

# **ASUS<sup>®</sup> AB-P 2600**

## **Book Size Barebone System**

### User's Guide



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# 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.



### **WARNING!**

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.**

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# 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.
- Before connecting or removing 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 devices into the system, carefully read all the documentation that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

# About this guide

## Audience

This guide provides general information and installation instructions about the ASUS Book Size Barebone System. This guide is intended for experienced users and integrators with hardware knowledge of personal computers.

## How this guide is organized

This document contains the following parts:

### 1. Chapter 1: System Introduction

This chapter gives a general description of the ASUS book size barebone system. It includes introduction on the front and rear panel features, and the internal features.

### 2. Chapter 2: System Assembly

This chapter tells how to install components into the barebone system through illustrated step-by-step instructions.

### 3. Chapter 3: Optional Components

This chapter detail steps in installing other optional components that can be included in the system .

### 4. Chapter 4: System Placement

This chapter describes proper system placement for system safety and compliment space saving design.

### 5. Chapter 5: Motherboard Information

This chapter gives information about the P4S8L motherboard that came with the system. This chapter includes the motherboard layout, jumper settings, and connector locations. It also includes information on the USB/audio board located on the front panel.

### 6. Chapter 6: BIOS information

This chapter tells how to change system settings through the BIOS Setup menus. It includes detailed descriptions of the BIOS parameters.

### 7. Chapter 7: Starting up

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

# About this guide

## Conventions used in this guide

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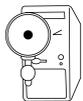
### **WARNING!**

Information to prevent injury to yourself when trying to complete a task.



### **DANGER!**

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 on page ix.

### **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)

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Support Email: tsd@asus.com.tw  
Web Site: www.asus.com.tw  
Newsgroup: cscnews.asus.com.tw

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General Support: +1-502-933-8713  
Web Site: www.asus.com  
Support Email: tsd@asus.com

## ASUS COMPUTER GmbH (Germany & Austria)

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

### *Technical Support*

Support Hotline: MB/Others: +49-2102-9599-0  
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

# System package contents

Check your ASUS Barebone System package for the following items:

1. Barebone system
2. Motherboard
3. Switching power supply
4. Support CD
5. User's guide



1. Optional items may not be present in your package.
  2. If any of the above items is damaged or missing, contact your dealer immediately.
- 



If you are assembling the system by yourself, make sure to prepare all the components before starting. It saves you a lot of time not having to hunt down components when you need them.

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# Chapter 1

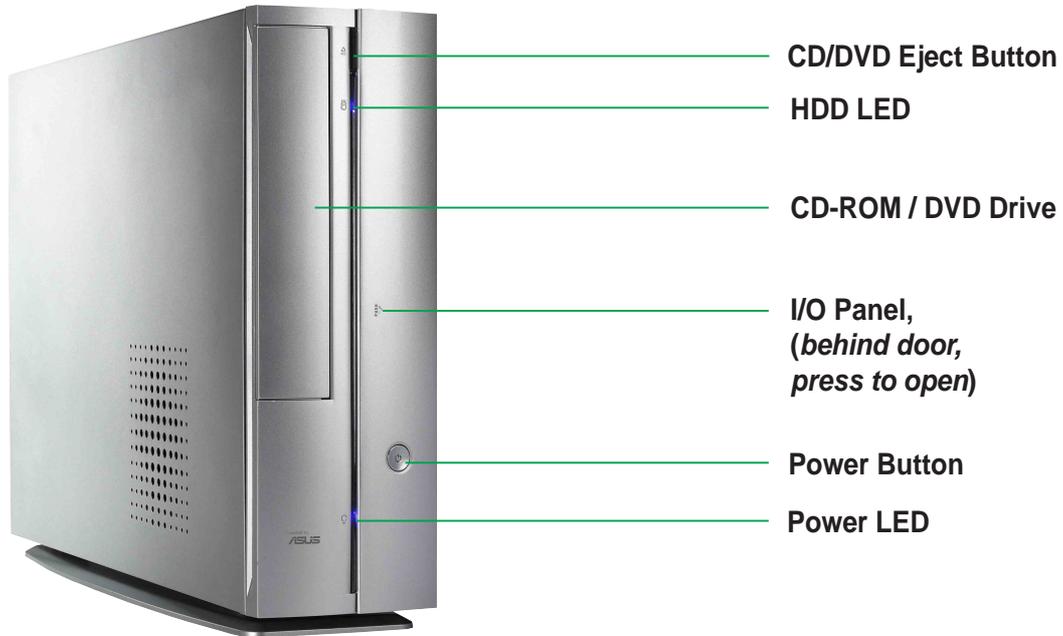
All about the ASUS Book Size Barebone System: the front and rear panel features, and the internal layout and design.

# System Introduction

# 1.1 Front Panel Features

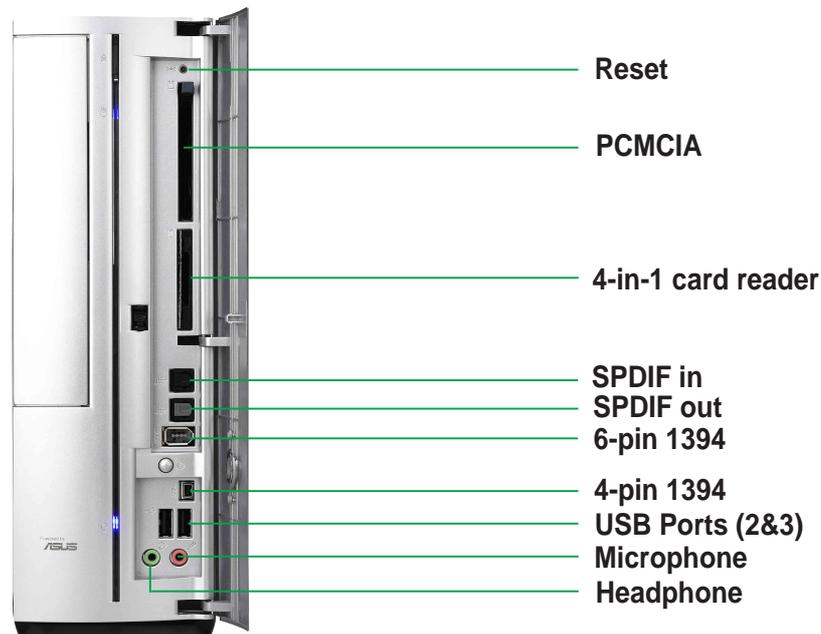
The ASUS Book Size Barebone System includes the ASUS motherboard, a power supply and a CD-ROM or DVD drive built into in a dual-positional chassis.

The front panel features:



The front bezel door conceals the and features: a PCMCIA slot, 4-in-1 card slot, the fiber optical SPDIF in and out connectors, the 4 and 6-pin 1394 jacks, two USB connectors (Ports 2&3), headphone and microphone connectors

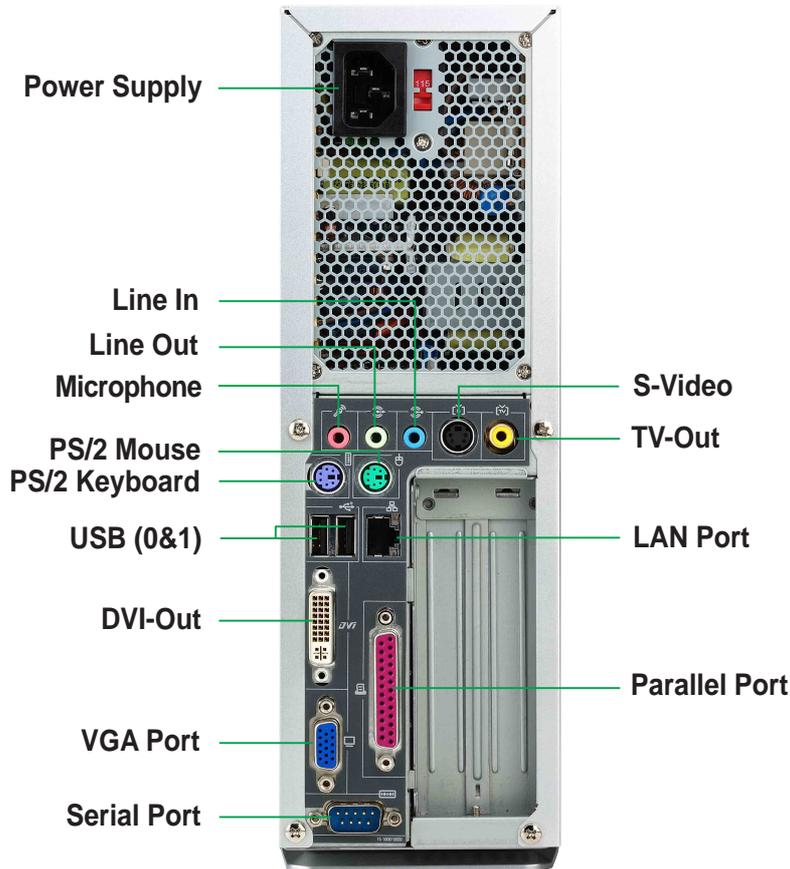
Press **PUSH** icon to open the door.



## 1.2 Rear Panel Features

The rear panel of the ASUS Book Size Barebone System includes the standard PC99 I/O connectors for external devices, power supply socket, and optional feature connectors.

The rear panel features:

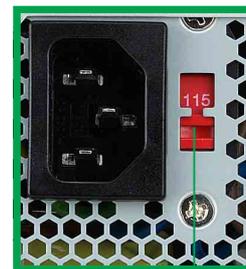


### Voltage Selector

The switching power supply that came with the system has a voltage selector switch below the power socket. Use this switch to select the appropriate voltage according to the voltage supply in your area.

If the voltage supply in your area is 100-127V, set the switch to 115V.

If the voltage supply in your area is 200-240V, set the switch to 230V.



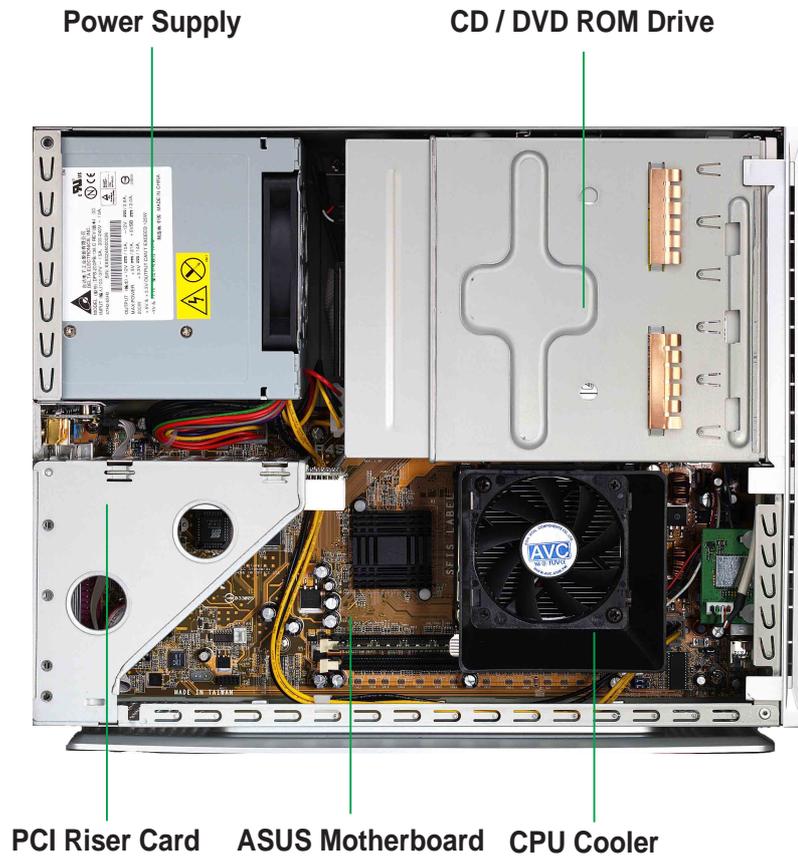
115V/230V  
Voltage Selector



Setting the switch to 115V in a 230V environment or 230V in a 115V environment will seriously damage the system!

## 1.3 Internal Features

The figure below shows the system from above. The standard components are already installed.



# Chapter 2

Step-by-step instructions on how to install basic components.



---

ASUS has designed the Pundit for an ASUS P4S8L motherboard only. It is not advisable to install other motherboards. Before installing any motherboard other than the original supplied by ASUS, make sure that it fits into the case and the I/O connectors correspond to the openings on the back panel.

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# System Assembly

## 2.1 Opening the chassis



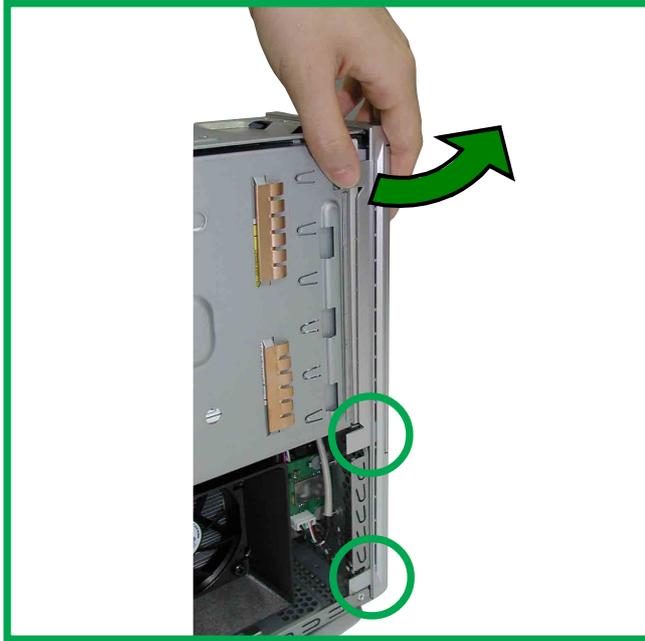
1. Remove the four screws on each end of the back panel. This frees the the chassis cover.



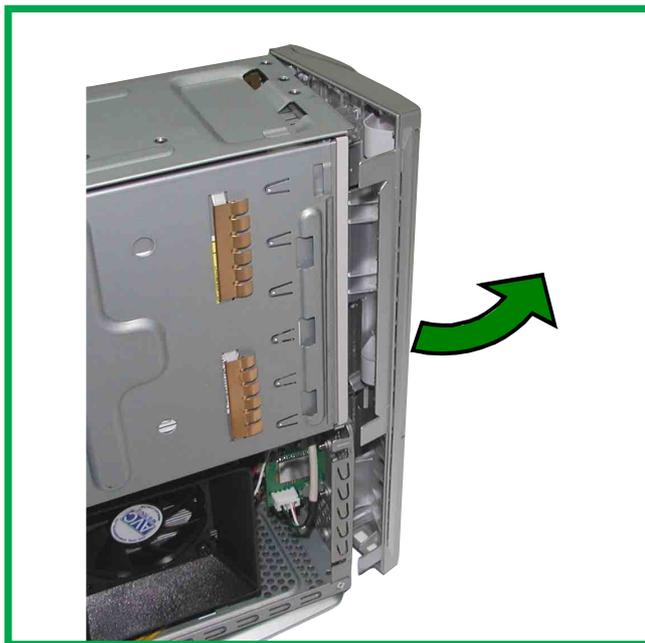
2. Separate the case and chassis cover: use your thumbs to pull it off, from the front to the back, then lift it off the chassis.



