SUPER®

# SUPER P4SBR
# SUPER P4SBE

## 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 P4SBR/P4SBE motherboard. The SUPER P4SBR/P4SBE supports single Intel Pentium® 4, 1.50 - 2.40 GHz processors at a system bus speed of 400 MHz. Please refer to the support section of our web site (http://www.supermicro.com/TechSupport.htm) for a complete listing of supported processors.

Single 478-pin Pentium 4 processors are housed in a microFCPGA2 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 P4SBR/P4SBE and gives 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 RIMM 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** provides AwardBIOS POST Codes.
**Appendix B** lists AwardBIOS POST Messages.
**Appendix C** lists AwardBIOS Error Beep Codes.

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## Preface



## Chapter 1: Introduction



## Chapter 2: Installation

## Chapter 3: Troubleshooting

## Chapter 4: AwardBIOS



## 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) ATA66/100 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) Supermicro CD or diskettes containing drivers and utilities

One (1) CPU heatsink fan and clips (retail only)

One (1) User's/BIOS Manual

One (1) CPU heat sink bracket

One (1) USB cable with one port (retail only)

SCSI Accessories (P4SBR only)

One (1) 50-pin Ultra SCSI cable

One (1) 68-pin Ultra SCSI cable

One (1) set of SCSI driver diskettes

One (1) SCSI manual

## 1-4 Contacting Supermicro


### Headquarters

Address: SuperMicro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.
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support@supermicro.com (Technical Support)
Web Site: www.supermicro.com

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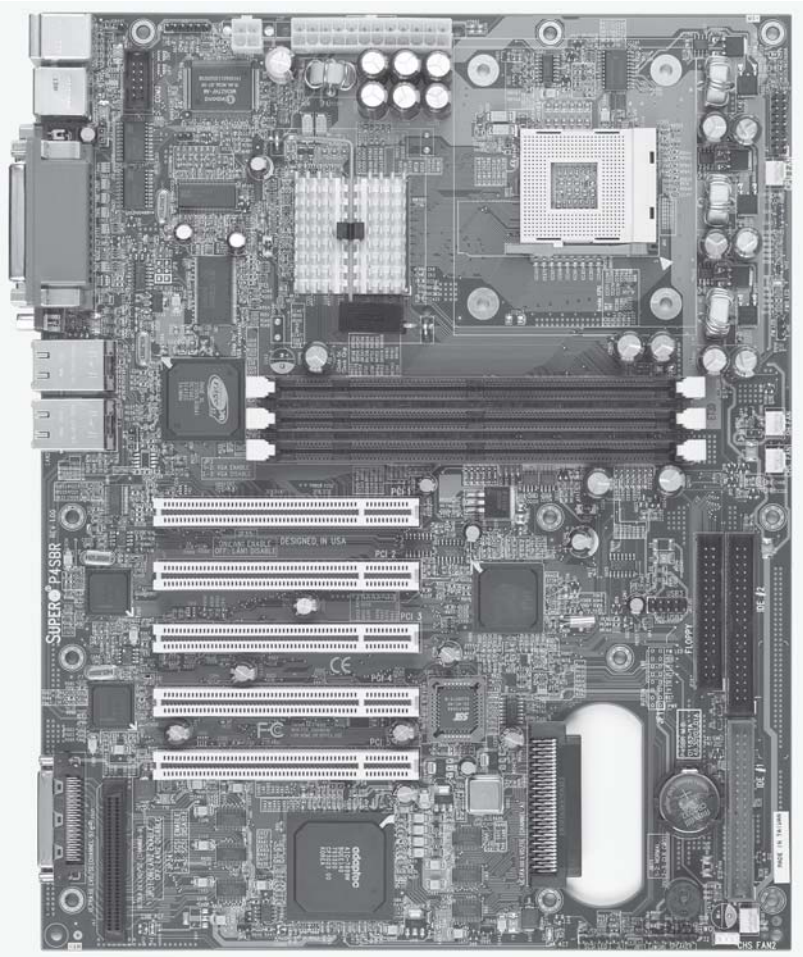
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

## Notes

## SUPER P4SBR

**Figure 1-1. SUPER P4SBR Image**



## SUPER P4SBE

**Figure 1-2. SUPER P4SBE Image**

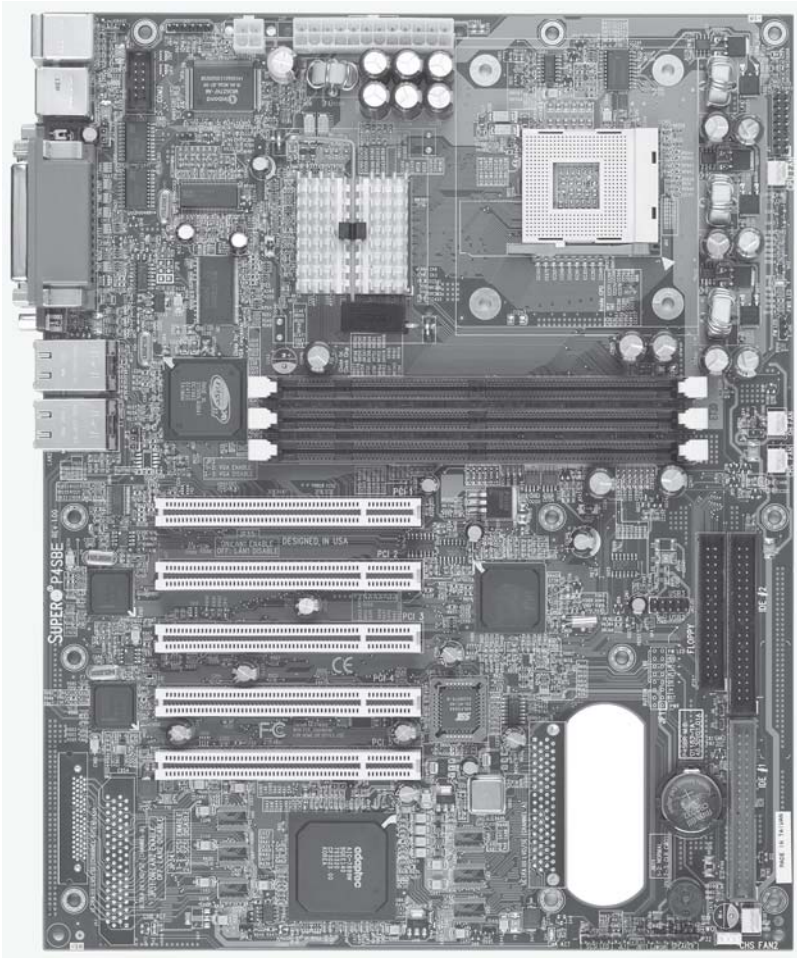
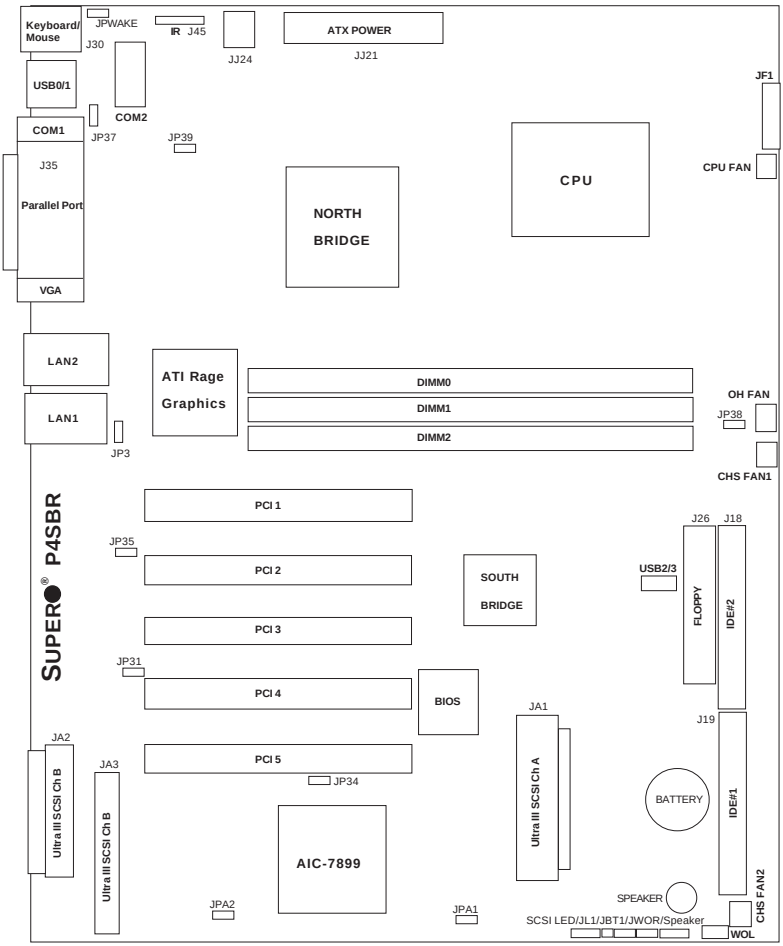


**Figure 1-3. SUPER P4SBR Layout**
(not drawn to scale)




See chapter 2 for detailed information on jumpers, I/O ports and the JF1 Front Panel Connectors. Jumpers not indicated are for test purposes only.

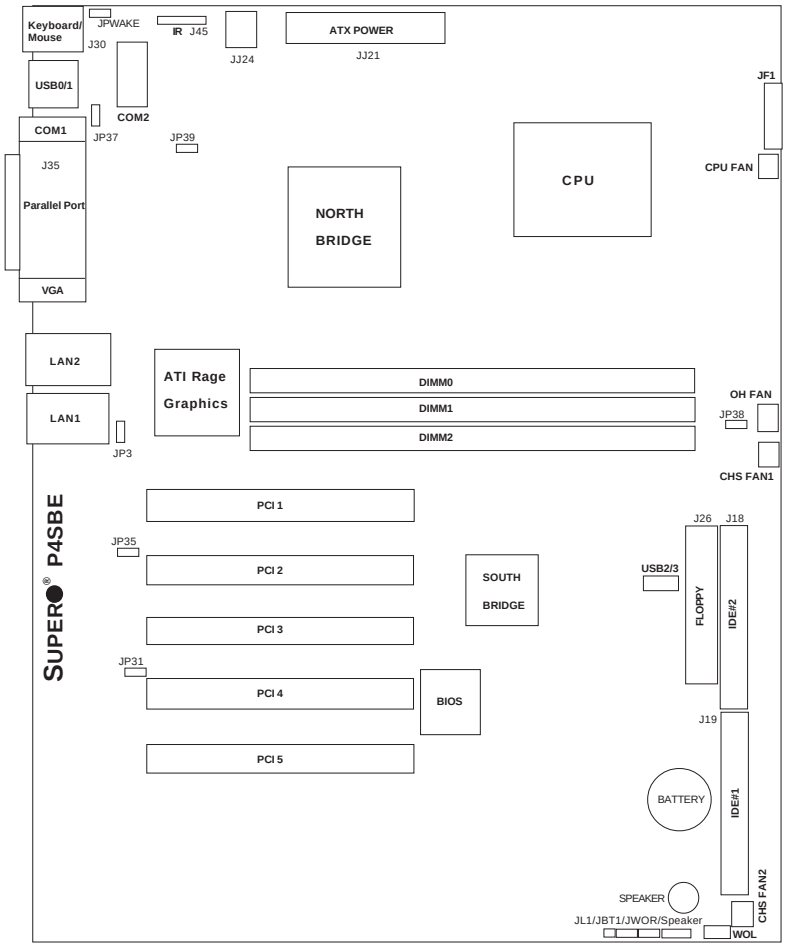
## P4SBR Quick Reference

| Jumpers | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | Pins 1-2 (Normal) |
| JPA1 | LVD SCSI Ch A Term | Open (Enabled) |
| JPA2 | LVD SCSI Ch B Term | Open (Enabled) |
| JP3 | VGA Enable/Disable | Pins 1-2 (Enabled) |
| JP31 | LAN2 Enable/Disable | Closed (Enabled) |
| JP34 | SCSI Enable/Disable | Pins 1-2 (Enabled) |
| JP35 | LAN1 Enable/Disable | Closed (Enabled) |
| JP37 | USB Wakeup | Pins 1-2 (Disabled) |
| JP38 | OH Fan On/Standby | Open (Standby) |
| JP39 | Watch Dog En/Disable | Open (Disabled) |
| JPWAKE | Keyboard Wake-Up | Pins 1-2 (Disabled) |

