P4S800D-E Deluxe

User Guide

Motherboard

E1381

First Edition

December 2003

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Quick Reference Card

Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.

- Seek professional assistance before using an adpater or extension cord. These devices could interrupt the grounding circuit.

- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.

- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.

- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.

- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.

- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.

- Place the product on a stable surface.

- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

About this guide

This user guide contains the information you need when installing the motherboard.

How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the motherboard features of the and the new technologies it supports.

- **Chapter 2: Hardware information**

  This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.

- **Chapter 3: Powering up**

  This chapter describes the power up sequence, the vocal POST messages, and ways of shutting down the system.

- **Chapter 4: BIOS setup**

  This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

- **Chapter 5: Software support**

  This chapter describes the contents of the support CD that comes with the motherboard package.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Information that you MUST follow to complete a task.

NOTE: Tips and additional information to aid in completing a task.

Typography

Bold Text	Indicates a menu or an item to select.
<Key> enclosed in the less-than and greater-than sign	Indicates that you must press the enclosed key. Example: **<Enter>** indicates that you must press the Enter or Return key.
<Multiple key names>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: **<Ctrl+Alt+Del>**
Words in Italics	Italics are used to emphasize a point.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

   The ASUS websites worldwide provide updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

   Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

P4S800D-E Deluxe specifications summary

CPU	Socket 478 for Intel® Pentium® 4 / Celeron processors with speeds up to 3.06 GHz+ Supports Intel® Hyper-threading Technology New power design supports next generation Intel Prescott CPU
Chipset	SiS 655TX SiS 964
Front Side Bus (FSB)	800/533/400 MHz
Memory	4 x 184-pin DDR DIMM sockets for up to 4GB unbuffered non-ECC DDR400/333/266/200 SDRAM memory Dual-channel memory architecture
Expansion slots	1 x AGP 8X 5 x PCI 1 x ASUS Proprietary WiFi slot

Storage	SIS 964 SouthBridge supports
	   - 2 x Serial ATA with RAID 0, RAID 1 function
	 SIS 180 Serial/Ultra ATA RAID controller supports
	   - 2 x Serial ATA + 2 x Ultra ATA with RAID 0, RAID 1, RAID 0+1 and JBOD

IEEE 1394	VIA VT6307 IEEE 1394 controller Supports 2 x IEEE 1394 connectors
Audio	ADI AD1888 SoundMAX 6-channel audio CODEC S/PDIF interface
LAN	Marvell® Gigabit Ethernet controller
Special features	ASUS EZ Flash ASUS CrashFree BIOS 2 ASUS Instant Music ASUS POST Reporter ASUS MyLogo2 ASUS Multi-Language BIOS ASUS Q-Fan AI Overclocking
Rear panel I/O	1 x Parallel port 1 x Serial port 1 x PS/2 keyboard port 1 x PS/2 mouse port 4 x USB 2.0/USB 1.1 ports 1 x RJ-45 port 1 x SPDIF-out port 1 x IEEE 1394 port Line In/Line Out/Microphone ports

(continued on the next page)

P4S800D-E Deluxe specifications summary

Overclock Features	ASUS JumperFree ASUS C.P.R. (CPU Parameter Recall) CPU, Memory, and AGP Voltage adjustable SFS (Stepless Frequency Selection) from 100MHz up to 300MHz at 1MHz increment Adjustable FSB/DDR ratio, fixed AGP/PCI frequencies
Internal I/O	2 x USB 2.0 supports additiona 4 USB 2.0 ports 4 x Serial ATA connectors 2 x IDE connectors CPU/Chassis/Power fan connectors 20-pin/4-pin ATX 12V power connectors Chassis intrusion IEEE 1394 connector GAME/MIDI connector CD/AUX audio connectors Front panel audio connector S/PDIF audio connector Serial port 2 connector Ultra ATA connector that support 2 drives
BIOS features	4Mb Flash ROM, ASUS JumperFree, AMI BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, ASUS EZ Flash, ASUS Instant Music, ASUS MyLogo2, ASUS CrashFree BIOS 2, ASUS C.P.R., ASUS Multi-Language BIOS, ASUS Q-Fan, ASUS AI Overclocking
Industry standard	PCI 2.2, USB 2.0
Manageability	WfM2.0, DMI 2.0, WOL, WOR, chassis intrusion
Support CD contents	Device drivers ASUS PC Probe ASUS Live Update Trend Micro™ PC-cillin 2002 anti-virus software
Form Factor	ATX form factor: 12 in x 9.6 in

* Specifications are subject to change without notice.

This chapter describes the motherboard features and the new technologies it supports.

Product introduction

Chapter summary

1.1   Welcome!

Thank you for buying the ASUS® P4S800D-E Deluxe motherboard!

The motherboard delivers a host of new features and latest technologies making it another standout in the long line of ASUS quality motherboards!

The motherboard incorporates the Intel® Pentium® 4 processor in a 478-pin package coupled with the SIS® 655TX chipset to set a new benchmark for an effective desktop platform solution.

Supporting up to 4GB of system memory with DDR400/333/266/200 SDRAM, high-resolution graphics via an AGP 8X slot, Serial ATA support, RAID, IEEE 1394, USB 2.0, and 6-channel audio features, the motherboard takes you ahead in the world of power computing!

Before you start installing the motherboard, and hardware devices on it, check the items in your package with the list below.

1.2   Package contents

Check your motherboard package for the following items.

- ✓ ASUS P4S800D-E Deluxe motherboard
- ✓ ASUS motherboard support CD
- ✓ 2 x SATA cable
- ✓ 1 x SATA power cable
- ✓ 1 x 2-port USB+GAME module w/ cable
- ✓ 1 x 1394 module
- ✓ 1 x 80-conductor ribbon cable for UltraDMA IDE drives
- ✓ 1 x 40-conductor IDE cable
- ✓ 1 x Ribbon cable for a 3.5-inch floppy drive
- ✓ I/O shield
- ✓ Bag of extra jumper caps
- ✓ User Guide (includes Quick Reference Card)
- ✓ Quick Setup Guide (Retail boxes only)
- ✓ Jumper/Connector Sticker (Retail boxes only)

> If any of the above items is damaged or missing, contact your retailer.

1.3 Special features

1.3.1 Product Highlights

Latest processor technology

The motherboard comes with a 478-pin surface mount, Zero Insertion Force (ZIF) socket for the Intel® Pentium® 4 processor in the 478-pin package with 512/256KB L2 cache on 0.13 micron process. This motherboard supports 800/533/400 MHz system front side bus that allows 6.4GB/s, 4.3GB/s and 3.2GB/s data transfer rates, respectively. The motherboard also supports the Intel® Hyper-Threading Technology and the next-generation Intel® Prescott CPU.

Dual Channel DDR memory support

Employing the Double Data Rate (DDR) memory technology, the motherboard supports up to 4GB of system memory using DDR400/333/266/200 DIMMs. The ultra-fast 400MHz memory bus delivers the required bandwidth for the latest 3D graphics, multimedia, and Internet applications.

SiS® Advanced HyperStreaming Architecture

The SiS® 655TX integrates the latest SIS® Advanced HyperStreaming™ technology that provides a two-level smart arbitration mechanism to schedule commands and data in the interface to improve the bus utilization and efficiency of the CPU and other devices. Also, with the Advanced HyperStreaming™ technology flow control mechanism and intelligent arbitration algorithm, the bandwidth between interfaces with other systems is increased and improves the transfer rate from the CPU to the chipsets giving an enhanced system performance.

Serial ATA solution with RAID 0, RAID 1, RAID 0+1, and JBOD support

The motherboard supports two interfaces compliant to the Serial ATA (SATA) specification, an evolutionary replacement of the Parallel ATA storage interface. The Serial ATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, up to 150 MB/s data transfer rate, and software compatibility with legacy Parallel ATA. With the integrated controller in the SIS 964 chipset and the SiS 180, the motherboard supports RAID0, RAID1, RAID 0+1 and JBOD configuration using UltraATA133 drives and SATA drives.

AGP 8X support

AGP 8X (AGP 3.0) is the next generation VGA interface specification that enables enhanced graphics performance with high bandwidth speeds up to 2.12 GB/s. See page 2-17.

S/PDIF out

The motherboard supports S/PDIF out function turns your computer into a high-end entertainment system with digital connectivity to powerful speaker systems.

IEEE 1394 support

The IEEE 1394 interface provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to IEEE 1394a standards. The IEEE 1394 interface allows up to 400Mbps transfer rates through simple, low-cost, high-bandwidth asynchronous (real-time) data interfacing between computers, peripherals, and consumer electronic devices such as camcorders, VCRs, printers,TVs, and digital cameras.

8 USB 2.0 ports

The motherboard implements the new Universal Serial Bus (USB) 2.0 specification, extending the connection speed from 12 Mbps on USB 1.1 to a fast 480 Mbps on USB 2.0 - supporting up to 8 USB 2.0 ports. The higher bandwidth of USB 2.0 allows connection of devices such as high resolution video conferencing cameras, next generation scanners and printers, and fast storage units. USB 2.0 is backward compatible with USB 1.1.

6-channel digital audio

The ADI AD1888 SoundMAX AC '97 audio CODEC is onboard to provide 6-channel audio playback for 5.1 surround sound, over 90dB dynamic range, and stereo MIC PREAMP.

1.3.2 Unique ASUS features

ASUS Wi-Fi slot

The ASUS Wi-Fi slot is designed for the ASUS WiFi-b™ add-on card to set up an environment for wireless LAN. The ASUS WiFi-b™ add-on card bundles the exclusive Software AP (Access Point) to save the extra cost of a stand-alone AP. In addition, the card comes with user-friendly utilities and applications that allow quick connection to notebooks, PDAs and other wireless LAN peripherals. See page 2-18.

AI NET solution

The Marvell® Gigabit PCI LAN controller chipset is onboard to provide a single-chip solution for LAN on Motherboard (LOM) applications. The controller integrates 32-bit 10/100/1000BASE-T Gigabit Ethernet Media Access Control (IEEE 802.3 compliant) and Physical Layer Transceiver solution to support high performance network applications. The controller is equipped with the net-diagnosing utility, VCT (Virtual Cable Tester), that intelligently diagnoses and reports cable faults from a remote location up to 100 meters. This feature helps maintain a more stable network connection. Se page 5-24.

AI BIOS solution

The AI BIOS is a combination of three ASUS intelligent solutions: Q-Fan, POST Reporter, and CrashFree BIOS2.

ASUS Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the fan speeds according to the system loading to ensure quiet, cool, and efficient operation. See page 4-30.

ASUS POST Reporter

The motherboard offers a new exciting feature called the ASUS POST Reporter to provide friendly voice messages and alerts during the Power-On Self-Tests (POST). Through an added external speaker, you will hear the messages informing you of the system boot status and causes of boot errors, if any. The bundled Winbond Voice Editor software allows you to customize the voice messages, and provides multi-language support. See page 3-3.

CrashFree BIOS 2

This feature allows you to restore the original BIOS data from the ASUS support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip. See page 4-5.

ASUS MyLogo2™

This new feature present in the motherboard allows you to personalize and add style to your system with customizable boot logos. See page 5-7.

C.P.R. (CPU Parameter Recall)

The C.P.R. feature of the motherboard BIOS allows automatic re-setting to the BIOS default settings in case the system hangs due to overclocking. When the system hangs due to overclocking, C.P.R. eliminates the need to open the system chassis and clear the RTC data. Simply shut down and reboot the system, and BIOS automatically restores the CPU default setting for each parameter. See page 4-4.

ASUS EZ Flash BIOS

With the ASUS EZ Flash, you can easily update the system BIOS even before loading the operating system. No need to use a DOS-based utility or boot from a floppy disk.

ASUS Multi-language BIOS

The multi-language BIOS allows you to select the language of your choice from the available options. The localized BIOS menus allow you to configure easier and faster. Visit the ASUS website for information on the supported languages. See page 4-12.

Instant Music

This unique feature allows you to playback audio files even without booting the system to Windows™. Just press the ASUS Instant Music special function keys and enjoy the music! See pages 4-26, 5-9.

Chapter 2

This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.

Hardware information

Chapter summary

2.1 Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.

2. Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.

3. Hold components by the edges to avoid touching the ICs on them.

4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

5. **Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply.** Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LED

The motherboard comes with a standby power LED. When lit, the green LED indicates that the system is ON, in sleep mode, or in soft-off mode, a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.

SB_PWR1

ON
Standby
Power

OFF
Powered
Off

P4S800D-E Onboard LED
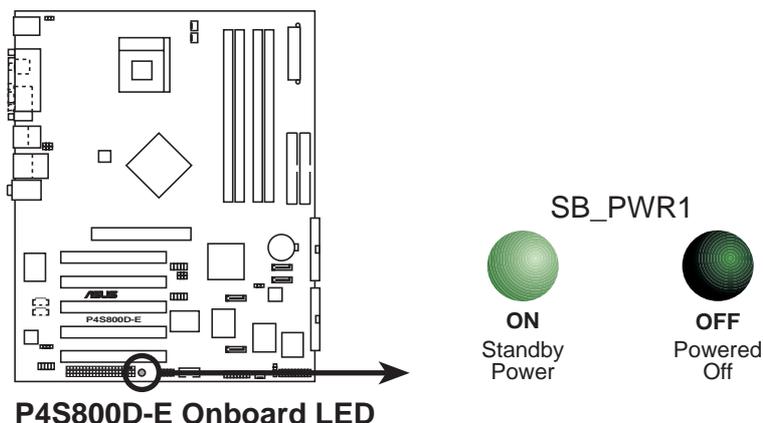
2.2 Motherboard overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause you physical injury and damage motherboard components.

2.2.1 Placement direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.2 Screw holes

Place nine (9) screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not overtighten the screws! Doing so may damage the motherboard.

Place this side towards the rear of the chassis
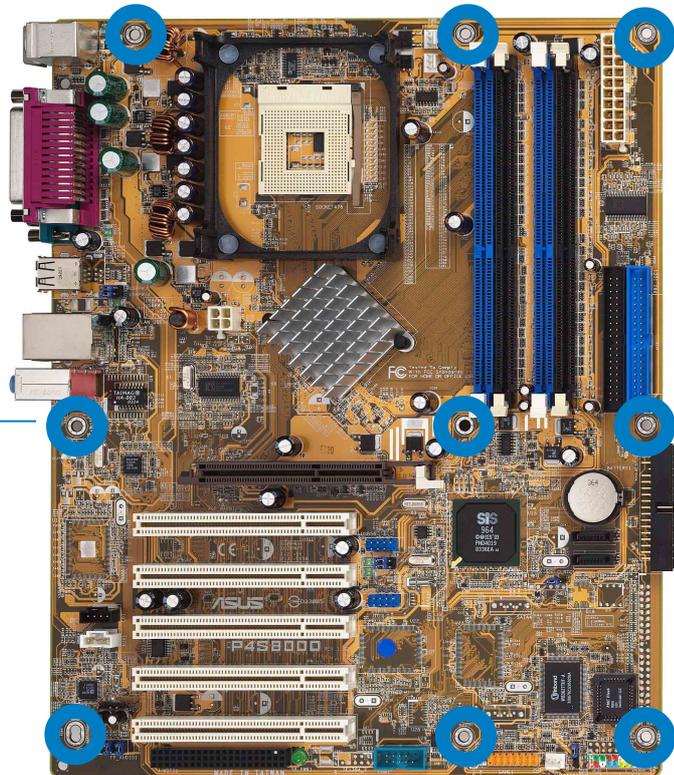
2.2.3 Motherboard layout

24.5cm (9.6in)

30.5cm (12.0in)

PS/2KBMS
T: Mouse
B: Keyboard

SPDIF_O

PARALLEL PORT

COM1

Bottom: USB1 USB2 Top: 1394

USBPW12
USBPW34

USB2.0
T: USB3 Top: RJ-45
B: USB4

Top:Line In
Center:Line Out
Below:Mic In

Socket 478

PWR_FAN1

CPU_FAN1

ATX12V1

SiS
655
TX

DDR DIMM_A1 (64 bit,184-pin module)
DDR DIMM_A2 (64 bit,184-pin module)
DDR DIMM_B1 (64 bit,184-pin module)
DDR DIMM_B2 (64 bit,184-pin module)

ATX Power Connector

SEC_IDE1
PRI_IDE1

Accelerated Graphics Port (AGP1)

FLOPPY1

CR2032 3V
Lithium Cell
CMOS Power

Marrell
88E8001
PCI LAN

PCI1

USB56

SiS
964

SATA2

SATA1

CLRTC1

USBPW56
USBPW78

PCI2

CD1

AUX1

USB78

PCI3

SATA4

P4S800D-E

VIA
VT6307

SiS
180

PRI_RAID1

Audio
Codec

PCI4

SPDIF_OUT

Super
I/O

4Mbit
Firmware
Hub

SATA3

CHASSIS1

PCI5

FP_AUDIO

WIFI

SB_PWR1

IE1394_2

COM2

GAME1

CHA_FAN1

PANEL1

2.2.4   Layout Contents

Slots	
1. PCI slots	p. 2-17
2. AGP slot	p. 2-17
3. Wi-Fi slot	p. 2-18
4. DDR DIMM slots	p. 2-12

Jumpers	
1. Clear RTC RAM (3-pin CLRTC1)	p. 2-19
2. USB device wake-up (3-pin USBPW12, USBPW34, USBPW56, USBPW78)	p. 2-20

Rear Panel Connectors	
1. PS/2 mouse port	p. 2-21
2. Parallel port	p. 2-21
3. IEEE 1394 port	p. 2-21
4. Gigabit LAN port (RJ-45)	p. 2-21
5. Line In jack	p. 2-21
6. Line Out jack	p. 2-21
7. Microphone jack	p. 2-21
8. USB 2.0 ports 3 and 4	p. 2-21
9. USB 2.0 ports 1 and 2	p. 2-22
10. Serial connector	p. 2-22
11. S/PDIF out jack	p. 2-22
12. PS/2 keyboard port	p. 2-22

Internal Connectors

2.3   Central Processing Unit (CPU)

2.3.1   Overview

The motherboard comes with a surface mount 478-pin Zero Insertion Force (ZIF) socket designed for the Intel® Pentium® 4 processor.

Take note of the marked corner (with gold triangle) on the CPU. This mark should match a specific corner on the socket to ensure correct installation.

Gold Mark
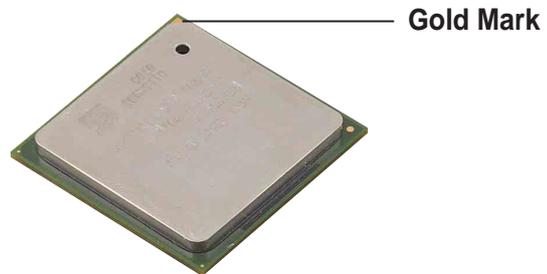
Notes on Intel® Hyper-Threading Technology

1. This motherboard supports Intel Pentium 4 CPUs with Hyper-Threading Technology.

2. Hyper-Threading Technology is supported under **Windows XP** and **Linux 2.4.x (kernel)** and later versions only. Under Linux, use the Hyper-Threading compliler to compile the code. If you are using any other operating systems, disable the Hyper-Threading Techonology item in BIOS to ensure system stability and performance.

3. It is recommended that you install WinXP Service Pack 1.

4. Make sure to enable the Hyper-Threading Technology item in BIOS before installing a supported operating system.

5. For more information on Hyper-Threading Technology, visit **www.intel.com/info/hyperthreading**.

To use the Hyper-Threading Technology on this motherboard:

1. Buy an Intel Pentium 4 CPU that supports Hyper-Threading Technology. Install the CPU.

2. Power up the system and enter BIOS Setup (see Chapter 4). Under the Boot Menu, make sure that the item **Hyper-Threading Technology** is set to Enabled. The item appears only if you installed a CPU that supports Hyper-Threading Technology.

3. Reboot the computer.

2.3.2 Installing the CPU

Follow these steps to install a CPU.

1. Locate the 478-pin ZIF socket on the motherboard.
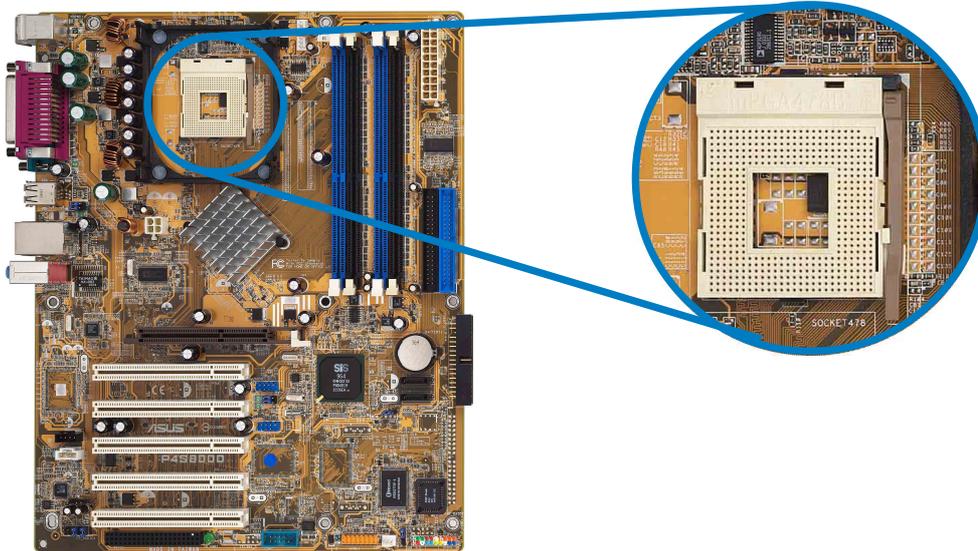
2. Unlock the socket by pressing the
    lever sideways, then lift it up to a
    90°-100° angle.
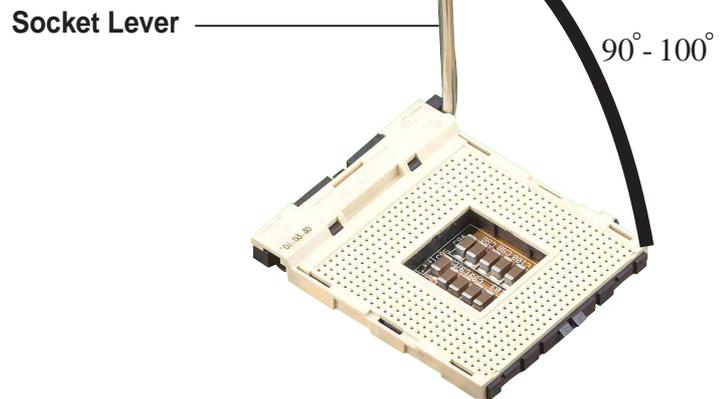
Socket Lever

$90^{\circ} - 100^{\circ}$

Make sure that the socket lever is lifted up to 90°-100° angle,
otherwise the CPU does not fit in completely.

3. Position the CPU above the socket such that its marked corner matches the base of the socket lever.

4. Carefully insert the CPU into the socket until it fits in place.

Gold Mark
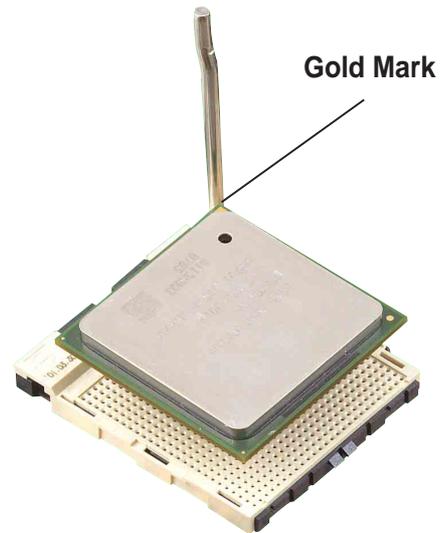
The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!

5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.

