

***P4SE***

User Guide

**ASUS**<sup>®</sup>

**Motherboard**

**E1141**

**Second Edition**

**October 2002**

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# Contents

Contents .....	iii
FCC/CDC statements .....	v
Federal Communications Commission Statement .....	v
Canadian Department of Communications Statement .....	v
Safety information .....	vi
About this guide .....	vii
Conventions used in this guide .....	vii
Where to find more information .....	vii
ASUS contact information .....	vii
Specifications summary .....	ix
<b>Chapter 1 - Motherboard Info .....</b>	<b>1-1</b>
<b>1.1 Welcome .....</b>	<b>1-2</b>
<b>1.2 Package contents .....</b>	<b>1-2</b>
<b>1.3 Motherboard components .....</b>	<b>1-3</b>
<b>1.4 Motherboard layout.....</b>	<b>1-6</b>
<b>1.5 Before you proceed.....</b>	<b>1-7</b>
<b>1.6 Central Processing Unit (CPU).....</b>	<b>1-7</b>
<b>1.7 System memory.....</b>	<b>1-8</b>
<b>1.8 Expansion Slots.....</b>	<b>1-9</b>
1.8.1 Configuring an expansion card .....	1-9
1.8.2 Standard Interrupt Assignments .....	1-9
<b>1.9 Switches and Jumpers .....</b>	<b>1-10</b>
<b>1.10 Connectors .....</b>	<b>1-14</b>
<b>Chapter 2 - BIOS Information .....</b>	<b>2-1</b>
<b>2.1 Managing and updating your BIOS .....</b>	<b>2-2</b>
2.1.1 Using ASUS AFLASH to update the BIOS.....	2-2
Updating BIOS procedures.....	2-3
<b>2.2 BIOS Setup Program .....</b>	<b>2-5</b>
2.2.1 BIOS menu bar .....	2-5
2.2.2 Legend bar .....	2-6

# Contents

<b>2.3 Main Menu .....</b>	<b>2-7</b>
2.3.1 Primary and Secondary Master/Slave.....	2-9
2.3.2 Keyboard Features .....	2-11
<b>2.4 Advanced Menu .....</b>	<b>2-12</b>
2.4.1 Chip Configuration .....	2-14
2.4.2 I/O Device Configuration .....	2-16
2.4.3 PCI Configuration .....	2-17
2.4.3.1 Onboard PCI Devices Control .....	2-18
2.4.3.2 PCI IRQ Resource Exclusion .....	2-18
<b>2.5 Power Menu .....</b>	<b>2-19</b>
2.5.1 Power-up Control .....	2-21
2.5.2 Hardware Monitor .....	2-22
<b>2.6 Boot Menu .....</b>	<b>2-22</b>
<b>2.7 Exit Menu .....</b>	<b>2-24</b>
<b>Chapter 3 - Starting Up .....</b>	<b>3-1</b>
<b>3.1 Install an operating system.....</b>	<b>3-3</b>
<b>3.2 Support CD information.....</b>	<b>3-3</b>
3.2.1 Running the support CD .....	3-3
3.2.2 Software drivers and installation menus .....	3-4
<b>3.3 Software Information.....</b>	<b>3-5</b>
3.3.1 ASUS Update .....	3-5
3.3.2 ASUS PC Probe .....	3-6
Starting ASUS PC Probe .....	3-6
Using ASUS PC Probe .....	3-7
ASUS PC Probe Task Bar Icon .....	3-9

# FCC/CDC statements

## 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.



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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 adapter 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.

## Conventions used in this guide

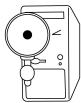
To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



**WARNING/DANGER:** 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  
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General Email: info@asus.com.tw

### *Technical Support*

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Notebook (Tel): +886-2-2890-7122 (English)  
Desktop/Server (Tel): +886-2-2890-7123 (English)  
Support Fax: +886-2-2890-7698  
Support Email: tsd@asus.com.tw  
Web Site: www.asus.com.tw  
Newsgroup: cscnews.asus.com.tw

## ASUS COMPUTER INTERNATIONAL (America)

Address: 6737 Mowry Avenue, Mowry Business Center,  
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Web Site: www.asus.com  
Support Email: tsd@asus.com

## ASUS COMPUTER GmbH (Europe)

Address: Harkortstr. 25, 40880 Ratingen, BRD, Germany  
General Fax: +49-2102-442066  
General Email: sales@asuscom.de (for marketing requests only)

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



# P4SE specifications summary

<b>CPU</b>	Socket 478 for Intel Pentium 4/Celeron Northwood/Willamette processors with frequency up to 2.6+ GHz
<b>Chipset</b>	Northbridge: SiS 645 Southbridge: SiS961B
<b>Front Side Bus (FSB)</b>	400 MHz
<b>Memory</b>	3 x DDR DIMM Sockets supports a maximum of 3 GB unbuffered PC2700/2100/1600 non-ECC DDR DIMMs (Note: PC2700 max. to 4 banks only.)
<b>Expansion slots</b>	1 x AGP 4X 6 x PCI
<b>IDE</b>	2 x UltraDMA 133/100/66
<b>Audio (optional)</b>	C-Media 4-channel CODEC S/PDIF-out interface
<b>Special Features</b>	ASUS EZPlug for flexible power connectivity ASUS MyLogo for customized boot logos ASUS Jumperfree support S/PDIF out interface ( <i>on audio model only</i> ) SFS (Stepless Frequency Selection) Suspend-to-RAM
<b>Back Panel I/O Ports</b>	1 x Parallel 2 x Serial 1 x PS/2 Keyboard 1 x PS/2 Mouse 2 x USB 1.1 1 x Audio I/O, Game/MIDI ( <i>on audio models only</i> )
<b>Internal I/O Connectors</b>	CPU/power/Chassis FAN connector 20 pin ATX power connector 4-pin AUX power connector Chassis intrusion SM Bus SIR S/PDIF out connector ( <i>on audio model only</i> ) CD/AUX/Modem audio in ( <i>on audio model only</i> ) ASUS front panel audio connector ( <i>on audio model only</i> ) 2 x USB Headers support additional 4 USB 1.1 ports

(continued on the next page)

# P4SE specifications summary

<b>BIOS features</b>	2Mb Flash EEPROM, ASUS JumperFree, ASUS MyLogo, Award BIOS with ACPI, DMI2.0, PnP, WfM2.0, Green, TCAV (Trend Chip Away Virus)
<b>Industry standard</b>	PCI 2.2, USB 1.1
<b>Manageability</b>	WfM2.0, DMI2.0, WOR, WOL, Chassis Intrusion, SM Bus
<b>Form Factor</b>	ATX form factor: 12 in x 8.6 in (30.5 cm x 21.9 cm)
<b>Support CD contents</b>	Device drivers ASUS PC Probe Trend Micro™ PC-cillin 2002 anti-virus software ASUS LiveUpdate Utility
<b>Accessories</b>	User's manual Support CD 1 x UltraDMA 133/100/66 cable FDD cable

\* Specifications are subject to change without notice.

# Chapter 1

This chapter gives information about the ASUS P4SE motherboard that came with the system. This chapter includes the motherboard layout, jumper settings, and connector locations.

# Motherboard Info

## 1.1 Welcome!

### Thank you for buying the ASUS® P4SE motherboard!

The ASUS P4SE motherboard delivers a host of new features and latest technology making it another standout in the long line of ASUS quality motherboards!

The P4SE incorporates the Intel® Pentium® 4 Processor in 478-pin package/Northwood Processor coupled with the SiS 645 chipset to set a new benchmark for an effective desktop platform solution.

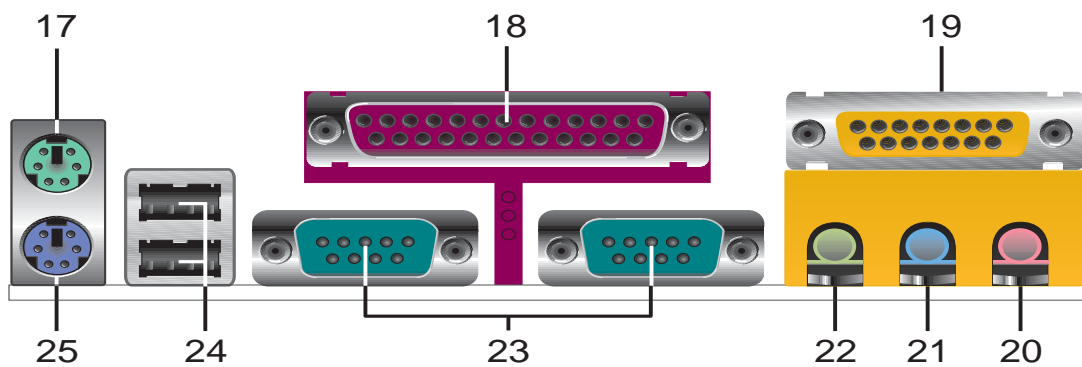
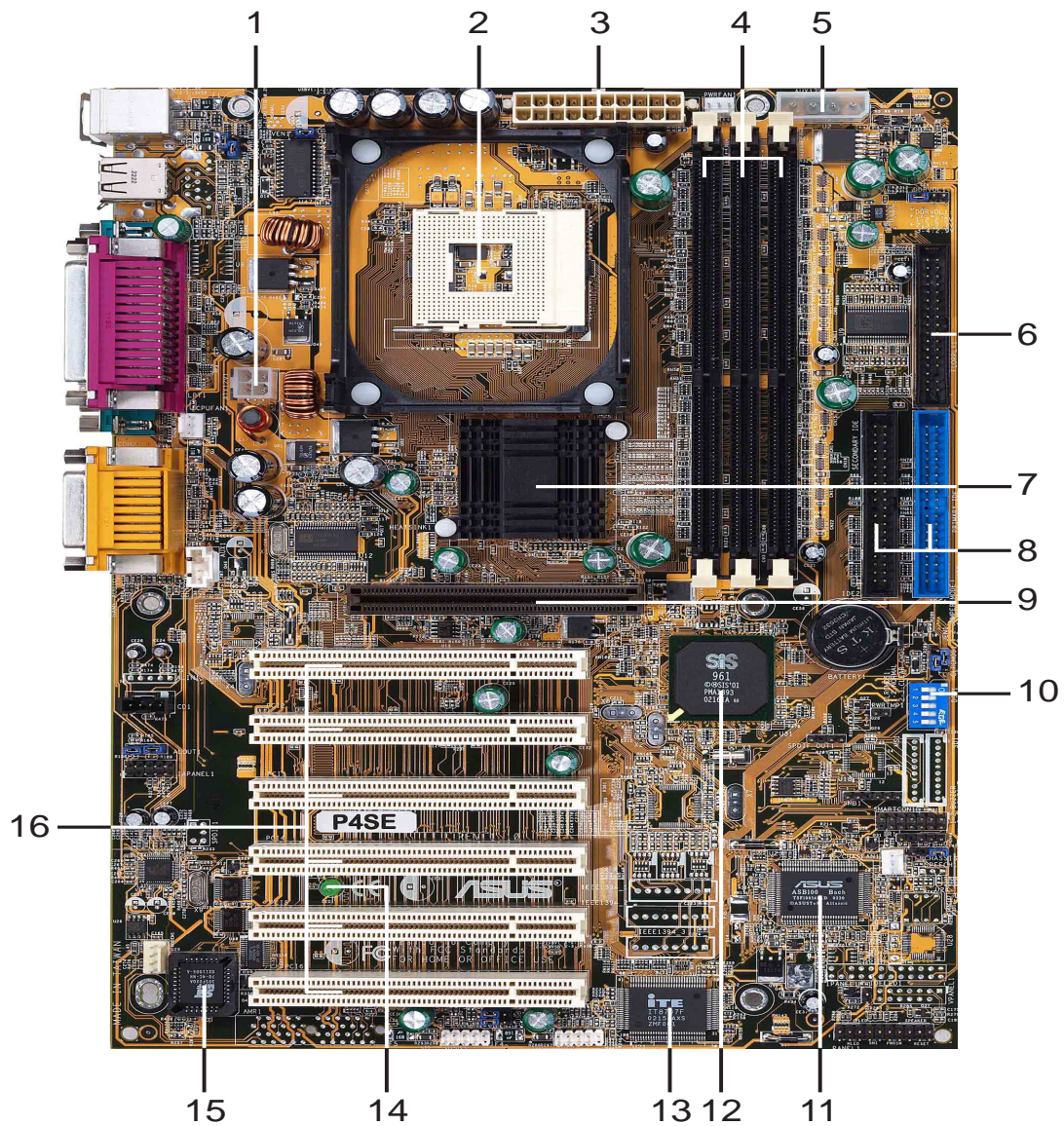
- ~ Up to 3GB of system memory of PC 2700 / 2100 / 1600 DDR (Note: PC2700 max. to 2GB only)
- ~ High-resolution graphics via an AGP 4X slot
- ~ Digital Audio Interface for 3D sound
- ~ Two USB ports plus headers for four more

## 1.2 Package contents

Check your ASUS P4SE package for the following items.