| Connectors | Description |
|---|---|
| COM1/COM2 | COM1/COM2 Serial Port Connector |
| CHS Fan 1/2 | Chassis Fan Headers |
| CPU FAN | CPU Fan Header |
| DIMM0/1/2 | Memory (DIMM) Slots |
| JA1 | Ultra III LVD SCSI Channel A |
| JA2 | Ultra III LVD SCSI Channel B |
| JA3 | Ultra III LVD SCSI Channel B |
| JF1 | Front Control Panel |
| JJ21 | ATX 12V Power Connector (20-pin) |
| JJ24 | ATX 12V Power Connector (4-pin) |
| JL1 | Chassis Intrusion Header |
| JP26 | Floppy Disk Drive Connector |
| JWOR | Wake-On-Ring Header |
| J18, J19 | IDE Hard Disk Drive Connectors |
| J30 | PS/2 Keyboard/Mouse |
| J35 | Parallel Printer Port |
| J45 | Infrared Device Header |
| OH Fan | Thermal Control (Overheat) Fan Header |
| SCSI LED | SCSI Activity LED Indicator |
| Speaker | External Speaker Header |
| USB0/1 | Universal Serial Bus Ports #0 / #1 |
| USB2/3 | Universal Serial Bus Port #2 / #3 |
| WOL | Wake-On-LAN |

**Note:** The 4-pin connector at JJ24 must be connected to meet the safety requirements of the ATX 12V specifications.

**Figure 1-4. SUPER P4SBE Layout**
(not drawn to scale)

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| JP31 | LAN2 Enable/Disable | Closed (Enabled) |
| JP35 | LAN1 Enable/Disable | Closed (Enabled) |
| JP37 | USB Wakeup | Pins 1-2 (Disabled) |
| JP38 | OH Fan On/Standby | Open (Standby) |
| JP39 | Watch Dog En/Disable | Open (Disabled) |
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| Connectors | Description |
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| JF1 | Front Control Panel |
| JJ21 | ATX 12V Power Connector (20-pin) |
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| J45 | Infrared Device Header |
| OH Fan | Thermal Control (Overheat) Fan Header |
| Speaker | External Speaker Header |
| USB0/1 | Universal Serial Bus Ports #0 / #1 |
| USB2/3 | Universal Serial Bus Port #2 / #3 |
| WOL | Wake-On-LAN |

**Note:** The 4-pin connector at JJ24 must be connected to meet the safety requirements of the ATX 12V specifications.

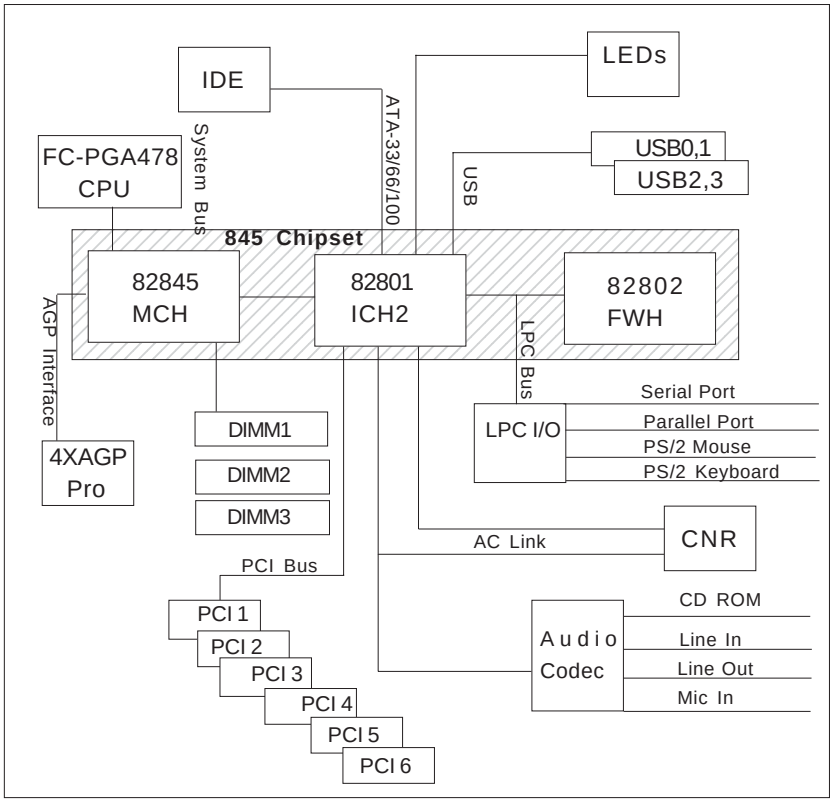



**Figure 1-5. 845 Chipset: System Block Diagram**

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

## Motherboard Features

**CPU**

- Single Intel Pentium® 4 478-pin micro FCPGA 1.50 to 2.40 GHz processors at a 400 MHz system bus speed
  **Note: please refer to the support setion of our website for a complete listing of supported processors (http://www.supermicro.com/TechSupport.htm).**

**Memory**

- Three 168-pin DIMMs for up to 3 GB unbuffered PC133/100 SDRAM. Error Checking & Correction and Parity Checking are fully supported.

**Chipset**

- Intel 845 Chipset

**Expansion Slots**

- Five 32-bit, 33MHz PCI slots

**BIOS**

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

**PC Health Monitoring**

- Seven 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 monitoring 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/PC98 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 for dual channel Ultra160 SCSI (P4SBR only)
- Intel 82559 for dual 10/100 LAN ports
- ATI Rage XL 8 MB PCI graphics controller
- Dual Ultra DMA100 IDE Bus Master
- 1 floppy port interface (up to 2.88 MB)
- 2 Fast UART 16550A compatible serial ports
- 1 EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) supported parallel port
- PS/2 mouse and PS/2 keyboard ports
- Up to 4 USB (Universal Serial Bus) ports
- VGA port
- Infrared port

**Other**

- Internal/external modem ring-on
- Recovery from AC power loss control
- Wake-on-LAN (WOL)
- Multiple CPU clock frequency ratio selections (set in BIOS)

**CD Utilities**

- BIOS flash upgrade utility
- Drivers for 845 chipset utilities

**Dimensions**

- P4SBR: ATX, 12" x 9.6" (305 x 244 mm)
- P4SBE: ATX, 12" x 9.6" (305 x 244 mm)

## 1-2 Chipset Overview

Intel's 845 chipset is made up of three main components:

The 82845 Memory Controller Hub (MCH) with an Accelerated Hub Architecture (AHA) bus.

The 82801 BA I/O Controller Hub (ICH2) with an AHA bus.

The 82802 AB Firmware Hub (FWH).

### Memory Controller Hub (MCH)

The MCH includes the host (CPU) interface, SDRAM interface, ICH2 interface and 4xAGP interface for the 845 chipset. It contains advanced power management logic and supports three DIMMS for up to 3 GB of unbuffered SDRAM. The AGP 2.0 interface supports 4x data transfers and operates at a peak bandwidth of 1056 GB. The MCH host interface bus runs at 400 MHz.

### I/O Controller Hub (ICH2)

The I/O Controller Hub (ICH2) subsystem on the P4SBR/P4SBE integrates many of the input/output functions of the 845 chipset, including a dual channel ATA-33/66/100 Bus Master IDE controller and two USB controllers that offer 24 Mbps of bandwidth across four ports. It also provides the interface to the PCI Bus and communicates with the MCH over a dedicated hub interface bus -- the AHA. The ICH2 also features an enhanced AC97 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 the system BIOS and video BIOS to eliminate a redundant nonvolatile memory component.

### Recovery from AC Power Loss

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

## 1-3 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER P4SBR/P4SBE. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

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

The onboard voltage monitor will scan these 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 tachometer (RPM) status of the CPU and two chassis 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. It can continue to monitor for overheat conditions even 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 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 turned on.

### 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 3-phase-switching voltage regulator for the CPU core can support up to 60A current and auto-sense voltage IDs ranging from 1.1V to 1.85V. This will allow the regulator to run cooler and thus make the system more stable.

## 1-4 ACPI/PC99 Features

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

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with both Windows 98/2000 and Windows NT 4.0. **Note:** To utilize ACPI, you must reinstall Windows 98. To reinstall Windows 98 with ACPI, enter DOS and type "setup /p J" at the CDROM prompt (usually D:\) with the Windows 98 CD loaded. (Make sure you include the spaces after "setup" and "p".) Then press <Enter>. 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 the USB keyboard is the only keyboard in the system, it keyboard will function like a normal keyboard during system boot-up.

### Slow Blinking LED for Suspend-State Indicator

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

### BIOS Support for USB Keyboard

If the USB keyboard is the only keyboard in the system, it keyboard will function like 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 4 seconds. The power will turn off and no power will be provided to the motherboard.

### Suspend to RAM (STR)

All tasks are stored in RAM and can be resumed within seconds from the suspend mode. This can save you time by avoiding the need to shutdown and reboot your system during idle periods. The S3 suspend mode is that in which the PC's power consumption is the lowest possible while maintaining the system context in memory.

### 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.

## 1-5 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates of 1.4+ GHz.

The SUPER P4SBR/P4SBE accommodates ATX 12V 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 12V power supply Specification 1.1 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.

## 1-6 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 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.

It also provides two high-speed, 16550 compatible serial communication ports (UARTs), 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 rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through a 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 be flexibly adjusted 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.

### Installation Procedures

Follow the procedures below for the installation of the motherboard and the system:

1. Installing the processor and the heat sink.

2. Installing the motherboard in the chassis.

3. Installing the memory and add-on cards.

4. Finally, installing the cables and drivers.

## 2-2 Processor and Heatsink Fan Installation

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

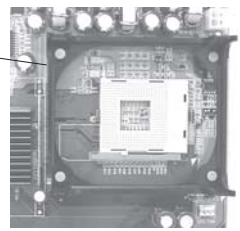
**IMPORTANT:** Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.

