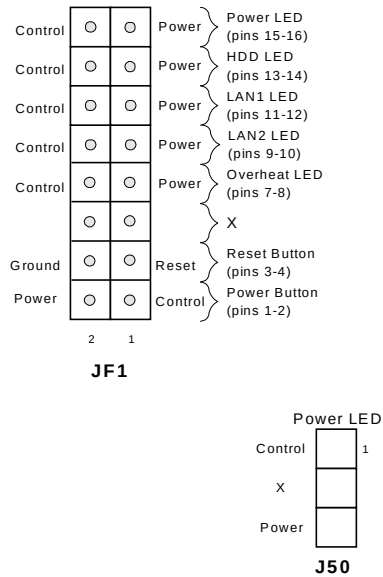
JF1 and JF2 on the P3TSSA contain header pins for various front control panel connectors. The front control panel connections for the P3TSSE and P3TSSR are located on a single front control panel connector (JF1) and share the same layout. These two boards also have a 3-pin Power LED located at J50.

The pin definitions for JF1 & J50 (on the P3TSSR/P3TSSE) are provided below. Refer to Sections 2-6 and 2-7 for the pin definitions of JF1 & JF2 (on the P3TSSA).

**Figure 2-4. Front Control Panel Connectors**




**P3TSSA**




**P3TSSR/P3TSSE**

## 2-6 Connecting Cables (see previous page for locations)

### Power Supply Connector

After you have securely mounted the motherboard, memory and add-on cards, you are ready to connect the cables. Attach an ATX power supply cable to J29 by aligning the tabs on both connectors. See Table 2-1 for the pin definitions of an ATX power supply connector.

**Table 2-1**
**ATX Power Supply Connector**
**Pin Definitions (J29)**

| Pin Number | Definition | Pin Number | Definition |
|---|---|---|---|
| 1 | 3.3V | 11 | 3.3V |
| 2 | 3.3V | 12 | -12V |
| 3 | Ground | 13 | Ground |
| 4 | 5V | 14 | PS-ON |
| 5 | Ground | 15 | Ground |
| 6 | 5V | 16 | Ground |
| 7 | Ground | 17 | Ground |
| 8 | PW-OK | 18 | -5V |
| 9 | 5VSB | 19 | 5V |
| 10 | 12V | 20 | 5V |

### Infrared Connector

The infrared connectors are located on pins 1-5 of JF2. On the P3TSSR/P3TSSE, an infrared header is located near JF1. See Table 2-2 for pin definitions (they are the same on all boards). Refer to the Technical Support section of our web page for information on the infrared devices you can connect to the system.

**Table 2-2**
**Infrared Pin Definitions**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | Key |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |

### PW_ON Connector

The PW_ON connectors are located on pins 9 & 10 of JF2. Momentarily contacting both pins will power on/off the system. The user can also configure this button to function as a suspend button. (See the Power Button Mode setting in BIOS.) To turn off the power when set to suspend mode, hold down the power button for at least 4 seconds. See Table 2-3 for pin definitions (P3TSSA).

**Table 2-3**
**PW_ON Connector**
**Pin Definitions (JF2)**

| Pin Number | Definition |
|---|---|
| 9 | Power |
| 10 | PW_On |

### Reset Connector

The reset connectors are located on pins 12 & 13 of JF2. This connector attaches to the hardware reset switch on the computer case. See Table 2-4 for pin definitions (P3TSSA).

**Table 2-4**
**Reset Pin Definitions (JF2)**

| Pin Number | Definition |
|---|---|
| 12 | Ground |
| 13 | Reset |

### Hard Drive LED

The hard drive LED are located on pins 1-4 of JF1. Attach the hard drive LED cable to pins 1 and 2. See Table 2-5 for pin definitions (P3TSSA).

**Table 2-5**
**Hard Drive LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | HD Active |
| 3 | HD Active |
| 4 | +5V |

### Keylock/Power LED Connector

The keylock/power LED connector is located on pins 5 to 9 of JF1. See Table 2-6 for pin definitions (P3TSSA).

**Table 2-6**
**Keylock/Power LED Pin Definitions (JF1)**

| Pin Number | Function | Definition |
|---|---|---|
| 5 | +3.3V | LED power |
| 6 | +5V | LED power or key |
| 7 | Ground | Black wire |
| 8 | keylock | Keyboard inhibit |
| 9 | Ground | Black wire |

## Speaker Connector

The speaker connectors are located on pins 10-13 of JF1. See Table 2-7 for pin definitions (P3TSSA).

**Table 2-7**
**Speaker Connector Pin Definitions (JF1)**

| Pin Number | Function | Definition |
|---|---|---|
| 10 | + | Speaker data |
| 11 | Key | No connection |
| 12 | | Key |
| 13 | | Red wire, sxpeaker data |

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

The ATX PS/2 keyboard and the PS/2 mouse ports are located at J30. See Table 2-8 for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3 for locations.)

**Table 2-8**
**PS/2 Keyboard and Mouse Port Pin Definitions (J30)**

| Pin Number | Definition |
|---|---|
| 1 | Data |
| 2 | NC |
| 3 | Ground |
| 4 | VCC |
| 5 | Clock |
| 6 | NC |

## Universal Serial Bus (USB)

Two Universal Serial Bus ports (USB0 and USB1) are located on the motherboard backplane. See Table 2-9 for pin definitions. In addition, two additional USB headers (one on the P3TSSA) are provided and designated USB2 and USB3. USBO and USB1 accept standard USB cables (not included). USB2 and USB3 are located near the floppy disk drive connector.

**Table 2-9**
**Universal Serial Bus Pin Definitions**

**USB0**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | P0- |
| 3 | P0+ |
| 4 | Ground |

**USB1**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | P0- |
| 3 | P0+ |
| 4 | Ground |

**USB2**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | P0- |
| 3 | P0+ |
| 4 | Ground |
| 5 | key |

**USB3**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | P0- |
| 3 | P0+ |
| 4 | Ground |
| 5 | Ground |

## Serial Ports

Two connectors, for the COM1 and COM2 serial ports, are provided on your board. COM1 is located beside the VGA port (see Figure 2-3) and COM2 is a header located near the backplane ports. See Table 2-10 for pin definitions. A 10-pin serial ribbon cable is required if connecting a device to the COM2 header.

**Table 2-10**
**Serial Port Pin Definitions (COM1/COM2)**

| Pin Number | Definition | Pin Number | Definition |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | Serial In | 7 | RTS |
| 3 | Serial Out | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | 10 | NC* |

## Wake-On-LAN

The Wake-On-LAN header is designated WOL on the motherboard. Refer to Table 2-11 for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-on-LAN connector and cable.)

**Table 2-11**
**Wake-On-LAN Pin Definitions (WOL)**

| Pin Number | Definition |
|---|---|
| 1 | +5V Standby |
| 2 | Ground |
| 3 | Wake-up |

## CD Headers (P3TSSA only)

There are two CD headers of different sizes on the motherboard for audio CD playback. You must connect an audio cable from your CD player to the header that fits your cable's connector. Refer to Table 2-12 for pin definitions.

**Table 2-12**
**Audio CD Header Pin Definitions (CD)**

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

**Audio CD Header Pin Definitions (CD_1)**

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

*NC indicates "no connection".

### Fan Headers*

The CPU, chassis and thermal control fan headers are designated CPU FAN, FAN2 (Chassis FAN) and FAN3 (OH FAN). Refer to Table 2-13 for pin definitions.

**Table 2-13**
**Fan Header Pin Definitions**

| Pin Number | Definition |
|---|---|
| 1 | Ground (black) |
| 2 | +12V (red) |
| 3 | Tachometer |

Caution: These fan headers are DC power.

### Chassis Intrusion

The Chassis Intrusion header is located on JL1. See the board layouts in Chapter 1 for its location. See Table 2-14 for pin definitions.

**Table 2-14**
**Chassis Intrusion**
**Pin Definitions (JL1)**

| Pin Number | Definition |
|---|---|
| 1 | Intrusion Input |
| 2 | Ground |

### Overheat LED (JOH)

The JOH header is used to connect an LED to provide warning of chassis overheating. Refer to Table 2-15 for pin definitions. The overheat LED header is designated JOH.

**Table 2-15**
**Overheat LED**
**Pin Definitions (JOH)**

| Pin Number | Definition |
|---|---|
| 1 | 12VDC |
| 2 | OH Active |

### Speaker Header (P3TSSR/ P3TSSE only)

A speaker header is provided at JP32 on the motherboard. Refer to Table 2-16 for pin definitions.

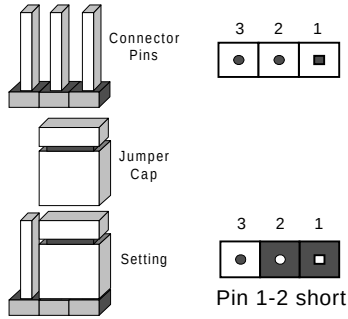
**Table 2-16**
**Speaker Header Pin Definitions**
**(JP32)**

| Pin Number | Definition |
|---|---|
| 1 | Speaker Data |
| 2 | Speaker Onboard |
| 3 | NC |
| 4 | VCC |

# 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. On a 2-pin jumper, "Closed" means the jumper is over both pins (to "close" the connection) and "Open" means the jumper is either off or on a single pin only.




## Front Side Bus Speed

The FSB speed is set with JP11 and JP12. Table 2-17 displays the settings for these two jumpers. The CPU speed can also be changed by software control in BIOS (see CPU Speed setting). The CPU Speed setting will show you the actual CPU speed for each FSB speed option selected.

**Note:** If the system does not reboot after changing the CPU speed, 1) clear CMOS and reboot (as described on the next page) and then set the correct CPU speed with the BIOS setting mentioned above.

**Table 2-17**
**Front Side Bus Speed Jumper Settings**
**(JP11, JP12)**

| JP11 | JP12 | FSB Speed |
|---|---|---|
| 1-2 | 1-2 | Auto |
| 2-3 | 2-3 | 66 MHz |
| 1-2 | 2-3 | 100 MHz |
| 2-3 | 1-2 | 133 MHz |

*** Note: The Auto setting allows the CPU to set the speed.**

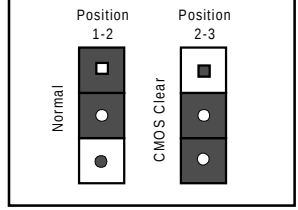
## CMOS Clear

Refer to Table 2-18 for instructions on how to clear CMOS. 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, then use JBT1 to clear CMOS. Replace JBT1 back to the pin 1-2 position before powering up the system again. Do not use the PW_ON connector to clear CMOS.**

**Table 2-18**
**CMOS Clear Jumper Settings (JBT1)**

| Jumper Position | Definition |
|---|---|
| 1-2 | Normal |
| 2-3 | CMOS Clear |




## AC'97 (P3TSSA only)

AC'97 brings high quality audio to PCs. When enabled with JP28, audio is processed onboard. The disabled setting should be selected when you wish to use an add-on card for audio in a PCI slot. See Table 2-19 for jumper settings.

**Table 2-19**
**AC'97 Enable/Disable Jumper Settings (JP28)**

| Jumper Position | Definition |
|---|---|
| 1-2 | Enabled |
| 2-3 | Disabled |

## Speaker

You may want to disable the onboard speaker. Jumper JP32 gives you this option. See Table 2-20 for jumper settings.