- ✓ ASUS P4SE motherboard  
ATX form factor: 12 in x 8.6 in
- ✓ ASUS P4SE support CD
- ✓ 1 pc. 80-conductor ribbon cable for UltraDMA/66/100/133 IDE drives
- ✓ 1 pc. 40-conductor ribbon cable for Ultra 33 IDE drives
- ✓ Ribbon cable for a 3.5-inch floppy drive
- ✓ Bag of extra jumper caps
- ✓ User Guide

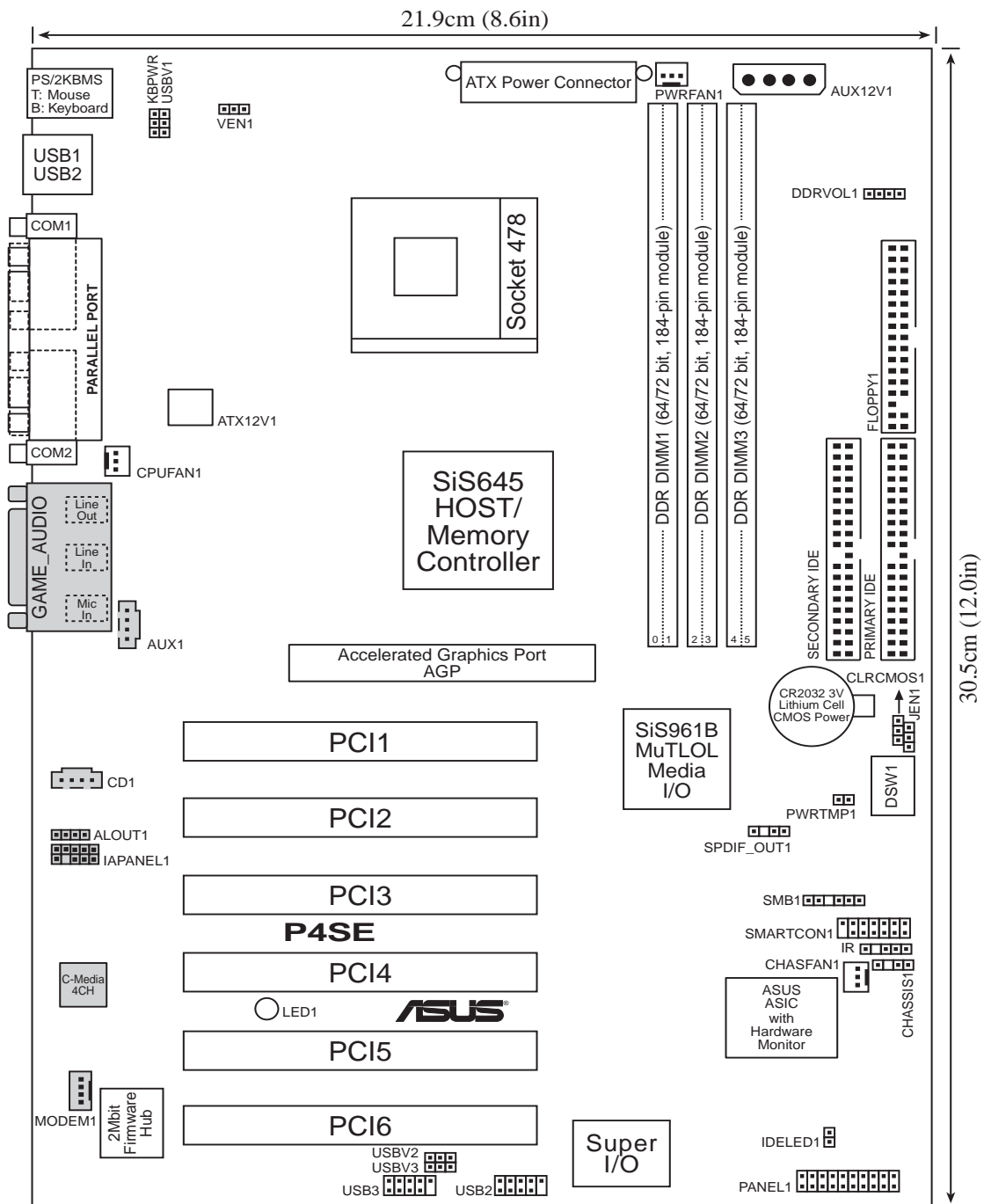
# 1.3 Motherboard components



- 1 ATX 12V connector.** This power connector connects the 4-pin 12V plug from the ATX 12V power supply.
- 2 CPU Sockets.** A 478-pin surface mount, Zero Insertion Force (ZIF) socket for the Intel® Pentium® 4 478/Northwood Processor with 400 MHz system bus that allows 3.2 GB/s data transfer rates respectively.
- 3 ATX power connector.** This standard 20-pin connector connects to an ATX 12V power supply. The power supply must have at least 1A on the +5V standby lead (+5VSB).
- 4 DDR DIMM Sockets.** These three 184-pin DIMM sockets support up to 3GB using non-ECC PC2700/2100/1600 DDR SDRAM DIMMs. (Note: PC 2700 max. to 4 banks only.)
- 5 ASUS EZ Plug™ Auxillary +12V connector.** This ASUS patented auxillary power connector is used if you don't have an ATX + 12V power supply. Connect a 4-pin device connector from a standard power supply to this connector to provide sufficient power to the CPU.
- 6 Floppy Disk connector.** This connector connects 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.
- 7 Northbridge Controller.** This SiS 645 controller integrates a high performance host interface for the Intel® Pentium® 4 processor, a memory controller and an integrated graphics interface.
- 8 IDE Connectors.** These dual-channel bus master IDE connectors support up to four Ultra DMA133/100/66, PIO Modes 3 & 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 AGP4x mode graphic cards for 3D graphical applications.
- 10 DIP Switches.** This 5-switch Dual Inline Package (DIP) allows you to set the CPU external frequency.
- 11 ASUS ASIC.** This chip performs multile system functions that include hardware and system voltage monitoring.

- 12 South bridge controller.** This SiS 961B controller integrates the AC'97 Interface, four Universal Serial Bus Host controllers, two IDE Master/Slave controllers.
- 13 Super I/O chipset.** This 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 PS/2 keyboard and mouse port, a multi-mode parallel port, a game port and, a serial port.
- 14 Standby power LED.** This green LED lights up if there is a standby power on the motherboard. The LED acts as a reminder to turn off the system power before plugging or unplugging devices.
- 15 Flash ROM.** This 2Mb firmware contains the programmable BIOS program.
- 16 PCI slots.** These 32-bit PCI 2.2 expansion slots support bus master PCI cards like SCSI and LAN cards with 133MB/s maximum output.
- 17 PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
- 18 Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
- 19 GAME/MIDI port.** This connector supports a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files. (on audio models only)
- 20 Microphone jack.** This Mic (pink) jack connects a microphone.
- 21 Line In jack.** This Line In (light blue) jack connects a tape player or other audio sources.
- 22 Line Out jack.** This Line Out (lime) jack connects a headphone or a speaker.
- 23 Serial port.** This port connects to your serial mouse and other serial devices.
- 24 USB port.** These two 4-pin Universal Serial Bus 1.1 (USB 1.1) ports are available for connecting USB devices such as a mouse and PDA.
- 25 PS/2 keyboard port.** This purple 6-pin connector is for a PS/2 keyboard.

# 1.4 Motherboard layout



The audio feature is optional. The components are grayed out in the above motherboard layout.



# 1.5 Before you proceed

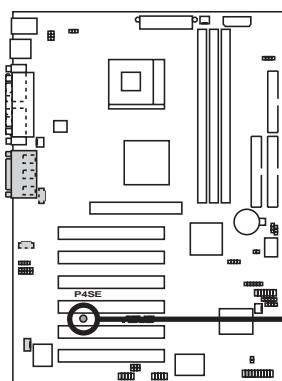
Take note of the following precautions before you install motherboard components or change any motherboard settings.



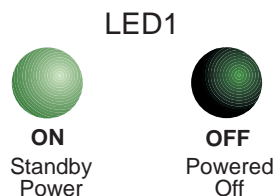
1. Unplug the power cord from the wall socket before touching any component.
2. Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.
3. Hold components by the edges 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 onboard LED (LED1) indicates that the system is ON, in sleep mode, or in soft-off mode, a reminder that you should shut down the system before removing or plugging in any motherboard component

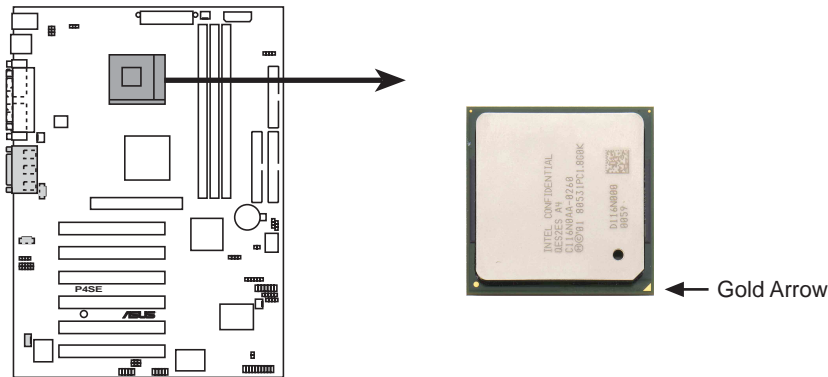


**P4SE Onboard LED**



## 1.6 Central Processing Unit (CPU)

The motherboard comes with a surface mount 478-pin Zero Insertion Force (ZIF) socket. This socket is specifically designed for the Intel® Pentium® 4 478/Northwood Processor.



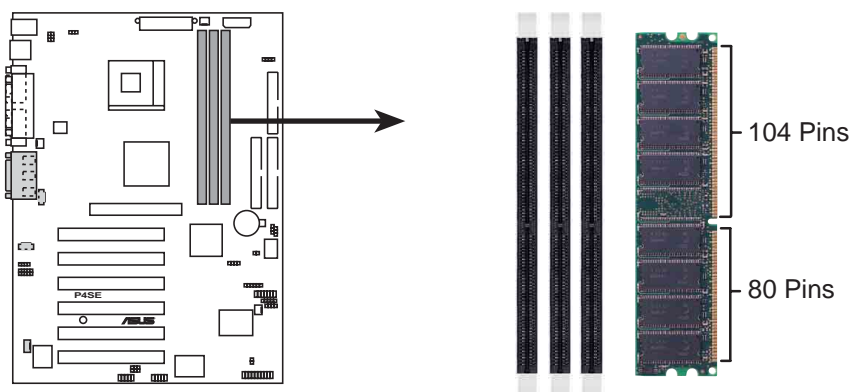
**P4SE Socket 478**

## 1.7 System memory

The motherboard has three Double Data Rate (DDR) DIMM sockets that supports up to 3GB non-ECC PC2700/2100/1600 DDR.

A DDR DIMM has the same physical dimensions as an SDR DIMM, but it has a 184-pin footprint compared to the 168-pin of the SDR DIMM. Also, a DDR DIMM is single notched while an SDR DIMM is double notched.

(Note: PC2700 max. to 4 banks only.)



**P4SE 184-Pin DDR DIMM Sockets**



1. 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

The P4SE motherboard has six (6) expansion slots. The following subsections describe the slots and the expansion cards that they support.

### 1.8.1 Configuring an expansion card

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

1. Turn on the system and change the necessary BIOS settings, if any.
2. Assign an IRQ to the card. Refer to the tables below.
3. Install the software drivers for the expansion card.

### 1.8.2 Standard Interrupt Assignments

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

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

### IRQ assignments for this motherboard

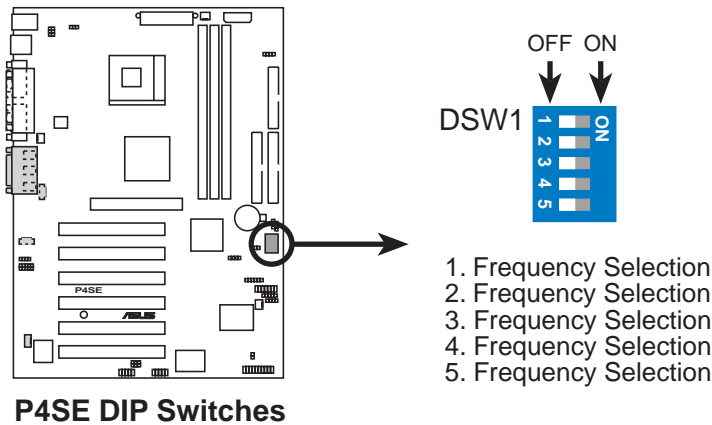
	A	B	C	D
PCI slot 1	shared	—	—	—
PCI slot 2	—	shared	—	—
PCI slot 3	—	—	shared	—
PCI slot 4	—	—	—	shared
PCI slot 5	shared	—	—	—
PCI slot 6	—	shared	—	—
Onboard USB controller HC0	—	—	—	shared
Onboard USB controller HC1	—	—	—	shared
AGP	shared	—	—	—



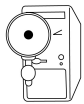
When using PCI cards on shared slots, ensure that the drivers support “Share IRQ” or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between two PCI groups.

## 1.9 Switches and jumpers

The motherboard frequency is adjusted through the DIP switches. The white block represents the switch position. The illustration below shows all the switches in the OFF position.



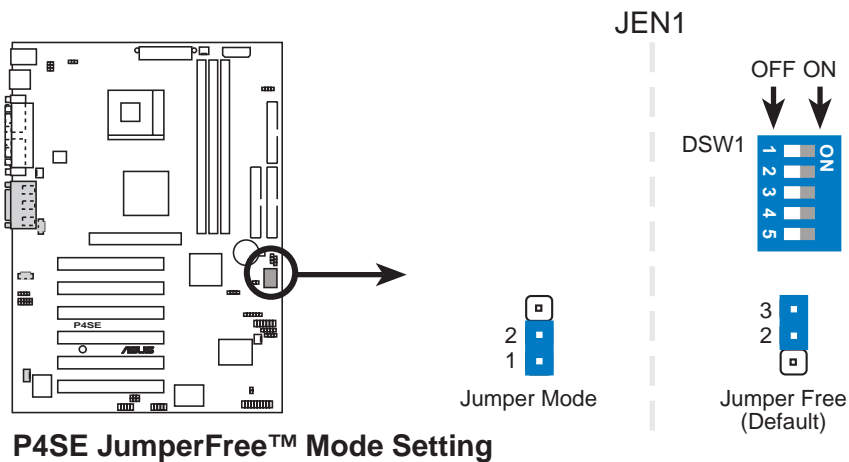
**P4SE DIP Switches**



The JEN jumper (see below) must be set to pins 1-2 for Jumper Mode if you wish to use the DIP switches. Otherwise, setting the switches does not produce any effect.

### 1. JumperFree™ Mode (JEN1)

This jumper allows you to enable or disable the JumperFree™ mode. The JumperFree mode allows you to change CPU settings through the BIOS setup instead of using the DIP switches.



