P4S800D

User Guide

/ASUS ®

Motherboard

E1443

First Edition V1

October 2003

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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

Conventions used in this guide

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

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.

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. The ASUS websites are listed in the ASUS Contact Information on the inside front cover.

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 specification summary

CPU	Socket 478 for Intel® Pentium® 4 Northwood/Willamette processor Intel® Hyper-Threading technology ready New power design for next generation Intel® Prescott CPU
Chipset	SIS 655FX SIS 964
Front Side Bus (FSB)	800/533/400 MHz
Memory	4 x 184-pin DDR DIMM sockets for up to 4GB memory Supports PC3200/PC2700/PC2100/PC1600 unbuffered non-ECC DDR DIMMs Dual-channel memory architecture
Expansion slots	1 x AGP 8X/4X (1.5V only) 5 x PCI 1 x ASUS Proprietary WiFi slot
Storage	2 x UltraDMA 133/100 2 x Serial ATA with RAID 0, 1 function
Audio	ADI AD1980 SoundMAX 6-channel audio CODEC S/PDIF out interface
LAN	Integrated 10/100 Mbps LAN controller with Realtek LAN PHY
Special features	ASUS EZ Flash ASUS CrashFree BIOS2 ASUS Instant Music Lite ASUS MyLogo2 ASUS Multi-Language BIOS ASUS Q-Fan Technology
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
Rear panel I/O	1 x Parallel port 1 x Serial port 1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x S/PDIF out port 1 x RJ-45 port 4 x USB 2.0/1.1 ports Line In/Line Out/Microphone ports

P4S800D specification summary

Internal I/O connectors	CPU/Power/Chassis FAN connectors 20-pin ATX power connector 4-pin ATX 12V power connector Chassis Intrusion GAME/MIDI connector CD/AUX audio in Front panel audio connector COM2 connector 2 x USB 2.0 connector supports additional 4 USB 2.0 ports 2 x Serial ATA ports
BIOS features	4Mb Flash ROM, ASUS JumperFree, AMI BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, ASUS EZ Flash, ASUS MyLogo2, ASUS CrashFree BIOS2, ASUS C.P.R., ASUS Multi-Language BIOS, ASUS Q-Fan, ASUS Instant Music Lite
Industry standard	PCI 2.2, USB 2.0/1.1
Manageability	WfM2.0, DMI2.0, WOR, WOL, Chassis intrusion
Form Factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 cm)
Support CD contents	Device drivers ASUS PC Probe ASUS LiveUpdate Trend Micro™ PC-cillin 2002 anti-virus software

* Specifications are subject to change without notice.

Chapter 1

This chapter describes the features of the
P4S800D motherboard. It includes brief
descriptions of the motherboard components,
and illustrations of the layout, jumper settings,
and connectors.

Product introduction

1.1   Welcome!

Thank you for buying the ASUS® P4S800D motherboard!

The ASUS P4S800D motherboard, based on the SIS 655FX chipset, is the first SIS platform supporting 800FSB and dual-channel DDR 400 that delivers a host of new features and latest technologies making it another standout in the long line of ASUS quality motherboards!

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 P4S800D package for the following items.

✓ ASUS P4S800D motherboard
      ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 cm)

✓ ASUS P4S800D series support CD

✓ 2 x Serial ATA cable

✓ 2-port USB 2.0 cable

✓ 80-conductor UltraATA IDE cable

✓ Ribbon cable for a 3.5-inch floppy drive

✓ I/O shield

✓ Bag of extra jumper caps

✓ User Guide

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

1.3   Special features

Latest processor technology 800 MHz FSB

The P4S800D motherboard supports the latest Intel® Pentium® 4 Processor via a 478-pin surface mount ZIF socket. The Pentium 4 processor with 512KB L2 cache on 0.13 micron processor includes a 800/533/400 MHz system bus, Intel® Hyper-Threading Technology and the FMB2 power design that allows up to 3.2+ GHz core frequencies for up to 6.4GB/s data transfer rates. See page 1-8.

Dual Channel DDR memory support

Employing the Double Data Rate (DDR) memory technology, the P4S800D motherboard supports up to 4GB of system memory using PC3200/PC2700/PC2100/PC1600 DDR DIMMs. The ultra-fast 400MHz memory bus delivers the required bandwidth for the latest 3D graphics, multimedia, and Internet applications. See page 1-10.

SiS® HyperStreaming Architecture

The SiS® 655FX integrates the latest HyperStreaming Engine which greatly improves computer system performance. The HyperStreaming Engine smartly manages the data streaming to flow smoothly from the peripherals to the core logic chipsets between the North and South bridge to the Front Side Bus, memory and graphic interface.

Serial ATA solution with RAID 0, RAID 1 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, the motherboard supports RAID0, RAID1 configuration using SATA drives. See pages 1-23.

ASUS Wi-Fi slot

The ASUS Wi-Fi slot is based on the 802.11b/g wireless standard that is specifically 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. The proprietary slot supports the 802.11g standard for future upgrades. See page 1-24.

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.

CrashFree BIOS 2

This feature allows you to restore the original BIOS data from a floppy disk or support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip.

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. With a bus of 533Mhz, AGP 8X is twice as fast as AGP 4X.

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. 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. See page 1-20.

6-channel digital audio

The ADI AD1980 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.

ASUS MyLogo2™

This new feature present in the P4S800D motherboard allows you to personalize and add style to your system with customizable boot logos. See details on page 2-30.

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's previous setting for each parameter.

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 2-11.

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. See page 2-5.

S/PDIF out

The P4S800D S/PDIF out function turns your computer into a high-end entertainment system with digital connectivity to powerful sound systems.

ASUS Instant Music Lite

This unique feature allows you to playback audio files even before entering the operating system. Just press the ASUS Instant Music special function keys and enjoy the music! See page 2-23.

1.4   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 P4S800D comes with a stand-by 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 Onboard LED
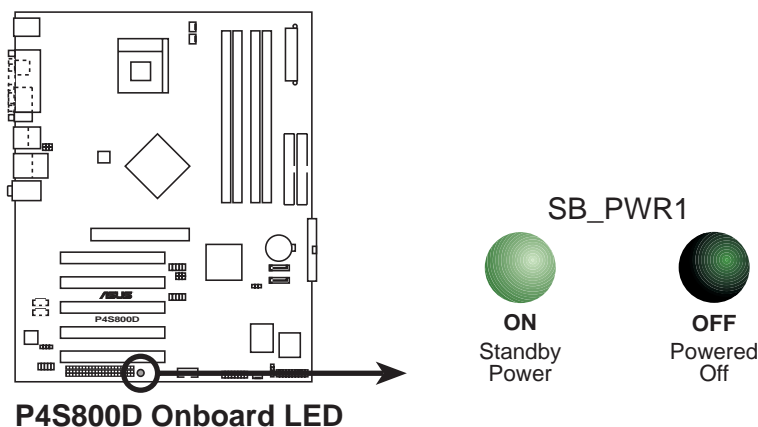
1.5 Motherboard overview

1.5.1 Motherboard layout

24.5cm (9.6in)

30.5cm (12.0in)

PS/2KBMS
T: Mouse
B: Keyboard

SPDIF_O

PARALLEL PORT

COM1

USB2.0
T: USB1
B: USB2

USBPW12
USBPW34

USB2.0
T: USB3
B: USB4

Top:
RJ-45

ATX12V1

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

PWR_FAN1

CPU_FAN1

Socket 478

SiS
655
FX

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)

PCI1

USB56

PCI2

USBPW56
USBPW78

CD1

AUX1

PCI3

USB78

P4S800D

PCI4

Audio
Codec

SPDIF_OUT

PCI5

FP_AUDIO

WIFI

SB_PWR1

COM2

GAME1

SiS
964

SATA2

SATA1

CLRTC1

CR2032 3V
Lithium Cell
CMOS Power

FLOPPY1

Super
I/O

4Mbit
Firmware
Hub

CHASSIS1

CHA_FAN1

PANEL1

1.5.2 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.

1.5.3 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
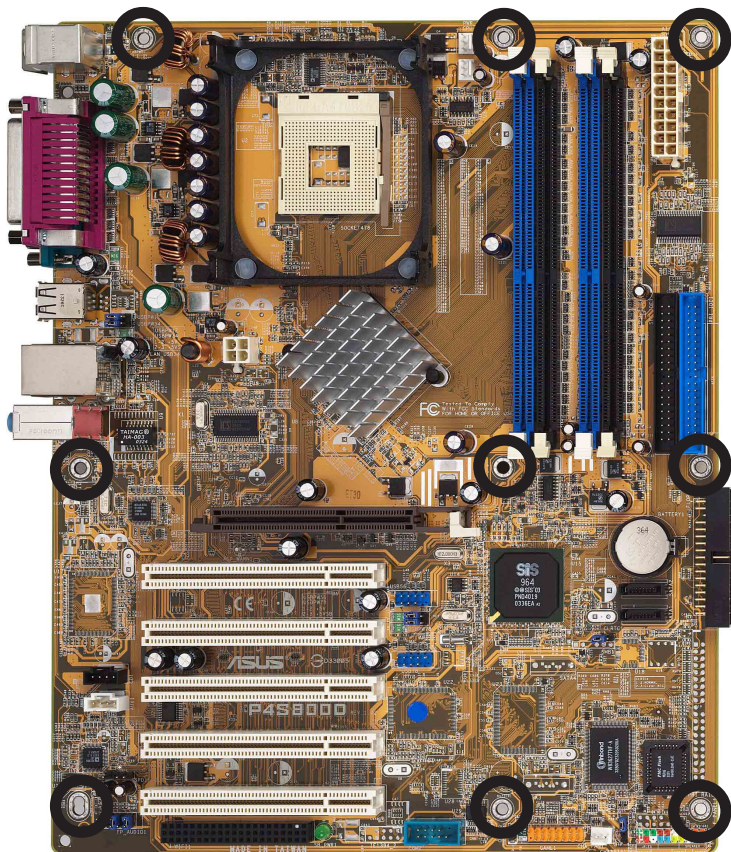
1.6   Central Processing Unit (CPU)

1.6.1   Overview

The Intel® Pentium® 4 Northwood/Willamette/Prescott processors has a gold triangular mark on one corner. This mark indicates the processor Pin 1 that should match a specific corner of the CPU socket.

P4S800D Socket 478

Gold Arrow
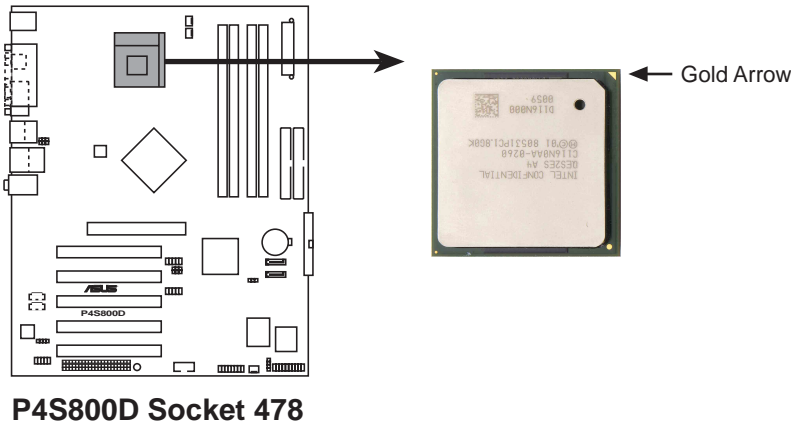
Incorrect installation of the CPU into the socket may bend the pins and severely damage the CPU!

Notes on Intel® Hyper-Threading Technology

1. 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.

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

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

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

1.6.2 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.

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

Socket Lever ——

90° - 100°
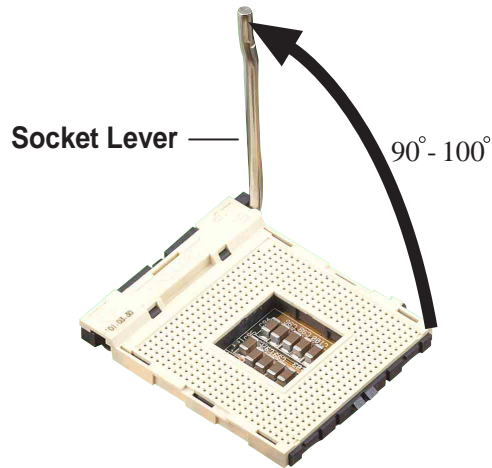
3. Position the CPU above the socket such that its marked corner matches the base of the socket lever.

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

> 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!