3. Open the case, lifting the top cover.



5. Gently detach the three front bezel hooks from the case front so that it may be removed.



6. Remove the front bezel and set it aside.

## 2.2 Removing the disk drive assembly



1. Remove the three screws on each marked location as shown. This frees the DVD/CD/HD drive assembly.



2. Slowly lift out the DVD/CD/hard disk drive module.



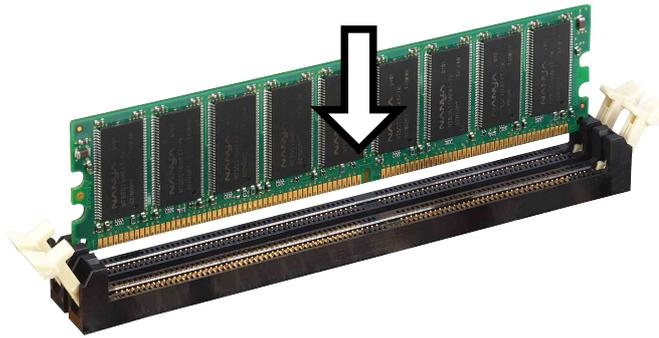
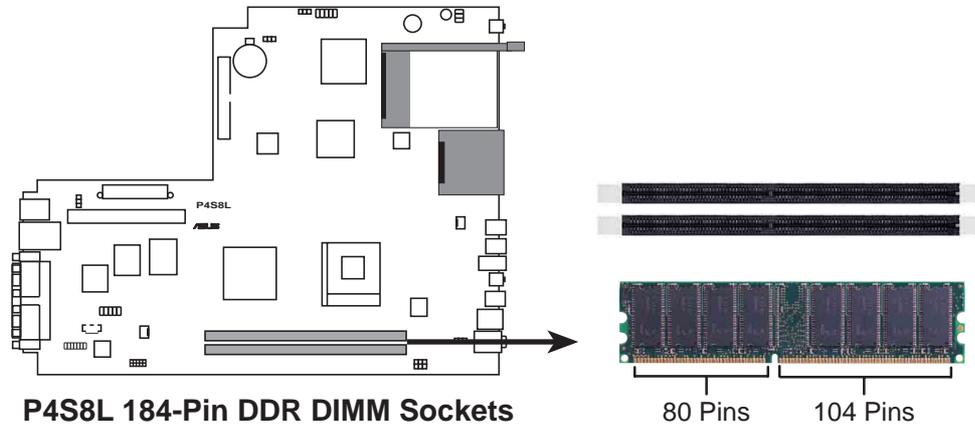
---

Take caution when lifting out the drive assembly, you may damage the cables connected to the DVD/CD and hard disk drives.

---

## 2.3 Installing the system memory

1. To perform this procedure, make sure
2. Locate the two DDR SDRAM DIMM sockets on the ASUS motherboard.



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

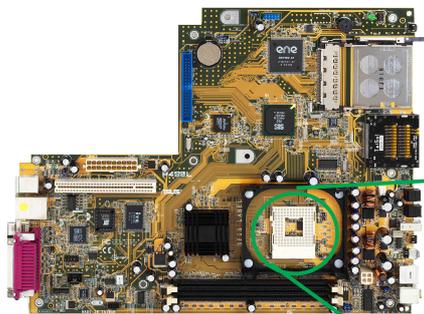
3. Unlock a DIMM socket by pressing the retaining clips outward.
4. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
5. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.
6. After installing the DIMM, place the CD and floppy drive assembly back into its original position. Then, replace the front bezel; take care to insert the three plastic tabs without stress.

## 2.4 Installing the CPU

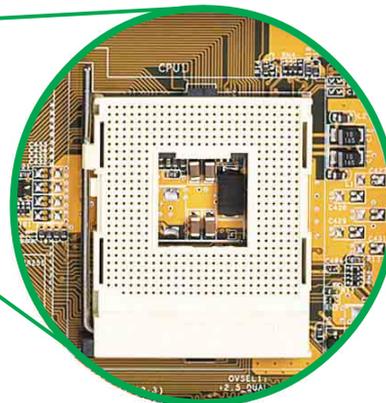


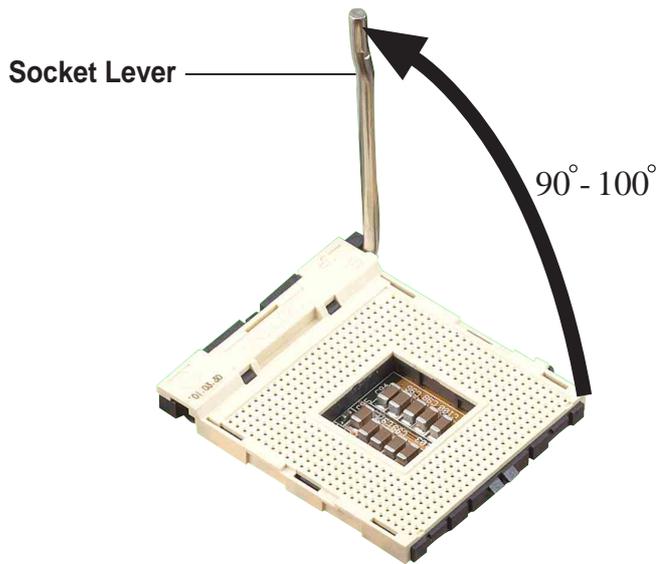
1. To install the CPU, it is necessary to remove the pre-installed heatsink assembly.
2. Press down and unhook the metal retaining clips on both sides of the metal heatsink.
3. Disconnect the CPU fan power cable if it is too short.
4. Lift the heatsink assembly up and out.

5. Locate the CPU Socket 478 on the motherboard.



Pundit P4S8L Motherboard





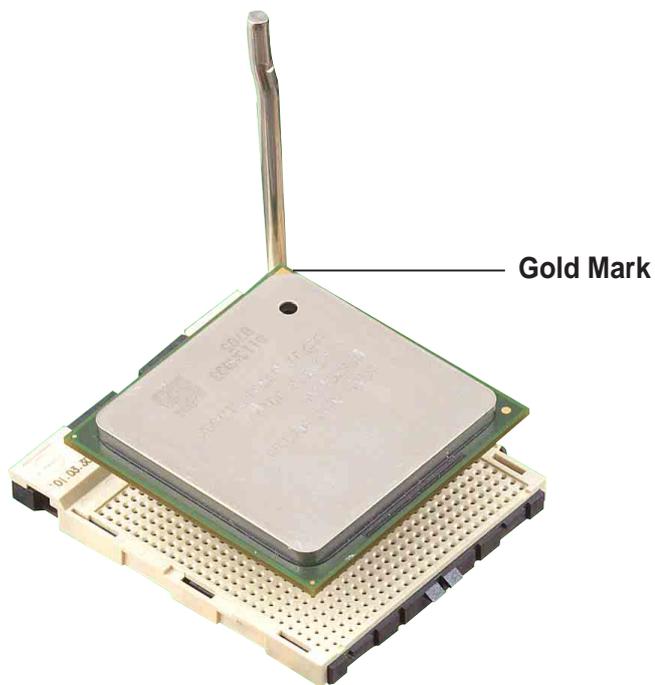
6. Unlock the socket by pressing the socket lever sideways, then lift it up to a 90°-100° angle.



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

---



7. Position the CPU above the socket such that its marked corner matches the base of the socket lever.
8. Carefully insert the CPU into the socket until it fits in place.



---

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

---

9. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.

## 2.5 Installing the CPU heatsink and fan

The Intel® Pentium® 4 478/Northwood Processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

When you buy a boxed Intel Pentium 4 478/Northwood Processor, the package usually includes the heatsink and fan assembly.

Follow these steps to install the CPU heatsink and fan.

1. Position the fan heatsink assembly on top of the installed CPU such that the fan cable is nearest the CPU fan connector on the motherboard (marked CPU\_FAN1).
2. Align one retention bracket with the rail on the side of the heatsink. Orient the bracket such that the locking lever is on the side of the PCI slots.
3. Snap the hook of the metal retention bracket into the hole of the retention module.
4. Follow steps 2 and 3 to attach the second retention bracket.



Retention bracket    Hole on the retention module    Locking lever

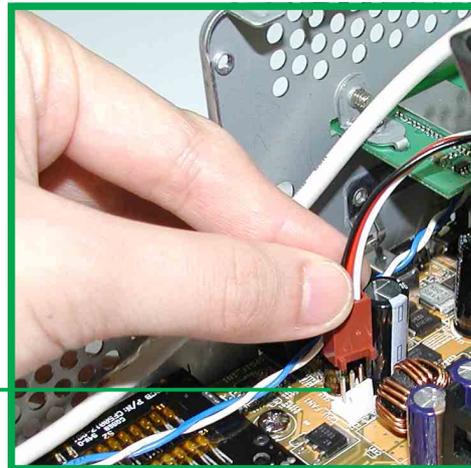
5. Carefully press down the locking lever on the other side of the bracket and hook its end into the hole of the retention module to secure the fan heatsink assembly in place.
6. Follow step 5 to lock the second bracket.

Locking lever



7. Connect the CPU fan cable from the assembly to the fan connector labeled CPU\_FAN1.

CPU fan connector  
(CPU\_FAN1)



## 2.6 Install a CD/DVD-ROM drive

In the future, you may want to upgrade your CD/DVD-ROM drive for higher speed. Follow these steps to install a CD/DVD-ROM drive.

1. After dislodging the disk drive assembly and disconnecting all cable connections, place disk drive assembly on a stable surface.
2. If you are replacing an installed CD/DVD-ROM drive, first remove the four screws (two on each side) to dislodge currently installed drive.
3. Slide the new CD/DVD-ROM drive in the vacated CD/DVD-ROM drive slot. Properly match the screw holes on each side of the drive. If the screw holes doesn't match, pull the drive out and reverse the drive entry.
4. After properly matching the screw holes, tighten the four screws (two on each side). Make sure the drive is stable in place.



5. Connect a power cable from the power supply to the power connector at the back of the CD/DVD-ROM. Use the cable with the white connector labeled P4.



CD/DVD-ROM Audio Cable

IDE Ribbon Cable

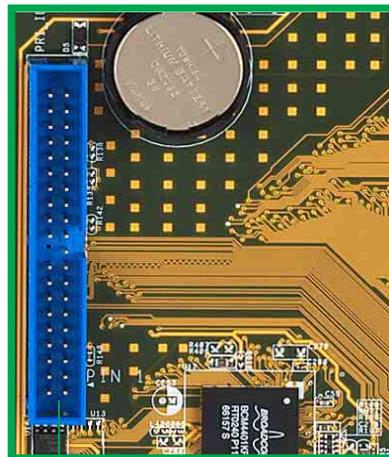
Red Stripe to Pin 1

Power Cable (P4)

6. Connect one end of the IDE ribbon cable to the IDE interface at the back of the CD-ROM, matching the red stripe on the cable with Pin 1 on the IDE interface.

7. Connect one end of the CD-ROM audio cable to the 4-pin connector at the back of the CD/DVD-ROM.

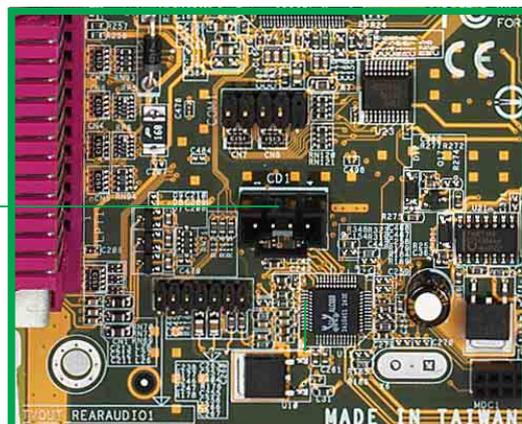
8. Connect the other end of the IDE ribbon cable to the primary IDE connector (blue connector labeled PRI\_IDE2) on the motherboard.



Primary IDE connector (PRI\_IDE1)

9. Connect the other end of the audio cable to the black 4-pin connector labeled CD on the motherboard.

CD/DVD-ROM Connector (CD1)

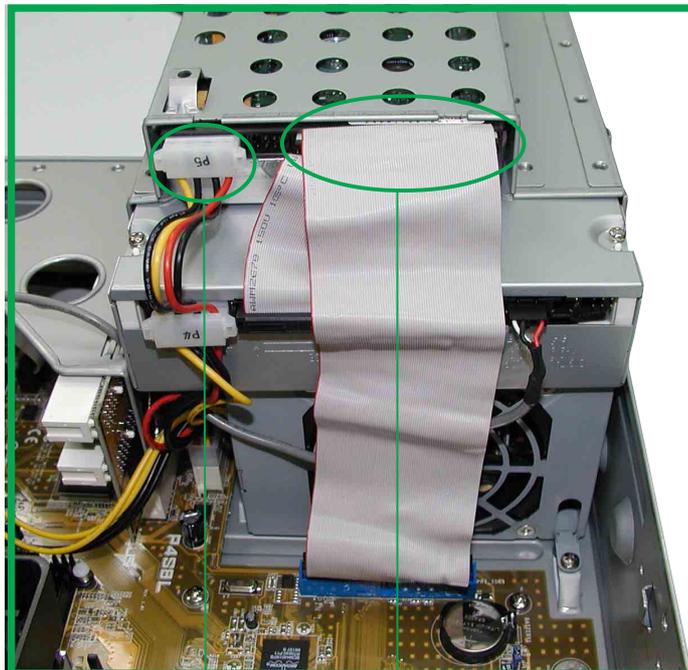


## 2.7 Installing a hard disk drive

1. Carefully slip the hard disk drive into the disk drive assembly. Ensure that the four screw holes are properly aligned. Tighten in the screws.



2. Slide the disk drive assembly back into its original place. Connect the middle connector of the IDE cable to the primary IDE connector on the hard disk drive. Locate the P5 power cable and connect it to the hard disk drive.



Power Cable (P5) IDE Cable  
(Red strip to Pin 1)

## 2.8 Replace the cover

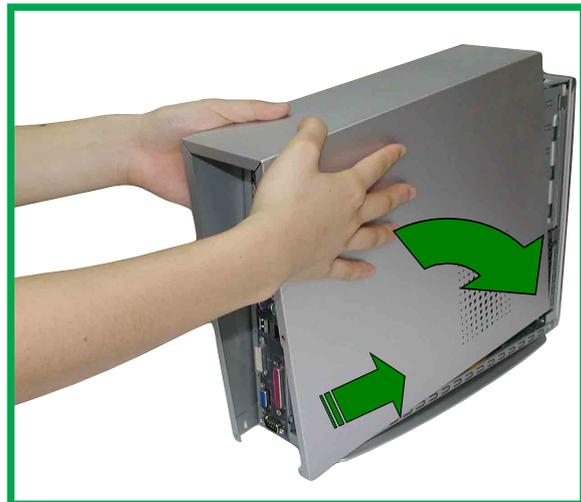
After you have installed all the internal components and you have connected all the necessary cables, you are now ready to put the system back together.

Follow these steps to re-assemble the system.

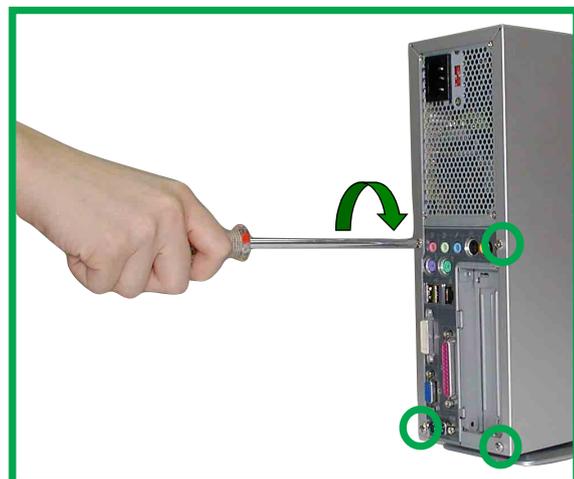
1. Replace the front cover bezel. Make sure the front bezel locks are properly clamped in place.