**P4SE JumperFree™ Mode Setting**



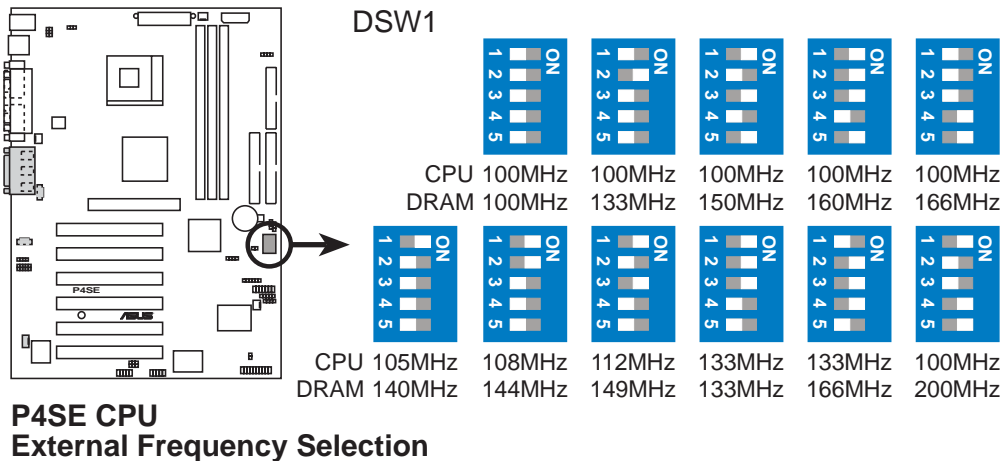
The JEN jumper is set in conjunction with the DIP switches. In JumperFree mode, set all the DIP switches to OFF.

## 2. CPU Frequency Selection (DSW1 Switches 1-5)

This option tells the clock generator what frequency to send the CPU. This permits selection of the CPU's external frequency (or Bus Clock). The BUS Clock multiplied by the Frequency Multiple equals the CPU's internal frequency (the advertised CPU speed).



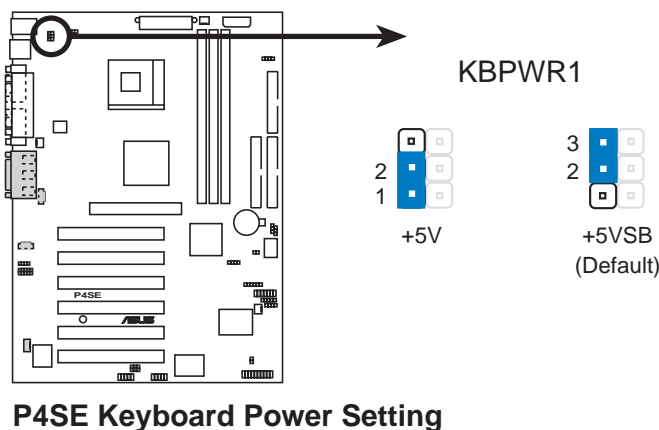
To select the CPU external frequency using the DIP switches, ensure that the JEN jumper is set to jumper mode.



Set the CPU frequency only to the recommended settings. Frequencies other than the recommended CPU bus frequencies are not guaranteed to be stable.

## 3. Keyboard Power (3-pin KBPWR1)

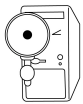
This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) if you wish to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS (see section 4.5.1 Power Up Control).



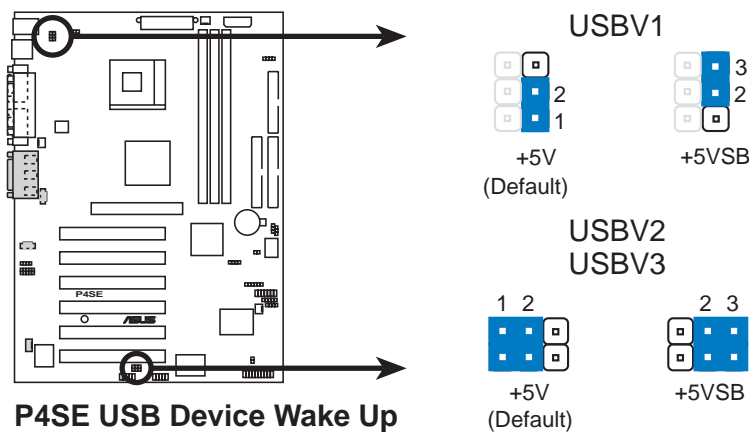
#### 4. USB Device Wake-up (3-pin USBV1, USBV2, USBV3)

Set these jumpers to +5V to wake up the computer from S1 sleep mode using the connected USB devices. Set to +5VSB to wake up from S3 sleep 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 USBV1 jumper is for the rear USB ports. The USBV2 and USBV3 jumpers are for the internal USB headers.



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

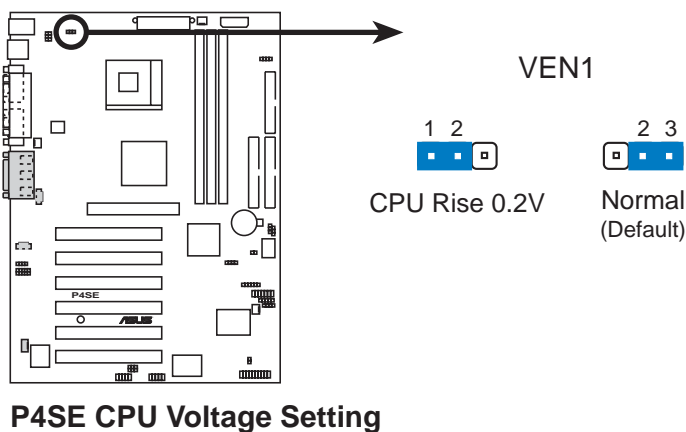


#### 5. CPU voltage selector (3-pin VEN1)

This jumper permits an increase of CPU voltage of 0.2 volts.



It is recommended that you keep the default setting (Normal) for system stability. Raising the CPU voltage may cause system failure.

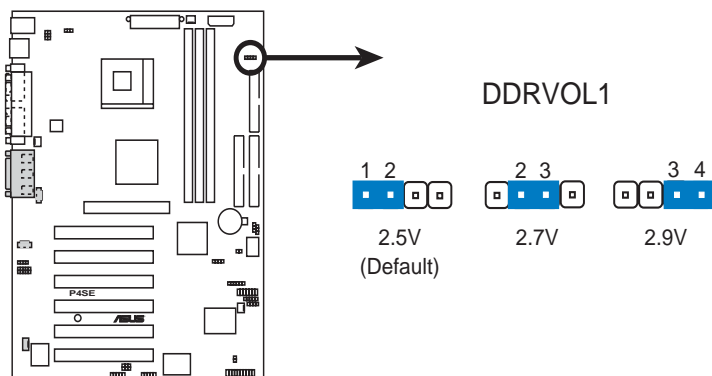


## 6. DDR Voltage Selector (4-pin DDRVOL1)

This jumper sets the voltage supplied to the system memory. Three positions are available for adjusting the voltage.



It is recommended that you keep the default setting (2.5V) for system stability. The other settings do not guarantee better system performance.



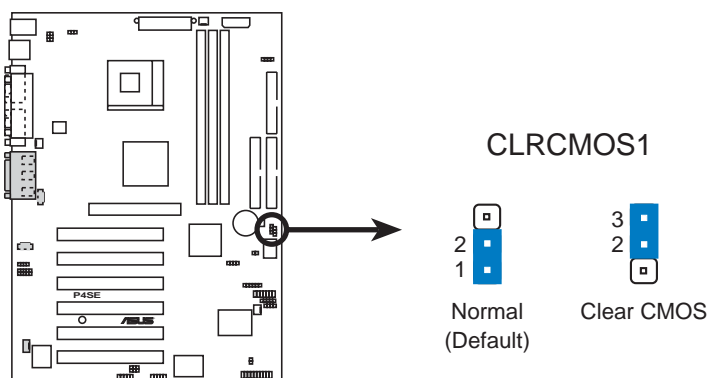
**P4SE DDRVOL Setting**

## 7. Clear RTC RAM (CLRCMOS1)

This jumper clears the Real Time Clock (RTC) RAM in CMOS. The RAM data in CMOS, that includes system setup information such as system passwords, is powered by the onboard button cell battery.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the motherboard battery.
3. Remove the jumper cap from the CLRTC jumper, [1-2] and place it on jumpers [2-3] for a few seconds.
4. Replace the jumper cap to the Normal position, [1-2].
5. Replace the battery.
6. Plug the power cord and turn ON the computer.
7. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.



**P4SE Clear RTC RAM**

# 1.10 Connectors

This section describes and illustrates the connectors on the motherboard.



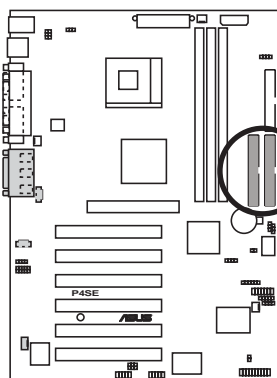
Some pins are used for connectors or power sources. These are clearly distinguished from jumpers in the Motherboard Layout. Placing jumper caps over these connector pins will cause damage to your motherboard.

## 1. IDE connectors (40-pin PRIMARY IDE/SECONDARY IDE)

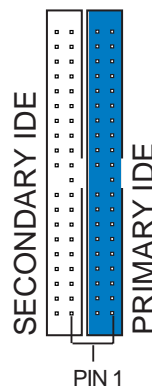
This connector supports the provided UltraDMA133/100/66 IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraDMA133/100/66 slave device (hard disk drive) and the black connector to the UltraDMA133/100/66 master device. It is recommended that you connect non-UltraDMA133/100/66 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 UltraDMA133/100/66 devices, purchase another UltraDMA133/100/66 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 UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.
2. The hole near the blue connector on the UltraDMA/100/66 cable is intentional.



P4SE IDE Connectors

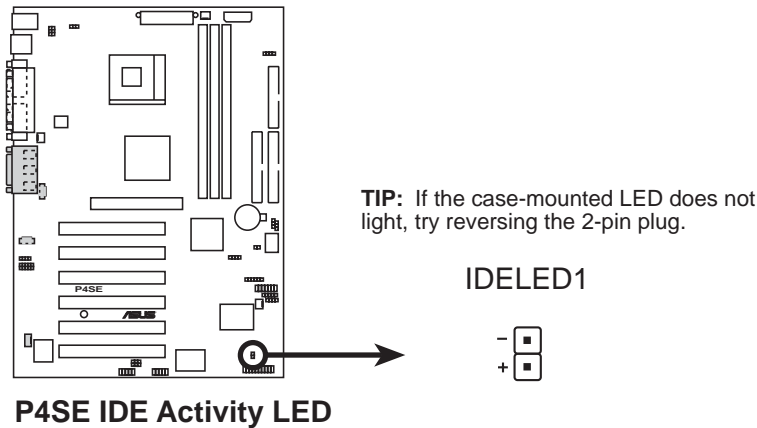


**NOTE:** Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.



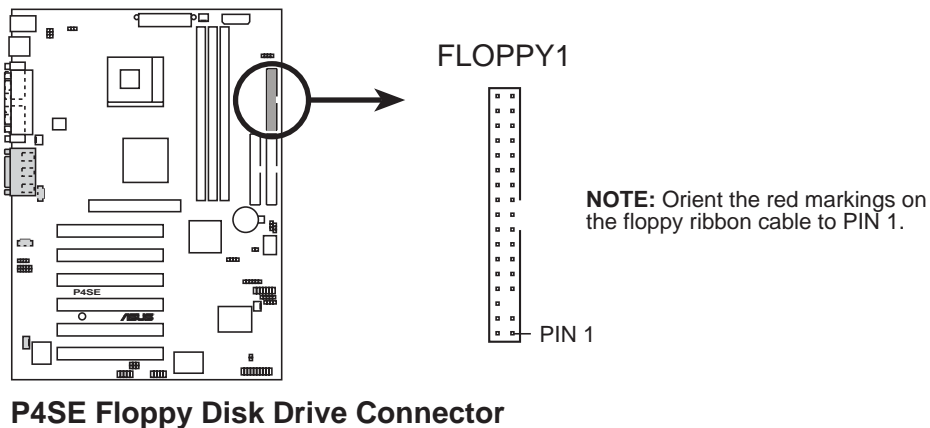
## 2. Hard disk activity LED (2-pin IDELED1)

This connector supplies power to the hard disk activity LED. The read and write activities of devices connected to the primary or secondary IDE connector cause this LED to light up.



## 3. Floppy disk drive connector (34-1 pin FLOPPY)

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).

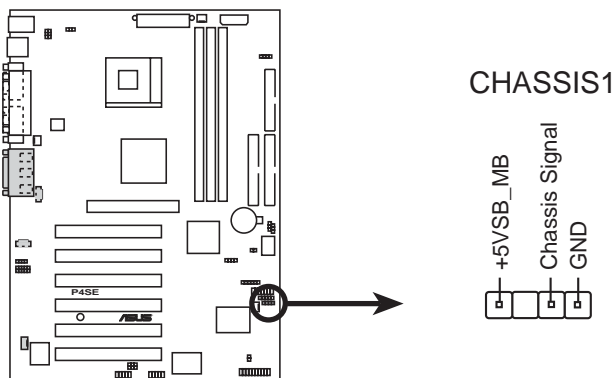


#### 4. Chassis open alarm lead (4-1 pin CHASSIS)

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.



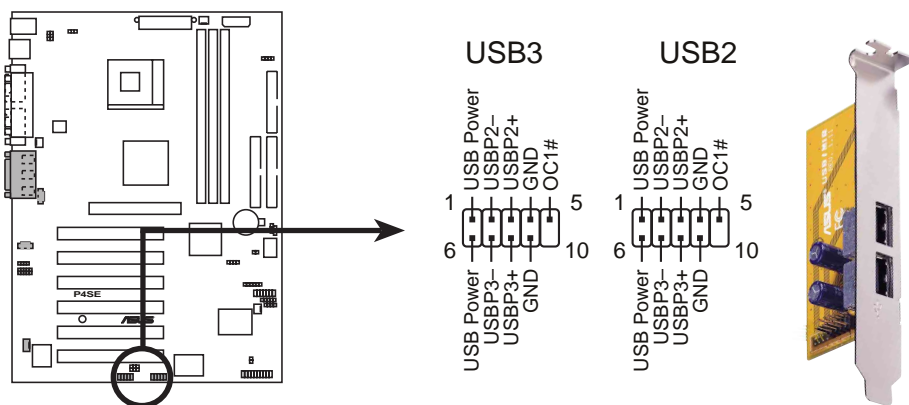
If you do not wish to use the chassis intrusion lead, place a jumper cap over the pins labeled “Chassis Signal” and “Ground” to close the circuit.