Chapter 2: Hardware information
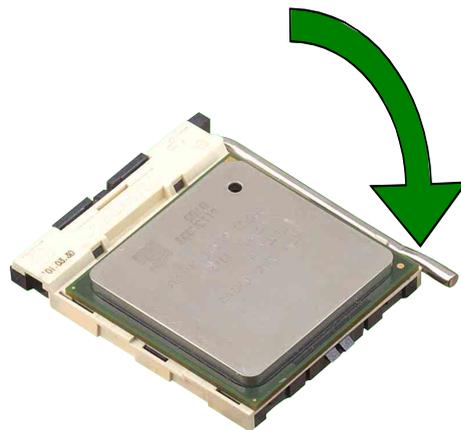
2.3.3 Installing the heatsink and fan

The Intel® Pentium® 4 Processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

> When you buy a boxed Intel Pentium 4 Processor, the package includes the heatsink, fan, and retention mechanism.
>
> In case you buy a CPU separately, make sure that you use only Intel certified heatsink and fan.

Follow these steps to install the CPU heatsink and fan.

1. Place the heatsink on top of the installed CPU, making sure that the heatsink fits properly on the retention module base.

> The retention module base is already installed on the motherboard upon purchase.
>
> You do not have to remove the retention module base when installing the CPU or installing other motherboard components.

CPU Heatsink

Retention Module Base
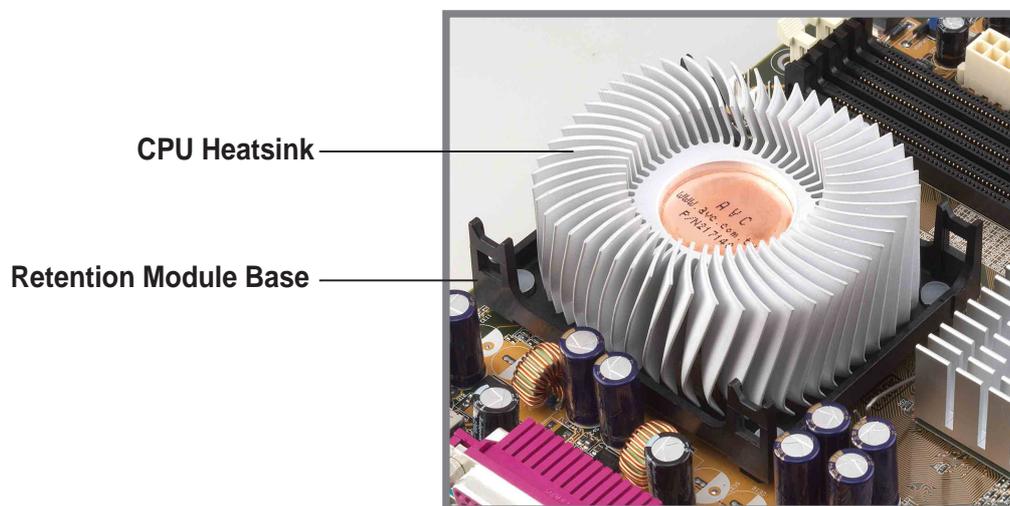
> Your boxed Intel Pentium 4 Processor package should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

2. Position the fan with the retention mechanism on top of the heatsink.
    Align and snap the four hooks of the retention mechanism to the holes
    on each corner of the module base.

> Make sure that the fan and retention mechanism assembly perfectly
> fits the heatsink and module base, otherwise you cannot snap the
> hooks into the holes.

Retention Hole

Retention Lock

**Retention Hook Snapped
to the Retention Hole**
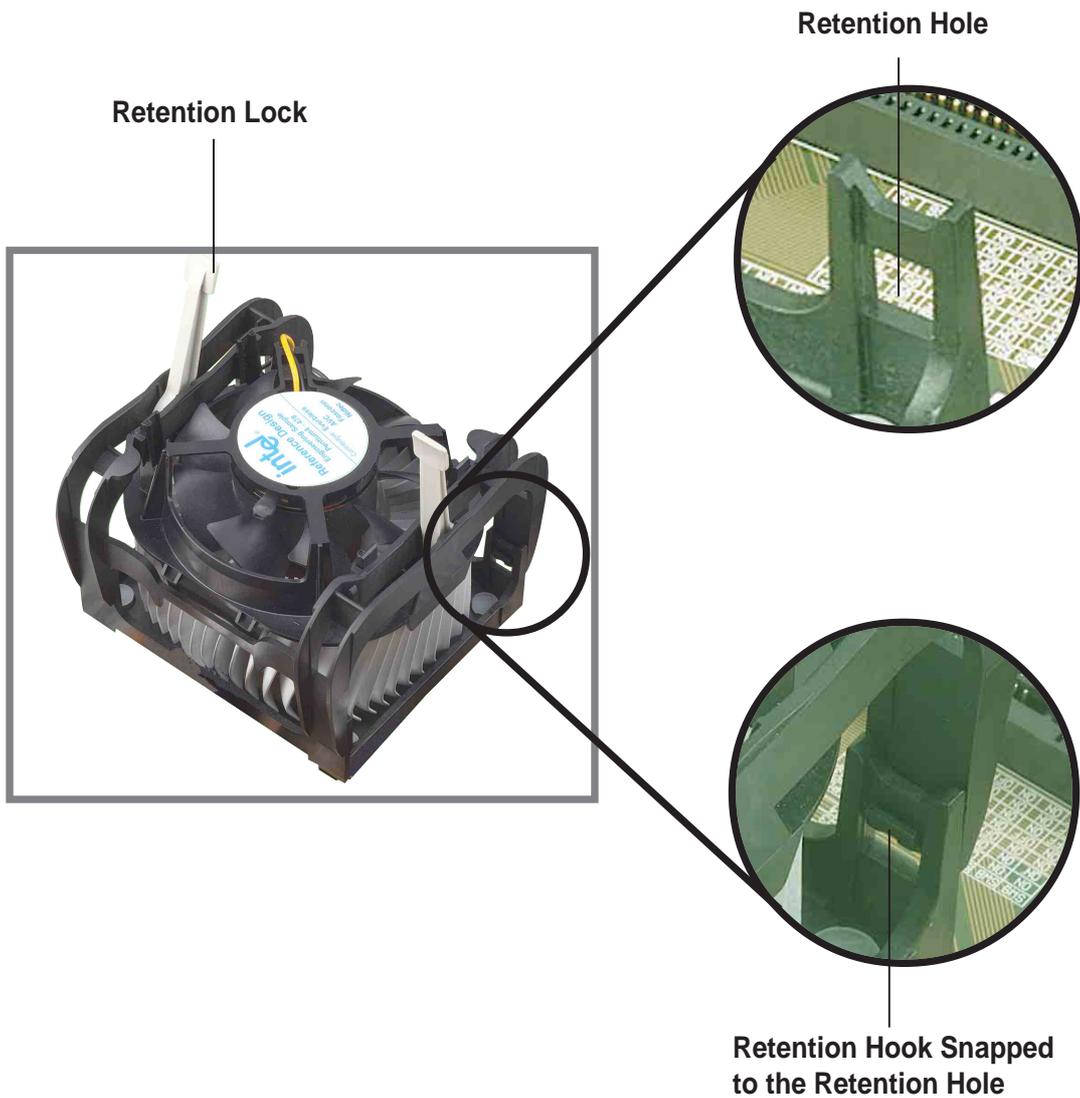
> Keep the retention locks lifted upward while fitting the retention
> mechanism to the module base.

3. Push down the locks on the retention mechanism to secure the heatsink and fan to the module base.

When secure, the retention locks should point to opposite directions.

2.3.4   Connecting the CPU fan cable

When the fan, heatsink, and the retention mechanism are in place, connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN1.
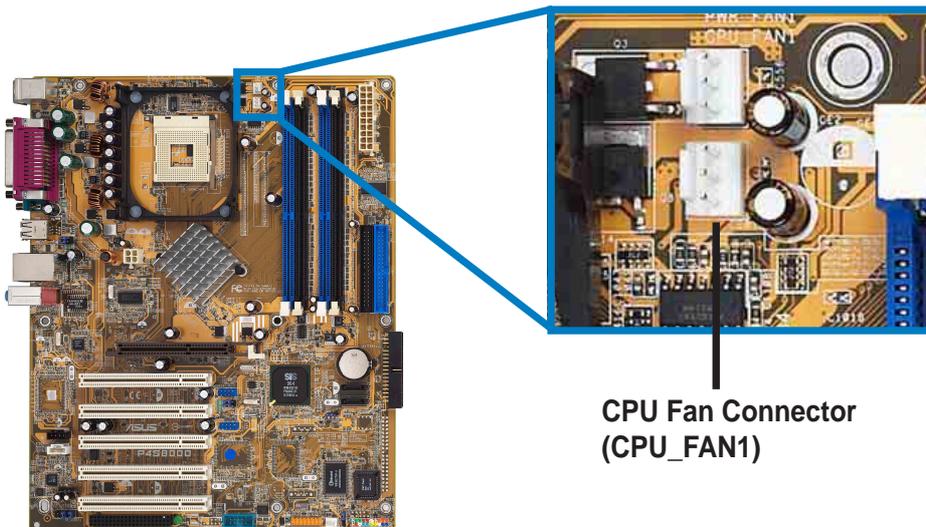
CPU Fan Connector (CPU_FAN1)

Don't forget to connect the CPU fan connector! Hardware monitoring errors may occur if you fail to plug this connector.

2.4 System memory

2.4.1 Overview

The motherboard comes with four Double Data Rate (DDR) Dual Inline Memory Module (DIMM) sockets.

The following figure illustrates the location of the sockets.

P4S800D-E 184-Pin DDR DIMM Sockets
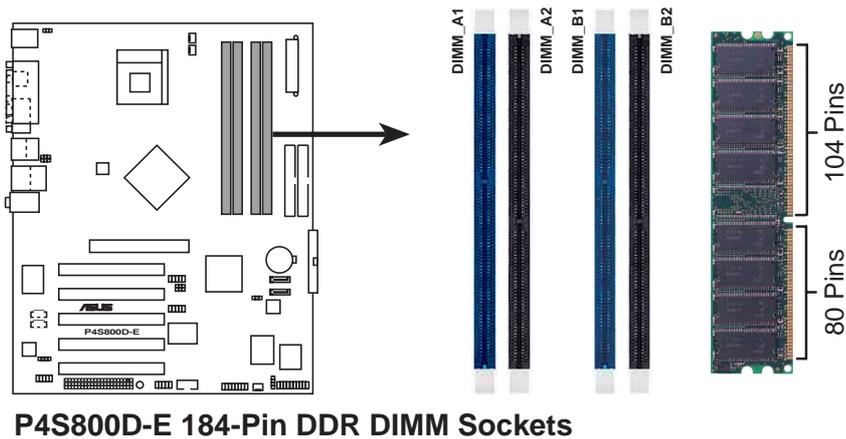
2.4.2 Memory configurations

You may install 64MB, 128MB, 256MB, 512MB, and 1GB DDR DIMMs into the DIMM sockets using the memory configurations in this section.

Important notes on memory configurations

1. Installing DDR DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations in Table 1.
2. In Dual-channel configurations, install only identical (the same type and size) DDR DIMM pairs for each channel.
3. Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor. See list of Qualified Vendors List on page 2-13.
4. When all four sockets are populated with 1GB DIMMs (total 4GB), the system may detect only 3+GB (a little less than 4GB) due to the Southbridge resource allocation.
5. It is recommended to use the blue DIMM slots first.

Table 1   Recommended memory configurations

Mode/DIMM Type		Sockets			
		DIMM_A1 (blue)	DIMM_A2 (black)	DIMM_B1 (blue)	DIMM_B2 (black)
Single-channel	(1)	Populated	—	—	—
(DDR400/DDR333/	(2)	—	Populated	—	—
DDR266/DDR200)	(3)	—	—	Populated	—
	(4)	—	—	—	Populated
Dual-channel	(1)	Populated	—	Populated	—
(DDR400/DDR333/	(2)	—	Populated	—	Populated
DDR266/DDR200)	(3)*	Populated	Populated	Populated	Populated

* **For dual-channel configuration (3), you may:**

• install identical DIMMs in all four sockets or

• install identical DIMM pair in DIMM_A1 and DIMM_B1 (blue sockets)
  and identical DIMM pair in DIMM_A2 and DIMM_B2 (black sockets)

2.4.3   Qualified Vendor List

The following table lists the DDR400 memory modules that have been tested and qualified for use with this motherboard.

Size	Vendor	Part No.	Brand	SS/DS	Chip Number	A*	B*	C*
512MB	Kingston	KVR333X72RC25/512	Micron	DS	MT46V64M4TG-6TC	•	•	•
256MB	TwinMos	M2G9I08AFATT9F081AA4T	TwinMos	SS	TMD7608F8E50D	•	•	•
512MB	TwinMos	M2G9J16AGATT9F081AA4T	TwinMos	DS	TMD7608F8E50D	•	•	•
256MB	TwinMos	M2S9I08AFAPS9F0811A-T	PSC	SS	A2S56D30ATP	•	•	•
256MB	Transcend	TS32MLD64V4F3	SAMSUNG	SS	K4H560838D-TCCC	•	•	•
256MB	A DATA	MDOAD5F3G315B1EC2	A DATA	SS	ADD8608A8A-5B	•	•	•
256MB	A DATA	MDOSS6F3G31YK1EZZ	SAMSUNG	SS	K4H560838E-TCCC	•	•	•
256MB	GEIL	MAG32UL6464D2TG5A-KC	GEIL	SS	GL3LC32G88TG-5A	•	•	•
512MB	GEIL	MAG16UL3264D1TG5A-KC	GEIL	DS	GL3LC32G88TG-5A	•	•	•
256MB	KINGSTON	KVR400X64C3A/256	Hynix	SS	HYB25D256800BT-5B	•	•	•
512MB	KINGSTON	KVR400X64C3A/512	Hynix	DS	HYB25D256800BT-5B	•	•	•
256MB	Hynix	HYMD232646B8J-D43AA	Hynix	SS	HY5DU56822BT-D43	•	•	•
512MB	Hynix	HYMD264646B8J-D43AA	Hynix	DS	HY5DU56822BT-D43	•	•	•
256MB	CENTURY	DXV6S8SSCCD3K27C	SAMSUNG	SS	K4H560838D-TCCC	•	•	•

A* - **supports one module inserted in the slot referred in Table 1, in a Single-channel memory configuration.**

B* - **supports one pair of modules inserted into either the blue slots or the yellow slots as one pair of Dual-channel memory configuration .**

C* - **support for 4 modules inserted into the blue & yellow slots as two pairs of Dual-channel memory configuration.**

Obtain DDR DIMMs only from ASUS qualified vendors. Visit the ASUS website (www.asus.com) for the latest QVL.

2.4.4 Installing a DIMM

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Unlock a DIMM socket by pressing the retaining clips outward.

2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

DDR DIMM NOTCH

Unlocked Retaining Clip
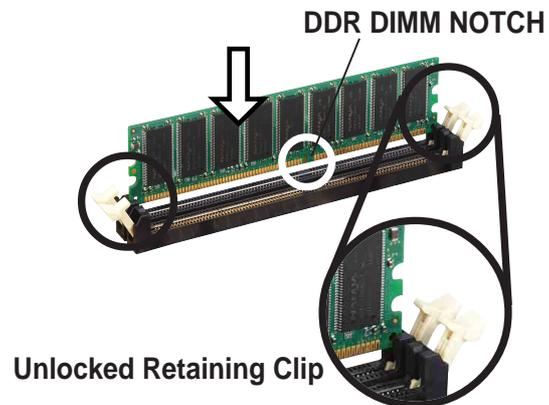
A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

Locked Retaining Clip
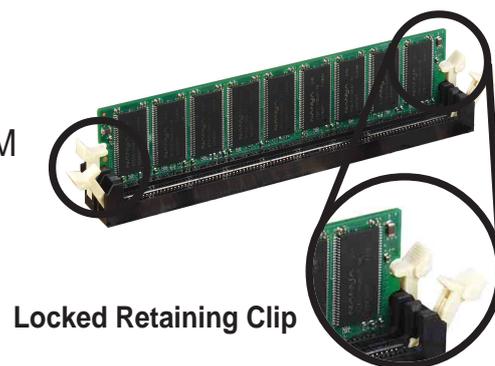
2.4.5 Removing a DIMM

Follow these steps to remove a DIMM.

1. Simultaneously press the retaining clips outward to unlock the DIMM.
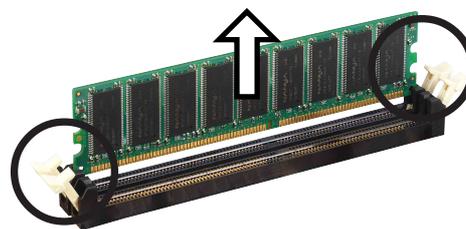
Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

2.5 Expansion slots

In the future, you may need to install expansion cards. The motherboard has available PCI slots and an Accelerated Graphics Port (AGP) slot. The following sub-sections describe the slots and the expansion cards that they support.

> ⚠ Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

2.5.1 Installing an expansion card

Follow these steps to install an expansion card.

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

2.5.2 Configuring an expansion card

After installing the expansion card, configure the card by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 4 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

2.5.3 Interrupt assignments

Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communications Port (COM2)
4*	12	Communications Port (COM1)
5*	13	Sound Card (sometimes LPT2)
6	14	Floppy Disk Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	ACPI Mode when used
10*	5	IRQ Holder for PCI Steering
11*	6	IRQ Holder for PCI Steering
12*	7	PS/2 Compatible Mouse Port
13	8	Numeric Data Processor
14*	9	Primary IDE Channel
15*	10	Secondary IDE Channel

*   These IRQs are usually available for ISA or PCI devices.

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI slot 1	shared	—	—	—	—	—	—	—
PCI slot 2	—	shared	—	—	—	—	—	—
PCI slot 3	—	—	shared	—	—	—	—	—
PCI slot 4	—	—	—	shared	—	—	—	—
PCI slot 5	shared	—	—	—	—	—	—	—
WiFi slot	shared	—	—	—	—	—	—	—
AGP slot	shared	—	—	—	—	—	—	—
Onboard USB 1.1/2.0 controller	—	—	—	—	used	used	used	used
Onboard LAN	—	—	—	shared	—	—	—	—
Onboard RAID	—	—	shared	—	—	—	—	—
Onboard 1394	—	shared	—	—	—	—	—	—
Onboard Audio	—	—	shared	—	—	—	—	—

When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

2.5.4 PCI slots

The PCI slots support PCI cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The following figure shows a LAN card installed on a PCI slot.

2.5.5 AGP slot

The Accelerated Graphics Port (AGP) slot that supports AGP8X/4X cards. When you buy an AGP card, make sure that you ask for one with +1.5V specification. Note the notches on the card golden fingers to ensure that they fit the AGP slot on your motherboard.

Install only 1.5V AGP cards on this motherboard! 3.3V AGP cards are not supported in this motherboard.
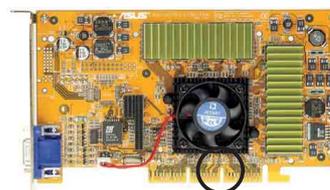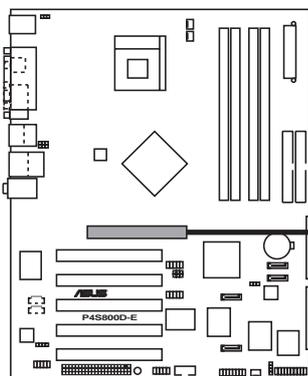
Keyed for 1.5v

P4S800D-E Accelerated Graphics Port (AGP)

If installing the ATi 9500 or 9700 Pro Series VGA cards, use only the card version **PN xxx-xxxxx-30** or later, for optimum performance and overclocking stability.

2.5.6 Wi-Fi slot

The Wi-Fi (Wireless Fidelity) slot supports the ASUS WiFi-b™ module. Visit the ASUS website (www.asus.com) for product updates.

The Wi-Fi slot conforms to the Institute of Electrical and Electronics Engineers (IEEE) 802.11b/g standard for wireless devices operating in the 2.4 GHz frequency band.

WIFI

P4S800D-E WiFi Slot
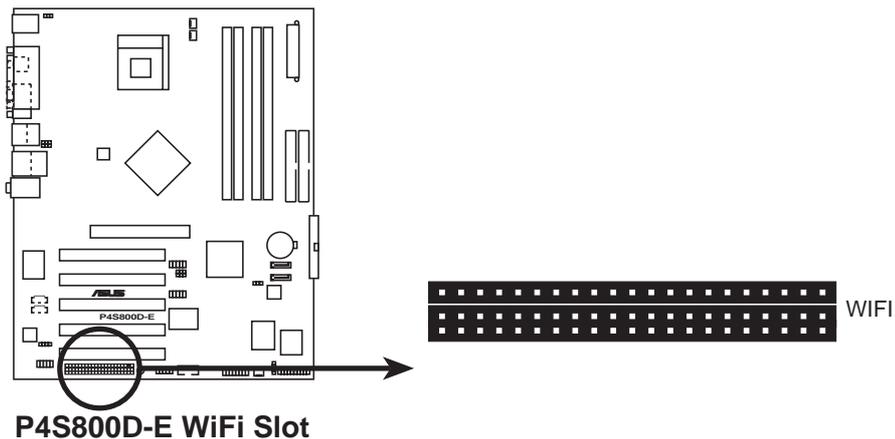
ASUS WiFi-b™ Setup

• The PCI 5 slot and the Wi-Fi slot can not be used at the same time.

• The ASUS WiFi-b™ module is purchased separately.

2.6　Jumpers

1. Clear RTC RAM (CLRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The RAM data in CMOS, that include system setup information such as system passwords, is powered by the onboard button cell battery.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Replace the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

CLRTC1

1 2   2 3

Normal   Clear CMOS
(Default)

P4S800D-E Clear RTC RAM
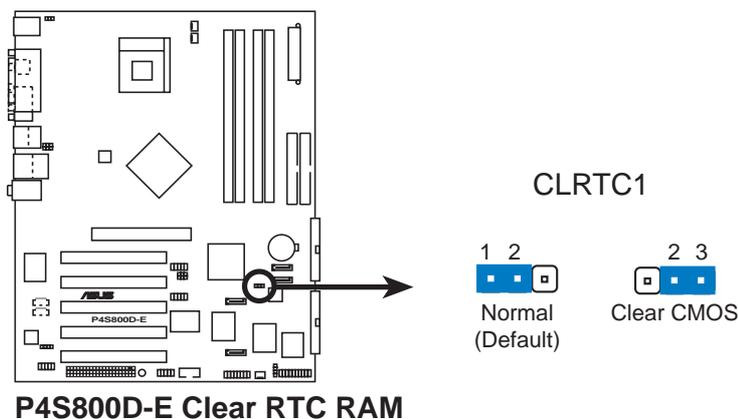
You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so BIOS can automatically reset parameter settings to default values.

2. USB device wake-up (3-pin USBPW12, USBPW34, USBPW56, USBPW78)

Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 and S4 sleep modes (no power to CPU, DRAM in slow refresh, power supply in reduced power mode).

USBPW12
USBPW34

1 2   2 3

+5V   +5VSB
(Default)

USBPW56
USBPW78

1 2   2 3

+5V   +5VSB
(Default)

P4S800D-E USB Device Wake Up
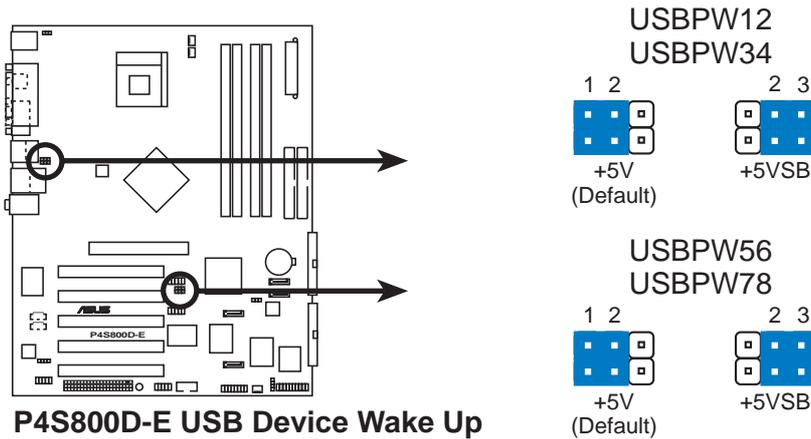
- The USB device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB port. Otherwise, the system would not power up.