**Table 2-20**
**Speaker Enable/Disable Jumper Settings (JP32)**

| Jumper Position | Definition |
|---|---|
| Open | Disabled |
| Closed | Enabled |

### Keyboard Wake-Up

The JPWAKE jumper is used together with the Keyboard Wake-Up function in BIOS. Enable both the jumper and the BIOS setting to allow the system to be woken up by depressing a key on the keyboard. See Table 2-21 for jumper settings.

**Note:** Your power supply must meet ATX specification 2.01 or higher and supply 720 mA of standby power to use this feature; however, you would need 1.5A for the SSR/SSE.

**Table 2-21**
**Keyboard Wake-Up**
**Jumper Settings**
**(JPWAKE)**

| Jumper Position | Definition |
|---|---|
| 1-2 | Disabled |
| 2-3 | Enabled |

### SCSI Termination (P3TSSR only)

The SCSI termination jumpers allow you to enable or disable termination for the onboard SCSI connectors. The normal (default) position is open to enable SCSI termination. See Table 2-22 for jumper settings.

**Table 2-22**
**SCSI Termination**
**Jumper Settings**
**(JPA1, JPA2)**

| Jumper Position | Definition |
|---|---|
| Open | Enabled |
| Closed | Disabled |

### LAN1/LAN2 (P3TSSR/ P3TSSE only)

Change the setting of jumper JP35 and JP31 to enable or disable LAN 1 and LAN 2, respectively. See Table 2-23 for jumper settings.

**Note:** You must disable LAN1 to use an add-on card in PCI 4.

**Table 2-23**
**LAN1/LAN2**
**Jumper Settings**
**(JP35, JP31)**

| Jumper Position | Definition |
|---|---|
| Open | Enabled |
| Closed | Disabled |

### Watchdog Reset (P3TSSR/ P3TSSE only)

Jumper JP36 allows you to enable or disable the Watchdog feature. The normal (default) position is closed to disable the watchdog timer and enable the speaker. See Table 2-24 for jumper settings.

**Table 2-24**
**Watchdog**
**Enable/Disable**
**Jumper Settings (JP36)**

| Jumper Position | Definition |
|---|---|
| Open | Watchdog |
| Closed | Speaker |

## 2-8 Parallel Port, AGP and Floppy/Hard Disk 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 34 wires and 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.
- The 80-wire ATA66/100 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this new technology offers. The blue connector connects to the onboard IDE connector interface 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 for the hard disk drive.

### Parallel Port Connector (P3TSSA only)

The parallel (printer) port is located on J35. See Table 2-25 for pin definitions.

**Table 2-25**
**Parallel (Printer) Port Pin Definitions (J35)**

| Pin Number | Function | Pin Number | Function |
|---|---|---|---|
| 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 | GND |
| 23 | PE | 24 | GND |
| 25 | SLCT | 26 | NC |

### Floppy Connector

The floppy connector is located on JP26. See Table 2-26 for pin definitions.

**Table 2-26**
**Floppy Connector Pin Definitions (JP26)**

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

### IDE Connectors

There are no jumpers to configure the onboard IDE interfaces J18 and J19. Refer to Table 2-27 for pin definitions. You must use the ATA100/66 cable included with your system to benefit from the ATA100/66 technology.

**Table 2-27**
**IDE Connector Pin Definitions**
**(J18, J19)**

| Pin Number | Function | Pin Number | Function |
|---|---|---|---|
| 1 | Reset IDE | 2 | GND |
| 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 | GND | 20 | Key |
| 21 | DRQ3 | 22 | GND |
| 23 | I/O Write- | 24 | GND |
| 25 | I/O Read- | 26 | GND |
| 27 | IOCHRDY | 28 | BALE |
| 29 | DACK3- | 30 | GND |
| 31 | IRQ14 | 32 | IOCS16- |
| 33 | Addr 1 | 34 | GND |
| 35 | Addr 0 | 36 | Addr 2 |
| 37 | Chip Select 0 | 38 | Chip Select 1- |
| 39 | Activity | 40 | GND |

### Ultra160 SCSI Connector (P3TSSR only)

Refer to Table 2-28 for pin definitions for the Ultra160 SCSI connector located at JA1, JA2 and JA3.

**Table 2-28**
**68-pin Ultra160 SCSI Connectors**
**(JA1, JA2, JA3)**

| Connector Contact Number | Signal Names | Connector Contact Number | Signal Names |
|---|---|---|---|
| 1 | +DB(12) | 35 | -DB(12) |
| 2 | +DB(13) | 36 | -DB(13) |
| 3 | +DB(14) | 37 | -DB(14) |
| 4 | +DB(15) | 38 | -DB(15) |
| 5 | +DB(P1) | 39 | -DB(P1) |
| 6 | +DB(0) | 40 | -DB(0) |
| 7 | +DB(1) | 41 | -DB(1) |
| 8 | +DB(2) | 42 | -DB(2) |
| 9 | +DB(3) | 43 | -DB(3) |
| 10 | +DB(4) | 44 | -DB(4) |
| 11 | +DB(5) | 45 | -DB(5) |
| 12 | +DB(6) | 46 | -DB(6) |
| 13 | +DB(7) | 47 | -DB(7) |
| 14 | +DB(P) | 48 | -DB(P) |
| 15 | GROUND | 49 | GROUND |
| 16 | DIFFSENS | 50 | GROUND |
| 17 | TERMPWR | 51 | TERMPWR |
| 18 | TERMPWR | 52 | TERMPWR |
| 19 | RESERVED | 53 | RESERVED |
| 20 | GROUND | 54 | GROUND |
| 21 | +ATN | 55 | -ATN |
| 22 | GROUND | 56 | GROUND |
| 23 | +BSY | 57 | -BSY |
| 24 | +ACK | 58 | -ACK |
| 25 | +RST | 59 | -RST |
| 26 | +MSG | 60 | -MSG |
| 27 | +SEL | 61 | -SEL |
| 28 | +C/D | 62 | -C/D |
| 29 | +REQ | 63 | -REQ |
| 30 | +I/O | 64 | -I/O |
| 31 | +DB(8) | 65 | -DB(8) |
| 32 | +DB(9) | 66 | -DB(9) |
| 33 | +DB(10) | 67 | -DB(10) |
| 34 | +DB(11) | 68 | -DB(11) |

### AGP Pro/4xAGP Slot

The AGP Pro slot is backward compatible with AGP and 4xAGP graphics cards, which have fewer pins than AGP Pro cards. Because of this, care must be taken when installing a graphics card into this slot, as doing so incorrectly can damage your motherboard. For AGP Pro cards, you should remove the orange sticker covering one end of the slot. For other cards, leave this sticker in place and make sure your card does not plug into the section it covers. A general rule of thumb is to make sure your card fills the center section of pins first, then the end toward the edge of the motherboard if there are more. If the I/O shield of your card is flush with the edge of the motherboard, the card should be inserted correctly.

**AGP Pro Slot**

## 2-9 Installing Software Drivers

After all the hardware has been installed you must install the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CDROM drive, the display shown in Figure 2-5 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CDROM drive. Finally, double click on the S "Setup" icon.)

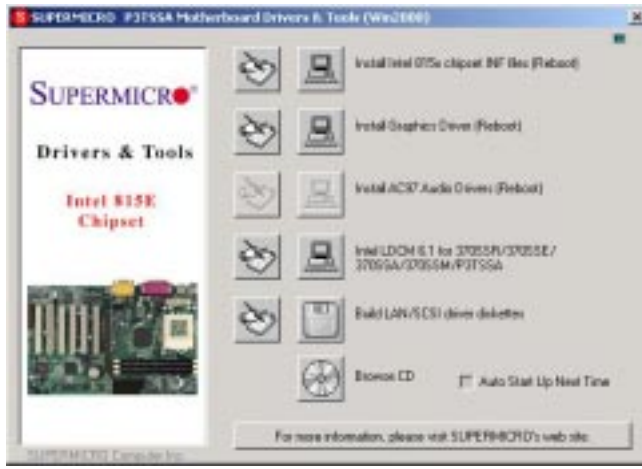



**Figure 2-5. Driver/Tool Installation Display Screen**

Click the icons showing a hand writing on paper to view the readme files for each item. Click the tabs to the right of these *in order from top to bottom* to install each item one at a time. **After installing each item, you must reboot the system before moving on to the next item on the list.** You should install everything here except for the SUPER Doctor utility, which is optional. The Security and Graphics Drivers support multiple languages. Click the arrows to pull down a menu of choices. The bottom icon with a CD on it allows you to view the entire contents of the CD.

**Note:** The memory size reported in the device manager may be less than expected because some is used by the onboard graphics. Higher screen resolutions will take up more of this memory.

# Chapter 3
# Troubleshooting

## 3-1 Troubleshooting Procedures

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

### Before Power On

1. Make sure no short circuits exist 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 (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. (Check all jumper settings as well.)

### No Power

1. Make sure no short circuits exist between the motherboard and the 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 the DIMM modules are properly and fully installed for the amount of memory desired.
2. Determine if different speeds of DIMMs have been installed and verify that the BIOS setup is configured for the fastest speed of memory used. It is recommended to use the same memory speed for all DIMMs in the system.
3. For DIMMs, make sure you are using PC133 or PC100 compliant, unbuffered SDRAM. EDO SDRAM is not supported.
4. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
5. Make sure all memory modules are fully seated in their slots.
6. Check the power supply voltage 115V/230V switch.

### Losing the System's Setup Configuration

1. Check the setting of jumper JBT1. Ensure 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 Questions" (FAQ) section in this chapter or see the FAQs on our web site < http://www.supermicro.com/techsupport.htm > before contacting Technical Support.
2. BIOS upgrades can be downloaded from our web site at < http://www.supermicro.com/techsupport/download.htm >.

***Note: Not all BIOS can be flashed depending 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: http://www.supermicro.com/techsupport/contact_support.htm
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 or by fax at (408) 503-8019.

## 3-3 Frequently Asked Questions

**Question: What are the various types of memory that the P3TSSA/P3TSSR/P3TSSE motherboard can support?**

**Answer:** The P3TSSA/P3TSSR/P3TSSE has three 168-pin DIMM slots that support up to 512 MB of unbuffered 3.3V SDRAM (registered DIMMs not supported). ECC memory is not supported. The 133/100 MHz memory bus fully supports both PC133 and PC100 memory. However, if three DIMM modules are installed, the memory will run at 100 MHz - even if PC133 memory is used (this is a chipset limitation).

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

**Answer:** It is recommended that you **do not** upgrade your BIOS if you are experiencing no problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com. Please check our BIOS warning message and the info on how to update your BIOS on our web site. Also, check the current BIOS revision and make sure it is newer than your BIOS before downloading. Select your motherboard model and down-

load the BIOS file to your computer. Unzip the BIOS update file and you will find the readme.txt (flash instructions), the fwhflash.com (BIOS flash utility) and the BIOS image (xxxxxx.rom) files. Copy these files onto a bootable floppy and reboot your system. It is not necessary to set BIOS boot block protection jumpers on the motherboard. At the DOS prompt, enter the command "fwhflash." This will start the flash utility and give you an opportunity to save your current BIOS image. Flash the boot block and enter the name of the update BIOS image file.

**Note:** It is important to save your current BIOS and **rename it "super.rom"** in case you need to recover from a failed BIOS update. Select flash boot block, then enter the update BIOS image. Select "Y" to start the BIOS flash procedure and do not disturb your system until the flash utility displays that the procedure is complete. After updating your BIOS, please clear the CMOS then load Optimal Values in the BIOS.