**P4SE Chassis Alarm Lead**

#### 5. USB headers (two 10-1 pin USB2, USB3)

If the USB port connectors on the rear panel are inadequate, two USB headers are available for additional USB port connectors. Connect the bundled 2-port USB connector set to this header and mount the USB bracket to an open slot in the chassis.



**P4SE Front Panel USB Headers**



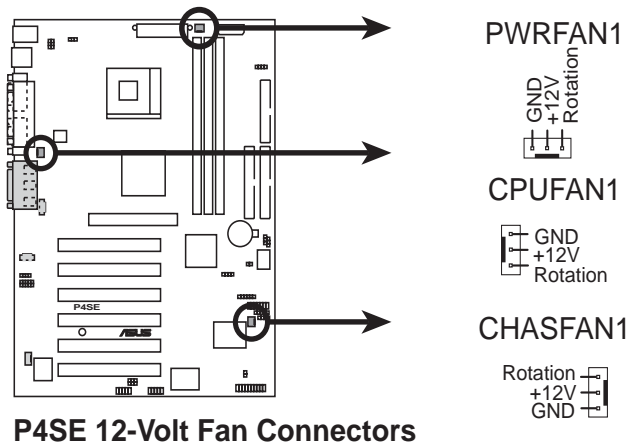
The two-port USB connector is not included in the package.

## 6. CPU, Chassis, and Power Fan Connectors (3-pin CPUFAN1, CHASFAN1, PWRFAN1)

The three fan connectors support cooling fans of 350mA (4.2 Watts) or a total of 1A (12W) at +12V. Orient the fans so that the heat sink fins allow air flow to go across the onboard heat sinks instead of the expansion slots. The fan wiring and plug may vary depending on the fan manufacturer. Connect the fan cable to the connector matching the black wire to the ground pin.

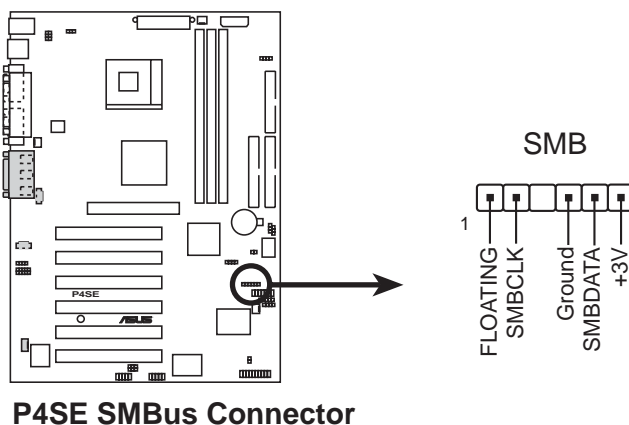


Do not forget to connect the fan cables to the fan connectors. Lack of sufficient air flow within the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!



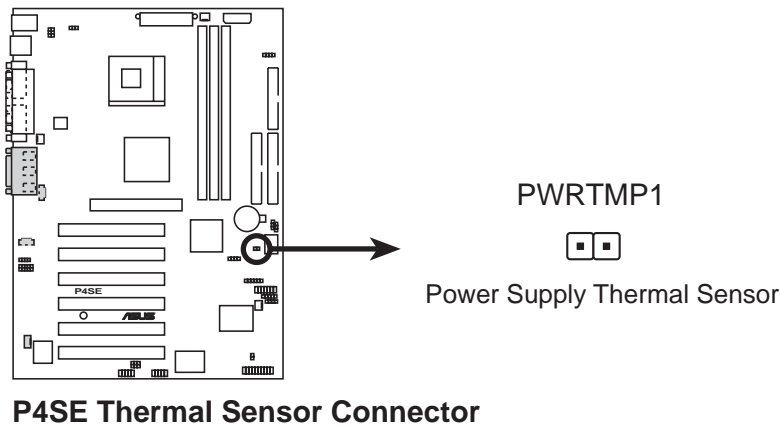
## 7. SMBus connector (6-1 pin SMB)

This connector allows you to connect SMBus (System Management Bus) devices. Devices communicate with an SMBus host and/or other SMBus devices using the SMBus interface. SMBus is a specific implementation of an I<sup>2</sup>C bus, a multi-device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.



## 8. Power supply thermal connector (2-pin PWRTMP)

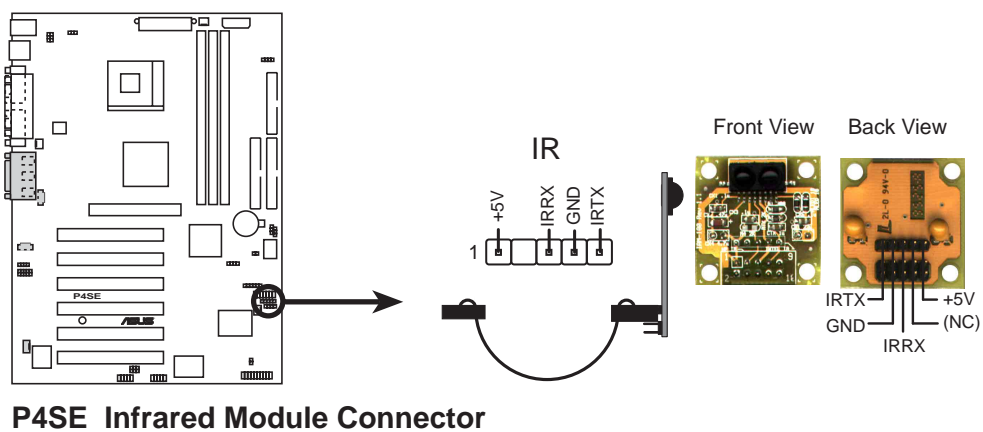
If your power supply has a thermal monitoring feature, connect its thermal sensor cable to this connector.



## 9. Infrared module connector (two 5-1 pin IR)

This connector supports an optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system chassis that support this feature. You must also configure the **UART2 Use As** parameter in BIOS to set UART2 for use with IR. See section "4.4.2 I/O Device Configuration" for details.

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



## 10. ASUS EZ Plug™ and ATX power connectors (20-pin ATXPWR, 4-pin ATX+12V, 4-pin AUX+12V)

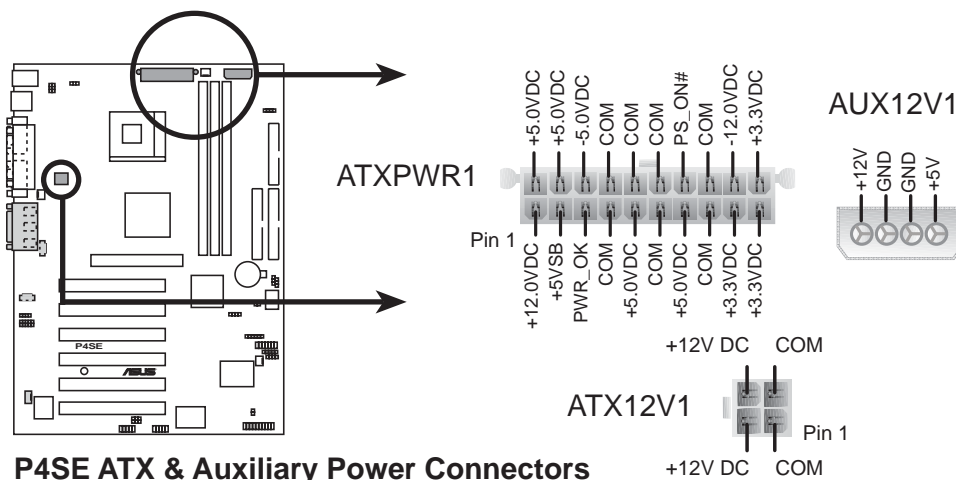
These connectors connect to an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

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

If you are using a standard ATX power supply that does not have the added ATX +12V plug, then simply connect one of the 4-pin device power plugs into the ASUS EZ Plug™ connector labeled AUX12V.

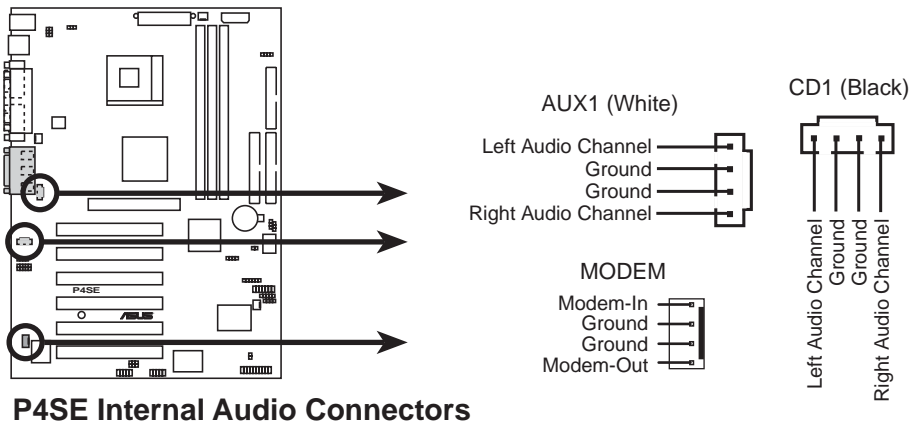


Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5V standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.



## 11. Internal audio connectors (4-pin CD1, AUX, MODEM) *(on audio models only)*

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.



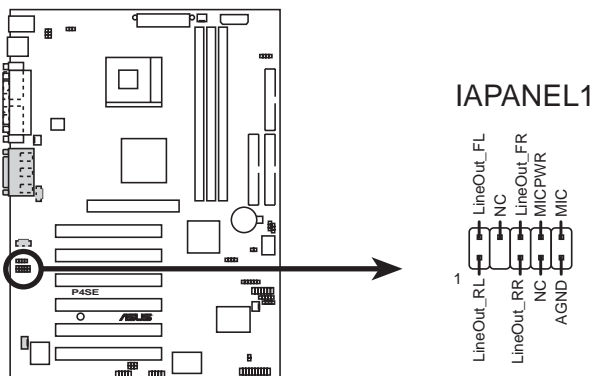
**P4SE Internal Audio Connectors**

## 12. Front panel audio connector (10-1 pin IAPANEL1) *(on audio models only)*

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



Make sure to place jumper caps over pins 1-2 and 5-6 if you do not connect the Intel front panel audio cable. By default, these pins are shorted. Before using this connector, make sure that your audio cable and the front panel audio module (if available) comply with the Intel Front Panel I/O specification.



**P4SE Audio Panel Connector**

### 13. Digital audio connector (6-1 pin SPDIF\_OUT1)

*(on audio models only)*

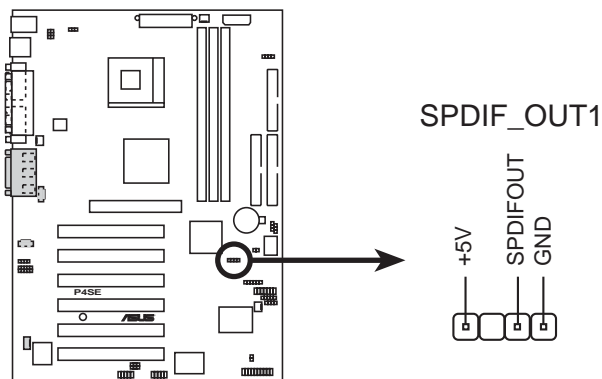
This connector connects an S/PDIF audio module that allows digital instead of analog sound output. Connect one end of the audio cable to the S/PDIF Out connector on the motherboard, and the other end to the S/PDIF module.



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

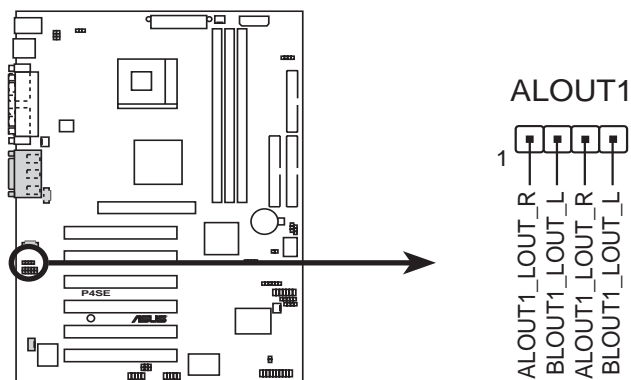
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**P4SE Digital Audio Connector**

### 14. Line out connector (5-pin ALOUT1) *(on audio models only)*

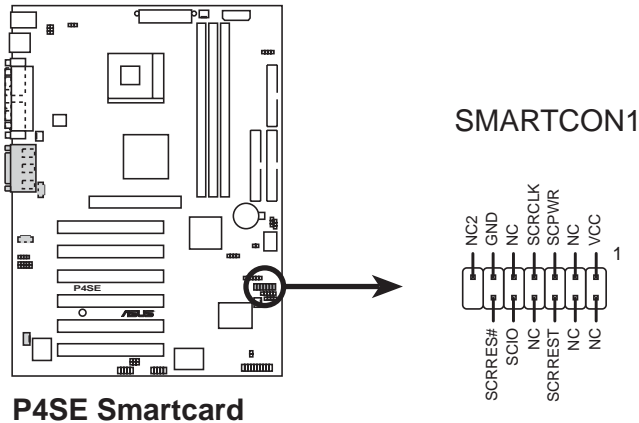
This connector supplies a front panel Line out jack for stereo output.