- The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

2.7 Connectors

2.7.1 Rear panel connectors
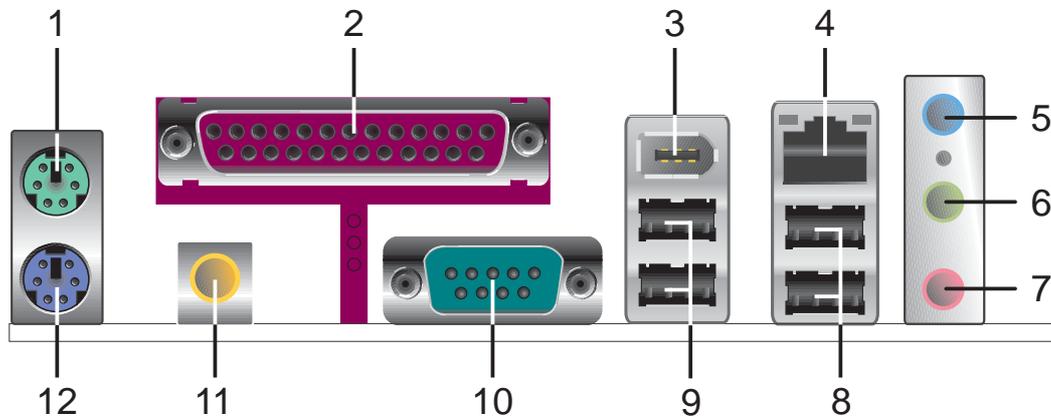
1. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.

2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.

3. **IEEE 1394 port.** This 6-pin IEEE 1394 port provides high-speed connectivity for audio/video devices, storage peripherals, other PC's and/or portable devices.

4. **RJ-45 port.** This port allows connection to a Local Area Network (LAN) through a network hub.

5. **Line In jack.** This Line In (light blue) jack connects a tape player or other audio sources. In 6-channel mode, the function of this jack becomes Bass/Center.

6. **Line Out jack.** This Line Out (lime) jack connects a headphone or a speaker. In 4-channel and 6-channel mode, the function of this jack becomes Front Speaker Out.

7. **Microphone jack.** This Mic (pink) jack connects a microphone. In 4-channel and 6-channel mode, the function of this jack becomes Rear Speaker Out.

Audio 2, 4 or 6-channel configuration

The functions of the Line Out, Line In, and Microphone jacks change when you select the 6-channel audio configuration as shown in the following table.

	Headphone/ 2-channel	4-channel	6-channel
Light Blue	Line In	Line In	Bass/Center
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Rear Speaker Out	Rear Speaker Out

8. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

9. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

10. **Serial connector.** This 9-pin COM1 port is for serial devices.

11. **S/PDIF out jack.** This jack connects to external audio output devices.

12. **PS/2 keyboard port.** This purple connector is for a PS/2 keyboard.

2.7.2 Internal connectors

1. **IDE connectors (40-1 pin PRI_IDE1, SEC_IDE1)**

   This connector supports the provided UltraDMA133/100/66 IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraATA133/100/66 slave device (hard disk drive) and the black connector to the UltraATA1133/100/66 master device.

   1. Follow the hard disk drive documentation when setting the device in master or slave mode.

   2. Pin 20 on each IDE connector is removed to match the covered hole on the UltraATA cable connector. This prevents incorrect orientation when you connect the cables.

   3. The hole near the blue connector on the UltraATA cable is intentional.
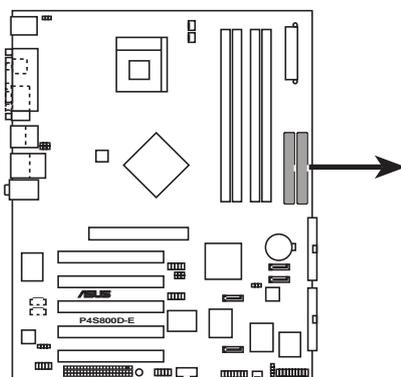
P4S800D-E IDE Connectors

SEC_IDE1   PRI_IDE1
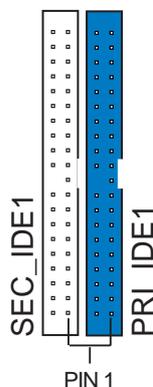
PIN 1

NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

2. Floppy disk drive connector (34-1 pin FLOPPY1)

This connector supports the provided floppy drive ribbon cable. After connecting one end to the motherboard, connect the other end to the floppy drive. (Pin 5 is removed to prevent incorrect insertion when using ribbon cables with pin 5 plug).

PIN 1

FLOPPY1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.
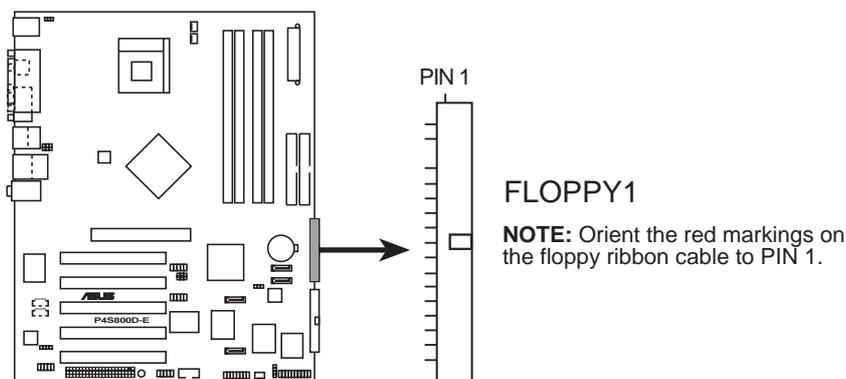
P4S800D-E Floppy Disk Drive Connector

3. RAID ATA/133/100/66/33 connector (40-1 pin PRI_RAID1)

This connector support either RAID 0, RAID 1 or RAID 0 + 1 configuration with the Serial ATA connectors through the onboard SIS® 180 controller. You can use the RAID feature to set up a disk array configuration and to support additional IDE devices.

PIN 1

PRI_RAID1

NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.
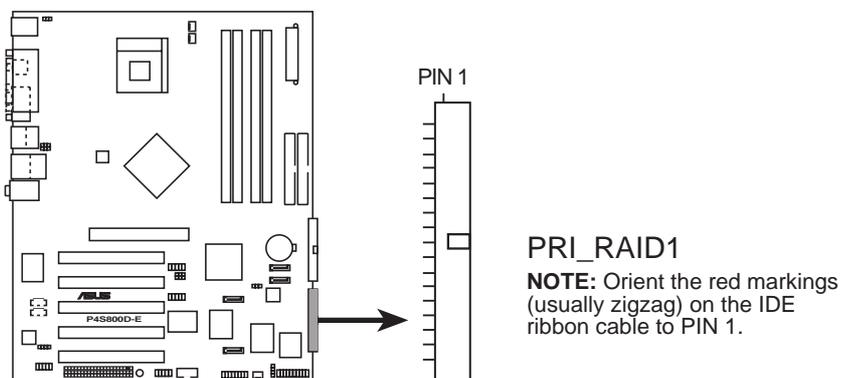
P4S800D-E RAID Connector

Important notes on the RAID feature:

- By default, the drive that you connect to the PRI_RAID connector follow the ATA133/100/66/33 protocol as an independent drive, not as a disk array.

- The RAID/SATA controller chipset does not support ATAPI devices such as CD-ROMs, DVD-ROMs, etc.

4. Serial ATA connectors (7-pin SATA1, SATA2, SATA3, SATA4)

These next generation connectors support the thin Serial ATA cables for primary internal storage devices. The current Serial ATA interface allows up to 150 MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (UltraDMA133).
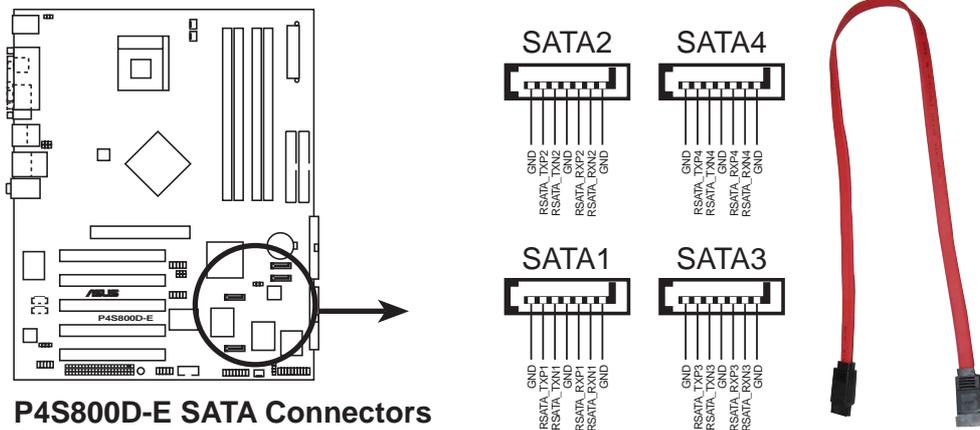
P4S800D-E SATA Connectors

Important notes on Serial ATA solution:

- The Serial ATA cable is smaller and more flexible allowing easier routing inside the chassis. The lower pin count of the Serial ATA cable eliminates the problem caused by the wide, flat ribbon cables of the Parallel ATA interface.

- Hot plug support for Serial ATA drive and connections are not available in this motherboard.

- Install Windows® XP™ Service Pack 1 when using Serial ATA.

5. CPU, Power and Chassis Fan Connectors (3-pin CPU_FAN1, PWR_FAN1, CHA_FAN1)

The fan connectors support cooling fans of 350mA~740mA (8.88W max.) or a total of 1A~2.22A (26.64W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

Do not forget to connect the fan cables to the fan connectors. Lack of sufficient air flow within the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!

PWR_FAN1

Rotation
+12V
GND

CPU_FAN1

Rotation
+12V
GND

CHA_FAN1

GND
+12V
Rotation

P4S800D-E 12-Volt Fan Connectors
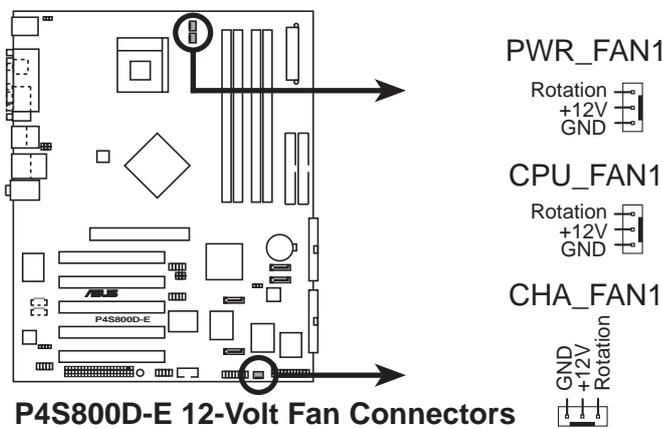
6. Serial Port 2 connector (10-1 pin COM2)

This connector accomodates a second serial port using a serial port bracket. Connect the bracket cable to this connector then install the bracket into a slot opening at the back of the system chassis.

COM2

PIN 1

P4S800D-E Serial COM2 Bracket
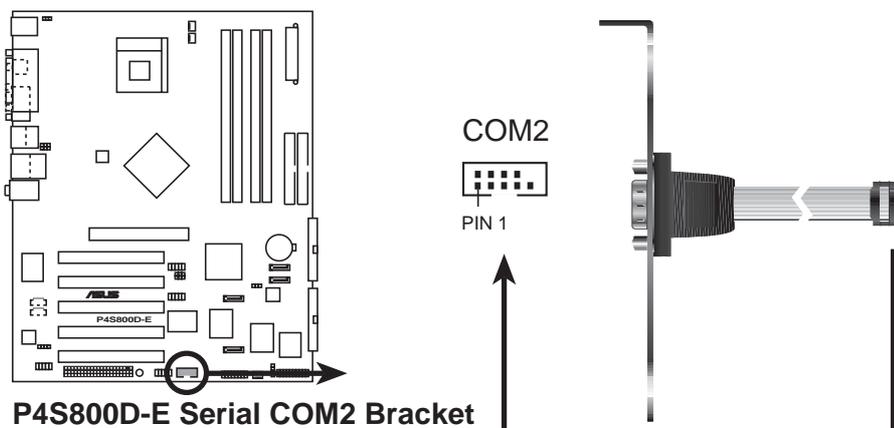
The serial port bracket is purchased separately.

7. ATX power connectors (20-pin ATXPWR1, 4-pin ATX12V1)

These connectors connect to an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

In addition to the 20-pin ATXPWR1 connector, this motherboard requires that you connect the 4-pin ATX +12V power plug to provide sufficient power to the CPU.

- Do not forget to connect the 4-pin ATX +12V power plug. Otherwise, the system does not boot up.

- Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 300W, or 350W for a fully configured system. The system may become unstable or may not boot up if the power is inadequate.

P4S800D-E ATX Power Connector
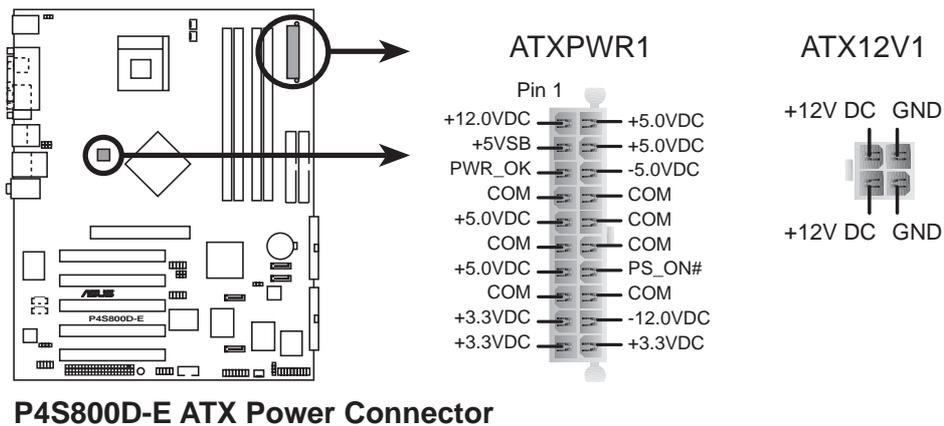
8. USB headers (10-1 pin USB56, USB78)

If the USB ports on the rear panel are inadequate, a USB header is available for additional USB ports. The USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed. This speed advantage over the conventional 12 Mbps on USB 1.1 allows faster Internet connection, interactive gaming, and simultaneous running of high-speed peripherals.

> You must install the driver before you can use the USB 2.0 capability.

P4S800D-E USB 2.0 Header
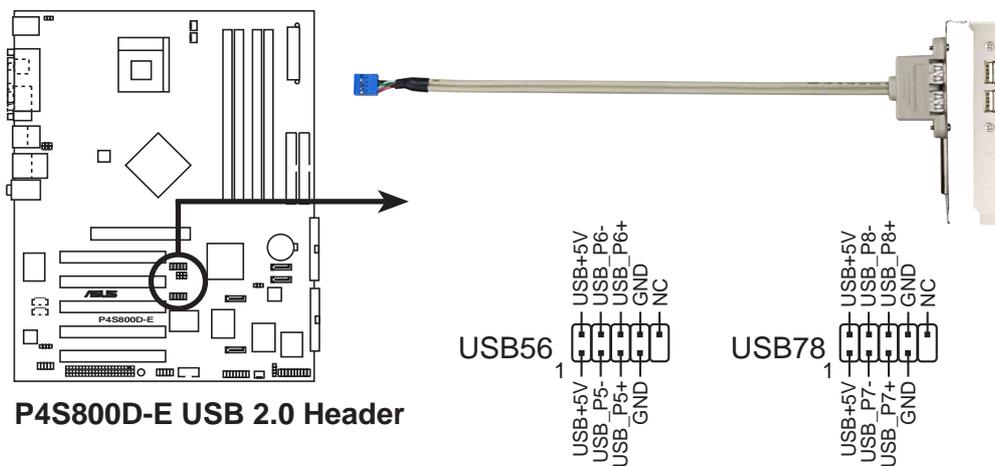
> NEVER connect a **1394 cable** to any of the USB connectors. Doing so will damage the motherboard!

9. Internal audio connectors (4-pin CD1, AUX1)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.

CD1 (Black)
AUX1 (White)

Right Audio Channel
Ground
Left Audio Channel

P4S800D-E Internal Audio Connectors
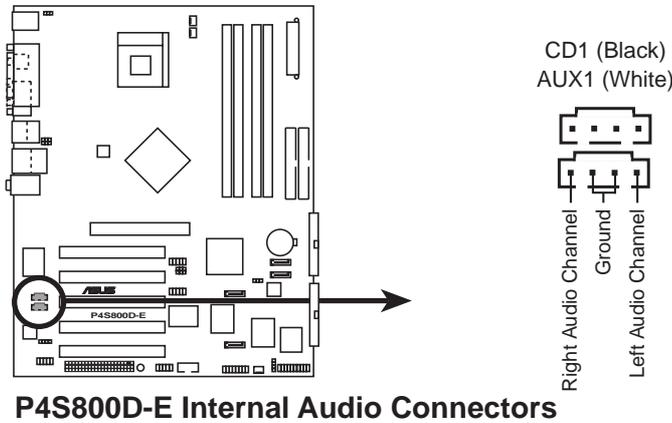
10. IEEE 1394 connectors (10-1 pin IE1394_2)

These connectors are for IEEE 1394 modules. Attach the 10-1 pin cable plugs to these connectors. You may also connect a 1394-compliant internal hard disk to these connectors.

IE1394_2

+12V
TPB0+
GND
TPA0+
1

GND
+12V
TPB0-
GND
TPA0-

P4S800D-E IEEE-1394 Connector
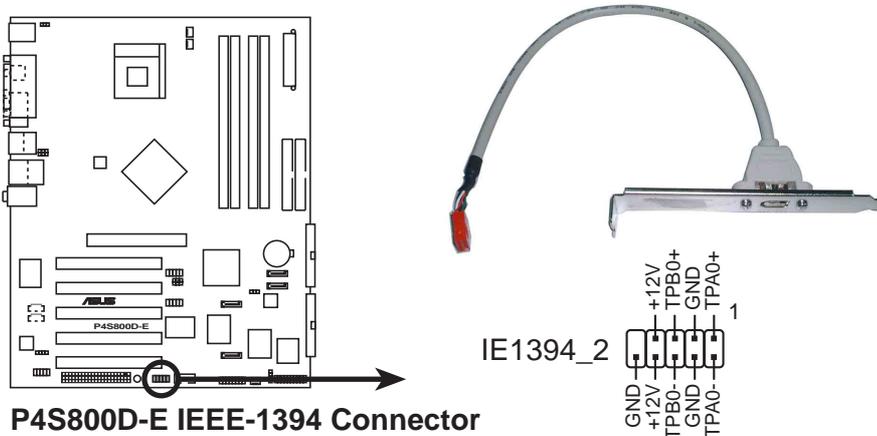
NEVER connect a **USB cable** to any of the IEEE 1394 (orange) connectors. Doing so will damage the motherboard!

11. Front panel audio connector (10-1 pin FP_AUDIO1)

This is an interface for the front panel audio cable that allow convenient connection and control of audio devices.

By default, the pins labeled LINE_OUT_R/BLINE_OUT_R and the pins LINE_OUT_L/BLINE_OUT_L are shorted with jumper caps. Remove the caps only when you are connecting the front panel audio cable.
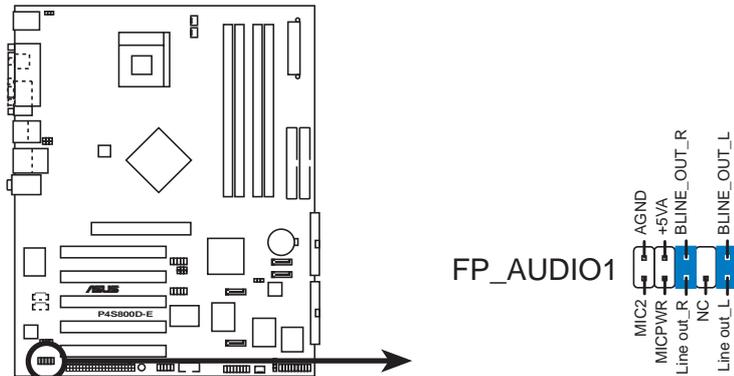
P4S800D-E Front Panel Audio Connector

12. Digital Audio connector (6-1 pin SPDIF_OUT1)

This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.
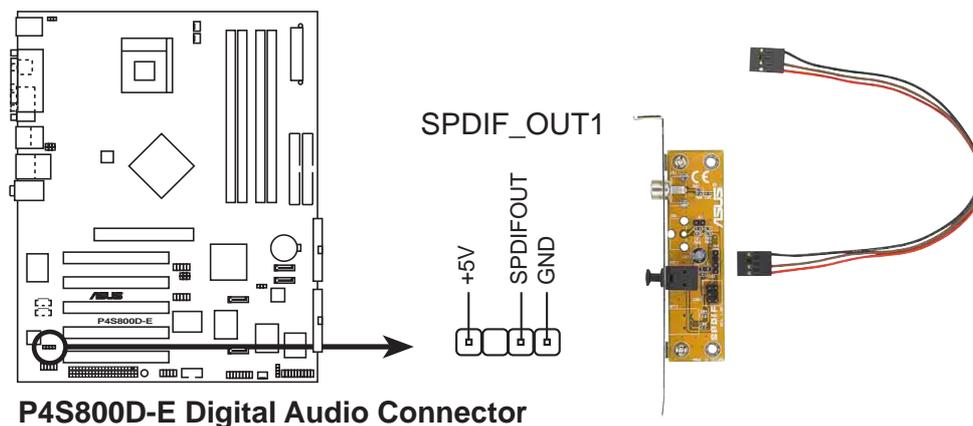
P4S800D-E Digital Audio Connector

The S/PDIF module is purchased separately.

13. GAME/MIDI connector (16-1 pin GAME1)

This connector supports a GAME/MIDI module. If a GAME/MIDI module is available, connect the GAME/MIDI cable to this connector. The GAME/MIDI port on the module connects a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files.