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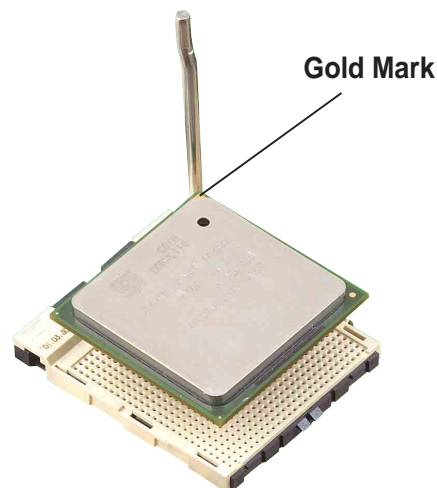
5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.

6. Install a CPU heatsink and fan following the instructions that came with the heatsink package.

7. Connect the CPU fan cable to the CPU_FAN1 connector on the motherboard.

1.7 System memory

1.7.1 DIMM sockets location

The following figure illustrates the location of the DDR DIMM sockets.
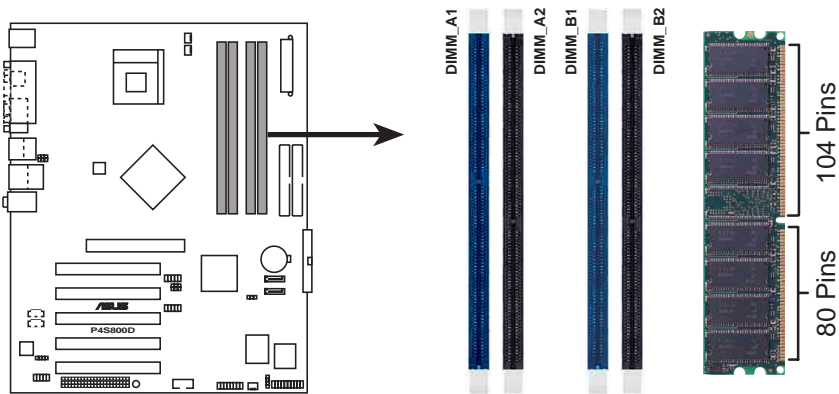
P4S800D 184-Pin DDR DIMM Sockets

1. It is recommended to use the blue DIMM slots first.

2. 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.

3. When installing long AGP cards, it is recommended to install the memory modules first. Long AGP cards, when installed, may interfere with the memory sockets.

1.7.2 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

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, always install an **identical** (the same type and size) DDR DIMM pair on sockets of the same color.

3. Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

Table 1   Recommended memory configurations

Mode/DIMM Type		DIMM_A1 (blue)	DIMM_A2 (black)	DIMM_B1 (blue)	DIMM_B2 (black)
Single-channel **(PC3200/PC2700/ PC2100/PC1600)**	(1)	Populated	—	—	—
	(2)	—	Populated	—	—
	(3)	—	—	Populated	—
	(4)	—	—	—	Populated
Dual-channel **(PC3200/PC2700/ PC2100/PC1600)**	(1)	Populated	—	Populated	—
	(2)	—	Populated	—	Populated
	(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)*

Table 2   Qualified DDR400 vendors list

This table lists the 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	•	•	•

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

1.7.3   Installing a DIMM

Follow these steps to install a DIMM.

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.

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

DDR DIMM notch

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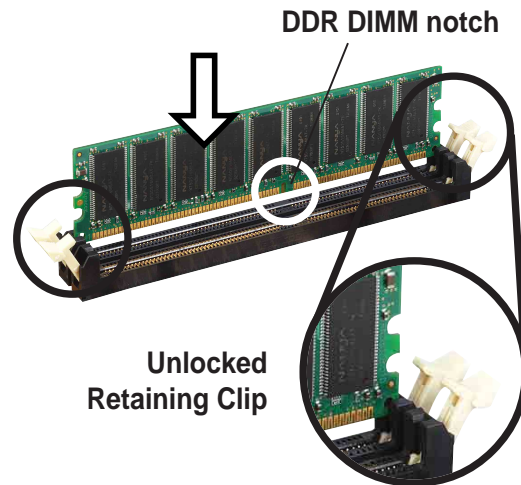
> A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT
> force a DIMM into a socket to avoid damaging the DIMM.

1.8   Expansion slots

To install and configure an expansion card:

1. Install an expansion card following the instructions that came with the chassis.

2. Turn on the system and change the necessary BIOS settings, if any. See
    Chapter 2 for BIOS information.

3. Assign an IRQ to the card. Refer to the tables next page.

4. Install the drivers and/or software applications for the expansion card
    according to the card documentation.

1.8.1 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	IRQ holder for PCI steering
6	14	Floppy Disk Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	IRQ holder for PCI steering
10*	5	Advance AC'97 CODEC
11*	6	Standard PCI Graphics Adapter (VGA)
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.

1.8.2 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.

1.8.3 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.
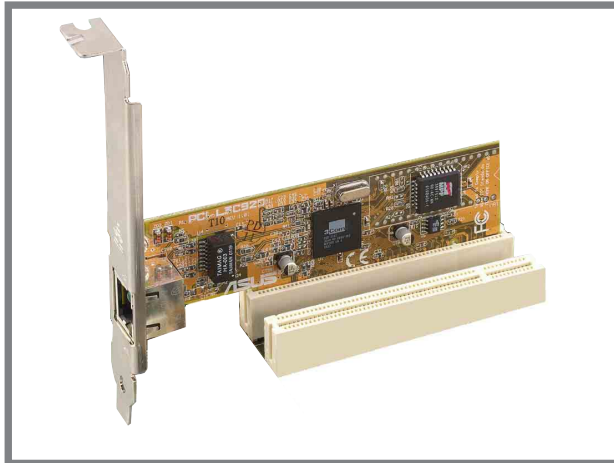
1.8.4 AGP slot

The Accelerated Graphics Port (AGP) slot that supports AGP 8X/4X (+1.5V) 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 the motherboard.

> Install only +1.5V AGP cards.

Keyed for 1.5v
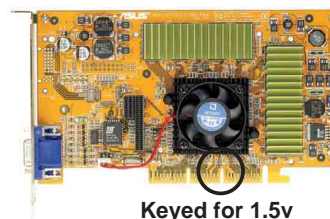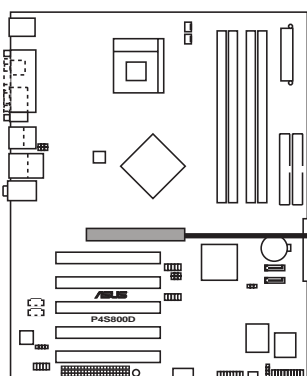
P4S800D Accelerated Graphics Port (AGP)

1.9　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. Move the jumper cap 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.

3. Plug the power cord and turn ON the computer.

4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

> ⚠ Except when clearing the RTC RAM, never remove the cap on CLRTC1 jumper default position. Removing the cap will cause system boot failure!

CLRTC1

1 2   2 3

Normal   Clear CMOS
(Default)
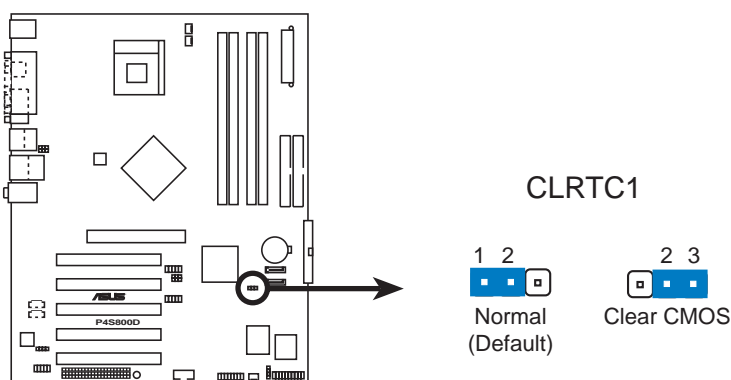
P4S800D Clear RTC RAM

> ✍ 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 sleep mode (no power to CPU, DRAM in slow refresh, power supply in reduced power mode). Both jumpers are set to pins 1-2 (+5V) by default because not all computers have the appropriate power supply to support this feature.

The USBPW12 and USBPW34 jumpers are for the rear USB ports. The USBPW56 and USBPW78 jumpers are for the internal USB header that you can connect to the front USB ports.

1. This feature requires a power supply that can provide at least 1A on the +5VSB lead when these jumpers are set to +5VSB. Otherwise, the system would not power up.

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

3. The rear panel USB ports (Ports 1 to 4) do not support device wake-up from S4 sleep mode.

USBPW12
USBPW34

1 2   2 3

+5V   +5VSB
(Default)

USBPW56
USBPW78

1 2   2 3

+5V   +5VSB
(Default)

P4S800D USB Device Wake Up
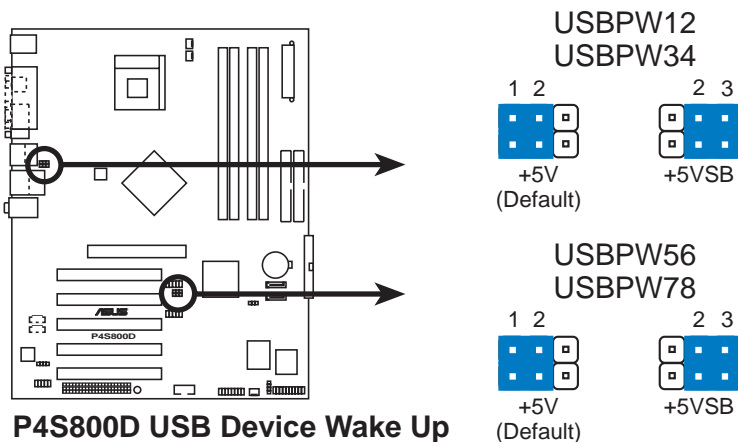
1.10 Connectors

This section describes and illustrates the motherboard rear panel and internal connectors.

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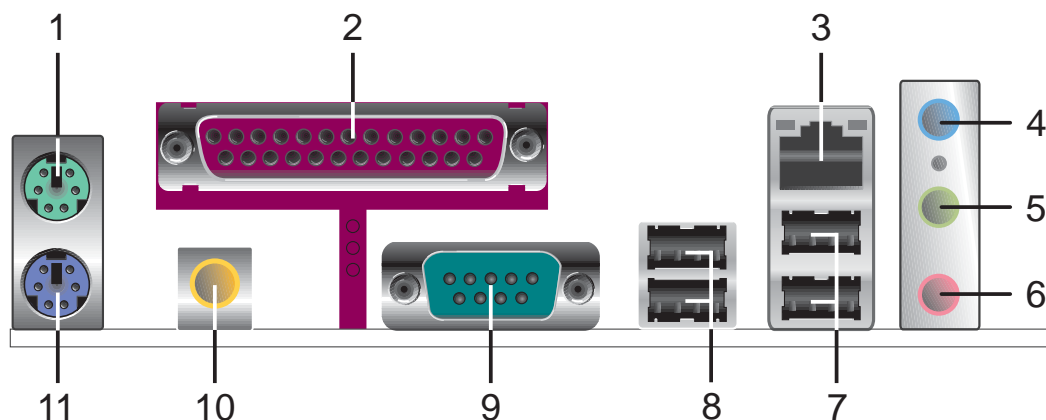
1. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.

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

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

4. **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.

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

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

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.

Audio 2, 4 or 6-channel configuration

2-Speaker	Headphone/ 4-Speaker	6-Speaker	
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

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

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

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

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

1.10.2 Internal connectors

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

This connector supports the provided UltraATA133 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 slave device (hard disk drive) and the black connector to the UltraATA133 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.

