P4P800-F

User Manual

ASUS

Motherboard

E1255

First Edition V1

May 2003

Contents

Contents

Notices

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. 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 page viii.

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.

ASUS contact information

ASUSTeK COMPUTER INC. (Asia-Pacific)

Address: 150 Li-Te Road, Peitou, Taipei, Taiwan 112
General Tel: +886-2-2894-3447
General Fax: +886-2-2894-3449
General Email: info@asus.com.tw

Technical Support

MB/Others (Tel):   +886-2-2890-7121 (English)
Notebook (Tel):   +886-2-2890-7122 (English)
Desktop/Server (Tel): +886-2-2890-7123 (English)
Support Fax: +886-2-2890-7698
Web Site: www.asus.com.tw

ASUS COMPUTER INTERNATIONAL (America)

Address: 44370 Nobel Drive, Fremont, CA 94538, USA
General Fax: +1-502-933-8713
General Email: tmd1@asus.com

Technical Support

Support Fax: +1-502-933-8713
General Support: +1-502-995-0883
Notebook Support: +1-510-739-3777 x5110
Web Site: www.asus.com
Support Email: tsd@asus.com

ASUS COMPUTER GmbH (Germany and Austria)

Address: Harkortstr. 25, 40880 Ratingen, BRD, Germany
General Email: sales@asuscom.de (for marketing requests only)
General Fax: +49-2102-9599-31

Technical Support

Support Hotlines: (Components)   +49-2102-9599-0
                      (Notebook PC) +49-2102-9599-10
Support Fax: +49-2102-9599-11
Support Email: www.asuscom.de/support (for online support)
Web Site: www.asuscom.de

P4P800-F specifications summary

CPU	Socket 478 for Intel® Pentium® 4 with speeds up to 3.06GHz+ Intel Northwood/Prescott CPU
Chipset	Intel 82865PE North bridge Intel ICH5 South bridge
Front Side Bus (FSB)	800/533/400 MHz
Memory	Dual-channel memory architecture 4 x 184-pin DDR DIMM sockets for up to 4GB memory Supports PC3200/PC2700/PC2100 unbuffered non-ECC DDR DIMMs
Expansion slots	1 x AGP 8X/4X (1.5V only) 5 x PCI 1 x CNR
IDE	2 x UltraATA100/66/33 connectors
Audio	AD1980 6-channel audio CODEC
LAN	Broadcom 4401 10/100 PCI controller
IEEE 1394	VIA VT6307 IEEE 1394 controller
Special features	ASUS EZ Flash CPU frequency multiple adjustment
HW monitoring	Winbond W83627HF-AW chip supports chassis/CPU fan, temperature and voltage monitoring ASUS Probe
Rear panel I/O	1 x Parallel port 1 x Serial port 1 x PS/2 keyboard port 1 x PS/2 mouse port 4 x USB 2.0 ports 1 x RJ-45 port 1 x S/PDIF-out port 1 x IEEE 1394 port Line In/Line Out/Microphone ports

(Continued next page)

P4P800-F specifications summary

Internal I/O	2 x USB 2.0 connector for 4 additional USB ports 1 x IEEE 1394 connector 2 x SATA connectors 20-pin and 4-pin ATX power connectors IR connector CD/AUX/MODEM audio connectors CPU/chassis fan connectors Front panel audio connector Front panel connector Chassis intrusion connector S/PDIF out connector (optional) COM2 connector (optional)
BIOS features	4Mb FWH Flash EEPROM, AMI BIOS, ACPI, PnP, DMI, Green, SM BIOS 2.3, PnP features and Trend Chip Away Virus (TCAV)
Industry standard	PCI 2.3, USB 2.0/1.1
Form Factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 cm)
Supported OS	Windows® 2000/XP
Support CD contents	Device drivers ASUS Probe ASUS Update Microsoft Direct X 8.1 PC-CILLIN 2002 Adobe Acrobat Reader V5.0 ASUS Screensaver E-Color 3Deep
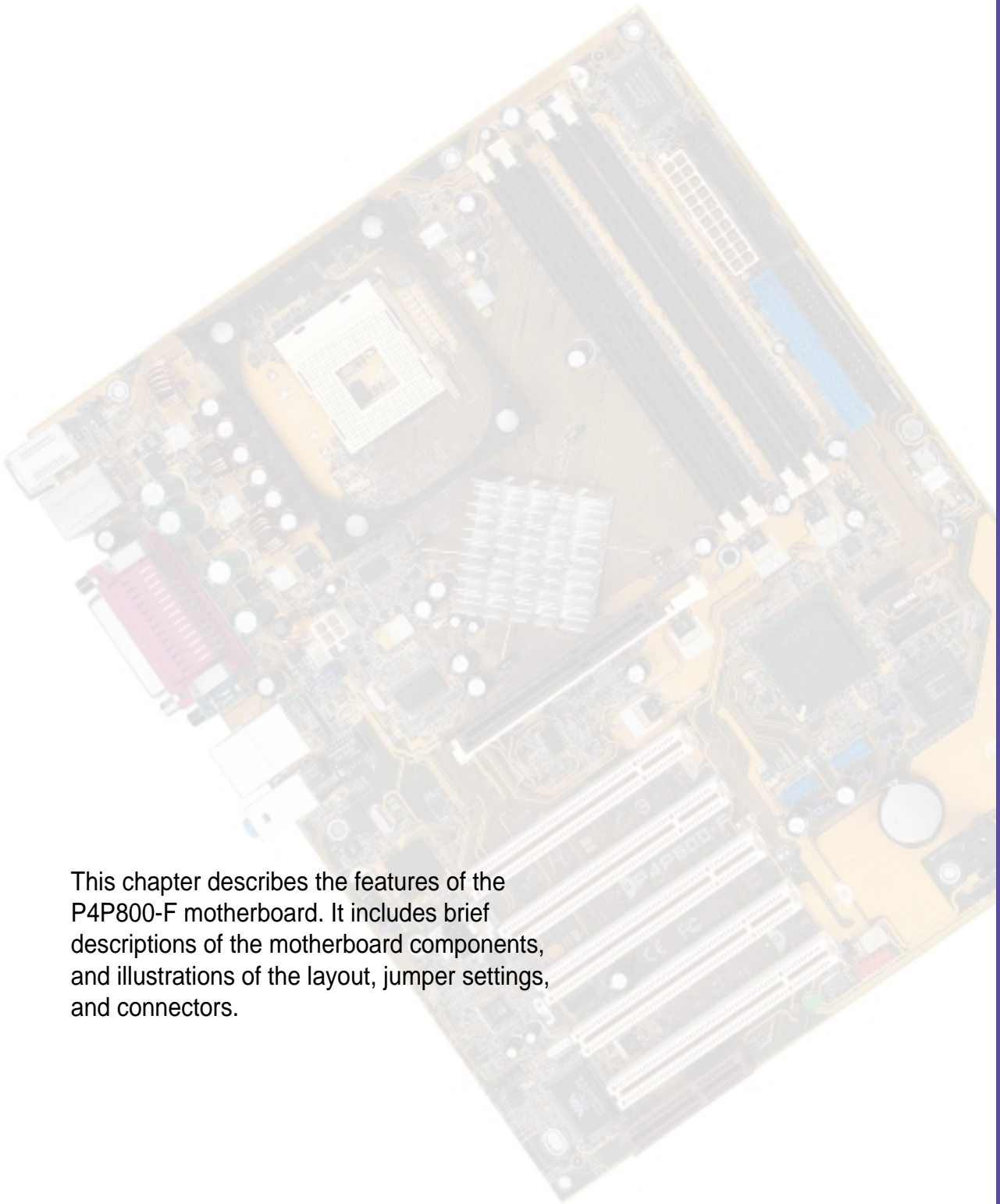
This chapter describes the features of the
P4P800-F motherboard. It includes brief
descriptions of the motherboard components,
and illustrations of the layout, jumper settings,
and connectors.

Product introduction

1.1　Welcome!

Thank you for buying the ASUS® P4P800-F motherboard!

The ASUS P4P800-F motherboard delivers a host of new features and latest technologies making it another standout in the long line of ASUS quality motherboards!

The P4P800-F incorporates the Intel® Pentium® 4 Processor in 478-pin package coupled with the Intel® 82865PE Springdale chipset to set a new benchmark for an effective desktop platform solution.

Supporting up to 4GB of system memory with PC3200/2700/2100 DDR SDRAM, high-resolution graphics via an AGP 8X/4X slot, USB 2.0/1.1, and 6-channel audio features, the P4P800-F is your dependable vehicle in the world of computing!

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

1.2　Package contents

Check your P4P800-F package for the following items.

✓ ASUS P4P800-F motherboard
　　　ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 cm)
✓ ASUS P4P800-F series support CD
✓ UltraATA100/66/33 cable
✓ Floppy disk cable
✓ I/O shield
✓ Bag of extra jumper caps
✓ User Manual

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

1.3   Special features

Latest processor technology

The motherboard supports the latest Intel® Pentium® 4 Processor via a 478-pin surface mount ZIF socket. The Pentium 4 processor with 512KB L2 cache includes a 800/533/400 MHz system bus and a new power design that allows up to 3.06+GHz core frequencies. The motherboard supports Intel Hyper-Threading Technology and the next generation Intel Prescott CPU. See page 1-11.

Dual-channel DDR400 memory support

Employing the dual-channel DDR memory architecture, the motherboard provides a solution that doubles the system memory bandwidth to boost system performance. The motherboard supports up to 4GB of system memory using PC3200/2700/2100 non-ECC DDR DIMMs to deliver up to 4GB/s data transfer rate for the latest 3D graphics, multimedia, and Internet applications. See page 1-13.

Serial ATA technology

The motherboard bundles the new Serial ATA technology through the SATA interfaces onboard. The SATA 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 the legacy Parallel ATA. See page 1-25.

AGP 8X support

The motherboard supports the latest graphic architecture, the AGP 8X interface (a.k.a. AGP 3.0), offering 2.1GB/s bandwidth which is twice that of its predecessor AGP 4X. See page 1-16.

USB 2.0 technology

The motherboard supports 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.

6-channel digital audio

The ADI AD1980 AC'97 audio CODEC is onboard to provide 6-channel audio playback for 5.1 surround sound and over 90dB dynamic range. A digital audio connector is onboard to accommodate an S/PDIF (Sony/Philips Digital Interface) out module. See page 1-25.

1.4   Motherboard components

Before you install the motherboard, learn about its major components and available features to facilitate the installation and future upgrades. Refer to the succeeding pages for the component descriptions.

1.   ATX 12V connector
2.   CPU socket
3.   North Bridge controller
4.   DDR DIMM sockets
5.   ATX power connector
6.   Super I/O controller
7.   Floppy disk connector
8.   IDE connectors
9.   AGP slot
10. SATA connectors
11. Flash EEPROM
12. Serial (COM2) connector
13. South Bridge controller
14. Standby power LED
15. CNR slot
16. IEEE 1394 controller
17. PCI slots

18. Audio Codec
19. LAN controller
20. PS/2 mouse port
21. IEEE 1394 port
22. Parallel port
23. RJ-45 port
24. Line In jack
25. Line Out jack
26. Microphone jack
27. USB 2.0 ports 1 and 2
28. Serial port (COM1)
29. SPDIF jack
30. USB 2.0 ports 3 and 4
31. PS/2 keyboard port