P4S800D-E Game Connector

GAME1
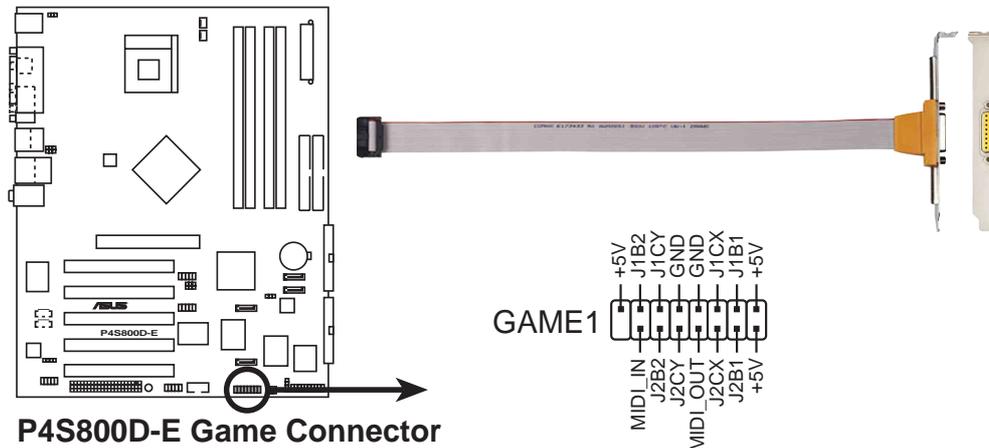
13. System panel connector (20-pin PANEL1)

This connector accommodates several system front panel functions.
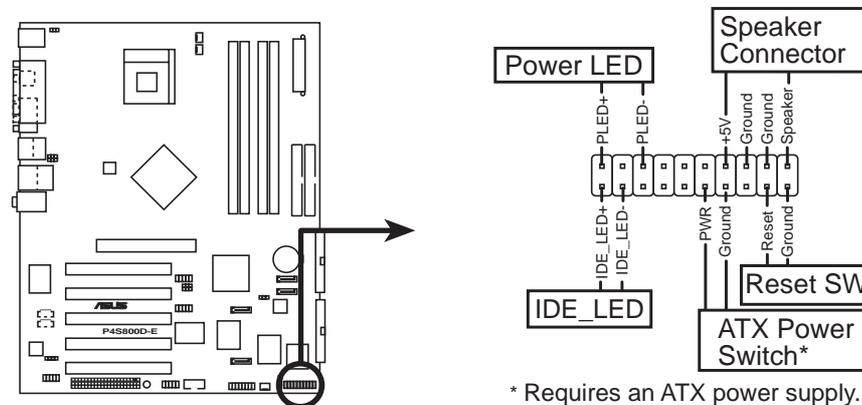
P4S800D-E System Panel Connectors

Power LED

Speaker Connector

IDE_LED

Reset SW

ATX Power Switch*

* Requires an ATX power supply.

- **System Power LED Lead (Green 3-1 pin PLED)**

    This 3-1 pin connector connects to the system power LED. The LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **System Warning Speaker Lead (Orange 4-pin SPKR)**

    This 4-pin connector connects to the case-mounted speaker and allows you to hear system beeps and warnings.

- **Reset Switch Lead (Blue 2-pin RESET)**

    This 2-pin connector connects to the case-mounted reset switch for rebooting the system without turning off the system power.

- **ATX Power Switch / Soft-Off Switch Lead (Yellow 2-pin PWRBTN)**

    This connector connects a switch that controls the system power. Pressing the power switch turns the system between ON and SLEEP, or ON and SOFT OFF, depending on the BIOS or OS settings. Pressing the power switch while in the ON mode for more than 4 seconds turns the system OFF.

- **Hard disk activity LED (Red 2-pin IDE_LED)**

    This connector supplies power to the hard disk activity LED. Any read or write activity of an IDE device cause this LED to light up.

> The System Panel connector is color-coded for easy and foolproof connection. Take note of the specific connector colors as described.

This chapter describes the power up
sequence, the vocal POST messages and
ways of shutting down the system.

Powering up

Chapter summary

3.1   Starting up for the first time

1. After making all the connections, replace the system case cover.

2. Be sure that all switches are off.

3. Connect the power cord to the power connector at the back of the system chassis.

4. Connect the power cord to a power outlet that is equipped with a surge protector.

5. Turn on the devices in the following order:

    a. Monitor

    b. External SCSI devices (starting with the last device on the chain)

    c. System power (if you are using an ATX power supply, you need to switch on the power supply as well as press the ATX power switch on the front of the chassis).

6. After applying power, the power LED on the system front panel case lights up. For ATX power supplies, the system LED lights up when you press the ATX power switch. If your monitor complies with "green" standards or if it has a "power standby" feature, the monitor LED may light up or switch between orange and green after the system LED turns on. The system then runs the power-on tests. While the tests are running, the BIOS beeps or additional messages appear on the screen. If you do not see anything within 30 seconds from the time you turned on the power, the system may have failed a power-on test. Check the jumper settings and connections or call your retailer for assistance.

7. At power on, hold down <Delete> to enter BIOS Setup. Follow the instructions in Chapter 4.

3.2 Powering off the computer

3.2.1 Using the OS shut down function

If you are using Windows 98/98SE/ME/NT/2000, click the **Start** button, click **Shut Down...**, make sure that the **Shut down** option button is selected, then the **OK** button to shut down the computer. The power supply should turn off after Windows shuts down.

If you are using Windows XP, click the **Start** button, click **Turn Off Computer**, then the **Turn Off** button to shut down the computer. The power supply should turn off after Windows shuts down.

3.2.2 Using the dual function power switch

While the system is ON, pressing the power switch for less than 4 seconds puts the system to sleep mode or to soft-off mode, depending on the BIOS setting. Pressing the power switch for more than 4 seconds lets the system enter the soft-off mode regardless of the BIOS setting. See section "4.5 Power Menu" in Chapter 4.

3.3 ASUS POST Reporter™

This motherboard includes the Winbond speech controller to support a special feature called the ASUS POST Reporter™. This feature gives you vocal POST messages and alerts to inform you of system events and boot status. In case of a boot failure, you will hear the specific cause of the problem.

These POST messages are customizable using the Winbond Voice Editor software that came with your package. You can record your own messages to replace the default messages.

3.3.1 Vocal POST messages

Following is a list of the default POST messages and their corresponding actions:

POST Message	Action
No CPU installed	• Install a supported processor into the CPU socket. See section "2.3 Central Processing Unit (CPU)" for supported processors.
System failed CPU test	• Check the CPU if properly installed. • Call ASUS technical support for assistance. See the "ASUS contact information" on the inside front cover of this manual.
System failed memory test	• Install supported DDR DIMMs into the sockets. • Check if the DIMMs on the DIMM sockets are properly installed. • Make sure that your DIMMs are not defective. • Refer to section "2.4 System memory" for instruction on installing a DIMM.
System failed VGA test	• Install a PCI VGA card into one of the PCI slots, or a 1.5V AGP card into the AGP slot. • Make sure that your VGA/AGP card is not defective.
System failed due to CPU over-clocking	• Check your CPU settings in BIOS and make sure you only set to the recommended settings. See section "4.4 Advanced menu."

POST Message	Action
No keyboard detected	• Check your keyboard if properly connected to the purple PS/2 connector on the rear panel. • See section "2.7.1 Rear panel connectors" for the location of the connector.
No floppy disk detected	• Make sure you have connected a floppy disk to the floppy disk connector on the motherboard.
No IDE hard disk detected	• Make sure you have connected an IDE hard disk drive to the one of the IDE connectors on the motherboard.
CPU temperature too high	• Check CPU fan if working properly.
CPU fan failed	• Check the CPU fan and make sure it turns on after you applied power to the system. • Make sure that your CPU fan supports the fan speed detection function.
CPU voltage out of range	• Check your power supply and make sure it is not defective. • Call ASUS technical support for assistance. See the "ASUS contact information" on the inside front cover of this manual.
System completed Power-On Self Test	• No action required
Computer now booting from operating system	• No action required

You may disable the ASUS POST Reporter™ in the BIOS setup. See section "4.4.6 Speech Configuration".

3.3.2 Winbond Voice Editor

The Winbond Voice Editor software allows you to customize the vocal POST messages. Install the software from the utilities menu of the support CD. See section "5.2.3 Utilities menu" for details.

> To avoid conflicts, do not run the Winbond Voice Editor while running the ASUS PC Probe.

Follow these steps to use the Winbond Voice Editor.

Launching the program

Launch the program either from the Winbond Voice Editor icon on your desktop, or from the Windows Start menu, **Programs/Winbond Voice Editor/ Voice Editor**.

The Winbond Voice Editor screen appears.
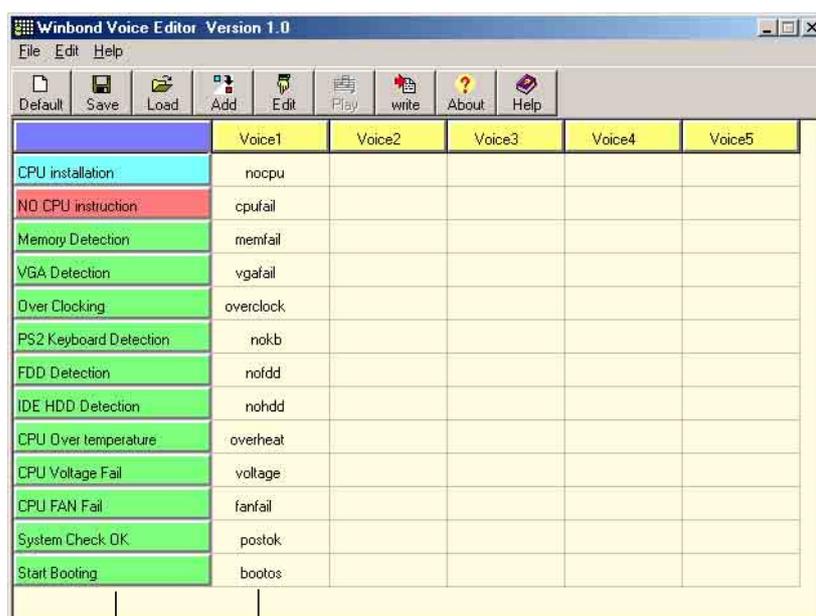
Default Messages

POST Events

Playing the default wave files

To play the default wave files, simply click on a POST event on the left side of the screen, then click the Play button.

> The default language setting is English.

Changing the default language

1. Click on the Load button. a window showing the available languages appears.

2. Select your desired language then click Open. The event messages for the language you selected appear on the Voice Editor screen.

> For some languages, not all events have a corresponding message due to file size constraints.

3. Click on the Write button to update the EEPROM.

4. Click Yes on the confirmation window that appears.

The next time you boot your computer, the POST messages are announced in the language that you selected .

Customizing your POST messages

If your language is not in the selection or if you wish to record your own POST messages to replace the pre-installed wave files, you may easily do so.

Follow these steps to customize your POST messages.

1. Launch the Voice Editor and take note of the list of POST events on the leftmost column of the screen.

2. Prepare your message for each event.

> The total compressed size for all the wave files must not exceed 1Mbit, so make your messages as short as possible.

3. Use a recording software, such as Windows Recorder, to record your messages.

4. Save the messages as wave files (.WAV). It is recommended that you save your files in low quality to keep them small. For example, use 8-bit, mono quality at 22Khz sampling rate.

> You may want to create a separate folder for your wave files so you can locate them easily in one place.

5. From the Voice Editor screen, click on the Add button to display the Add Wave File window.

6. Copy the wave files that you recorded to the database. Close the window when done.
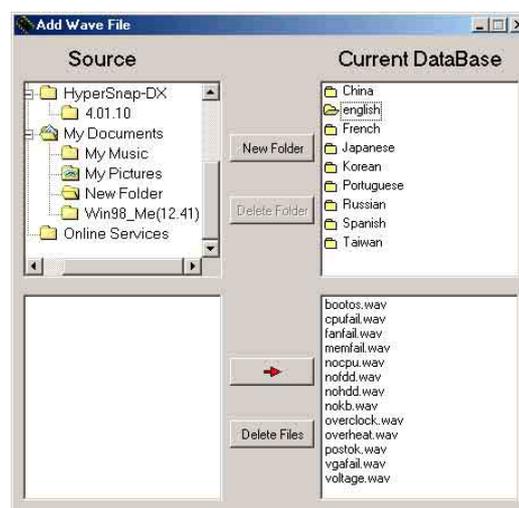
7. Click a POST event on the Voice Editor screen, then on the Edit button. The Event Sound Editor window appears.

8. Locate and select your wave file for the event then click on the arrow opposite Voice1. The file you selected appears on the space next to it.

9. Click OK to return to the Voice Editor screen.

10. Do steps 7 to 9 for the other events.

11. When done, click the Save button. A window appears prompting you to save your configuration.

12. Type a file name with a **.flh** extension, then click Save.

13. Click on the Write button to compress the file and copy into the EEPROM.

14. Click Yes on the confirmation window that appears.
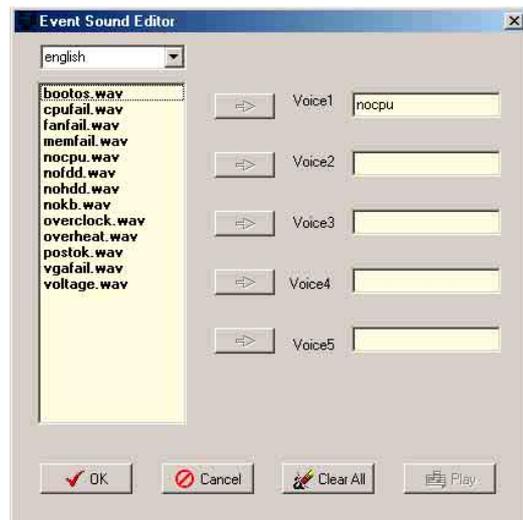
If you receive an error message telling you that the files exceed the total allowable size, do one or all of the following.

• Try to modify your messages to make them shorter

• Save the wave files at a lower quality

• Skip lesser used events like FDD Detection, IDE HDD Detection, etc.

This chapter tells how to change the system
settings through the BIOS Setup menus.
Detailed descriptions of the BIOS
parameters are also provided.

BIOS setup

Chapter summary

4.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup.

1. **ASUS AFUDOS** *(Updates the BIOS using a bootable floppy disk in DOS mode.)*
2. **ASUS EZ Flash** *(Updates the BIOS using a floppy disk during POST.)*
3. **ASUS CrashFree BIOS** *(Updates the BIOS using a bootable floppy disk or the motherboard support CD.)*
4. **ASUS Update** *(Updates the BIOS in a Windows® environment.)*

Refer to the corresponding sections for details on these utilities.

Important notes

It is recommended that you save a copy of the **original motherboard BIOS file** to a **bootable floppy disk** in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

Visit the ASUS website and download the latest BIOS file for this motherboard using the ASUS Update utility.

4.1.1 Creating a bootable floppy disk

1. Do either one of the following to create a bootable floppy disk.

DOS environment

Insert a 1.44 MB floppy disk into the drive. At the DOS prompt, type:

    format A:/S   then press **<Enter>**.

Windows® 98SE/ME/2000/XP environment

a. Insert a 1.44 MB floppy disk into the floppy disk drive.
b. From your Windows desktop, click on **Start**, then select **My Computer**.
c. Select the **3 1/2 Floppy Drive** icon.
d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.
e. If you are using Windows™ XP, select **Create an MS-DOS startup disk** from the format options field, then click **Start**.
   OR
   If you are using Windows™ 98SE/ME/2000, select **Full** option button from the format type, then click **Start**.

2. Copy the original (or the latest) motherboard BIOS to the bootable floppy disk.

4.1.2 Using AFUDOS to update the BIOS

Update the BIOS using the AFUDOS.EXE utility in DOS environment.

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for your motherboard. Save the BIOS file to a bootable floppy disk.

> Write down the BIOS file name to a piece of paper. You need to type the **exact BIOS file name** at the prompt.

2. Copy the AFUDOS.EXE utility from the support CD to the bootable floppy disk that contains the BIOS file.

3. Boot the system from the floppy disk.

4. At the DOS prompt, type the command line:

   afudos /i<*filename*>

   where "filename" means the latest (or original) BIOS file that you copied to the bootable floppy disk.

   The screen displays the status of the update process.

> The BIOS information on the screen is for reference only. What you see on your screen may not be exactly the same as shown.

```
A:\>afudos /iP4S800D.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

    Reading file ..... done
    Erasing flash .... done
    Writing flash .... 0x0008CC00 (9%)
```

> DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

When the BIOS update process is complete, the utility returns to the DOS prompt.

```
A:\>afudos /iP4S800D.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.


    Reading file ..... done
    Erasing flash .... done
    Writing flash .... 0x0008CC00 (9%)
    Verifying flash .. done


A:\>
```

5. Reboot the system from the hard disk.

4.1.3 Using AFUDOS to copy BIOS from PC

The AFUDOS.EXE utility can also be used to copy the current system BIOS settings to a floppy or hard disk. The copy can be used as a backup in case the system BIOS fails or gets corrupted.

1. At the DOS prompt, type the command line:

    afudos /o**<filename>**

    where "filename" can be any user provided filename of not more than eight (8) alpha-numeric characters for the main filename and three (3) alpha-numeric characters for the extension name.

    Press **<Enter>**.

> The BIOS information on the screen is for reference only. What you see on your screen may not be exactly the same as shown.

Main filename

Extension name

```
A:\>afudos /oMYBIOS03.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.


    Reading flash ..... 0x0008CC00 (9%)
```

2. The utility will copy the current system BIOS by default to the floppy disk. Make sure that the floppy disk is not write-protected and have enough space (at least 600KB) to store the file.

```
A:\>afudos /oMYBIOS03.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.


   Reading flash ..... done


A:\>
```

When the BIOS copy process is complete, the utility returns to the DOS prompt.

4.1.4   Using ASUS EZ Flash to update the BIOS

The ASUS EZ Flash feature allows you to easily update the BIOS without having to go through the long process of booting from a diskette and using a DOS-based utility. The EZ Flash is built-in the BIOS firmware so it is accessible by simply pressing **<Alt + F2>** during the Power-On Self Tests (POST).

To update the BIOS using ASUS EZ Flash:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for your motherboard and rename the downloaded file as **P4S800DE.ROM**. Save the BIOS file to a floppy disk.

2. Reboot the system.

3. To launch EZ Flash, press **<Alt+F2>** during POST to display the following.

```
User recovery requested. Starting BIOS recovery...

Checking for floppy...
```

- • If there is no floppy disk found in the drive, the error message "**Floppy not found!**" appears.

- • If the correct BIOS file is not found in the floppy disk, the error message "**Floppy not found!**" is displayed. Make sure to rename the downloaded BIOS file as "**P4S800DE.ROM**".

4. Insert the floppy disk that contains the BIOS file. If all the necessary files are found in the floppy disk, EZ Flash performs the BIOS update process and automatically reboots the system when done.

> DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

```
User recovery requested. Starting BIOS recovery...

Checking for floppy...

Floppy found!

Reading file "P4S800DE.rom". Completed.

Start flashing...

Flashed successfully. Rebooting.
```

4.1.5   Recovering the BIOS with CrashFree BIOS 2

The CrashFree BIOS 2 auto recovery tool allows you to restore BIOS from the motherboard support CD, or from a floppy disk that contains the BIOS file, in case the current BIOS on the motherboard fails or gets corrupted.

> 1. Prepare the **support CD** that came with the motherboard or a **floppy disk that contains the motherboard BIOS** before proceeding with the BIOS update process.
>
> 2. If you have saved a copy of the original motherboard BIOS to a bootable floppy disk, you may also use this disk to restore the BIOS. See section "4.1.1 Creating a bootable floppy disk."

To recover the BIOS from a floppy disk:

1. Boot the system.
2. When a corrupted BIOS is detected, the following screen message appears.

```
Bad BIOS checksum. Starting BIOS recovery...

Checking for floppy...
```

3. Insert a floppy disk that contains the original or the latest BIOS file for this motherboard. If all the necessary files are found in the floppy disk, the BIOS update process continues.

> Make sure that the BIOS file in the floppy disk is renamed as "**P4S800DE.ROM**".

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "P4S800DE.rom". Completed.
Start flashing...
```

> DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

4. When the BIOS update process is complete, reboot the system.

To recover the BIOS from the support CD:

1. Boot the system.
2. When a corrupted BIOS is detected, the following screen message appears.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

> If there is no floppy disk found in the drive, the system automatically checks the CD-ROM.

3. Place the support CD in the CD-ROM. The support CD contains the original BIOS for this motherboard.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found.
Reading file "P4S800DE.rom". Completed.
Start flashing...
```

> ⚠️ DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

4. When the BIOS update process is complete, reboot the system.

> 🖎 The recovered BIOS may not be the latest BIOS version for this motherboard. Visit ASUS website (www.asus.com) to download the latest BIOS file.

4.1.6 ASUS Update

The ASUS Update is a utility that allows you to update the motherboard BIOS in Windows® environment. This utility is available in the support CD that comes with the motherboard package. ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

To install ASUS Update:

1. Insert the support CD into the CD-ROM drive. The **Drivers** menu appears.
2. Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**. See page 5-3 for the **Utilities** menu screen.
3. The ASUS Update utility is copied into your system.

To update the BIOS using the ASUS Update:

1. Launch the utility from the Windows desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update initial screen appears.

2. Select your desired update method, then click **Next**.
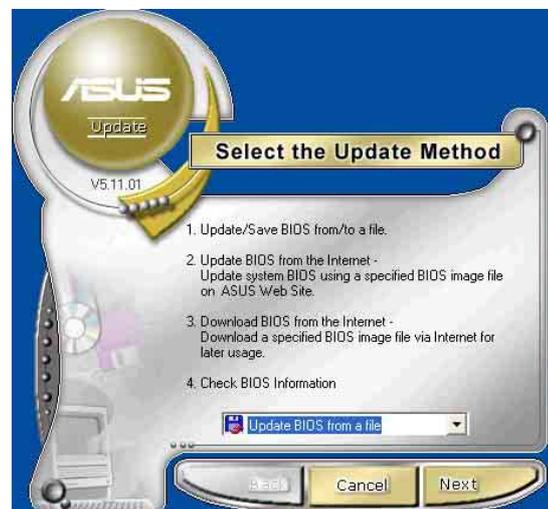
3. If you selected updating/ downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic, or choose **Auto Select**. Click **Next**.
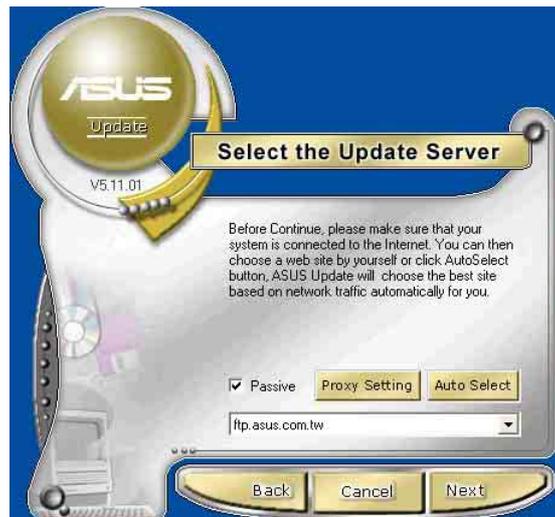
4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.

5. Follow the instructions on the succeeding screens to complete the update process.
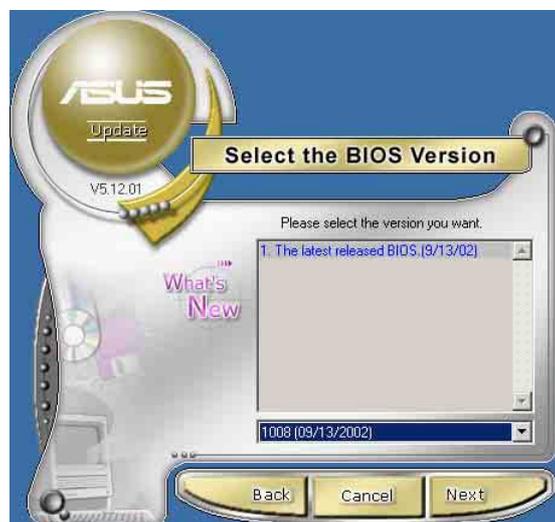
If you selected the option to update the BIOS from a file, a window prompts you to locate the file. Select the file, click **Save**, then follow the screen instructions to complete the update process.

4.2   BIOS Setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section "4.1 Managing and updating your BIOS."

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup". This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you may want to change the configuration of your computer in the future. For example, you may want to enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware hub.

The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press **<Delete>** during the Power-On Self Test (POST) to enter the Setup utility. Otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing **<Ctrl+Alt+Delete>**, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections from the available options using the navigation keys.

> The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Default Settings** item under the Exit Menu. See section "4.7 Exit Menu."

> • The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
>
> • Visit the ASUS website (www.asus.com) to download the latest product and BIOS information.