**Question: After flashing the BIOS my system does not have video. How can I correct this?**

**Answer:** If the system does not have video after flashing your new BIOS, it indicates that the flashing procedure failed. To remedy this, first clear CMOS per the instructions in this manual and retry the BIOS flashing procedure. If you still do not have video, please use the following **BIOS Recovery Procedure**. First, make sure the JPWAKE jumper is disabled. Then, turn your system off and place the floppy disk with the saved BIOS image file (see above FAQ) in drive A. Press and hold <CTRL> and <Home> at the same time, then turn on the power with these keys pressed until your floppy drive starts reading. Your screen will remain blank until the BIOS program is done. If the system reboots correctly, then the recovery was successful. The **BIOS Recovery Procedure** will not update the boot block in your BIOS.

**Question: What's in 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 815 chipset drivers for Windows and security and audio drivers.

**Question: Why can't I turn off the power using the momentary power on/off switch?**

**Answer:** The instant power off function is controlled in BIOS by the Power Button Mode setting. When the On/Off feature is enabled, the motherboard

will have instant off capabilities as long as the BIOS has control of the system. When the Standby or Suspend feature is enabled or when the BIOS is not in control such as during memory count (the first screen that appears when the system is turned on), the momentary on/off switch must be held for more than four seconds to shut down the system. This feature is required to implement the ACPI features on the motherboard.

**Question: I see some of my PCI devices sharing IRQs, but the system seems to be fine. Is this correct or not?**

**Answer:** Some PCI Bus Mastering devices can share IRQs without performance penalties. These devices are designed to work correctly while sharing IRQs. See Table 3-1 below for details on shared IRQs.

**Table 3-1. Shared IRQs**

**P3TSSA**

PCI 1 shares an IRQ with PCI 5, the AGP Pro slot and onboard VGA
PCI 2 shares an IRQ with PCI 6, onboard audio and SM bus*
PCI 3 has a dedicated IRQ (does not share)
PCI 4 shares an IRQ with USB

**P3TSSR**

PCI 1 shares an IRQ with onboard LAN2, the 4xAGP slot and onboard VGA
PCI 2 shares an IRQ with the onboard SCSI and the SM bus*
PCI 3 has a dedicated IRQ (does not share)
PCI 4 shares an IRQ with the USB and onboard LAN1**

**P3TSSE**

PCI 1 shares an IRQ with onboard LAN2, the 4xAGP slot and onboard VGA
PCI 2 shares an IRQ with the SM bus*
PCI 3 has a dedicated IRQ (does not share)
PCI 4 shares an IRQ with the USB and onboard LAN1**

***System Management Bus**
**** The PCI 4 slot shares resources with onboard LAN1. LAN1 must be disabled to use the PCI 4 slot.**

**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 ATA66/100 cable to my IDE device(s)?**

**Answer:** The 80-wire/40-pin ATA66/100 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 ATA66/100 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.

# Chapter 4
# BIOS

## 4-1 Introduction

This chapter describes the AMIBIOS for the P3TSSA/P3TSSR/P3TSSE. The AMIBIOS program is stored in a Flash EEPROM and can be easily upgraded using a floppy disk-based program.

**Note:** Due to periodic changes to BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to BIOS that are not reflected in this manual:
< http://www.supermicro.com/TECHSUPPORT/FAQs/Memory_vendors.htm >.

### System BIOS

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

### How To Change the Configuration Data

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

### Starting the Setup Utility

Normally, the only visible 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 Chipset and Power menus. Section 4-3 gives detailed descriptions of each parameter setting in the Setup utility.

An AMIBIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

## 4-2 BIOS Features

- Supports Plug and Play V1.0A and DMI 2.1
- Supports Intel PCI (Peripheral Component Interconnect) (PME) local bus specification
- Supports Advanced Power Management (APM) specification v 1.1
- Supports ACPI
- Supports Flash ROM

AMIBIOS supports the LS120 drive made by Matsushita-Kotobuki Electronics Industries Ltd. The LS120:

- Can be used as a boot device
- Is accessible as the next available floppy drive

AMIBIOS supports PC Health Monitoring chips. When a failure occurs in a monitored activity, AMIBIOS can sound an alarm and display a message. The PC Health Monitoring chips monitor:

- CPU temperature
- Additional temperature sensors
- Chassis intrusion detector
- Five positive voltage inputs
- Two negative voltage inputs
- Three fan speed monitor inputs

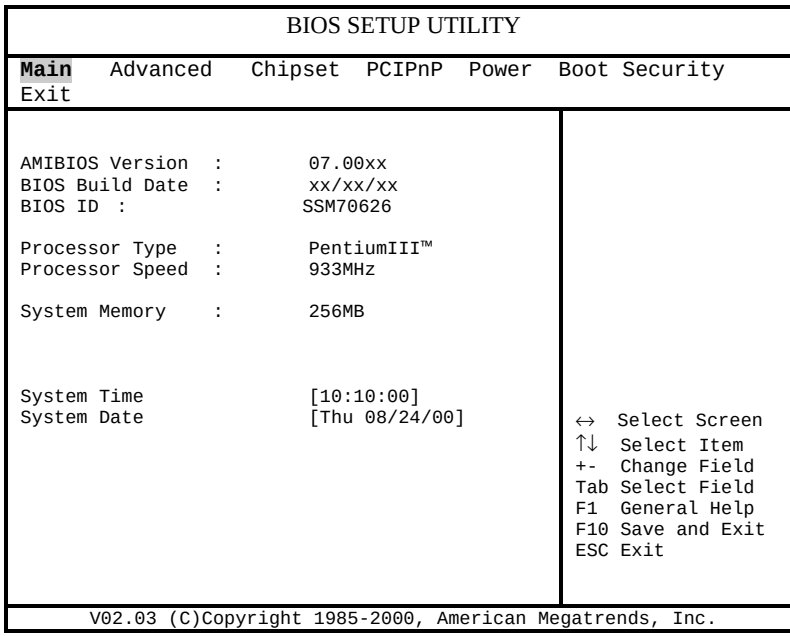
## 4-3 Running Setup

****Optimal 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 Standard 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 on next page).

## The Main BIOS Setup Menu

Press the <DEL> key during the POST (Power On Self Test) to enter the Main Menu of the BIOS Setup Utility. All Main Setup options are described in this section. The Main BIOS Setup screeen is displayed below.




Use the <Up> and <Down> arrow keys or the <Tab> key to move among the different settings in the above menu.

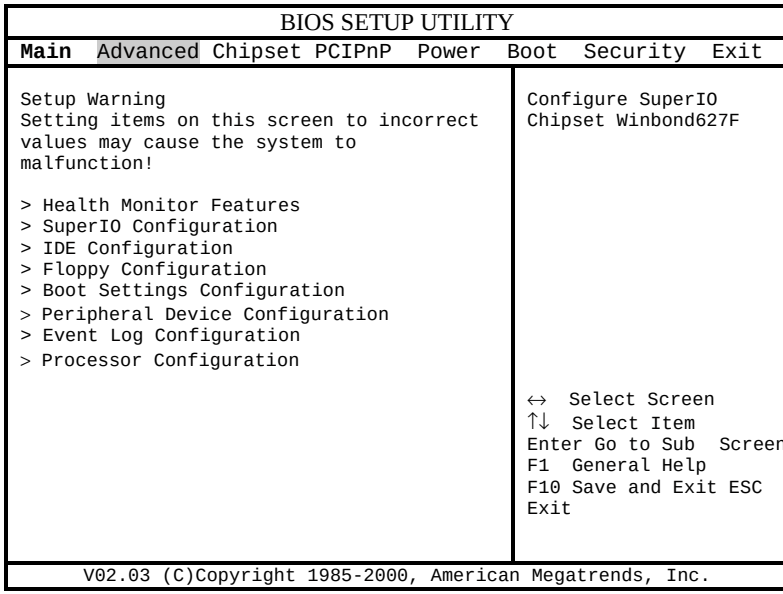
When the items "System Time", and "System Date" are highlighted, type in the correct time/date in the time field, and then press the <Enter> key. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format. The time is in also 24-hour format. For example, 5:30 a.m. appears as 05:30:00 and 5:30 p.m. as 17:30:00.

Press the <ESC> key to exit the Main Menu and use the <Left> and <Right> arrow keys to enter the the other categories of BIOS settings. The next section is described in detail to illustrate how to navigate through the menus.

***Note: Items displayed in gray are preset and cannot be selected.**

## 4-4 Advanced Chipset Setup

Choose "Advanced BIOS Setup" from the "BIOS Setup Utility" main menu with the <Left> and <Right> arrow keys. You should see the following display. Select one of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.




Use the <Up> and <Down> arrow keys to select the "Health Monitor Features" line.

When the "Health Monitor Features" line is highlighted, press the <ENTER> key to display its items.

### Health Monitor Features

The BIOS continuously monitors the health of your system by measuring certain voltage levels and temperatures.

**CPU Overheat Warning**

This option allows you to **"Enable"** or "Disable" a system overheat warning signal, used to notify you in the event of a dangerous rise in heat levels.

**CPU Overheat Warning**

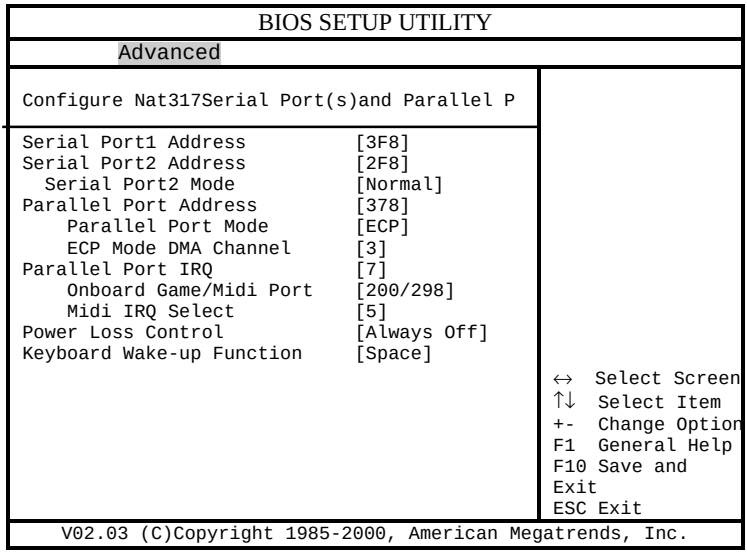
This option allows you to specify the temperature threshold that, when exceeded, will trigger the overheat warning alarm.

The rest of the Health Monitor menu lists various voltages and temperatures as they are currently being measured. These include CPU current temperature, CPU voltage, the RPMs of the CPU, H/W MonitorIN0 (CPU1), H/W MonitorIN2 (+3.3V), H/W MonitorIN3 (+5V), H/W MonitorIN4 (+12v), H/W MonitorIN5 (-12V), CPU Fan,Chassis Fan 1, Chassis Fan 2, and thermal control fans. The settings are "Enabled" or **"Disabled**."

## Super IO Configuration

After selecting the settings for "Health Monitor Features", use the <Up> and <Down> arrow keys to select the "SuperIO Configuration" line.

When the "SuperIO Configuration" line is highlighted, press the <ENTER> key to display its menu.




The Super IO Configuration includes the following items:

**Serial Port 1 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 1. The settings for this item include "Disabled", **"3F8/ IRQ4"**, "3E8/IRQ4" and "2E8/IRQ3." Select the desired setting and then press the <Enter> key.