### Installation of the Processor and Heatsink

1. Locate the following components, which are included in the shipping package.


**Note:** The CPU heatsink fan and clips are included only with the retail versions of the P4SBR and P4SBE. If you buy a boxed Intel Pentium 4 478/ Northwood processor it should include a heatsink, fan and retention mechanism. If you buy a processor separately, use only a Supermicro or Intel certified heatsink and fan.

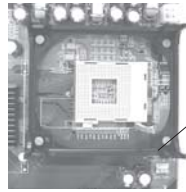
2. Insert the white pegs into the black anchors. Do not force the white pegs all the way in - about 1/3 of the white pegs should be inside the black anchors. (These are for chassis that do not have four CPU retention holes.)




3. Place a retention bracket in the proper position and secure it by pressing two pegs into the retention holes until you hear a *click*. The clicking sound indicates that the peg is locked and secured.

4. Secure the other retention bracket into position by repeating Step 3.

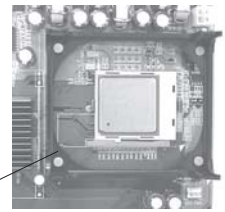
5. Lift the lever on the CPU socket.



Socket Lever

6. Install the CPU in the socket. Make sure that Pin 1 of the CPU is seated on Pin 1 of the socket (both corners are marked with a triangle).

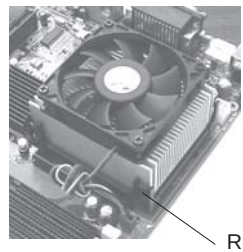
7. Press the lever down until you hear it *click* into the locked position.



Socket lever in locked position

8. Apply the proper amount of thermal compound to the CPU die.

9. Place the heatsink on top of the CPU and press firmly downward - do not twist or slide the heatsink to seat thermal compound.



Retainer clip attachment point

10. Secure the heatsink by locking the retention clips into their proper position.

11. Connect the cord of CPU fan to the proper CPU fan connector.

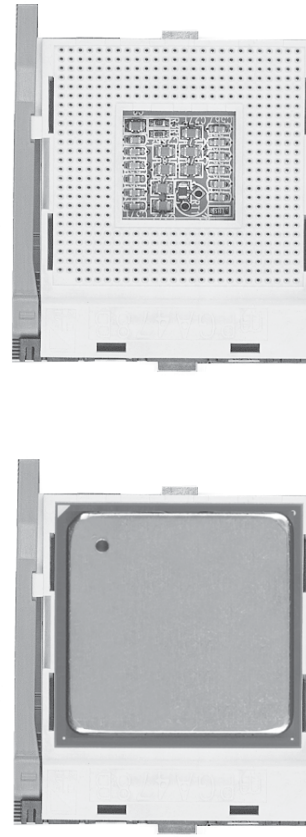


**Figure 2-1. 478-Pin FCPGA Socket: Empty and with Processor Installed**

## 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.

## 2-4 Installing DIMMs

***CAUTION***

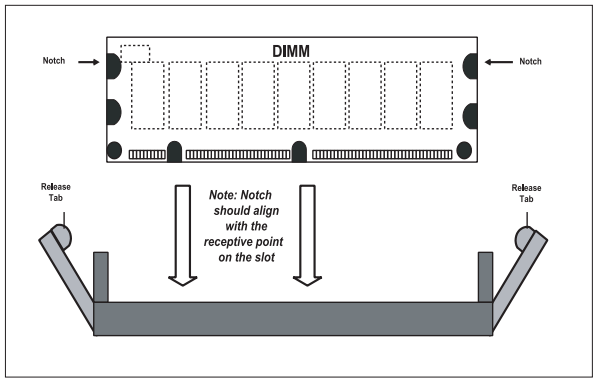
Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

### Memory Module Installation (See Figure 2-2)

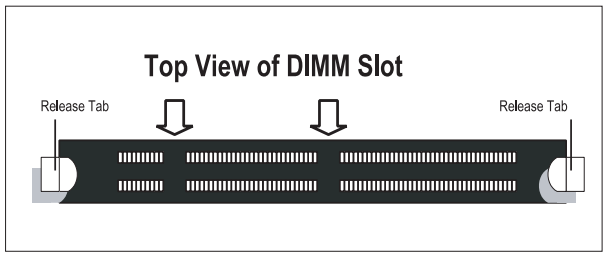
1. Insert each memory module vertically into a DIMM slot. Pay attention to the two notches along the bottom of the module to prevent inserting the module incorrectly.
2. Gently press down on the memory module until it snaps into place.
3. Three PC 133 SDRAM sockets support up to 3 GB PC133/PC100 unbuffered SDRAM. ECC type memory is supported. PC133 and PC100 memory are both fully supported at their respective speeds.

**Figure 2-2. DIMM Installation/Removal**

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



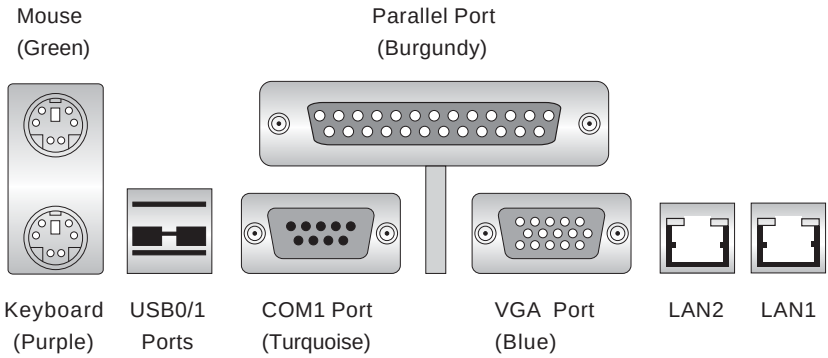

**To Remove:** Use your thumbs gently to push each release tab outward to release the DIMM from the slot.



## 2-5 I/O 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.

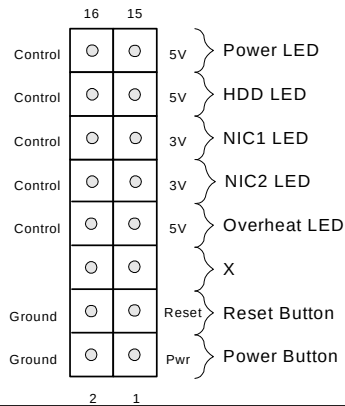
**Figure 2-3. I/O Port Locations and Definitions**




### Front Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 2-4 for the pin definitions of the Power and Reset buttons and the Overheat, NIC1, NIC2, HDD and Power LEDs, which are all located on JF1. Refer to the following section for more details.

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



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

### Power Supply Connector

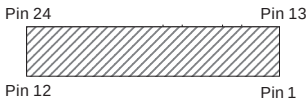
The primary power supply connector on the P4SBR/P4SBE meets the SSI (Superset ATX) 24-pin specifications; however, it also supports an ATX 20-pin connector. Thus, both 20-pin ATX and 24-pin SSI connectors can be used as long as it is correctly oriented. (Make sure that pin 1 of the PS connector is seated on pin 1 of the JJ21 header.) See the tables on the right for the pin definitions of both types. Refer to Figure A below for a 24-pin connector orientation and Figure B for a 20-pin connector orientation. Also see the table below right for JJ24 (12V connector) pin definitions.

**ATX Power Supply 24-pin Connector Pin Definitions (JJ21)**

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

**ATX Power Supply 20-pin Connector**

| Pin Number | Definitio | Pin # | Definition |
|---|---|---|---|
| 11 | +3.3V | 1 | +3.3V |
| 12 | -12V | 2 | +3.3V |
| 13 | COM | 3 | COM |
| 14 | PS_ON | 4 | +5V |
| 15 | COM | 5 | COM |
| 16 | COM | 6 | +5V |
| 17 | COM | 7 | COM |
| 18 | -5V | 8 | PW-OK |
| 19 | +5V | 9 | 5VSB |
| 20 | +5V | 10 | +12V |

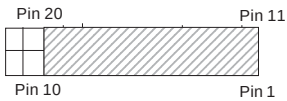



(Figure A: 24-pin connection)

**ATX Power Supply 4-pin Connector (JJ24)**

**required connection**

| Pins # | Definition |
|---|---|
| 1 & 2 | Ground |
| 3 & 4 | +12 V |




(Figure B: 20-pin connection)

PWR Supply Color Definitions

| Color | Definition |
|---|---|
| Orange | +3.3V |
| Black | Com |
| Red | 5V |
| White | Power OK |
| Yellow | +12V |
| Purple | 5V standby |
| Brown | -5V |

(For reference only)

### Power Button

The Power Button connector is located on pins 1 and 2 of JF1. 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 the table on the right for pin definitions.

**Power Button Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 1 | PW_ON |
| 2 | Ground |

### Reset Button

The Reset Button is located on pins 3 and 4 of JF1. This connector attaches to the hardware reset switch on the computer case. See the table on the right for pin definitions.

**Reset Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 3 | Ground |
| 4 | Reset |

### Overheat LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

**Overheat (OH) LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 7 | +5V |
| 8 | GND |

### NIC2 LED

The NIC2 (Network Interface Controller) LED connection is located on pins 9 and 10 of JF1. Attach the NIC2 LED cable to display network activity. Refer to the table on the right for pin definitions.

**NIC2 LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 9 | +5V |
| 10 | GND |

### NIC1 LED

The NIC1 (Network Interface Controller) LED connection is located on pins 11 and 12 of JF1. Attach the NIC1 LED cable to display network activity. Refer to the table on the right for pin definitions.

**NIC1 LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 11 | +5V |
| 12 | GND |

### HDD LED

The HDD LED (for IDE Hard Disk Drives) connection is located on pins 13 and 14 of JF1. Attach the IDE hard drive LED cable to these pins to display disk activity. Refer to the table on the right for pin definitions.

**(IDE) HDD LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 13 | +5V |
| 14 | HD Active |

### Power LED

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

**PWR_LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 15 | +5V |
| 16 | Control |

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

The ATX PS/2 keyboard and the PS/2 mouse are located on J30. Refer to the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 2-3 for locations.)

**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 I/O backplane. Refer to the table on the right for pin definitions.

**Universal Serial Bus Pin Definitions**

| USB0 | | USB1 | |
|---|---|---|---|
| Pin Number | Definition | Pin Number | Definition |
| 1 | +5V | 1 | +5V |
| 2 | P0- | 2 | P0- |
| 3 | P0+ | 3 | P0+ |
| 4 | Ground | 4 | Ground |
| 5 | N/A | 5 | Key |

## Extra Universal Serial Bus Connection (USB2/3)

The P4SBR/P4SBE also provides two additional USB headers; USB2 and USB3 are headers located near the floppy connnection and provide easy front side chassis access (cables are not included). Refer to the table on the right for pin definitions.

**USB2 Pin Definitions (J43)**

| Pin Number | Definition |
|---|---|
| 1 | Power |
| 2 | - |
| 3 | + |
| 4 | Ground |

**USB3 Pin Definitions (J51)**

| Pin Number | Definition |
|---|---|
| 1 | Power |
| 2 | - |
| 3 | + |
| 4 | Ground |

## Serial Ports

The COM1 serial port is located under the parallel port (see Figure 2-3). See the table on the right for pin definitions. The COM2 connector is a header located behind the USB ports.

(Note: NC indicates no connection.)