4.2.1 BIOS menu screen

Menu items **Menu bar**   **Configuration fields**   **General help**

```
                        BIOS SETUP UTILITY
Main    Advanced    Power    Boot    Exit

  System Time                  [11:51:19]          Use [ENTER], [TAB]
  System Date                  [Thu 08/05/2003]    or [SHIFT-TAB] to
  Legacy Diskette A            [1.44M, 3.5 in]     select a field.
  Language                     [English]
                                                   Use [+] or [-] to
 ▶  Primary IDE Master        : [ST320413A]        configure system time.
 ▶  Primary IDE Slave         : [ASUS CD-S340]
 ▶  Secondary IDE Master      : [Not Detected]
 ▶  Secondary IDE Slave       : [Not Detected]
  OnChip SATA Controller        [Enabled]
                                                   ←    Select Screen
 ▶  System Information                             ↑↓   Select Item
                                                   +-   Change Field
                                                   Tab  Select Field
                                                   F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit

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```

Sub-menu items   **Navigation keys**

4.2.2 Menu bar

The menu bar on top of the screen has the following main items:

Main   For changing the basic system configuration

Advanced   For changing the advanced system settings

Power   For changing the advanced power management (APM)
                configuration

Boot   For changing the system boot configuration

Exit   For selecting the exit options and loading default settings

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

4.2.3 Navigation keys

At the *bottom right corner* of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.

> Some of the navigation keys differ from one screen to another.

4.2.4 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.
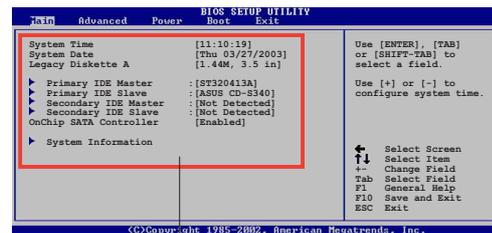
The other items (Advanced, Power, Boot, and Exit) on the menu bar have their respective menu items.

Main menu items

4.2.5 Sub-menu items

An item with a sub-menu on any menu screen is distinguished by a solid triangle before the item. To display the sub-menu, select the item and press Enter.

4.2.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you may change the value of the field opposite the item. You can not select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press Enter to display a list of options. Refer to "4.2.7 Pop-up window."

4.2.7 Pop-up window

Select a menu item then press Enter to display a pop-up window with the configuration options for that item.

4.2.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press **Up/Down arrow keys** or **PageUp/PageDown keys** to display the other items on the screen.
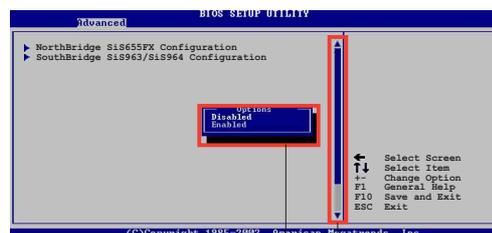
Pop-up window

Scroll bar

4.2.9 General help

At the top right corner of the menu screen is a brief description of the selected item.

4.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears giving you an overview of the basic system information.

Refer to section "4.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                          BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

   System Time                  [11:51:19]          Use [ENTER], [TAB]
   System Date                  [Thu 08/05/2003]    or [SHIFT-TAB] to
   Legacy Diskette A            [1.44M, 3.5 in]     select a field.
   Language                     [English]
                                                    Use [+] or [-] to
 ▶ Primary IDE Master         : [ST320413A]         configure system time.
 ▶ Primary IDE Slave          : [ASUS CD-S340]
 ▶ Secondary IDE Master       : [Not Detected]
 ▶ Secondary IDE Slave        : [Not Detected]
   OnChip SATA Controller       [Enabled]
                                                    ←     Select Screen
 ▶ System Information                               ↑↓    Select Item
                                                    +-    Change Field
                                                    Tab   Select Field
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit

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```

4.3.1 System Time [xx:xx:xxxx]

This item allows you to set the system time.

4.3.2 System Date [Day xx/xx/xxxx]

This item allows you to set the system date.

4.3.3 Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5in.]

4.3.4 Language [English]

This field allows you to choose the BIOS language version from the available options.

4.3.5 Primary and Secondary IDE Master/Slave

While entering Setup, BIOS auto-detects the presence of IDE devices. There is a separate sub-menu for each IDE device. Select a device item then press Enter to display the IDE device information.

```
                          BIOS SETUP UTILITY
  Main

  Primary IDE Master
  Device         : Hard Disk            Select the type
  Vendor         : ST320413A            of device connected
  Size           : 20.0GB               to the system.
  LBA Mode       : Supported
  Block Mode     : 16 Sectors
  PIO Mode       : Supported
  Async DMA      : MultiWord DMA-2
  Ultra DMA      : Ultra DMA-5
  SMART Monitoring: Supported

  Type                       [Auto]      ←     Select Screen
  LBA/Large Mode             [Auto]      ↑↓    Select Item
  Block(Multi-sector Transfer)  [Auto]   +-    Change Option
  PIO Mode                   [Auto]      F1    General Help
  DMA Mode                   [Auto]      F10   Save and Exit
  Smart Monitoring           [Auto]      ESC   Exit
  32Bit Data Transfer        [Disabled]

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```

The values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring) are auto-detected by BIOS and are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to Disabled, the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode. Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0]
[SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0]
[UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer. Configuration options: [Disabled]
[Enabled]

4.3.6   OnChip SATA Controller

This item allows you to enable or disable the onboard Serial ATA controller.

4.3.7   System Information

This menu gives you an overview of the general system specifications.
The items in this menu are auto-detected by BIOS.

```
                        BIOS SETUP UTILITY
  Main

  AMI BIOS
  Version      : 08.00.08
  Build Data   : 08/04/03

  Processor
  Type         : Intel(R) Pentium(R) 4 CPU 1500MHz
  Speed        : 1500MHz
  Count        : 1

  System Memory
  Size         : 256MB

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

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```
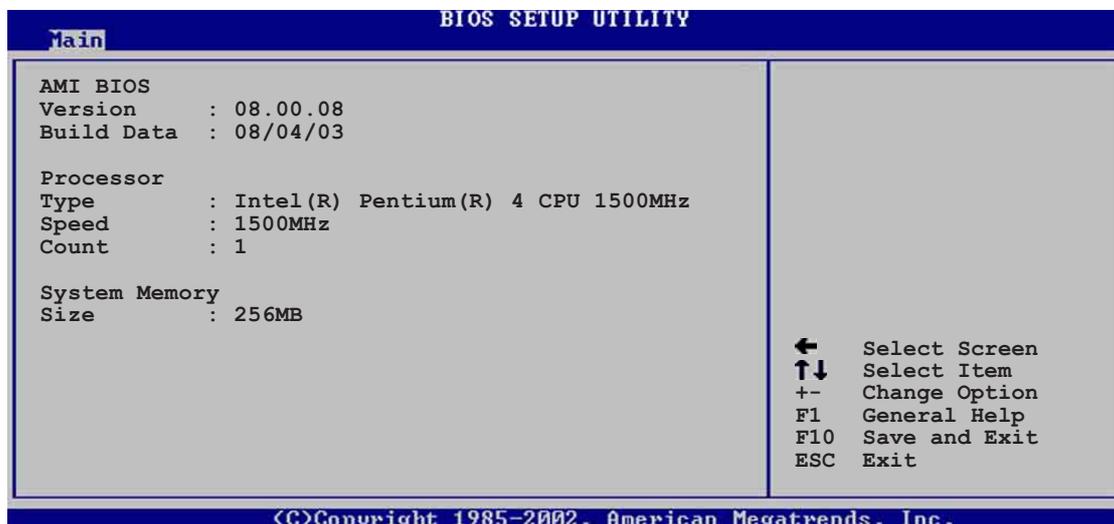
AMI BIOS

This item displays the auto-detected BIOS information.

Processor

This item displays the auto-detected processor information.

System Memory

This item displays the auto-detected system memory.

4.4   Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

⚠ Take caution when changing the settings of the Advanced menu items. Incorrect field values may cause the system to malfunction.

```
                          BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

▶  JumperFree Configuration                      Configure CPU.
▶  CPU Configuration
▶  Chipset
▶  Onboard Devices Configuration
▶  PCIPnP
▶  USB Configuration
▶  Speech Configuration
▶  Instant Music Configuration


                                                  ←     Select Screen
                                                  ↑↓    Select Item
                                                  Enter Go to Sub-screen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

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```

4.4.1   JumperFree Configuration

```
                          BIOS SETUP UTILITY
     Advanced

AI Overclock Tuner              [Standdard]
DRAM Frequency                  [Auto]

Configure System Frequency/Voltage

CPU VCore Voltage               [Auto]
CPU VCore Offset +0.1V          [Disabled]
AGP VDDQ Voltage                [Auto]
DDR Reference Voltage           [Auto]


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

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```

AI Overclock Tuner [Standard]

Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking options. Configuration options: [Manual] [Standard] [Overclock 5%] [Overclock 10%] [Overclock 20%] [Overclock 30%]

⚠ Selecting a very high CPU frequency may cause the system to become unstable! If this happens, revert to the default setting.

CPU Frequency [XXX]   (value is auto-detected)

Indicates the frequency sent by the clock generator to the system bus and PCI bus. The bus frequency (external frequency) multiplied by the bus multiple equals the CPU speed. The value of this item is auto-detected by BIOS. The values range from 100 to 300. This item appears only when the **AI Overclock Tuner** item is set to Manual.

DRAM Frequency [Auto]

Allows you to set the DDR operating frequency. Configuration options: [266 MHz] [333 MHz] [400 MHz] [Auto]

Configure System Frequency/Voltage

CPU VCore Voltage [Auto]

This item allows you to set the CPU VCore voltage.
Configuration options: [Auto] [1.9500V] [1.9250V] [1.9000V] [1.8750V] [1.8500V] [1.8250V] [1.8000V] [1.7750V] [1.7500V]

CPU VCore Offset +0.1V [Disabled]

This item allows you to enable or disable the CPU VCore Offset voltage. Configuration options: [Disabled] [Enabled]

DDR VDDQ Voltage [Auto]

This item allows you to automatically detect or select from a list the DDR operating voltage. Configuration options: [1.50V] [1.60V] [1.70] [1.80V] [Auto]

DDR Reference Voltage [Auto]

This item allows you to automatically detect or select from a list the DDR reference voltage. Configuration options: [2.55V] [2.65V] [2.75V] [2.85V] [Auto]

4.4.2   CPU Configuration

The items in this menu show the CPU-related information auto-detected by BIOS.

```
                          BIOS SETUP UTILITY
    Advanced

    Configure Advanced CPU settings

    Manufacturer: Intel
    Brand String: Intel(R) Pentium(R) 4 CPU 1500MHz
    Frequency   : 1500Mhz
    FSB Speed   : 400Mhz

    Cache L1    : 8 KB
    Cache L2    : 25 KB
    Cache L3    : 0 KB

    Rario Status: Locked
    Ratio Actual Value: 15                          ←    Select Screen
      VID CMOS Setting:            [ 62]           ↑↓   Select Item
    Max CPUID Value Limit:         [Disabled]      +-   Change Option
    CPU Internal Thermal Control   [Auto]          F1   General Help
                                                   F10  Save and Exit
    Hyper Threading Function       [Enabled]       ESC  Exit

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```

VID CMOS Setting [62]

This item allows you to set the VID setting value in which the processor is to run.

Max CPUID Value Limit [Disabled]

This item allows you to enable or disable the maximum CPUID value limit. Configuration options: [Disabled] [Enabled]

CPU Internal Thermal Control [Auto]

This item allows you to disable or set to auto the CPU internal thermal control feature. Configuration options: [Auto] [Disabled]

Hyper-Threading Technology [Enabled]

This item allows you to enable or disable the processor Hyper-Threading Technology. Configuration options: [Disabled] [Enabled]

4.4.3 Chipset

The Chipset menu items allow you to change the advanced chipset settings. Select an item then press Enter to display the sub-menu.

```
                        BIOS SETUP UTILITY
     Advanced

   ▶ NorthBridge SiS655TX Configuration
   ▶ SouthBridge SiS963/SiS964 Configuration



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

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```

NorthBridge SiS655TX Configuration

```
                        BIOS SETUP UTILITY
     Advanced

   Graphics Adapter Priority      [PCI]
   Graphics Aperture Size         [ 64MB]
   Advanced HyperStreaming Engine [Enabled]
   Performance Mode               [Auto]
   DRAM Timing                    [Auto]
   128 Bit Access Mode            [Auto]
   Ch0 MA 1T/2T Select            [Auto]
   Ch1 MA 1T/2T Select            [Auto]
   DRAM CAS# Latency              [By SPD]
   DRAM Precharge Display         [Auto]
   DRAM RAS# to CAS# Delay        [Auto]
   DRAM RAS# Precharge            [Auto]
                                              ←     Select Screen
                                              ↑↓    Select Item
                                              +-    Change Option
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```

Graphic Adapter Priority [PCI]

Allows selection of the graphics controller to use as primary boot device. Configuration options: [PCI] [AGP]

Graphics Aperture Size [64MB]

Allows you to select the size of mapped memory for AGP graphic data. Configuration options: [32MB] [64MB] [128MB] [256MB]

Advanced HyperStreaming Engine [Enabled]

Allows your to enable or disable the advanced hyperstreaming engine.
Configuration options: [Disabled] [Enabled]

Performance Mode [Auto]

Allows boost in system performance.
Configuration options: [Safe] [Normal] [Aggressive] [Auto]

DRAM Timing [Auto]

Allows you to set the DRAM Timing.
Configuration options: [Slow] [Normal] [Fast] [Fast+] [Auto]

128 Bit Access Mode [Auto]

Allows you to set the 128 Bit Access mode.
Configuration options: [Auto] [64*2] [128*1]

Ch0 MA 1T/2T Select [Auto]

Allows you to set the Channel 0 MA 1T or 2T setting.
Configuration options: [Auto] [MA 2T] [MA 1T]

Ch1 MA 1T/2T Select [Auto]

Allows you to set the Channel 1 MA 1T or 2T setting.
Configuration options: [Auto] [MA 2T] [MA 1T]

DRAM CAS# Latency [By SPD]

This item controls the latency between the SDRAM read command and
the time the data actually becomes available.
Configuration options: [By SPD] [2T] [2.5T] [3T]

DRAM Precharge Delay [Auto]

Configuration options: [Auto] [6T] [7T] [5T] [4T] [8T] [9T]

DRAM RAS# to CAS# Delay [Auto]

This item controls the latency between the DDR SDRAM active
command and the read/write command.
Configuration options: [Auto] [3T] [2T] [4T] [5T]

DRAM RAS# Precharge [Auto]

This item controls the idle clocks after issuing a precharge command to
the DDR SDRAM. Configuration options: [Auto] [3T] [2T] [4T] [5T]

> If the system becomes unstable after changing the settings of any of
> the above items, revert to the default settings.

SouthBridge SiS963/SiS964 Configuration

```
                       BIOS SETUP UTILITY
    Advanced

    Onboard AC97 Audio Device      [Enabled]

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

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```

Onboard AC97 Audio Device [Enabled]

This item enables or disables the onboard AC'97 audio CODEC device. Configuration options: [Disabled] [Enabled]

4.4.4 Onboard Devices Configuration

```
                       BIOS SETUP UTILITY
    Advanced

    Configure Win637 Super IO Chipset

    Serial Port1 Address          [3F8/IRQ4]
    Serial Port2 Address          [2F8/IRQ3]
    Parallel Port Address         [378]
    Parallel Port Mode            [Normal]
     Parallel Port IRQ            [IRQ7]
    OnBoard Game/MIDI Port        [Disabled]

    Onboard SIS180 SATA Controller [Enabled]
    Onboard 1394 Controller       [Enabled]
    Onboard LAN                   [Enabled]
     Onboard LAN Boot ROM         [Disabled]       ←    Select Screen
                                                   ↑↓   Select Item
                                                   +-   Change Option
                                                   F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit

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```

Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address. Configuration options: [Disabled] [3F8/IRQ4] [3E8/IRQ4] [2E8/IRQ3]

Serial Port2 Address [2F8/IRQ3]

Allows you to select the Serial Port2 base address. Configuration options: [Disabled] [2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses. Configuration options: [Disabled] [378] [278] [3BC]

Parallel Port Mode [Normal]

Allows you to select the Parallel Port mode. When the item **Parallel Port Address** is set to **3BC**, the Parallel Port Mode options are only Normal, Bi-directional, and ECP. Configuration options: [Normal] [Bi-directional] [EPP] [ECP]

EPP Version [1.9]

Allows selection of the Parallel Port EPP version. This item appears only when the **Parallel Port Mode** is set to **EPP**.
Configuration options: [1.9] [1.7]

ECP Mode DMA Channel [DMA3]

Allows selection of the Parallel Port ECP DMA channel. This item appears only when the **Parallel Port Mode** is set to **ECP**.
Configuration options: [DMA0] [DMA1] [DMA3]

Parallel Port IRQ [IRQ7]

Allows you to select the Parallel Port IRQ. Configuration options: [IRQ5] [IRQ7]

Onboard Game/MIDI Port [Disabled]

Allows you to select the Game Port address or to disable the port. Configuration options: [Disabled] [200/300] [200/330] [208/300] [208/330]

OnBoard SIS180 SATA Controller [Enabled]

Allows you to enable or disable the onboard SIS180 RAID controller. Configuration options: [Disabled] [Enabled]

OnBoard 1394 Controller [Enabled]

Allows you to enable or disable the onboard IEEE 1394 controller. Configuration options: [Disabled] [Enabled]

OnBoard LAN [Enabled]

Allows you to enable or disable the onboard LAN controller. Configuration options: [Disabled] [Enabled]

OnBoard LAN Boot ROM [Disabled]

Allows you to enable or disable the onboard LAN boot ROM. This item appears only when the OnBoard LAN item is enabled. Configuration options: [Disabled] [Enabled]

4.4.5   PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.

> Take caution when changing the settings of the PCI PnP menu items. Incorrect field values may cause the system to malfunction.

```
                            BIOS SETUP UTILITY
        Advanced

      Advanced PCI/PnP Settings

      WARNING: Setting wrong values in below sections
               may  cause the system to malfunction.
      Plug And Play O/S              [No]
      PCI Latency Timer             [64]
      Allocate IRQ to PCI VGA       [Yes]
      Palette Snooping              [Disabled]
      PCI IDE BusMaster             [Enabled]

      IRQ3                          [Available]
      IRQ4                          [Available]
      IRQ5                          [Available]          ←   Select Screen
      IRQ7                          [Available]          ↑↓  Select Item
      IRQ9                          [Available]          +-  Change Option
      IRQ10                         [Available]          F1  General Help
      IRQ11                         [Available]          F10 Save and Exit
      IRQ14                         [Available]          ESC Exit
      IRQ15                         [Available]

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```

Plug and Play O/S [No]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you installed a Plug & Play operating system, the operating system configures the Plug & Play devices not required for boot. Configuration options: [No] [Yes]

PCI Latency Timer [64]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA [Yes]

When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested. Configuration options: [No] [Yes]

Pallete Snooping [Disabled]

When set to [Enabled], the pallete snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Setting to [Disabled] deactivates this feature. Configuration options: [Disabled] [Enabled]

PCI IDE BusMaster [Enabled]

Allows BIOS to use PCI bus mastering when reading/writing to IDE devices. Configuration options: [Disabled] [Enabled]

IRQ xx [Available]

When set to [Available], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [Available] [Reserved]

4.4.6 USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press Enter to display the configuration options.

```
                        BIOS SETUP UTILITY
      Advanced

 Onboard SiS USB1.1 DEVICE      [Enabled]          Enables USB host
 Onboard SiS USB2.0 DEVICE      [Enabled]          controllers.

 USB Configuration

 Module  Version - 2.23.2-9.4

 USB Devices Enabled: None

 Legacy USB Support            [Auto]
 USB 2.0 Controller Mode       [HiSpeed]
 Stop EHCI HC in OHCI handover [Enabled]     ←      Select Screen
                                             ↑↓     Select Item
                                             +-     Change Option
                                             F1     General Help
                                             F10    Save and Exit
                                             ESC    Exit

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```
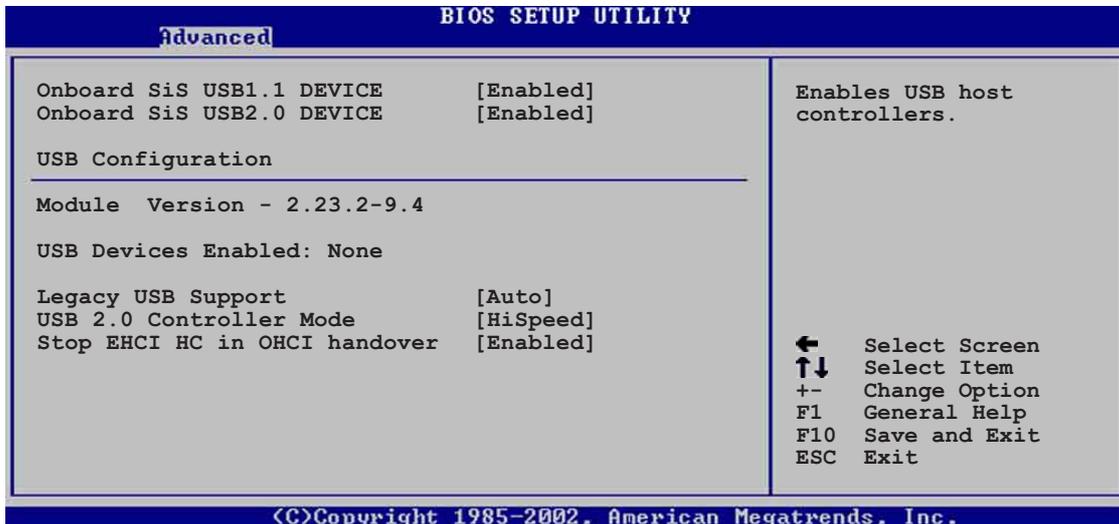
OnBoard SiS USB 1.1 Device [Enabled]

Allows you to enable or disable the onboard SiS USB 1.1 device. Configuration options: [Disabled] [Enabled]

OnBoard SiS USB 2.0 Device [Enabled]

Allows you to enable or disable the onboard SiS USB 2.0 device. Configuration options: [Disabled] [Enabled]

> • The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.
> • Set to [Disabled] if you are using a Windows 98SE or Windows ME OS.