See page 1-6 for the specifications of each component. Refer to Chapter 2 for detailed information on the components.
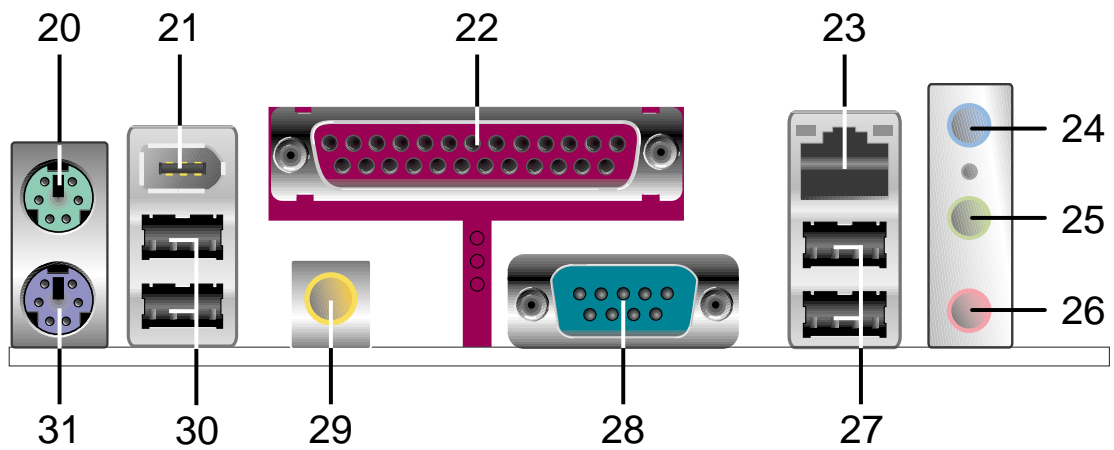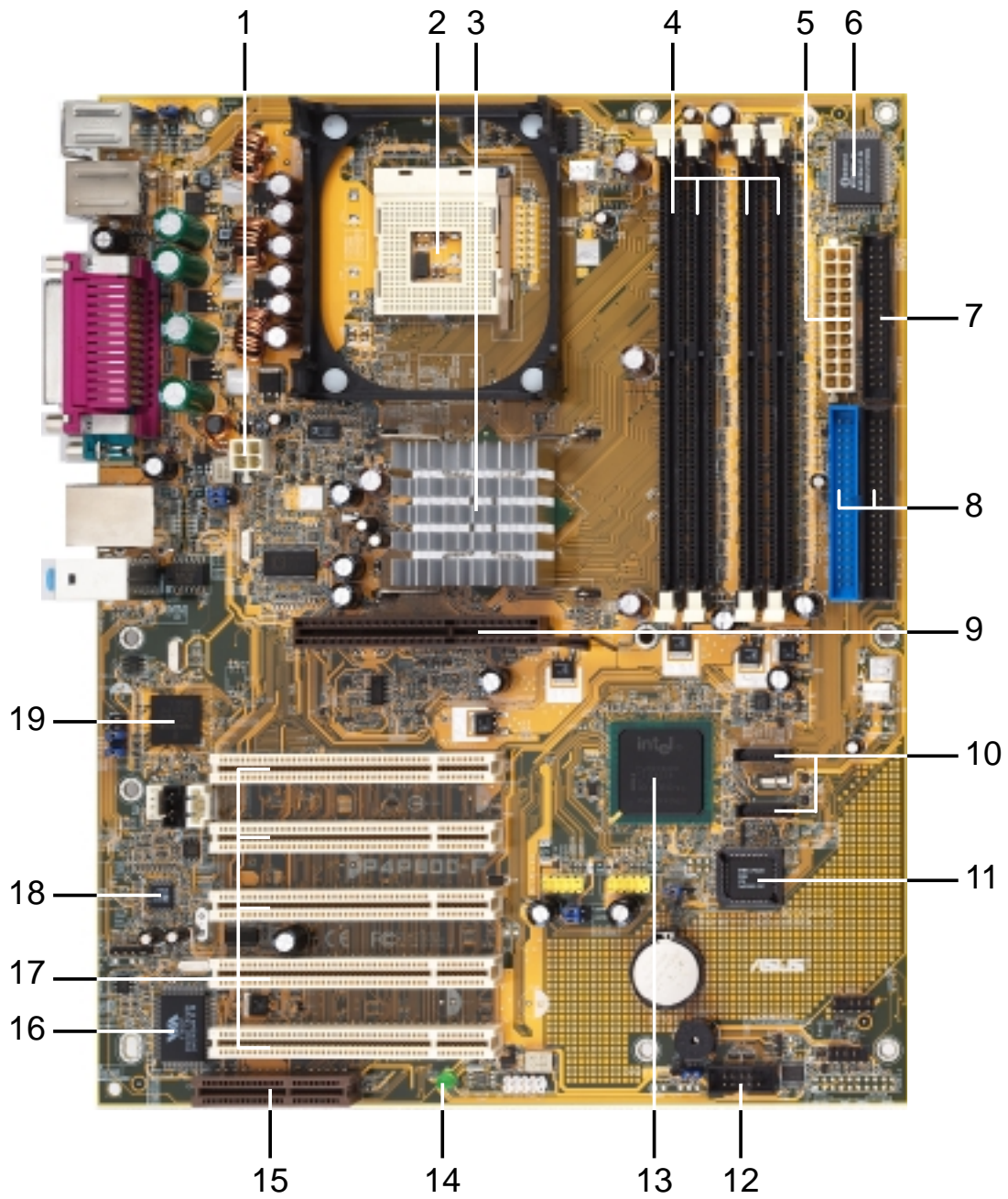
1 **ATX 12V connector.** This power connector connects the 4-pin 12V plug from the ATX 12V power supply.

2 **CPU socket.** A 478-pin surface mount, Zero Insertion Force (ZIF) socket for the Intel® Pentium® 4 Processor, with 800/533/400 MHz system bus that allows 6.4GB/s, 4.3GB/s, and 3.2GB/s data transfer rates, respectively.

3 **North bridge controller.** The Intel® 82865PE (Springdale) Memory Controller Hub provides the processor interface with 800/533/400 MHz frequency, system memory interface at 400/333/266MHz operation, and 1.5V AGP interface that supports AGP 3.0 specification including 8X Fast Write protocol. The MCH interconnects to the south bridge ICH5 via the Intel® proprietary Hub Interface.

4 **DDR DIMM sockets.** These four 184-pin DIMM sockets support up to 4GB system memory using unbuffered non-ECC PC3200/2700/2100 DDR DIMMs.

5 **ATX power connector.** This 20-pin connector connects to an ATX +12V power supply. The power supply must have at least 1A on the +5V standby lead (+5VSB).

6 **Super I/O controller.** This Winbond Low Pin Count (LPC) interface provides the commonly used Super I/O functionality. The chipset supports a high-performance floppy disk controller for a 360K/720K/1.44M/2.88M floppy disk drive, a multi-mode parallel port, two standard compatible UARTs, and a Flash ROM interface. This controller also integrates the ASIC for PC health monitoring.

7 **Floppy disk connector.** This connector accommodates the provided ribbon cable for the floppy disk drive. One side of the connector is slotted to prevent incorrect insertion of the floppy disk cable.

8 **IDE connectors.** These dual-channel bus master IDE connectors support Ultra ATA100/66/33, PIO Modes 0-4 IDE devices. Both the primary (blue) and secondary (black) connectors are slotted to prevent incorrect insertion of the IDE ribbon cable.

9 **AGP slot.** This Accelerated Graphics Port (AGP) slot supports AGP 8X/4X mode graphics cards for 3D graphical applications.

10 **SATA connectors.** These connectors support Serial ATA HDDs and allows for up to 150MB/s data transfer rate, faster than the standard Parallel ATA with 133 MB/s.

11 **Flash EEPROM.** This 4Mb firmware hub contains the programmable BIOS program.

12 **Serial (COM2) connector.** This connector accommodates a second serial port using an optional serial port bracket.

13 **South bridge controller.** The fourth-generation Intel I/O Controller Hub (ICH5) is a subsystem that integrates various I/O functions including 2-channel ATA100/66/33 bus master IDE controller, up to eight USB 2.0/1.1 ports, I/O APIC, SMBus 2.0 controller, and PCI 2.3 interface. The ICH5 also contains the necessary arbitration and buffering for efficient utilization of these interfaces.

14   **Standby power LED.** This LED lights up if there is a standby power on the motherboard. This LED acts as a reminder to turn off the system power before plugging or unplugging devices.

15   **CNR slot.** The Communications and Networking Riser (CNR) slot supports interface cards that integrates audio, modem, and network functionality.

16   **IEEE 1394 controller.** The VIA® 6307 controller supports IEEE 1394 functionality with maximum data transfer rates of 400Mbps.

17   **PCI slots.** These five 32-bit PCI 2.3 expansion slots support bus master PCI cards like SCSI or LAN cards with 133MB/s maximum throughput.

18   **Audio CODEC.** The ADI AD1980 is an AC'97 CODEC that allows 6-channel audio playback. The audio CODEC provides six DAC channels for 5.1 surround sound, S/PDIF output, AUX and Line In stereo inputs, integrated headphone amplifier, and supports greater than 90dB dynamic range.

19   **LAN controller.** This Broadcom 4401 onboard supports 10BASE-T/ 100BASE-TX Fast Ethernet networking.

20   **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.

21   **IEEE 1394 port**. The 6-pin digital interface supports electronic devices such as DV camcorders, digital cameras, scanners, and printers.

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

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

24   **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.

25   **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.

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

27   **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0/1.1 devices.

28   **Serial port**. This 9-pin COM1 port is for pointing devices or other serial devices.

29   **S/PDIF out port.** This connector supports S/PDIF devices that provides 6-channel surround sound and 3D audio.

30   **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0/1.1 devices.

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

1.5   Motherboard layout

24.5cm (9.6in)

30.5cm (12.0in)

PS/2KBMS
T: Mouse
B: Keyboard

KBPWR

Bottom:
USB1
USB2

Top:
1394

SPDIF_O

PARALLEL PORT

COM1

USB2.0
T: USB4
B: USB3

Top:
RJ-45

ATX12V1

USBPW12
USBPW34

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

Socket 478

CPU_FAN

Intel
82865PE
Memory
Controller
Hub

Accelerated Graphics Port (AGP1)

DDR DIMM_A1 (64/72 bit,184-pin module)
DDR DIMM_A2 (64/72 bit,184-pin module)
DDR DIMM_B1 (64/72 bit,184-pin module)
DDR DIMM_B2 (64/72 bit,184-pin module)

Super
I/O

ATX Power Connector

FLOPPY1

PRI_IDE1

SEC_IDE1

CHA_FAN1

FP_AUDIO

BCM
4401KFB

CD1

AUX1

MODEM1

Audio
Codec

ALIN1

VIA
VT6307
Chipset

PCI1

PCI2

PCI3

P4P800-F

PCI4

PCI5

CNR1

Intel
ICH5

SATA1

SATA2

USB56   USB78

USBPW78
USBPW56

CLRTC1

4Mbit
Firmware
Hub

CR2032 3V
Lithium Cell
CMOS Power

ASUS

IR_CON1

BUZZ1

F_PANEL

SB_PWR1

IE1394_2

CHASSIS1

COM2

1.6   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.

When lit, the standby power LED (SB_PWR1) 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.

SB_PWR1

ON
Standby
Power

OFF
Powered
Off

P4P800-F Onboard LED
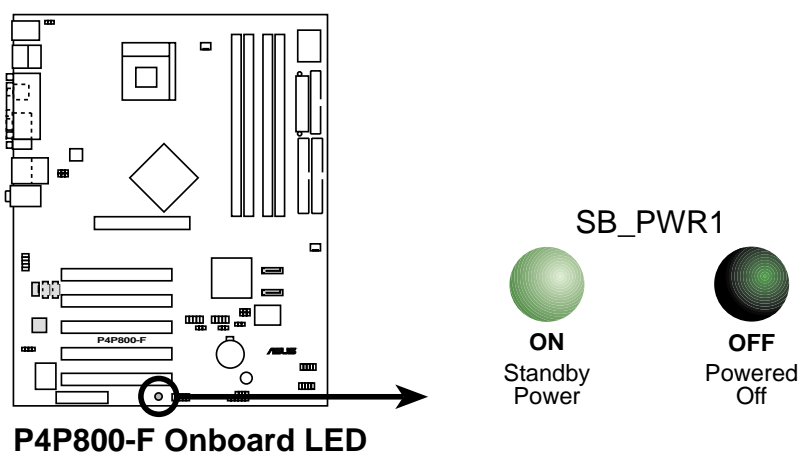
1.7   Motherboard installation

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. The motherboard uses the ATX form factor that measures 12 inches x 9 inches (30.5 cm x 22.9 cm).

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

1.7.1   Placement direction

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

1.7.2   Screw holes

Place ten (10) 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

1.8 Central Processing Unit (CPU)

1.8.1 Overview

The motherboard comes with a surface mount 478-pin Zero Insertion Force (ZIF) socket. The socket is designed for the Intel® Pentium® 4 Processor in the 478-pin package with 512KB L2 cache. This processor supports 800/533/400MHz front side bus (FSB), and allows data transfer rates of 6.4GB/s, 4.2GB/s, and 3.2GB/s.
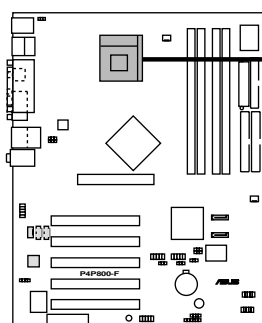
Gold Arrow

Note in the illustration that the CPU 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.

P4P800-F Socket 478

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

Notes on Intel® Hyper-Threading Technology

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

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

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

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

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

To use the Hyper-Threading Technology on this motherboard:

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

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

3. Reboot the computer.

1.8.2   Installing the CPU

Follow these steps to install a CPU.

1. Locate the 478-pin ZIF socket on the motherboard.

2. Unlock the socket by pressing the lever sideways, then lift it up to a 90°-100° angle.

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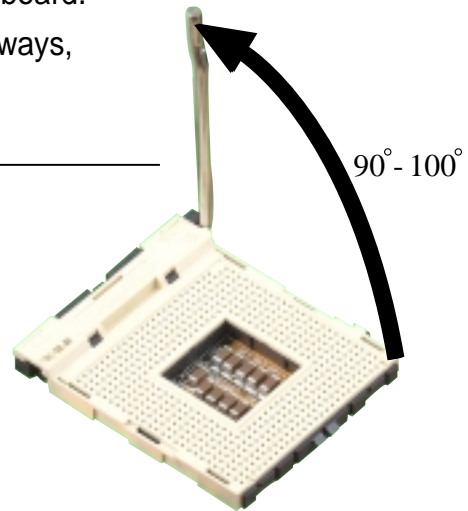
Make sure that the socket lever is lifted up to 90°-100° angle, otherwise the CPU does not fit in completely.