2. Align chassis cover tabs and push chassis cover towards the front panel.

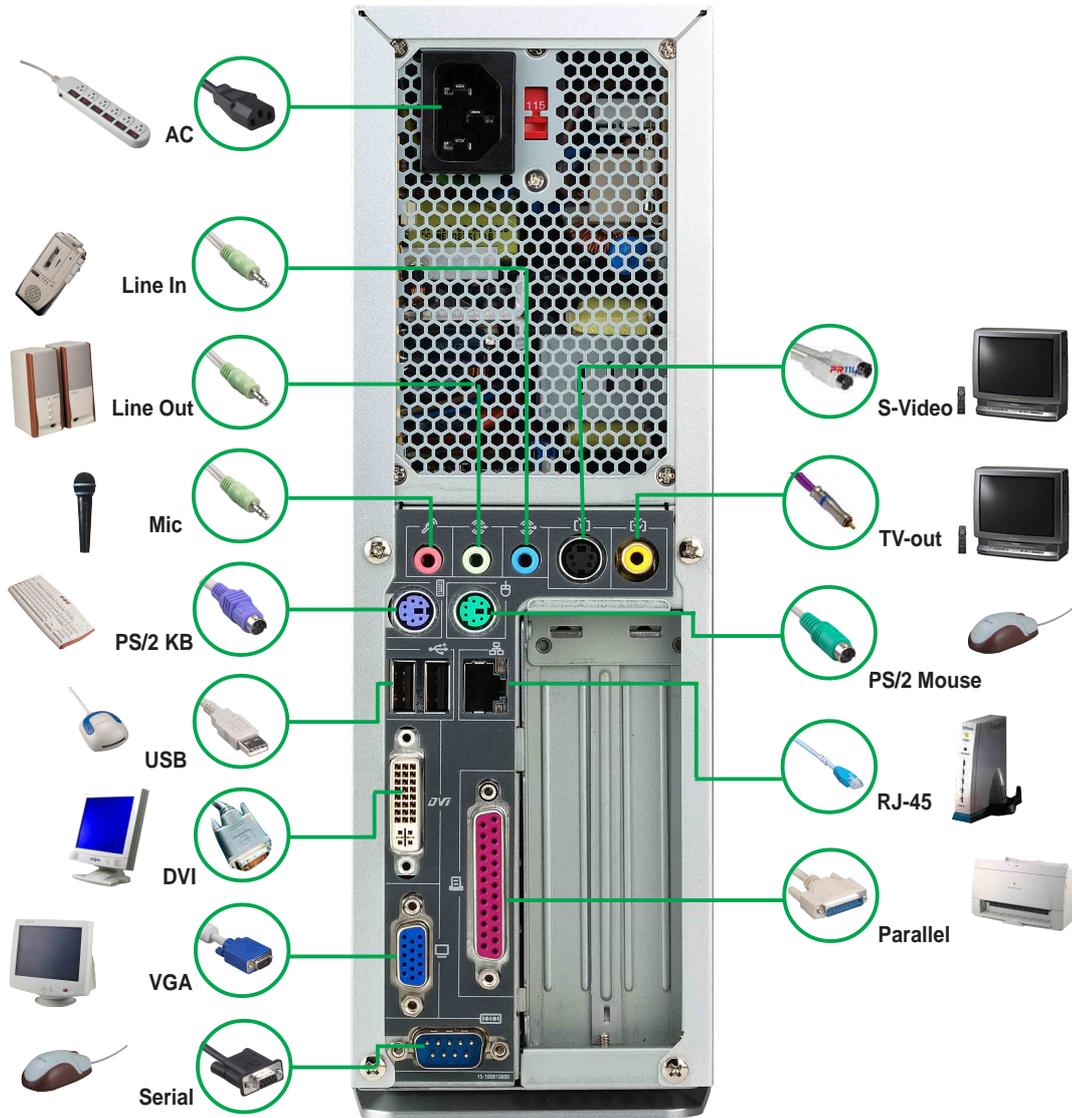


3. Make sure the four screw holes on the chassis cover are aligned to the holes on the case.
4. Tighten the four screws.



## 2.9 Connect External Devices

The figure below shows the specific connectors and devices that you can connect to the rear panel ports.



## 2.10 Power Supply Specifications

### 2.10.1 Input Characteristics

<b>Input Voltage Range</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>
Range 1	90V	115V	135V
Range 2	180V	230V	265V
<b>Input Frequency Range</b>	47 Hz to 63 Hz		
<b>Maximum Input ac Current</b>	4A max. at 115Vac 2A max. at 230Vac, maximum load		
<b>Inrush Current</b>	90A max. at 115Vac, full load cold start at 25°C		
<b>Efficiency</b>	70% min. at nominal input, maximum load		

### 2.10.2 Output Characteristics

<b>Output Voltage</b>	<b>Load Range</b>		<b>Regulation</b>		<b>Ripple</b>
	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Max</b>
+5V	0.5A	4.0A	-5%	+5%	50mV <sub>p-p</sub>
+12V	0.45A	9.5A	-5%	+5%	120mV <sub>p-p</sub>
-12V	0A	0.2A	-10%	+10%	120mV <sub>p-p</sub>
+5VSB	0.05A	1.5A	-5%	+5%	50mV <sub>p-p</sub>
+3V3	1A	8.0A	-5%	+5%	50mV <sub>p-p</sub>

### 2.10.3 Over-Voltage Protection (OVP)

<b>Output Voltage</b>	<b>Maximum Voltage</b>
+5V	6.5V
+12V	15.6V
+3.3V	4.3V



The power supply will shut down and latch off for shorting +5V, +12V, -12V, or +3.3V. By shorting +5VSB, the power supply can latch down or automatically recover when the fault condition is removed



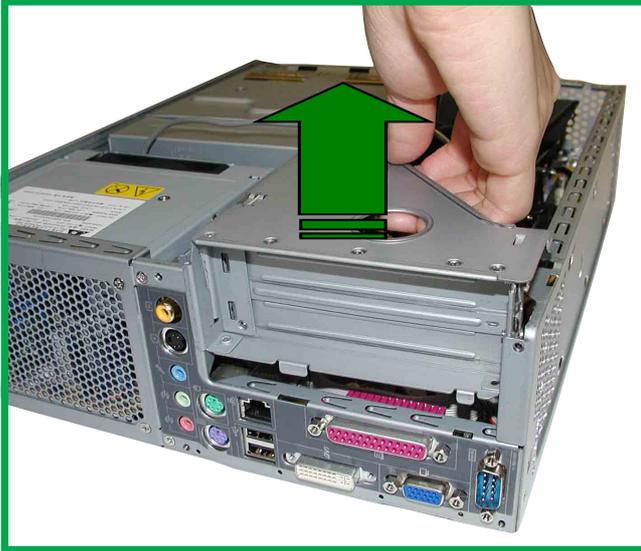
# Chapter 3

How to install optional components.

# Optional Procedures

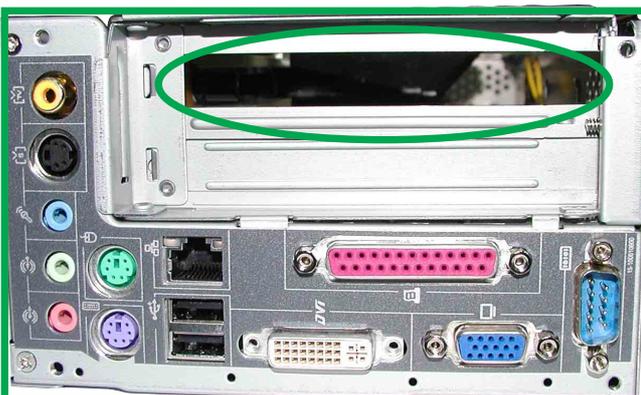
## 3.1 Removing the PCI I/O cover

The Pundit chassis accommodates two PCI expansion card through a PCI riser card. Before installing a new PCI card, it is necessary to detach the I/O cover.



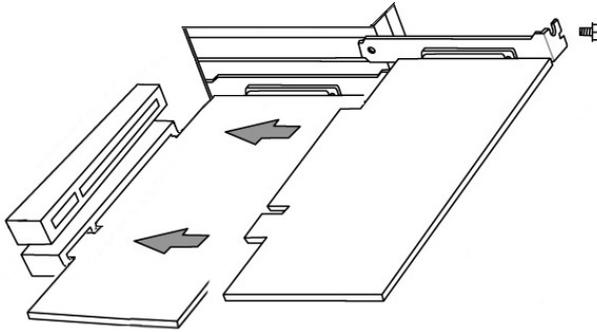
1. To remove the I/O cover from the chassis, pull-out the expansion card assembly.

2. Place the expansion card assembly on a stable surface and remove the I/O cover by unfastening the screw with a Philips (cross) screwdriver.



3. After removing the I/O cover, the back panel exposes the external I/O port to permit external access for component connections, like a modem card connector.

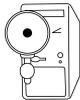
## 3.2 Installing a PCI expansion card



1. A PCI card is precisely sized for for easy alignment with both the onboard notches and the external I/O port.



2. Align and firmly plug the PCI card into the slot.



---

For card stability, make sure that the card bracket end goes into the cleft on the slot frame.

---



# Chapter 4

The sleek design and vertical placement of the ASUS Book Size barebone system help to maximize work space and compliments your interior design.

# System Placement

## 4.1 Placement

The Pundit Book Size Barebone System is placed upright on a flat stable surface, like an office desk or computer table.



# Chapter 5

This chapter gives information about the ASUS P4S8L motherboard that came with the system. This chapter includes the motherboard layout, jumper settings, and connector locations.



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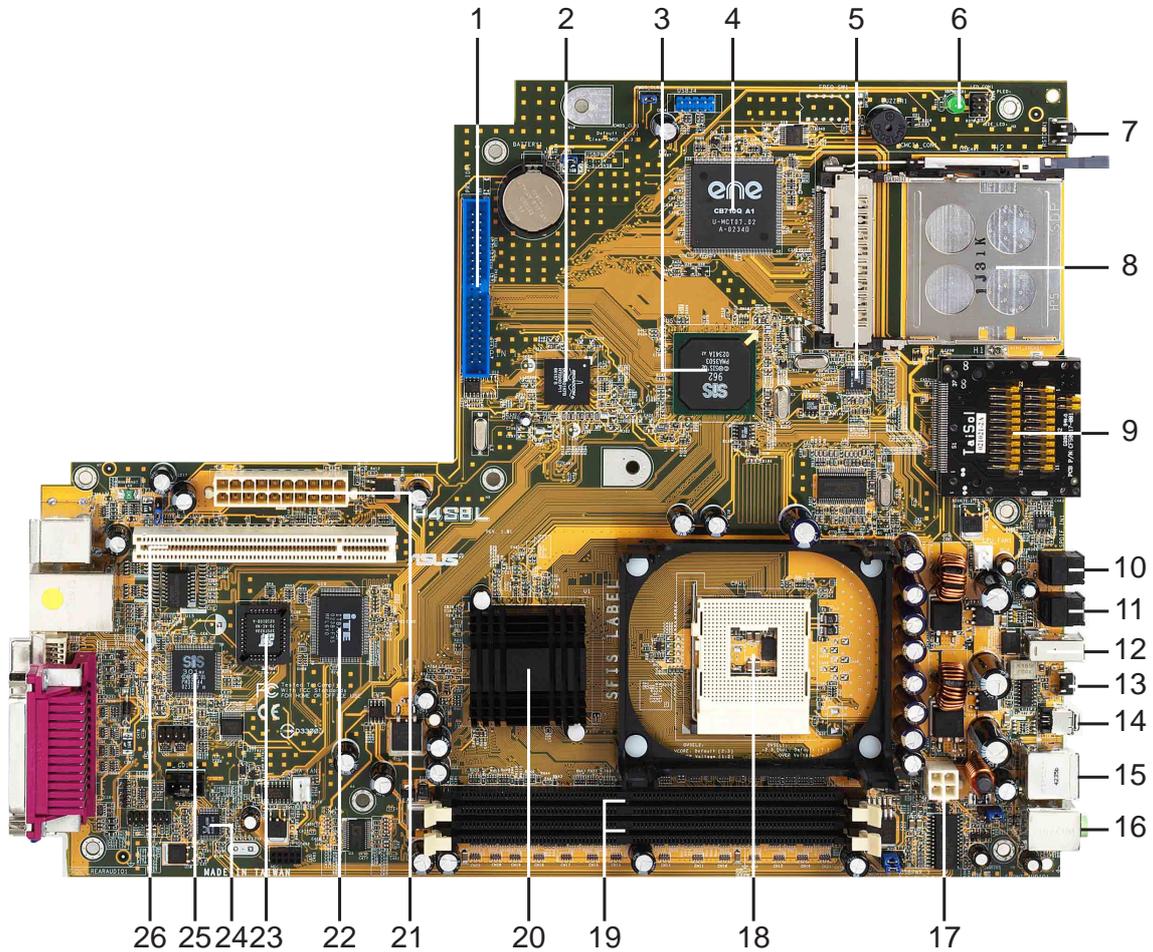
## IMPORTANT

The ASUS Pundit barebone system is designed to support the ASUS P4S8L motherboard. It is not recommended to install other motherboard model and sizes. If you need to replace the original motherboard that came with the system, make sure that it fits into the chassis and that the I/O connectors corresponds to the openings of the front and rear panels.

---

# Motherboard Info

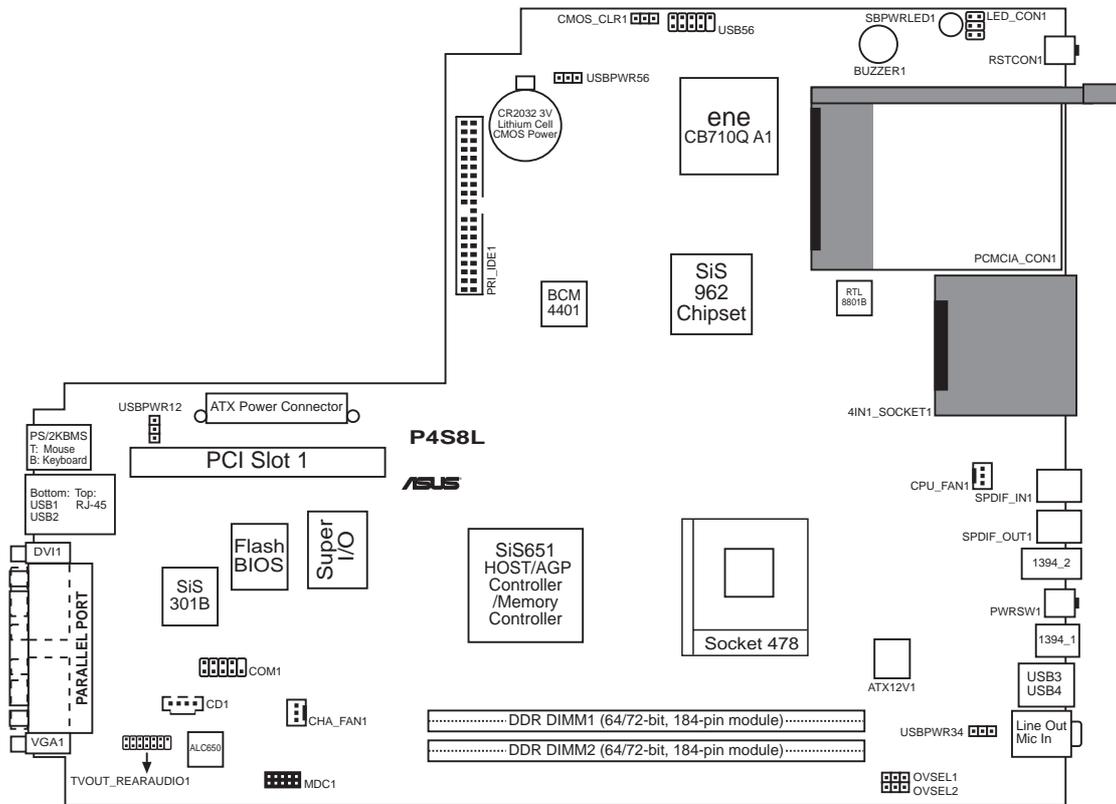
# 5.1 Motherboard components



- 1 IDE Connector.** This dual-channel bus master IDE connector support up to two Ultra DMA133/100/66, PIO Modes 3 & 4 IDE devices. This connector is slotted to prevent incorrect insertion of the IDE ribbon cable.
- 2 Single-Chip Fast Ethernet controller.** The Broadcom BCM4401 LAN Fast Ethernet controller allows connection to a Local Area Network (LAN) through a network hub. (Onboard LAN model only)
- 3 South bridge controller.** This SIS® SIS962 A2 MuTIOL Media I/O controller integrates the AC'97 Interface, four Universal Serial Bus Host controllers, one IDE Master/Slave controllers, Flash BIOS, and PCI bus for two PCI Slots.
- 4 Card bus controller.** This interface provides functionality for PCMCIA 16-bit and 32-bit single slot cardbus, a memory stick and secure digital memory cards. It supports PCMCIA 2.1 compliant sockets for two type I/II or one type III PC cards.
- 5 1394 controller.** The Realtek RTL8801B 1394 PHY is linked with south bridge to support IEEE 1394 ports.
- 6 Onboard LED.** This onboard LED lights up if there is a standby power on the motherboard. This LED acts as a reminder to turn off the system power before plugging or unplugging devices.
- 7 Reset Button.** This button restarts or reboots system.
- 8 PCMCIA slot.** The socket supports 32-bit Cardbus. This allows expansion options such as memory cards, ISDN, SCSI, Smart Cards and wireless network adapters.
- 9 Memory stick slot.** This slot accomodate a memory stick to share and transfer pictures, sound, and other data between different compact electronic devices such as digital cameras and camcorder.
- 10 S/PDIF in.** This Sony/Philips Digital Interface (S/PDIF) in connector accomodates digital audio input from audio devices.
- 11 S/PDIF out.** This SPDIF out connector accomodates digital audio output.
- 12 IEEE 1394.** This 6-pin connector provides connection up to 63 devices with data transfer speeds up to 400 megabits per second.
- 13 Power button.** This button starts or shut down the system.
- 14 IEEE 1394.** This 4-pin connector provides connection up to 63 devices with data transfer speeds up to 400 megabits per second.
- 15 USB 2.0 ports.** These two 4-pin Universal Serial Bus 2.0 (USB 2.0) ports are available for connecting USB devices such as a mouse and PDA.