Legacy USB Support [Auto]

Allows you to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [HiSpeed]

Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [HiSpeed] [Full Speed]

Stop EHCI HC in OHCI handover [Enabled]

Allows you to enable or disable the feature to stop the EHCI host controller during the OHCI OS handover call. This is needed when installing operating systems that do not support EHCI host controllers. Configuration options: [Disabled] [Enabled]

4.4.7   Speech Configuration

```
                          BIOS SETUP UTILITY
     Advanced

  Speech Option

  Speech Post Reporter          [Enabled]
  Report IDE Error              [Disabled]
  Report System Booting         [Disabled]




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


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```
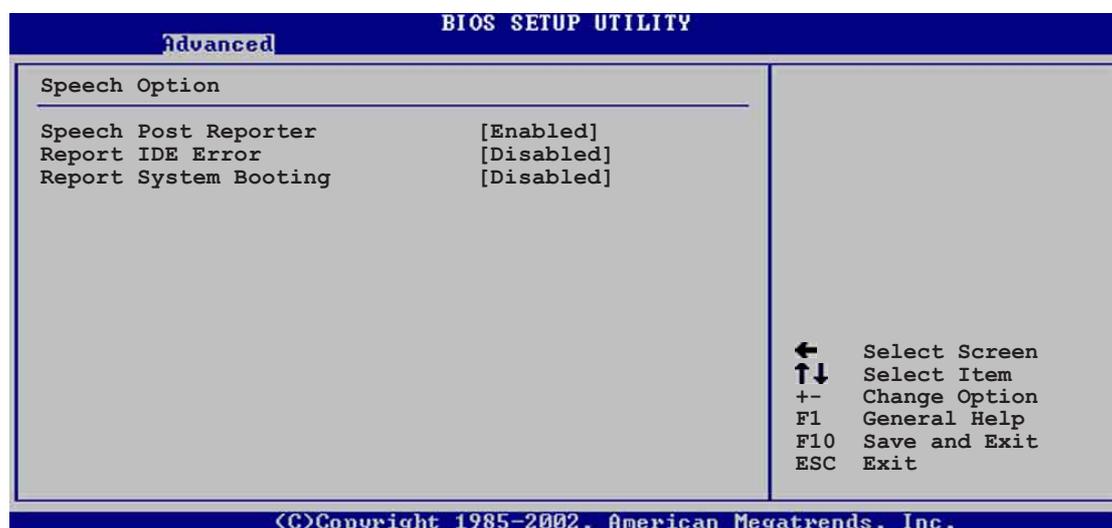
Speech POST Reporter [Enabled]

Allows you to enable or disable the ASUS Speech POST Reporter™ feature. Configuration options: [Disabled] [Enabled]

The following items appear only when Speech POST Reporter is set to Enabled.

Report IDE Error [Disabled]

Configuration options: [Disabled] [Enabled]

Report System Booting [Disabled]

Configuration options: [Disabled] [Enabled]

4.4.8 Instant Music Configuration

```
                         BIOS SETUP UTILITY
     Advanced

 Instant Music Option

 Instant Music                       [Disabled]




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

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```
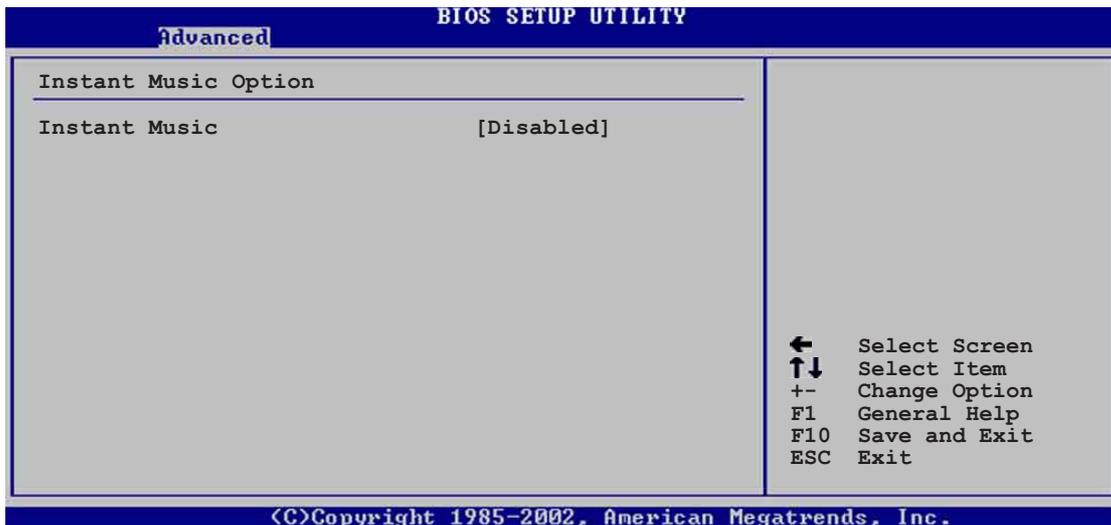
Instant Music [Disabled]

Allows you to enable or disable the Instant Music feature in BIOS.
Configuration options: [Disabled] [Enabled]

> When Instant Music is enabled, the PS/2 keyboard power up feature is
> automatically disabled.

Instant Music CD-ROM Drive [IDE Secondary Master]

Allows you to select the CD-ROM drive that you wish to use for the Instant
Music CD playback. Configuration options: [IDE Primary Master] [IDE
Primary Slave] [IDE Secondary Master] [IDE Secondary Slave]

> The above item appears only if you enabled the Instant Music item.

4.5 Power menu

The Power menu items allow you to change the settings for the Advanced Power Management (APM). Select an item then press Enter to display the configuration options.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

 Suspend Mode                 [Auto]            Configure CPU.
 Repost Video on S3 Resume    [No]
 ACPI 2.0 Support             [No]
 AcPI APIC Support            [Enabled]

 ▶  APM Configuration
 ▶  Hardware Monitor


                                               ←     Select Screen
                                               ↑↓    Select Item
                                               Enter Go to Sub-screen
                                               F1    General Help
                                               F10   Save and Exit
                                               ESC   Exit

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```
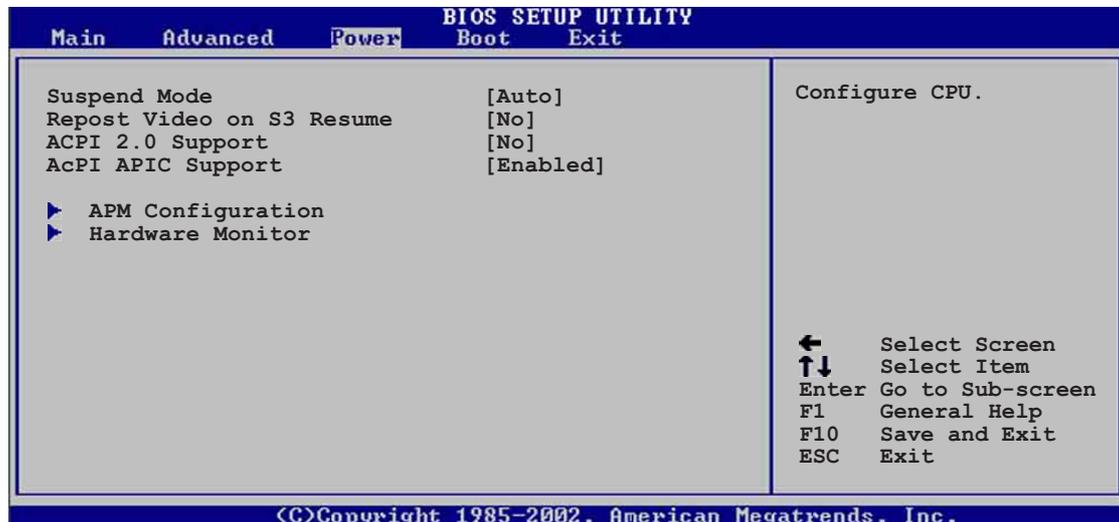
4.5.1 Suspend Mode [Auto]

Allows you to select the ACPI state to be used for system suspend. Configuration options: [S1 (POS) only] [Auto] [S3 only]

4.5.2 Repost Video on S3 Resume [No]

Determines whether to invoke VGA BIOS POST on S3/STR resume. Configuration options: [No] [Yes]

4.5.3 ACPI 2.0 Support [No]

Allows you to add more tables for ACPI 2.0 specifications. Configuration options: [No] [Yes]

4.5.4 ACPI APIC Support [Enabled]

Allows you to enable or disable the ACPI support in the ASIC. When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

2.5.5   APM Configuration

```
                         BIOS SETUP UTILITY
                 Power

   Power Button Mode            [On/Off]

   Restore on AC Power Loss     [Always OFF]
   Power On By PS2 Keyboard      [Disabled]
   Power On By PS2 MOUSE         [Disabled]
   Power On By PCI Devices       [Disabled]
   Power On By External Modem    [Disabled]
   Power On By RTC Alarm         [Disabled]



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

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```
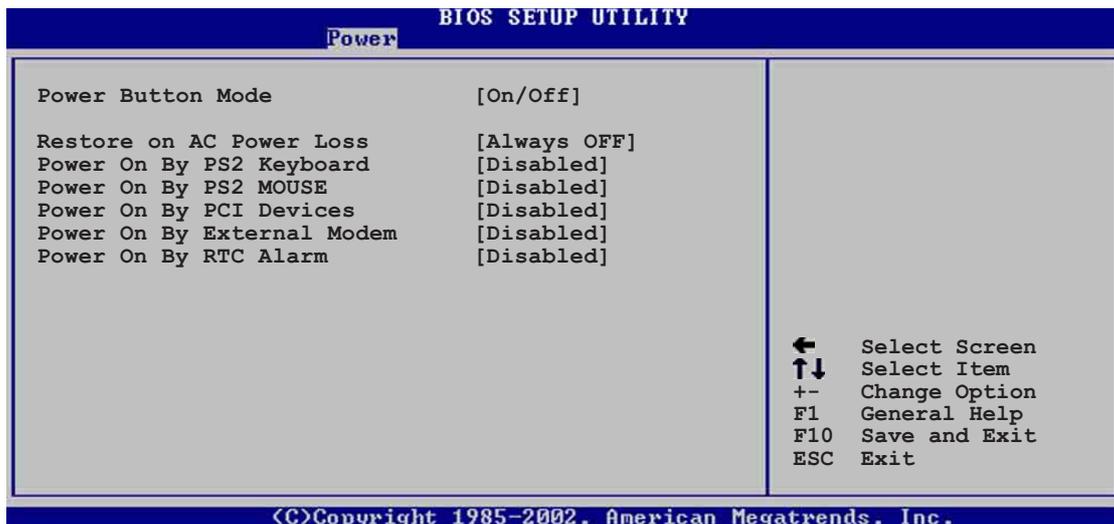
Power Button Mode [On/Off]

Allows the system to go into On/Off mode or suspend mode when the power button is pressed. Configuration options: [On/Off] [Suspend]

Restore on AC Power Loss [Always Off]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss. When set to Last State, the system goes into either off or on state whatever was the system state before the AC power loss. Configuration options: [Always Off] [Always On] [Keep Previous State]

Power On By PS/2 Keyboard [Disabled]

This parameter allows you to disable or set specific keys on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Space Bar] [Ctrl-Esc] [Power Key]

Power On By PS/2 Mouse [Disabled]

When set to [Enabled], this parameter allows you to use the PS/2 mouse to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

> If the **Power On By PS/2 Keyboard** is enabled, the **Power On by PS/2 Mouse** function is disabled.

Power On By PCI Devices [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.
Configuration options: [Disabled] [Enabled]

Power On By External Modem [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. Configuration options: [Disabled] [Enabled]

> The computer cannot receive or transmit data until the computer and applications are fully running. Thus, connection cannot be made on the first try. Turning an external modem off and then back on while the computer is off causes an initialization string that turns the system power on.

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values.
Configuration options: [Disabled] [Enabled]

4.5.6   Hardware Monitor

```
                      BIOS SETUP UTILITY
             Power

  Hardware Monitor

  CPU Temperature            [44°C/111°F]
  MB Temperature             [36°C/96.5°F]

  CPU Fan Speed              [2393RPM]
  Chassis Fan Speed          [N/A]
  Power Fan Speed            [N/A]

  CPU Fan Control            [Disabled]

  VCORE Voltage              [ 1.465V]
  3.3V Voltage               [ 3.328V]         ←    Select Screen
  5V Voltage                 [ 5.026V]         ↑↓   Select Item
  12V Voltage                [11.795V]         +-   Change Option
                                               F1   General Help
                                               F10  Save and Exit
                                               ESC  Exit

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```

CPU Temperature [xxxC/xxxF]
MB Temperature [xxxC/xxxF]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select [Ignored] if you do not wish to display the detected temperatures.

CPU Fan Speed [xxxxRPM] or [N/A]
Chassis Fan Speed [xxxxRPM] or [N/A]
Power Fan Speed [xxxxRPM] or [N/A]

The onboard hardware monitor automatically detects and displays the CPU, chassis, and power fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, the specific field shows N/A.

CPU Fan Control [Disabled]

This item allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. When this field is set to [Enabled], the **CPU Fan Ratio** item appears to allow selection of the appropriate fan speed ratio. Configuration options: [Disabled] [Enabled]

CPU Fan Ratio [11/16]

This item allows you to select the appropriate fan speed ratio for the system. The default [11/16] is the minimum fan speed ratio. Select a higher ratio if you installed additional devices and the system requires more ventilation. Configuration options: [11/16] [12/16] [13/16] [14/16] [15/16]

The above item appears only when the **CPU Fan Control** item is set to Enabled.

VCORE Voltage, +3.3V Voltage, +5V Voltage, +12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

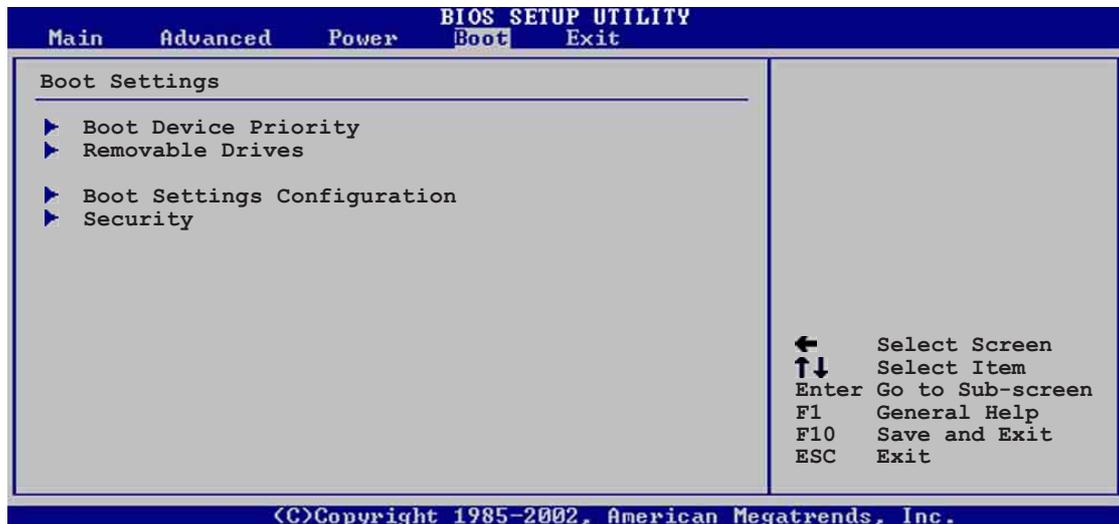If any of the monitored items is out of range, the following error message appears: "Hardware Monitor found an error. Enter Power setup menu for details". You will then be prompted to "Press F1 to continue or DEL to enter SETUP".
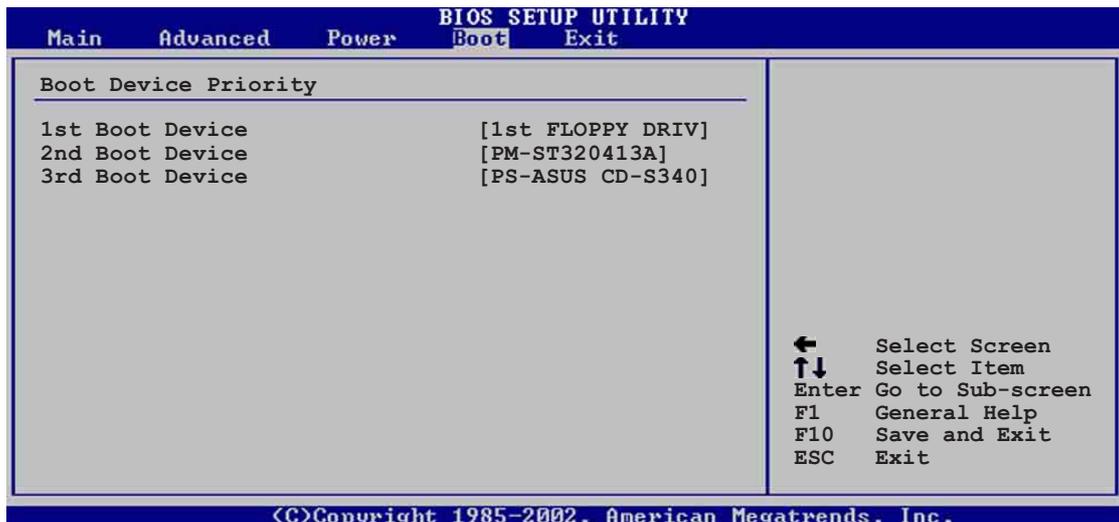
4.6   Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press Enter to display the sub-menu.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

  Boot Settings

  ▶ Boot Device Priority
  ▶ Removable Drives

  ▶ Boot Settings Configuration
  ▶ Security

                                            ←      Select Screen
                                            ↑↓     Select Item
                                            Enter  Go to Sub-screen
                                            F1     General Help
                                            F10    Save and Exit
                                            ESC    Exit

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```

4.6.1   Boot Device Priority

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

  Boot Device Priority

  1st Boot Device              [1st FLOPPY DRIV]
  2nd Boot Device              [PM-ST320413A]
  3rd Boot Device              [PS-ASUS CD-S340]

                                            ←      Select Screen
                                            ↑↓     Select Item
                                            Enter  Go to Sub-screen
                                            F1     General Help
                                            F10    Save and Exit
                                            ESC    Exit

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```
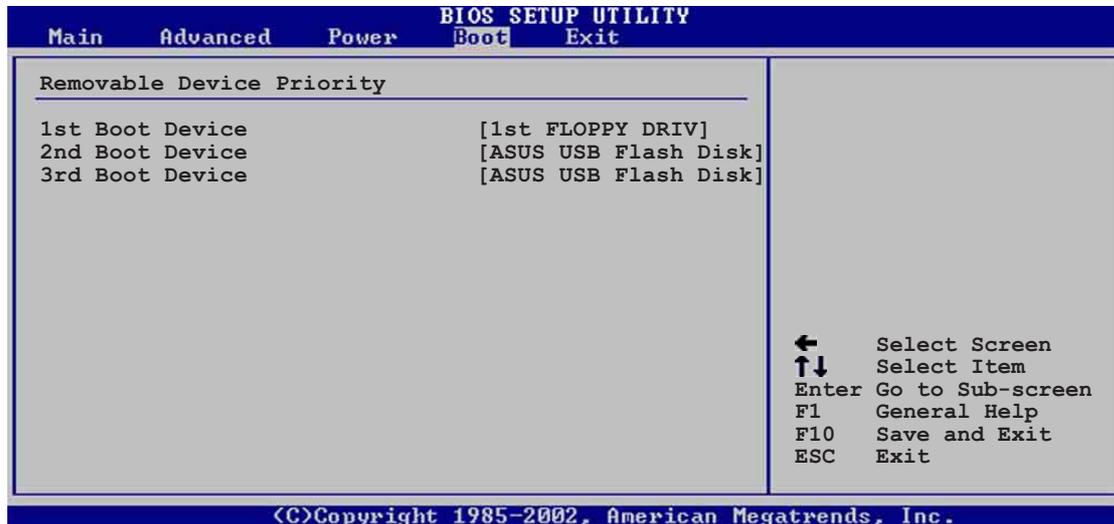
1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appear on the screen depends on the the number of devices installed in the system. Configuration options: [xxxxx Drive] [Disabled]
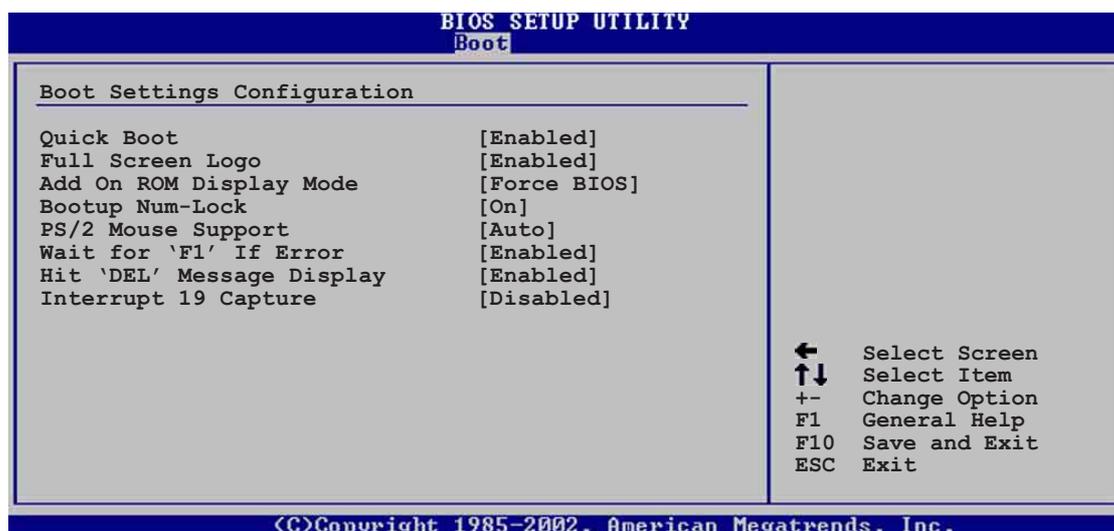
4.6.2 Removable Drives

This item appears only when there are removable drives (like a USB flash disk) plugged in the system.

```
                        BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

  Removable Device Priority

  1st Boot Device             [1st FLOPPY DRIV]
  2nd Boot Device             [ASUS USB Flash Disk]
  3rd Boot Device             [ASUS USB Flash Disk]



                                              ←      Select Screen
                                              ↑↓     Select Item
                                              Enter  Go to Sub-screen
                                              F1     General Help
                                              F10    Save and Exit
                                              ESC    Exit

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```

1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the removable boot device priority sequence from the available removable boot devices. Configuration options: [xxxxx Drive] [Disabled]

4.6.3 Boot Settings Configuration

```
                        BIOS SETUP UTILITY
                          Boot

  Boot Settings Configuration

  Quick Boot                  [Enabled]
  Full Screen Logo            [Enabled]
  Add On ROM Display Mode     [Force BIOS]
  Bootup Num-Lock             [On]
  PS/2 Mouse Support          [Auto]
  Wait for 'F1' If Error      [Enabled]
  Hit 'DEL' Message Display   [Enabled]
  Interrupt 19 Capture        [Disabled]



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

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```

Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items. Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

This allows you to enable or disable the full screen logo display feature. Configuration options: [Disabled] [Enabled]

Make sure that the above item is set to [Enabled] if you wish to use the ASUS MyLogo2™ feature.