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

SEC_IDE1

PRI_IDE1

PIN 1

P4S800D IDE Connectors
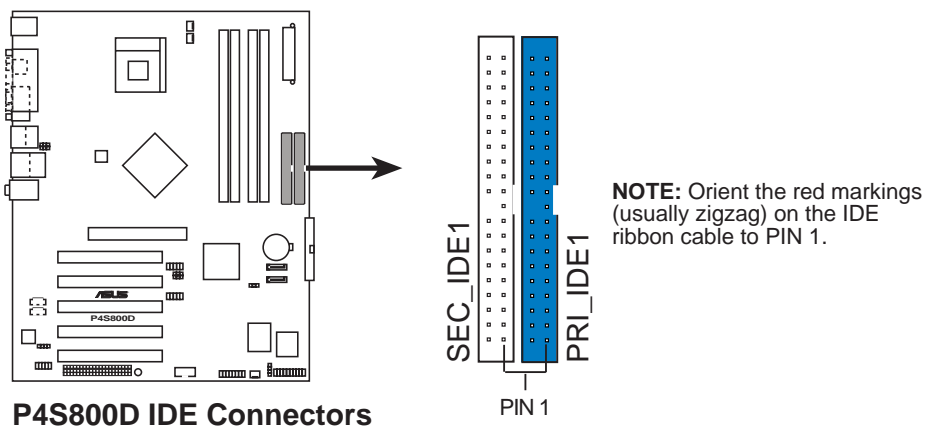
2. Floppy disk drive connector (34-1 pin FLOPPY1)

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 Floppy Disk Drive Connector
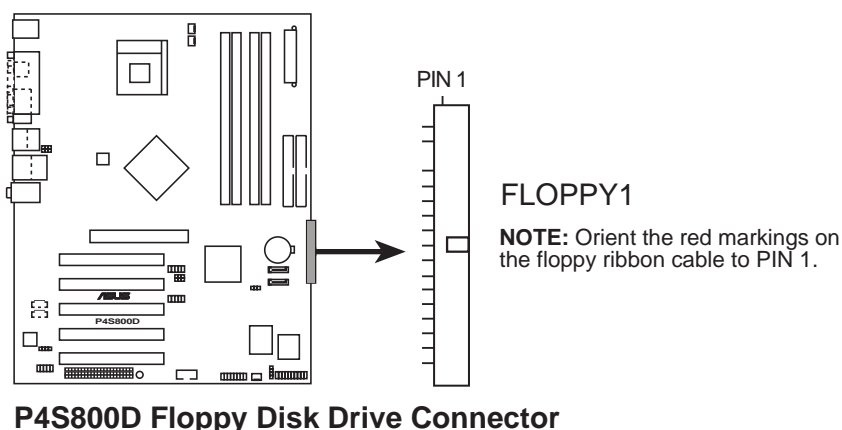
3. ATX power connectors (20-pin ATXPWR1, 4-pin ATX12V1)

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

> 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 230W, or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.

ATXPWR1

Pin 1

+12.0VDC	+5.0VDC
+5VSB	+5.0VDC
PWR_OK	-5.0VDC
COM	COM
+5.0VDC	COM
COM	COM
+5.0VDC	PS_ON#
COM	COM
+3.3VDC	-12.0VDC
+3.3VDC	+3.3VDC

ATX12V1

+12V DC   GND

+12V DC   GND

P4S800D ATX Power Connector
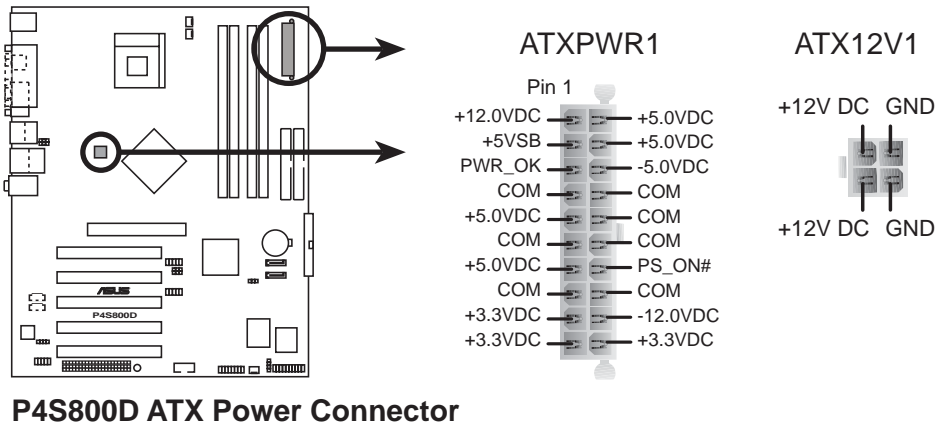
4. Internal audio connectors (4-pin CD1, AUX1)

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 Internal Audio Connectors
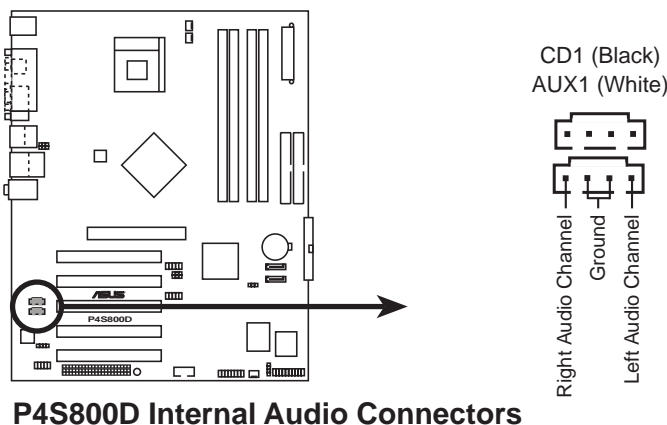
5. **CPU, power and chassis fan connectors (3-pin CPU_FAN1, PWR_FAN1, CHA_FAN1)**

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!

P4S800D 12-Volt Fan Connectors

PWR_FAN1

Rotation
+12V
GND

CPU_FAN1

Rotation
+12V
GND

CHA_FAN1

GND
+12V
Rotation
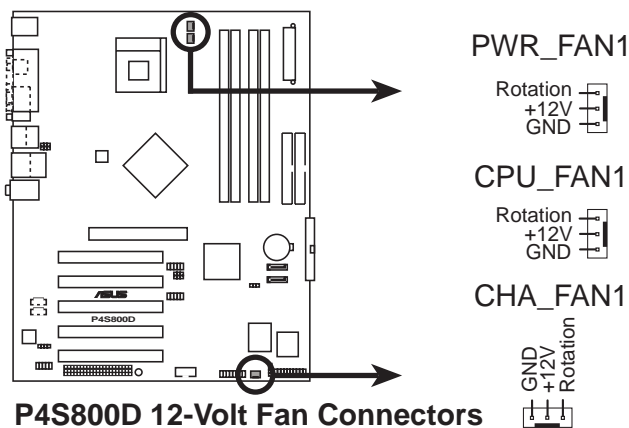
6. **USB header (10-1 pin USB56, USB78)**

If the USB ports on the rear panel are inadequate, a USB header is available for additional USB ports. Connect the USB cable of the USB 2.0 module to this header. You may install the USB module in the chassis front panel. The module has two USB 2.0 ports for connecting next generation USB peripherals such as high resolution cameras, scanners, and printers.

P4S800D USB 2.0 Headers

USB56

USB+5V
USB_P6-
USB_P6+
GND
NC

USB+5V
USB_P5-
USB_P5+
GND

USB78

USB+5V
USB_P8-
USB_P8+
GND
NC

USB+5V
USB_P7-
USB_P7+
GND
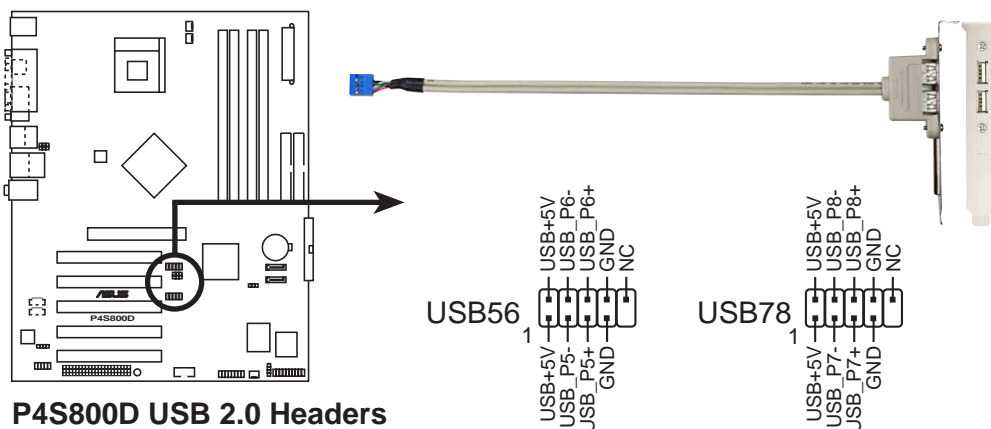
NEVER connect a **1394 cable** to the USB_56 connectors. Doing so will damage the motherboard!

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

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

Be 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.
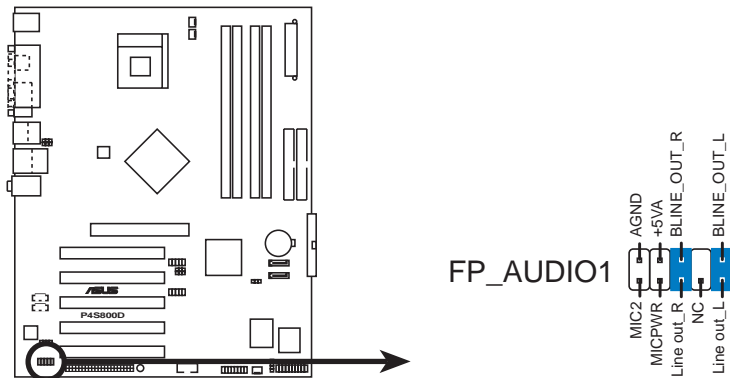
P4S800D Front Panel Audio Connector

8. Serial port connector (10-1 pin COM1)

This green connector accommodates the bundled serial port module. Install the module into a slot opening at the back of the system chassis, the connect the module's green cable plug to this connector.
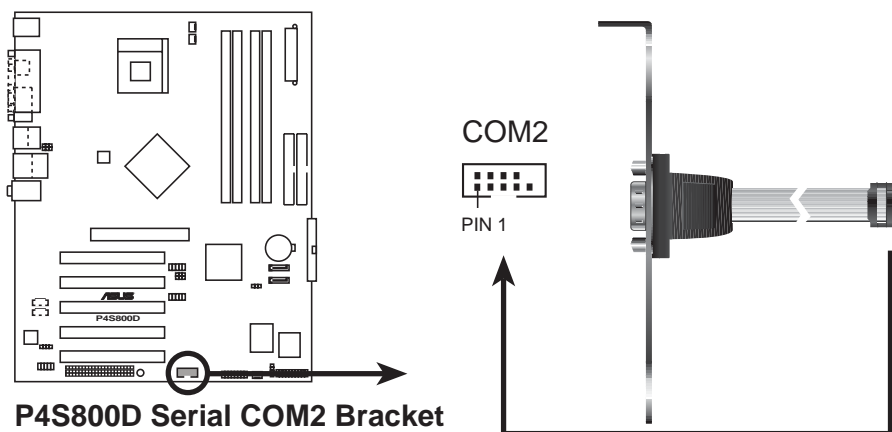
P4S800D Serial COM2 Bracket

The Serial COM2 bracket is purchased separately.

9. Chassis intrusion connector (4-1 pin CHASSIS1)

This lead is for a chassis designed with intrusion detection feature. This requires an external detection mechanism such as a chassis intrusion sensor or microswitch. When you remove any chassis component, the sensor triggers and sends a high-level signal to this lead to record a chassis intrusion event.

By default, the pins labeled "Chassis Signal" and "Ground" are shorted with a jumper cap. If you wish to use the chassis intrusion detection feature, remove the jumper cap from the pins.

P4S800D Chassis Alarm Lead

CHASSIS1

GND
Chassis Signal → (Default)

+5VSB_MB
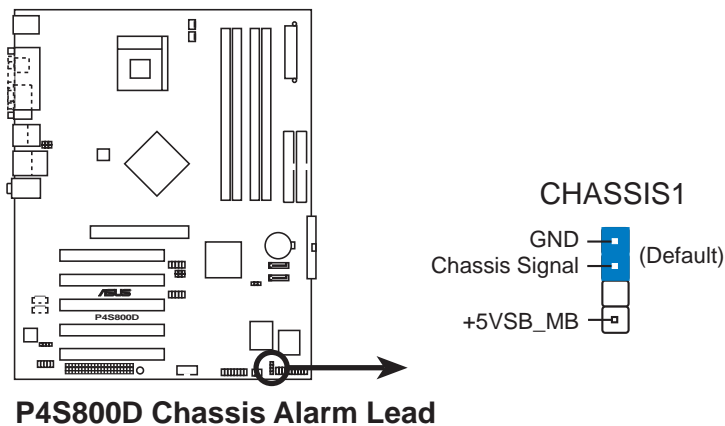
10. GAME/MIDI connector (16-1 pin GAME1)

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 Game Connector

GAME1

+5V
J1B2
J1CY
GND
GND
J1CX
J1B1
+5V

MIDI_IN
J2B2
J2CY
MIDI_OUT
J2CX
J2B1
+5V
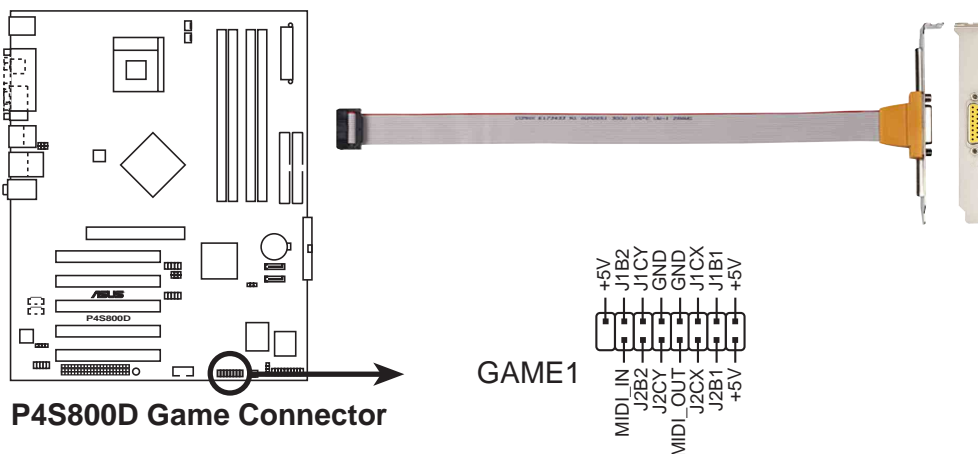
The GAME/MIDI module is purchased separately.