- 16** **Microphone/Line Out jack.** The Mic (pink) jack connects a microphone and the Line Out (lime) jack connects a headphone or a speaker.
- 17** **ATX 12V connector.** This power connector is for the 4-pin 12V plug from an ATX 12V power supply.
- 18** **CPU Sockets.** A 478-pin surface mount, Zero Insertion Force (ZIF) socket for the Intel® Pentium® 4 P478 Willamette & Northwood Processor with 400/533 MHz system bus that allows 1.4 GHz ~ 2.8 GHz+ core frequency.
- 19** **DDR DIMM Sockets.** These two 184-pin DIMM sockets support up to 2GB using non-ECC PC2700/2100 DDR SDRAM DIMMs with 2.1GBytes/sec of transfer rate.
- 20** **NorthBridge Controller.** This SIS® SIS651 controller integrates a high performance host interface for the Intel® Pentium® 4 processor, a memory controller and an integrated graphics interface.
- 21** **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).
- 22** **Super I/O chipset.** This interface provides the commonly used Super I/O functionality. The chipset supports a high-performance flash ROM, a PS/2 keyboard and mouse port, a multi-mode parallel port and a serial port.
- 23** **Flash ROM.** This 2MB firmware contains the programmable BIOS program.
- 24** **Audio/Modem CODEC.** This Realtek ALC650 audio CODEC is AC '97 compliant.
- 25** **Graphic chipset.** This interface provides support for TV out and DVI-I output.
- 26** **PCI slot.** This 32-bit PCI 2.2 expansion slot support bus master PCI cards like SCSI and LAN cards with 133MB/s maximum output. A PCI-riser provides expansion of two additional slots.

# 5.2 Motherboard layout



## 5.3 Before you proceed

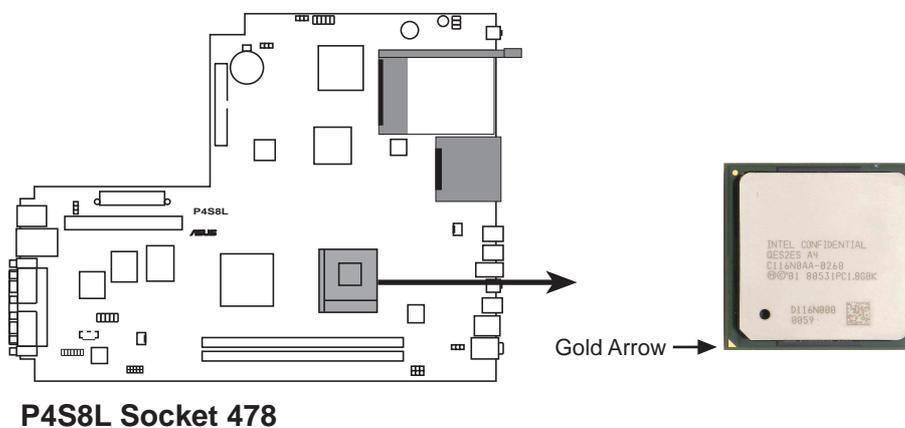
Take note of the following precautions before you install motherboard components or change any motherboard settings.



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.

## 5.4 Central Processing Unit (CPU)

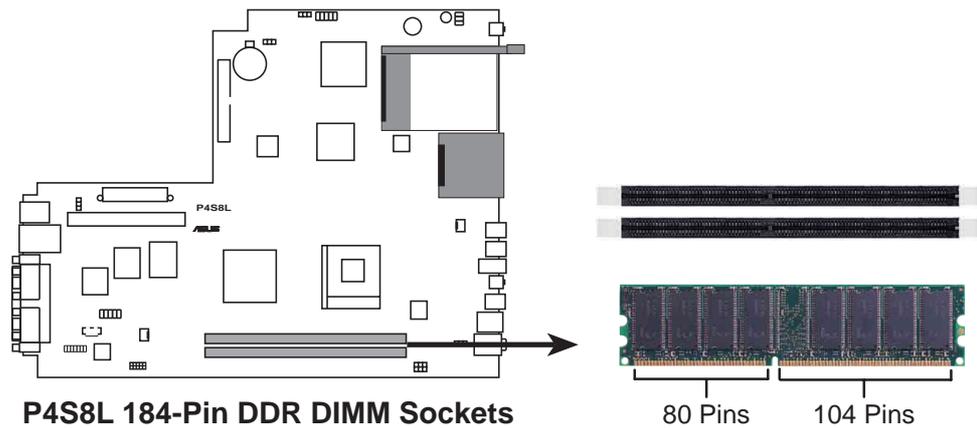
The motherboard comes with a surface mount 478-pin Zero Insertion Force (ZIF) socket. This socket is specifically designed for the Intel® Pentium® 4 478/ Northwood Processor.



## 5.5 System memory

The motherboard has two Double Data Rate (DDR) DIMM sockets that supports up to 2GB non-ECC PC2700/2100 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.



## 5.6 Expansion slots

The P4S8L motherboard has three (3) expansion slots. The following sub-sections describe the slots and the expansion cards that they support.

### 5.6.1 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.

## 5.6.2 Standard Interrupt Assignments

IRQ	Standard Function
0	System Timer
1	Keyboard Controller
2	Programmable Interrupt Controller
3*	USB Universal Host Controller
4*	Communications Port (COM1)
5*	Onboard Audio
6	Standard Floppy Disk Controller
7*	Printer Port (LPT1)
8	System CMOS/Real Time Clock
9*	Onboard LAN
10*	USB Universal Host Controller
11*	Onboard VGA
12*	PS/2 Compatible Mouse Port
13	Numeric Data Processor
14*	Ultra ATA Controller
15*	Secondary Ultra ATA Controller

\*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	—
Onboard USB controller HC0	—	—	—	shared
Onboard USB controller HC1	—	—	—	shared
Onboard LAN	—	—	shared	—
Onboard Audio	—	—	shared	—
Onboard VGA	shared	—	—	—

# 5.7 Jumpers

## 1. USB device wake-up (3-pin USBPWR12,USBPWR34,USBPWR56)

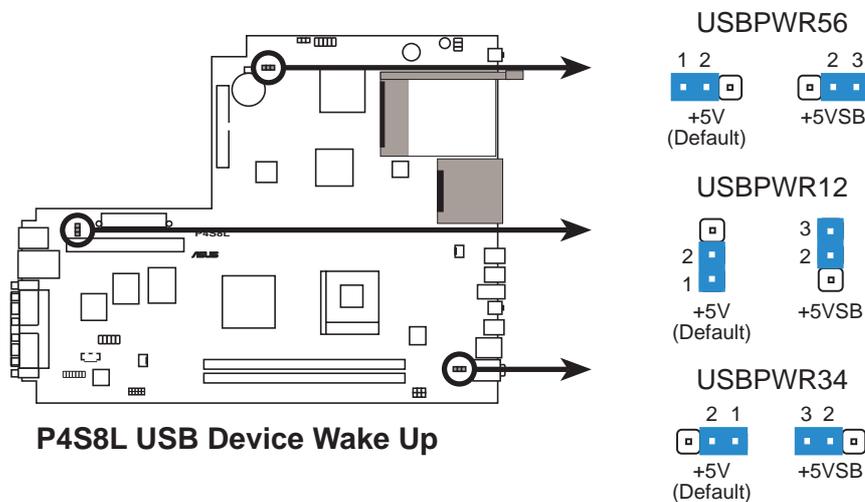
Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 sleep mode (no power to CPU, DRAM in slow refresh, power supply in reduced power mode). Both jumpers are set to pins 1-2 (+5V) by default because not all computers have the appropriate power supply to support this feature.

The USBPWR12 and USBPWR34 jumpers are for the rear USB port. USBPWR56 is for the internal USB header that you can connect to the front USB ports.



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.

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

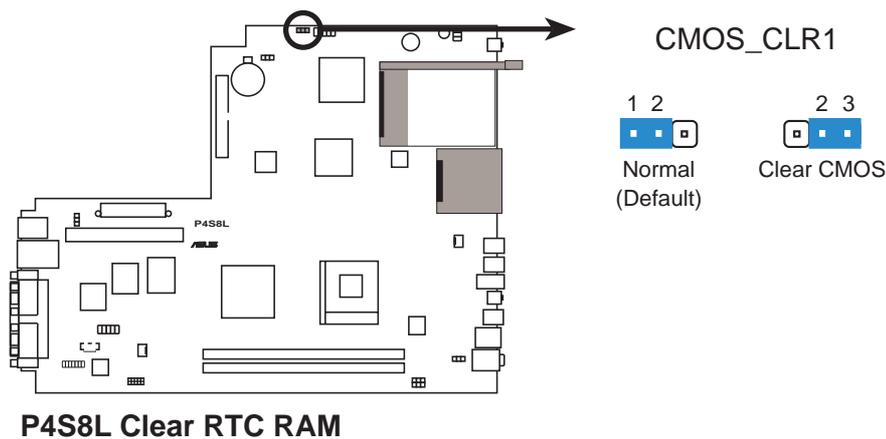


## 2. Clear RTC RAM (2-pin CMOS\_CLR1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time and system setup parameters by erasing the CMOS RTC RAM data. The RAM data in CMOS that includes the 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 battery.
3. Short the solder points to clear CMOS.
4. Reinstall the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

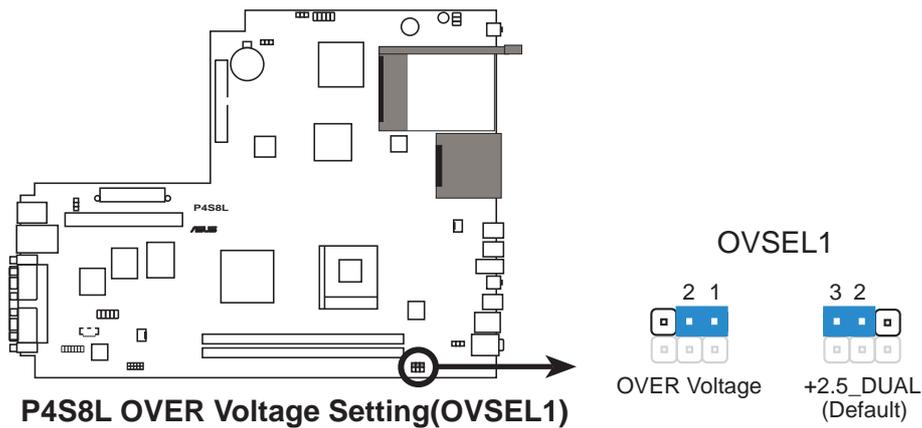


## 2. Over Voltage Setting 1(2-pin OVSEL1)

This jumper allows you to set the DDR Voltage setting. Keep the default setting (pins 3-2) for +2.5 Dual voltage setting. Set to pins 1-2 for over voltage setting.



Setting to a high voltage may cause permanent damage to the DDR DIMMs. It is recommended that you keep the default setting (+2.5 Dual)

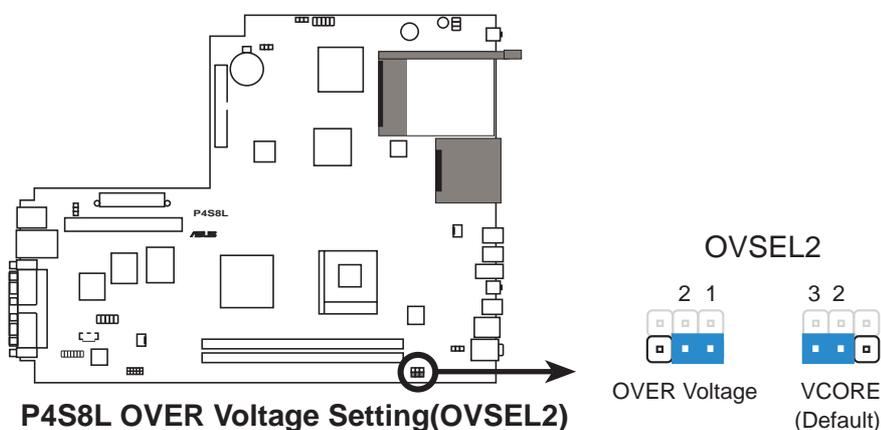


## 3. Over Voltage Setting 2 (2-pin OVSEL2)

This jumper allows you to set the CPU's Vcore voltage setting. Keep the default setting (pins 3-2) for Vcore voltage setting. Set to pins 1-2 for over voltage setting.



Setting to a high voltage may cause permanent damage to the CPU. It is recommended that you keep the default setting (Vcore)



## 5.8 Connectors

This section describes and illustrates the connectors on the motherboard.

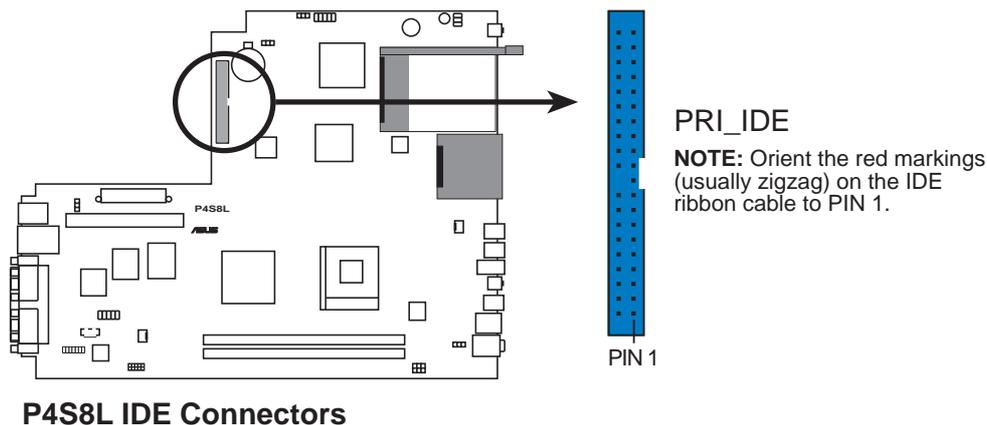
### 1. IDE connectors (40-pin PRI\_IDE)

This connector supports the provided UltraDMA/133/100/66 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 UltraDMA/133/100/66 slave device (hard disk drive) and the black connector to the UltraDMA/133/100/66 master device. It is recommended that you connect non-UltraDMA/133/100/66 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 UltraDMA/133/100/66 devices, purchase another UltraDMA/133/100/66 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.