**Serial Port Pin Definitions (COM1, COM2)**

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

### LAN1/LAN2 Ports

Two Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables. Two LEDs on each indicate a successful connection (yellow) and activity (green).

RJ45 Ethernet Port

### Infrared Connector

The infrared connector is located at J45. See the table on the right for pin definitions. Refer to the Technical Support section of our web page for information on the infrared devices you can connect to the system.

**Infrared Pin Definitions (J45)**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | CIRRX |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |
| 6 | NC |

### Fan Headers

The motherboard has CPU, chassis and overheat fan headers designated CPU, CHS F1, CHS FAN2 and OH FAN, respectively. See the table on the right for pin definitions.

**Fan Header Pin Definitions (CPU/CHS/OH Fans)**

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

Caution: These fan headers are DC power.

### Wake-On-LAN

The Wake-On-LAN header is designated as "WOL". Refer to the table on the right 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 to use this feature.)

**Wake-On-LAN Pin Definitions (WOL)**

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

### SCSI LED Indicator (P4SBR only)

The SCSI LED connector is used to provide an LED indication of SCSI activity. See the table on the right for pin definitions.

**SCSI LED Pin Definitions (SCSI LED)**

| Pin Number | Definition |
|---|---|
| 1 | Positive |
| 2 | Negative |
| 3 | Negative |
| 4 | Positive |

### PWR LED

Attach an LED to the Power LED connection to be informed that power is being supplied to the motherboard. Refer to the table on the right for pin definitions.

**Power LED Pin Definitions (PWR LED)**

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | Control |
| 3 | Control |

### Wake-On-Ring

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

**Wake-On-Ring Pin Definitions (JWOR)**

| Pin Number | Definition |
|---|---|
| 1 | Ground |
| 2 | Wake-up |

### Chassis Intrusion

The Chassis Intrusion header is located on JL1. See the table on the right for pin definitions.

**Chassis Intrusion Pin Definitions (JL1)**

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

### Speaker

A header for an external speaker is located near JWOR. If using the onboard speaker, pins 1 and 2 should be closed with a jumper. If you wish to use an external speaker, you may connect it to this header. See the table on the right for pin definitions.

**Speaker Connector Pin Definitions (Speaker)**

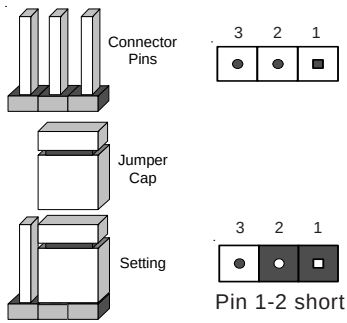
| Pin Number | Function | Definition |
|---|---|---|
| 1 | + | Red wire, Speaker data |
| 2 | Key | No connection |
| 3 | | Key |
| 4 | | Speaker data |

## 2-7 Jumper Settings

### Explanation of Jumpers

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

Note: on 2-pin jumpers, "Closed" means the jumper is on both pins and "Open" means the jumper is either on one pin only or completely off.



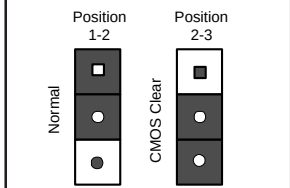

### CMOS Clear

Refer to the table on the right 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.**

**CMOS Clear Jumper Settings (JBT1)**

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



### USB Wake-Up

Jumper JP37 is used in conjunction with the Keyboard Wake-Up function in BIOS to wake the system up with a USB keyboard that has been connected to a USB port (not header). Set JP37 to pins 1-2 to support USB keyboard wake-up and resume from ACPI S1 mode and pins 2-3 pins to support USB keyboard wake-up and resume from ACPI S3 mode. See the table on the right for jumper settings.
**Note:** Your power supply must provide 5v of standby voltage with at least 1A to use this feature.

**USB Wake-Up**
**Jumper Settings (JP37)**

| Jumper Position | Definition |
|---|---|
| 1-2 | 5v |
| 2-3 | 5v Standby |

### SCSI Termination (P4SBR 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 the table on the right for jumper settings.

**SCSI Termination**
**Jumper Settings**
**(JPA1, JPA2)**

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

### SCSI Enable/Disable (P4SBR only)

Use jumper JP34 to enable or disable the onboard SCSI on your motherboard. See the table on the right for jumper settings.

**SCSI Enable/Disable**
**Jumper Settings (JP34)**

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

### LAN1/LAN2

Use jumper JP35/JP31 to enable or disable LAN 1/LAN 2, respectively. See the table on the right for jumper settings.

**LAN1/2 Enable/Disable**
**Jumper Settings**
**(J35, J31)**

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

### Overheat Fan Enable/Disable

JP38 allows you to enable or disable the overheat (thermal) fan. When enabled, the fan will operate continuously. When disabled, it will operate only when a predefined temperature threshold has been exceeded. See the table on the right for jumper settings.

**Thermal Fan Enable/Disable Jumper Settings (JP38)**

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

### Watchdog Enable/Disable

Jumper JP39 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 the table on the right for jumper settings.

**Watchdog Enable/Disable Jumper Settings (JP39)**

| 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 the table on the right for jumper settings.

**Note:** Your power supply must meet ATX specification 2.01 or higher and supply 720mA of standby power to use this feature.

**Keyboard Wake-Up Jumper Settings (JPWAKE)**

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

## 2-8 Parallel Port, Floppy/Hard Drive and SCSI Connections

Use the following information to connect 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

The parallel port is located on J35. See the table on the right for pin definitions.

**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 the table on the right for pin definitions.

**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. See the table on the right for pin definitions. You must use the ATA100/66 cable included with your system to benefit from the ATA100/66 technology.

**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 Connectors

Refer to the table below for the pin definitions of the Ultra160 SCSI connectors located at JA1, JA2 and JA3.

**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) |

## 2-9 Installing Software Drivers

After all the hardware has been installed, you must install, first of all, the operating system, and then, 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.)

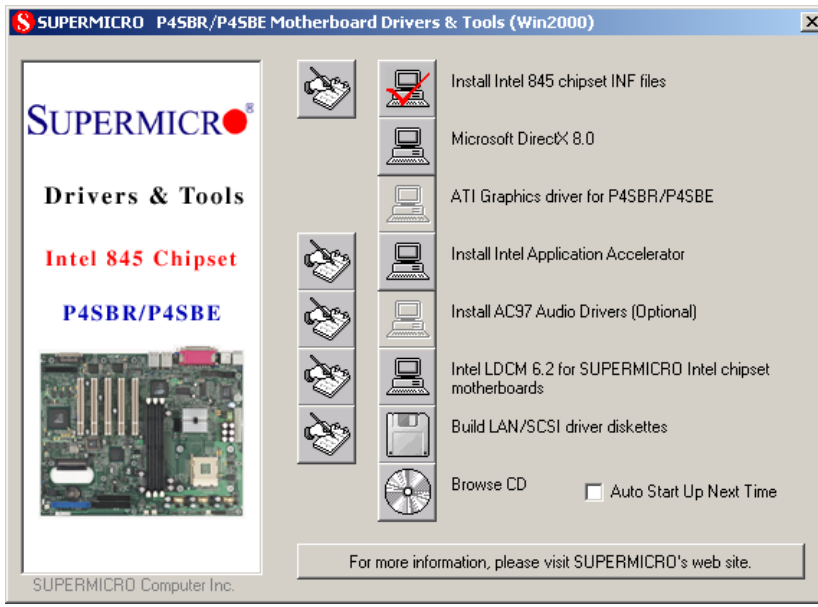



**Figure 2-5. Driver/Tool Installation Display Screen**

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.

## Notes

# Chapter 3
# Troubleshooting

## 3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. **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 in each slot.
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. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
4. Check the power supply voltage 115V/230V switch.

### Losing the System's Setup Configuration

1. 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 Question' (FAQ) sections 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 at 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 P4SBR/ P4SBE motherboard can support?**

**Answer:** The P4SBR/P4SBE has three 168-pin DIMM slots that support up to 3 GB MB. ECC memory and Parity Checking are supported. The 600/800 MHz memory bus fully supports both PC133 and PC100 memory.

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

**Answer:** It is recommended that you **do not** upgrade your BIOS if you are not experiencing problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com. 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 download 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 set to "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 850 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**

**P4SBR**

PCI 1 shares an IRQ with onboard SCSI
PCI 2 shares an IRQ with the System Management Bus
PCI 3 has a dedicated IRQ (does not share)
PCI 4 shares an IRQ with onboard SCSI and USB controller#1 (USB0/USB1)
PCI 5 shares an IRQ with LAN1

**P4SBE**

PCI 1 has a dedicated IRQ (does nopt share)
PCI 2 shares an IRQ with the System Management Bus
PCI 3 has a dedicated IRQ (does not share)
PCI 4 shares an IRQ with USB controller#1 (USB0/USB1)
PCI 5 shares an IRQ with LAN1

**Question: How do I connect the ATA66/100 cable to my IDE device(s)?**

**Answer:** The 80-wire/40-pin high-density 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
# AwardBIOS

## 4-1 Introduction

This chapter describes the AwardBIOS for the P4SBR/P4SBE. The Award ROM BIOS is stored in a Flash chip and can be easily upgraded using a floppy disk-based program.

**Note:** Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to BIOS that are not reflected in this manual.

### System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The AwardBIOS Flash chip stores the system parameters, such as amount of memory, type of disk drives and video displays, etc. CMOS requires very little power. When the computer is turned off, a back-up battery provides power to the BIOS Flash chip, 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 CMOS information 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.

## 4-2 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 Main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

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

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

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

**Press DEL to enter SETUP**

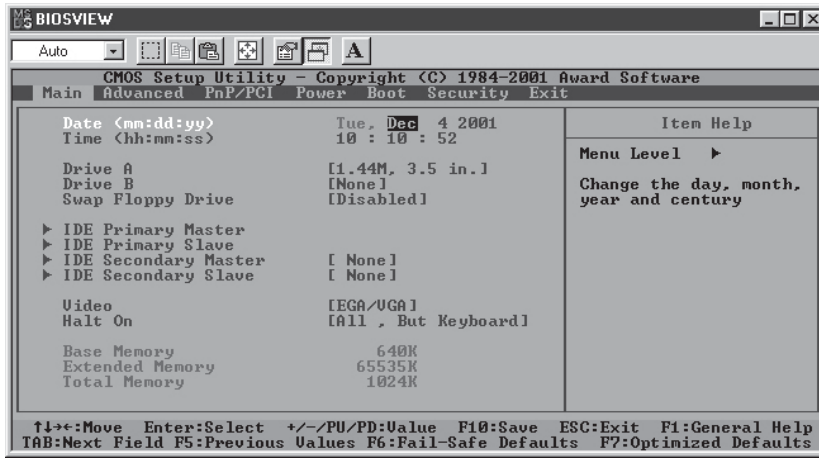
## 4-3 Main BIOS Setup

All Main Setup options are described in this section. The Main BIOS Setup screeen is displayed below.

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

Press the <Esc> key to exit theCMOS Setup Menu and use the <Left> <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.

## Main BIOS Setup Menu




### Date/Time

Set the system date and time. Key in the correct information in the "mm", "dd" and "yy" fields. Press the "Enter" key to save the data.