**Serial Port 2 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 2. The settings for this item include "Disabled", **"2F8/ IRQ3"**, "3E8/IRQ4" and "2E8/IRQ3."

**Serial Port2 Mode**

This option specifies Serial Port2 Mode. The settings for this item include **"Norma"l**, "IRDA1.6ms", "IRDA311.6", "ASKIR", "ASKIR500", "ASKIRDem", "ASKIRD500."

**Parallel Port Address**

This option specifies the I/O address used by the parallel port. The settings for this item include "Disabled", **"378'**, "278" and "3BC." Select your setting and then press the <Enter> key.

**Parallel Port Mode**

This option specifies the parallel port mode. The settings for this item include "Normal", "Bi-directional", "EPP" and **"ECP**."

**ECP Mode DMA Channel**

This option allows the user to set the setting for the ECP Mode of the DMA Channel. The settings for this item include **"0"**, "1" and "3."

**Parallel Port IRQ**

This option allows the user to set the Parallel Port IRQ. The settings for this item include "5" and **"7**."

**Onboard Game/Midi Port**

This option allows the user to set the Onboard Game/Midi Port. The settings for this item include "Disabled", **"200/298"**, "200/300", "200/330", "208/300" and "208/330."

**Midi IRQ Select**

This option allows the user to set the Midi IRQ. The settings for this item are **"5"**, "7", "9" and "10."

**Power Loss Control**

This option determines how the system will react when power is reapplied after being lost unexpectedly. The settings are **"Always Off"** (if the system loses power unexpectedly, the computer system will keep power off until the power button is pressed), "Always On" (if the system loses power unexpectedly, the computer system will restore power) and "Previous" (if the system loses power unexpectedly, the computer system restores the system to its previous state before power was lost).

**Keyboard Wake-Up Function**

Use this option to specify which key is to be depressed to wake-up the system from sleep mode. The settings are "Disabled", "CTRL F1", **"Space"** and "Any Key." Disabled: This setting prevents the computer system from using the keyboard to power it on. Ctrl F1: This setting allows the computer system to be powered on when the CTRL and F1 keys on the keyboard are pressed. **Space**: This setting allows the computer system to be powered on when the Space bar on the keyboard is pressed. This is the default setting. Any Key*:* This setting allows the computer system to be powered on when any keys on the keyboard are pressed.

## IDE Configuration

**Onboard PCI IDE Controller**

This option allows the user to enable or disable the integrated IDE Controller. The settings include Disabled, Primary, Secondary and **Both**. Select "Disabled" to disable the Integrated IDE Controller. Select "Primary" to enable the Primary IDE ontroller only. Select "Secondary" to enable the Secondary IDE Controller only. Select "Both" to enable both Primary and Secondary IDE Controllers.

**Primary IDE Master**

When entering "Setup", BIOS automatically detects the presence of IDE devices. This displays the auto detection status of the IDE devices. You can also manually configure the IDE drives by providing the following information:

**Type**

This option sets the type of device that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. The settings include "Not installed", **"Auto"**, "CDROM" and "ARMD". The "Auto" setting allows BIOS to automatically detect the pres ence of the IDE controller.

**LBA/Large Mode**

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capac ity is 137 GB. The settings are "Disabled" and **"Auto**." Se lect "Disabled" to disable LBA mode. Select "Auto" to enable LBA mode if your device supports it and is not already for matted with the LBA mode.

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

This option sets the block mode multi sector transfers option The settings include "Disabled" and **"Auto**." Disabled: This option prevents the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device will occur one sector at a time. Auto: This option allows the BIOS to auto detect device support for Multi-Sector Trans fers on the specified channel. If supported, this option al lows the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to memory. The data transfer to and from the device will occur multiple sectors at a time (if the device supports it).

**PIO Mode**

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

**DMA**

This item allows the users to select the DMA mode. The settings are: **"Auto"**, "SWDMA0", "SWDMA1", "SWDMA2", "MWDMA0", "MWDMA1", "MWDM2", "UWDMA0", "UWDMA1",

"UWDMA2", "UWDMA3" and "UWDMA4." Select "Auto" to auto detect the DMA Mode. Select SWDMA0 through SWDMA2 to set single word DMA0 through DMA2. Select MWDMA0 through MWDMA2 to set Multi-word DMA0 through DMA2. Select "UDMA0" trhough "UDMA4" to set Ultra DMA0 through Ultra DMA4.

**S.M.A.R.T.**

S.M.A.R.T stands for Self-Monitoring Analysis and Reporting Technology, a feature that can help predict impending drive failures. The settings are **"Auto"**, "Disabled" and "Enabled." Select "Enabled" or "Disabled" to enable or disable the S.M.A.R.T. Select "Auto" to auto detect S.M.A.R.T.

**32Bit Data Transfer**

The settings are "Auto", "Disabled" and **"Enabled**." Select "Enabled" or "Disabled" to enable or disable the 32-bit Data Transfer function. Select "Auto" to auto detect the 32-bit Data Transfer function.

**ARMD Emulation**

This option is used to select the emulation used when configuring an LS120, MO (Magneto-Optical), or Iomega Zip drive. The settings are **"Auto"**, "Floppy" and "HardDisk."

**Primary IDE Slave**

When the system enters "Setup", BIOS automatically detects the presence of IDE devices. This option displays the auto detection status of IDE devices. The settings for "Primary IDE Slave" are the same as those for the "Primary IDE Master".

**Secondary IDE Master**

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Master" are the same as those for the "Primary IDE Master".

**Secondary IDE Slave**

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Slave" are the same as those for the "Primary IDE Master".

**Hard Disk Write Protect**

This item allows the user to prevent the hard disk from being overwritten. The options are "Enabled" and **"Disabled**." Enabled allows the drive to be used normally; read, write and erase functions can all be performed. Disabled prevents the hard disk from being erased. This function is effective only when the device can be accessed through BIOS.

**ATA(PI) Detect Timeout**

Set this option to stop the system search for ATAPI devices within the specified number of seconds. The options are "0", "5", "10", "15", "20", "25", "30", and **"35"** (seconds). Most ATA disk drives can be detected within 5 seconds.

**ATA(PI) 80Pin Cable Detection**

This option selects the mechanism for detecting the 80-pin ATA(PI) cable. Options include **Host and Device**, Host, and Device. Host: This option uses the motherboard onboard IDE controller to detect the type of IDE cable used. Device This option uses the IDE disk drive to detect the type of IDE cable used. Host & Device: This option uses both the motherboard onboard IDE controller and IDE disk drive to detect the type of IDE cable used.

## Floppy Configuration

**Floppy A**

Use this option to specify which of floppy drive you have installed in the A drive. The settings are "Disabled", "360 KB 5 1/4", "1.2 MB 5 1/4", "720 KB 3 1/2", **"1.44 MB 3 1/2"** and "2.88 MB 3 1/2."

**Floppy B**

Use this option to specify which of floppy drive you have installed in the B drive. The settings are "Disabled", "360 KB 5 1/4", "1.2 MB 5 1/4", "720 KB 3 1/2", **"1.44 MB 3 1/2"** and "2.88 MB 3 1/2."

**Floppy Drive Seek**

Use this option to Enable or **Disable** the floppy seek routine on bootup.

## Boot Settings Configuration

**Quick Boot**

This option allows the BIOS to skip certain tests that are normally perfomred on boot up. You can disable the option to speed up boot time. The settings are **"Disabled"** and "Enabled."

**Quiet Boot**

If "Disabled", this option will cause the normal POST messages to be displayed upon setup. When **"Enabled"**, the OEM logo is displayed instead of the POST messages.

**Add-On ROM Display Mode**

Set this option to display add-on ROM (read-only memory) messages. The settings for this option are **"Force BIOS"** and "Keep Current." Force BIOS allows the computer to force a third party BIOS to display during system boot. Keep Current has the system display AMIBIOS information on bootup.

**BootUp Num Lock**

This option is used to select the status of the Number Lock function on your keyboard on bootup. The settings are **"On"** and "Off."

**BootUp CPU Speed**

This option is used set the CPU speed to either **"High"** or "Low."

**PS/2 Mouse Support**

This option specifies whether a PS/2 Mouse will be supported. Settings are **"Enabled"** and "Disabled."

**Typematic Rate**

Set this option to select the rate at which the computer repeats a key that is held down. Settings are **"Fast"** and "Slow." Fast: This sets the rate the computer repeats a key to over 20 times per second. Under normal operations, this setting should not be changed. Slow: This sets the rate the computer repeats a key to under 8 times per second.

**System Keyboard**

This option is to let the system know if a keyboard is **"Present'** or "Absent."

**Primary Display**

This option specifies the type of monitor display you have installed on the system. The settings are "Absent", **"VGA/EGA"**, "Color 40 x 25", "Color 80 x 25" and "monochrome."

**Parity Check**

Use this option to either "Enable" or **"Disable"** the use of memory parity checking.

**Boot to OS/2**

This option can be used to boot the system to an OS/2 operating system. The settings are **"No"** and "Yes."

**Wait for F1 if Error**

This settings for this option are **"Enabled"** and "Disabled." Disabled: This prevents the AMIBIOS to wait on an error for user intervention. This setting should be used if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached. If this setting is set, the system will continue to bootup in to the operating system. If 'F1' is enabled, the system will wait until the BIOS setup is entered. Enabled: This option allows the system BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem. This normally happens when upgrading the hardware and not setting the BIOS to recognize it.

**Hit "Delete" Message Displayed**

This option tells the system to display or not display the "Hit Delete to Enter Setup" message. The settings are **"Enabled"** and "Disabled."

**Internal Cache**

This option is for enabling or disabling the internal CPU L1 cache. Settings include "Disabled", "Write-Thru" and **"Write-Back**." Disabled: This option prevents the system from using the internal CPU L1 cache. This setting should be used to slow the computer system down or to troubleshoot error messages. Write-Thru: This option allows the computer system to use the internal CPU L1 cache as Write-Though cache. Write-Through cache is slower than Write-Back cache. It performs write operations to the internal L1 CPU cache and system memory simultaneously. Write-Back: This option allows the computer system to use the internal CPU L1 cache as Write-Back cache. Write-Back cache is faster than Write-Through cache. Write-Back cache is a caching method in which modifications to data in the cache aren't copied to the cache source until absolutely necessary. Write-back caching is available on all CPUs supported by this BIOS. With these CPUs, write operations stored in the L1 cache aren't copied to main memory until absolutely necessary. This is the default setting.

**External Cache**

This option is for enabling or disabling the internal CPU L2 cache. Settings include "Disabled", "Write-Thru" and **"Write-Back**." See description above.

**Peripheral Device Configurations**

This option allows the user to set the configurations for the devices listed below. The options for these devices are: "Disabled", **"Enabled**."

## Event Log Configuration

**Event Logging**

This option **Enables** or Disables the logging of events. You can use this screen to select options for the Event Log Configuration Settings. You can access sub screens to view the event log and mark all events as read. Use the up and down arrow keys to select an item, and the plus <+> and minus <-> keys to change the option setting. The settings are described on the following pages. The screen is shown below.

**ECC Event Logging**

This option "Enables" or **"Disables"** the logging of ECC events. The events logged by AMIBIOS are post errors such as a bad BIOS, floppy errors, or hard drive errors.

**Clear All Event Logs**

This option can be used to tell the system to clear the event log on the next boot up. The settings are **"No"** and "Yes."

**View Event Log**

This option allows the user view the events of the system. The settings are **"No"** and "Yes."