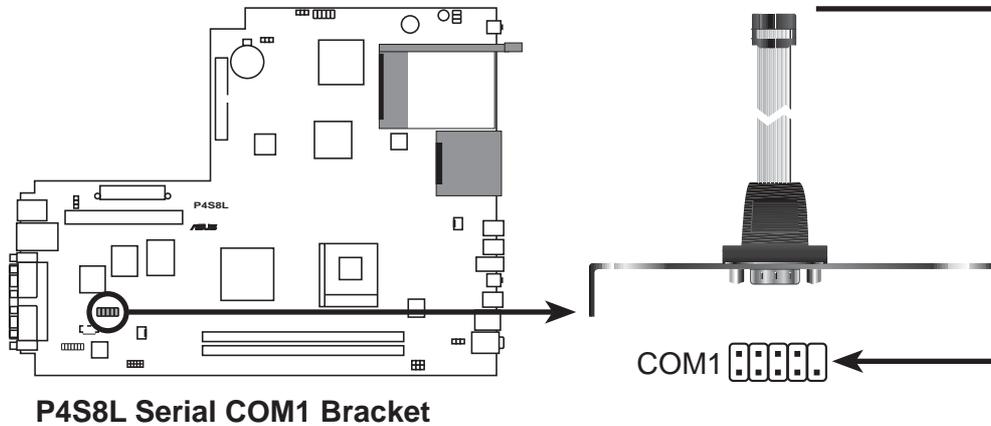
Pin 20 on each IDE connector is removed to match the covered hole on the UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.

For UltraDMA/133/100/66 IDE devices, use an 80-conductor IDE cable.



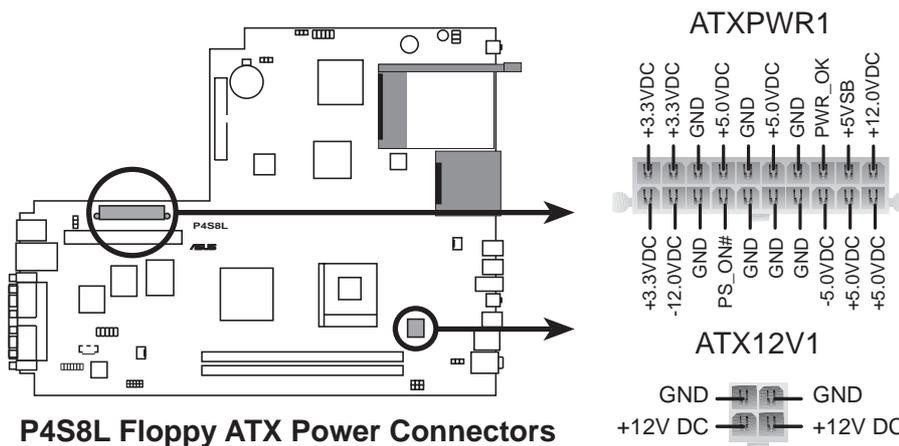
## 2. Serial connector (9-pin COM1 )

This 9-pin connector connects to the Serial COM1 bracket. Connect the COM1 cable to this connector and install the bracket on an available slot in the rear panel of the chassis.



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

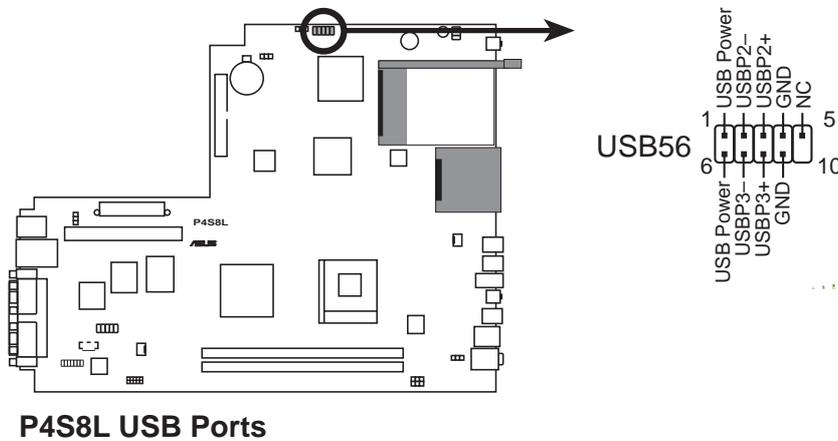
These connectors connect to an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



If you will need to replace the power supply in the future, make sure that your new ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.

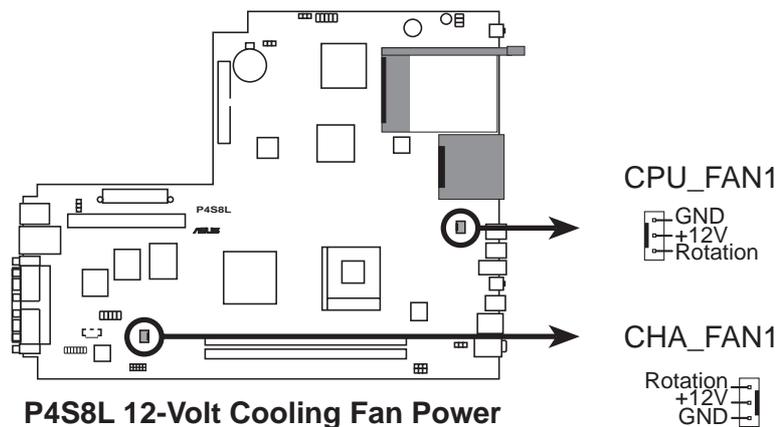
#### 4. USB headers (10-1 pin USB56)

USBPWR56 is for the internal USB header that you can connect to the front USB ports.



#### 5. CPU and Chassis Fan Connectors (3-pin CPU\_FAN1, CPU\_FAN1)

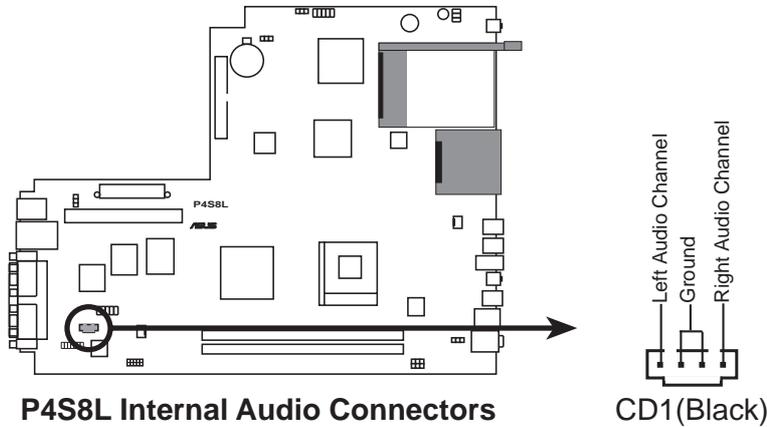
The two fan connectors support cooling fans of 350mA (4.2 Watts) or a total of 1A (12W) at +12V. Orient the fans so that the heat sink fins allow air flow to go across the onboard heat sinks instead of the expansion slots. The fan wiring and plug may vary depending on the fan manufacturer. Connect the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

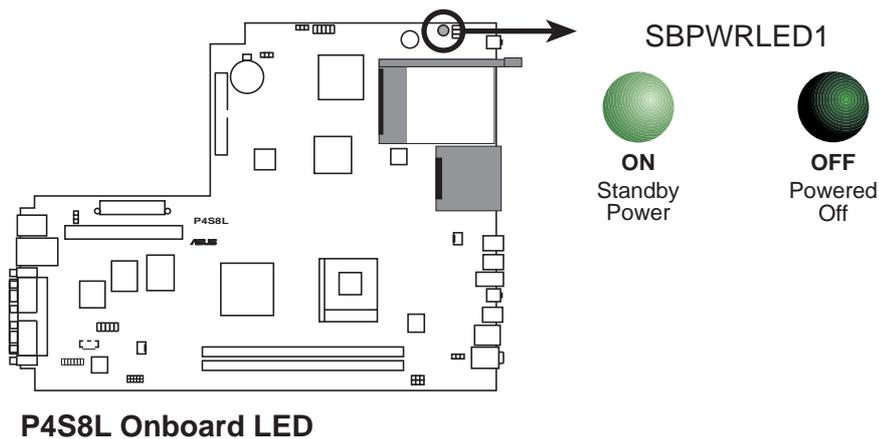
## 6. Internal audio connectors (4-pin CD1)

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



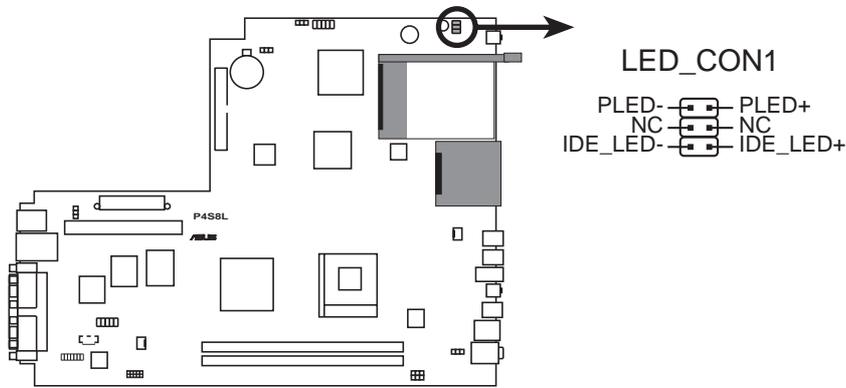
## 7. OnBoard LED

This Light Emitting Diode (LED) lights-ON if there is standby power and lights-OFF when the power is turned off.



## 8. LED connector (6-pin LED\_CON1)

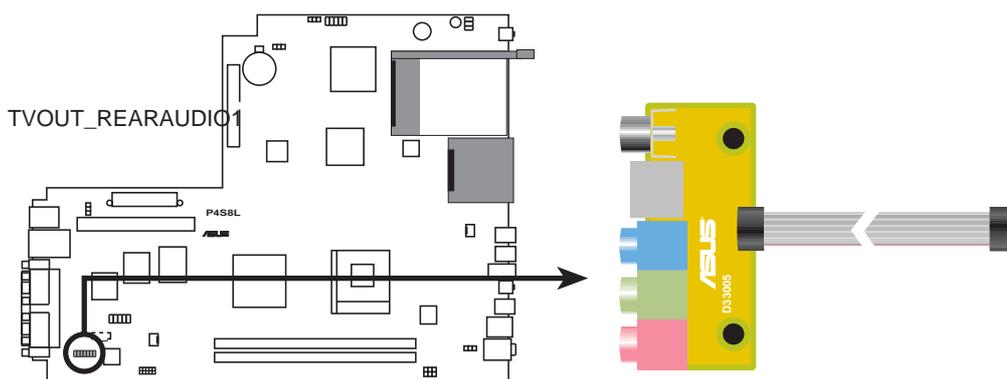
This 6-pin connector connects to the front panel system power and IDE LEDs.



**P4S8L LED Connector**

## 9. TV out connector

This 10-1 pin connector connects to the front panel daughter card with the audio and tv-out ports.



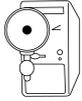
**P4S8L TVOUT\_REARAUDIO Connectors**

# Chapter 6

This chapter gives information about the ASUS P4S8L Basic Input/Output System (BIOS). This chapter includes updating the BIOS using the ASUS AFLASH BIOS utility that is bundled with the support CD.

# BIOS Information

## 6.1 Managing and updating your BIOS



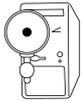
It is recommended that you save a copy of the motherboard's **original BIOS** to a bootable floppy disk in case you need to reinstall the original BIOS later.

### 6.1.1 Using ASUS EZ Flash to update the BIOS

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

Follow these steps to update the BIOS using ASUS EZ Flash.

1. Download the latest BIOS file from the ASUS website (see ASUS contact information on page x). Save the file to a floppy disk.



Write down the BIOS file name on a piece of paper. You need to type the **exact BIOS file name** at the EZ Flash screen.

2. Reboot the computer.
3. To use EZ Flash, press <Alt> + <F2> during POST to display the following screen.

```
ASUS EZ Flash V1.00
Copyright (C) 2002, ASUSTeK COMPUTER INC.

[Onboard BIOS Information]
BIOS Version      : ASUS P4S8L ACPI BIOS Revision 1002
BIOS Model        : P4S8L
BIOS Built Date   : 12/16/02

Please Enter File Name for NEW BIOS: _
*Note: EZ Flash will copy file from A:\, Press [ESC] to reboot
```



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.

4. Insert the disk that contains the new BIOS file into the floppy drive. You will receive the error message, “**WARNING! Device not ready.**” if you proceed to step 5 without the disk in the drive.

5. At the prompt, “**Please Enter File Name for NEW BIOS: \_**”, type in the BIOS file name that you downloaded from the ASUS website, then press <Enter>.

EZ Flash will automatically access drive A to look for the file name that you typed. When found, the following message appears on screen.

```
[BIOS Information in File]
BIOS Version: P4S8L Boot Block

WARNING! Continue to update the BIOS (Y/N)? _
```

If you accidentally typed in a wrong BIOS file name, the error message, “**WARNING! File not found.**” appears. Press <Enter> to remove the message, then type in the correct file name. Press <Enter>.

6. At the above prompt, type **Y** to continue with the update process. Pressing **N** exits the EZ Flash screen and reboots the system without updating the BIOS.

The following prompts appear if you typed **Y**.

```
Flash Memory: SST 49LF004

Update Main BIOS area (Y/N)? _
```

7. Press **Y** to update the main BIOS area.



---

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

---

8. When the update process is done, the message, “**Press a key to reboot**” appears. Press any key to reboot the system with the new BIOS.

## 6.1.2 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 in the DOS prompt within Windows, and 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.

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

```
ASUS ACPI BIOS
FLASH MEMORY WRITER U2.0
Copyright (C) 1994-2001 ASUSTeK COMPUTER INC.

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

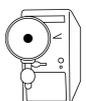
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01

Choose one of the followings:

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

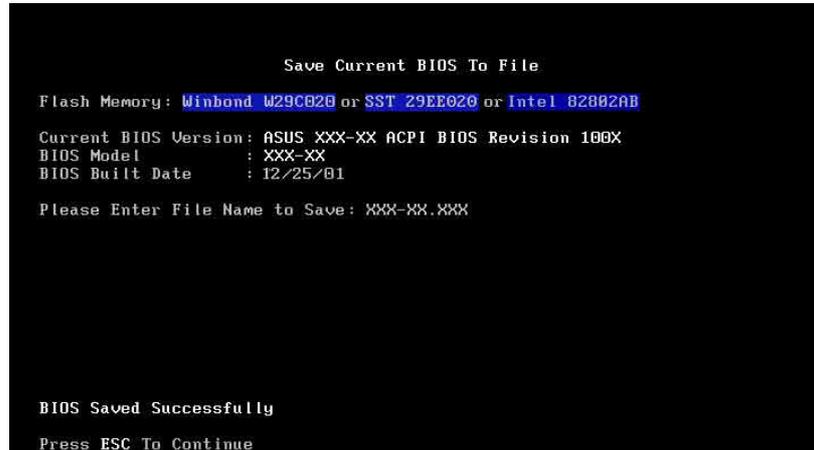
Enter choice: [1]

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.



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 have problems with the motherboard and 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>.
6. 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.XXXX] 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. This minimizes the possibility of boot problems in case of update failures. 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 U2.0
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
```



If you encounter problems while updating the new BIOS, DO NOT turn off the system because 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, the system may not boot. If this happens, call the ASUS service center for support.

## 6.1.3 CrashFree BIOS feature

The CrashFree BIOS feature allows you to boot the computer from a floppy disk and update the BIOS in case the original BIOS fails or gets corrupted.



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1. You must have a bootable floppy disk ready before updating the BIOS.
  2. The bootable floppy disk could be the one that you created following the procedure in section 6.1.2, and should contain the AFLASH.EXE utility.
  3. If the BIOS fails (ROM data or codes are corrupted), a message appears during POST indicating the failure.
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To update the BIOS:

1. Turn on the computer, and when prompted, place the bootable floppy disk into the floppy drive, so that the computer boots from the floppy disk.
2. Follow the BIOS update procedure in section “6.1.2 Using AFLASH to update the BIOS.”