11. Serial ATA connectors (7-pin SATA1, SATA2)

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 (Ultra ATA/133).
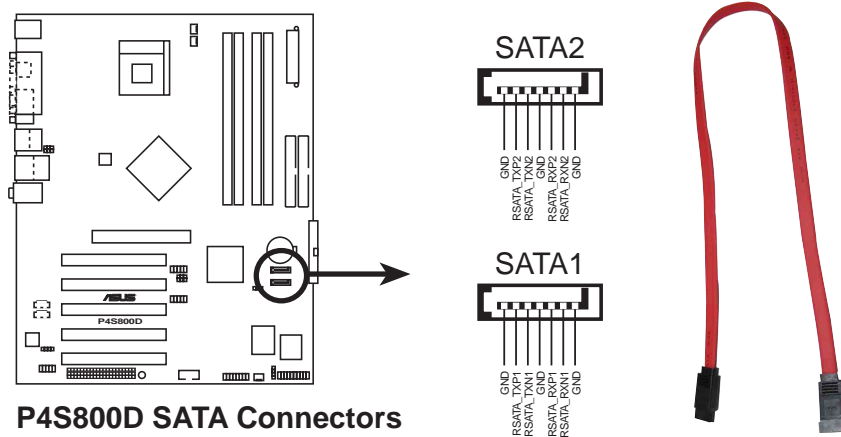
P4S800D SATA Connectors

12. Digital Audio connector (4-1 pin SPDIF_OUT1)

In addition to the S/PDIF out port on the rear panel, an S/PDIF Out connector is available for an S/PDIF audio module. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.
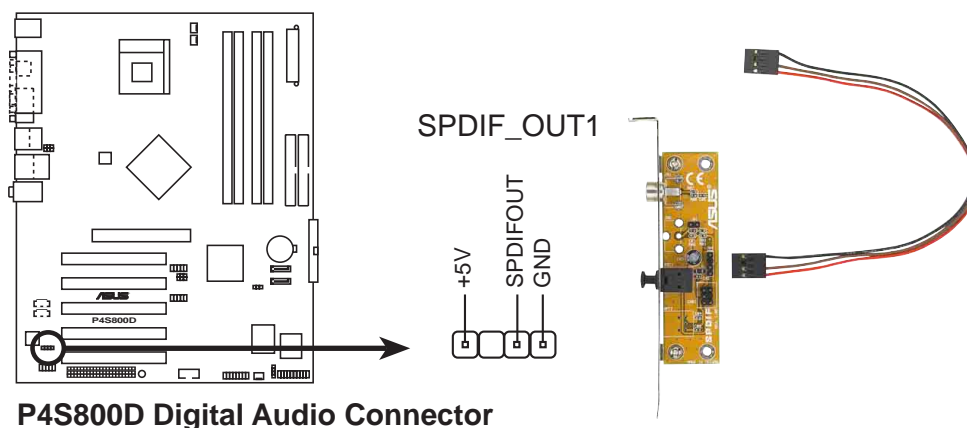
P4S800D Digital Audio Connector

The S/PDIF out module is purchased separately.

13. WiFi connector (63-pinWiFi)

The WiFi (Wireless Fidelity) slot will support the ASUS WiFi-b™ module when available. Visit the ASUS website (www.asus.com) for product updates.

The WiFi 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 WiFi Connectors
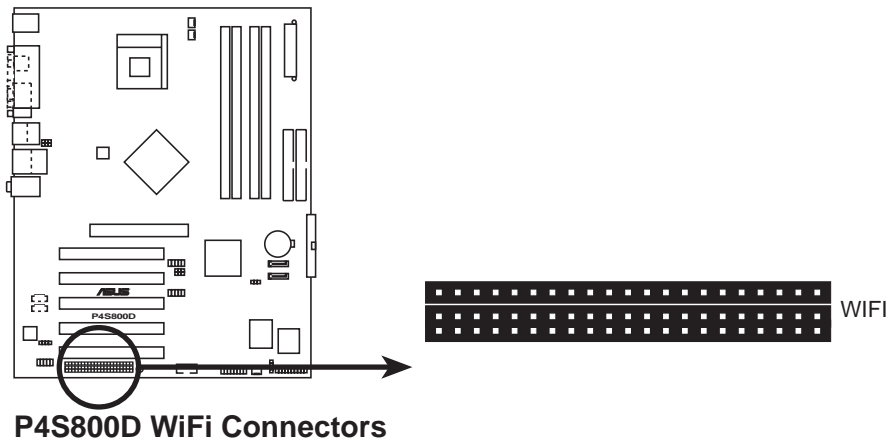
1. The PCI 5 slot and the WiFi slot may not be used at the same time.
2. The WiFi module is purchased separately.

ASUS WiFi-b™ Setup
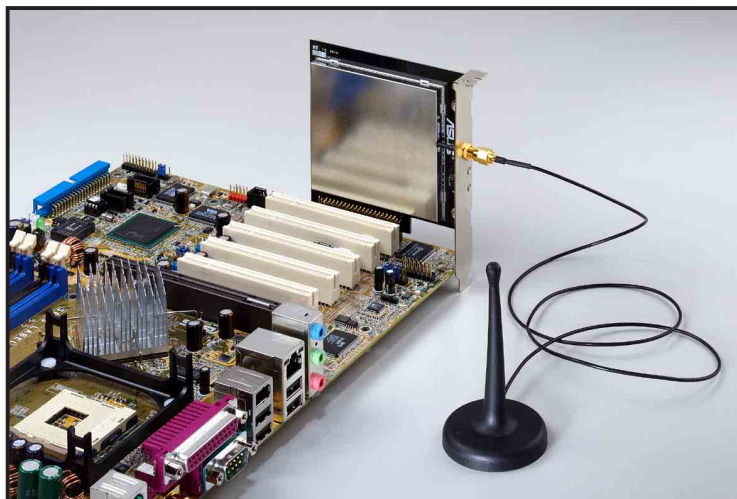
12. System panel connector (10-1 pin F_PANEL1)

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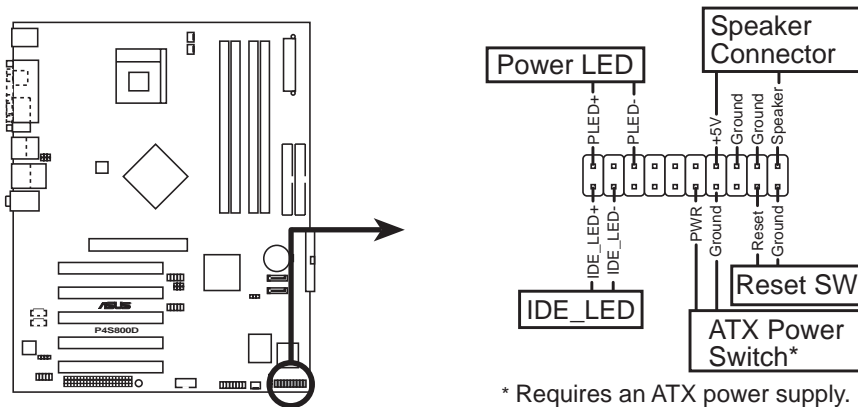
P4S800D System Panel Connectors

Power LED — PLED+ PLED-

Speaker Connector — +5V Ground Ground Speaker

IDE_LED — IDE_LED+ IDE_LED-

ATX Power Switch* — PWR Ground

Reset SW — Reset Ground

* 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.

- **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.

- **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.

- **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.

Chapter 2

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

BIOS information

2.1 Managing and updating your BIOS

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

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

Refer to the corresponding section for each utility.

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 AFUDOS or the ASUS Update utilities.
>
> A **working BIOS file** for this motherboard is in the support CD. Use this file only when you do not have a copy of the original motherboard BIOS file in a floppy disk.
>
> Visit the ASUS website and download the latest BIOS file for this motherboard using the ASUS Update utility.

2.1.1 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 environment

   a. From your Windows desktop, click on **Start**, point to **Settings**, then click on **Control Panel**.

   b. Double-click on **Add/Remove Programs** icon from the Control Panel window.

   c. Click on the **Startup Disk** tab, then on **Create Disk...** button.

   d. Insert a 1.44 MB floppy disk when prompted. Follow the succeeding screen instructions to complete the process.

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

2.1.2 Using AFUDOS to copy the current BIOS

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 the **Enter** key.

> 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.

2.1.3 Using AFUDOS to update the BIOS

The AFUDOS is a DOS-based application that lets you update the BIOS file using a bootable floppy diskette. AFUDOS also allows you to copy the original BIOS file to a floppy diskette.

To update the BIOS using the AFUDOS.EXE:

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.rom>

   where "filename.rom" 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.

2.1.4 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 floppy disk and using a DOS-based utility. The EZ Flash is built-in the BIOS LPC chip 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 it to **P4S800D.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 "**P4S800D.ROM not found!**"

4. Insert the floppy disk that contains the BIOS file. If the **P4S800D.ROM** file is 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 "p4s800d.rom". Completed.

Start flashing...

Flashed successfully. Rebooting.
```

2.1.5 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** (P4S800D.ROM) 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 "2.1.1 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 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 (P4S800D.ROM). If the BIOS file that you downloaded from the ASUS website has a different filename (e.g. P4S800D2.ROM), rename it to **P4S800D.ROM**. The BIOS update process continues when the P4S800D.ROM is found.

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

Checking for floppy...

Floppy found!

Reading file "p4s800d.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 "p4s800d.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 the ASUS website (www.asus.com) to download the latest BIOS file.

2.2   BIOS Setup program

This motherboard supports a programmable Low Pin Count (LPC) chip that you can update using the provided utility described in section "2.1 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 make changes to 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 LPC chip.

The LPC chip 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 among the predetermined choices.

Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purposes only, and may not exactly match what you see on your screen.

2.2.1   BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
                           BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

     System Time              [11:10:19]              Use [ENTER], [TAB]
     System Date              [Thu 03/27/2003]        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   :[Raid Mode]
                                                      ←      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**

2.2.2   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.

2.2.3   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.

2.2.4 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.

```
                    BIOS SETUP UTILITY
 Main    Advanced   Power   Boot    Exit

System Time              [11:10:19]              Use [ENTER], [TAB]
System Date              [Thu 03/27/2003]        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   :[Raid Mode]
                                                 ↔   Select Screen
► System Information                             ↑↓  Select Item
                                                 +-  Change Field
                                                 Tab Select Field
                                                 F1  General Help
                                                 F10 Save and Exit
                                                 ESC Exit

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```

Main menu items

2.2.5 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.

2.2.6 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 "2.2.7 Pop-up window."