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

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

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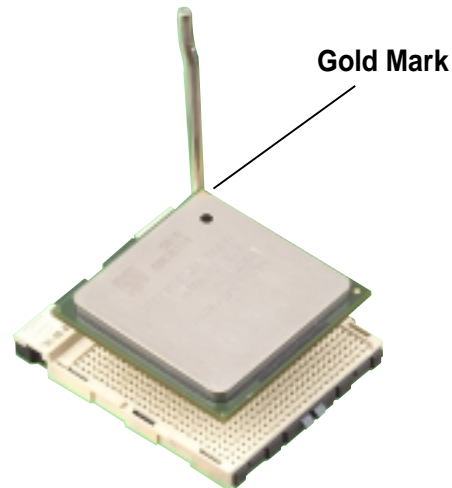
The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!

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

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.
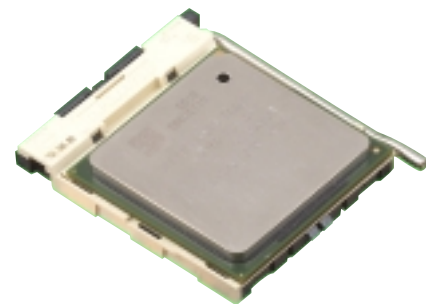
1.9 System memory

The motherboard comes with four Double Data Rate (DDR) Dual Inline Memory Module (DIMM) sockets. These sockets support up to 4GB system memory using 184-pin unbuffered non-ECC PC3200/PC2700/PC2100 DDR DIMMs. The following figure shows the location of the DDR DIMM sockets.
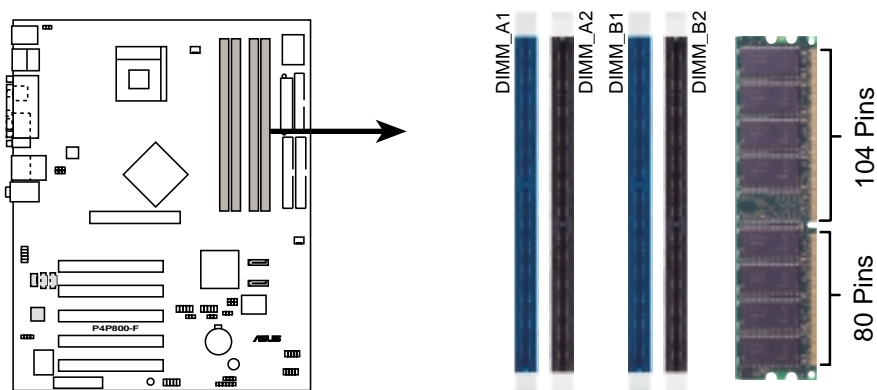
P4P800-F 184-Pin DDR DIMM Sockets

This motherboard supports different memory frequencies depending on the CPU FSB (Front Side Bus) and the type of DDR DIMM.

CPU FSB	DDR DIMM Type	Memory Frequency
800 MHz	PC3200/PC2700/PC2100	400/333/266 MHz
533 MHz	PC2700/PC2100	333/266 MHz
400 MHz	PC2100	266 MHz

1.9.1 Installing a DIMM

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

Follow these steps to install a DIMM.

DDR DIMM notch

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.

Unlocked Retaining Clip
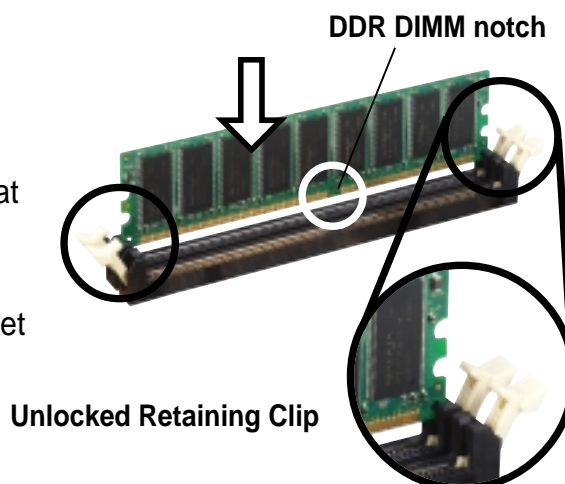
1.9.2 Memory configurations

You may install any DDR DIMMs with 64MB, 128MB, 256MB, 512MB, and 1GB densities into the DIMM sockets.

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 the table below.

2. In dual-channel configurations, install only **identical** (the same type and size) DDR DIMM pairs for each channel.

3. Install only DIMMs with the same CAS latency.

4. Make sure that the memory frequency matches the CPU FSB (Front Side Bus).

5. DIMMs installed into any three sockets will function in single-channel mode.

| | | Sockets | | | |
Mode		DIMM1	DIMM2	DIMM3	DIMM4
Single-channel	(1)	Installed	—	—	—
	(2)	—	Installed	—	—
	(3)	—	—	Installed	—
	(4)	—	—	—	Installed
Dual-channel*	(1)	Installed	—	Installed	—
	(2)	—	Installed	—	Installed
	(3)	Installed	Installed	Installed	Installed

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

- *install identical DIMMs in all four sockets, or*
- *install identical DIMMs in DIMM_A1 and DIMM_A2 and identical DIMMs in DIMM_B1 and DIMM_B2*

1.10 Expansion slots

The motherboard has five PCI slots, one Accelerated Graphics Port (AGP) slot and one CNR slot..

To install and configure an expansion card:

1. Install an expansion card following the instructions that came with the chassis. NOTE: The AGP slot supports only +0.8V or 1.5V AGP cards.
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 on the next page.
4. Install the drivers and/or software applications for the expansion card according to the card documentation.

1.10.1 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.

> 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.

1.10.2 IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI slot 1						shared		
PCI slot 2							shared	
PCI slot 3								used
PCI slot 4					shared			
PCI slot 5						shared		
AGP slot	used							
Onboard LAN							shared	
Onboard 1394					shared			

1.10.3 AGP slot

This motherboard has an Accelerated Graphics Port (AGP) slot that supports +1.5V AGP 8X cards. Note the notches on the card golden fingers to ensure that they fit the AGP slot on your motherboard.

Keyed for 1.5v
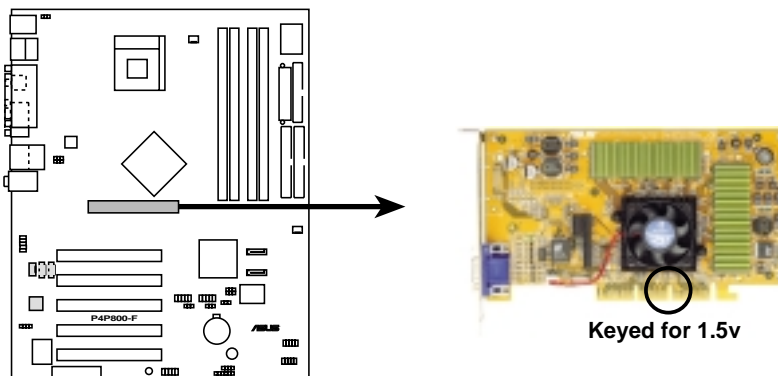
P4P800-F Accelerated Graphics Port (AGP)

Install only 1.5V AGP cards on this motherboard!

1.10.4 CNR slot

The Communications and Networking Riser (CNR) slot supports interface cards that integrates audio, modem, and network functionality.

The CNR specification supports interfaces including:

- Audio Codec '97 (AC '97) - for audio and/or modem functions
- System Management Bus (SMB) - for Plug-n-Play functionality
- Power - to provide the signals required for power management, and the main power supplies to operate the CNR circuitry

The CNR is tagged to replace the current Audio Modem Riser (AMR) slot because of its flexibility and added features. Also, the CNR slot does not take up the motherboard space for one PCI slot because it is a shared slot; rather, it provides you more options.
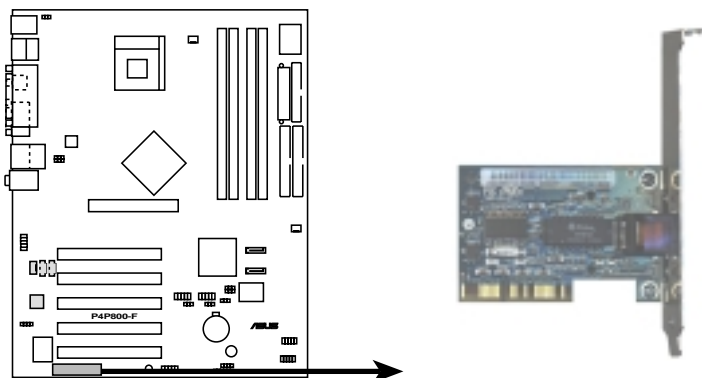
P4P800-F Communication & Networking Riser Slot

1.10.5 PCI slots

There are five 32-bit PCI slots on this motherboard. The slots support PCI cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The following figure shows a LAN card installed on a PCI slot.
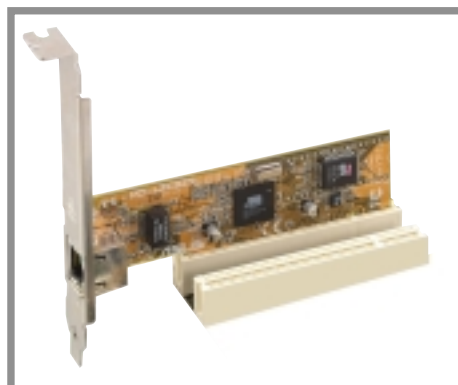
1.11 Jumpers

1. **Keyboard power (3-pin KBPWR)**

   This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) if you wish to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS.
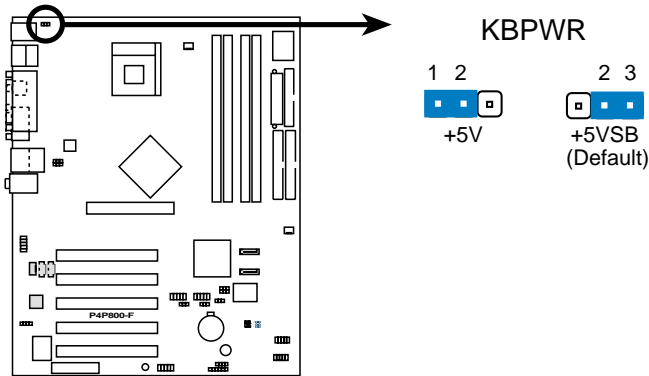
   P4P800-F Keyboard Power Setting

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

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

   The USBPW12 and USBPW34 jumpers are for the rear USB ports. The USBPW56 and USBPW78 jumper is for the internal USB header that you can connect to the front USB ports.
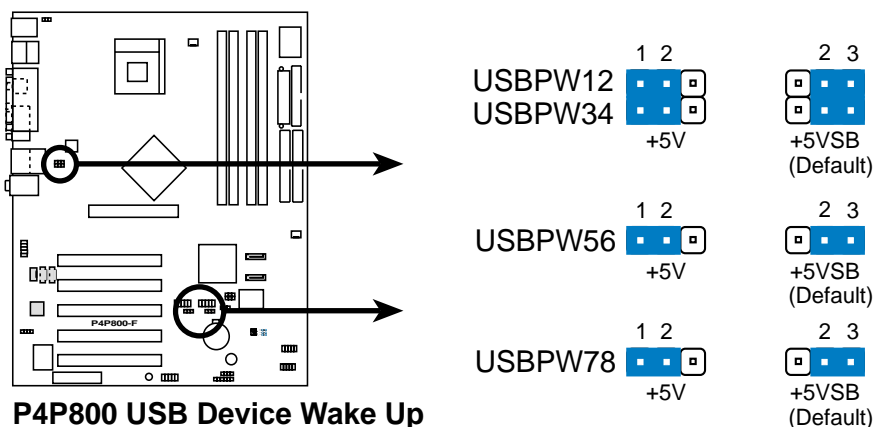
   P4P800 USB Device Wake Up

3. 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)

P4P800-F Clear RTC RAM
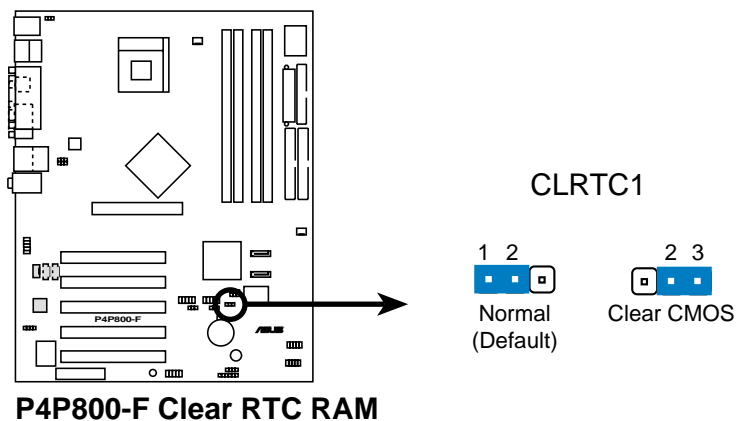
1.12 Connectors

This section describes and illustrates the internal connectors on the motherboard.