**P4SE ALOUT Connector**

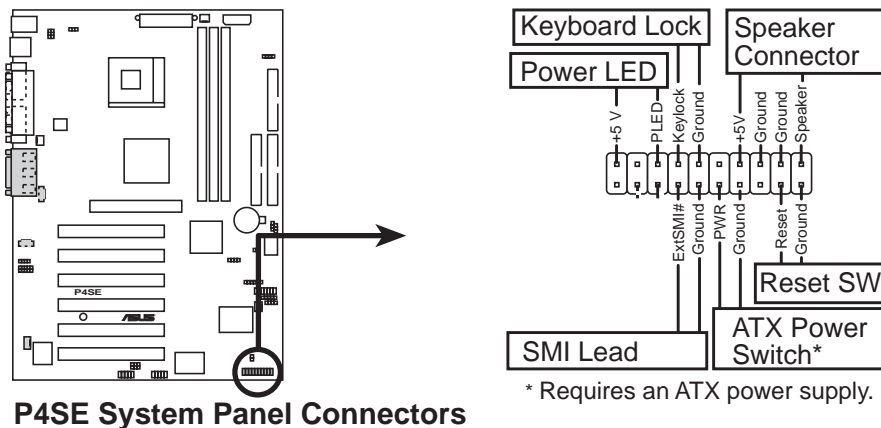
### 15. Smart card reader connector (14-1 pin SMARTCON1) *(optional)*

This connector accommodates a Smart Card Reader that allows you to conveniently make transactions such as financial, health care, telephony, or traveling services through a Smart Card user interface software.



### 16. System panel connector (20-pin PANEL1)

This connector accommodates several system front panel functions.



- **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.

- **System Warning Speaker Lead (4-pin SPEAKER)**

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



- **System Management Interrupt Lead (2-pin SMI)**

This 2-pin connector allows you to manually place the system into a suspend mode, or “green” mode, where system activity is instantly decreased to save power and to expand the life of certain system components. Attach the case-mounted suspend switch to this 2-pin connector.

- **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.

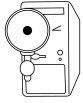


## Chapter 2

This chapter gives information about the ASUS P4SE Binary Input/Output System (BIOS). This chapter includes updating the BIOS using the ASUS AFLASH BIOS that is bundled with the support CD.

# BIOS Information

## 2.1 Managing and Updating your BIOS



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

### 2.1.1 Using AFLASH to update the BIOS

#### Creating a bootable disk

AFLASH.EXE is a Flash Memory Writer utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the motherboard. This file works only in DOS mode. To determine the BIOS version of your motherboard, check the last four numbers of the code displayed on the upper left-hand corner of your screen during bootup. Larger numbers represent a newer BIOS file.

1. Type `FORMAT A:/S` at the DOS prompt to create a bootable system disk. DO NOT copy `AUTOEXEC.BAT` and `CONFIG.SYS` to the disk.
2. Type `COPY D:\AFLASH\AFLASH.EXE A:\` (assuming D is your CD-ROM drive) to copy `AFLASH.EXE` to the boot disk you created.



AFLASH works only in DOS mode. It does not work with certain memory drivers that may be loaded when you boot from the hard drive. It is recommended that you reboot using a floppy disk.

3. Reboot the computer from the floppy disk.



BIOS setup must specify “Floppy” as the first item in the boot sequence.

4. In DOS mode, type `A:\AFLASH <Enter>` to run AFLASH.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V2.0
Copyright (C) 1994-2001 ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel B2802AB

Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model           : XXX-XX
BIOS Built Date      : 12/25/01

Choose one of the followings:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD

Enter choice: [1]

Press ESC To Exit
```



If the word “unknown” appears after `Flash Memory:`, the memory chip is either not programmable or is not supported by the ACPI BIOS and therefore, cannot be programmed by the Flash Memory Writer utility.

5. Select 1. Save Current BIOS to File from the Main menu and press <Enter>. The Save Current BIOS To File screen appears.

```
Save Current BIOS To File
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01
Please Enter File Name to Save: XXX-XX.XXX

BIOS Saved Successfully
Press ESC To Continue
```

6. Type a filename and the path, for example, A:\XXX-XX.XXX, then press <Enter>.

## Updating the BIOS



Update the BIOS only if you are sure that the new BIOS revision will solve your problems. Careless updating may result to more problems with the motherboard!

1. Download an updated ASUS BIOS file from the Internet (WWW or FTP) (see ASUS CONTACT INFORMATION on page x for details) and save to the boot floppy disk you created earlier.
2. Boot from the floppy disk.
3. At the “A:” prompt, type AFLASH and then press <Enter>.
4. At the Main Menu, type 2 then press <Enter>. The Update BIOS Including Boot Block and ESCD screen appears.
5. Type the filename of your new BIOS and the path, for example, A:\XXX-XX.XXX, then press <Enter>.

To cancel this operation, press <Enter>.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01
Please Enter File Name for NEW BIOS: A:\XXX-XX.XXX
```

6. When prompted to confirm the BIOS update, press **Y** to start the update.

```
Update BIOS Including Boot Block and ESCD

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

BIOS Version
[CURRENT] ASUS XXX-XX ACPI BIOS Revision 100X
[Test.awd] ASUS XXX-XX ACPI BIOS Revision 100X

BIOS Model
[CURRENT] XXX-XX
[Test.awd] XXX-XX

Date of BIOS Built
[CURRENT] 09/25/99
[XXXX.XXX] 05/29/00

Check sum of 1001.010 is F266.

Are you sure (Y/N) ? [Y]

Press ESC To Return to Main Menu
```

7. The utility starts to program the new BIOS information into the Flash ROM. The boot block is updated automatically only when necessary. When the programming is done, the message “*Flashed Successfully*” appears.

```
Update BIOS Including Boot Block and ESCD

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

BIOS Version
[CURRENT] ASUS XXX-XX ACPI BIOS Revision 100X
[Test.awd] ASUS XXX-XX ACPI BIOS Revision 100X

BIOS Model
[CURRENT] XXX-XX
[Test.awd] XXX-XX

Date of BIOS Built
[CURRENT] 12/25/01
[XXXX.XXX] 05/29/00

Check sum of 1001.010 is F266.

Are you sure (Y/N) ? [Y]
Block Erasing -- Done
Programming -- 3FFFF
Flashed Successfully

Press ESC To Continue
```

8. Follow the onscreen instructions to continue.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V2.0
Copyright (C) 1994-2001 ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model : XXX-XX
BIOS Built Date : 12/25/01

Choose one of the followings:

1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD

Enter choice: [1]

You have flashed the EPROM:It is recommended that you turn off
the power, enter SETUP and LOAD Setup Defaults to have CMOS
updated with new BIOS when exits.