**Mark all Events as Read**

This option allows the user to use the screen to mark all events as read. The settings are **"OK"** and "Cancel."

## 4-5 Chipset Setup

Choose "Chipset Setup" from the AMIBIOS "Setup Utility" main menu. The screen is shown below. All Chipset Setup options are described following the screen. You can use this screen to select options for the GHCH Configuration.

```
                        BIOS SETUP UTILITY
Main   Advanced   Chipset   PCIPnP   Power   Boot   Security   Exit

> GMCH Configuration                          Options for MCH
> ICH Configuration

Processor Serial Number            [Disabled]
CPU Latency Timer                  [Disabled]

C000,16k Shadow                    [Cached/WP]
C400,16k Shadow                    [Cached/WP]
C800,16k Shadow                    [Disabled]
CC00,16k Shadow                    [Disabled]
D000,16k Shadow                    [Disabled]
D400,16k Shadow                    [Disabled]      ↔  Select Screen
D800,16k Shadow                    [Disabled]      ↑↓  Select Item
DC00,16k Shadow                    [Disabled]      +-  Change Option
                                                   F1  General Help
                                                   F10 Save and Exit
                                                   ESC Exit

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```

### GMCH Configuration

You can use this screen to select options for the GMCH Configuration. Use the up and down arrow keys to select an item, and the plus <+> and minus <-> keys to change the option setting. The settings are described on the following pages.

#### Primary Video Device

This option specifies the primary display device on your system. Settings include "Internal", "External PCI", "External AGP" and **"Auto**." Auto: This setting allows the BIOS to select the primary video device at bootup. Internal: This setting allows the onboard video display adapter to be the primary videodevice at bootup. External PCI: This setting allows a PCI Display Adapter card to be the primary video device at bootup. External AGP: This setting allows an AGP Display Adapter to be the primary video device at bootup.

**Internal Graphics Mode Select**

This option selects the mode for the internal graphics mode. Settings include "Disabled", "Enabled; 512 KB" and **"Enabled; 1 MB**." Enabled; 1MB: This option allows the Internal Graphic controller to allocate 1 MB of system memory for video display use. Enabled; 512KB: This option allows the Internal Graphic controller to allocate 512 KB of system memory for video display use. Disabled: This option allocates no system memory for video display use.

**Display Cache Window Size**

This option sets the size of the display cache window. The settings are **"64 MB"** and "32 MB."

**Display VBIOS Message:**

This option allows the BIOS to display VBIOS messages. The settings are **"Enabled",** or "Disabled."

**Internal Graphics Scaling**

This option allows the Internal Graphics Scaling to be manually set or automatically set. The settings for this option for this setting include "Disabled", "Auto" and "Enabled." Auto: This setting allows the Internal Graphics scaling to auto select itself. This setting sets the Internal Graphics scaling off. Enabled: This setting sets the Internal Graphics scaling on.

**AGP Graphics Aperture Size**

This option allows you to adjust the graphics aperture size to either **"64 MB"** or "32 MB."

**Internal Graphics TV Format**

This option specifies the type of TV format that will be used with the onboard graphics. The settings are **"NTSC"** and "PAL."

**Output Device Synch/Non-Synch**

This option allows you to set the output device as either **"Non-Synchronous"** (Asynchronous) or Synchronous. "Synchronous" means the output device will match the frequency of the bus speed. Asynchronous or Non-Synchronous allows data to be sent and received at a different frequency than the bus.

**Digital Device Priority**

Use this option to prioritize the type(s) of display device on your system. The settings are **"CRT/FP/TV"**, "FP/CRT/TV", "CRT/TV/FP", "TV/CRT/FP", "FP/TV/CRT" and "TV/FP/CRT." (FP stands for flat panel.)

**Init Display Cache Memory**

This option allows the Initial Display cache memory to be adjusted. The setting are **"Enabled"** and "Disabled."

**Paging Mode Control**

This option allows the paging mode controls to be adjusted to either **"Close"** or "Open."

**RAS-to-CAS Latency Override**

The RAS-to-CAS Override is adjusted with this option. The settings are **"Disabled"** and "Enabled." Disabled: This option allows RAS-to-CAS. Enabled: This option overrides RAS-to-CAS. SDRAM stores information in blocks of rows and columns. RAS stands for Row Ad dress Strobe. CAS stands for Column Address Strobe.

**CAS Latency**

This option regulates the speed of the Column Address Strobe (CAS) as either "Fast" or **"Slow"**, which is higher or lower latency. CAS latency optimizes the speed at which data is accessed in a column by defining CAS latency time in 100 MHz or 133 MHz clocks (dependent on the memory bus speed). It controls the time delay (in clocks) before the SDRAM starts a read command after receiving it.

Reading RAS data can be read twice as fast as reading CAS. Lowering the latency can increase the speed of the SDRAM, but at the expense of stability.

**RAS Timing**

This option regulates the speed of the Row Address Strobe (RAS) as either "Fast" or **"Slow**." As with CAS Latency, lowering the timing can increase the speed of the SDRAM, but at the expense of stability.

**RAS Pre-charge**

The precharge time is the number of cycles it takes for the RAS to accumulate a charge before a DRAM refresh. Insufficient recharge time may cause the DRAM to lose data. The settings are "Fast" and **"Slow"**, which is more stable.

**System Memory Frequency**

This option allows the system memory frequency to be adjusted. The settings are "100 MHz" (for PC100 memory), "133 MHz" (for PC133 memory) and **"Auto"**, which allows the system memory frequency to auto select itself

**SDRAM Refresh**

This option sets the refresh rate for the system memory. Settings include **"Auto"**, "15.6 mS", "7.8 mS" and "128 CLKS."

**DRAM Cycle Time (SCLKS)**

This option allows you set the DRAM cycle time to "5/7", "6/8" or **"Auto**."

**CAS Latency (SCLKS)**

This option allows you to set the CAS latency time to "3", "2" or **"Auto**."

**RAS# to CAS# Delay (SCLKS)**

The settings for this option are "3", "2" or **"Auto**."

**RAS# Precharge (SCLKS)**

This option sets the RAS# precharge time. The settings are "3", "2" or **"Auto**."

**DRAM Page Closing Policy**

The settings for this option are "Close" and **"Open**."

**Memory Hole**

Some ISA cards may require specific areas of memory to function. This can be done by choosing the 15 MB - 16 MB option to reserve the area. The settings for this option are **Disabled** and 15 MB-16 MB.

## ICH2 Configuration

You can use this screen to select options for the ICH2 Configuration. Use the up and down arrow keys to select an item, and the plus <+> and minus <-> keys to change the option setting. The settings are described on the following pages. "ICH" is an acronym for "I/O Controller Hub", which is a chipset member on the motherboard that controls the basic I/O functions, USB ports, audio functions, modem functions, IDE channels, and PCI slots -- the "2" indicates an ICH with added features.

**Moon ISA Device Enable**

This option allows a Moon ISA device to be supported. The settings are **"Disabled"** and "Enabled." A Moon ISA device is a device that contains an Intel® PCIset S82380AB PCI to ISA in a 160-pin MQFP chipset. This chipset is called an Intel® Moon ISA or Intel® MISA. This chipset is used to connect ISA devices to computers that do not have a physical ISA slot. The best example of this is a notebook computer (No ISA Slots) when used with a docking station (contains up to three ISA peripherals). The docking station would contain the Intel® Moon ISA chipset.

**ICH2 Positive Decode**

This option allows the ICH Positive Decode or ICH2 Positive Decode to be set. The settings are **"Disabled"** and "Enabled."

**Onboard Audio Codec**

This option allows the system to Enable Onboard Audio Codec. The settings are "Disabled" and **"Enabled**."

**CPU Bist Enable**

This option allows the CPU Bist Enable to be set. The settings are **"Disabled"** and "Enabled."

**ICH2 DCB Enable**

This option allows the ICH2 DCB to be set. The settings are **"Disabled"** and "Enabled."

**SMBus Controller**

The settings for this option are **"Enabled"** and "Disabled."

**AC97 Audio Controller**

The settings for this option are **"Enabled"** and "Disabled."

**AC97 Modem Controller**

The settings for this option are **"Enabled"** and "Disabled."

**Sound Blaster Decode**

This option is for adjusting the Sound Blaster Decode. The settings are **"Disabled"**, "220h-233h", "240h-253h", "260h-273h" and "280h-293h."

**Microsoft Sound Decode**

This option is for adjusting the Microsoft Sound Decode. The settings are **"Disabled"**, "530h-537h", "604h-60Bh", "E80h-E87h" and "F40h-F47h."

**MIDI Decode**

This option allows the MIDI Decode to be set. The settings are **"Disabled"**, "330h-331h" and "300h-301h."

**Adlib Range 388h-38Bh**

This option allows the Adlib Range 388h-38Bh to be set. The settings are **"Enabled"** and "Disabled."

**Game Port**

This option allows the Game Port to be set. The settings are **"Enabled"** and "Disabled."

**LPC 4Eh-4Fh Decode**

This option allows the LPC 4Eh-4Fh to be set. The settings are "Disabled" and **"Enabled**."

**DMA-0 Type**

**DMA-1 Type**

**DMA-2 Type**

**DMA-3 Type**

**DMA-4 Type**

**DMA-5 Type**

**DMA-6 Type**

**DMA-7 Type**

This above options allow you to change the protocol for DMA-0 through DMA-7. The settings for all are "PC/PCI" and **"LPC DMA**."

**Processor Serial Number**

Intel includes a serial number in their processors to act as a unique system identifier. For privacy reasons, you can disable the release of this identifier. The settings for this option are **"Disabled"** and "Enabled." Disabled: This setting restricts all access to the CPU serial number from your CPU. Enabled: This setting allows the operating system and applications to be able to read the CPU serial number from your CPUs. **Note:** If the CPU is a Intel® Celeron Processor, then this selection will be grayed out. Intel® Celeron Processors do not contain a processor serial number.

**CPU Latency Timer**

This option allows the CPU Latency Timer to be modified. The settings for this option are **"Disabled"** and "Enabled." Disabled: The deferrable processor cycle will be deferred immediately after receiving another ADS#. Enabled: The deferrable processor cycle will only be deferred after it has been in a “Snoop Stall” for 31 clocks and another ADS# has arrived.

**C000, 16k Shadow**

**C400, 16k Shadow**

**C800, 16k Shadow**

**CC00, 16k Shadow**

**D000, 16k Shadow**

**D400, 16k Shadow**

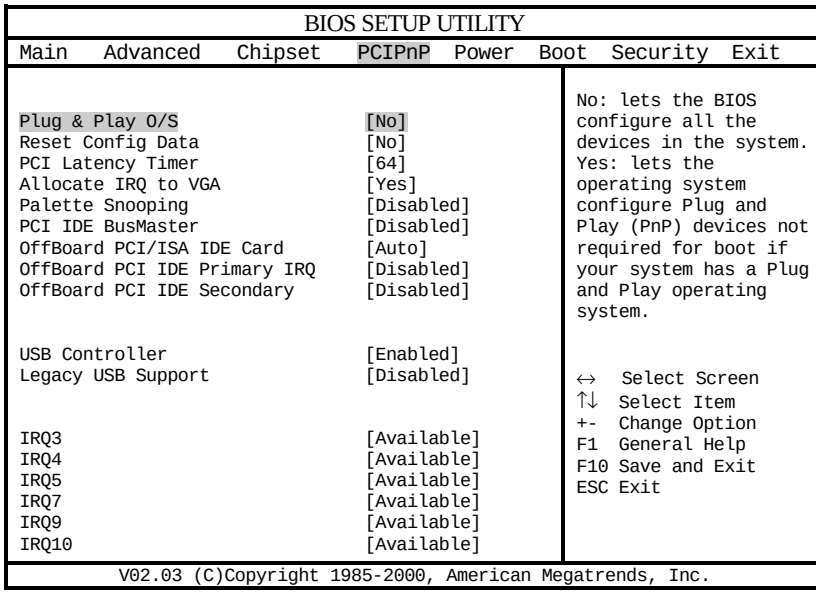
**D800, 16k Shadow**

**DC00, 16k Shadow**

These options specify how the 16 KB of video ROM at each of the above addresses is treated. The settings are "Disabled", "Enabled", and "Cached/WP." When Disabled, the contents of the video ROM are not copied to RAM. When Enabled, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM for faster application. When set to Cached/WP, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM and can be