2.2.7 Pop-up window

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

2.2.8 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.

```
                    BIOS SETUP UTILITY
 Advanced

Advanced Chipset settings
WARNING: Setting wrong values in the sections below
         may cause system to malfunction.
Configure DRAM Timing by SPD    [Enabled]
Performance Acceleration Mode   [Auto]
DRAM Idle Timer
DRAm Refresh Rate                    Options
                                Disabled
                                Enabled
Graphic Adapter Priority
Graphics Aperture Size
Spread Spectrum                 [Enabled]          ↔   Select Screen
                                                   ↑↓  Select Item
ICH Delayed Transaction         [Enabled]          +-  Change Option
                                                   F1  General Help
MPS Revision                    [1.1]              F10 Save and Exit
                                                   ESC Exit

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```

Pop-up window

Scroll bar

2.2.9 General help

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

2.3　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 "2.2.1 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              [11:10:19]              Use [ENTER], [TAB]
  System Date              [Thu 03/27/2003]        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   :[Raid Mode]

►  System Information                                  Select Screen
                                                   ↑↓   Select Item
                                                   +-   Change Field
                                                   Tab  Select Field
                                                   F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit

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```

2.3.1　System Time [xx:xx:xxxx]

This item allows you to set the system time.

2.3.2　System Date [Day xx/xx/xxxx]

This item allows you to set the system date.

2.3.3　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.]

2.3.4　Language [English]

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

2.3.5 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                          │ Select the type          │
│                                             │ of device connected      │
│ Device       : Hard Disk                    │ to the system.           │
│ Vendor       : ST320413A                    │                          │
│ Size         : 20.0GB                       │                          │
│ LBA Mode     : Supported                    │                          │
│ Block Mode   : 16 Sectors                   │                          │
│ PIO Mode     : Supported                    │                          │
│ Async DMA    : MultiWord DMA-2              │                          │
│ Ultra DMA    : Ultra DMA-5                  │                          │
│ SMART Monitoring: Supported                 │                          │
│                                             │ ←    Select Screen       │
│ Type                       [Auto]           │ ↑↓   Select Item         │
│ LBA/Large Mode             [Auto]           │ +-   Change Option       │
│ Block (Multi-sector Transfer)  [Auto]       │ F1   General Help        │
│ PIO Mode                   [Auto]           │ F10  Save and Exit       │
│ DMA Mode                   [Auto]           │ ESC  Exit                │
│ Smart Monitoring           [Auto]           │                          │
│ 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]

2.3.6   OnChip SATA Controller [Enabled]

This field allows you to enable or disable the onchip Serial ATA controller. Configuration options: [Disabled] [Enabled]

2.3.7   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 Date : 03/12/03
  ID         : P4C81029

  Processor
  Type       : Intel(R) Pentium(R) 4 CPU 1.73GHz
  Speed      : 1733 MHz
  Count      : 1

  System Memory                                      ←   Select Screen
  Size       : 256MB                                 ↑↓  Select Item
                                                     +-  Change Option
                                                     F1  General Help
                                                     F10 Save and Exit
                                                     ESC Exit

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```
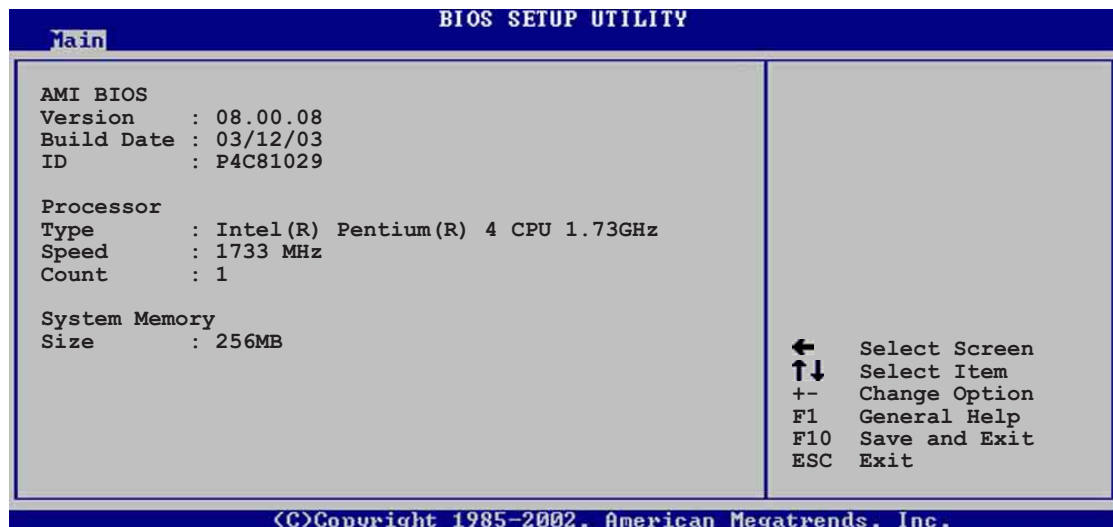
AMI BIOS

This item displays the auto-detected BIOS information.

Processor

This item displays the auto-detected CPU specification.

System Memory

This item displays the auto-detected system memory.

2.4 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
▶ PCI PnP
▶ 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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```

2.4.1 JumperFree Configuration

```
                        BIOS SETUP UTILITY
  Advanced

AI Overclock Tuner              [Standard]
DRAM Frequency                  [Auto]

Configure System Frequency Voltage

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]

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

If you are using an unlocked CPU, the item **CPU Ratio** appears under the AI Overclock Tuner item. You may select your desired ratio from the available options.

CPU Frequency [133]

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 and is not manually configurable. The values range from 100 to 300.

The **CPU Frequency** item appears only when you set the **AI Overclocking Tuner** item to [Manual].

DRAM Frequency [Auto]

Allows you to set the DDR operating frequency. Configuration options: [200 Mhz] [266 MHz] [333 MHz] [400 MHz] [Auto]

CPU VCore Offset +0.1V [Disabled]

Allows you to enable or disable the CPU VCore Offset at +0.1 voltage. Configuration options: [Disabled] [Enabled]

AGP VDDQ voltage [1.50V]

Allows selection of the AGP operating voltage. Configuration options: [Auto] [1.60V] [1.70V] [1.80V] [Auto]

DDR Reference Voltage [Auto]

Allows selection of the DDR SDRAM operating voltage. Configuration options: [2.55V] [2.65V] [2.75V] [2.85V] [Auto]

2.4.2 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(R)
 Brand String  : Intel(R) Pentium(R) 4 CPU 1.73GHz
 Frequency     : 1733 MHz
 FSB Speed     : 533 MHz

 Cache L1      : 8 KB
 Cache L2      : 512 KB
 Cache L3      : 0 KB

 Ratio Status  : Locked
 Ratio Actual Value : 13                    ←    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 Technology   [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]

2.4.3 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 SiS655FX Configuration
  ▶ SouthBridge SiS963/SiS964 Configuration



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

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```

2.4.3.1 NorthBridge SiS655FX Configuration

```
                        BIOS SETUP UTILITY
     Advanced

  Graphics Adapter Priority       [PCI]
  Graphics Aperture Size          [ 64MB]
  Advanced HyperStreaming Engine  [Disabled]
  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 [Disabled]

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.

2.4.3.2 SouthBridge SiS963/SiS964 Configuration

```
                        BIOS SETUP UTILITY
  Advanced

Onboard AC97 Audio Device      [Enabled]
Onboard SiS900 LAN Device      [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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```
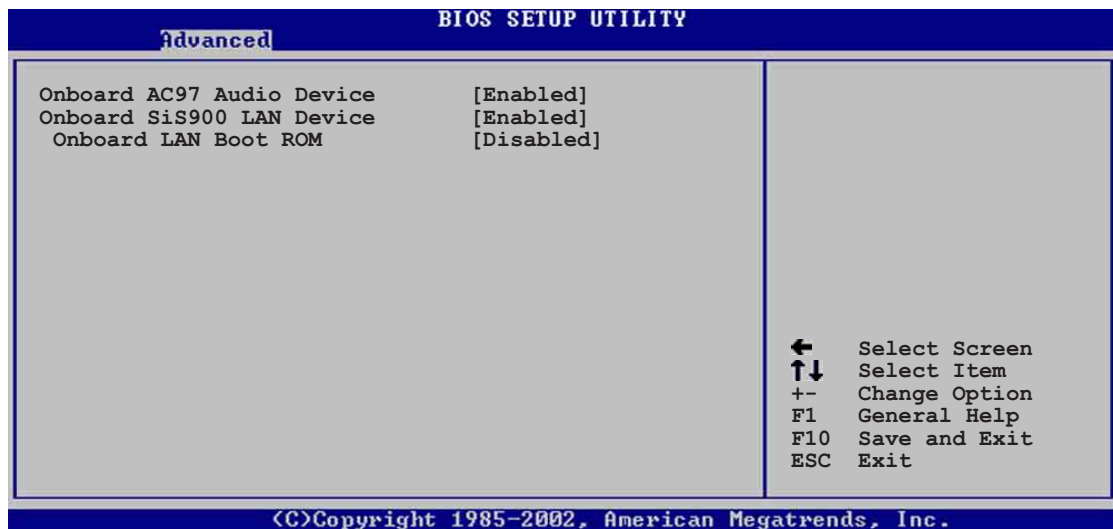
Onboard AC97 Audio Device [Enabled]

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

OnBoard SiS900 LAN Device [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 option ROM in the onboard LAN controller.
This item appears only when the Onboard LAN item is set to Enabled.
Configuration options: [Disabled] [Enabled]

2.4.4   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          [Disabled]
OnBoard Game/MIDI Port         [Disabled]




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

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```
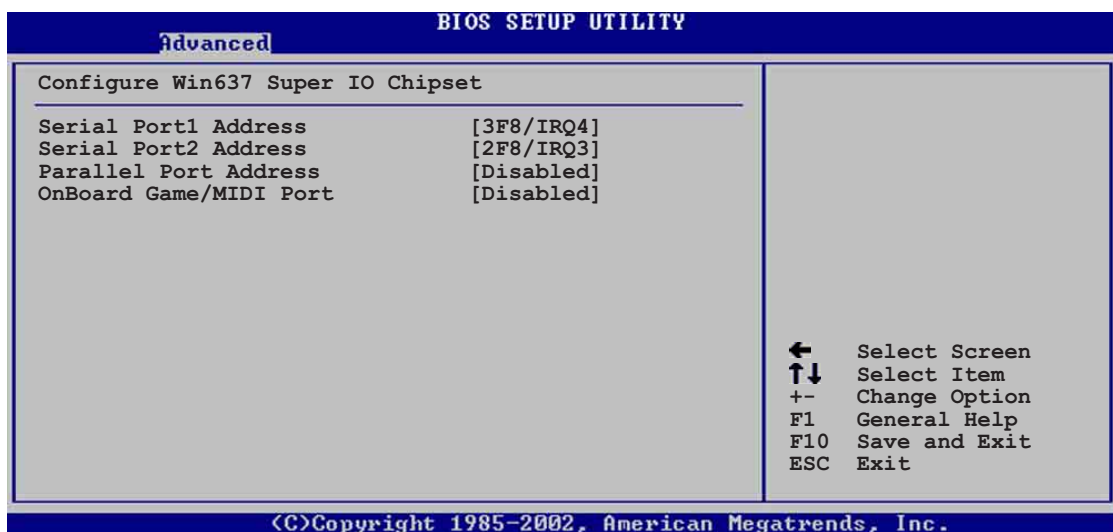
Serial Port1 Address [3F8/IRQ4]

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]

2.4.5   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                   │ NO: Lets the bIOS      │
│                                             │ configure all the      │
│ WARNING: Setting wrong values in the sections below │ devices in the system. │
│          may cause system to malfunction.   │ YES: Lets the          │
│ Plug and Play OS            [No]            │ operating system       │
│ PCI Latency Timer           [64]           │ configure Plug and     │
│ Allocate IRQ to PCI VGA     [Yes]          │ Play (PnP) devices not │
│ Palette Snooping            [Disabled]      │ required for boot if   │
│ PCI IDE BusMaster           [Enabled]       │ your system has a Plug │
│                                             │ and Play operating     │
│ IRQ3                        [Available]      │ system.                │
│ 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]

2.4.6   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  : 2.23.0-7.4

   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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```
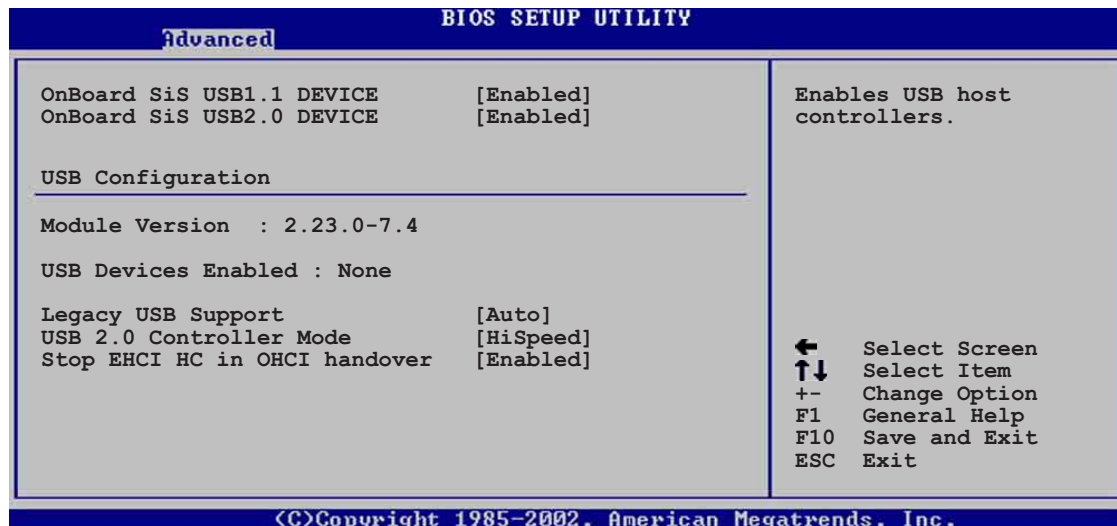
OnBoard SiS USB 1.1 Device [Enabled]