Press ESC To Exit
```



DO NOT turn off the system while updating the BIOS. This may cause boot problems. Just repeat the process, and if the problem persists, load the original BIOS file you saved to the boot disk. If the Flash Memory Writer utility is not able to successfully update a complete BIOS file, call the ASUS service center for support.

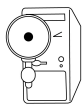
## 2.2 BIOS Setup program

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 anywhere 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 highlighted 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>.



## Sub-menu

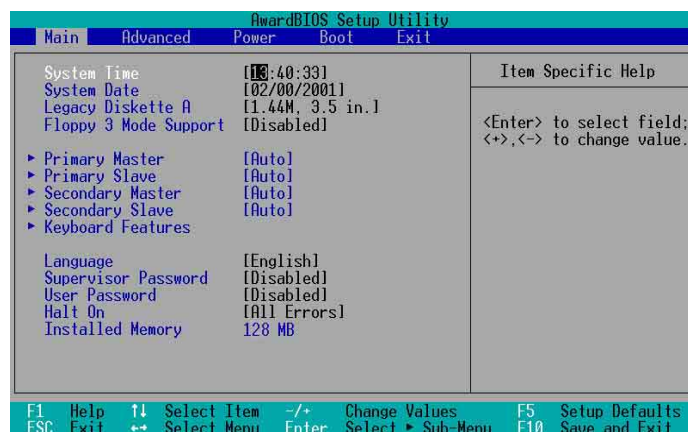


Note that a right pointer symbol (as shown on the left) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. 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

When you enter the Setup program, the following screen appears.



### 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.]

## **Floppy 3 Mode Support [Disabled]**

This is required to support older Japanese floppy drives. The Floppy 3 Mode feature allows reading and writing of 1.2MB (as opposed to 1.44MB) on a 3.5-inch diskette. Configuration options: [Disabled] [Enabled]

## **Language [English]**

This field displays the BIOS language version.

## **Supervisor Password [Disabled] / User Password [Disabled]**

These fields allow you to set passwords. To set a password, highlight the appropriate field and press <Enter>. 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 to [Enabled]. 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 set to [Disabled].



---

Make a copy of the original BIOS on a bootable floppy disk before setting passwords. Label it as CMOS Backup copy.

---

### **A note about passwords**

The BIOS Setup program allows you to specify passwords in the Main 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 "2.1 Managing and updating your BIOS" on how to update the BIOS.

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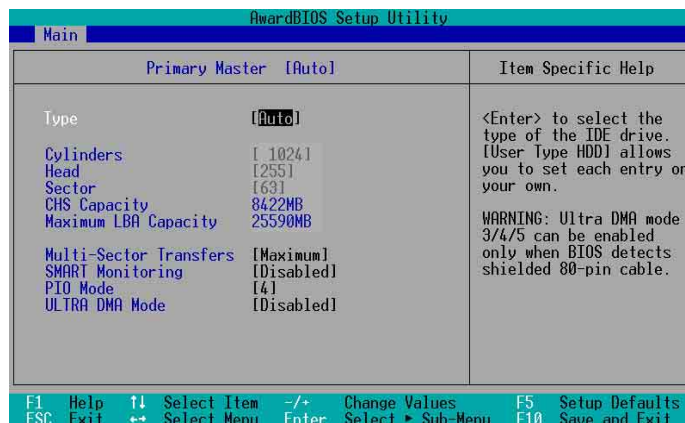
## Halt On [All Errors]

This field specifies the types of errors that will cause the system to halt. Configuration options: [All Errors] [No Error] [All but Keyboard] [All but Disk] [All but Disk/Keyboard]

## Installed Memory [XXX MB]

This field automatically displays the amount of conventional memory detected by the system during the boot process.

## 2.3.1 Primary and Secondary Master/Slave



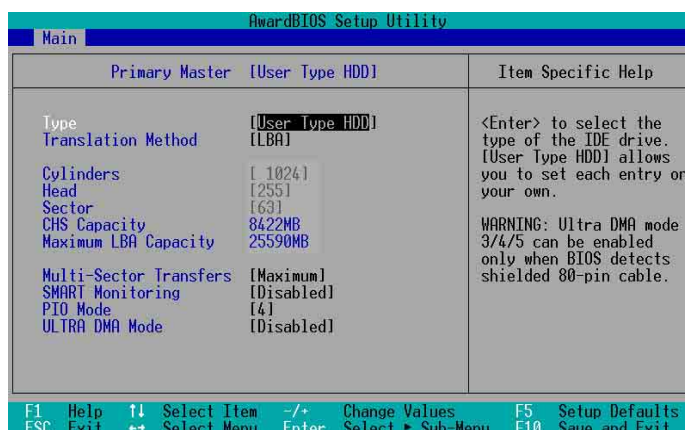
### Type [Auto]

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. If automatic detection fails, select [User Type HDD] to manually enter the IDE hard disk drive parameters. Refer to the next section for details.



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

### [User Type HDD]



Manually enter the number of cylinders, heads and sectors per track for the drive. Refer to the drive documentation or label for this information.

If no drive is installed or if you are removing a drive and not replacing it, select [None].

Other options for the Type field are:

**[CD-ROM]** - for IDE CD-ROM drives

**[LS-120]** - for LS-120 compatible floppy disk drives

**[ZIP]** - for ZIP-compatible disk drives

**[MO]** - for IDE magneto optical disk drives

**[Other ATAPI Device]** - for IDE devices not listed here

After making your selections on this sub-menu, press the <Esc> key to return to the Main menu. When the Main menu appears, the hard disk drive field displays the size for the hard disk drive that you configured.

### **Translation Method [LBA]**

Select the hard disk drive type in this field. When Logical Block Addressing (LBA) is enabled, the 28-bit addressing of the hard drive is used without regard for cylinders, heads, or sectors. Note that LBA Mode is necessary for drives with more than 504MB storage capacity. Configuration options: [LBA] [LARGE] [Normal] [Match Partition Table] [Manual]

### **Cylinders**

This field configures the number of cylinders. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

### **Head**

This field configures the number of read/write heads. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

### **Sector**

This field configures the number of sectors per track. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

### **CHS Capacity**

This field shows the drive's maximum CHS capacity as calculated by the BIOS based on the drive information you entered.

## Maximum LBA Capacity

This field shows the drive's maximum LBA capacity as calculated by the BIOS based on the drive information you entered.

## Multi-Sector Transfers [Maximum]

This option automatically sets the number of sectors per block to the highest number that the drive supports. Note that when this field is automatically configured, the set value may not always be the fastest value for the drive. You may also manually configure this field. Refer to the documentation that came with the hard drive to determine the optimum value and set it manually. To make changes to this field, set the Type field to [User Type HDD]. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors] [32 Sectors] [Maximum]

## SMART Monitoring [Disabled]

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: [Disabled] [Enabled]

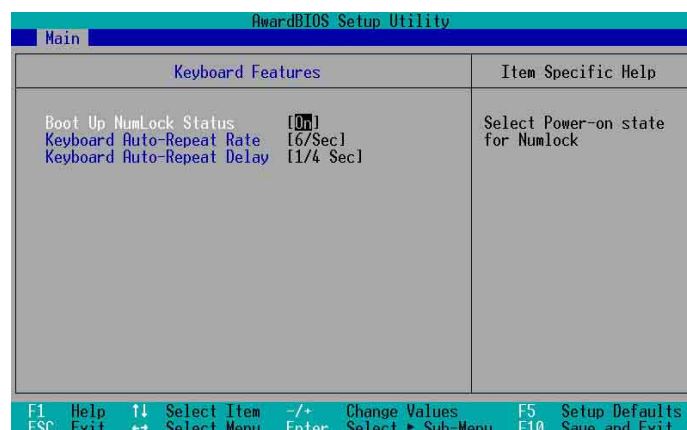
## PIO Mode [4]

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]

## Ultra DMA Mode [Disabled]

Ultra DMA capability allows improved transfer speeds and data integrity for compatible IDE devices. Set to [Disabled] to suppress Ultra DMA capability. To make changes to this field, set the Type field to [User Type HDD]. Configuration options: [0] [1] [2] [3] [4] [5] [Disabled]

## 2.3.2 Keyboard Features



## Boot Up NumLock Status [On]

This field enables users to activate the Number Lock function upon system boot. Configuration options: [Off] [On]

## Keyboard Auto-Repeat Rate [6/Sec]

This controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Configuration options: [6/Sec] [8/Sec] [10/Sec] [12/Sec] [15/Sec] [20/Sec] [24/Sec] [30/Sec]

## Keyboard Auto-Repeat Delay [1/4 Sec]

This field sets the time interval for displaying the first and second characters. Configuration options: [1/4 Sec] [1/2 Sec] [3/4 Sec] [1 Sec]

## 2.4 Advanced Menu



### CPU Speed

This displays the current speed of the CPU installed.

### CPU Frequency Multiple (when CPU Speed is set to [Manual])

This field displays frequency multiple value between the CPU's internal frequency (CPU speed) and external frequency.

### CPU/PCI Frequency (MHz) (when CPU Speed is set to [Manual])

This feature tells the clock generator what frequency to send to the system bus and PCI bus. The bus frequency (external frequency) multiplied by the bus multiple equals the CPU speed.

### CPU/Memory Frequency Ratio [Auto]

This field determines whether the memory clock frequency is set to be in synchronous or asynchronous mode with respect to the system frequency. The options that appear in the popup menu vary according to the CPU Frequency (MHz). Configuration options: [Auto] [1:1] [3:4] [3:5]

## **CPU VCore Setting [Auto]**

The [Manual] setting allows you to manually select the core voltage supplied to the CPU(see next item). However, it is recommended that you keep the default setting [Auto] to allow the system to automatically determine the appropriate CPU core voltage.

## **CPU VCore [1.750V] (for Willamette), [1.500V] (for Northwood)**

When the CPU VCore Setting parameter above is set to [Manual], the CPU VCore item allows you to select a specific CPU core voltage.

Configuration options:

Pentium 4 (Willamette)	[1.850V] [1.825V] [1.800V] [1.775V] [1.750V]
Pentium 4 (Northwood)	[1.700V] [1.675V] [1.650V] [1.625V] [1.600V] [1.575V] [1.550V] [1.525V] [1.500V]

## **CPU Level 2 Cache [Enabled]**

These fields allow you to choose from the default [Enabled] or choose [Disabled] to turn on or off the CPU Level 1 and Level 2 built-in cache.

Configuration options: [Disabled] [Enabled]

## **BIOS Update [Enabled]**

This field functions as an update loader integrated into the BIOS to supply the processor with the required data. When [Enabled], the BIOS loads the update during system bootup. Configuration options: [Disabled] [Enabled]

## **PS/2 Mouse Function Control [Auto]**

The default setting [Auto] allows the system to detect a PS/2 mouse at startup. If a mouse is detected, the BIOS assigns IRQ12 to the PS/2 mouse. Otherwise, IRQ12 can be used for expansion cards. When you set this field to [Enabled], BIOS reserves IRQ12, whether or not a PS/2 mouse is detected at startup. Configuration options: [Enabled] [Auto]

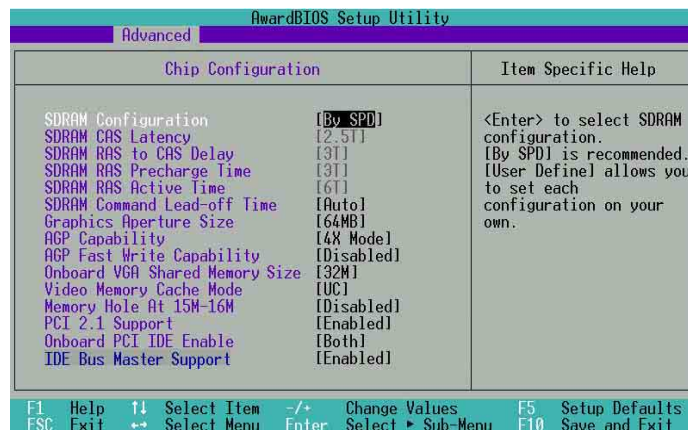
## **USB Legacy Support [Auto]**

This motherboard supports Universal Serial Bus (USB) devices. The default of [Auto] allows the system to detect a USB device at startup. If detected, the USB controller legacy mode is enabled. If not detected, the USB controller legacy mode is disabled. When you set this field to [Disabled], the USB controller legacy mode is disabled whether or not you are using a USB device. Configuration options: [Disabled] [Enabled] [Auto]

## **OS/2 Onboard Memory > 64M [Disabled]**

When using OS/2 operating systems with installed DRAM of greater than 64MB, you need to set this option to [Enabled]. Otherwise, leave to the default setting [Disabled]. Configuration options: [Disabled] [Enabled]

## 2.4.1 Chip Configuration



### SDRAM Configuration [By SPD]

This parameter allows you to set the optimal timings for items 2–5, depending on the memory modules that you are using. The default setting is [By SPD], which configures items 2–5 by reading the contents in the SPD (Serial Presence Detect) device. The EEPROM on the memory module stores critical information about the module, such as memory type, size, speed, voltage interface, and module banks.

Configuration options: [User Defined] [By SPD]



The SDRAM parameters (items 2~5) become configurable only when you set the SDRAM Configuration to [User Defined].

### SDRAM CAS Latency [2.5T]

This item controls the latency between the SDRAM read command and the time the data actually becomes available.

### SDRAM RAS to CAS Delay [3T]

This item controls the latency between the DDR SDRAM active command and the read/write command.

### SDRAM RAS Precharge Time [3T]

This item controls the idle clocks after issuing a precharge command to the DDR SDRAM.

### SDRAM RAS Active Time [6T]

This item controls the number of DDR SDRAM clocks used for DDR SDRAM parameters.

### SDRAM Command Lead-off Time [Auto]

When set to [2T], memory read/write commands are issued 1 clock cycle behind the memory address (MA). When set to [1T], read/write commands and MA are issued simultaneously. Configuration options: [Auto] [2T] [1T]



### **Graphics Aperture Size [64MB]**

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

### **AGP Capability [4X Mode]**

This motherboard supports the AGP 4X interface that transfers video data at 1066MB/s. AGP 4X is backward-compatible, so you may keep the default [4X Mode] even if you are using an AGP 1X video card. When set to [1X Mode], the AGP interface only provides a peak data throughput of 266MB/s even if you are using an AGP 4x card.