## 4-6 PCI PnP Setup

Choose PCI/PnP Setup from the AMIBIOS Setup main menu. All PCI/PnP options are described in this section. The PCI/PnP Setup screen is shown below.




**Plug & Play OS**

Choose the **"No"** setting for computers that do not meet the Plug and Play specifications, which will allow the BIOS to configure all the devices in the system. Choosing the "Yes" setting lets the operating system configure PnP devices that are not required for boot up (if the system has a PnP operating system). The operating system would have the ability to change interrupt, I/O, and DMA settings. Normally, this option is set to "Disabled."

**Reset Configuration Data**

Choosing the "Yes" setting will cause the PnP configuration data in the BIOS to be cleared on the next boot up. Choosing the **"No"** setting does not force PnP data to be cleared on the next boot.

**PCI Latency Timer**

This option specifies the latency timing of the PCI clocks for all PCI devices. Settings include "32", **"64"**, "96", "128", "160", "192", "224" and "248" PCI clocks.

**Allocate IRQ to PCI VGA**

This option lets you allocate an interrupt request (IRQ) to the PCI VGA adapter card (if used). The settings are **"Yes"** and "No."

**Palette Snooping**

When enabled, this option informs PCI devices that an ISA graphics device is installed. The settings are **"Disabled"** and "Enabled." This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with your adapter card manuals first, before modifying the default settings in the BIOS.

**PCI IDE BusMaster**

The settings for this option are **"Disabled"** and "Enabled." This option is only available on non-Microsoft Operating Systems.

**OffBoard PCI/ISA IDE Card**

This option specifies which PCI slot has an IDE controller card installed. Settings are **"Auto"**, "PCI slot 1", "PCI slot 2", "PCI slot 3", "PCI slot 4", "PCI slot 5" and "PCI slot 6." (PCI slot numbers will be available in this option even if your motherboard does not have that slot number. If your motherboard does not have a PCI slot 5, for example, do not set this option to "PCI slot5.")

**OffBoard PCI Primary IRQ**

This option specifies the primary IRQ for the PCI. Settings include **"Disabled"**, "INTA" (Interrupt A), "INTB", "INTC", "INTD" and "Hardwired." Hardwired tells the BIOS that the OffBoard IDE Primary controller is a legacy device and the interrupt request channels cannot participate in PCI "Swizzle". (PCI "Swizzle" is a term used to describe IRQ sharing.)

**Legacy USB Support**

This option allows Legacy USB support. The settings are **"Disabled"**, "Enabled" and "Auto." Disabled prevents the use of any USB device in DOS or during system boot. Enabled allows the use of USB devices during boot and while using DOS. The Auto setting auto detects USB keyboards or mice and if found, allows them to be utilized during boot and while using DOS.

**PCI Slot1 IRQ Preferrence**

**PCI Slot2 IRQ Preferrence**

**PCI Slot3 IRQ Preferrence**

**PCI Slot4 IRQ Preferrence**

The settings for the above options are **"Auto"**, "3", "4", "5", "7", "9", "10", "11", "12", "14", "15."

**IRQ 3**

**IRQ 4**

**IRQ 5**

**IRQ 7**

**IRQ 9**

**IRQ 10**

**IRQ 11**

**IRQ 14**

**IRQ 15**

The settings for the above options are **"Available"** and "Reserved." Available allows the specified IRQ to be available for use by PCI/PnP devices. Reserved means the specified IRQ is reserved for use by Legacy ISA devices.

**DMA Channel 0**

**DMA Channel 1**

**DMA Channel 3**

**DMA Channel 5**

**DMA Channel 6**

**DMA Channel 7**

Each of the above list of DMA channel setting options can be set to **"Available"** and "Reserved." Available means the specified DMA channel is available for use by PCI/PnP devices. Reserved means the specified DMA channel is reserved for use by Legacy ISA devices.

**Reserved Memory Size**

This option specifies the size of a memory area to be reserved for Legacy ISA adapter cards. The settings are **"Disabled"**, "16k", "32k" and "64k."

**Reserved Memory Address**

The option specifies the beginning address of the reserved memory area to be used for Legacy ISA adapter cards. The settings are "C0000", "C4000", **"C8000"**, "CC000", "D0000", "D4000", "D8000" and "DC000."

## 4-7 Power Setup

Choose "Power Setup" from the AMIBIOS "Setup Utility" main menu. All Power Setup options are described in this section. The Power Setup screen is shown below.

BIOS SETUP UTILITY

Main Advanced Chipset PCIPnP **Power** Boot Security Exit

| | |
|---|---|
| ACPI Aware O/S | [No] |
| Suspend to RAM Support | [Disabled] |
| Repost Video on S3 Resume | [Yes] |
| Power Management/APM | [Enabled] |
| Standby Time Out | [Disabled] |
| Suspend Power Saving | [S1] |
| Suspend Time Out | [Disabled] |
| Power Button Mode | [On/Off] |
| AfterG3 Enable | [Disabled] |
| Green PC Monitor Power State | [Suspend] |
| Video Power Down Mode | [Suspend] |
| Hard Disk Power Down Mode | [Suspend] |
| Hard Disk Time Out (Minute) | [Disabled] |
| Display Activity | [Ignore] |
| Manual Throttle Ratio | [50%] |
| THRM throttle Ratio | [50%] |
| Intruder Sel | [SMI] |

↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit

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**ACPI Aware O/S**

This option allows the system to utilize Intel's ACPI (Advanced Configuration and Power Interface) specification. Settings are "No" and **"Yes**." DOS®, Windows 3.x®, Windows 95 and Windows NT® are examples of non-ACPI aware operating systems. Windows 98®, Windows ME, and Windows 2000® are examples of ACPI aware operating systems.

**Suspend to RAM Support**

This allows you to enable or disable the Suspend to RAM (STR) feature. Settings are **"Disabled"** and "Enabled." The Disabled setting prevents the system from saving information to main memory when in a low power state. Enabled causes the system to enter a low power state instead of being completely shut off. This allows the computer system to bootup in a few seconds. Suspend to RAM is a technology that is closely associated with the S3 state of the ACPI (Advanced Configuration and Power Interface) specification. STR allows a properly configured system to go into a low power state while saving information to main memory about the system's configuration, open applications, and active files. While in the low power STR state, memory remains powered to retain the system information while most other components turn off to conserve energy. Fans are turned off to provide silent operation and to minimize power consumption. Properly configured systems in STR typically can consume less than 5 watts.

**Repost Video on S3 Resume**

This option determines whether or not to invoke the VGA BIOS post test when resuming from STR or the S3 state. Settings are "No" and **"Yes**." (Used with ACPI only.)

**Power Management /APM**

This option allows you to select using APM (Advanced Power Management). The settings are "Disabled" and **"Enabled**."

**Standby Time Out**

This option specifies the length of system inactivity time that should expire before the computer enters a standby power state. The settings are **"Disabled"**, "1Min", "5Min" and "10Min."

**Suspend Power Saving Type**

The settings for this option are "C2" and "S1." The C2 setting allows the CPU (microprocessor) to be put in a low power state. In this state, incoming interrupts wake-up the CPU (microprocessor) to process them (I/O APIC). S1 allows the system to enter the S1 POS (Power On Suspend) state. While the system is in this state, the CPU is not executing instructions, all power resources that supply system level reference of S0 are off, system memory context is maintained, devices that reference power resources that are on are on, and devices that can wake-up the system can cause the CPU to continue to execute from where it left off.

**Suspend Time Out**

This option specifies the length of system inactivity while in the standby state that should expire before the computer enters a suspend power state. The settings are **"Disabled"**, "1Min", "5Min" and "10Min."

**Power Button Mode**

This option specifies how the external power button on the computer chassis functions. When set to **"On/Off"**, depressing the power button turns the computer on or off. When set to "Suspend", depressing the power button places the computer in Suspend mode or Full On power mode. The "Standby" setting places the computer in Standby or Full On mode.

**After G3 Enable**

This option allows AfterG3 Enable support. The settings are **"Disabled"** and "Enabled." Disabled prevents the system to power on after power is applied to the system. Enabled allows the system to power on after power is applied to the system. This means that if an ATX compliant power supply is turned hard off or unplugged from the wall (power socket supplying it power), the computer system will not power back on immediately after the power cord is reattached or the hard off switch is flipped back on. The power button on the front of the chassis is usually the soft off, meaning that there is still power being supplied to the motherboard even though the system looks completely off. Hard off means that there is not power being supplied to the system at all. The only power is coming from the backup battery on the motherboard.

**Green PC Monitor Power State**

This option specifies the power state that a green PC-compliant monitor enters when BIOS places it in a power saving state after the specified period of display inactivity has expired. The settings include "Standby", **"Suspend"** and "Off."

**Video Power Down Mode**

This option specifies the power state that the VGA video subsystem enters after the specified period of display inactivity has expired. The settings include "Disabled", "Standby" and **"Suspend**."

**Hard Disk Power Down Mode**

This option specifies the power conserving state that the hard disk drive(s) enters after the specified period of inactivity has expired. The settings include "Disabled", "Standby" and **"Suspend**."

**Hard Disk Time Out (Minutes)**

This option specifies the length of hard disk inactivity time that should expire before entering the power conserving state specified in the previous setting. The settings include **"Disabled"** and increments of "1-15" minutes.

**Display Activity**

This option specifies if BIOS is to monitor for display activity when in a power saving state. The **"Ignore"** setting means any display activity will not wake the system up from a power management state. The "Monitor" setting allows display activity to wake up the system from a power management state.

**Manual Throttle Ratio**

When in a power management state, throttling can be used to lower power consumption and reduce heat. This option allows the CPU to operate at a reduced average power, which includes a sacrifice in performance. The settings include "87.5%", "75.0%", "62.5%", **"50%"**, "37.5%", "25%" and "12.5%." (A setting of 75.0% means the BIOS will throttle back the CPU clock to operate 75% of the time.)

**THRM Throttle Ratio**

THRM throttling is used to lower power consumption and reduce heat. The settings include "87.5%", "75.0%", "62.5%", **"50%"**, "37.5%", "25%" and "12.5%."