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]

2.4.7   Instant Music Configuration

```
                            BIOS SETUP UTILITY
     Advanced

  Instant Music Option                              Disable/Enable Instant
                                                    Music feature.
  Instant Music              [Disabled]




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

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```
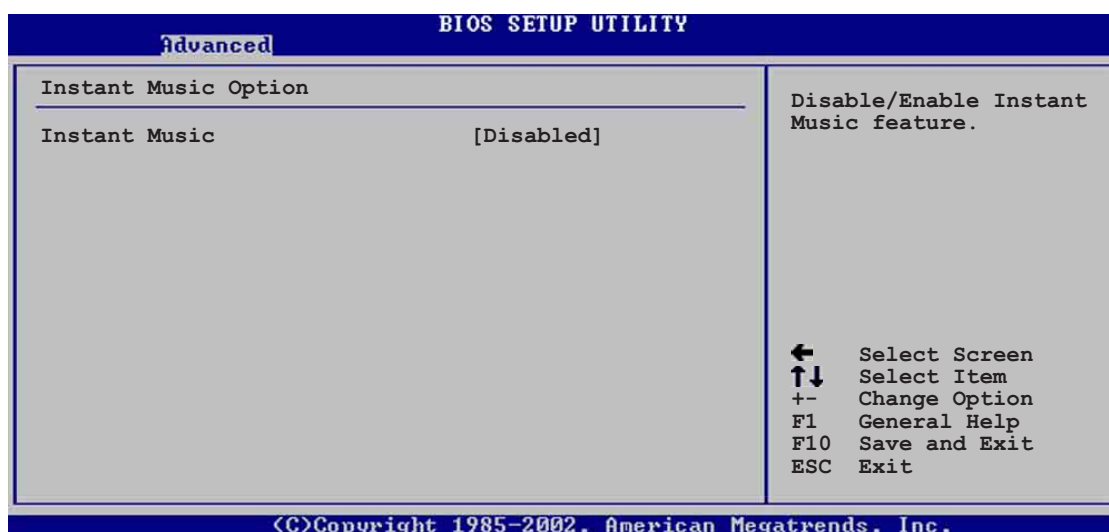
Instant Music [Disabled]

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.

2.5   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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```
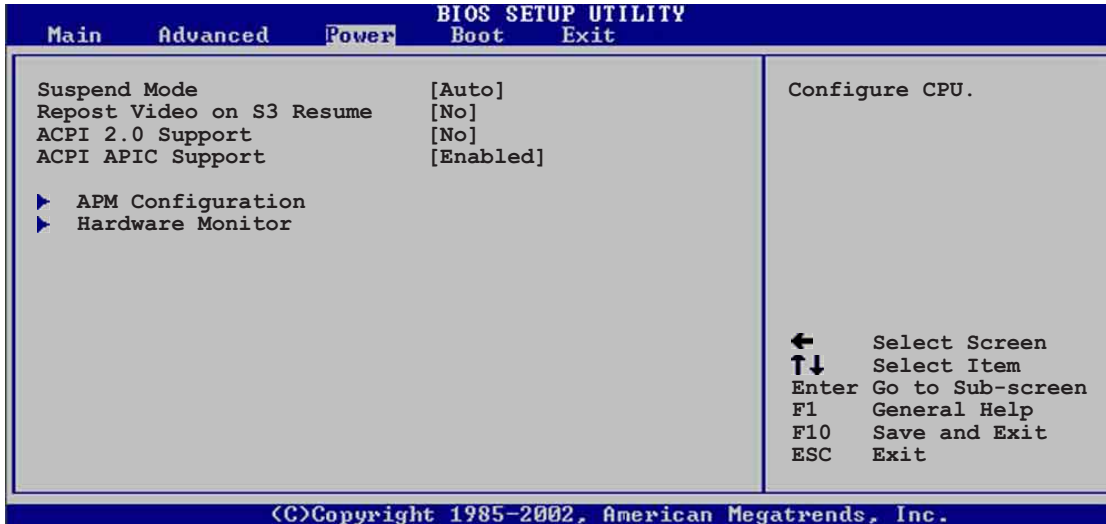
2.5.1   Suspend Mode [Auto]

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

2.5.2   Repost Video on S3 Resume [No]

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

2.5.3   ACPI 2.0 Support [No]

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

2.5.4   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]          Enabled or disable
                                                  APM.
 Restore on AC Power Loss       [Always OFF]
 Power On By PS/2 Keyboard       [Disabled]
 Power On By PS/2 Mouse          [Disabled]
 Power On By Internal MAC LAN    [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 use 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] [Enabled]

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 Internal MAC LAN [Disabled]

When set to [Enabled], this parameter allows you to use the MAC LAN device to wake the system from sleep state. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

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]

2.5.6   Hardware Monitor

```
                          BIOS SETUP UTILITY
              Power

 Hardware Monitor

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

 CPU Fan Speed                [2250RPM]
 Chassis Fan Speed            [XXX RPM]
 Power Fan Speed              [XXX RPM]

 CPU Fan Control              [Disabled]

 VCORE Voltage                [1.550V]
 3.3V Voltage                 [3.386V]          ←    Select Screen
 5V Voltage                   [4.890V]          ↑↓   Select Item
 12V Voltage                  [11.900V]         +-   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 **Fan Speed Ratio** item appears to allow selection of the appropriate fan speed ratio. Configuration options: [Disabled] [Enabled]

Fan CPU 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 **Q-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".

2.6   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                            │ Specifies the Boot       │
 │                                          │ Device Priority          │
 │ ▶  Boot Device Priority                  │ sequence.                │
 │ ▶  Hard Disk 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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```

2.6.1   Boot Device Priority

```
                        BIOS SETUP UTILITY
                        Boot
 ┌──────────────────────────────────────────┬──────────────────────────┐
 │ Boot Device Priority                     │ Specifies the boot       │
 │                                          │ sequence from the        │
 │ 1st Boot Device        [First Floppy Drive]│ available devices.     │
 │ 2nd Boot Device        [PM-ST320413A]     │                         │
 │ 3rd Boot Device        [PS-ASUS CD-S340]  │ A device enclosed in    │
 │                                          │ parenthesis has been     │
 │                                          │ disabled in the          │
 │                                          │ corresponding type       │
 │                                          │ menu.                    │
 │                                          │                          │
 │                                          │  ←→  Select Screen        │
 │                                          │  ↑↓  Select Item          │
 │                                          │  +-   Change Option       │
 │                                          │  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]

2.6.2 Hard Disk Drives

```
                          BIOS SETUP UTILITY
                             Boot
┌────────────────────────────────────────────┬─────────────────────────┐
│  Hard Disk Drives                           │  Specifies the boot     │
│                                             │  sequence from the      │
│  1st Drive               [PM-ST320413A]     │  available devices.     │
│  2nd Drive               [SiS 964]          │                         │
│                                             │                         │
│                                             │                         │
│                                             │                         │
│                                             │                         │
│                                             │                         │
│                                             │                         │
│                                             │  ←    Select Screen     │
│                                             │  ↑↓   Select Item       │
│                                             │  +-   Change Option     │
│                                             │  F1   General Help      │
│                                             │  F10  Save and Exit     │
│                                             │  ESC  Exit              │
│                                             │                         │
└────────────────────────────────────────────┴─────────────────────────┘
           (C)Copyright 1985-2002, American Megatrends, Inc.
```
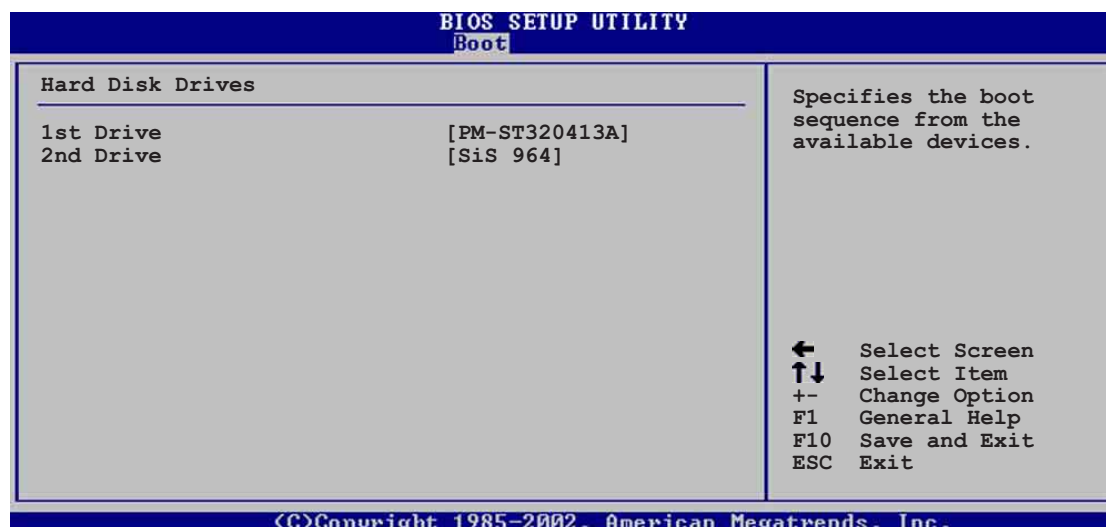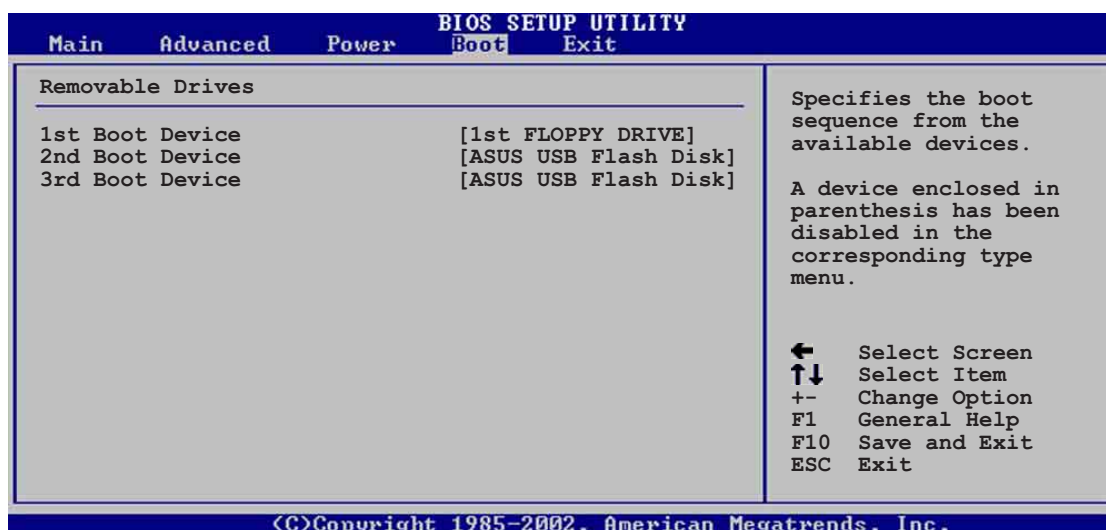
1st ~ xxth Drive (Hard disk model number auto detected)

These items specify the hard disk priority sequence from the available hard disk
drives. The number of hard disk drive items that appear on the screen depends on
the the number of hard disk drives installed in the system. Configuration options:
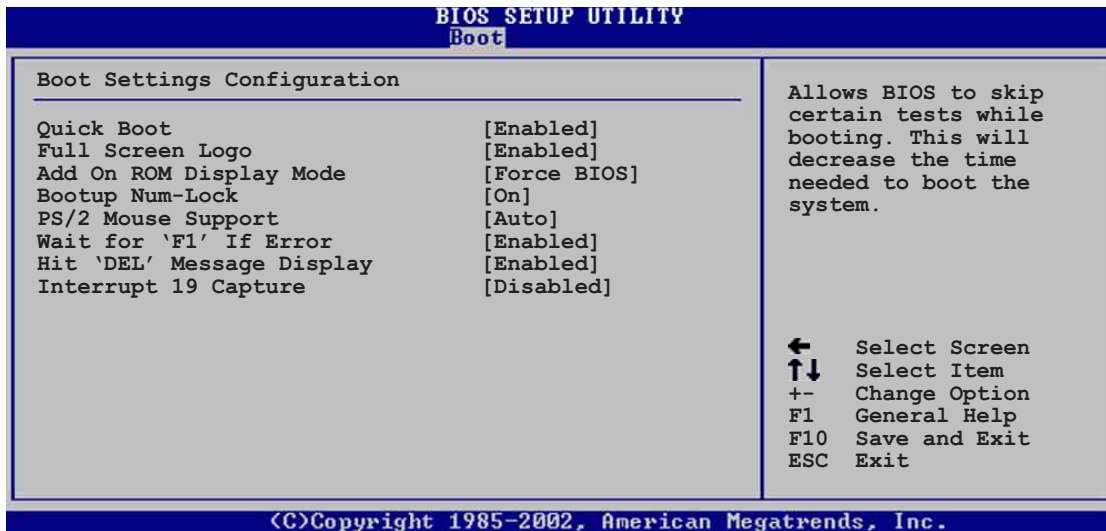[xxxxx Drive] [Disabled]

2.6.3 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 Drives                           │  Specifies the boot     │
│                                             │  sequence from the      │
│  1st Boot Device        [1st FLOPPY DRIVE]  │  available devices.     │
│  2nd Boot Device        [ASUS USB Flash Disk]│                        │
│  3rd Boot Device        [ASUS USB Flash Disk]│ A device enclosed in   │
│                                             │  parenthesis has been   │
│                                             │  disabled in the        │
│                                             │  corresponding type     │
│                                             │  menu.                  │
│                                             │                         │
│                                             │  ←    Select Screen     │
│                                             │  ↑↓   Select Item       │
│                                             │  +-   Change Option     │
│                                             │  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]

2.6.4 Boot Settings Configuration