Configuration options: [1X Mode] [2X Mode] [4X Mode]

### **AGP Fast Write Capability [Disabled]**

Configuration options: [Disabled] [Enabled]

### **Video Memory Cache Mode [UC]**

USWC (uncacheable, speculative write combining) is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must set this to UC (uncacheable) if your display card does not support this feature, otherwise the system may not boot. Configuration options: [UC] [USWC]

### **Memory Hole At 15M-16M [Disabled]**

This field allows you to reserve an address space for ISA expansion cards. Setting the address space to a particular setting makes that memory space unavailable to other system components. Expansion cards can only access memory up to 16MB. Configuration options: [Disabled] [Enabled]

### **PCI 2.1 Support [Enabled]**

This field allows you to enable or disable the PCI 2.1 features. Keep the default setting [Enabled] if you installed PCI 2.1 compliant cards. Set to [Disabled] if you installed any card that is not PCI 2.1 compliant.

Configuration options: [Disabled] [Enabled]

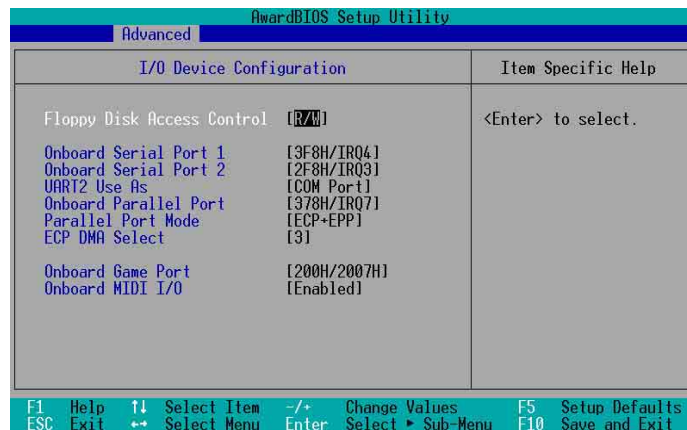
### **Onboard PCI IDE Enable [Both]**

This field allows you to enable either the primary IDE channel or secondary IDE channel, or both. You can also set both channels to [Disabled]. Configuration options: [Both] [Primary] [Secondary] [Disabled]

### **IDE Bus Master Support [Enable]**

This field enables or disables the IDE Bus Master Capability under the DOS environment. Configuration options: [Disabled] [Enabled]

## 2.4.2 I/O Device Configuration



### Floppy Disk Access Control [R/W]

When set to [Read Only], this parameter protects files from being copied to floppy disks by allowing reads from, but not writes to, the floppy disk drive. The default setting [R/W] allows both reads and writes. Configuration options: [R/W] [Read Only]

### Onboard Serial Port 1 [3F8H/IRQ4], Port 2 [2F8H/IRQ3]

These fields allow you to set the addresses for the onboard serial connectors. Serial Port 1 and Serial Port 2 must have different addresses.

### UART2 Use As [COM Port]

This field allows you to select the device on which to assign UART2. Configuration options: [COM Port] [IR] [Smart Card Reader]

### Onboard Parallel Port [378H/IRQ7]

This field allows you to set the address of the onboard parallel port connector. If you disable this field, the Parallel Port Mode and ECP DMA Select configurations are not available. Configuration options: [Disabled] [378H/IRQ7] [278H/IRQ5]

### Parallel Port Mode [ECP+EPP]

This field allows you to set the operation mode of the parallel port. [Normal] allows normal-speed operation but in one direction only; [EPP] allows bidirectional parallel port operation; [ECP] allows the parallel port to operate in bidirectional DMA mode; [ECP+EPP] allows normal speed operation in a two-way mode. Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

### ECP DMA Select [3]

This field allows you to configure the parallel port DMA channel for the selected ECP mode. This selection is available only if you select [ECP] or [ECP+EPP] in Parallel Port Mode above. Configuration options: [1] [3]

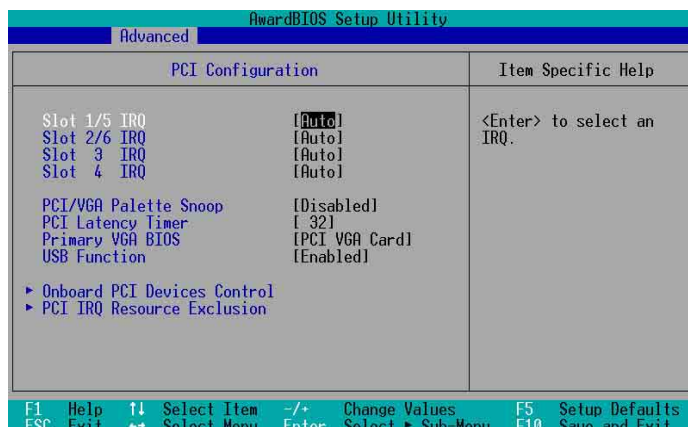
## Onboard Game Port [200H-207H]

This field allows you to select the I/O address for the game port.  
Configuration options: [Disabled] [200H-207H] [208H-20FH]

## Onboard MIDI I/O [Disabled]

This field allows you to select the I/O address for the MIDI port.  
Configuration options: [Disabled] [330H-331H] [300H-301H]

## 2.4.3 PCI Configuration



### Slot 1/5, Slot 2/6, Slot 3, Slot 4 IRQ [Auto]

These fields assign the IRQ for each PCI slot. The default setting for each field is [Auto], which utilizes auto-routing to determine IRQ assignments.  
Configuration options: [Auto] [NA] [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

### PCI/VGA Palette Snoop [Disabled]

Some non-standard VGA cards, like graphics accelerators or MPEG video cards, may not show colors properly. Setting this field to [Enabled] corrects this problem. If you are using standard VGA cards, leave this field to the default setting [Disabled].  
Configuration options: [Disabled] [Enabled]

### PCI Latency Timer [32]

Leave this field to the default setting [32] for best performance and stability.

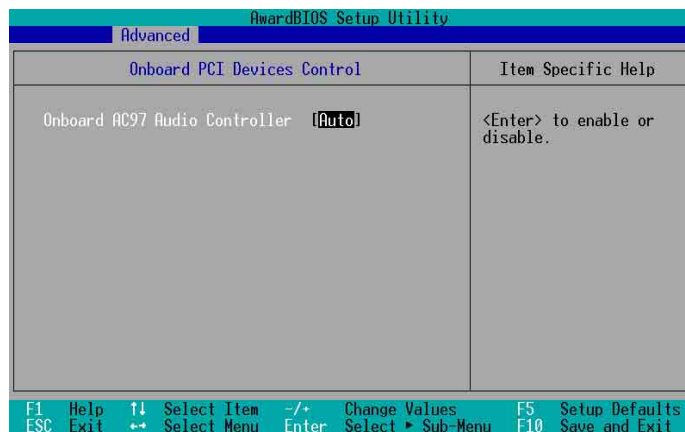
### Primary VGA BIOS [PCI VGA Card]

This field allows you to select the primary graphics card or the onboard VGA. The option [Onboard VGA] appears only if you installed a PCI or AGP card.  
Configuration options: [PCI VGA Card] [AGP VGA Card]

### USB Function [Enabled]

This field allows you to select the number of USB 1.1 controllers that you wish to activate.  
Configuration options: [Disabled] [Enabled]

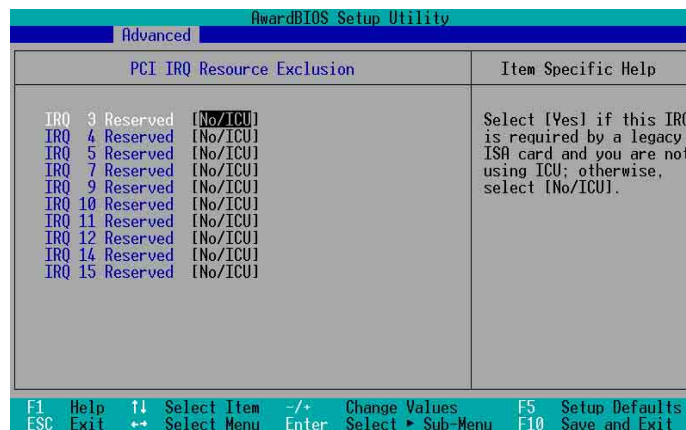
### 4.4.3.1 Onboard PCI Devices Control



#### Onboard AC97 Audio Controller [Auto]

[Auto] allows the BIOS to detect whether you are using any modem/audio device. If a modem/audio device is detected, the onboard modem/audio controller is enabled; if no modem/audio device is detected, the controller is disabled. If there are conflicts with the onboard modem/audio controller, set the appropriate field to [Disabled]. Configuration options: [Disabled] [Auto]

### 2.4.3.2 PCI IRQ Resource Exclusion

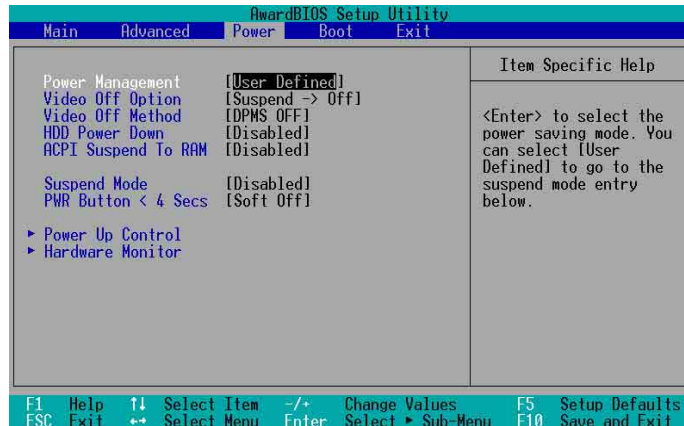


#### IRQ XX Reserved [No/ICU]

These fields indicate whether or not the displayed IRQ for each field is being used by a legacy (non-PnP) ISA card. The setting [No/ICU] for an IRQ field indicates that you are using the ISA Configuration Utility (ICU), and that this particular IRQ is NOT required by a legacy ISA card. Set the IRQ field to [Yes] if you install a legacy ISA card that requires a unique IRQ and you are NOT using ICU. Configuration options: [No/ICU] [Yes]

## 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.



### Power Management [User Defined]

This field allows you to activate or deactivate the automatic power saving features. When set to [Disabled], the power management features do not function regardless of the other settings on this menu. The [User Defined] option allows you to set the period of inactivity before the system enters suspend mode. Refer to “Suspend Mode” later in this section.

When set to [Max Saving], system power is conserved to its greatest amount. This setting automatically puts the system into suspend mode after a brief period of system inactivity. [Min Saving] allows the least power saving as the system enters suspend mode only after a long period of inactivity. Configuration options: [User Defined] [Disabled] [Min Saving] [Max Saving]



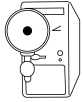
You should install the Advanced Power Management (APM) utility to keep the system time updated even when the computer enters suspend mode. In Windows 3.x and Windows 95, you need to install Windows with the APM feature. In Windows 98 or later, APM is automatically installed as indicated by a battery and power cord icon labeled “Power Management” in the Control Panel. Select the item “Advanced” in the Power Management Properties dialog box.

### Video Off Option [Suspend -> Off ]

This field determines when to activate the video off feature for monitor power management. Configuration options: [Always On] [Suspend -> Off]

## Video Off Method [DPMS OFF]

This field defines the video off features. The Display Power Management System (DPMS) feature allows the BIOS to control the video display card if it supports the DPMS feature. [Blank Screen] only blanks the screen. Use this for monitors without power management or “green” features.



---

Even if installed, your screen saver does not display when you select [Blank Screen] for the above field.

---

[V/H SYNC+Blank] blanks the screen and turns off vertical and horizontal scanning. Configuration options: [Blank Screen] [V/H SYNC+Blank] [DPMS Standby] [DPMS Suspend] [DPMS OFF] [DPMS Reduce ON]

## HDD Power Down [Disabled]

Shuts down any IDE hard disk drives in the system after a period of inactivity as set in this user-configurable field. This feature does not affect SCSI hard drives. Configuration options: [Disabled] [1 Min] [2 Min] [3 Min]...[15 Min]

## ACPI Suspend To RAM [Disabled]

This field allows you to enable or disable the ACPI Suspend-to-RAM feature. To support this feature, the +5VSB of the power supply should have the capacity to provide more than 720mA current. Configuration options: [Disabled] [Enabled]

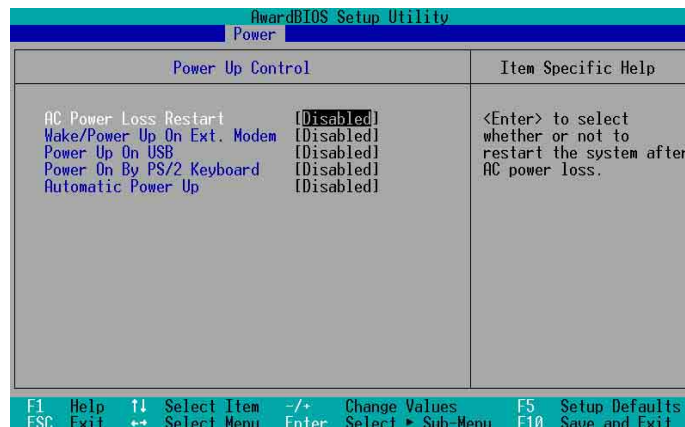
## Suspend Mode [Disabled]

Sets the time period before the system goes into suspend mode. Configuration options: [Disabled] [1~2 Min] [2~3 Min] [4~5 min] [8~9 Min] [20 Min] [30 Min] [40 Min] [1 hour]

## PWR Button < 4 Secs [Soft Off]

When set to [Soft off], the ATX switch can be used as a normal system power-off button when pressed for less than 4 seconds. [Suspend] allows the button to have a dual function where pressing less than 4 seconds puts the system in sleep mode. Regardless of the setting, holding the ATX switch for more than 4 seconds powers off the system. Configuration options: [Soft off] [Suspend]

## 2.5.1 Power Up Control



### AC PWR Loss Restart [Disabled]

This allows you to set whether or not to reboot the system after power interruptions. [Disabled] leaves your system off while [Enabled] reboots the system. [Previous State] sets the system back to the state it was before the power interruption. Configuration options: [Disabled] [Enabled] [Previous State]

### Wake/Power Up On Ext. 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]

### Power Up on USB [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a USB device activity. 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 Keyboard [Space Bar]

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] [Space Bar] [Ctrl-Esc] [Power Key]

### Automatic Power Up [Disabled]

This allows an unattended or automatic system power up. You may configure your system to power up at a certain time of the day by selecting [Everyday] or at a certain time and day by selecting [By Date]. Configuration options: [Disabled] [Everyday] [By Date]

## 2.5.2 Hardware Monitor

AwardBIOS Setup Utility		Item Specific Help
Power		
Hardware Monitor		
MB Temperature	30°C/86°F	<Enter> to switch between monitoring or ignoring.
CPU Temperature	41°C/105.5°F	
POWER Temperature	N/A	
CPU Fan Speed	7500RPM	
Chassis Fan Speed	N/A	
Power Fan Speed	5335RPM	
VCORE Voltage	1.50V	
+3.3V Voltage	3.47V	
+5V Voltage	4.91V	
+12V Voltage	12.09V	
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults		
ESC Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		

### MB Temperature [xxx°C/xxx°F], CPU Temperature [xxx°C/xxx°F], Power Temperature [N/A]

The onboard hardware monitor automatically detects and displays the motherboard, CPU and Power supply temperatures.

### CPU Fan Speed [xxxxRPM], Chassis Fan Speed [xxxxRPM], Power Fan Speed [xxxxRPM]

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, that field shows N/A.

### 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

AwardBIOS Setup Utility		Item Specific Help