## 6.2 BIOS Setup program

This motherboard supports a programmable Flash ROM that you can update using the provided utility described in section “6.1 Managing and updating your BIOS.”

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

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

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

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

The Setup program is designed to make it as easy to use as possible. It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections among the predetermined choices.



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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.

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## 6.2.1 BIOS menu bar

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

<b>MAIN</b>	Use this menu to make changes to the basic system configuration.
<b>ADVANCED</b>	Use this menu to enable and make changes to the advanced features.
<b>POWER</b>	Use this menu to configure and enable Power Management features.
<b>BOOT</b>	Use this menu to configure the default system device used to locate and load the Operating System.
<b>EXIT</b>	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.

## 6.2.2 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.

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

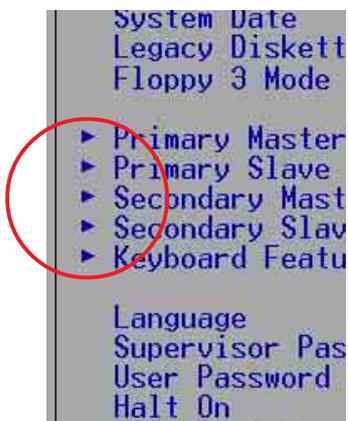
## Saving changes and exiting the Setup program

See “6.7 Exit Menu” for detailed information on saving changes and exiting the setup program.

## Scroll bar

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

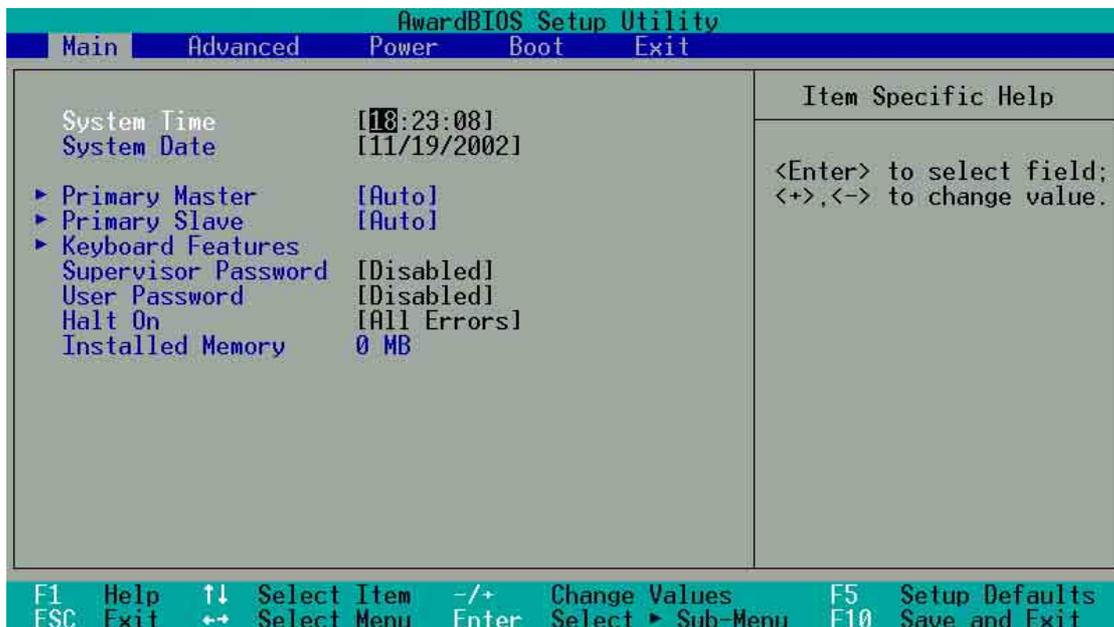


Note that a right pointer symbol (as shown on the left) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>.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

## 6.3 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.

### 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].

## **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. See section “2.7 Jumpers” for information on how to erase the R TC RAM.

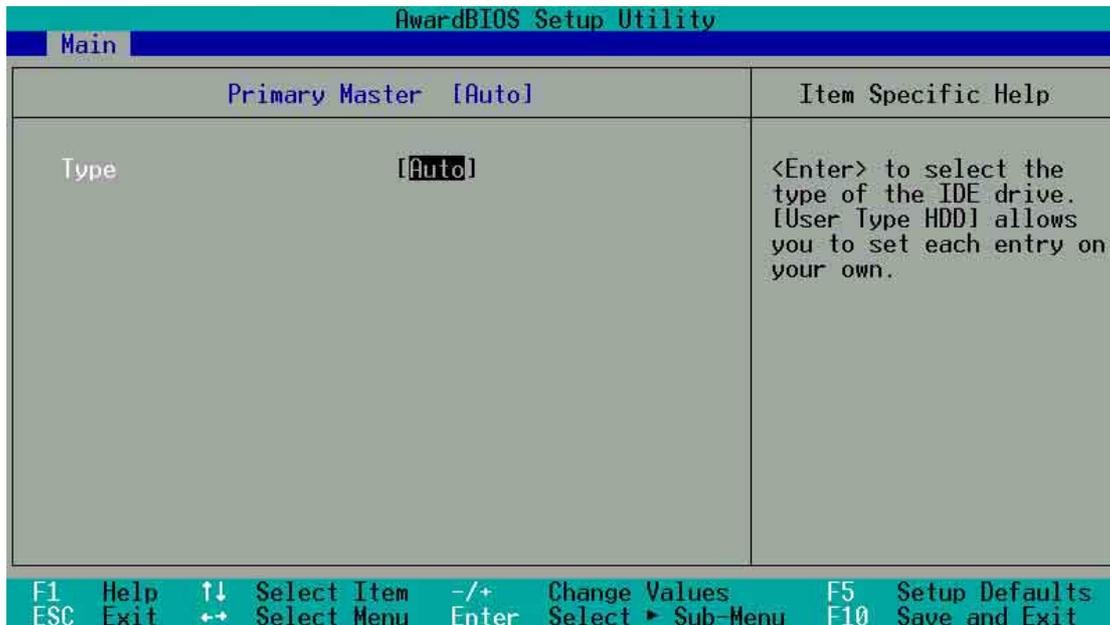
## **Halt On [All Errors]**

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.

## 6.3.1 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, this may be because the hard disk drive is too old or too new. If the hard disk was already formatted on an older system, Setup may detect incorrect parameters. In these cases, 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. Incorrect settings may cause the system to fail to recognize the installed hard disk.

## [User Type HDD]

AwardBIOS Setup Utility	
Main	
Primary Master [User Type HDD]	Item Specific Help
Type [User Type HDD]	<p>&lt;Enter&gt; to select the type of the IDE drive. [User Type HDD] allows you to set each entry on your own.</p> <p>WARNING: Ultra DMA mode 3/4/5 can be enabled only when BIOS detects shielded 80-pin cable.</p>
Translation Method [LBA]	
Cylinders [ 1024]	
Head [255]	
Sector [63]	
CHS Capacity 8422MB	
Maximum LBA Capacity 25590MB	
Multi-Sector Transfers [Maximum]	
SMART Monitoring [Disabled]	
PIO Mode [4]	
ULTRA DMA Mode [Disabled]	
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults ESC Exit ↔ Select Menu Enter Select ► Sub-Menu F10 Save and Exit	

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



After entering the IDE hard disk drive information into BIOS, use a disk utility, such as FDISK, to partition and format new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

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]

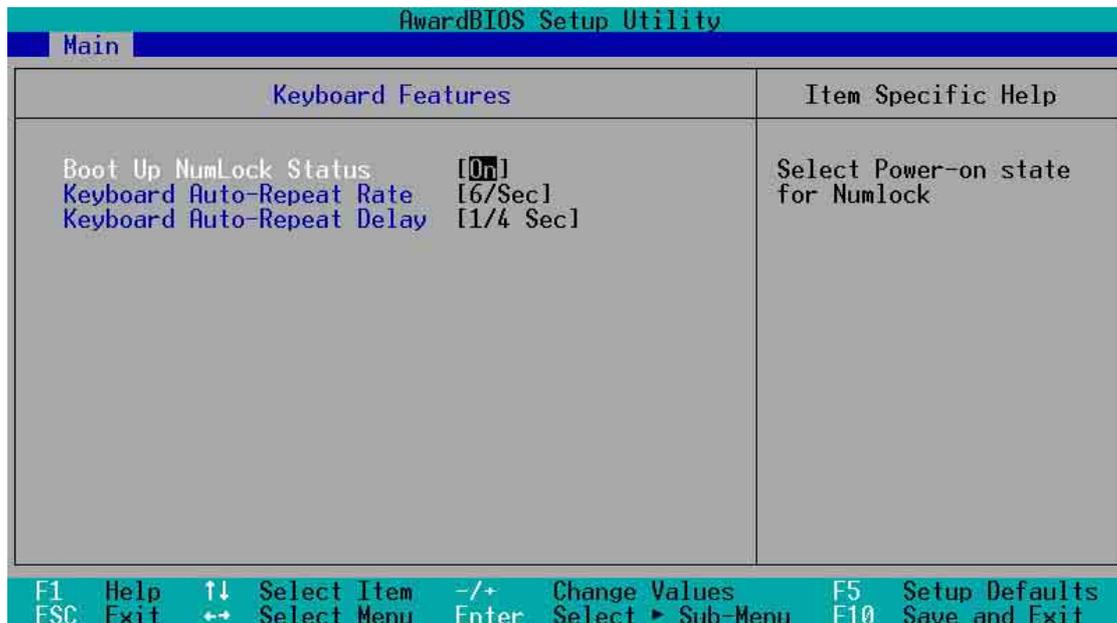
### **PIO Mode [4]**

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]

## 6.3.2 Keyboard Features



### Boot Up NumLock Status [On]

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

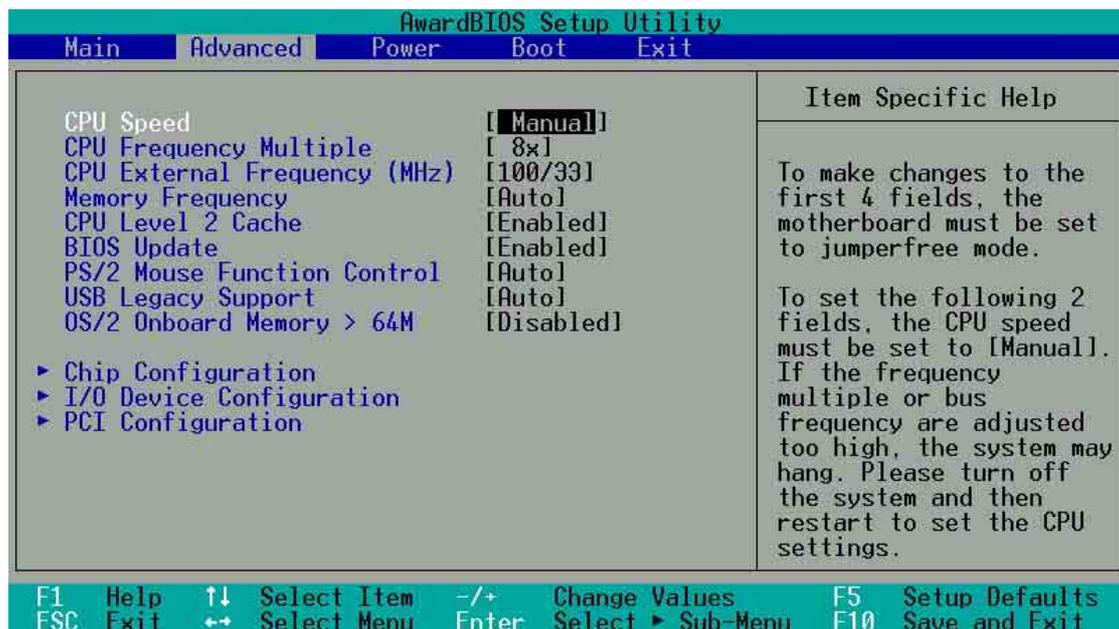
### Keyboard Auto-Repeat Rate [6/Sec]

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]

## 6.4 Advanced Menu



### CPU Speed [Manual]

When the motherboard is set to JumperFree™ mode, this field allows you to select the internal frequency of the CPU. Select [Manual] if you want to make changes to the two subsequent fields. Note that selecting a frequency higher than the CPU manufacturer recommends may cause the system to hang or crash.

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

This field sets the frequency multiple between the CPU's internal frequency (CPU speed) and external frequency. Set this field in conjunction with CPU Frequency (MHz) to match the speed of the CPU.



The item **CPU Frequency Multiple** is accessible only if you have an unlocked processor. If your processor frequency multiple is locked, you cannot change the setting of this item.

### CPU External 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.

### **Memory Frequency [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] [266MHz] [355MHz] [333MHz]

### **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 set to [Enabled], the BIOS loads the update on all processors 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]

## 6.4.1 Chip Configuration

AwardBIOS Setup Utility		
Advanced		
Chip Configuration		Item Specific Help
SDRAM Configuration	[By SPD]	<Enter> to select SDRAM configuration. [By SPD] is recommended. [User Defined] allows you to set each configuration on your own.
SDRAM CAS Latency	[2.5T]	
SDRAM RAS to CAS Delay	[3T]	
SDRAM RAS Precharge Delay	[3T]	
SDRAM Active Precharge Delay	[6T]	
Chipset Clock Mode	[Synchronous]	
SDRAM Command Lead-off Time	[Auto]	
DUAL CHANNEL MODE	[Enabled]	
Graphics Aperture Size	[ 64MB]	
AGP Capability	[4X Mode]	
AGP Fast Write	[Enabled]	
Video Memory Cache Mode	[UC]	
Delay Transaction	[Enabled]	
Onboard PCI IDE Enable	[Both]	
IDE Bus Master Support	[Enabled]	
F1 Help    ↑↓ Select Item    -/+ Change Values    F5 Setup Defaults ESC Exit    ←→ Select Menu    Enter Select ► Sub-Menu    F10 Save and Exit		

### 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 (value depends on SDRAM SPD)

This item controls the latency between the SDRAM read command and the time the data actually becomes available. Configuration options: [1.5T] [2T] [2.5T]

### SDRAM RAS to CAS Delay (value depends on SDRAM SPD)

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

### **SDRAM RAS Precharge Time (value depends on SDRAM SPD)**

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

### **SDRAM Active Time (value depends on SDRAM SPD)**

This item controls the number of DDR SDRAM clocks used for DDR SDRAM parameters. Configuration options: [5T] [6T] [7T] [8T]

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

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] [4X Mode]

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

This field enables or disables the AGP Fast Write Capability feature.

Configuration options: [Disabled] [Enabled]

### **Onboard VGA Shared Memory Size [32M]**

This field sets the shared memory size for the onboard VGA.