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

This connector supports the provided UltraATA100/66/33 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 UltraATA100/66/33 slave device (hard disk drive) and the black connector to the UltraATA100/66/33 master device. It is recommended that you connect non-UltraATA100/66/33 devices to the secondary IDE connector. If you install two hard disks, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings. BIOS supports specific device bootup. If you have more than two UltraATA100/66/33 devices, purchase another UltraATA100/66/33 cable. You may configure two hard disks to be both master devices with two ribbon cables – one for the primary IDE connector and another for the secondary IDE connector.

> 1. 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.
>
> 2. The hole near the blue connector on the UltraATA100/66/33 cable is intentional.
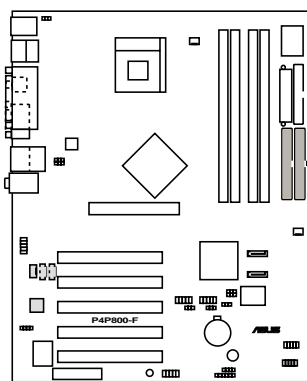
P4P800-F IDE Connectors

PRI_IDE1   SEC_IDE1
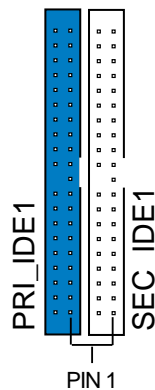
NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

PIN 1

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

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

FLOPPY1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

PIN 1
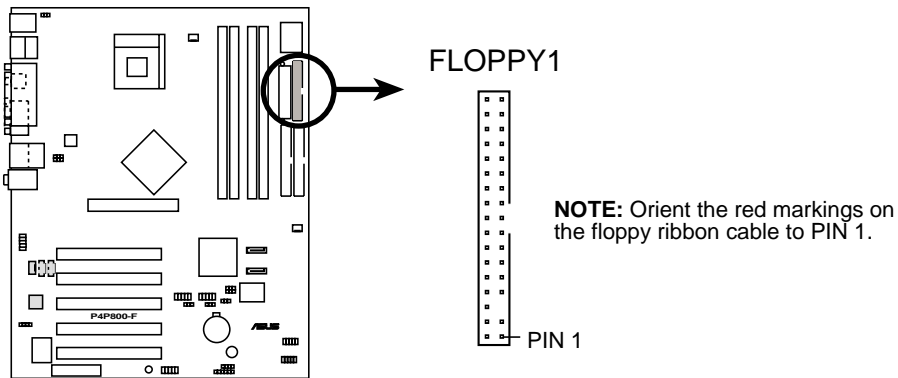
P4P800-F Floppy Disk Drive Connector

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 ATXPWR1 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

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

ATX12V1

+12V DC   GND

+12V DC   GND
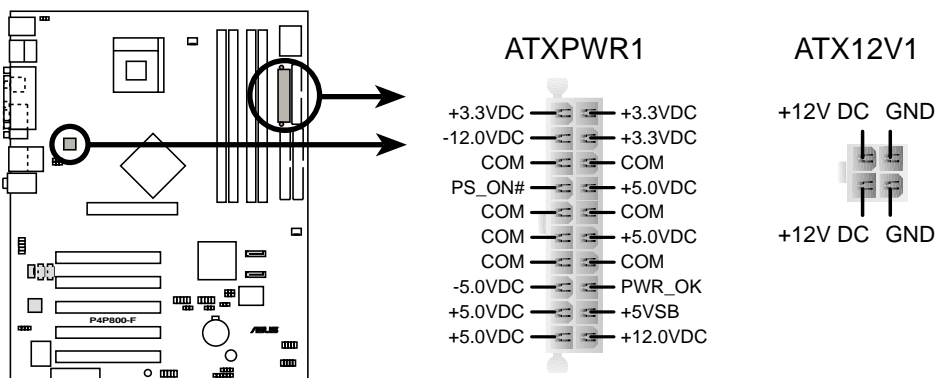
P4P800-F ATX Power Connector

4. 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.

CHASSIS1

+5VSB_MB
Chassis Signal
GND

(Default)

P4P800-F Chassis Alarm Lead
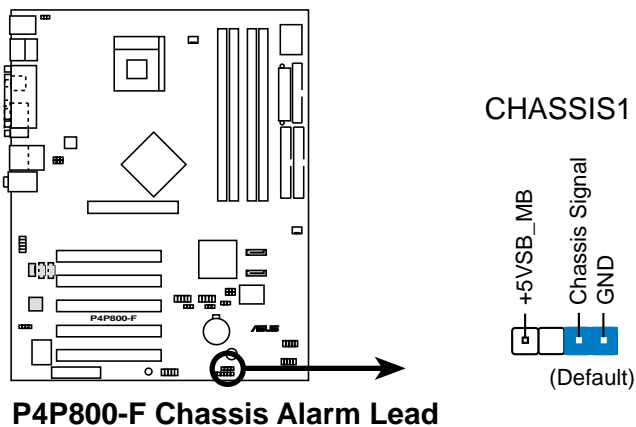
5. Front panel audio connector (10-1 pin FP_AUDIO)

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

By default, the pins labeled LINE OUT_R/BLINE_OUT_R and the pins LINE OUT_L/BLINE_OUT_L are shorted with jumper caps. Remove the caps only when you are connecting the front panel audio cable.

FP_AUDIO

MIC2 — AGND
MICPWR — +5VA
Line out_R — BLINE_OUT_R
NC
Line out_L — BLINE_OUT_L

P4P800-F Front Panel Audio Connector
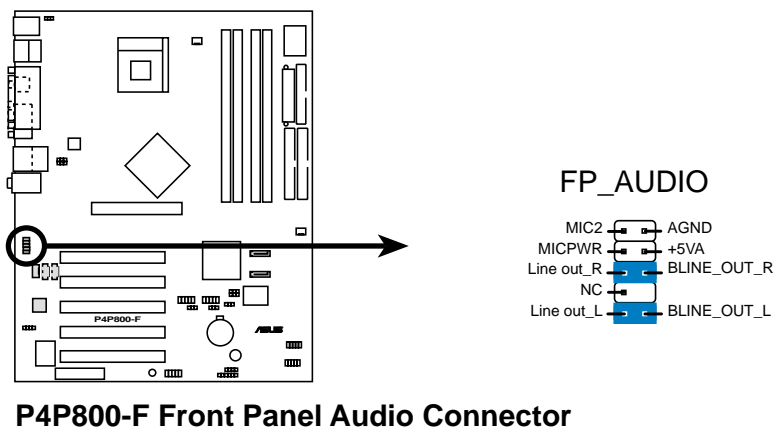
6. CPU and chassis fan connectors (3-pin CPU_FAN1, CHA_FAN1)

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!
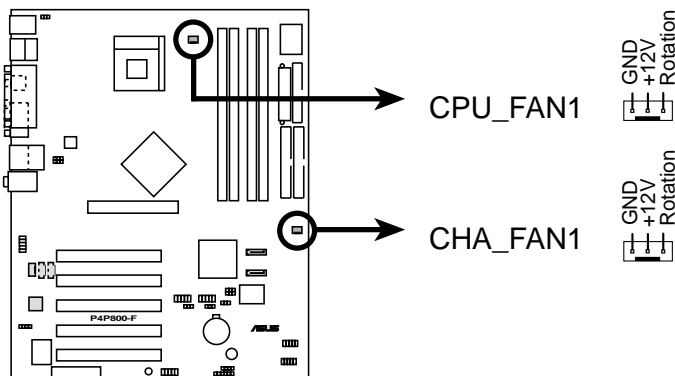
P4P800-F 12-Volt Fan Connectors

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

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card. The MODEM connector allows the onboard audio to interface with a voice modem card with a similar connector. It also allows the sharing of mono_in (such as a phone) and a mono_out (such as a speaker) between the audio and a voice modem card.
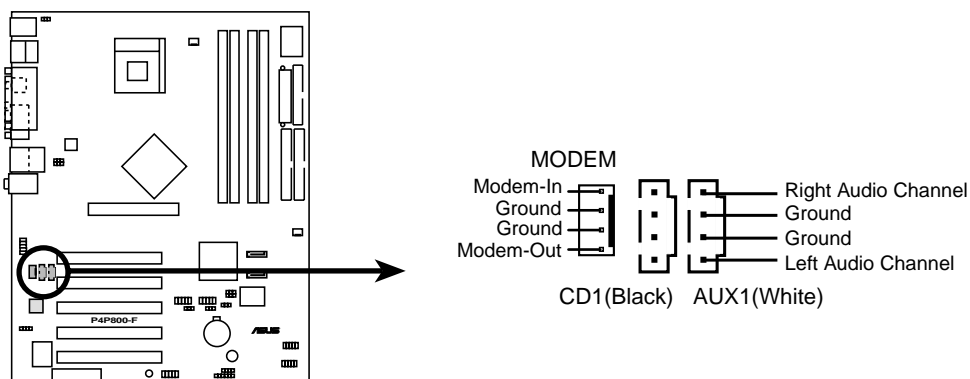
P4P800-F Internal Audio Connectors

8. USB header (10-1 pin USB56, USB78)

If the USB ports on the rear panel are inadequate, two USB headers are available for additional USB ports. The USB headers comply with USB 2.0 (supports up to 480 Mbps connection speed) and USB 1.1 (12 Mbps connection speed) specifications. This speed advantage allows faster Internet connection, interactive gaming, and simultaneous running of high-speed peripherals.

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

P4P800-F USB 2.0 Header
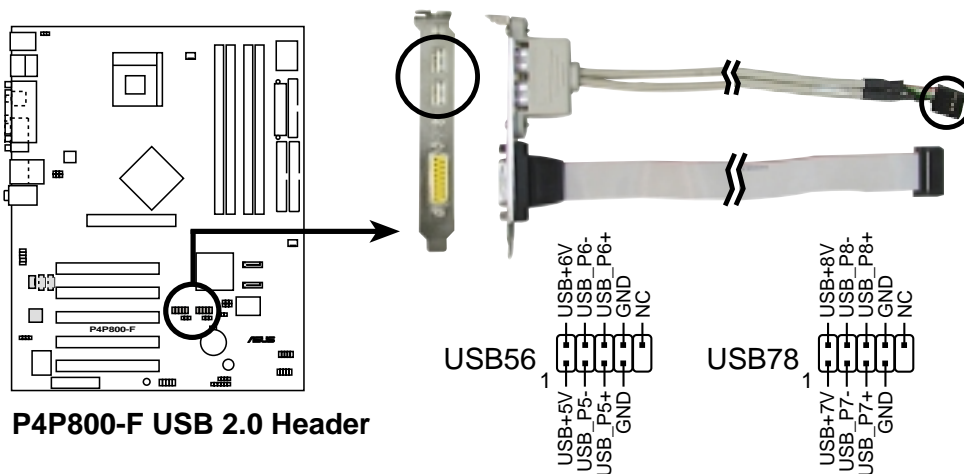
> The USB module is not included in this motherboard package.

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

These next generation connectors support the thin Serial ATA cables for Serial ATA hard disks. 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).

P4P800-F SATA Connectors
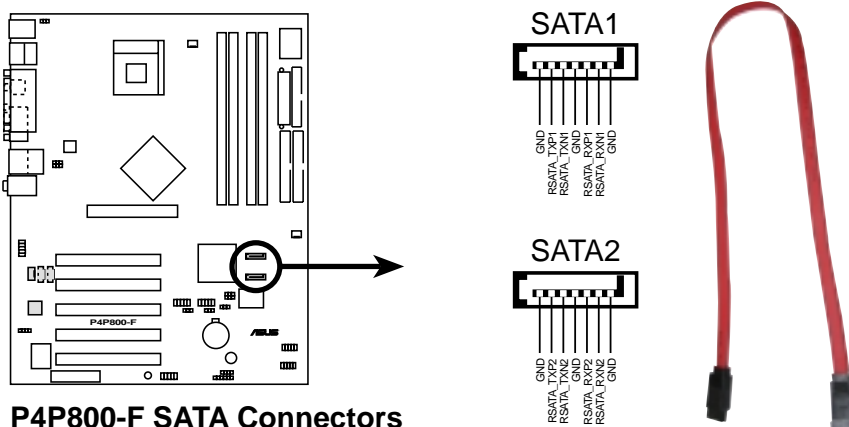
10. Optional Digital Audio Connector (3-1 pin SPDIF_OUT2)

This connector is for optional S/PDIF audio module that allows digital instead of analog sound input and output.

The S/PDIF module is not included in this motherboard package.