Main Advanced Power Boot Exit		
1. Removable Device	[Legacy Floppy]	Boot Sequence: <Enter> to select the device.  To select the boot sequence, use the up or down arrow. Press <+> to move the device up the list, or <-> to move it down the list.
2. IDE Hard Drive	[None]	
3. ATAPI CD-ROM	[None]	
4. Other Boot Device	[INT18 Device (Networ]	
Plug & Play O/S	[No]	
Boot Virus Detection	[Enabled]	
Quick Power On Self Test	[Enabled]	
Boot Up Floppy Seek	[Enabled]	
Full Screen Logo	[Enabled]	
Interrupt Mode	[APIC]	
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults		
ESC Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit		



## **Boot Sequence**

The Boot menu allows you to select four types of boot devices using the up and down arrow keys. By using the <+> or <Space> key, you can promote devices and by using the <-> key, you can demote devices. Promotion or demotion of devices alters the priority which the system uses to boot device on system power up. Configuration fields include Removable Devices, IDE Hard Drive, ATAPI CD-ROM, and Other Boot Device.

### **Removable Device [Legacy Floppy]**

Configuration options: [Disabled] [Legacy Floppy] [LS-120] [ZIP] [ATAPI MO] [USB FDD] [USB ZIP]

### **IDE Hard Drive**

This field allows you to select which IDE hard disk drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all connected IDE hard disk drives.

### **ATAPI CD-ROM**

This field allows you to select which ATAPI CD-ROM drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all your connected ATAPI CD-ROM drives.

### **Other Boot Device Select [INT18 Device (Network)]**

Configuration options: [Disabled] [SCSI Boot Device] [INT18 Device (Network)]

### **Plug & Play O/S [No]**

This field allows you to use a Plug-and-Play (PnP) operating system to configure the PCI bus slots instead of using the BIOS. When [Yes] is selected, interrupts may be reassigned by the OS. If you installed a non-PnP OS or if you want to prevent reassigning of interrupt settings, keep the default setting [No]. Configuration options: [No] [Yes]

### **Boot Virus Detection [Enabled]**

This field allows you to set boot virus detection, 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]

## Quick Power On Self Test [Enabled]

This field speeds up the Power-On-Self Test (POST) routine by skipping retesting a second, third, and fourth time. Configuration options: [Disabled] [Enabled]

## Boot Up Floppy Seek [Enabled]

When enabled, the BIOS will seek the floppy disk drive to determine whether the drive has 40 or 80 tracks. Configuration options: [Disabled] [Enabled]

## Full Screen Logo [Enabled]

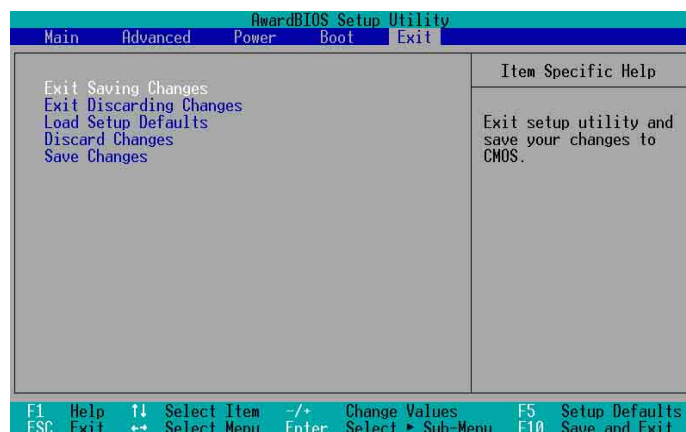
This allows you to enable or disable the full screen logo display feature. Configuration options: [Disabled] [Enabled]

## Interrupt Mode [APIC]

The Advanced Programmable Interrupt Controller (APIC) setting allows you to distribute interrupt routings other than the 16 IRQs. The Programmable Interrupt Controller (PIC) setting allows you to use the 16 IRQs only. Configuration options: [PIC] [APIC]

## 2.7 Exit Menu

When you have made all of your selections from the various menus in the Setup program, save your changes and exit Setup. Select Exit from the menu bar to display the following menu.



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 Saving 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 Discarding 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.

## 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.

## 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.

## Save Changes

This option saves your selections without exiting the Setup program. You can then return to other menus and make further changes. After you select this option, a confirmation window appears. Select [Yes] to save any changes to the non-volatile RAM.



# Chapter 3

This chapter helps you power up your system and install drivers and utilities that came with the support CD.

# Starting Up

## 3.1 Install an operating system

The P4SE motherboard supports Windows 98/ME/NT/2000/XP operating systems (OS). Always install the latest OS version and corresponding updates so you can maximize the features of your hardware.

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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.

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## 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.



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

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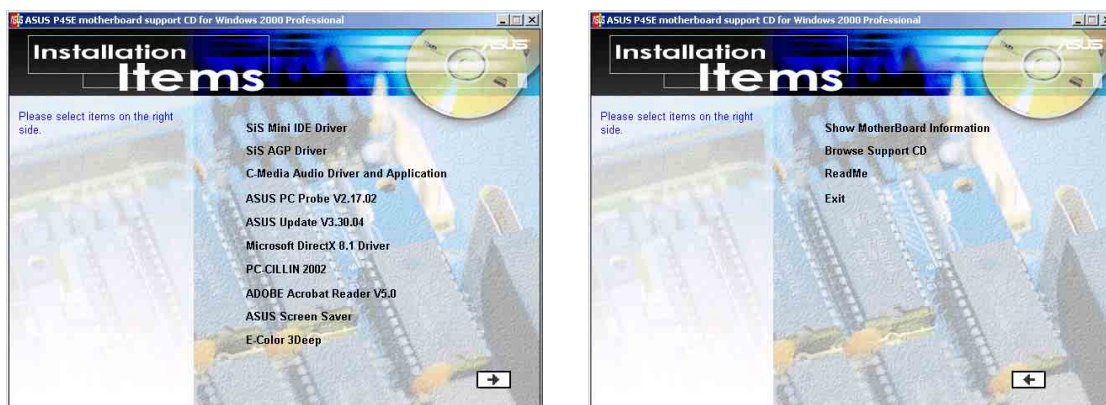
### 3.2.1 Running the support CD

To begin using the support CD, simply insert the CD into your CD-ROM drive. If Autorun is enabled in your computer, the software and drivers menu automatically appears on your screen.

If the installation menu did not appear automatically, locate and double-click on the file ASSETUP.EXE from the BIN folder in the support CD to display the menu.

## 3.2.2 Software and drivers installation menus

The support CD menu is composed of two screens. Click on the **Right Arrow** on the lower right corner of the first screen to display the second menu screen. To return to the first menu screen, click on the **Left Arrow** on the lower right corner of the second screen.



## 5.2.3 Software and drivers description

The menu lists the drivers and applications that are available for this motherboard. Simply click on a specific item then follow the installation wizard to install it.

### SiS Mini IDE Driver

Click this item to install the mini driver for the SiS chipset.

### SiS AGP Driver

Click this item to load the installation wizard and install the SiS AGP V1.07 driver for your AGP card.

### C-Media Audio Driver and Applications

This item is for installing the C-Media audio driver and software applications.

### ASUS PC Probe

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

### ASUS Update

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

### Microsoft Direct X 8.0a Driver

This item installs the Microsoft V8.0a driver.

## **PC-CILLIN 2002**

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

## **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.

## **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.

CLICK THE RIGHT ARROW TO SEE THE NEXT MENU

## **Show Motherboard Information**

Click this item to display the general specifications for the P4SE motherboard.

## **Browse Support CD**

Click this item to display the support CD contents in graphical format.

## **Readme**

This item displays the contents of the support CD and a brief description of each in text format.

## **Exit**

Click this item to exit the P4SE support CD.

CLICK THE LEFT ARROW TO RETURN TO THE MAIN MENU



## 3.3 Software information

### 3.3.1 ASUS Update

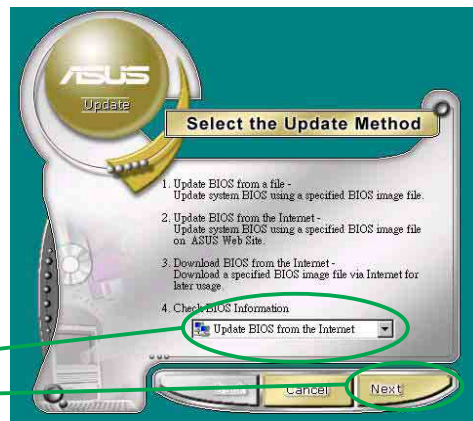
The ASUS Update utility allows you to update the motherboard BIOS and drivers. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP).

Follow these steps to use the ASUS Update.

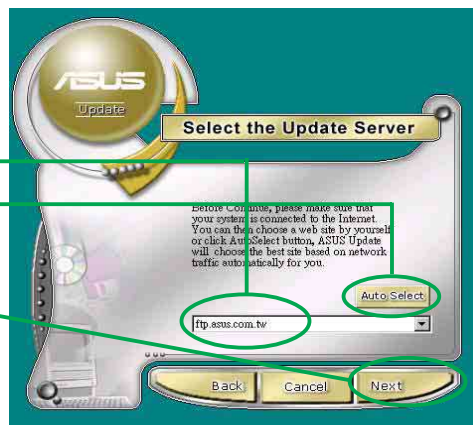
1. Launch the utility from your Windows Start menu:  
**Programs/AsusUpdate Vx.xx.xx/  
AsusUpdate**

The ASUS Update initial screen appears.

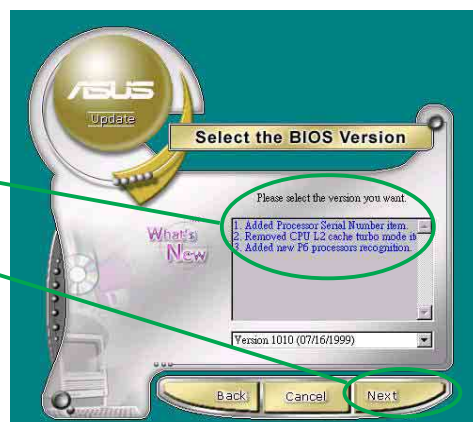
2. Select desired update method.  
Click Next.



3. If you selected Updating or Downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic, or choose Auto Select.  
Click Next.



4. From the FTP site, select the BIOS version that you wish to download.  
Click Next.



5. Follow the instructions on the succeeding screens to complete the update process.



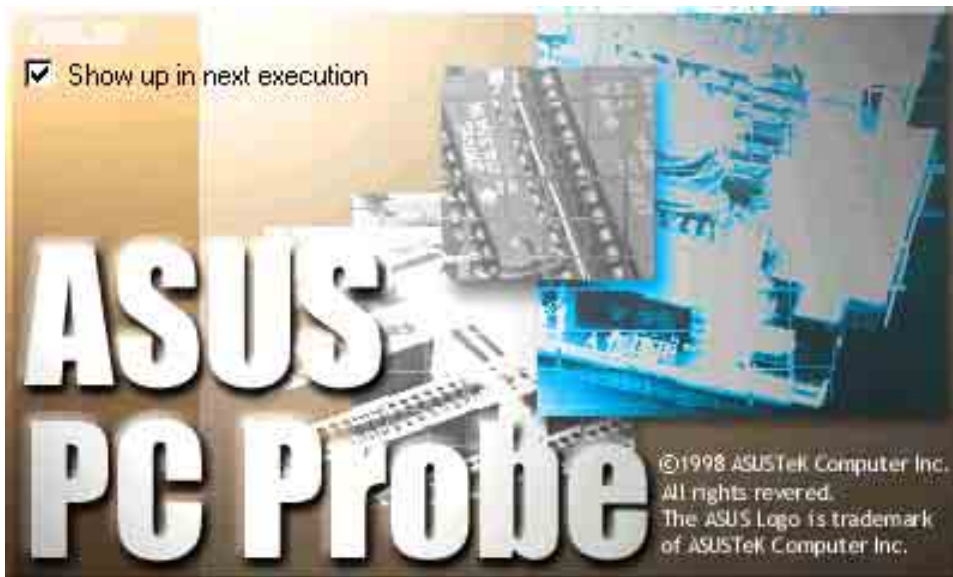
If you selected the option to update the BIOS from a file, a window pops up prompting you to locate the file. Select the file, click Save, then follow the screen instructions to complete the update process.

### 3.3.2 ASUS PC Probe


ASUS PC Probe is a convenient utility to continuously monitor your computer system's vital components, such as fan rotations, voltages, and temperatures. It also has a utility that lets you review useful information about your computer, such as hard disk space, memory usage, and CPU type, CPU speed, and internal/external frequencies through the DMI Explorer.

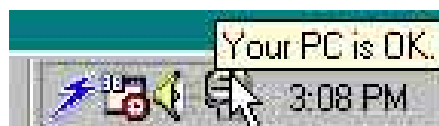
#### Starting ASUS PC Probe

When ASUS PC Probe starts, a splash screen appears allowing you to select whether to show the screen again when you open PC Probe or not. To bypass this startup screen, clear the **Show up in next execution** check box.



To launch **ASUS PC Probe**, click the Windows **Start** button, point to **Programs**, and then **ASUS Utility**, and then click **Probe Vx.xx**.

The PC Probe icon  appears on the taskbar system tray indicating that ASUS PC Probe is running. Clicking the icon allows you to see the status of your PC.



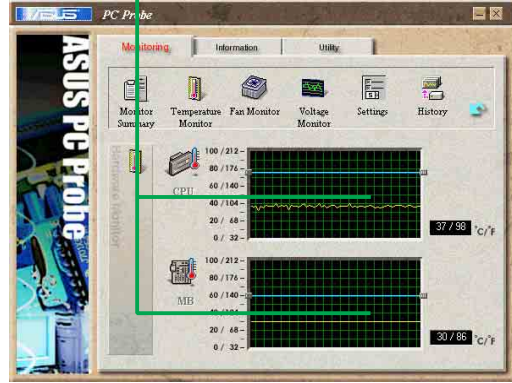
# Using ASUS PC Probe

## Monitoring

Temperature Warning Threshold Adjustment  
(Move the slider up to increase the threshold level or down to decrease the threshold level)

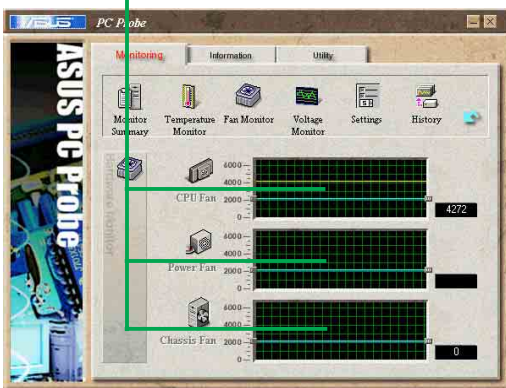


**Monitor Summary**  
Shows a summary of the items being monitored.

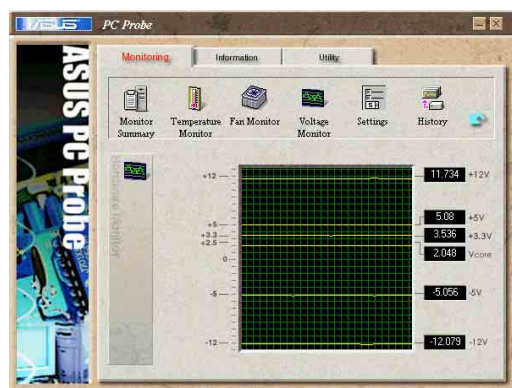


**Temperature Monitor**  
Shows the PC temperature (for supported processors only).

Fan Warning Threshold Adjustment  
(Move the slider up to increase the threshold level or down to decrease the threshold level)



**Fan Monitor**  
Shows the PC fan rotation.



**Voltage Monitor**  
Shows the PC voltages.

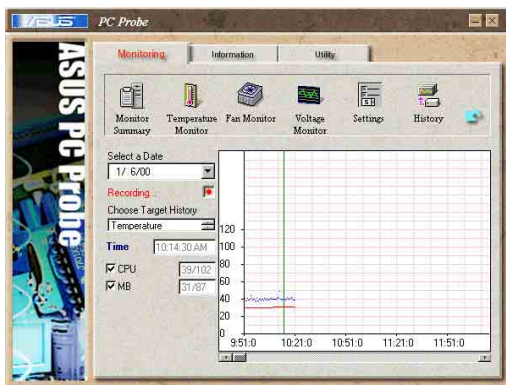
## Settings

Lets you set threshold levels and polling intervals or refresh times of the PC's temperature, fan rotation, and voltages.



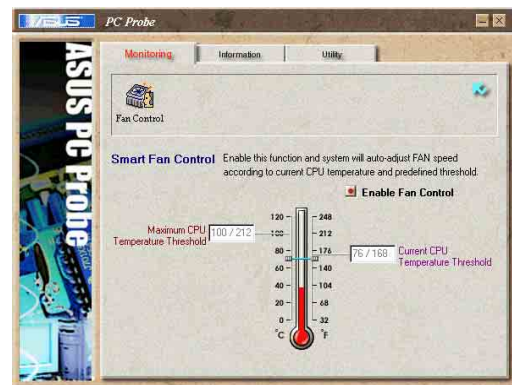
### CPU Cooling System Setup

Lets you select when to enable software CPU cooling. When **When CPU Overheated** is selected, the CPU cooling system is enabled whenever the CPU temperature reaches the threshold value.



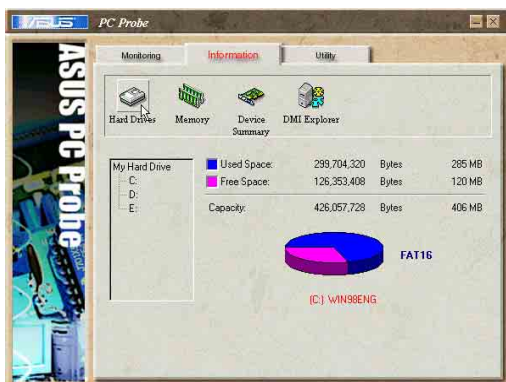
## History

Lets you record the monitoring activity of a certain component of your PC for future reference.



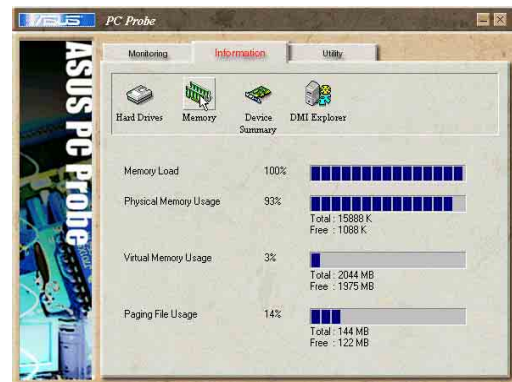
## Fan Control

Lets you enable/disable Smart Fan Control. Smart Fan Control adjusts the fan speed automatically based on the current CPU temperature and predefined threshold.



## Hard Drives

Shows the used and free space of the PC's hard disk drives and the file allocation table or file system used.



## Memory

Shows the PC memory load, memory usage, and paging file usage.



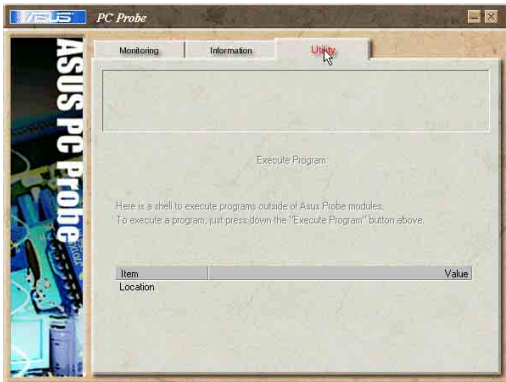
### Device Summary

Shows a summary of devices present in your PC.



### DMI Explorer

Shows information pertinent to the PC, such as CPU type, CPU speed, and internal/external frequencies, and memory size.



### Utility

**NOTE:** This feature is currently unavailable.

## ASUS PC Probe Task Bar Icon

Right clicking the PC Probe icon brings up a menu to open or exit ASUS PC Probe and pause or resume all system monitoring.



When the ASUS PC Probe senses a problem with your PC, portions of the ASUS PC Probe icon change to red, the PC speaker beeps, and the ASUS PC Probe monitor appears.