**Intruder Sel**

This option allows you to set the Intruder SEL setting to "SCI" or **"SMI**." "SCI" is an acronym for "System Control Interrupt." This is considered to be ACPI (Advanced Configuration and Power Interface) mode. The operating system uses the SCI interrupt to process ACPI (Advanced Configuration and Power Interface) events signaled by GPEs (General Purpose Event), whether the system is asleep or awake when the event occurs. In other words, the wake event has the side effect of causing the system to wake up if it is asleep, but its primary purpose is to generate a SCI that notifies the operating system that the event has occurred. "SMI" is an acronym for "System Management Interrupt." This is considered to be Legacy mode. It is used to log interrupt events to operating systems that do not support ACPI (Advanced Configuration and Power Interface) and operating systems that do.

**Timer Overflow Enable**

This allows the system to generate a System Management Interrupt after a specific amount of time has passed. The settings for this option are **"Disabled"** and "Enabled."

**Thermal SMI Enable**

This allows the system to generate a System Management Interrupt after a specific temperature has been exceeded. The settings for this option are **"Disabled"** and "Enabled."

**PME SMI Enable**

This allows the system to generate a System Management Interrupt after a Power Management event has ocurred. The settings for this option are **"Disabled"** and "Enabled."

**SW SMI Timer Enable**

The settings for this option are **"Disabled"** and "Enabled."

**TCO Logic SMI Enable**

This allows the system to generate a System Management Interrupt when a century rollover occurs. The settings for this option **"Disabled"** and "Enabled."

**RTC Resume**

This allows you to direct the system to resume operation at a predetermined time by using the real-time clock. The settings for this option **"Disabled"** and "Enabled."

**RTC Alarm Date**

This allows you to input the date you want the system to resume operation according to a real-time clock wake-up. Input a number from "1 to 31" to indicate the day of the month.

**RTC Alarm Time**

This allows you to input the time you want the system to resume operation according to a real-time clock wake-up. Input the hour and minutes as desired.

**AC97 Logic Resume (370SSA/370SSM)**

This allows you to wake up the system from an AC97 modem. The settings for this option **"Disabled"** and "Enabled."

**USB Controller Resume**

This allows you to wake up the system from a USB device. The settings for this option **"Disabled"** and "Enabled."

**PME Resume**

This allows you to wake up the system from a PME device. The settings for this option **"Disabled"** and "Enabled."

**RI Resume**

The settings for this option **"Disabled"** and "Enabled."

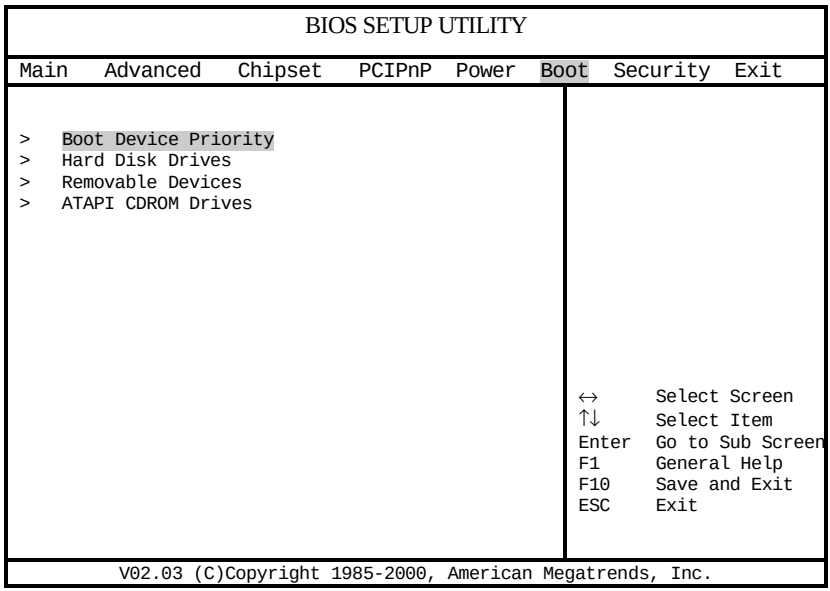
**SMBUS Resume**

This allows you to wake up the system from a System Management Bus device. The settings for this option **"Disabled"** and "Enabled."

**LAN Wake-Up (370SSR/370SSE)**
This allows you to wake up LAN1 and LAN2 from a System Management Bus device. The settings for this option **"Disabled"** and "Enabled."

## 4-8 Boot Setup

Choose Boot Setup from the AMIBIOS Setup main menu. All Boot Setup options are described in this section. The Boot Setup screen is shown below.



## Boot Device Priority

**1st Boot Device**

AMI BIOS automatically detects hardware devices of the system. This option allows the BIOS to specify the order of boot sequence that is auto - detected by the BIOS. The settings for the 1st Boot Device are **"Removeable Device"**, "Hard Drive", "ATAPI CDROM", "Onboard LAN1 Option", and "Onboard LAN2 Option."

**2nd Boot Device**

The settings for the 2nd Boot Device are **"Removeable Device"**, "Hard Drive", "ATAPI CDROM", "Onboard LAN1 Option", and "Onboard LAN2 Option."

**3rd Boot Device**

The settings for the 3rd Boot Device are **"Removeable Device"**, "Hard Drive", "ATAPI CDROM", "Onboard LAN1 Option", and "Onboard LAN2 Option."

## Hard Disk Drives

Use this screen to view the hard drives that have been auto-detected or entered manually on your system.

## Removeable Devices

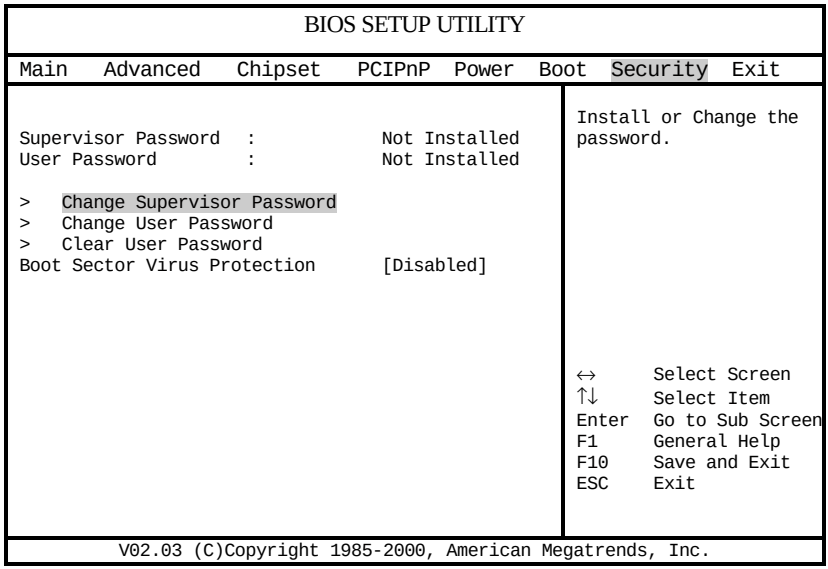
Use this screen to view the removeable devices that have been auto-detected or entered manually on your system.

## ATAPI CDROM Drives

Use this screen to view the ATAPI CDROM drives that have been auto-detected or entered manually on your system.

## 4-9 Security Setup

Choose "Security Setup" from the AMIBIOS "Setup Utility" main menu. All Security Setup options are described in this section. The Security Setup screen is shown below.




### Supervisor Password

### User Password

AMIBIOS provides both Supervisor and User password functions. If you use both passwords, the Supervisor password must be set first. The system can be configured so that all users must enter a password every time the system boots or when AMIBIOS Setup is executed, using either or both the Supervisor password or User password. The Supervisor and User passwords activate two different levels of password security. If you select "Password Support", you are prompted for a 1 – 6 character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must clear the BIOS' CMOS and reconfigure. **Remember your Password!**

Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in the BIOS' CMOS.

### Change Supervisor Password

This option allows you to change a supervisor password that was entered previously.

### Change User Password

This option allows you to change a user password that was entered previously.

### Clear User Password

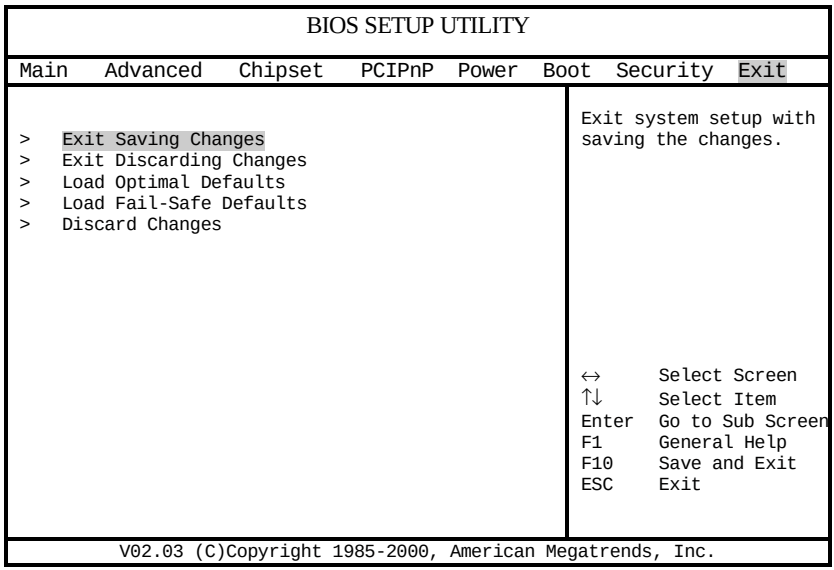
Use this option to clear the user password so that it is not required to be entered when the system boots up.

### Boot Sector Virus Protection

This option allows you to enable or disable a virus detection program to protect the boot sector of your hard disk drive. The settings for this option **are "Disabled"** and "Enabled." If Enabled, AMIBIOS will display a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive.

## 4-10 Exit Setup

Choose "Exit Setup" from the AMIBIOS "Setup Utility" main menu. All Exit Setup options are described in this section. The Exit Setup screen is shown below.




### Exit Saving Changes

Highlighting this setting and then pressing the <Enter> key will save any changes you made in the BIOS Setup program and then exit. Your system should then continue with the boot up procedure.

### Exit Discarding Changes

Highlighting this setting and then pressing the <Enter> key will ignore any changes you made in the BIOS Setup program and then exit. Your system should then continue with the boot up procedure.

## Load Optimal Defaults

Highlighting this setting and then pressing the <Enter> key provides the optimum performance settings for all devices and system features.

## Load Failsafe Defaults

Highlighting this setting and then pressing the <Enter> key provides the safest set of parameters for the system. Use them if the system is behaving erratically.

## Discard Changes

Highlighting this setting and then pressing the <Enter> key will ignore any changes you made in the BIOS Setup program but will not exit the BIOS Setup program.

## Notes

# Appendix A
# BIOS Error Beep Codes & Messages

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

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

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

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list, on the following page, correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

# AMI BIOS Error Beep Codes

| Beep Code | Error Message | Description |
|---|---|---|
| 1 beep | Refresh | ***The memory refresh circuitry on the motherboard is faulty*** |
| 2 beeps | BIOS ROM file absent | ***The BIOS was unable to find the specific file name required to flash the BIOS*** |
| 3 beeps | Base 64KB memory failure | ***Memory failure occurred in the first 64KB of Memory*** |
| 4 beeps | Flash program successful | ***The flash was properly programmed with the BIOS ROM file.*** |
| 5 beeps | Media read error | ***The floppy or ATAPI media is not presented or cannot be read*** |
| 6 beeps | Keyboard controller Gate A20 failure | ***The keyboard controller may be bad. The BIOS cannot switch to protected mode.*** |
| 7 beeps | Processor exception interrupt error | ***The CPU generated an exception interrupt*** |
| 8 beeps | Display memory read/write error | ***The system video adapter is either missing or its memory is faulty. This is not a fatal error.*** |
| 10 beeps | Flash erase error | ***The flash device was unable to be properly programmed.*** |
| 11 beeps | Flash program error | ***The flash device was unable to be properly programmed.*** |
| 12 beeps | BIOS ROM file incorrect size | ***The BIOS ROM file found does not match the size of the flash device*** |
| 13 beeps | BIOS ROM image mismatch | ***The BIOS ROM file layout configuration does not match image present in the flash device.*** |
| 5 short +_1 long beeps | Memory Error | ***No memory detected in the system*** |
| 6 short + 1 long beeps | Memory Error | ***EDO memory detected in system*** |
| 7 short + 1 long beeps | SMBUS Error | ***SMBUS error*** |

# Appendix B
# AMIBIOS POST Codes

When AMIBIOS performs the Power On Self Test, it writes diagnostic codes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, diagnostic equipment can be attached to the computer to read I/O port 0080h.

## B-1 Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution:

| Checkpoint | Code Description |
|---|---|
| D0h | The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified. |
| D1h | Initializing the DMA controller, performing the keyboard controller BAT test, starting memory refresh, and entering 4 GB flat mode next. |
| D3h | Starting memory sizing next. |
| D4h | Returning to real mode. Executing any OEM patches and setting the Stack next. |
| D5h | Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0. |
| D6h | Control is in segment 0. Next, checking if <Ctrl> <Home> was pressed and verifying the system BIOS checksum. If either <Ctrl> <Home> was pressed or the system BIOS checksum is bad, next will go to checkpoint code E0h. Otherwise, going to checkpoint code D7h. |

## B-2 Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution:

| Checkpoint | Code Description |
|---|---|
| E0h | The onboard floppy controller if available is initialized. Next, beginning the base 512 KB memory test. |
| E1h | Initializing the interrupt vector table next. |
| E2h | Initializing the DMA and Interrupt controllers next. |
| E6h | Enabling the floppy drive controller and Timer IRQs. Enabling internal cache memory. |
| Edh | Initializing the floppy drive. |
| Eeh | Looking for a floppy diskette in drive A:. Reading the first sector of the diskette. |
| Efh | A read error occurred while reading the floppy drive in drive A:. |
| F0h | Next, searching for the AMIBOOT.ROM file in the root directory. |
| F1h | The AMIBOOT.ROM file is not in the root directory. |
| F2h | Next, reading and analyzing the floppy diskette FAT to find the clusters occupied by the AMIBOOT.ROM file. |
| F3h | Next, reading the AMIBOOT.ROM file, cluster by cluster. |
| F4h | The AMIBOOT.ROM file is not the correct size. |