### Drive A/Drive B

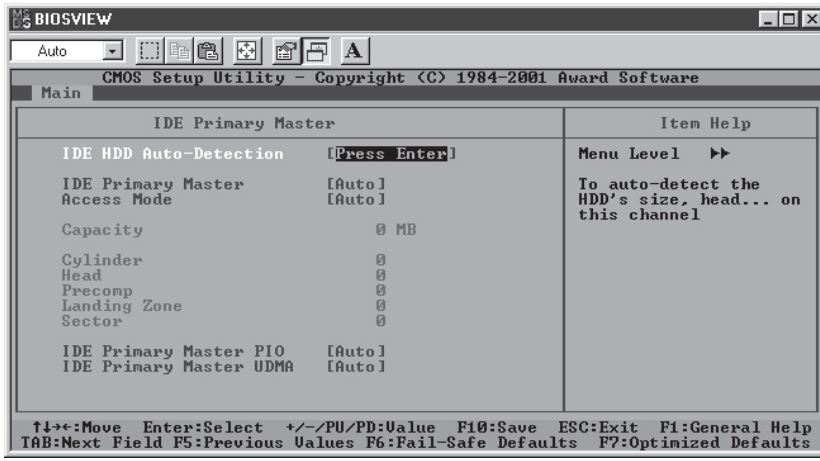
These settings allow the user to set the type of floppy disk drive installed in the system. The options are "None", "360K, 5.25 in", "1.2M, 5.25 in", "720K, 3.5 in", "1.44M, 3.5 in" and "2.88M, 3.5 in". Default settings are "1.44, 3.5" in for Drive A and "None" for Drive B.

### Swap Floppy Drive

This setting allows the user to swap the designation (A and B) of the floppy disk drives installed in the system (if there are two floppy disk drives installed on the mainboard). The options are "**Disabled**" and "Enabled".

### IDE Primary Master/IDE Primary Slave/IDE Secondary Master/IDE Secondary Slave

These options allow the user to set the parameters of the IDE Primary Master/Slave and IDE Secondary Master/Slave slots. Press "Enter" to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are listed below:




### IDE HDD Auto-Detection

Press the <Enter> key to activate the "IDE HDD Auto-Detection" function, which will allow BIOS to automatically detect the status of the IDE HDD installed in the system, such as the size and number of cylinders.

### IDE Primary Master

This option allows the user to determine the manner in which the AwardBIOS sets the settings for the IDE Primary Master Device. The options are "None", "**Auto**" and "Manual."

### Access Mode

This item determines the location through which the AwardBIOS accesses the IDE Primary Master Device. The settings are "CHS", "LBA", "Large", and "**Auto**".

### IDE Primary Slave PIO

See the previous setting for description. The options for this setting are "**Auto**", "Mode 0", "Mode 1", "Mode 2", "Mode 3" and "Mode 4".

### IDE Primary Master UDMA

This is available only when your IDE drive supports UDMA and the operating environment also includes a UDMA drive. If your IDE hard drive and your system software both support UDMA, select Auto to enabled BIOS support. The options for this setting are "**Auto**" and "Disabled".

### Video

Use this setting to specify the type of display you are using with the system. Options are "**EGA/VGA**", "CGA 40", "CGA 80" and "MONO".

### Halt On

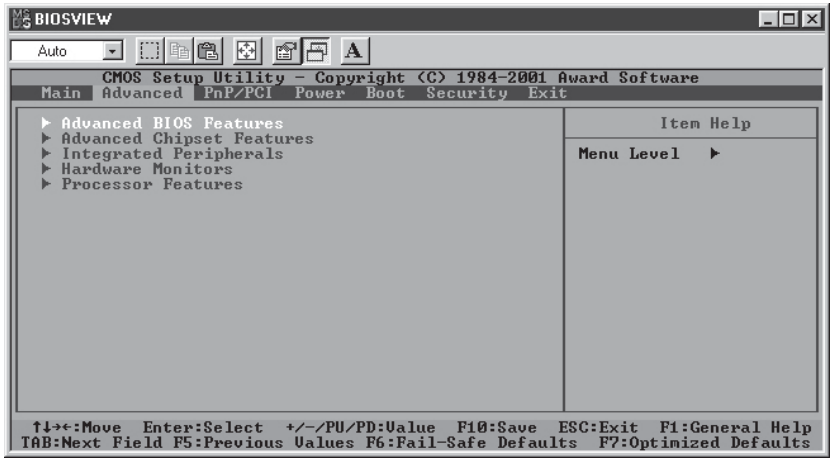
If the system encounters a non-specified error during boot-up, it will come to a halt as directed by these settings. You can tell the system to halt on "All Errors", "No Errors", "**All, But Keyboard**", "All, But Diskette" or "All, But Disk/Key".

### Base Memory/Extended Memory/Total Memory

These are displays that inform you how much of each type of memory is recognized as being present in the system.

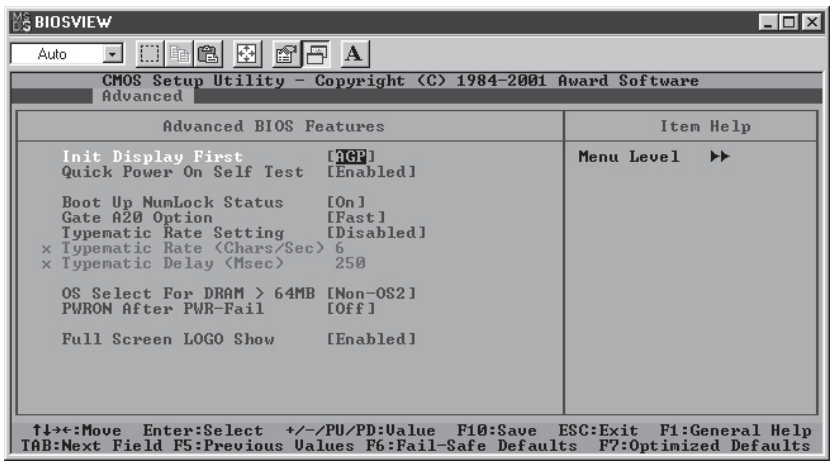
## 4-4 Advanced BIOS Setup

Choose Advanced BIOS Setup from the Award BIOS main menu with the Left/ Right arrow keys. You should see the following display. Select one of the items in the left frame of the screen 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.




### 4-4.1 Advanced BIOS Features

When the item of Advanced BIOS Features is highlighted, press the <Enter> key to activate the screen below:



### Init Display First

This setting allows the user to determine which device will be first displayed when the sytem boots up - a device installed in the PCI slot or a device intalled in the AGP slot. The options are "PCI slot" and "**AGP**".

### Quick Power-On Self Test

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

### Boot Up NumLock Status

This option enables the system to check the status of the NumLock key during boot-up. The settings are "**On**" and "Off".

### Gate A20 Option

This option allows the user to determine if the chipset or the keyboard controller should have the control over Gate A20. The settings are "Normal" or "Fast." If set to "Normal", a pin in the keyboard controller controls Gate A20. If "Fast" is selected, the chipset will have the control over Gate A20. The default setting is "Fast."

### Typematic Rate Setting

If enabled, the option allows the user to set the number of times a key stroke repeats itself in a second when the key is held down. If disabled, the keyboard controller sets the rate.

#### Typematic Rate (Chars/Sec)

You may change this setting only if the Typmatic Rate Setting is enabled. This setting allows the user to set the number of times a key stroke repeats itself in a second when the key is held down. The options are: "**6**", "8", "10", "12", "15", "20", "24" and "30."

#### Typematic Delay

You may change this setting only if the Typmatic Rate Setting is

enabled. This setting sets the delay time after a key is held down before it begins to repeat the keystroke. The settings are: "**250**", "500", "750" and "1000."

### OS Select For DRAM > 64MB

This setting should be changed only if using OS2 and your system has more than 64 MB of RAM. The options are "OS2" and "**Non-OS2**".

### PWRON After PWR-Fail

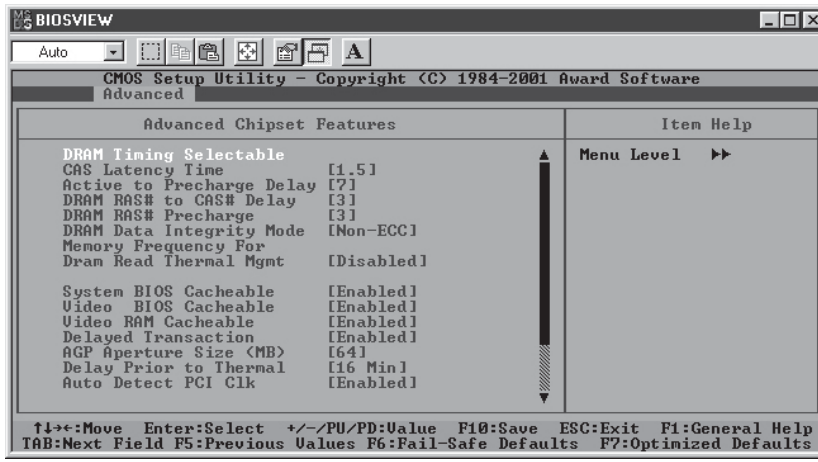
This setting allows the user to specify how the system will respond when power is reapplied after the system has gone down due to a power failure. The options are "**Off**", "On" and "Former-Sts".

### Full Screen Logo Show

The options for this setting are "**Enabled**" and "Disabled".

## 4-4.2 Advanced Chipset Features

This section covers the functions used for configuring the system based upon the special features offered by the Plumas chipset. The chipset manages the operations of major components of the board. Normally, the default settings for the Advanced Chipset Features listed in the section are pre-configured by the manufacturer for the optimal performance of the system. It is recommended that the user does not alter the default settings. This section is provided as an emergency measure for the user to restore the functions of the system when the critical data stored in the BIOS is lost.




### DRAM Timing Selectable

This item regulates dynamic random access memory (DRAM) timing. The options are "Manual" and "**By SPD**".

### CAS Latency TIme

This item regulates memory column address strobe (CAS) timing. The settings are "**1.5**", "2", "2.5" and "3".

### Active to Precharge Delay

This item regulates the number of memory clock cycles allowed for memory refresh charging. The options are "**7**", "6" and "5". Shorter timings increase system memory throughput at the risk of lacking sufficient refresh charge.

### DRAM RAS# to CAS# Delay

This item regulates the number of memory closk cycles between strobing a row address (RAS) and a column address (CAS). Shorter numbers of clock cycles improve system memory performance at the risk of missing data. The options are "**3**" and "2".

### DRAM RAS Precharge

This item regulates the number of system memory clock cycles for RAS precharging. The options are "**3**" and "2".

### DRAM Data Integrity Mode

This item regulates CPU access to the data stored in the protected area of dynamic random access memory (DRAM) on the motherboard. To preserve its integrity, critical system information is usually stored in a protected area of memory. If set to the "ECC" mode, the CPU will have access to data stored in the area when performing ECC (Error Correction/Checking) activities. The options are "ECC" and "**Non-ECC**".

### Memory Frequency For

This item regulates system memory frequency. The options are "PC100", "PC133" and "**Auto**".

### DRAM Read Thermal Management

This item regulates the system's ability to read system thermal data. The options are "**Disabled**" and "Enabled".