SPDIF_OUT2

+5V
SPDIFOUT
GND

P4P800-F Digital Audio Connector
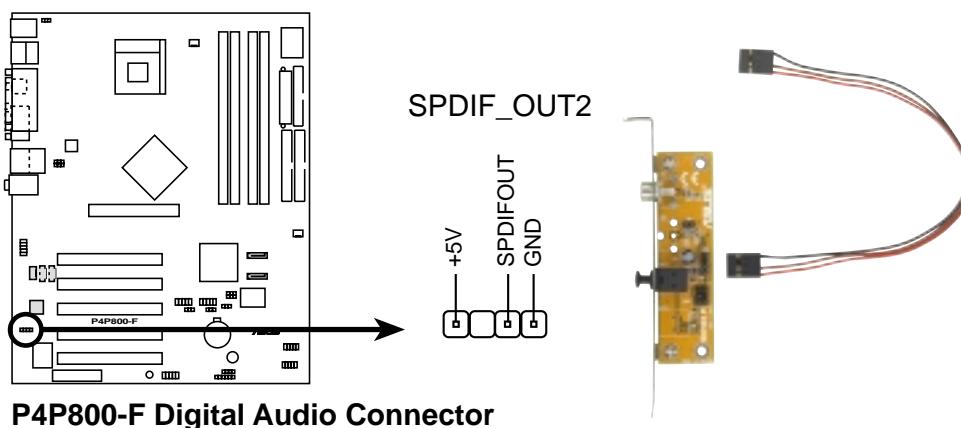
11. IEEE 1394 connector (10-1 pin IE1394_2)

This connector is for the bundled 10-to-6-pin 1394 serial connector cables that connect to the 1394 module. Attach the 10-1 pin cable plugs to this connector, and the 6-pin cable plugs to the 1394 module. You may also connect a 1394-compliant internal hard disk to these connectors.

IE1394_2

TPA0-
GND
TPB0-
+12V
GND

1

TPA0+
GND
TPB0+
+12V

P4P800-F IEEE-1394 Connector
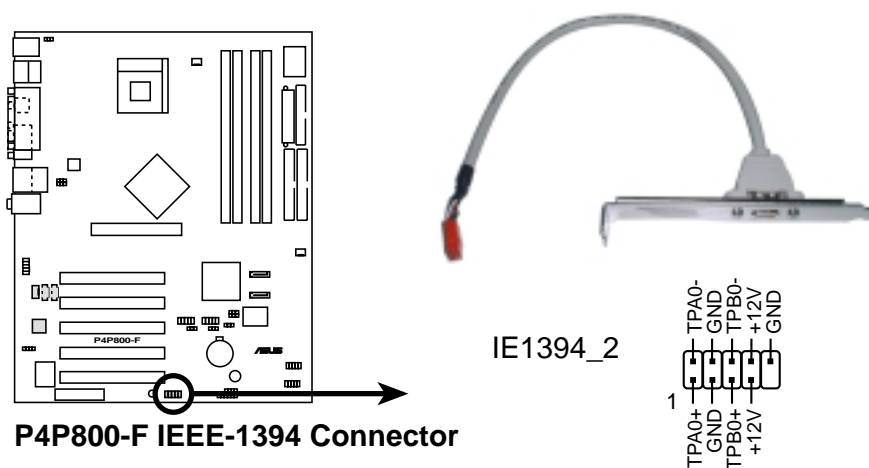
The IEEE 1394 module is not included in this motherboard package.

12. Infrared Module connector (10-1 pin IR_CON1)

These connectors support an optional wireless transmitting and receiving infrared module. The module mounts to a small opening on the system chassis that support this feature.

Use the ten pins as shown in Back View and connect a ribbon cable from the module to the motherboard SIR connector according to the pin definitions.

P4P800-F Infrared Module Connector
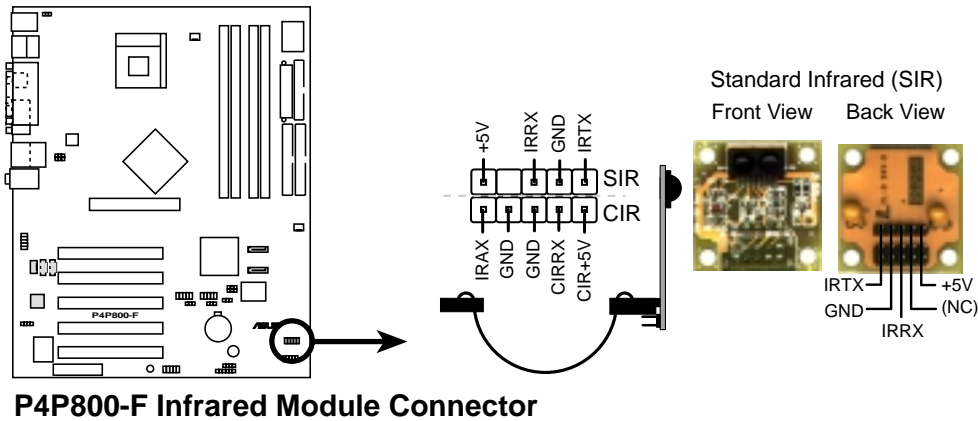
The IR module is not included in this motherboard package.

13. Optional serial port connector (10-1 pin COM2)

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

P4P800-F Serial COM2 Bracket
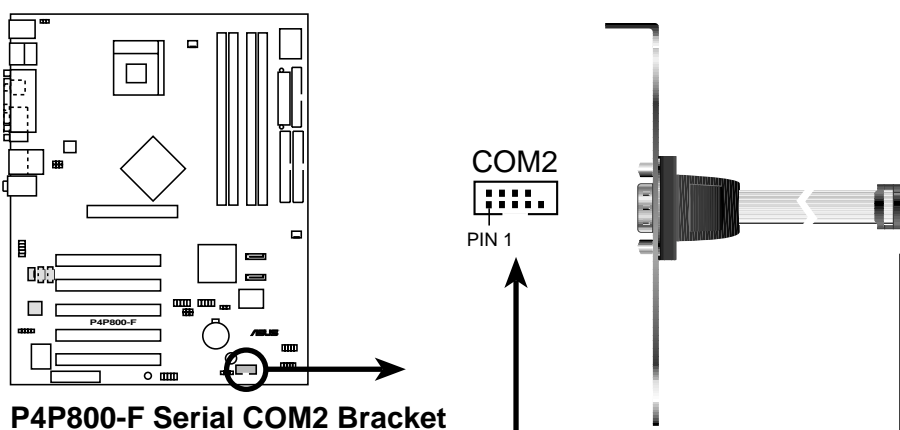
The COM2 module is not included in this motherboard package.

14. Front Panel Audio Line-In header (5 pin ALIN1)

This connector supports audio input on left and right stereo audio channels.
NOTE: The motherboard ships with jumper caps over pins 1-2 and 4-5.
Remove them only when making audio input connections.

P4P800-F LINE_IN Connector

ALIN1
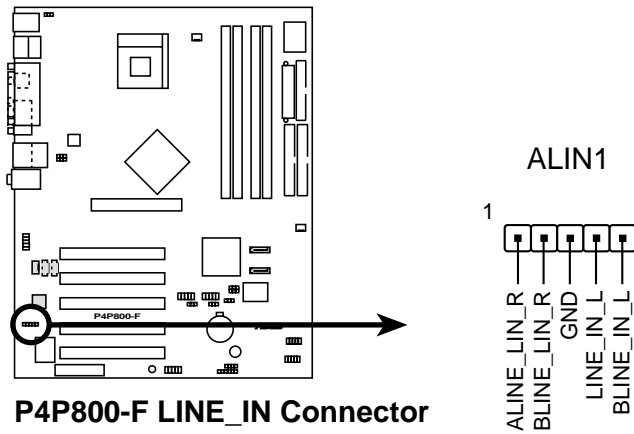
15. System panel connector (10-1 pin F_PANEL)

This connector accommodates several system front panel functions.
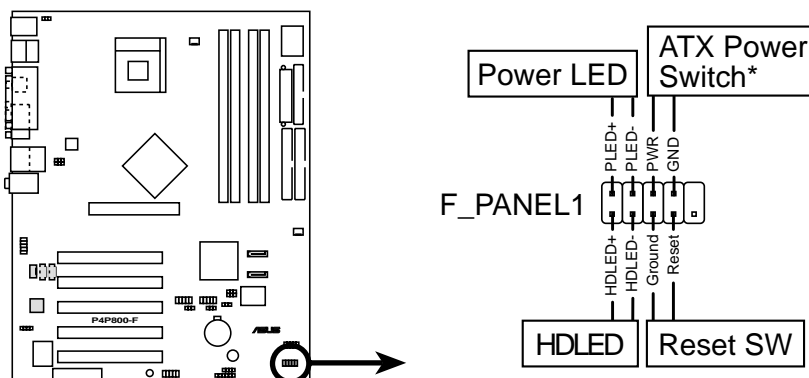
P4P800-F Front Panel Audio Connector

- **System Power LED Lead (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.

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

  This 2-pin connector supplies power to the hard disk activity LED. Any read or write activity of an IDE device cause this LED to light up.

Chapter 2
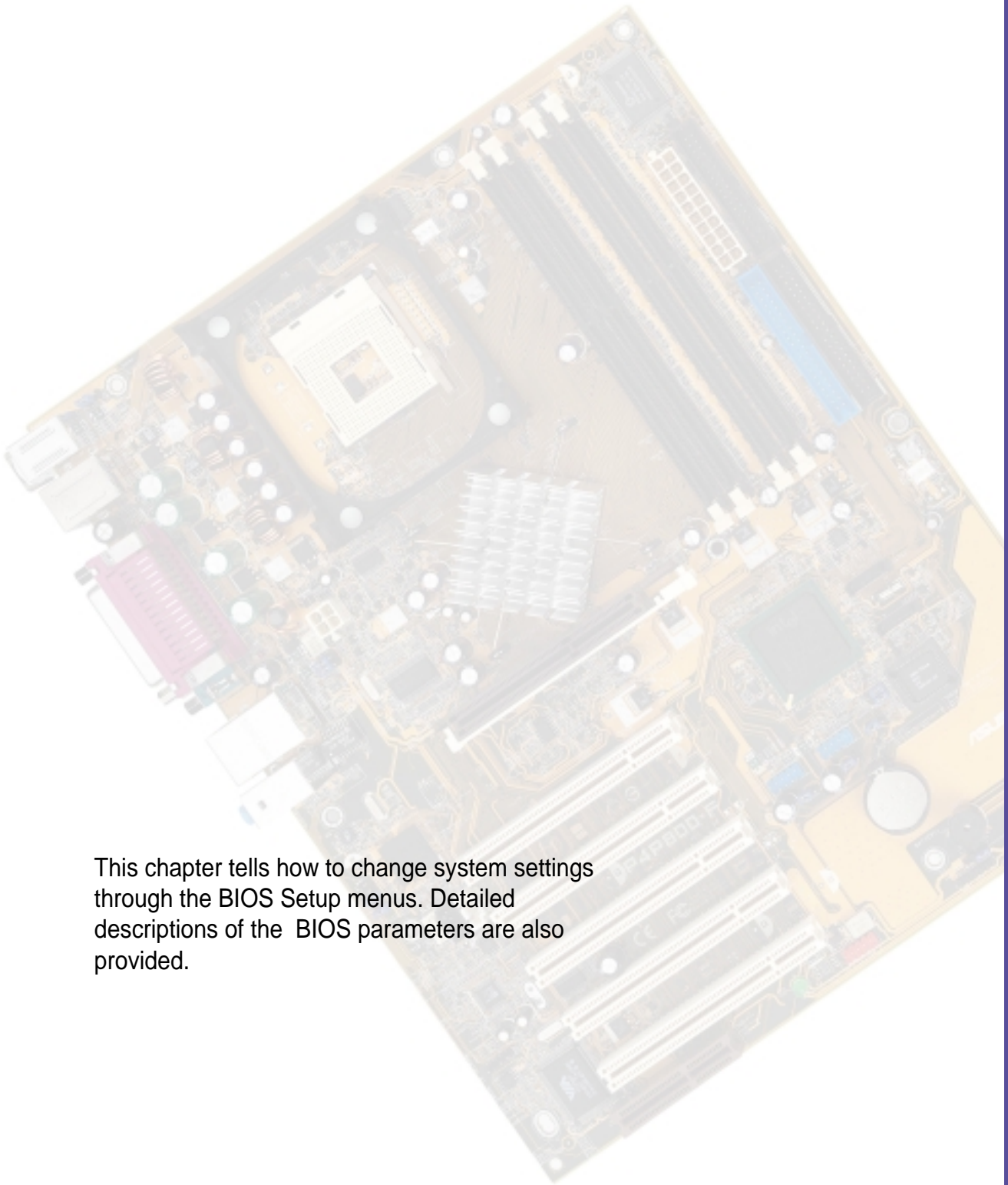
This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

BIOS information

2.1 Managing and Updating your BIOS

The original BIOS file for this motherboard is in the support CD. Copy the original BIOS to a bootable floppy disk in case you need to restore the BIOS in the future

2.1.1 Using AFUDOS to update the BIOS

Updating the BIOS

1. Copy the AFUDOS.EXE utility and the latest BIOS file into a bootable floppy disk.

Visit the ASUS website (www.asus.com) for the latest BIOS update and the AFUDOS.EXE utility.