| F5h | Next, disabling internal cache memory. |
| FBh | Next, detecting the type of flash ROM. |
| FCh | Next, erasing the flash ROM. |
| FDh | Next, programming the flash ROM. |
| FFh | Flash ROM programming was successful. Next, restarting the system BIOS. |

## B-3 Uncompressed Initialization Codes

The following runtime checkpoint codes are listed in order of execution. These codes are uncompressed in F0000h shadow RAM.

| Checkpoint | Code Description |
|---|---|
| 03h | The NMI is disabled. Next, checking for a soft reset or a power on condition. |
| 05h | The BIOS stack has been built. Next, disabling cache memory. |
| 06h | Uncompressing the POST code next. |
| 07h | Next, initializing the CPU and the CPU data area. |
| 08h | The CMOS checksum calculation is done next. |
| 0Ah | The CMOS checksum calculation is done. Initializing the CMOS status register for date and time next. |
| 0Bh | The CMOS status register is initialized. Next, performing any required initialization before the keyboard BAT command is issued. |
| 0Ch | The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller. |
| 0Eh | The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test. |
| 0Fh | The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next. |
| 10h | The keyboard controller command byte is written. Next, issuing the Pin 23 and 24 blocking and unblocking command. |
| 11h | Next, checking if <End or <Ins> keys were pressed during power on. Initializing CMOS RAM if the *Initialize CMOS RAM in every boot* AMIBIOS POST option was set in AMIBCP or the <End> key was pressed. |
| 12h | Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2. |
| 13h | The video display has been disabled. Port B has been initialized. Next, initializing the chipset. |
| 14h | The 8254 timer test will begin next. |
| 19h | The 8254 timer test is over. Starting the memory refresh test next. |
| 1Ah | The memory refresh line is toggling. Checking the 15 second on/off time next. |

| Checkpoint | Code Description |
|---|---|
| 2Bh | Passing control to the video ROM to perform any required configuration before the video ROM test. |
| 2Ch | All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it. |
| 2Dh | The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control. |
| 23h | Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors. |
| 24h | The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin. |
| 25h | Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on. |
| 27h | Any initialization before setting video mode will be done next. |
| 28h | Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next. |
| 2Ah | Bus initialization system, static, output devices will be done next, if present. See the last page for additional information. |
| 2Eh | Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next. |
| 2Fh | The EGA/VGA controller was not found. The display memory read/write test is about to begin. |
| 30h | The display memory read/write test passed. Look for retrace checking next. |
| 31h | The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next. |
| 32h | The alternate display memory read/write test passed. Looking for alternate display retrace checking next. |
| 34h | Video display checking is over. Setting the display mode next. |
| 37h | The display mode is set. Displaying the power on message next. |
| 38h | Initializing the bus input, IPL, general devices next, if present. See the last page of this chapter for additional information. |
| 39h | Displaying bus initialization error messages. See the last page of this chapter for additional information. |
| 3Ah | The new cursor position has been read and saved. Displaying the *Hit <DEL>* message next. |
| 3Bh | The *Hit <DEL>* message is displayed. The protected mode memory test is about to start. |

| Checkpoint | Code Description |
|---|---|
| 40h | Preparing the descriptor tables next. |
| 42h | The descriptor tables are prepared. Entering protected mode for the memory test next. |
| 43h | Entered protected mode. Enabling interrupts for diagnostics mode next. |
| 44h | Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next. |
| 45h | Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next. |
| 46h | The memory wraparound test is done. Memory size calculation has been done. Writing patterns to test memory next. |
| 47h | The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next. |
| 48h | Patterns written in base memory. Determining the amount of memory below 1 MB next. |
| 49h | The amount of memory below 1 MB has been found and verified. Determining the amount of memory above 1 MB memory next. |
| 4Bh | The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next. |
| 4Ch | The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next. |
| 4Dh | The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next. |
| 4Eh | The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next. |
| 4Fh | The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next. |
| 50h | The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadow ing next. |
| 51h | The memory size display was adjusted for relocation and shadowing. Testing the memory above 1 MB next. |
| 52h | The memory above 1 MB has been tested and initialized. Saving the memory size information next. |
| 53h | The memory size information and the CPU registers are saved. Entering real mode next. |
| 54h | Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next. |

| Checkpoint | Code Description |
|---|---|
| 57h | The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next. |
| 58h | The memory size was adjusted for relocation and shadowing. Clearing the *Hit <DEL>* message next. |
| 59h | The *Hit <DEL>* message is cleared. The *<WAIT...>* message is displayed. Starting the DMA and interrupt controller test next. |
| 60h | The DMA page register test passed. Performing the DMA Controller 1 base register test next. |
| 62h | The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next. |
| 65h | The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next. |
| 66h | Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next. |
| 67h | Completed 8259 interrupt controller initialization. |
| 7Fh | Extended NMI source enabling is in progress. |
| 80h | The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next. |
| 81h | A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next. |
| 82h | The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next. |
| 83h | The command byte was written and global data initialization has completed. Checking for a locked key next. |
| 84h | Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next. |
| 85h | The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next. |
| 86h | The password was checked. Performing any required programming before WINBIOS Setup next. |
| 87h | The programming before WINBIOS Setup has completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next. |
| 88h | Returned from WINBIOS Setup and cleared the screen. Perform ing any necessary programming after WINBIOS Setup next. |

| Checkpoint | Code Description |
|---|---|
| 89h | The programming after WINBIOS Setup has completed. Displaying the power on screen message next. |
| 8Bh | The first screen message has been displayed. The *<WAIT...>* message is displayed. Performing the PS/2 mouse check and extended BIOS data area allocation check next. |
| 8Ch | Programming the WINBIOS Setup options next. |
| 8Dh | The WINBIOS Setup options are programmed. Resetting the hard disk controller next. |
| 8Fh | The hard disk controller has been reset. Configuring the floppy drive controller next. |
| 91h | The floppy drive controller has been configured. Configuring the hard disk drive controller next. |
| 95h | Initializing the bus option ROMs from C800 next. See the last page of this chapter for additional information. |
| 96h | Initializing before passing control to the adaptor ROM at C800. |
| 97h | Initialization before the C800 adaptor ROM gains control has completed. The adaptor ROM check is next. |
| 98h | The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control. |
| 99h | Any initialization required after the option ROM test has completed. Configuring the timer data area and printer base address next. |
| 9Ah | Set the timer and printer base addresses. Setting the RS-232 base address next. |

| Checkpoint | Code Description |
|---|---|
| 9Bh | Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next. |
| 9Ch | Required initialization before the Coprocessor test is over. Initializing the Coprocessor next. |
| 9Dh | Coprocessor initialized. Performing any required initialization after the Coprocessor test next. |
| 9Eh | Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next. |
| A2h | Displaying any soft errors next. |
| A3h | The soft error display has completed. Setting the keyboard typematic rate next. |
| A4h | The keyboard typematic rate is set. Programming the memory wait states next. |
| A5h | Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next. |
| A7h | NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next. |
| A8h | Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next. |
| A9h | Returned from adaptor ROM at E000h control. Performing any initialization required after the E000 option ROM had control next. |
| Aah | Initialization after E000 option ROM control has completed. Displaying the system configuration next. |
| Abh | Uncompressing the DMI data and executing DMI POST initialization next. |
| B0h | The system configuration is displayed. |
| B1h | Copying any code to specific areas. |
| 00h | Code copying to specific areas is done. Passing control to INT 19h boot loader next. |

## B-4 Bus Checkpoint Codes

The system BIOS passes control to different buses at the following checkpoints:

| Checkpoint Code | Description |
|---|---|
| 2Ah | Initializing the different bus system, static, and output devices, if present. |
| 38h | Initialized bus input, IPL, and general devices, if present. |
| 39h | Displaying bus initialization error messages, if any. |
| 95h | Initializing bus adaptor ROMs from C8000h through D8000h. |

**Additional Bus Checkpoints**

While control is inside the different bus routines, additional checkpoints are output to I/O port address 0080h as word to identify the routines being executed. These are word checkpoints.

The low byte of checkpoint is the system BIOS checkpoint where control is passed to the different bus routines.

The high byte of checkpoint indicates that the routine is being executed in different buses.

**High Byte**

The high byte of these checkpoints includes the following information:

| Bits | Description |
|---|---|
| **Bits 7-4** | |
| 0000 Function 0. | Disable all devices on the bus. |
| 0001 Function 1. | Initialize static devices on the bus. |
| 0010 Function 2. | Initialize output devices on the bus. |
| 0011 Function 3. | Initialize input devices on the bus. |
| 0100 Function 4. | Initialize IPL devices on the bus. |
| 0101 Function 5. | Initiate general devices on the bus. |
| 0110 Function 6. | Initialize error reporting on the bus. |
| 0111 Function 7. | Initialize add-on ROMs for all buses. |

| Bits 3-0 | Specify the bus |
|---|---|
| 0 | Generic DIMM Device Initialization Manager. |
| 1 | Onboard System devices. |
| 2 | ISA devices. |
| 3 | EISA devices. |
| 4 | ISA PnP devices. |
| 5 | PCI devices. |

## Notes