Add On ROM Display Mode [Force BIOS]

Sets the display mode for option ROM. Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock. Configuration options: [Off] [On]

PS/2 Mouse Support [Auto]

Allows you to enable or disable support for PS/2 mouse. Configuration options: [Disabled] [Enabled] [Auto]

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

4.6.4 Security

The Security menu items allow you to change the system security settings. Select an item then press Enter to display the configuration options.

```
                        BIOS SETUP UTILITY
                              Boot

  Security Settings

  Supervisor Password          : Not Installed
  User Password                : Not Installed

  Change Supervisor Password
  Change User Password
  Clear User Password
                                          ←     Select Screen
                                          ↑↓    Select Item
                                          +-    Change Option
                                          F1    General Help
                                          F10   Save and Exit
                                          ESC   Exit

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```
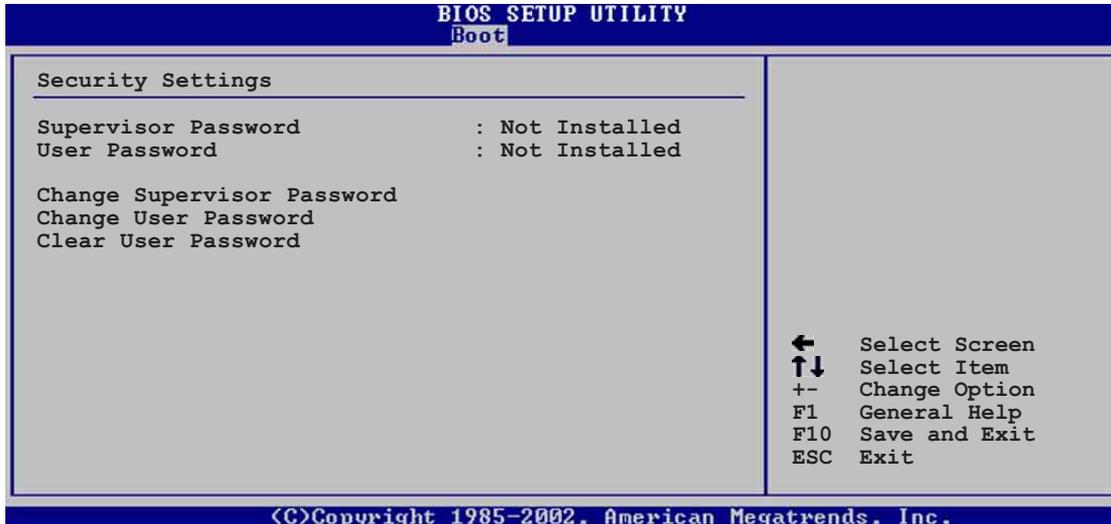
Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default **Not Installed**. After you have set a password, this item shows **Installed**.

To set a Supervisor Password:

1. Select the Change Supervisor Password item and press Enter.

2. On the password box that appears, type a password composed of letters and/or numbers, then press Enter. Your password should have at least six characters.

3. Confirm the password when prompted.
   The message "Password Installed" appears after you have successfully set your password.

   The Supervisor Password item now shows **Installed**.

To change the supervisor password, follow the same steps as in setting a user password.
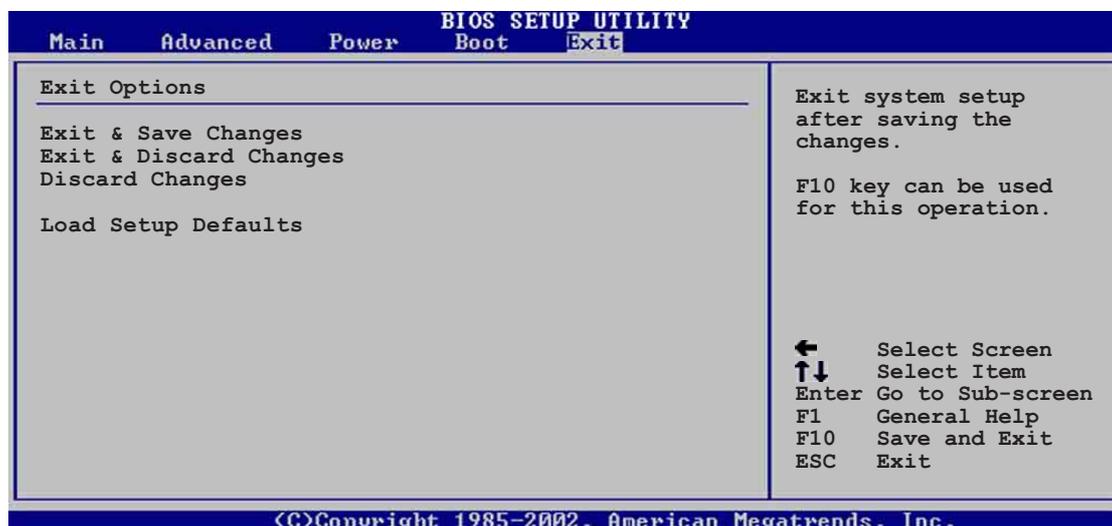
To clear the supervisor password, select the Change Supervisor Password then press Enter. The message "Password Uninstalled" appears.

> If you forget your BIOS password, you can clear clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "2.7 Jumpers" for information on how to erase the RTC RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.

```
                        BIOS SETUP UTILITY
                             Boot

Security Settings

Supervisor Password          : Installed
User Password                : Not Installed

Change Supervisor Password
User Access Level            [Full Access]
Change User Password
Clear User Password
Password Check               [Setup]

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

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```

User Access Level (Full Access]

This item allows you to select the access restriction to the Setup items. Configuration options: [No Access] [View Only] [Limited] [Full Access]

No Access prevents user access to the Setup utility.

View Only allows access but does not allow change to any field.

Limited allows change to only selected fields, such as Date and Time.

Full Access allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen shows the default **Not Installed**. After you have set a password, this item shows **Installed**.

To set a User Password:

1. Select the Change User Password item and press Enter.

2. On the password box that appears, type a password composed of letters and/or numbers, then press Enter. Your password should have at least six characters.

3. Confirm the password when prompted.
   The message "Password Installed" appears after you have successfully set your password.

   The User Password item now shows **Installed**.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item if you wish to clear the user password.

Password Check [Setup]

When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system. Configuration options: [Setup] [Always]

4.7   Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.

```
                    BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

  Exit Options                                    Exit system setup
  ──────────────────────────────────────────     after saving the
  Exit & Save Changes                             changes.
  Exit & Discard Changes
  Discard Changes                                 F10 key can be used
                                                  for this operation.
  Load Setup Defaults



                                                  ←    Select Screen
                                                  ↑↓   Select Item
                                                  Enter Go to Sub-screen
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

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```

> Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select [Yes] to save changes and exit.

> If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Pressing <Enter> saves the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select [OK] to discard any changes and load the previously saved values.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select [OK] to load default values. Select Exit Saving Changes or make other changes before saving the values to the non-volatile RAM.

Chapter 5

This chapter describes the contents of the support CD that comes with the motherboard package.

Software support

Chapter summary

5.1 Install an operating system

This motherboard supports Windows 98SE/ME/2000/Windows 2003 Server/XP operating system (OS). Always install the latest OS version and corresponding updates so you can maximize the features of your hardware.

Because motherboard settings and hardware options vary, use the setup procedures presented in this chapter for general reference only. Refer to your OS documentation for more information.

5.2 Support CD information

The support CD that came with the motherboard contains useful software and several utility drivers that enhance the motherboard features.

The contents of the support CD are subject to change at any time without notice. Visit the ASUS website for updates.

5.2.1 Running the support CD

To begin using the support CD, simply insert the CD into your CD-ROM drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.
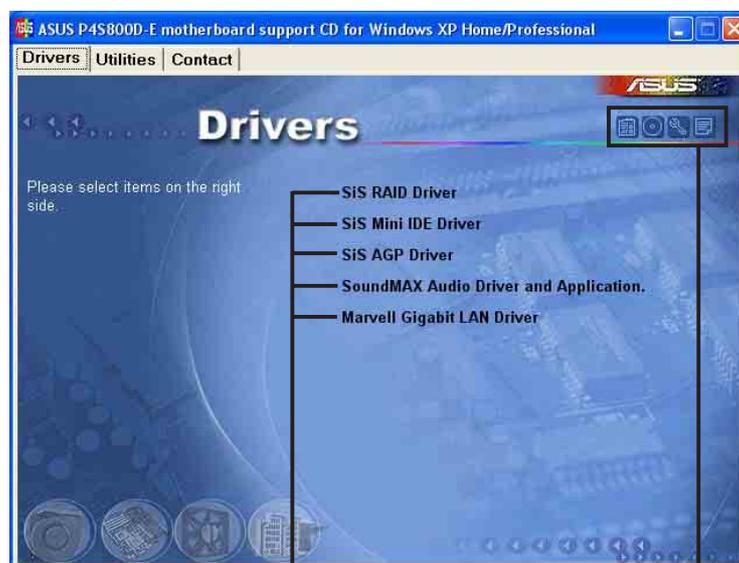
Click an item to install   **Click an icon to display more information**

If **Autorun** is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the **ASSETUP.EXE** to run the CD.

5.2.2   Drivers menu

The drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.
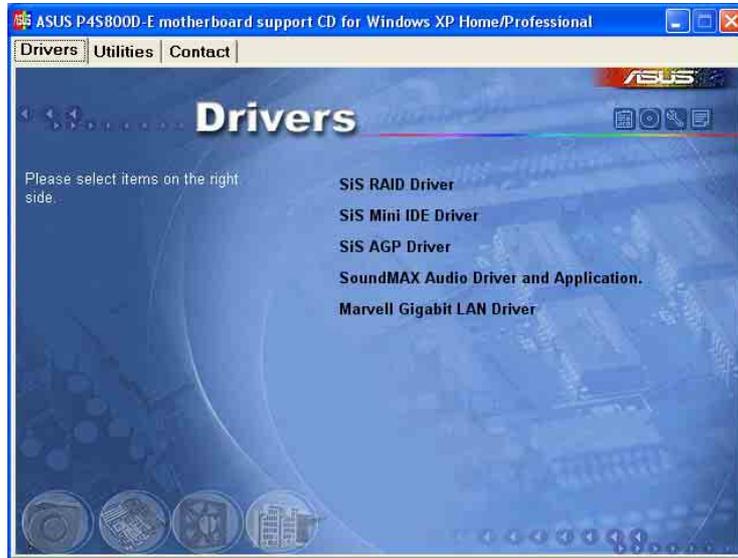
SiS RAID Driver

This item installs the SiS® RAID controller driver and application.

SiS Mini IDE driver

This item installs the SiS® mini IDE driver.

SiS AGP Driver

This item installs the SiS® AGP driver.

SoundMAX Audio Driver and Application

This item installs the ADI SoundMAX 1980 AC'97 compliant audio controller and application.

Marvell Gigabit LAN driver

This item installs the Marvell® Gigabit LAN driver.

5.2.3 Utilities menu

The Utilities menu shows the applications and other software that the motherboard supports.
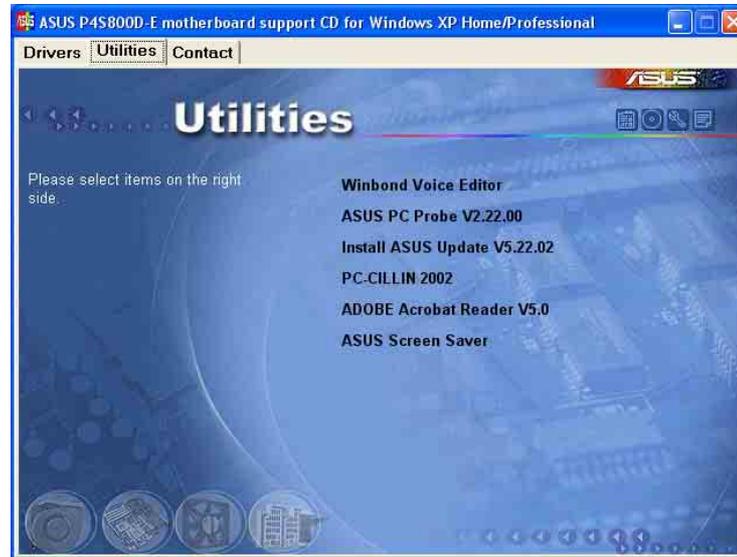
Winbond Voice Editor

This program is for recording and customizing wave files for the ASUS POST Reporter™. Use this program if you wish to change the default vocal POST messages. See section "3.2 Vocal POST Messages" for a list of the default messages.

ASUS PC Probe

This smart utility monitors the fan speed, CPU temperature, and system voltages, and alerts you on any detected problems. This utility helps you keep your computer at a healthy operating condition.

ASUS Update

This program allows you to download the latest version of the BIOS from the ASUS website.

> Before using the ASUS Update, make sure that you have an Internet connection so you can connect to the ASUS website.

PC-CILLIN 2002

This item installs the PC-cillin 2002 anti-virus program. View the PC-cillin online help for detailed information.

Adobe Acrobat Reader V5.0

This item installs the Adobe Acrobat Reader V5.0. The Acrobat Reader software is for viewing files saved in Portable Document Format (PDF).

ASUS Screen Saver

This item installs the ASUS screen saver.

> Screen display and utilities option may not be the same for other operating system versions.

5.2.4 ASUS Contact Information

Clicking the ASUS Contact Information tab displays as stated. You may also find this information in the inside front cover of this user guide.

5.2.5 Other information

The icons on the top right corner of the screen give additional information on the motherboard and the contents of the support CD. Click an icon to display the specified information.

Motherboard Info

The window displays the general specifications of the P4S800D-E Deluxe motherboard.
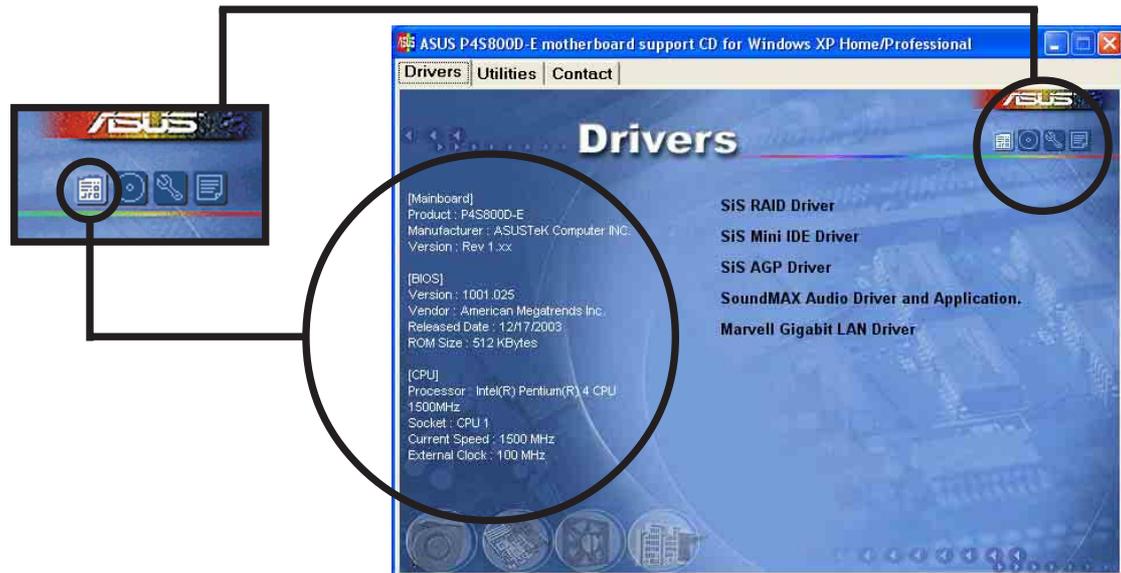
Browse this CD

The window displays the support CD contents in graphical format.
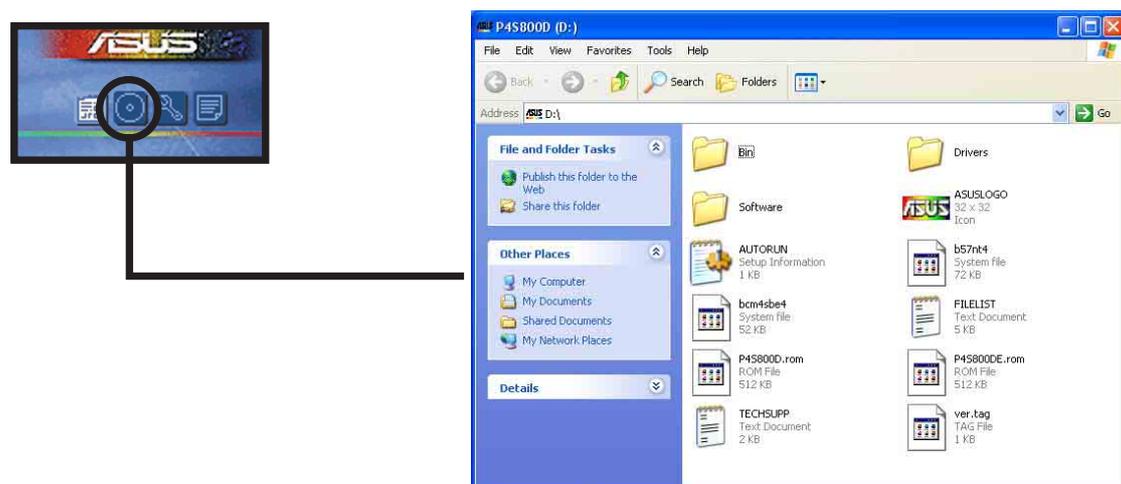
Technical Support Form

The window displays the ASUS Technical Support Request Form that you have to fill up when requesting technical support.
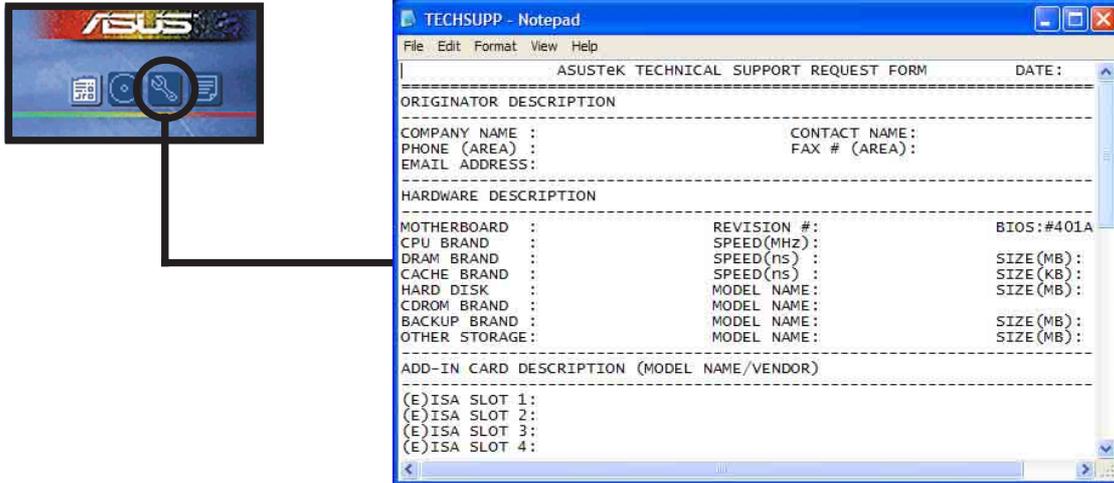
Filelist

The window displays the contents of the support CD and a brief description of each in text format.
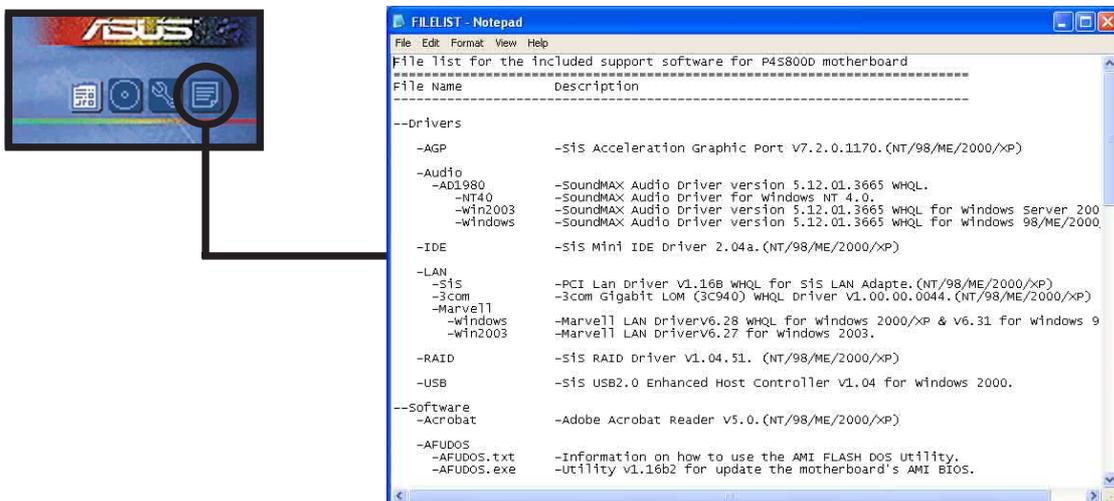
5.3 Software Information

Most of the applications in the support CD have wizards that will conveniently guide you through the installation. View the online help or readme file that came with the software for more information.

This section provides details on the software applications that the motherboard supports.

5.3.1 ASUS MyLogo2™

The ASUS MyLogo2™ is automatically installed when you install the ASUS Update utility from the software menu. See section "5.2.3 Utilities menu".

Before using ASUS MyLogo2™ feature, use the AFUDOS utility to make a copy of your original BIOS file, or obtain the latest BIOS version from the ASUS website.

Make sure that the BIOS Item Full Screen Logo is set to [Enabled] if you wish to use ASUS MyLogo2. See section "4.6.3 Boot Settings Configuration".

Follow these steps to use ASUS MyLogo2.

1. Launch the ASUS Update utility. See section "4.1.6 ASUS Update."

2. When prompted for the BIOS update method, select the option "Update BIOS from a file."

3. Specify the location of the BIOS file, such as from a floppy disk. Click **Next**.

4. From the selection that appears, choose a logo image. Click **Next**.

> If you wish, you may create your own boot logo image in GIF, JPG, or BMP file formats.

5. When you click on an image, it displays larger on the MyLogo2 screen.

> If you wish to make the logo image smaller, click on the arrow on the Ratio item and select your desired scale.

6. The next screen prompts you to flash the original BIOS to update it with the new boot logo. Click Flash to update the BIOS.

7. When finished, click **Exit**, then reboot your computer.
   Your system boots with the new boot logo.
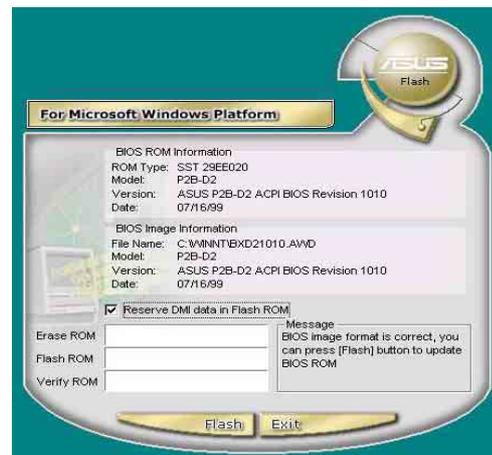
> Instead of starting from ASUS Update, you may also launch ASUS MyLogo2 directly from the Windows Start menu to change your BIOS boot logo. After you have modified the BIOS file with the new logo, use the ASUS Update utility to upload the new BIOS.

5.3.2   ASUS Instant Music

The motherboard is equipped with a BIOS-based audio playback feature called **Instant Music**. This feature is supported by the onboard audio AC'97 CODEC, and requires an optical drive (CD-ROM, DVD-ROM, or CD-RW).

1. Instant Music only supports CDs in audio format.
2. Instant Music does not work if you installed and enabled an add-on sound card.
3. Instant Music only supports PS/2 keyboard.

To enable ASUS Instant Music:

1. Connect the analog audio cable from the optical drive (CD-ROM, DVD-ROM, or CD-RW drive) to the 4-pin CD-In connector (labeled CD) on the motherboard. See section "2.7 Connectors" for the location.

Make sure to connect the CD-ROM audio cable. Otherwise, you cannot control the audio volume using the Instant Music function keys.

2. Turn on the system and enter BIOS by pressing the **Delete** key during the Power On Self-Tests (POST).

3. In the **Instant Music Configuration** menu, select the item **Instant Music** and set it to **Enabled**. See section "4.4.8 Instant Music Configuration" in the user guide.

4. The **Instant Music CD-ROM Drive** item appears if you enabled Instant Music. Highlight the item then press Enter to display the CD-ROM options.

5. Save your changes and exit BIOS Setup.

1. The Scroll Lock LED is fixed to ON after enabling Instant Music.
2. The Caps Lock LED turns ON when you pause the CD playback.
3. When set to Instant Music mode, the system wake-up features (LAN, keyboard, mouse, USB) are deactivated. In this case, power up the system using the power switch.
4. If the system lost connection or did not detect any optical drive, the Instant Music feature turns OFF (disabled) automatically. A "beep" indicates this condition.

To use ASUS Instant Music:

1. Ensure that the power cord is plugged to a grounded power source, so that the system has a standby power.

2. Use either one of the two sets of special function keys on your keyboard to play audio CDs. These keys only function as indicated if you enabled the Instant Music item in BIOS.

Instant Music function keys (Set 1)
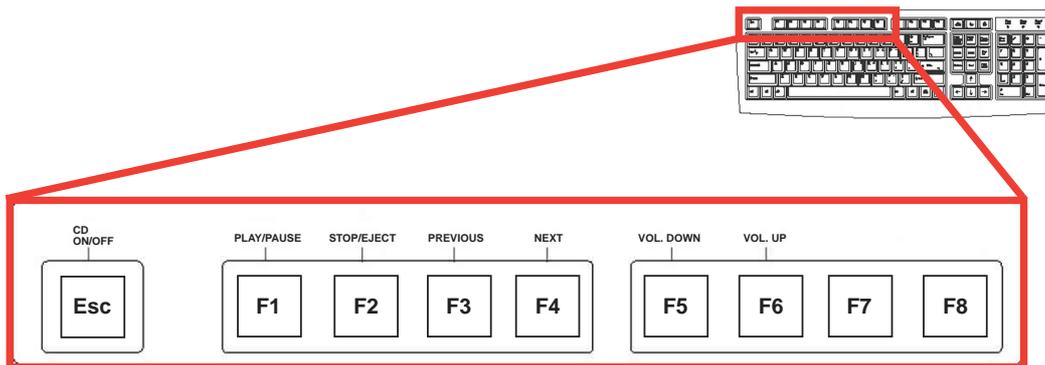
To guide you in using Instant Music, place the Instant Music label over the function keys on the keyboard. The Instant Music keyboard label comes with your motherboard package.

Instant Music function keys (Set 2)
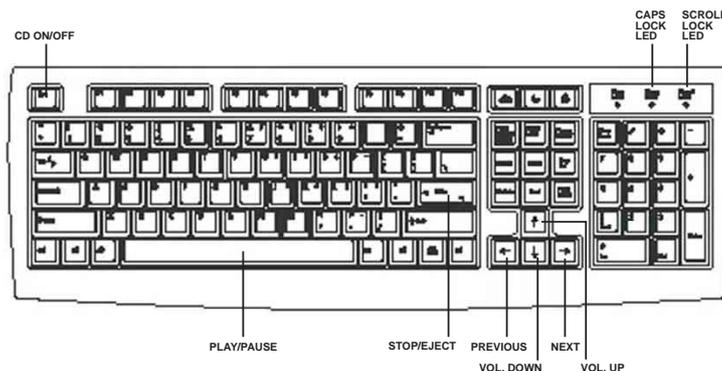
3. Connect speakers or a headphone to the Line Out (lime colored) port on the rear panel for audio output. You may also connect a headphone to the headphone jack on the CD-ROM drive front panel.

4. Press **<Esc>** to turn ON Instant Music.

5. Place an audio CD on the CD-ROM drive.

6. Press **<F1>** or the **<Space Bar>** to play the first track on the CD.

If there is no CD on the drive and you press **<F1>** or **<Space Bar>**, the drive tray ejects.

7. Refer to the Instant Music function key definitions on the previous page to select other tracks or control the volume.

8. Press **<F2>** or **<Enter>** *once* to stop playing the CD.
   Press **<F2>** or **<Enter>** *one more time* to eject the CD.

5.4   6-channel audio feature

The ADI AD1888 AC '97 audio CODEC provides 6-channel audio capability through the SoundMAX to deliver the ultimate audio experience on your PC. The software implements high quality audio synthesis/rendering, 3D sound positioning, and advanced voice-input technologies.

Follow the installation wizard to install the **SoundMAX Audio Driver and Application** from the support CD that came with the motherboard package to activate the 6-channel audio feature.

> You must use 4-channel or 6-channel speakers for this setup.
>
> SoundMAX requires Microsoft Windows 98SE/ME/2000/XP. Make sure that one of these operating systems is installed before installing SoundMAX.

If the SoundMAX software is correctly installed, you will find the SoundMAX icon on the taskbar.

SoundMAX Digital Integrated Audio icon

From the taskbar, double-click on the **SoundMAX Digital Integrated Audio** icon to display the **SoundMAX Control Panel**.
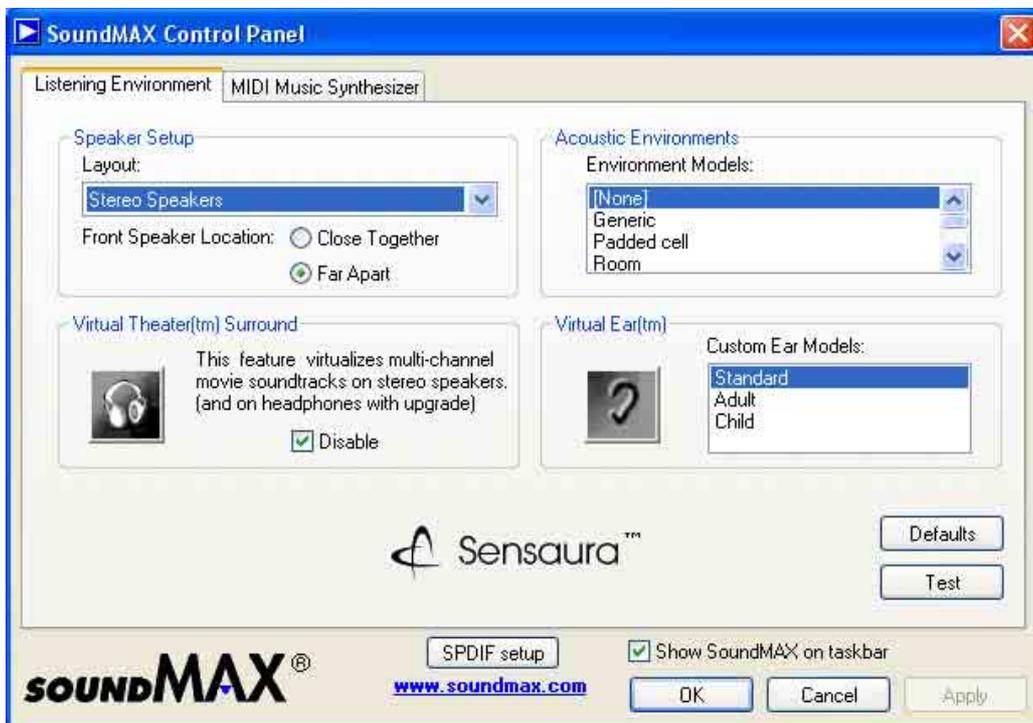
5.4.1 Listening Environment options

The SoundMAX Digiral Integrated Audio support several audio technologies including SoundMAX SPX™ Animated Audio, 3DPA™, MultiDrive™ 5.1, EnvironmentFC™, MacroFX/ZoomFX™, and Virtual Theater Surround.

To set the listening environment:

1. From the SoundMAX Control Panel, select the **Listening Environment** tab.
2. Change the speaker setup, acoustic environments, Virtual Theater™ surround or Virtual Ear™ to your desired settings. Click the **Defaults** button to load pre-defined values.
3. Click **Test** to test your desired settings. The following dialog box appears.

4. Follow screen instructions to test listening environment. Click **Close** to exit.
5. Click **OK** or **Apply** to implement settings or **Cancel** to discard changes.

5.4.2 MIDI Music Synthesizer

This item allows you to choose your default MIDI Music Synthesizer set.

To set the MIDI Music Synthesizer:

1. From the SoundMAX Control Panel, select the **MIDI Music Synthesizer** tab.

2. Click the combo list box to choose synthesizer default sound set. Click the **Defaults** button to load pre-defined values.
3. Click **OK** or **Apply** to implement settings or **Cancel** to discard changes.

5.4.3 Rear panel audio ports function variation

The functions of the Line Out (lime), Line In (blue), and Mic (pink) ports on the rear panel change when you select the 4-channel or 6-channel audio configuration as shown in the following table.

	Headphone/ 2-channel	4-channel	6-channel
Light Blue	Line In	Rear Speaker Out	Rear Speaker Out
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Bass/Center

5.5 SiS® RAID configurations

The motherboard includes a high performance IDE RAID controller that adds reliability to PC desktops or server systems. The SiS 964 southbridge integrated Serial/Ultra ATA RAID controllers provides a cost-effective hybrid solution. It supports RAID 0, RAID 1,and JBOD with two independent Serial ATA channels.

RAID 0 (called *data striping*) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage.

RAID 1 (called *data mirroring*) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system.

JBOD (for "*Just a Bunch Of Disks*" or "*Just a Bunch Of Drives*") is officially termed as "*spanning*". This is used to refer to a computer's hard disk that haven't been configured according to the RAID system to increase fault tolerance and improved data access performance. This RAID system stores the same data redundantly on multiple drives by combining the drives into one larger logical drive.

> Refer to the SIS 180 Serial ATA User's Manual found in the motherboard support CD.

5.5.1 Install the Serial ATA (SATA) hard disks

The SiS 964 southbridge chipset RAID controller supports Serial ATA and Ultra ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a RAID set.

*   If you are creating a **RAID 0 (striping)** array for performance, use two new drives.

*   If you are creating a **RAID 1 (mirroring)** array for protection, you can use two new drives or use an existing drive and a new drive (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, one hard disk has an 80GB storage capacity and the other hard disk has 60GB storage capacity, the maximum storage capacity for the RAID 1 set is 60GB.

Follow these steps to install the SATA hard disks for RAID configuration.

*   Before setting up your new RAID array, verify the status of your hard disks. Make sure the Master/Slave jumpers are configured properly.
*   Both the data and power SATA cables are new cables. You cannot use older 40-pin 80-conductor IDE or regular IDE power cables with Serial ATA drives. Installing Serial ATA (SATA) hard disks require the use of new Serial ATA cable (4-conductor) which supports the Serial ATA protocol and a Serial ATA power cable.
*   Either end of the Serial ATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

1. Install the Serial ATA hard disks into the drive bays.
2. Connect one end of the Serial ATA cable to the motherboard's primary Serial ATA connector (SATA1).
3. Connect the other end of Serial ATA cable to the master Serial ATA hard disk.
4. Connect one end of the second Serial ATA cable to the motherboard's secondary Serial ATA connector (SATA2).
5. Connect the other end of Serial ATA cable to the secondary Serial ATA hard disk.
6. Connect the Serial ATA power cable to the power connector on each drive.
7. Proceed to section 5.5.2 "BIOS utility operation (for RAID only)" for the next procedure.

5.5.2 BIOS utility operation (for RAID only)

1. Boot your system. During POST, the onboard BIOS will display the following screen:

```
Silicon Integrated Systems Corp. RAID Card BIOS Setting Utility

1.00.0.XX

(c) 2003-2005 Silicon Integrated Systems Corp. All Rights Reserved.


Press <Ctrl><S> to run the BIOS Setting Utility.
```
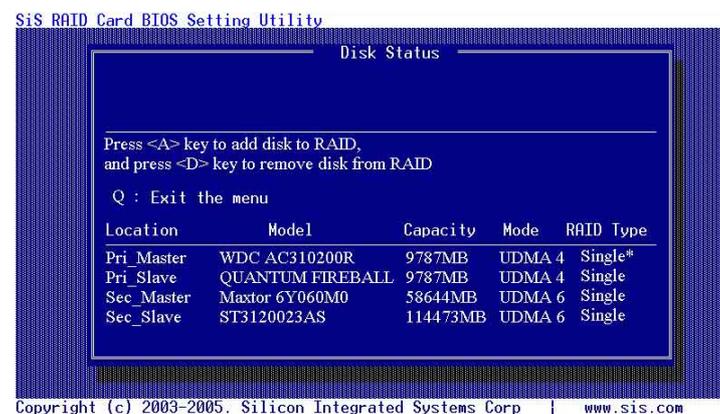
2. Press **<Ctrl+S>** to display the SIS180 Utility Main Menu.

3. Press **<R>** to display the RAID setup menu.
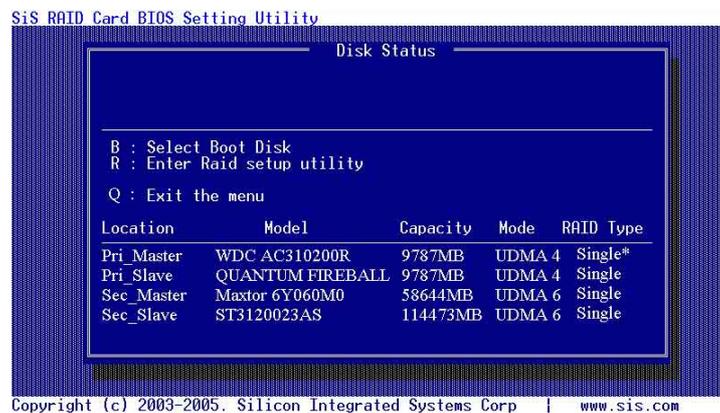
Creating an Array for Performance

Follow these steps to create a RAID array for performance:

1. From the BIOS utility main menu, press **<A>** to create array.

2. Press **<2>** then **<Enter>** to select Stripe (RAID 0)

3. Press **<1>** and **<7>**, then **<Enter>** to select the Block Size.

4. Press **<1>** and **<2>**, then **<Enter>** to select the Transfer Mode.
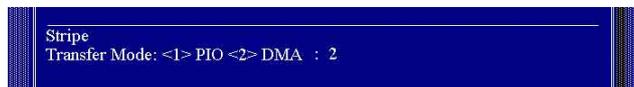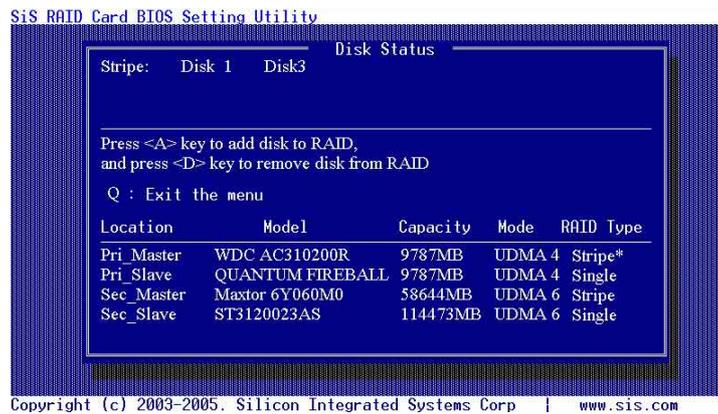

5. Use the **up/down** arrow keys to move selection bar, then **<Enter>** to select a disk drive.
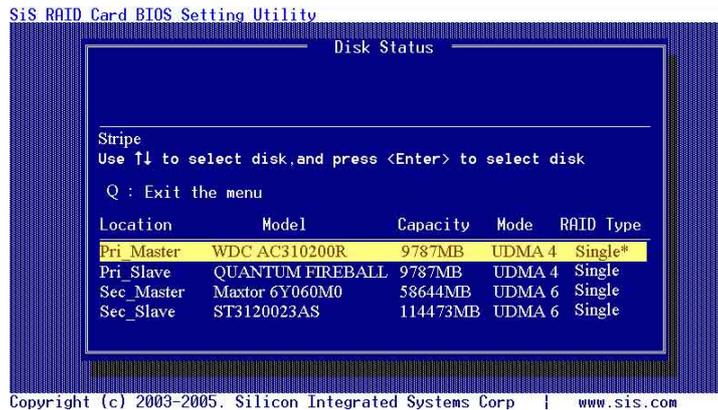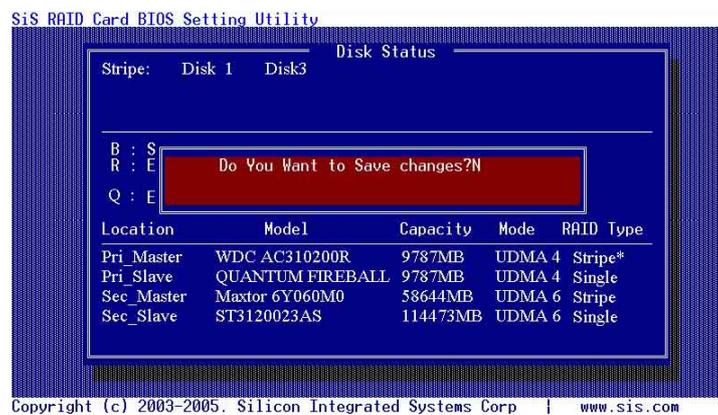

6. Press **<N>** then **<Enter>** to create a Stripe only configuration. Press **<Y>** if you wish to split the data on the source disk to other disks.
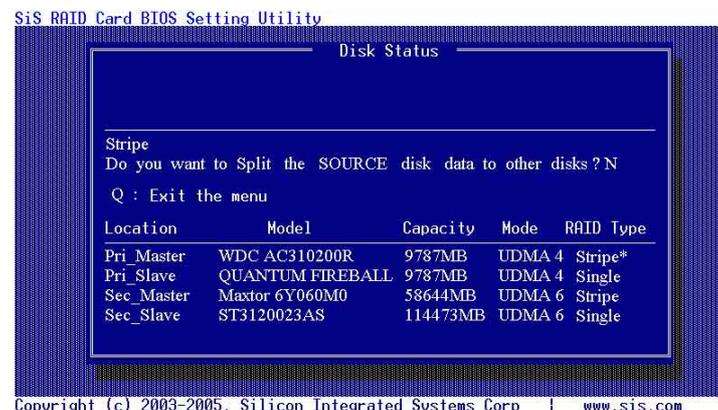
7. Press **<Q>** to exit the current setup menu.

8. Press **<Y>** then **<Enter>** to save changes.

9. Once the array has been created, you will need to partition and initialize your hard disk using the FDISK utility and format the array as a new single hard drive.

5.5.3 SIS 180 RAID utility operation

1. After installing the SIS RAID utility, go to **Start** -> **Programs**-> **SIS RAID Utility** and click on the **SiSRaid** item to display the SIS RAID Utility window.

2. The SIS RAID utility main interface has two tabs: **View** and **Configuration**. Click on each tab to view its contents. The View tab contains the device information. The default value displayed is the information of the first device detected.

3. Click the **Configuration** tab to display its contents. The Configuration tab contains a subset of tabs: Create Raid, Delete Raid and Raid Recovery. You can switch to the different tabs by clicking on it.
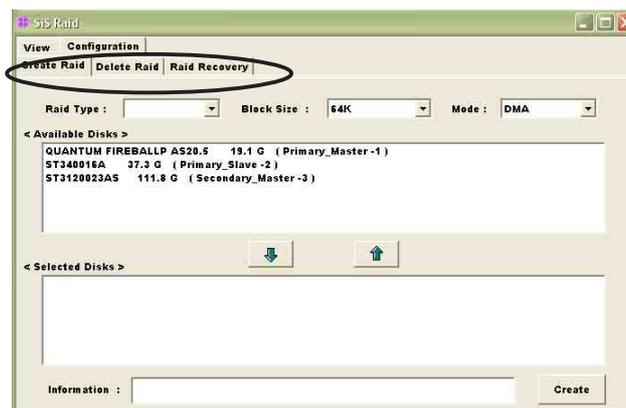
Creating an Array for Performance (RAID 0)

Follow these steps to create a RAID 0 array:

> You must have at least two hard disks installed to create a RAID 0 array.

1. From the SIS 180 RAID utility menu, click the **Configuration** tab then **Create Raid**.

2. Click the **Raid Type** combo list box and select **RAID 0**.

3. Click the **Block Size** combo list box and select a block size you want.

4. Click the **Mode** combo list box and select a mode you want.

5. From the **Available Disks** pane, select a disk then click the **down arrow** to add the disk on the **Selected Disks** pane.

5. After all fields and parameters are set, click the **Create** button to display the **Create Stripe RaidSet** dialog box.
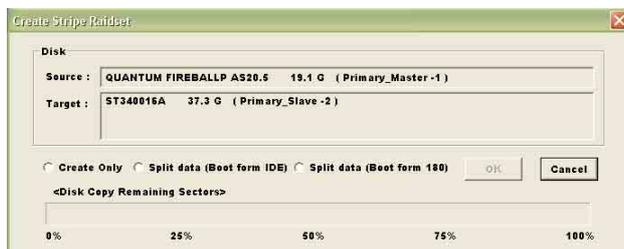
Item Notes:

Source: Displays the first selected disk.

Target: All available disks except the first selected disk.

Create Only: This operation will destroy all data on the selected disk and create a clean stripe array without any data.

Split data (Boot from IDE): This operation will split the data from the source disk into all the selected disks. In this operation, the boot disk cannot be placed to boot from 180.

Split data (Boot from 180): This operation is similar to "Split data into RAID 0" operation, but the system boots from 180.

OK: Starts the operation.

Cancel: Aborts the operation.

<Disk Copy Remaiing Sector>: Displays the remaining splitting data.

6. Click **OK** after completing the selection. The differential warning messages will appear following the differential operations. Click **Cancel** if you want to exit the dialog box.

7. If the operation is **Split data into RAID 0**, the following warning message appears. Click **Yes** to continue or **No** to cancel.

8. When completed, a restart warning message appears. Click **OK**.

5.6   Creating a floppy with RAID driver

A floppy disk with the SIS® RAID 180 driver is required when installing Windows® XP™, Windows® 2000™ or Windows® NT™ operating systems. You can create a floppy disk with the RAID driver using Makedisk.exe utility. A floppy disk with a RAID driver is necessary when configuring RAID installations.

To create a floppy disk with RAID driver:

1. Insert the motherboard support CD into the CD-ROM drive and locate the Makedisk.exe utility for your RAID controller.

> The SIS® 180 SATA driver is located in **"\Drivers\RAID\SISRAID\DriverDisk"** of the motherboard support CD.

2. Insert a clean floppy disk into the floppy disk drive and execute Makedisk.exe. Follow succeeding screen instructions.

3. Write-protect the floppy disk to avoid computer virus infection.

To use the floppy with RAID driver:

1. During the OS installation, the system prompts to press the **F6** key to install third-party SCSI or RAID driver.

2. Press **<F6>** then insert the floppy disk with RAID driver into the floppy disk drive.

3. Follow succeeding screen instructions.

> For additional information on RAID installation and configuration, refer to the Promise® RAID installation guide found in **"\Drivers\RAID\964_180um020.doc"** of the motherboard support CD.

5.7   AI Net feature

The motherboard supports the Marvell® Virtual Cable Tester (VCT) Technology. The VCT virtually diagnose and report cable faults using the Time Domain Reflectometry (TDR). With this essential tool, installation and network diagnosis has never been easier. The VCT technology detects and reports open and shorted cables with up to 1 meter of accuracy. It also detects impedance mismatches, pair swaps, pair polarity problems and pair skew problems of up to 64ns.

VCT remarkably reduces networking and support costs complementing a highly manageable and controlled network system.Also, this tool can be incorporated in the network systems software making it ideal for field support as well as development diagnostics.

Using the Virtual Cable Tester™

To use the the Marvell® Virtual Cable Tester™ on your computer.

1. Click the **Start** button. Select **All Programs -> Marvell -> Virtual Cable Tester.**

2. From the menu, click **Virtual Cable Tester**. The following screen display appears.
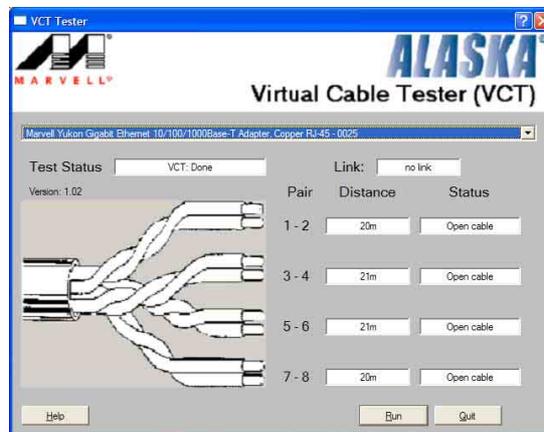
3. Click on **Run** to execute test.

> • The Virtual Cable Tester™ (VCT) feature is supported in Windows® XP™ and Windows® 2000™ operating systems only.
> • The Virtual Cable Tester™ (VCT) feature works in Gigabit LAN only.
> • The **Run** button on the VCT Tester dialogue box is disabled if no problem is detected on the network.