2. Boot from the floppy disk.
3. At the "A:\" prompt, type **afudos /i<filename>** and then press <Enter>. Where <ROM filename> is the original or latest BIOS file you want to use to update the motherboard BIOS.
4. The utility displays the status of the update on the screen.

```
A:\AFUDOS>afudos /iP4P800F.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%)
```

5. After all tasks are performed, AFUDOS utility returns to DOS.

```
A:\AFUDOS>afudos /iP4P800F.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......done
Verifying flash....done
```

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

2.2　BIOS Setup program

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 EEPROM.

The EEPROM 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.

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 bar

The top of the screen has a menu bar with the following selections:

MAIN　　　　　Use this menu to make changes to the basic system configuration.

ADVANCED　　Use this menu to enable and make changes to the advanced features.

POWER　　　　Use this menu to configure and enable Power Management features.

BOOT　　　　Use this menu to configure the default system device used to locate and load the Operating System.

EXIT　　　　Use this menu to exit the current menu or to exit the Setup program.

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

2.2.2 Legend bar

At the bottom of the Setup screen is a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding functions.

Navigation Key(s)	Function Description
<F1> or <Alt + H>	Displays the General Help screen from any-where in the BIOS Setup
<Esc>	Jumps to the Exit menu or returns to the main menu from a sub-menu
Left or Right arrow	Selects the menu item to the left or right
Up or Down arrow	Moves the highlight up or down between fields
- (minus key)	Scrolls backward through the values for the highlighted field
+ (plus key) or spacebar	Scrolls forward through the values for the high-lighted field
<Enter>	Brings up a selection menu for the highlighted field
<Home> or <PgUp>	Moves the cursor to the first field
<End> or <PgDn>	Moves the cursor to the last field
<F5>	Resets the current screen to its Setup Defaults
<F10>	Saves changes and exits Setup

General help

In addition to the Item Specific Help window, the BIOS setup program also provides a General Help screen. You may launch this screen from any menu by simply pressing <F1> or the <Alt> + <H> combination. The General Help screen lists the legend keys and their corresponding functions.

Saving changes and exiting the Setup program

See "2.7 Exit Menu" for detailed information on saving changes and exiting the setup program.

When a scroll bar appears to the right of a help window, it indicates that there is more information to be displayed that will not fit in the window. Use <PgUp> and <PgDn> or the up and down arrow keys to scroll through the entire help document. Press <Home> to display the first page, press <End> to go to the last page. To exit the help window, press <Enter> or <Esc>.

```
System Time
System Date
Legacy Diskette A
Legacy Diskette B

▶ Primary IDE Master
▶ Primary IDE Slave
▶ Secondary IDE Master
▶ Secondary IDE Slave

▶ System Information
```
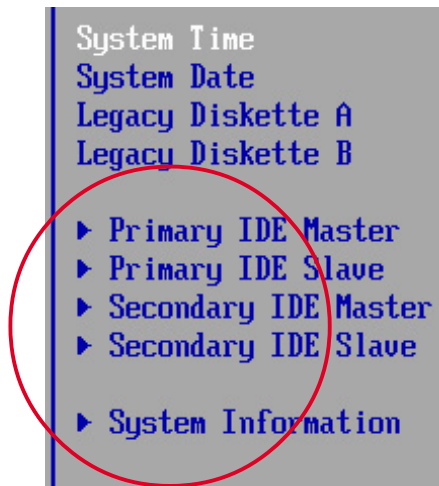
Sub-menu

Note that a right pointer symbol (as shown on the left) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the <Esc> key to return to the main menu. Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. If you accidentally make unwanted changes to any of the fields, use the set default hot key <F5> to load the Setup default values. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

2.3   Main Menu

```
                        BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

 System Time              [12:12:12]              Use [ENTER], [TAB]
 System Date              [Thu 03/31/2003]        or [SHIFT-TAB] to
 Legacy Diskette A        [1.44M, 3.5 in]         select a field.

 ▶ Primary IDE Master    :[ST320413A]             Use [+] or [-] to
 ▶ Primary IDE Slave     :[ASUS CD-S340]          configure system time.
 ▶ Secondary IDE Master  :[Not Detected]
 ▶ Secondary IDE Slave   :[Not Detected]
 ▶ Third IDE Master       :[Not Detected]
 ▶ Fourth IDE Master      :[Not Detected]
 ▶ IDE Configuration
                                                  ←     Select Screen
 ▶ System Information                             ↑↓    Select Item
                                                  +-    Change Field
                                                  Tab   Select Field
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

            (C)Copyright 1985-2002, American Megatrends, Inc.
```

System Time [XX:XX:XX]

Sets the system to the time that you specify (usually the current time). The format is hour, minute, second. Valid values for hour, minute and second are Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59). Use the <Tab> or <Shift> + <Tab> keys to move between the hour, minute, and second fields.

System Date [XX/XX/XXXX]

Sets the system to the date that you specify (usually the current date). The format is month, day, year. Valid values for month, day, and year are Month: (1 to 12), Day: (1 to 31), Year: (up to 2099). Use the <Tab> or <Shift> + <Tab> keys to move between the month, day, and year fields.

Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [None] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

2.3.1 Primary, Secondary, Third and Fourth IDE Master/Slave

```
                          BIOS SETUP UTILITY
  Main

  Primary IDE Master
                                                    Select the type
  Device          : Hard Disk                       of device connected
  Vendor          : ST320413A                       to the system.
  Size            : 20.0GB
  LBA Mode        : Supported
  Block Mode      : 16 Sectors
  PIO Mode        : 4
  Async DMA       : MultiWord DMA-2
  Ultra DMA       : UltraDMA-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]

              (C)Copyright 1985-2002, American Megatrends, Inc.
```

Type [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, Setup automatically fills in the correct values for the remaining fields on this sub-menu. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

⚠ Before attempting to configure a hard disk drive, make sure you have the correct configuration information supplied by the drive manufacturer.

LBA/Large Mode [Auto]

This field configures the LBA mode. Select [Auto] to enable LBA mode if the device supports it and the device is not already formatted with LBA Mode disabled. [Disable] disables the LBA mode.

Block (Multi-Sector Transfer) [Auto]

This field configures the Multi-Sector Transfer Block. Select [Auto] to enable the data to transfer from and to the device occurs multiple sectors at a time if the device supports it. When [Disabled], the data transfer from and to the device occurs one sector at a time.

PIO Mode [Auto]

This option lets you set a PIO (Programmed Input/Output) mode for the IDE device. Modes 0 through 4 provide successive increase in performance. Configuration options: [0] [1] [2] [3] [4]

DMA Mode [Auto]

This field enables you to select the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2]

SMART Monitoring [Auto]

This field allows you to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system that utilizes internal hard disk drive monitoring technology. This parameter is normally disabled because the resources used in the SMART monitoring feature may decrease system performance. Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

This field enables or disables the 32Bit data transfer mode. Configuration options: [Enabled] [Disabled]

2.3.2   IDE Configuration

This option displays detailed information about IDE configurations
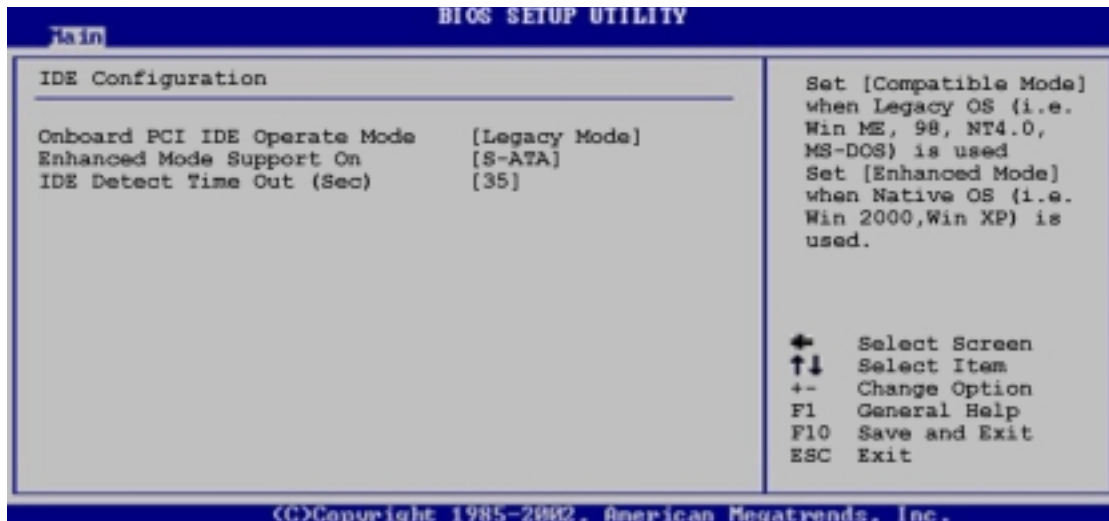
OnBoard PCI IDE Operate Mode [Legacy Mode]

Configuration options: [Legacy Mode] [Native Mode]

Enhanced Mode Support On [S-ATA]

This field allows you to set the Serial ATA, Parallel ATA or both as native mode. Configuration options: [P-ATA+S-ATA] [S-ATA] [P-ATA]]

IDE Detect Time Out (Sec) [35]

This field allows you to select the time out value for detecting ATA/ATAPI device(s). Configuration options: [Primary] [Secondary] [Both]

2.3.3 System Information

This option displays detailed information about the BIOS, processor and system memory. This field displays fixed values based on detected BIOS, processor and memory installed.

```
                        BIOS SETUP UTILITY
 Main

 AMI BIOS
 Version      : 08.00.08
 Build Date : 04/01/03
 ID           : P4P8100

 Processor
 Type         : Intel (R) Pentium (R) 4 CPU 1.60Ghz
 Speed        : 1600 Mhz
 Count        : 1

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

              (C)Copyright 1985-2002, American Megatrends, Inc.
```

2.4 Advanced Menu

```
                          BIOS SETUP UTILITY
  Main    Advanced   Power    Boot    Exit

   ▶  CPU Configuration
   ▶  Chipset
   ▶  Onboard Devices Configuration
   ▶  PCI PnP
   ▶  USB Configuration


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

           (C)Copyright 1985-2002, American Megatrends, Inc.
```

2.4.1 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 1.6Ghz
  Frequency           : 1600 Mhz

  Ratio Status        : Locked
  Ratio Actual Value  : 16
  CPU Ratio                       [028]

  Hyper-Threading Technology      [Enabled]

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

           (C)Copyright 1985-2002, American Megatrends, Inc.
```
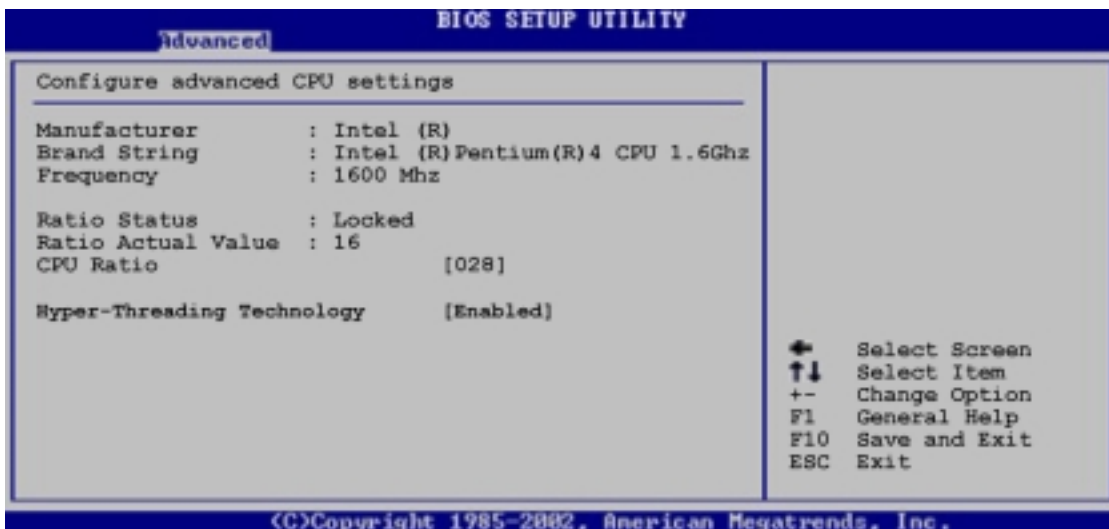
Hyper-Threading Technology [Enabled]
This item allows you to enable or disable the processor Hyper-Threading
Technology. Configuration options: [Disabled] [Enabled]

✎ The item **Hyper-Threading Technology** appears only if you installed an Intel
Pentium 4 CPU that supports this feature.

2.4.2 Chipset

```
                         BIOS SETUP UTILITY
   Advanced

Advanced Chipset settings                        Select which graphics
                                                 controller to use as
   WARNING: Setting wrong values in the sections below    the primary boot
            may cause system to malfunction.     device.