### System BIOS Cacheable

If enabled, the system BIOS information stored in the BIOS ROM (Read Only Memory) chip will be written and temporarily stored in the "cacheable" memory section of the CPU, giving the CPU faster access to the information. The options are "Disabled" and "**Enabled**".

### Video BIOS Cacheable

If enabled, the information regarding the Video BIOS stored in the BIOS ROM (Read Only Memory) chip will be written and temporarily stored in the "cacheable" memory section of the CPU, giving the CPU faster access to the information. The options are "Disabled" and "**Enabled**".

### Video RAM Cacheable

If enabled, the information regarding the Video card stored in the RAM chip (Randon Access Memory) will be written and temporarily stored in the "cacheable" memory section of the CPU, giving the CPU faster access to the information. The options are "Disabled" and "**Enabled**".

### Delayed Transaction

This setting compensates for the slower speed of ISA cards on a PCI interface and so is only relevant if ISA cards are present on the motherboard. The options are "**Enabled**" and "Disabled".

### AGP Aperture size (MB)

This setting allows the user to set the aperture size for the Accelerated Graphics Port (AGP). The options are "4M", "8M", "16M", "32M", "**64M**", "128M" and "256M".

### Delay Prior to Thermal

The options for this setting are "4 Min", "8 Min", "**16 Min**" and "32 Min".

### Auto Detect PCI Clk

This setting allows the PCI clock rate to be automatically determined. The options for this setting are "**Enabled**" and "Disabled".

### On-Chip Primary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The options for this setting are "**Enabled**" and "Disabled".

### On-Chip Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The options for this setting are "**Enabled**" and "Disabled".

### USB Controller

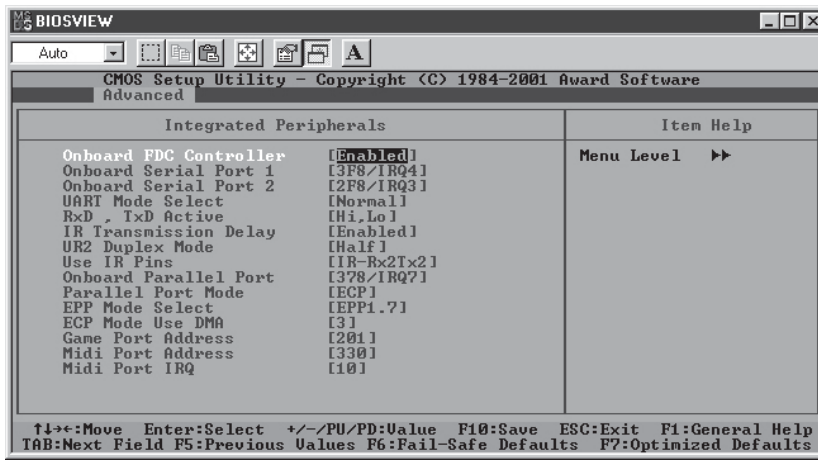
You should Enable this setting if your system contains a Universal Serial Bus (USB) controller (it does) and you have USB peripherals. The options for this setting are "**Enabled**" and "Disabled".

### USB Keyboard Support

If enabled, this setting allows the user to activate the BIOS support of the On-Chip USB Keyboard Controller. The options are "**Disabled**" and "Enabled".

## 4-4.3 Integrated Peripherals

When the item "Integrated Peripherals" is highlighted, press the <Enter> key to activate the following sub-menu screen.




### Onboard FDC Controller

Select "Enabled", if your system has a floppy disk controller (FDC) installed on the main board and you wish to use it. The settings are "**Enabled**" and "Disabled".

### Onboard Serial Port 1/Port 2

This setting allows the user to set the address and the corresponding IRQ for the Serial Port1 and Serial Port 2. The options are "Disabled" , "3F8/IRQ4", "2F8/IRQ3", "3E8/IRQ4", "2E8/IRQ3", and "Auto". The default setting for Serial Port1 is "**3F8/IRQ4**" and the default for Port 2 is is "**2F8/IRQ3**".

### UART Mode Select

This setting allows the user to select the UART mode for BIOS. The options are "IrDA", "ASKIR" ans "**Normal**".

### RxD, TxD Active

This setting allows the user to set the settings for the function of "RxD, TxD Active." The options are "Hi, Hi", "**Hi, Lo**", "Lo, Hi", and "Lo, Lo".

### IR Transmission Delay

If "Enabled", the transmssion of IR (infrared) signals will be delayed. The options are "**Enabled**" and "Disabled".

### UR2 Duplex Mode

This setting set the mode for the UR2 Duplex Mode. The options are "Full" and "**Half**".

### Use IR Pins

This item sets the usage of IR pins. The options are "RxD2, TxD2" and "**IR-Rx2Tx2**".

### Onboard Parallel Port

This setting allows the user to set the address and the corresponding IRQ for the onboard parallel port. The options are "Disabled", "**378/IRQ7**", "278/IRQ5" and "3BC/IRQ7".

### Parallel Port Mode

This setting sets the mode for the onboard Parallel port. The options are "SPP," "EPP", "**ECP**" and "ECP+EPP".

### EPP Mode Select

This setting allows the user to select the EPP port type. The options are "EPP 1.9" and "**EPP 1.7**".

### ECP Mode Use DMA

This setting allows the user to select the DMA channel for the ECP mode (port) to use. The options are "1" and "**3**".

### Game Port Address

This setting allows the user to set the Game Port address. The options are "Disabled", "**201**" and "209."

### Midi Port Address

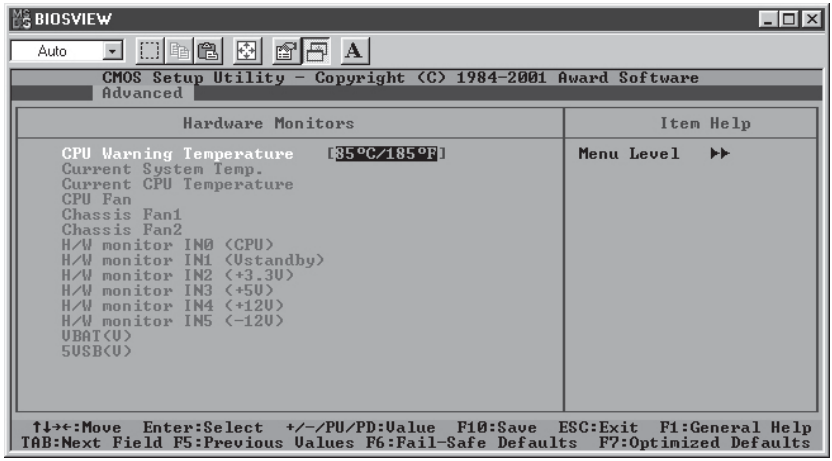
This setting allows the user to set the Midi Port address. The options are "Disabled", "**330**", "300" and "290".

### Midi Port IRQ

This setting allows the user to set the Midi Port IRQ. The options are "5" and "**10**".

### 4-4.4 Hardware Monitors

When the item "Hardware Monitors" is highlighted, press the <Enter> key to activate the following sub-menu screen.



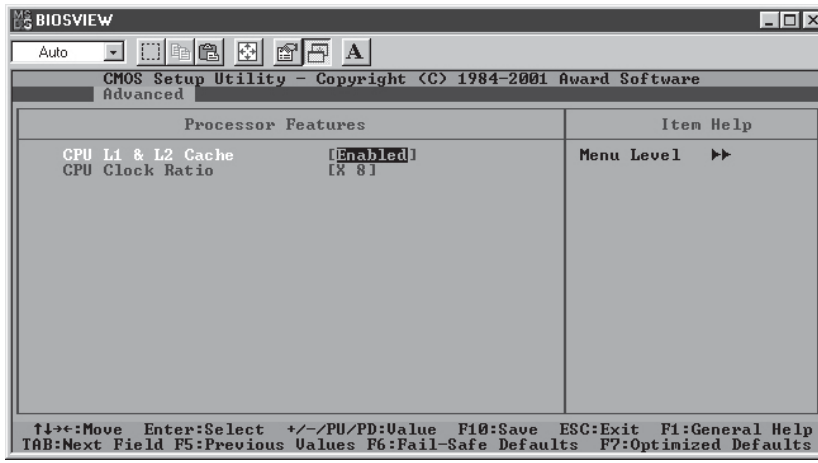

There is only one setting on this menu (below). The rest of this menu shows various temperatures and voltage levels.

#### CPU Warning Temperature

This item allows the user to set the CPU temperature threshold. When the CPU temperature reaches the threshold temperature set by the user, the alarm will be set off and a warning message will be displayed on the screen. The options are "**Disabled**", "50°C/122°F", "60°C/140°F", "65°C/149°F", "70°C/167°F", "75°C/167°F", "80°C/176°F" and "85°C/185°F".

## 4-4.5 Processor Features

When the item "Processor Features" is highlighted, hit the <Enter> key to activate the sub-menu shown below:




### CPU L1 & L2 Cache

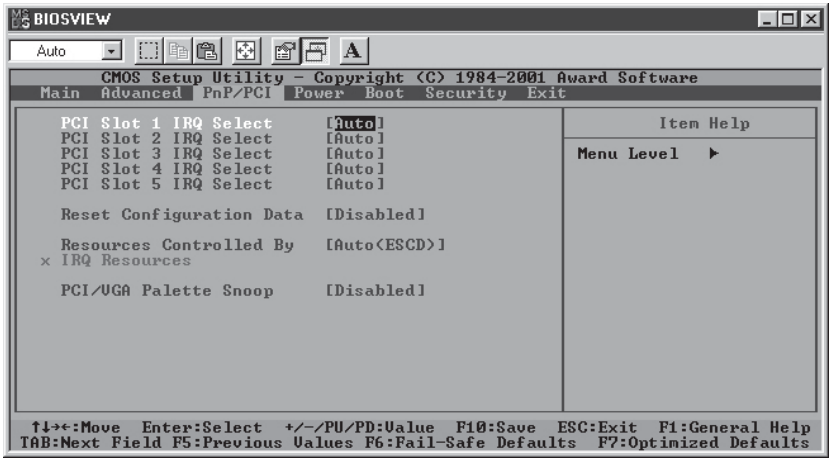
Set this option to "Enable" to activate the function of CPU L1 and L2 cache. The settings are "Disabled", and "**Enabled**".

### CPU Clock Ratio

This item allows the user to change the CPU/Clock ratio. You can key in any whole number between (and including) 8 and 50. The default setting is **8** (meaning x8).

## 4-5 PCI/PnP Configurations

Choose PCI/PnP Configurations from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:




### PCI Slot 1 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 1. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

### PCI Slot 2 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 2. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

### PCI Slot 3 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 3. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

### PCI Slot 4 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 4. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

### PCI Slot 5 IRQ Select

Use this setting to select the IRQ (interrupt request) for PCI slot 5. The options are "**Auto**", "3", "4", "5", "7", "9", "10", "11", "12", "14" and "15".

### Reset Configuration Data

When Enabled, this setting resets the extended system configuration data when you exit setup. Do this when you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot reboot the system. The options for this setting are "Enabled" and "**Disabled**".