Configuration options: [4M] [8M] [16M] [32M] [64M]

### **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 enables or disables the PCI 2.1 support feature. Configuration options: [Disabled] [Enabled]

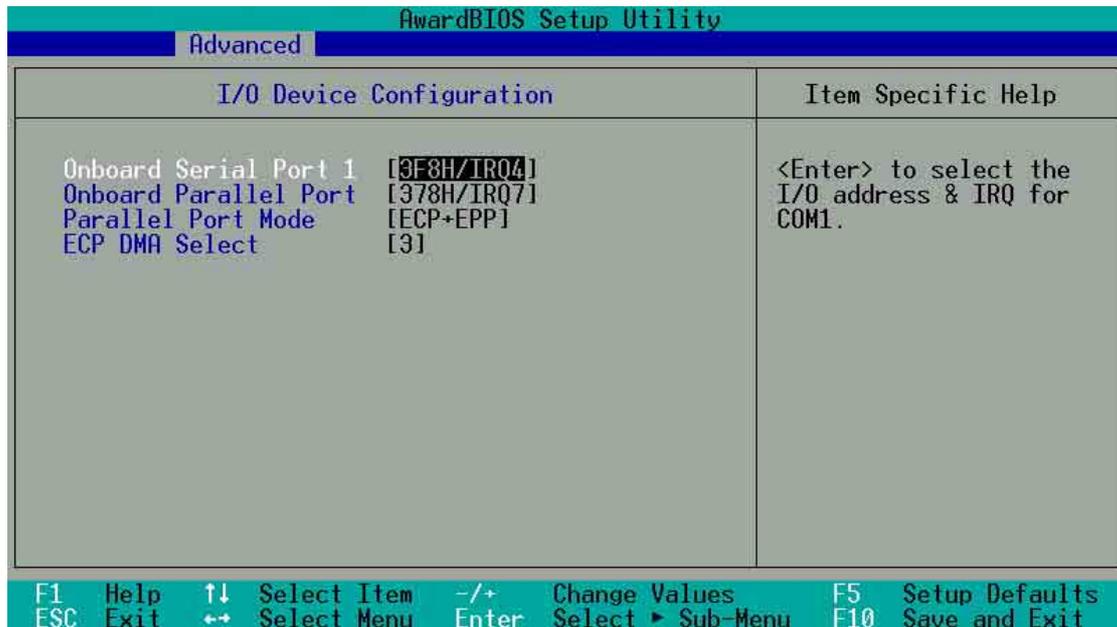
### **Onboard PCI IDE [Both]**

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 [Enabled]**

This item enables or disables the IDE bus master support for non-Windows operating systems. Configuration options: [Disabled] [Enabled]

## 6.4.2 I/O Device Configuration



### Onboard Serial Port 1 [3F8H/IRQ4]

These fields allow you to set the addresses for the onboard serial connectors. Serial Port 1 and Serial Port 2 must have different addresses. Configuration options: [3F8H/IRQ4] [2F8H/IRQ3] [3E8H/IRQ4] [2E8H/IRQ10] [Disabled]

### 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]

## 6.4.3 PCI Configuration

AwardBIOS Setup Utility										
Advanced		Item Specific Help								
PCI Configuration										
Slot 1 IRQ	[Auto]	<Enter> to select an IRQ.								
Slot 2 IRQ	[Auto]									
PCI/VGA Palette Snoop	[Disabled]									
PCI Latency Timer	[ 32]									
Primary VGA BIOS	[PCI VGA Card]									
Onboard VGA	[Enabled]									
TV Out Function	[NTSC]									
USB Function	[Enabled]									
USB2.0 Function	[Enabled]									
<ul style="list-style-type: none"> <li>▶ Onboard PCI Devices Control</li> <li>▶ PCI IRQ Resource Exclusion</li> </ul>										
<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">F1 Help</td> <td style="width: 15%;">↑↓ Select Item</td> <td style="width: 15%;">-/+ Change Values</td> <td style="width: 15%;">F5 Setup Defaults</td> </tr> <tr> <td>ESC Exit</td> <td>↔ Select Menu</td> <td>Enter Select ▶ Sub-Menu</td> <td>F10 Save and Exit</td> </tr> </table>			F1 Help	↑↓ Select Item	-/+ Change Values	F5 Setup Defaults	ESC Exit	↔ Select Menu	Enter Select ▶ Sub-Menu	F10 Save and Exit
F1 Help	↑↓ Select Item	-/+ Change Values	F5 Setup Defaults							
ESC Exit	↔ Select Menu	Enter Select ▶ Sub-Menu	F10 Save and Exit							

### Slot 1, Slot 2 IRQ [Auto]

These fields automatically 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. Configuration options: [PCI VGA Card] [AGP VGA Card]

### Onboard VGA [Enabled]

This field enables or disables the onboard VGA. Configuration options: [Disabled] [Enabled]

## TV Out Function [NTSC]

This field allows you to set the broadcast frequency of the TV out function.  
Configuration options: [NTSC] [PAL]

## USB Function [Enabled]

This field allows you to enable or disable the USB 1.1 function.  
Configuration options: [Disabled] [Enabled]

## USB 2.0 Function [Enabled]

This field allows you to enable or disable the USB 2.0 function.  
Configuration options: [Disabled] [Enabled]

### 6.4.3.1 Onboard PCI Devices Control



## Onboard PCMCIA and Card Reader [Enabled]

This field enables or disabled the onboard PCMCIA and Card Reader slots. Configuration options: [Disabled] [Enabled]

## Onboard LAN [Enabled]

This field enables or disabled the onboard Local Area Network [LAN] feature. Configuration options: [Disabled] [Enabled]

## Onboard 1394 Controller [Enabled]

This field enables or disabled the onboard IEEE 1394 controller.

Configuration options: [Disabled] [Enabled]

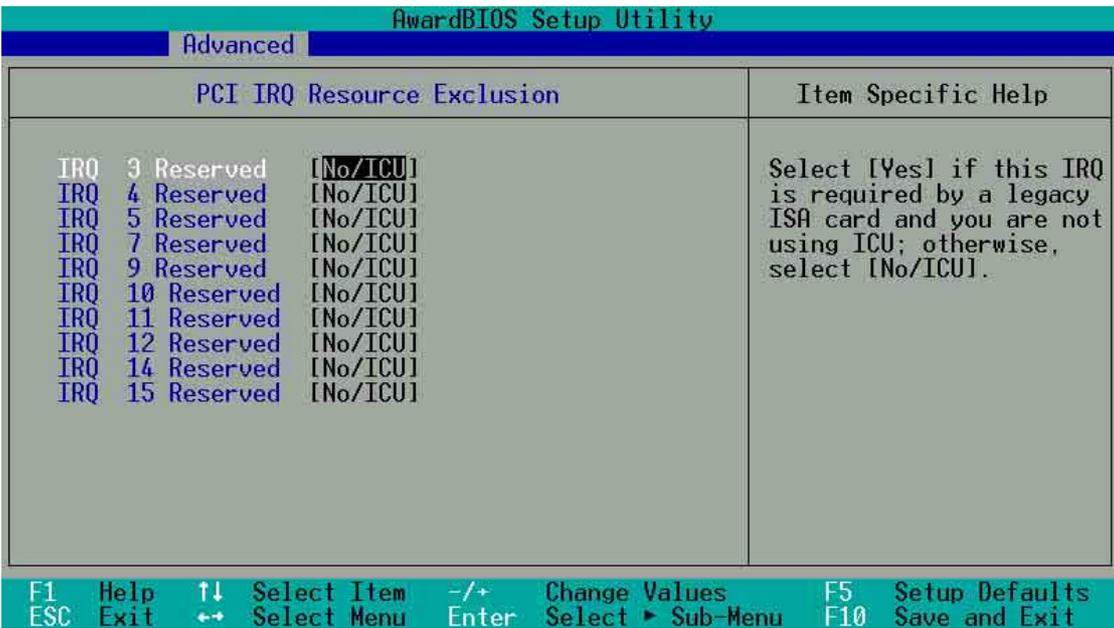
## Onboard AC97 Audio Controller [Auto]

This field allows you to set AC97 audio CODEC. Set to [Auto], to automatically search for available AC97 audio controller. Select [Disabled] to disable the controller. Configuration options: [Disabled] [Auto]

## Onboard AC97 Modem Controller [Auto]

This field allows you to set AC97 modem. Set to [Auto], to automatically search for available AC97 modem controller. Select [Disabled] to disable the controller. Configuration options: [Disabled] [Auto]

## 6.4.3.2 PCI IRQ Resource Exclusion



The screenshot shows the 'AwardBIOS Setup Utility' interface. The 'Advanced' menu is selected, and the 'PCI IRQ Resource Exclusion' screen is displayed. The screen is divided into two columns: 'PCI IRQ Resource Exclusion' and 'Item Specific Help'. The 'PCI IRQ Resource Exclusion' column lists IRQs 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15, all marked as 'Reserved' and set to '[No/ICU]'. The 'Item Specific Help' column provides instructions: 'Select [Yes] if this IRQ is required by a legacy ISA card and you are not using ICU; otherwise, select [No/ICU]'. At the bottom, a legend defines navigation keys: F1 Help, ESC Exit, ↑↓ Select Item, ↔ Select Menu, -/+ Change Values, Enter Select, F5 Setup Defaults, and F10 Save and Exit.

AwardBIOS Setup Utility	
Advanced	
PCI IRQ Resource Exclusion	Item Specific Help
IRQ 3 Reserved [No/ICU]	Select [Yes] if this IRQ is required by a legacy ISA card and you are not using ICU; otherwise, select [No/ICU].
IRQ 4 Reserved [No/ICU]	
IRQ 5 Reserved [No/ICU]	
IRQ 7 Reserved [No/ICU]	
IRQ 9 Reserved [No/ICU]	
IRQ 10 Reserved [No/ICU]	
IRQ 11 Reserved [No/ICU]	
IRQ 12 Reserved [No/ICU]	
IRQ 14 Reserved [No/ICU]	
IRQ 15 Reserved [No/ICU]	

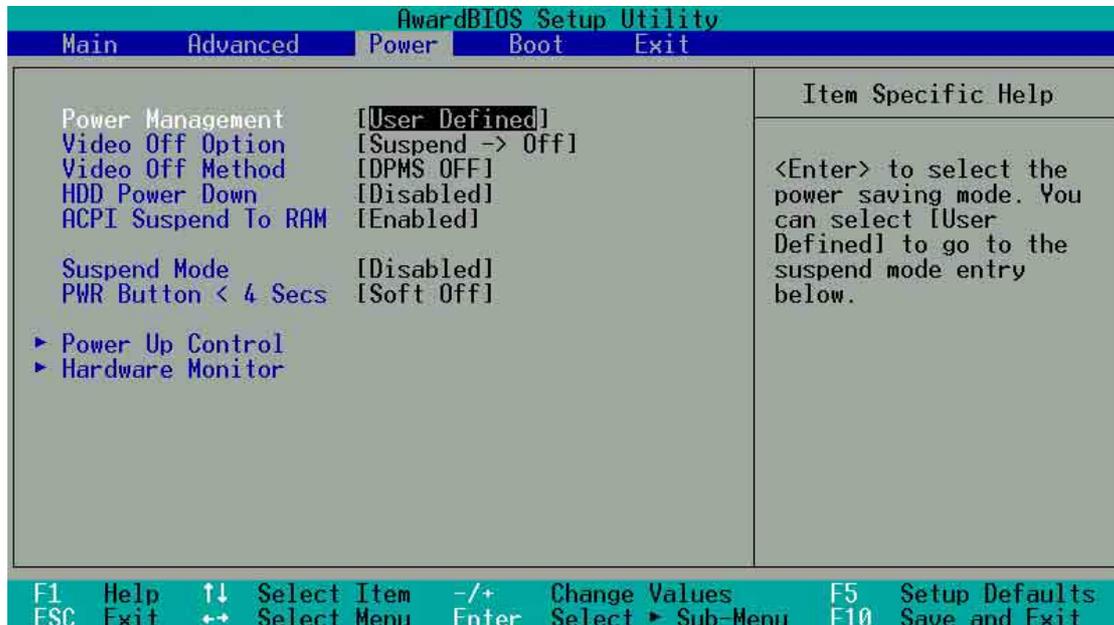
F1 Help   ↑↓ Select Item   -/+ Change Values   F5 Setup Defaults  
ESC Exit   ↔ Select Menu   Enter Select   F10 Save and Exit

## 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]

## 6.5 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" item.

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]

## **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]

## 6.5.1 Power Up Control

AwardBIOS Setup Utility	
Power	
Power Up Control	Item Specific Help
AC Power Loss Restart [Disabled]	<Enter> to select whether or not to restart the system after AC power loss.
Wake/Power Up On Ext. Modem [Disabled]	
Power Up On PCI Device [Disabled]	
Power Up By PS/2 Keyboard [Disabled]	
Automatic Power Up [Disabled]	

F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults  
ESC Exit ↔ Select Menu Enter Select ► Sub-Menu F10 Save and Exit

### AC Power 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]



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

### Power Up On PCI Card [Disabled]

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

### **Power On By 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]

## 6.5.2 Hardware Monitor

AwardBIOS Setup Utility	
Power	
Hardware Monitor	Item Specific Help
CPU Q-FAN Function [Enabled]	<Enter> to enable or disable.
MB Temperature [N/A]	
CPU Temperature [N/A]	
CPU Fan Speed [N/A]	
Chassis Fan Speed [N/A]	
VCORE Voltage [N/A]	
+3.3V Voltage [N/A]	
+5V Voltage [N/A]	
+12V Voltage [N/A]	
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults ESC Exit ↔ Select Menu Enter Select ► Sub-Menu F10 Save and Exit	

### Q-Fan Control [Disabled]

This item allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. When this field is set to [Enabled], the **Fan Speed Ratio** and **Speed Up/Down Response Time** items appear to allow selection of the appropriate fan speeds and the corresponding response time. Configuration options: [Disabled] [Enabled]

### MB Temperature [xxxC/xxxF]

### CPU Temperature [xxxC/xxxF]

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

If your power supply comes with a two-pin thermal sensor cable, connect this cable to the TRPWR1 connector on the motherboard to allow BIOS to auto-detect the power supply temperature. The POWER temperature item shows the detected value if you have the appropriate power supply. Select [Ignore] to disable the power temperature auto-detect function.

### **CPU Fan Speed [xxxxRPM] or [N/A]**

### **Chassis Fan Speed [xxxxRPM] or [N/A]**

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

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

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

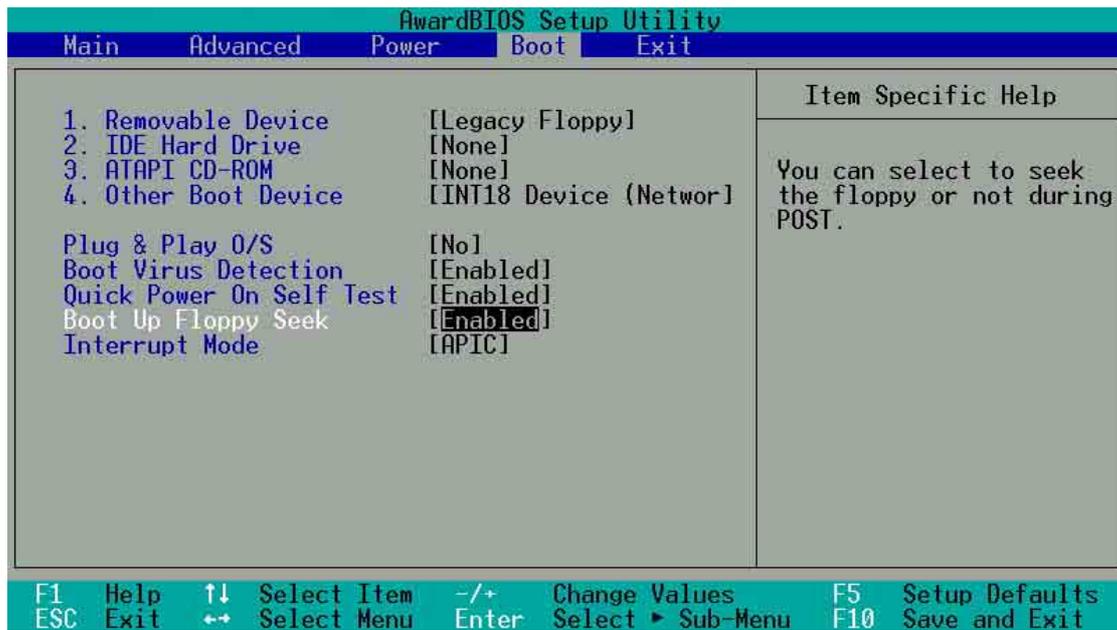


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If any of the monitored items is out of range, the following error message appears: "Hardware Monitor found an error. Enter Power setup menu for details". You will then be prompted to "Press F1 to continue or DEL to enter SETUP".

---

## 6.6 Boot Menu



### Boot Sequence

The Boot menu allows you to select among the four possible types of boot devices listed 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 search for a 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] [ATAPIMO]

### 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]

### **Reset Configuration Data [No]**

The Extended System Configuration Data (ESCD) contain information about non-PnP devices. It also holds the complete record of how the system was configured the last time it was booted. Select [Yes] if you want to clear these data during the Power-On-Self-Test (POST).