```
                         BIOS SETUP UTILITY
                         Boot

  Boot Settings Configuration                    Allows BIOS to skip
  _____            certain tests while
  Quick Boot              [Enabled]              booting. This will
  Full Screen Logo        [Enabled]              decrease the time
  Add On ROM Display Mode [Force BIOS]           needed to boot the
  Bootup Num-Lock         [On]                   system.
  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 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 **Full Screen Logo** 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]

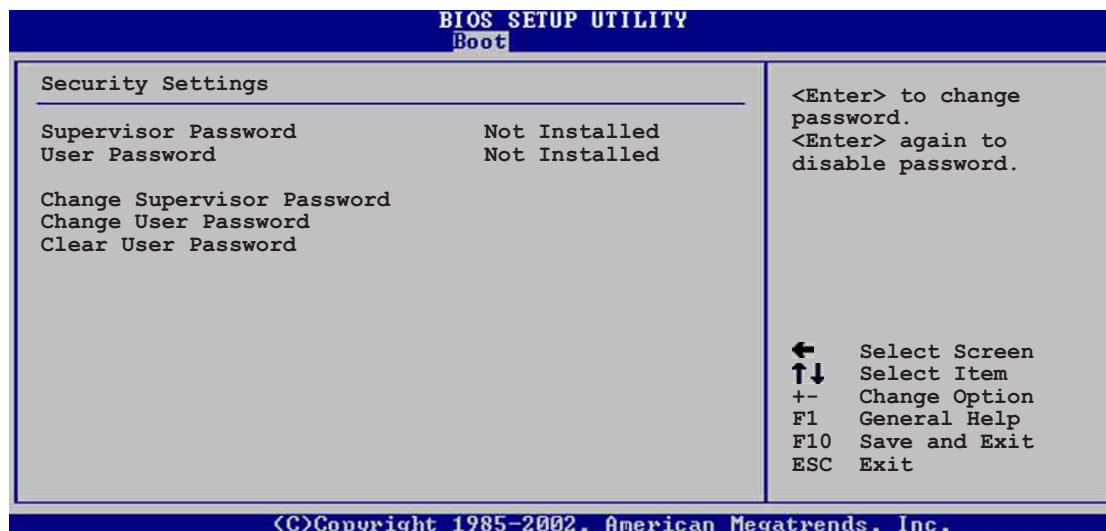### Hit 'DEL' Message Display [Enabled]

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]

2.6.5   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                               <Enter> to change
                                                  password.
  Supervisor Password          Not Installed      <Enter> again to
  User Password                Not Installed      disable password.

  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. The password supports only a maximum of 6
    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
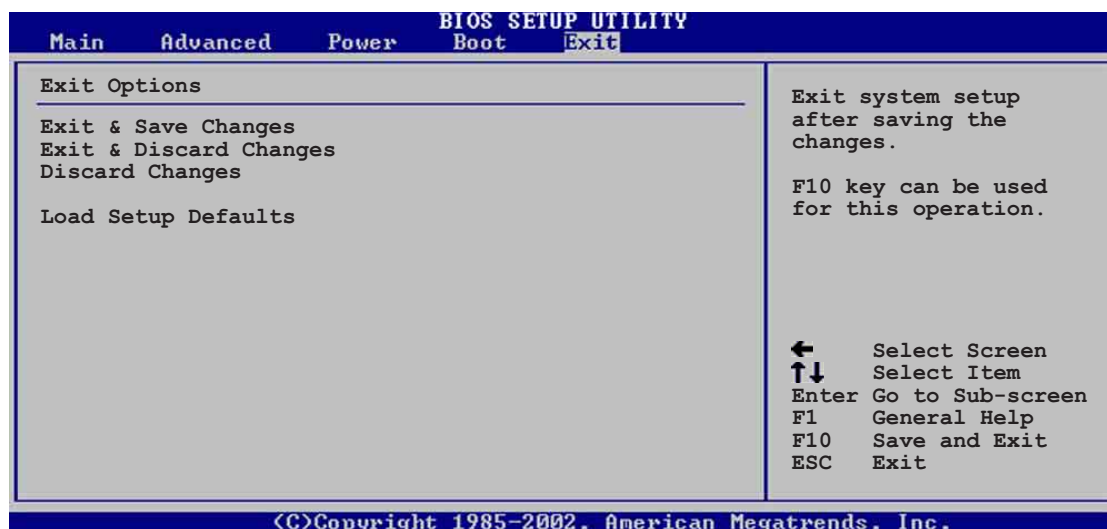password.

To clear the supervisor password, select the Change Supervisor Password then
press Enter. The message "Password Uninstalled" appears.

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

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]

2.7 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 [Yes] 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 [Yes] to load default values. Select Exit Saving Changes or make other changes before saving the values to the non-volatile RAM.

Chapter 3

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

Software support

3.1 Install an operating system®

This motherboard supports Windows® ME/2000/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.
>
> • This motherboard does not support Windows® 98SE.

3.2 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.

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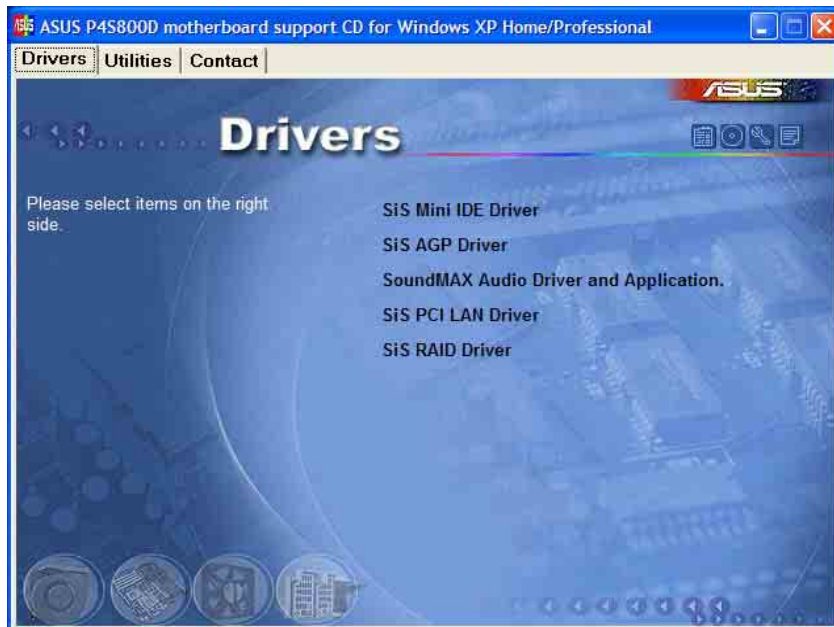
> If **Autorun** is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the **ASSETUP.EXE** to run the CD.

3.2.2 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 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.

SiS PCI LAN driver

This item installs the SiS® PCI LAN driver.

SiS RAID driver

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

3.2.3 Utilities menu

The Utilities menu shows the applications and other software that the motherboard supports.
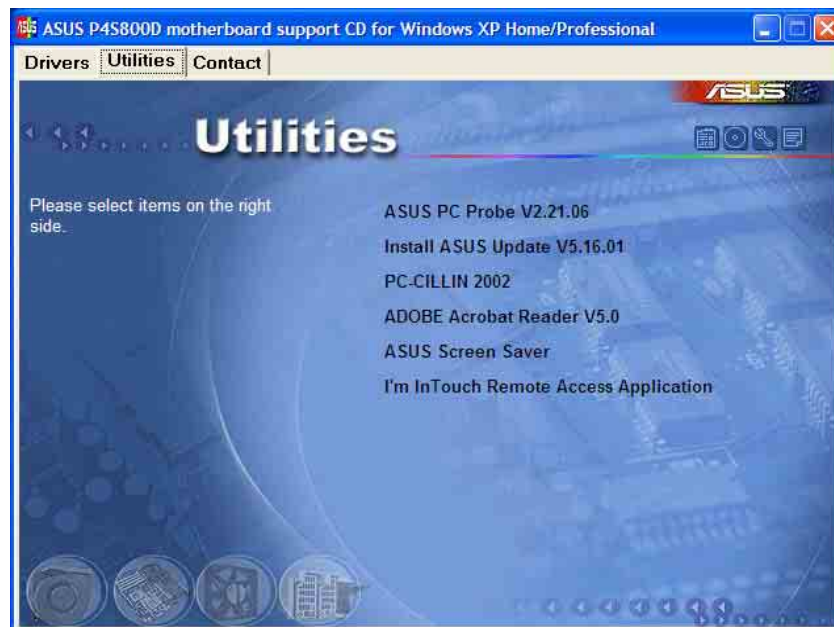
ASUS PC Probe

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.

Install 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. Installing ASUS Update also installs ASUS Mylogo2™.

PC-CILLIN 2002

This item installs the Tren Micro PC-CILLIN 2002 anti-virus program.View the PC-CILLIN online help for details.

Adobe Acrobat Reader

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.

I'm InTouch Remote Access Application

This item installs the I'm InTouch Remote Access application that allow users to remotely access files or control some hardware from their PC at home or in the office.

3.2.4   ASUS Contact Information

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

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

3.3   ASUS Instant Music Lite

The motherboard is equipped with a BIOS-based audio playback feature called
Instant Music Lite. 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 Lite only supports CDs in audio format.
> 2.   Instant Music Lite does not work if you installed and enabled an add-on
>   sound card.
> 3.   Instant Music Lite only supports PS/2 keyboard.

To enable ASUS Instant Music Lite:

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 CD1) on the
    motherboard. See section "1.10 Connectors" for the connector location.

> Make sure to connect the CD-ROM audio cable. Otherwise, you cannot control
> the audio volume using the Instant Music Lite 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 **Advanced Configuration** menu, select the item **Instant Music** and set
    it to **Enabled**. See section "2.4 Advanced Menu" in the user guide.

4. Highlight the **Instant Music CDROM** item and press Enter to display the
    CD-ROM options. Select the CD-ROM drive that you wish to use for this
    feature. See section "2.4 Advanced Menu" in the user guide.

> If you have only one optical drive (either CD-ROM, DVD-ROM, or CD-RW)
> installed in the system, you don't have to set Instant Music CDROM item. BIOS
> automatically detects and displays the installed drive type.

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 is turns ON when you pause the CD playback.
> 3.   When set to Instant Music Lite 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 Lite feature turns OFF (disabled) automatically. A "beep" indicates
>   this condition.

To use ASUS Instant Music Lite:

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 the BIOS.