Graphic Adapter Priority        [AGP/PCI]
Graphics Aperture Size          [ 64 MB]



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

            (C)Copyright 1985-2002, American Megatrends, Inc.
```

Graphic Adapter Priority [AGP/PCI]
This field selects which graphic controller to use as the primary boot device.
Configuration options: [AGP/PCI] [PCI/AGP]

Graphics Aperture Size [Auto]
This feature allows you to select the size of mapped memory for AGP graphic data.
Configuration options: [4MB] [8MB] [16MB] [32MB] [64MB] [128MB] [256MB]

2.4.3 Onboard Devices Configurations

```
                         BIOS SETUP UTILITY
   Advanced

Onboard AC'97 Audio             [Auto]
Onboard IEEE 1394 Controller    [Enabled]
Onboard LAN                     [Enabled]
   Onboard LAN Boot ROM         [Disabled]

Onboard Floppy Controller       [Enabled]
Serial Port1 Address            [3F8/IRQ4]
Onboard IR Port                 [Disabled]
Parallel Port Address           [Disabled]
Parallel Port Mode              [ECP]
   ECP Mode DMA Channel         [DMA3]
   Parallel Port IRQ            [IRQ7]            ◄►   Select Screen
                                                  ↑↓   Select Item
                                                  +-   Change Option
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

            (C)Copyright 1985-2002, American Megatrends, Inc.
```

Onboard AC'97 Audio [Auto]
This field allows you to disable or set to automatic the internal audio CODEC
interface. Configuration options: [Disabled] [Auto]

Onboard IEEE 1394 Controller [Enabled]

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

Onboard LAN [Enabled]

This field allows you to enable or disable the onboard LAN. Configuration options:
[Disabled] [Enabled]

Onboard LAN Boot ROM [Disabled]

This field allows you to enable or disable the onboard LAN Boot ROM.
Configuration options: [Disabled] [Enabled]

Onboard Floppy Controller [Enabled]

This field allows you to enable or disable the onboard Floppy controller.
Configuration options: [Disabled] [Enabled]

Serial Port1 Address [3F8/IRQ4]

This field allows you to set the address for the onboard serial connector.
Configuration options: [3F8/IRQ4] [3E8/IRQ4] [2E8/IRQ3] [Disabled]

Onboard IR Port [Disabled]

This field allows you to enable or disable the IR port. Configuration options:
[Disabled] [3E0] [2E0]

Parallel Port Address [Disabled]

This field allows the BIOS to select the Parallel Port Base Address. Configuration
options: [Disabled] [378] [278] [3BC]

Parallel Port Mode [ECP]

This field allows you to select the Parallel Port Mode. Configuration options:
[Normal] [Bi-directional] [EPP] [ECP]

ECP Mode DMA Channel [DMA3]

This field allows you to select the ECP DMA channel of the parallel port.
Configuration options: [DMA0] [DMA1] [DMA3]

Parallel Port IRQ [IRQ7]

This field allows you to select the Parallel Port IRQ. Configuration options: [IRQ5]
[IRQ7]

2.4.4 PCIPnP

```
                          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
                                                    operating system
 Plug and Play O/S                [No]              configure Plug and
 PCI Latency Timer                [64]              Play (PnP) devices not
 Allocate IRQ to PCI VGA          [Yes]             required for boot if
 Palette Snooping                 [Disabled]        your system has a Plug
 PCI IDE BusMaster                [Enabled]         and Play operating
                                                    system.
 IRQ3                             [Available]
 IRQ4                             [Available]       ←→   Select Screen
 IRQ5                             [Available]       ↑↓   Select Item
 IRQ7                             [Available]       +-   Change Option
 IRQ9                             [Available]       F1   General Help
 IRQ10                            [Available]       F10  Save and Exit
 IRQ11                            [Available]       ESC  Exit

              (C)Copyright 1985-2002, American Megatrends, Inc.
```

```
 IRQ14                            [Available]
 IRQ15                            [Available]

 DMA Channel 0                    [Available]
 DMA Channel 1                    [Available]       ←→   Select Screen
 DMA Channel 3                    [Available]       ↑↓   Select Item
 DMA Channel 5                    [Available]       +-   Change Option
 DMA Channel 7                    [Available]       F1   General Help
                                                    F10  Save and Exit
 Reserved Memory Size             [Disabled]        ESC  Exit

              (C)Copyright 1985-2002, American Megatrends, Inc.
```

Plug and Play O/S [No]
This field configures the Plug and Play O/S feature. If set to [No] the BIOS configures all the devices attached to the system. If set to [Yes], the operating system configures Plug and Play (PnP) devices not required for boot if the system has a Plug and Play operating system feature. Configuration options: [No] [Yes]

PCI Latency Timer [64]
Leave this field to the default setting [32] for best performance and stability. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA [Yes]
Select [Yes] to automatically assign IRQ to PCI VGA card if card requests IRQ. If set to [No], no IRQ is assigned even the card requests an IRQ.

Palette Snooping [Disabled]
This field enables or disables the Palette Snooping feature. Set to [Enabled] and the PCI devices will detect that an ISA graphics device is installed in the system so the device will function correctly. Configuration options: [Disabled] [Enabled]

PCI IDE BusMaster [Enabled]
This field allows the BIOS, when [Enabled], to use PCI busmastering for reading and writing to IDE drives. Configuration options: [Disabled] [Enabled]

IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, IRQ14, IRQ15 [Available]

This field specifies if the IRQ is reserved or available for use by Legacy ISA devices. Configuration options: [Available] [Reserved]

DMA Channel 0, 1, 3, 5, 6, 7 [Available]

This field specifies if the DMA Channel is reserved or available for use by Legacy ISA devices. Configuration options: [Available] [Reserved]

Reserved Memory Size [Disabled]

This field specifies the reserved memory block for use of legacy ISA devices. Configuration options: [Disabled] [16k] [32k] [64k]

2.4.5   USB Configuration
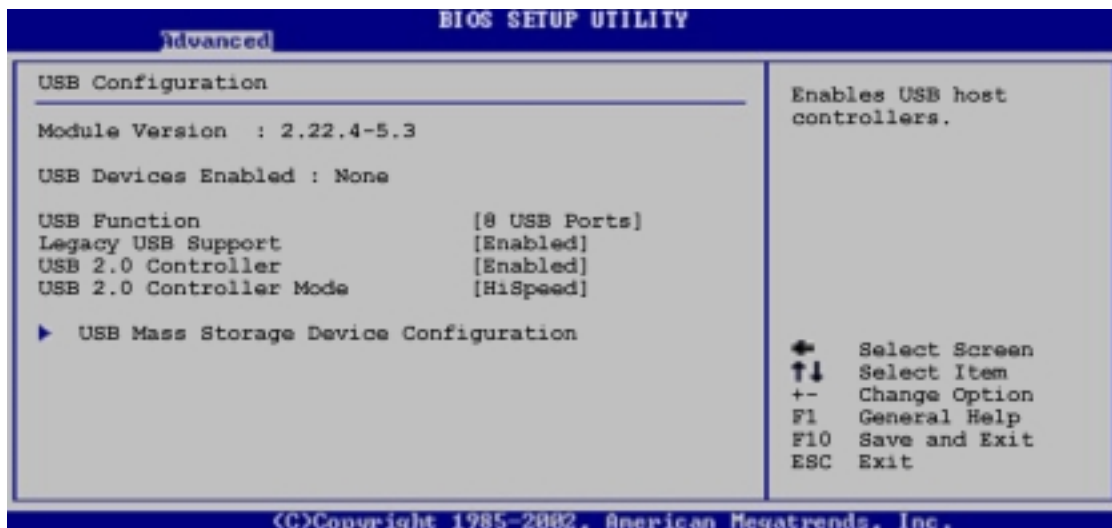
USB Function [8 USB Ports]

This field disables all USB ports or sets the number number of USB ports to enable. Configuration options: [Disabled] [2 USB Ports] [4 USB Ports] [6 USB Ports] [8 USB Ports]

Legacy USB Support [Enabled]

This field enables or disables the support for legacy USB. The [Auto] option disables the USB legacy support if no USB devices are connected. Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller [Enabled]

This field enables or disables the USB 2.0 controller. Configuration options:
[Disabled] [Enabled]

USB 2.0 Controller Mode [HiSpeed]

This field configures the USB 2.0 controller in HiSpeed, that is 480Mbps of data
transfer rate or FullSpeed at 12Mbps of data transfer rate. Configuration options:
[FullSpeed] [HiSpeed]

2.4.5.1 USB Mass Storage Device Configuration

USB Mass Storage Reset Delay [20 Sec]

This field sets the number of seconds POST waits for the USB mass storage
device after start unit command Configuration options: [10 Sec] [20 Sec] [30 Sec]
[40 Sec]

2.5 Power Menu

The Power menu allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.

```
                          BIOS SETUP UTILITY
     Main    Advanced    Power    Boot    Exit

    Restore on AC Power Loss    [Last State]          Select the ACPI state
    Suspend Mode                [S1 & S3 (STR)]       used for System
    Repost Video on S3 Resume   [No]                  Suspend.
    Power On by External Modems [Disabled]
    Power On by PCI Devices     [Disabled]

    ▶ Hardware Monitor




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

               (C)Copyright 1985-2002, American Megatrends, Inc.
```

Restore on AC Power Loss [Last State]

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: [Power On] [Power Off] [Last State]

Suspend Mode [Auto]

This field sets the ACPI state used for system suspend. Configuration options: [S1 (POS) only] [S3 only] [Auto]

Repost Video on S3 Resume [No]

This field sets whether to invoke VGA BIOS port on S3/STR resume Configuration options: [No] [Yes]

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 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]

2.5.1 Hardware Monitor

```
                          BIOS SETUP UTILITY
              Power

 Hardware Monitor                                    CPU temperature

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

 CPU Fan Speed                [2250RPM]
 Chassis Fan Speed            [0RPM]

 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

              (C)Copyright 1985-2002, American Megatrends, Inc.
```
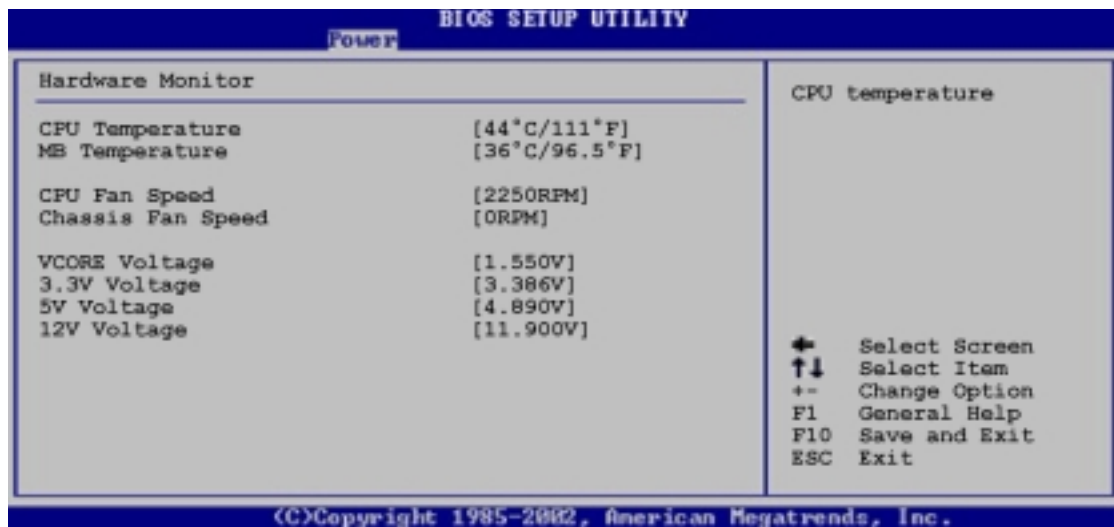
CPU Temperature [xxxC/xxxF]
MB Temperature [xxxC/xxxF]
The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures.

CPU Fan Speed [xxxxRPM] or [N/A]
Chassis Fan Speed [xxxxRPM] or [N/A]
The onboard hardware monitor automatically detects and displays the CPU and chassis fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, that field shows 0RPM.

VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

2.6   Boot Menu
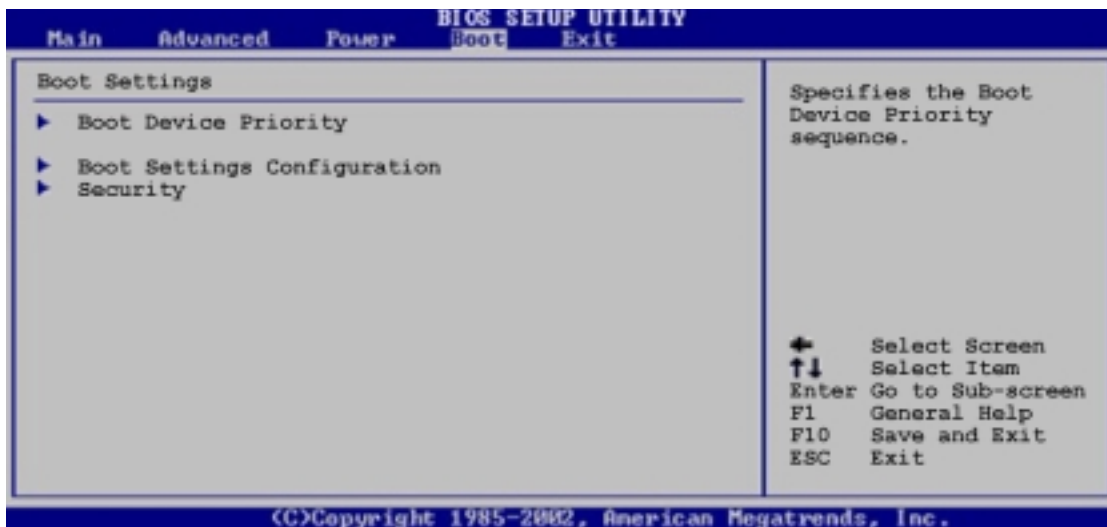
2.6.1   Boot Device Priority

1st, 2nd, 3rd Boot Device

This field specifies the boot sequence from the available devices. Additional plug-in boot devices installed appear in sequence after the list of available boot devices . Configuration fields include FLOPPY DRIVE, IDE Hard Drive, ATAPI CD-ROM, and Other Boot Device.

2.6.2 Boot Settings Configuration