### Resources Controlled By

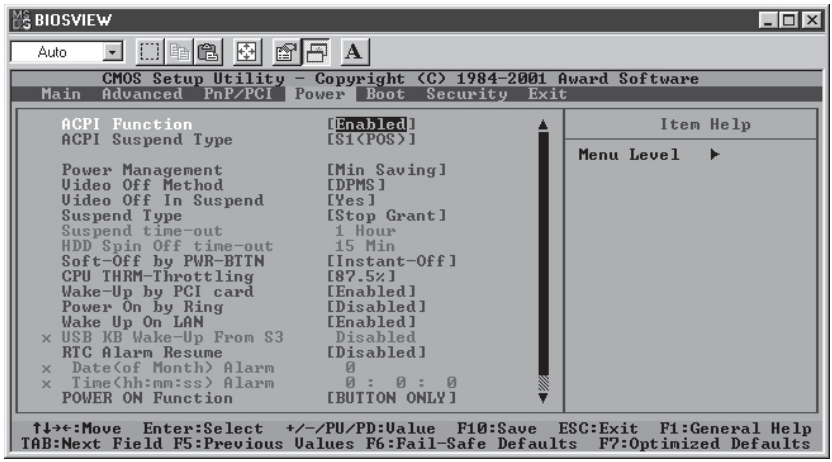
This setting allows BIOS to automatically configure all boot and Plug and Play compatible devices. If you choose Auto, you cannot select the IRQ, DMA and memory base address fields, because BIOS automatically assigns them. The options are "**Auto <ESCD>**" and "Manual".

### PCI/VGA Palette Snoop

For best system performance, this item has been pre-set to "Disabled" by the manufacturer. The settings are "Enabled" and "**Disabled**".

## 4-6 Power

Choose Power from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:




### ACPI Function

This item allows you to enable and disable the ACPI (Advanced Configuration and Power Management) program. The options are "**Enabled**" and "Disabled".

### ACPI Suspend Type

This item allows the user to determine the ACPI Suspend type. The options are "**S1 (POS)**" and "S3 (STR)".

### Power Management

This setting sets the degree of power saving for the system, especially for HDD Power Down, Doze Mode and Suspend Mode. The options are "User Define", "**Min Saving**" and "Max Saving".

### Video Off Method

This item determines the manner in which the monitor is turned off. The options are "Blank Screen", "**V/H SYNC+Blank**" and "DPMS". Select "V/H

SYNC+Blank" to turn off the vertical and horizontal synchronization ports and the monitor. Select "Blank Screen" to turn off the video buffer and the monitor. Select "DPMS" to initiate display power management signals.

### Video Off in Suspend

This setting determines whether the display turns off when the system is in the Suspend Mode. The settings are "**Yes**" and "No".

### Suspend Type

This item sets the system suspend Mode. The options are "**Stop Grant**" and "PWR On Suspend".

### Soft-Off by PWR-BTTN

This item determines the system's "Soft-off" mode when the user presses the power-button. The options for this setting are "**Instant-Off**" and "Delay 4 sec".

### CPU THRM-Throttling

THRM throttling is used to lower power consumption and reduce the heat gererated by the CPU. The options for this setting are "87.5%", "75%", "62.5%", "**50%**", "37.5%", "25%' and "12.5%'.

### Wake-Up by PCI Card

If Enabled, the user is able to "wake up" the system via a PCI card. The settings are "Enabled" and "**Disabled**".

### Power On by Ring

If Enabled, the user is able to "wake up" the system via the modem. The options for this setting are "**Enabled**" and "Disabled".

### Wake Up on LAN

If Enabled, the user is able to "wake up" the system via the LAN. The options for this setting are "**Enabled**" and "Disabled".

### Resume by Alarm

If Enabled, this setting will allow the AwardBIOS to turn on the system via the real-time clock (RTC). The options are "Enabled" and "**Disabled**".

### Date (of Month) Alarm

Set the date for RTC alarm wake up in this field.

### Time (hh:mm:s) Alarm

Set the time for RTC alarm wake up in this field.

### POWER ON Function

This setting allows the user to determine the method by which the system power is activated. The options are "Password", "Hot Key", "Mouse Left", "Mouse Right", "Any Key", "**Button Only**" and "Keyboard 98".

### KB Power On Password

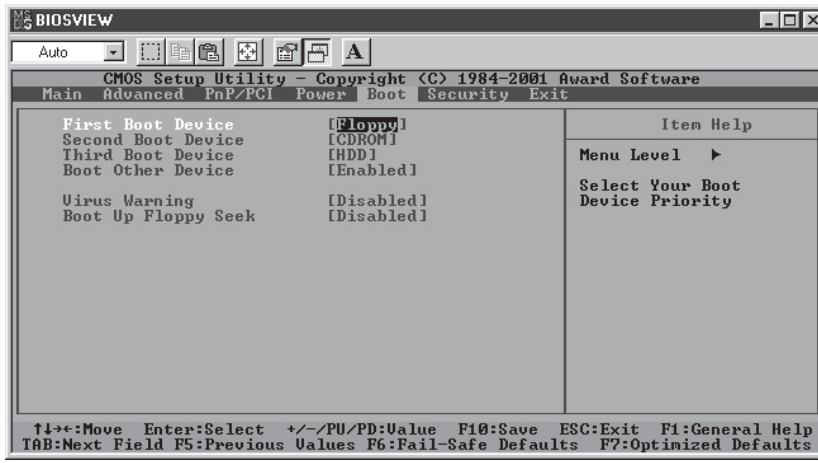
This setting allows the user to set the password to activate the Power On function through the keyboard. Press <Enter> to enter the password.

### Hot Key Power On

This option allows the user to set the hot key to activate the power on function. The settings are "**Ctrl F1**", "Ctrl F2", "Ctrl F3", "Ctrl F4", "Ctrl F5", "Ctrl F6", "Ctrl F7", "Ctrl F8", "Ctrl F9", "Ctrl F10", "Ctrl F11" and "Ctrl F12".

## 4-7 Boot

Choose Boot from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:




Award BIOS attempts to load the operating system from devices specified by the users in a user-specified sequence.

### First Boot Device

This item allows the user to set the first boot-up device. The options are "**Floppy**", "LS120", "HDD", "SCSI", "CDROM", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

### Second Boot Device

This item allows the user to set the second boot-up device. The options are "Floppy", "LS120", "HDD", "SCSI", "**CDROM**", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

### Third Boot Device

This item allows the user to set the third boot-up device. The options are "Floppy", "LS120", "**HDD**", "SCSI", "CDROM", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN" and "Disabled".

### Boot Other Device

If enabled, this option enables the BIOS to load the OS from another device rather than the ones that have been specified as the first, second and third boot up devices. The settings are "**Enabled**" and "Disabled".

### Virus Warning

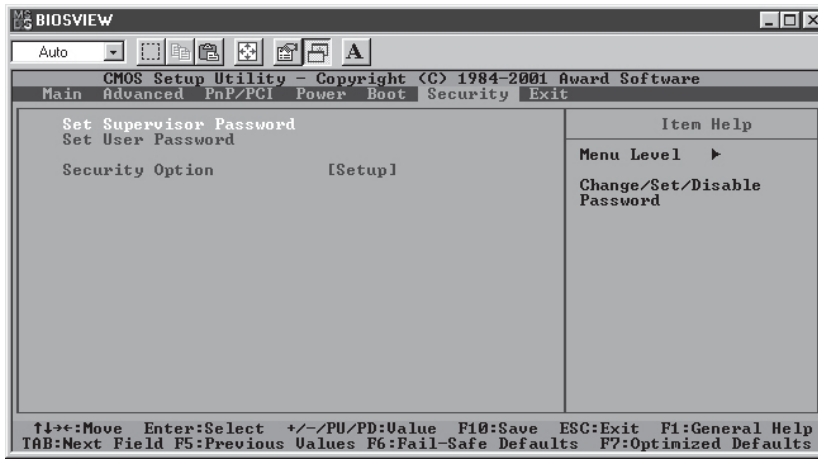
This item allows the user to choose the VIRUS Warning feature for IDE Hard Drive Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, the BIOS will display a warning message and an alarm will sound. The settings are "Enabled", and "**Disabled**".

### Boot Up Floppy Seek

Set this option to "Enabled" to allow the BIOS to test floppy drives to determine whether they have 40 tracks or 80 tracks. The settings are "Enabled" or "**Disabled**".

## 4-8 Security

Choose Security from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:




### Set Supervisor Password

When the item "Set Supervisor Password" is highlighted on the above screen, press the <Enter> key. When prompted, type the Supervisor Password in the dialogue box to set or to change the Supervisor Password.

### Set User Password

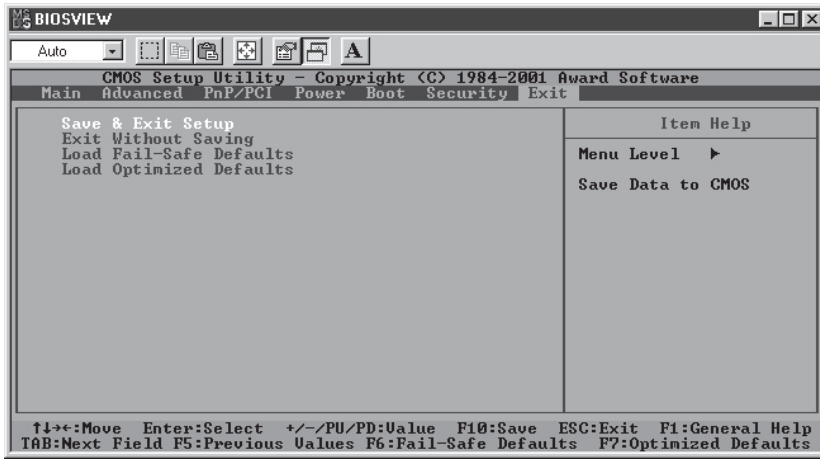
When the item "Set User Password" is highlighted on the above screen, press the <Enter> key. When prompted, type the User Password in the dialogue box to set or to change the User Password.

### Security Option

This setting allows the user to determine if the password is required every time when the system boots up or if the password is required only when you enter the CMOS setup. The options are "System" and "**Setup**".

## 4-9 Exit

Choose Exit from the Award BIOS main menu with the Left/Right arrow keys. You should see the following display:




### Save & Exit Setup

When the item "Save & Exit Setup" is highlighted, press <Enter> to save the changes you've made in the BIOS program (CMOS) and exit. Your system should, then, continue with the boot-up procedure.

### Exit without Saving

When the item "Exit without Saving" is highlighted, press <Enter> to exit the Setup routine without saving any changes you may have made. Your system should then continue with the boot-up procedure.

### Load Fail-Safe Defaults

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

### Load Optimized Defaults

Highlight this item and hit <Enter> to load the optimized settings for all items in the BIOS Setup. These settings provide you with optimal system performance.

# Appendix A
# AwardBIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for errors. If an error is found and a correction is needed, the BIOS will activate an alarm or display a message.

If a message is displayed, it will be accompanied by the following:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

## POST Beep Codes

Currently, there are two kinds of beep codes used in AwardBIOS. One code indicates that a video error has occurred and that the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that a Rambus error has occurred. This beep code consists of a single long beep that sounds repeatedly.

## Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

### CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

### CMOS CHECKSUM ERROR

The CMOS hecksum is incorrect. This can indicate that CMOS has been corrupted. This error may have been caused by a weak battery. Check the battery and replace if necessary.

### DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain the proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also make sure the disk has been formatted as a boot device. Then reboot the system.

### DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

The type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

### DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates that the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

### DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

### ERROR ENCOUNTERED INITIALIZING HARD DRIVE

The hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

### ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize the controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

### FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

### KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during boot up.

If you are intentionally configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

### Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

### Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

### Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

### OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

### OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

### PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

### PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

### RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

### SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

**FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.**

**FLOPPY DISK(S) fail (40) → Floppy Type dismatch.**

**Hard Disk(s) fail (80) → HDD reset failed**
**Hard Disk(s) fail (40) → HDD controller diagnostics failed.**

**Hard Disk(s) fail (20) → HDD initialization error.**

**Hard Disk(s) fail (10) → Unable to recalibrate fixed disk.**

**Hard Disk(s) fail (08) → Sector Verify failed.**

**Keyboard is locked out - Unlock the key.**

BIOS detect the keyboard is locked. P17 of the keyboard controller is pulled low.

**Keyboard error or no keyboard present.**

Cannot initialize the keyboard. Make sure that the keyboard is attached correctly and no keys are being pressed during the boot.

**Manufacturing POST loop.**

System will repeat POST procedure infinitely while the P15 of keyboard controller is pulled low. This is also used for M/B burn in testing.

**BIOS ROM checksum error - System halted.**

The checksum of ROM address F0000H-FFFFFH is bad.

**Memory test fail..**

BIOS reports the a memory test fail if the onboard memory has an error.

# Appendix B
# AwardBIOS POST Codes

This section lists the POST (Power On Self Testing) Codes for the Award BIOS.

| POST (hex) | Description |
|---|---|
| CFh | Test CMOS R/W functionality. |
| C0h | Early chipset initialization:<br>-Disable shadow RAM<br>-Disable L2 cache (socket 7 or below)<br>-Program basic chipset registers |
| C1h | Detect memory<br>-Auto-detection of DRAM size, type and ECC.<br>-Auto-detection of L2 cache (socket 7 or below) |
| C3h | Expand compressed BIOS code to DRAM |
| C5h | Call chipset hook to copy BIOS back to E000 & F000 shadow RAM. |
| 0h1 | Expand the Xgroup codes locating in physical address 1000:0 |
| 02h | Reserved |
| 03h | Initial Superio_Early_Init switch. |
| 04h | Reserved |
| 05h | 1. Blank out screen<br>2. Clear CMOS error flag |
| 06h | Reserved |
| 07h | 1. Clear 8042 interface<br>2. Initialize 8042 self-test |
| 08h | 1. Test special keyboard controller for Winbond 977 series Super I/O chips.<br>2. Enable keyboard interface. |
| 09h | Reserved |
| 0Ah | ● Disable PS/2 mouse interface (optional).<br>● Auto detect ports for keyboard & mouse followed by a port & interface swap (optional).<br>● Reset keyboard for Winbond 977 series Super I/O chips. |
| 0Bh | Reserved |
| 0Ch | Reserved |
| 0Dh | Reserved |
| 0Eh | Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker. |

## Debuggig LED Encoding

| Post Code | Encoded LED | Task |
|---|---|---|
| C1h | 001b | Memory Detection |
| 05h | 010b | BIOS Shadowing |
| 07h | 011b | KBC Initialization |
| 0Eh | 100b | Shadow RAM test |
| 14h | 101b | Chipset defaults loaded |
| 26h | 110b | Clock generator configured |
| 2Bh | 111b | Video initialization |
| 52h | 000b | Just clear LEDs |

| POST (hex) | Description |
|---|---|
| 0Fh | Reserved |
| 10h | Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support. |
| 11h | Reserved |
| 12h | Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override. |
| 13h | Reserved |
| 14h | Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers. |
| 15h | Reserved |
| 16h | Initial Early_Init_Onboard_Generator switch. |
| 17h | Reserved |
| 18h | Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686). |
| 19h | Reserved |
| 1Ah | Reserved |
| 1Bh | Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR. |
| 1Ch | Reserved |
| 1Dh | Initial EARLY_PM_INIT switch. |
| 1Eh | Reserved |
| 1Fh | Load keyboard matrix (notebook platform) |
| 20h | Reserved |
| 21h | HPM initialization (notebook platform) |
| 22h | Reserved |
| 23h | 1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.<br>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.<br>3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.<br>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots.<br>5. Early PCI initialization:<br>-Enumerate PCI bus number<br>-Assign memory & I/O resource<br>-Search for a valid VGA device & VGA BIOS, and put it into C000:0. |
| 24h | Reserved |
| 25h | Reserved |
| 26h | Reserved |
| 27h | Initialize INT 09 buffer |
| 28h | Reserved |
| 29h | • Program CPU internal MTRR (P6 & PII) for 0-640K memory address.<br>• Initialize the APIC for Pentium class CPU.<br>• Program early chipset according to CMOS setup. Example: onboard IDE controller.<br>• Measure CPU speed.<br>• Invoke video BIOS. |
| 2Ah | Reserved |
| 2Bh | Reserved |
| 2Ch | Reserved |

| POST (hex) | Description |
|---|---|
| 2Dh | 1. Initialize multi-language<br>2. Put information on screen display, including Award title, CPU type, CPU speed …. |
| 2Eh | Reserved |
| 2Fh | Reserved |
| 30h | Reserved |
| 31h | Reserved |
| 32h | Reserved |
| 33h | Reset keyboard except Winbond 977 series Super I/O chips. |
| 34h | Reserved |
| 35h | Reserved |
| 36h | Reserved |
| 37h | Reserved |
| 38h | Reserved |
| 39h | Reserved |
| 3Ah | Reserved |
| 3Bh | Reserved |
| 3Ch | Test 8254 |
| 3Dh | Reserved |
| 3Eh | Test 8259 interrupt mask bits for channel 1. |
| 3Fh | Reserved |
| 40h | Test 8259 interrupt mask bits for channel 2. |
| 41h | Reserved |
| 42h | Reserved |
| 43h | Test 8259 functionality. |
| 44h | Reserved |
| 45h | Reserved |
| 46h | Reserved |
| 47h | Initialize EISA slot |
| 48h | Reserved |
| 49h | 1. Calculate total memory by testing the last double word of each 64K page.<br>2. Program writes allocation for AMD K5 CPU. |
| 4Ah | Reserved |
| 4Bh | Reserved |
| 4Ch | Reserved |
| 4Dh | Reserved |
| 4Eh | 1. Program MTRR of M1 CPU<br>2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range.<br>3. Initialize the APIC for P6 class CPU.<br>4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical. |
| 4Fh | Reserved |
| 50h | Initialize USB |
| 51h | Reserved |
| 52h | Test all memory (clear all extended memory to 0) |
| 53h | Reserved |
| 54h | Reserved |
| 55h | Display number of processors (multi-processor platform) |
| 56h | Reserved |
| 57h | 1. Display PnP logo<br>2. Early ISA PnP initialization<br>-Assign CSN to every ISA PnP device. |

| POST (hex) | Description |
|---|---|
| 58h | Reserved |
| 59h | Initialize the combined Trend Anti-Virus code. |
| 5Ah | Reserved |
| 5Bh | (Optional Feature)<br>Show message for entering AWDFLASH.EXE from FDD (optional) |
| 5Ch | Reserved |
| 5Dh | 1. Initialize Init_Onboard_Super_IO switch.<br>2. Initialize Init_Onboard_AUDIO switch. |
| 5Eh | Reserved |
| 5Fh | Reserved |
| 60h | Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility. |
| 61h | Reserved |
| 62h | Reserved |
| 63h | Reserved |
| 64h | Reserved |
| 65h | Initialize PS/2 Mouse |
| 66h | Reserved |
| 67h | Prepare memory size information for function call:<br>INT 15h ax=E820h |
| 68h | Reserved |
| 69h | Turn on L2 cache |
| 6Ah | Reserved |
| 6Bh | Program chipset registers according to items described in Setup & Auto-configuration table. |
| 6Ch | Reserved |
| 6Dh | 1. Assign resources to all ISA PnP devices.<br>2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO". |
| 6Eh | Reserved |
| 6Fh | 1. Initialize floppy controller<br>2. Set up floppy related fields in 40:hardware. |
| 70h | Reserved |
| 71h | Reserved |
| 72h | Reserved |
| 73h | (Optional Feature)<br>Enter AWDFLASH.EXE if :<br>-AWDFLASH is found in floppy drive.<br>-ALT+F2 is pressed |
| 74h | Reserved |
| 75h | Detect & install all IDE devices: HDD, LS120, ZIP, CDROM….. |
| 76h | Reserved |
| 77h | Detect serial ports & parallel ports. |
| 78h | Reserved |
| 79h | Reserved |
| 7Ah | Detect & install co-processor |
| 7Bh | Reserved |
| 7Ch | Reserved |
| 7Dh | Reserved |
| 7Eh | Reserved |
| 7Fh | 1. Switch back to text mode if full screen logo is supported.<br>-If errors occur, report errors & wait for keys<br>-If no errors occur or F1 key is pressed to continue:<br>◆Clear EPA or customization logo. |

| POST (hex) | Description |
|---|---|
| 80h | Reserved |
| 81h | Reserved |
| 82h | 1. Call chipset power management hook.<br>2. Recover the text font used by EPA logo (not for full screen logo)<br>3. If password is set, ask for password. |
| 83h | Save all data in stack back to CMOS |
| 84h | Initialize ISA PnP boot devices |
| 85h | 1. USB final Initialization<br>2. NET PC: Build SYSID structure<br>3. Switch screen back to text mode<br>4. Set up ACPI table at top of memory.<br>5. Invoke ISA adapter ROMs<br>6. Assign IRQs to PCI devices<br>7. Initialize APM<br>8. Clear noise of IRQs. |
| 86h | Reserved |
| 87h | Reserved |
| 88h | Reserved |
| 89h | Reserved |
| 90h | Reserved |
| 91h | Reserved |
| 92h | Reserved |
| 93h | Read HDD boot sector information for Trend Anti-Virus code |
| 94h | 1. Enable L2 cache<br>2. Program boot up speed<br>3. Chipset final initialization.<br>4. Power management final initialization<br>5. Clear screen & display summary table<br>6. Program K6 write allocation<br>7. Program P6 class write combining |
| 95h | 1. Program daylight saving<br>2. Update keyboard LED & typematic rate |
| 96h | 1. Build MP table<br>2. Build & update ESCD<br>3. Set CMOS century to 20h or 19h<br>4. Load CMOS time into DOS timer tick<br>5. Build MSIRQ routing table. |
| FFh | Boot attempt (INT 19h) |

## Notes

# Appendix C
# AwardBIOS Beep Codes

This section lists the Award BIOS Error Beep Codes.

| Beep Code | Error Message Description |
|---|---|
| 1 short beep | System boot. |
| 2 short beeps | Incorrect CMOS setting. |
| 1 long + 1 short | DRAM error. |
| 1 long + 2 short | VGA error. |
| 1 long + 3 short | Keyboard error. |
| 1 long + 9 short | ROM error. |
| Long beeps | Memory module error. |
| High beeps | Power error. |

## Notes