Instant Music function keys (Set 1)
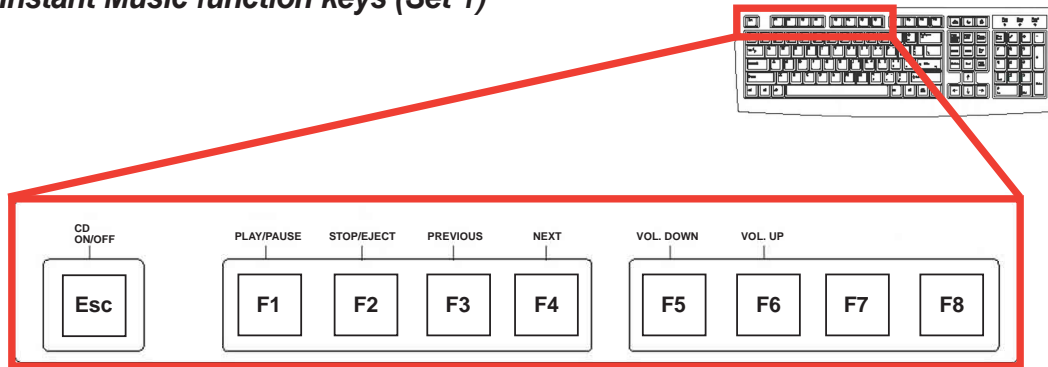
Instant Music function keys (Set 2)
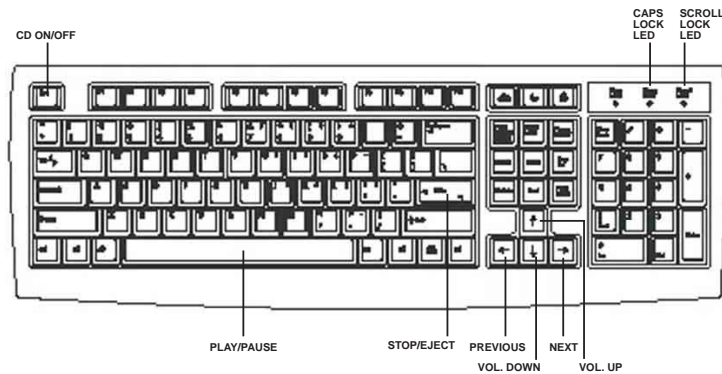
3. Connect speakers or a headphone to the Line Out (lime colored) port on the rear panel for audio output. You may also connect a headphone to the headphone jack on the CD-ROM drive front panel.

4. Place an audio CD on the drive.

5. Press **Esc** to turn ON Instant Music Lite.

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.

3.4 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.

3.4.1　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 3.4.2 "BIOS utility operation (for RAID only)" for the next procedure.

3.4.2 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.
```
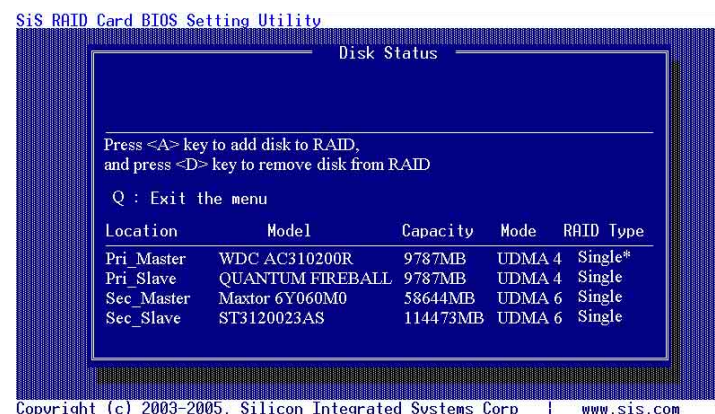
2. Press **<Ctrl><S>** to display the SIS180 Utility Main Menu.
3. Press **R** to display the RAID setup menu.
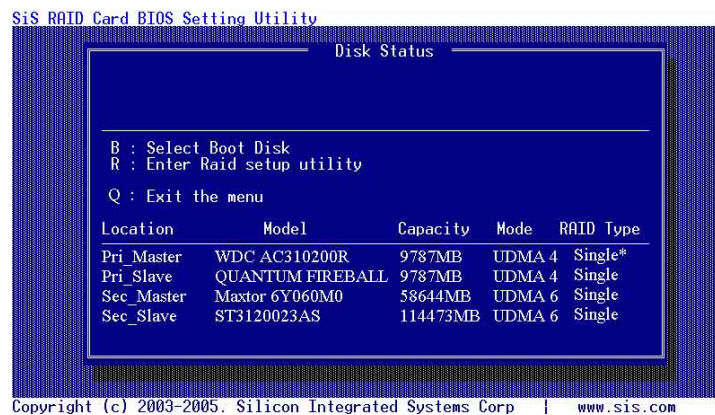
Creating an Array for Performance

Follow these steps to create a RAID array for performance:

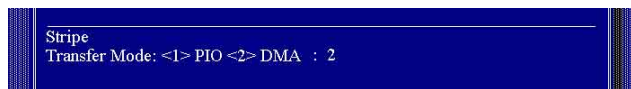1. From the BIOS utility main menu, press **A** to create array.

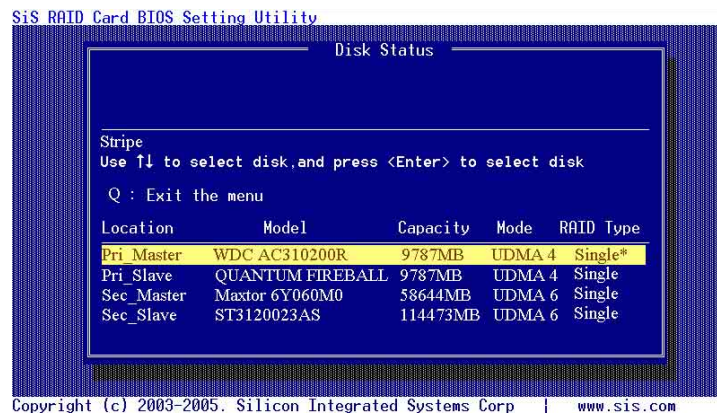2. Press **2** then **Enter** to select Stripe (RAID 0)


```
RAID Type :<1> JBOD <2> Stripe <3>Mirror <4> Stripe-Mirror  :

Q : Exit the menu
```

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


```
Stripe
Block Size :<1> 8K <2> 16K <3> 32K <4> 64K <5> 128K <6> 256K
<7> 512K  : 3
```

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


```
Stripe
Transfer Mode: <1> PIO <2> DMA  : 2
```

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


```
SiS RAID Card BIOS Setting Utility
                          Disk Status



    Stripe
    Use ↑↓ to select disk,and press <Enter> to select disk

    Q : Exit the menu

    Location        Model         Capacity   Mode   RAID Type
    Pri_Master    WDC AC310200R      9787MB    UDMA 4   Single*
    Pri_Slave     QUANTUM FIREBALL  9787MB    UDMA 4   Single
    Sec_Master    Maxtor 6Y060M0    58644MB   UDMA 6   Single
    Sec_Slave     ST3120023AS       114473MB  UDMA 6   Single



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```

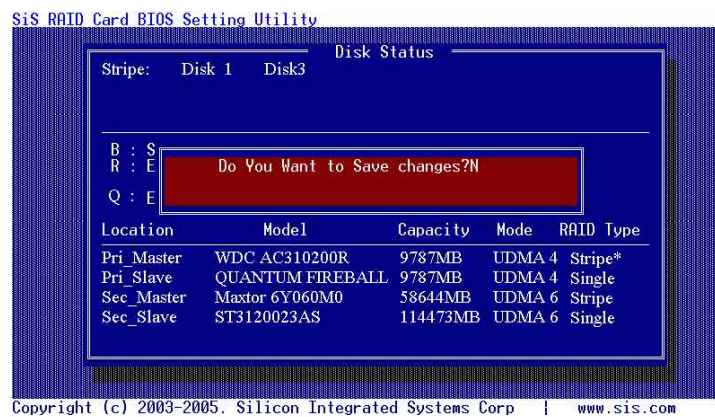6. Press **N** then **Enter** to create a Stripe only configuration. Press **Y** if you wish to split the data on the source disk to other disks.


```
SiS RAID Card BIOS Setting Utility
                          Disk Status



    Stripe
    Do you want to Split the SOURCE disk data to other disks ? N

    Q : Exit the menu

    Location        Model         Capacity   Mode   RAID Type
    Pri_Master    WDC AC310200R      9787MB    UDMA 4   Stripe*
    Pri_Slave     QUANTUM FIREBALL  9787MB    UDMA 4   Single
    Sec_Master    Maxtor 6Y060M0    58644MB   UDMA 6   Stripe
    Sec_Slave     ST3120023AS       114473MB  UDMA 6   Single



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```

7. Press **Q** to exit the current setup menu.

```
SiS RAID Card BIOS Setting Utility
                    Disk Status
  Stripe:    Disk 1    Disk3


  Press <A> key to add disk to RAID,
  and press <D> key to remove disk from RAID

   Q : Exit the menu

  Location        Model          Capacity   Mode    RAID Type

  Pri_Master    WDC AC310200R      9787MB    UDMA 4  Stripe*
  Pri_Slave     QUANTUM FIREBALL   9787MB    UDMA 4  Single
  Sec_Master    Maxtor 6Y060M0    58644MB    UDMA 6  Stripe
  Sec_Slave     ST3120023AS      114473MB    UDMA 6  Single



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```

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

```
SiS RAID Card BIOS Setting Utility
                    Disk Status
  Stripe:    Disk 1    Disk3



  B : S
  R : E    Do You Want to Save changes?N

  Q : E

  Location        Model          Capacity   Mode    RAID Type

  Pri_Master    WDC AC310200R      9787MB    UDMA 4  Stripe*
  Pri_Slave     QUANTUM FIREBALL   9787MB    UDMA 4  Single
  Sec_Master    Maxtor 6Y060M0    58644MB    UDMA 6  Stripe
  Sec_Slave     ST3120023AS      114473MB    UDMA 6  Single



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```

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.

3.4.3   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.
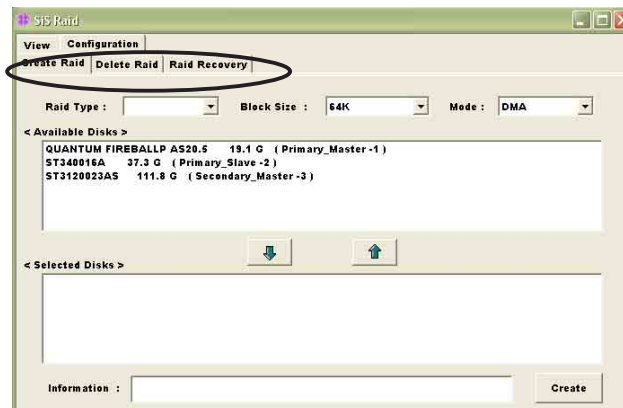
Creating an Array for Performance (RAID 0)

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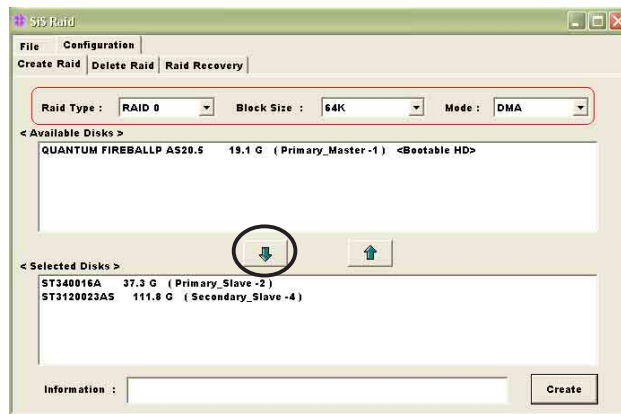
5. After all fields and parameters are set, click the **Create** button to display the **Create Stripe RaidSet** dialog box.
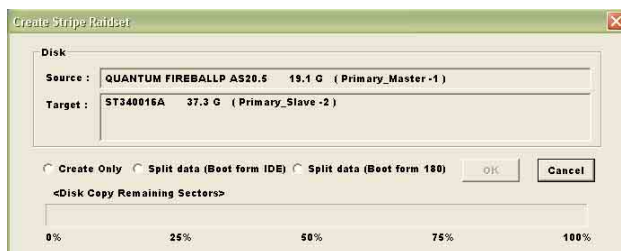
Item Notes:

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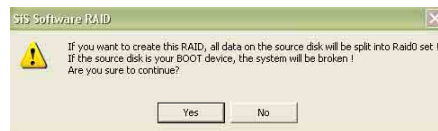
8. When completed, a restart warning message appears. Click **OK**.