```
                          BIOS SETUP UTILITY
                              Boot

Boot Settings Configuration                          Allows BIOS to skip
                                                     certain tests while
Quick Boot                      [Enabled]            booting. This will
Quiet Boot                      [Enabled]            decrease the time
Add On ROM Display Mode         [Force BIOS]         needed to boot the
Bootup Num-Lock                 [On]                 system.
PS/2 Mouse Support              [Enabled]
Typematic Rate                  [Fast]
Parity Check                    [Disabled]
Boot to OS/2                    [No]
Wait for 'F1' If Error          [Enabled]
Hit 'DEL' Message Display       [Enabled]            ←→   Select Screen
Interrupt 19 Capture            [Disabled]           ↑↓   Select Item
                                                     +-   Change Option
                                                     F1   General Help
                                                     F10  Save and Exit
                                                     ESC  Exit


           (C)Copyright 1985-2002, American Megatrends, Inc.
```

Quick Boot [Enabled]
This field allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system. Configuration options: [Disabled] [Enabled]

Quiet Boot [Disabled]
When [Enabled], the normal POST messages are displayed and displays only OEM Logo instead of POST messages. Configuration options: [Disabled] [Enabled]

AddOn ROM Display Mode [Force BIOS]
This field sets the display mode for option ROM. Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]
This field selects the power-on state for the NumLock key. Configuration options: [Off] [On]

PS/2 Mouse Support [Enabled]
This sets the PS/2 mouse support. Configuration options: [Disabled] [Enabled]

Typematic Rate [Fast]
This field configures the typematic rate of the keyboard. Configuration options: [Slow] [Fast]

System Keyboard [Present]
This allows you to enable or disable all the keyboards attached to the system. Configuration options: [Absent] [Present]

Parity Check [Disabled]
This field enables or disables the memory or parity error checking feature. Configuration options: [Disabled] [Enabled]

Boot to OS/2 [No]

This field sets compatibility mode to OS/2 operating system. Configuration options: [No] [Yes]

Wait for 'F1' If Error [Enabled]

This field sets whether to wait for F1 key to be pressed if an error occurs. Configuration options: [Disabled] [Enabled]
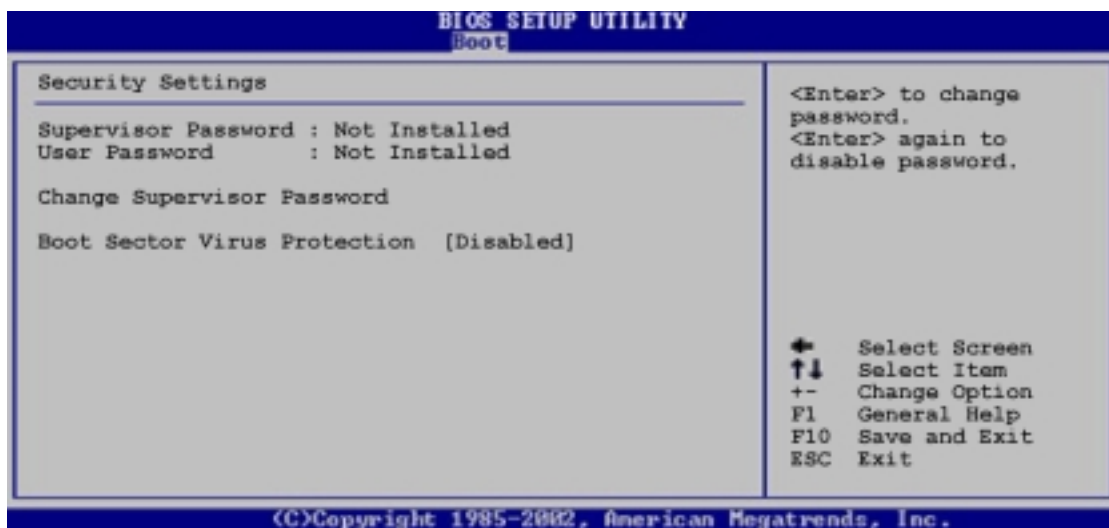
Hit 'Del' Message Display [Disabled]

This field toggles the display of "Press DEL to run Setup". Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

When [Enabled], it allows option ROMs to trap Interrupt 19. This is required by some PCI cards that provide a ROM based setup utility. Configuration options: [Disabled] [Enabled]

2.6.2   Security

Change Supervisor Password

These fields allow you to set passwords. To set a password, highlight the appropriate field and press <Enter>. A pop-up window will appear; Type in a password then press <Enter>. You can type up to eight alphanumeric characters. Symbols and other characters are ignored. To confirm the password, type the password again and press <Enter>. The password is now set. This password allows full access to the BIOS Setup menus. To clear the password, highlight this field and press <Enter>. The same dialog box as above appears. Press <Enter>. The password is cleared.

Make a copy of the original BIOS on a bootable floppy disk before setting passwords. You will need to upload the BIOS file in case you erase the CMOS RAM in the future.

A note about passwords
The BIOS Setup program allows you to specify passwords in the Boot menu. The passwords control access to the BIOS during system startup. Passwords are not case sensitive, meaning, passwords typed in either uppercase or lowercase letters are accepted. The BIOS Setup program allows you to specify two different passwords: a Supervisor password and a User password. If you did not set a Supervisor password, anyone can access the BIOS Setup program. If you did, the Supervisor password is required to enter the BIOS Setup program and to gain full access to the configuration fields.

Forgot the password?
If you forget your password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. If you need to erase the CMOS RAM, unplug the all the power cables and remove the button cell battery. Re-install the battery after about 2 seconds, then power up the system. Refer to section "Jumpers - Clear RTC RAM" on how to erase the CMOS.

Boot Sector Virus Protection [Disabled]

This field allows you to set boot sector virus protection, ensuring a virus-free boot sector. The system halts and displays a warning message when it detects a virus. If this occurs, you can either allow the operation to continue or use a virus-free bootable floppy disk to restart and investigate your system. Configuration options: [Disabled] [Enabled]

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

              (C)Copyright 1985-2002, American Megatrends, Inc.
```

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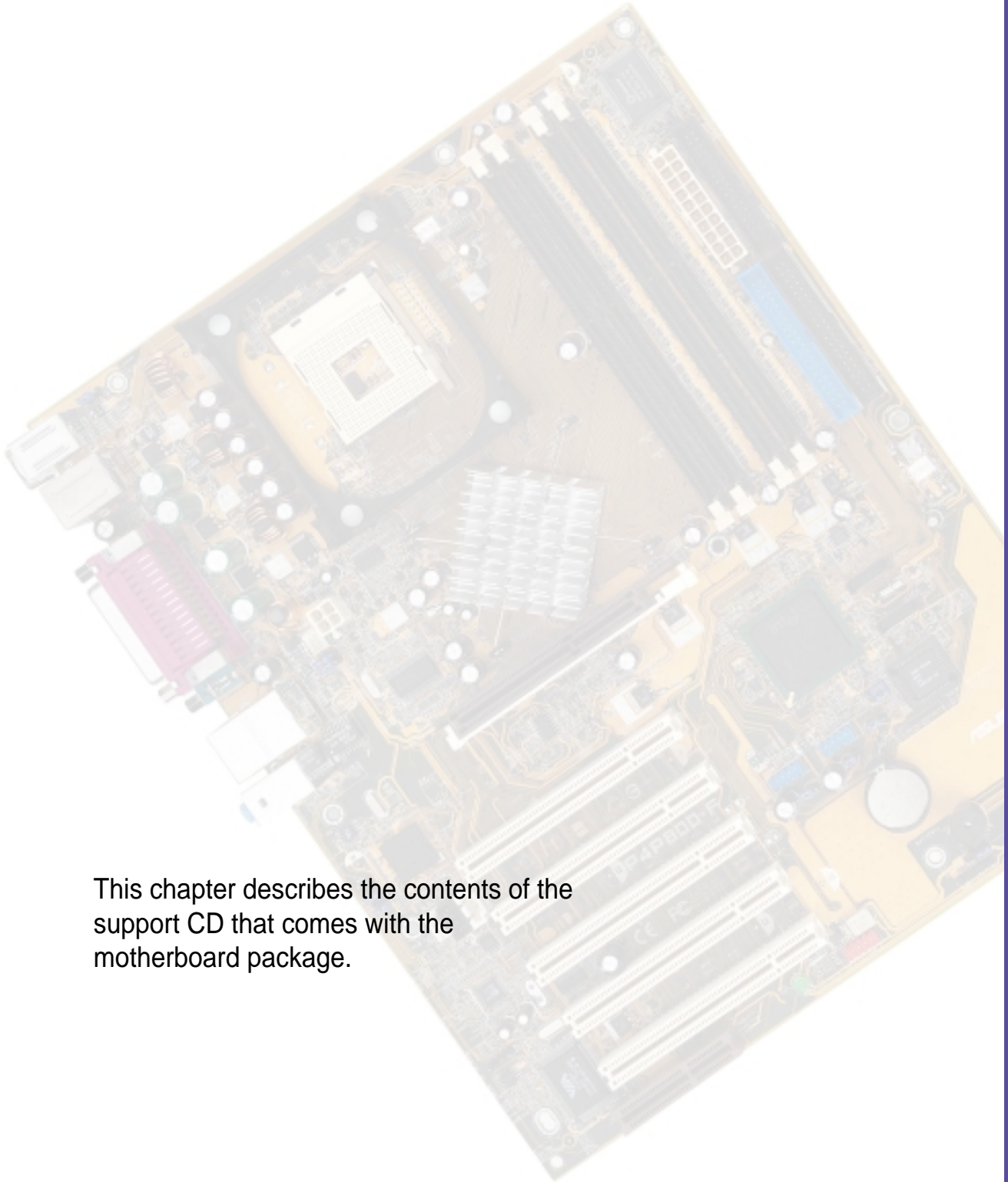
This chapter describes the contents of the
support CD that comes with the
motherboard package.

Software support

3.1   Install an operating system

This motherboard supports Windows® 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.

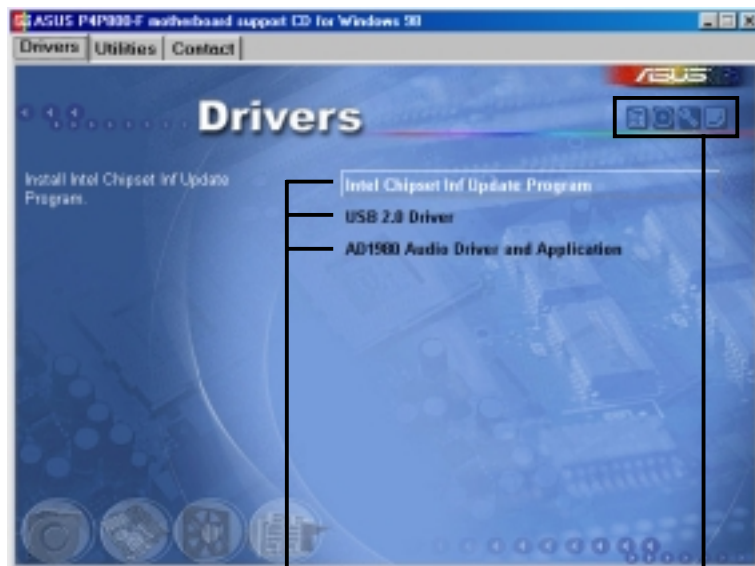# 3.2   Support CD information

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 an item to install   **Click an icon to display more information**

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

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.

Intel Chipset Inf Update Program

This item installs the Intel Chipset Inf Update Program.

USB 2.0 Driver

This item installs the Universal Serial Bus 2.0 driver.

AD1980 Audio Driver and Applications

This item executes the wizard to install the SoundMAX audio driver and applications.

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.

Screen display and driver options may not be the same for other operating system versions.

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.

Microsoft Direct X 8.1 Driver

This item installs the Microsoft V8.0a driver.

PC-CILLIN 2002

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

Adobe Acrobat Reader V5.0

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

ASUS Screen Saver

This item installs the ASUS screen saver.

E-Color 3Deep

This item installs the 3Deep software. 3Deep is the first application that gives online gamers the competitive edge in multi-player skirmishes. This application removes dark washed-out graphics to deliver true vibrant colors.

3.2.4   ASUS Contact Information

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