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]**

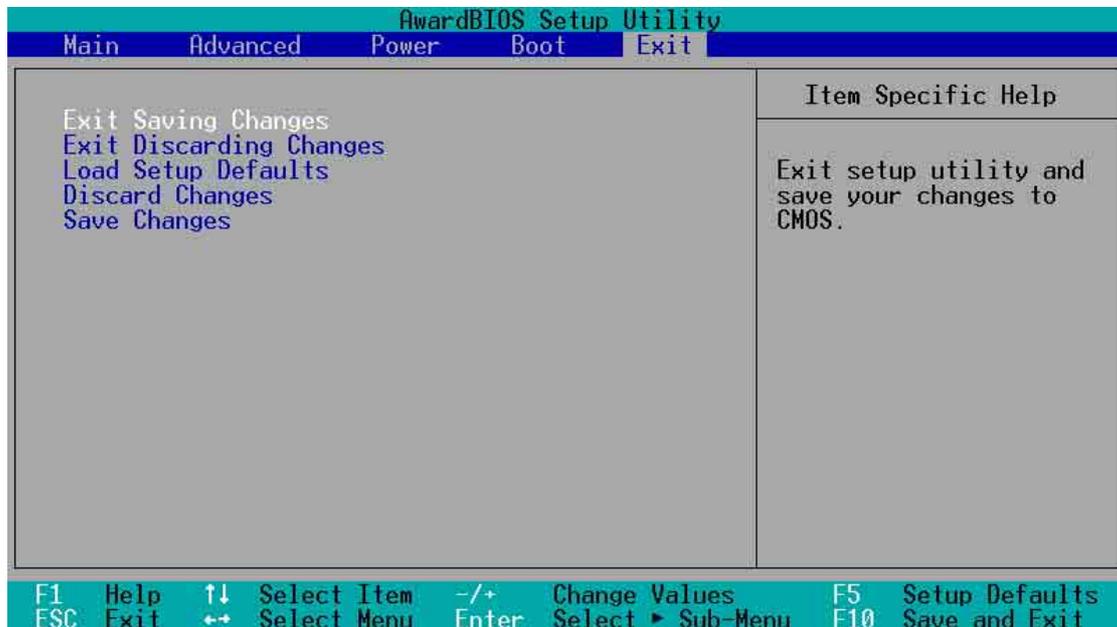
When enabled, the BIOS will seek the floppy disk drive to determine whether the drive has 40 or 80 tracks. Configuration options: [Disabled] [Enabled]

### **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]

## 6.7 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 7

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

# Starting Up

## 7.1 Install an operating system

The P4S8L 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.



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.

## 7.2 Support CD information

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

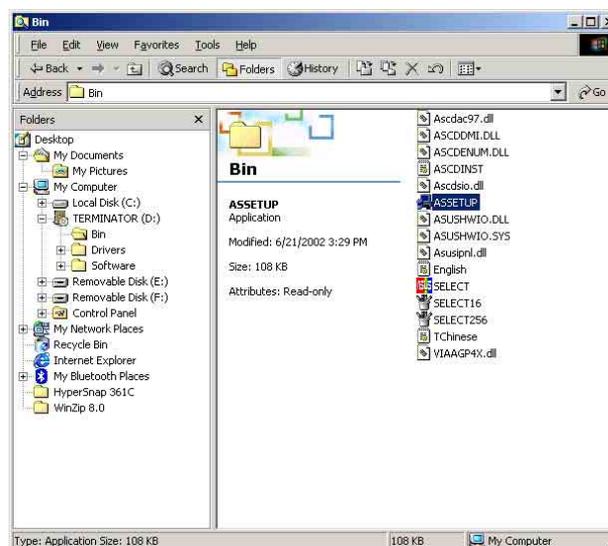


The contents of the support CD are subject to change at any time without notice. Visit the ASUS website for updates.

### 7.2.1 Running the support CD

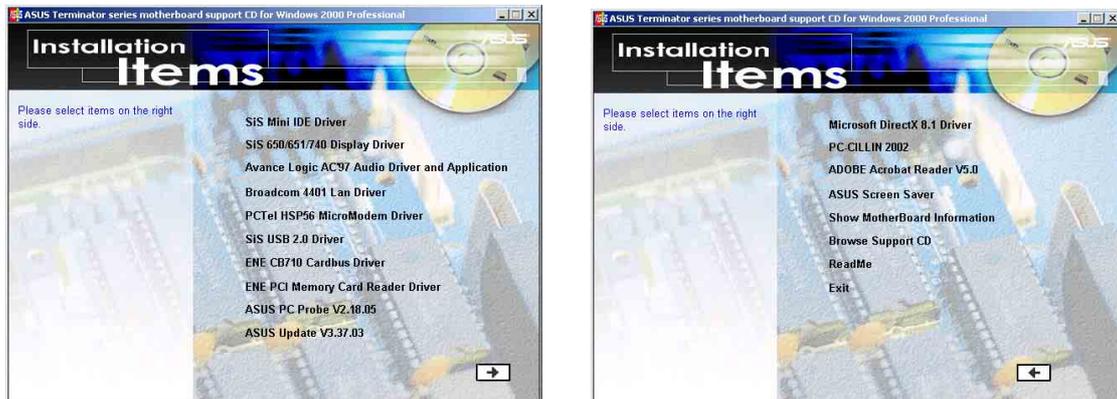
To begin using the support CD, simply insert the CD into your CD-ROM drive. If Autorun is enabled in your computer, the software and drivers menu automatically appears on your screen.

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.



## 7.2.2 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.



## 7.2.3 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 SiS chipset mini IDE driver.

### **SiS 650/651/740 Display Driver**

Click this item to install the display driver for the SiS 650/651/740 chipset.

### **Avance Logic AC'97 Audio Driver and Applications**

This item is for installing the Avance Logic audio driver and software applications.

### **Broadcom 4401 Lan Driver**

Click this item to install the Broadcom 4401 LAN driver.

### **PCTel HSP56 MicroModem Driver**

Click this item to install the PCTel HSP56 MicroModem driver.

### **SiS USB 2.0 Driver**

Click this item to install the SiS USB 2.0 driver.

### **ENE CB710 Driver**

Click this item to install the ENE CB710 driver.

### **ENE PCI Memory Card Reader Driver**

Click this item to install the ENE PCI memory card reader driver.

## **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.

CLICK THE RIGHT ARROW TO SEE THE NEXT MENU

## **Microsoft Direct X 8.1 Driver**

This item installs the Microsoft V8.1 driver.

## **PC-CILLIN 2002**

This item installs the PC-CILLIN 2002 anti-virus software.

## **ADOBE Acrobat Reader V5.0**

This item installs the ADOBE Acrobat Reader version 5.0.

## **ASUS Screen Saver**

This item installs the ASUS screen saver.

## **Show Motherboard Information**

Click this item to display the general specifications for the P4S8L 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 P4S8L support CD.

CLICK THE LEFT ARROW TO RETURN TO THE MAIN MENU

## 7.3 Software information

### 7.3.1 ASUS Update

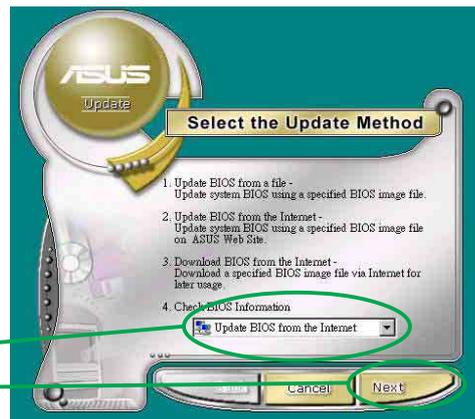
The ASUS Update utility allows you to update the motherboard BIOS and drivers. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP).

Follow these steps to use the ASUS Update.

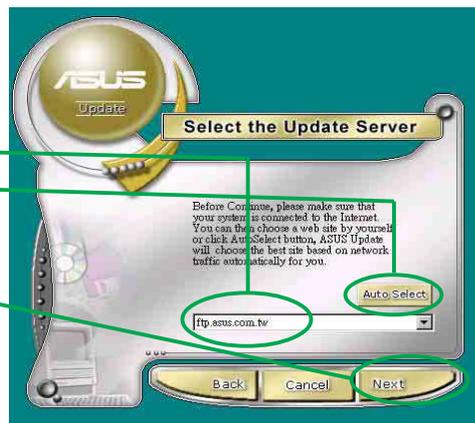
1. Launch the utility from your Windows Start menu:  
**Programs/AsusUpdate Vx.xx.xx/  
AsusUpdate**

The ASUS Update initial screen appears.

2. Select desired update method.  
Click Next.

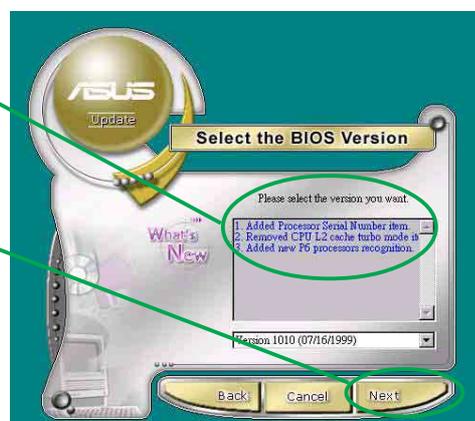


7. If you selected Updating or Downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic,  
or choose Auto Select.  
Click Next.



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.



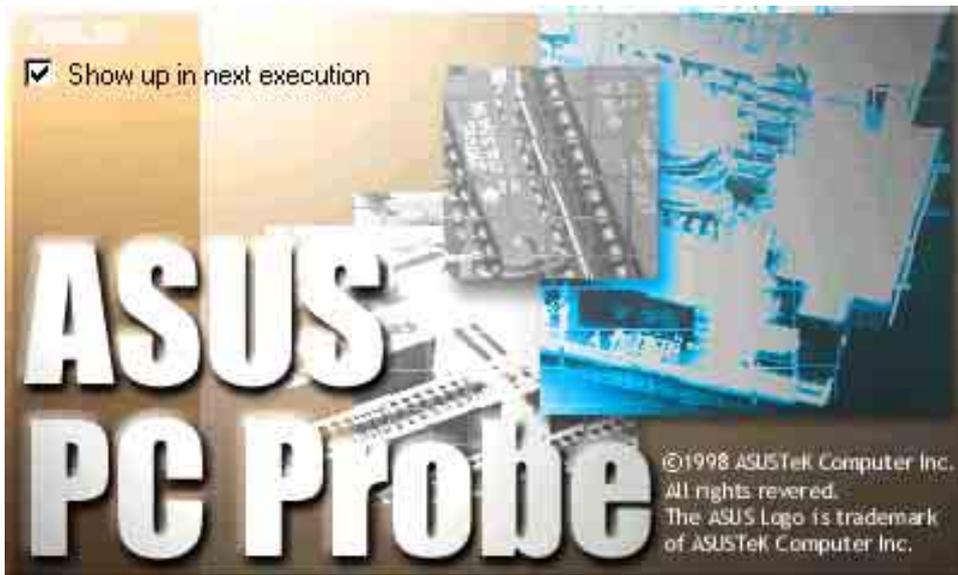
If you selected the option to update the BIOS from a file, a window pops up prompting you to locate the file. Select the file, click Save, then follow the screen instructions to complete the update process.

## 7.3.2 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**.

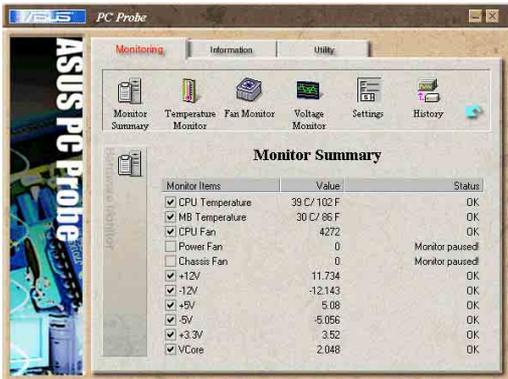
The PC Probe icon  appears on the taskbar system tray indicating that ASUS PC Probe is running. Clicking the icon allows you to see the status of your PC.



# Using ASUS PC Probe

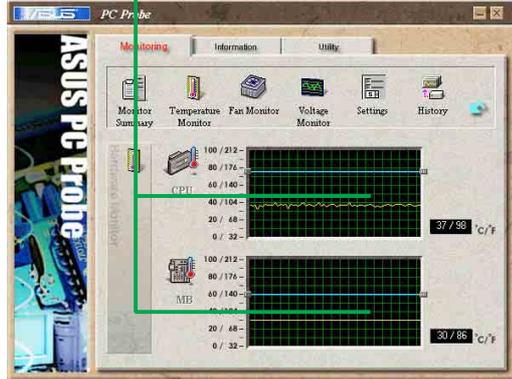
## Monitoring

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



### Monitor Summary

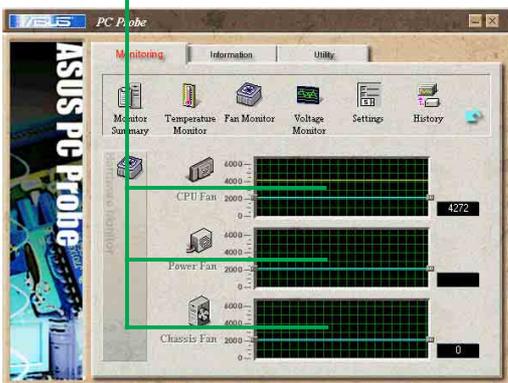
Shows a summary of the items being monitored.



### Temperature Monitor

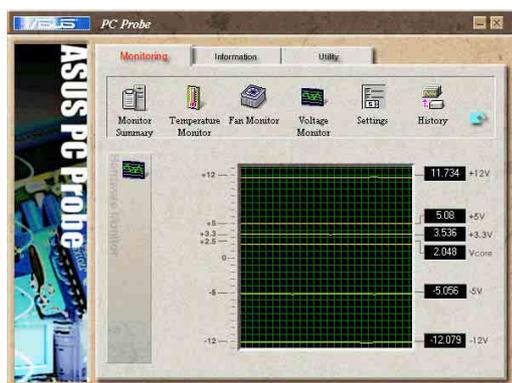
Shows the PC temperature (for supported processors only).

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.

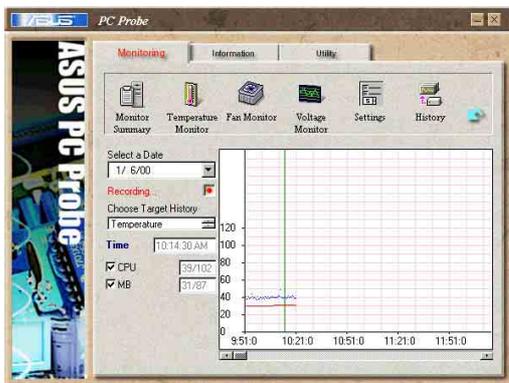
## Settings

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



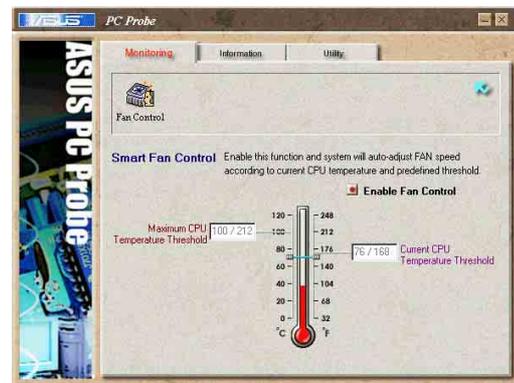
### CPU Cooling System Setup

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



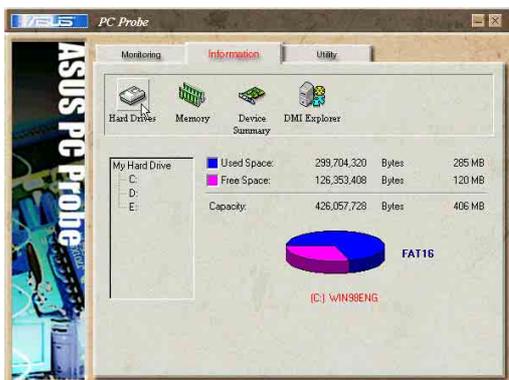
## History

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



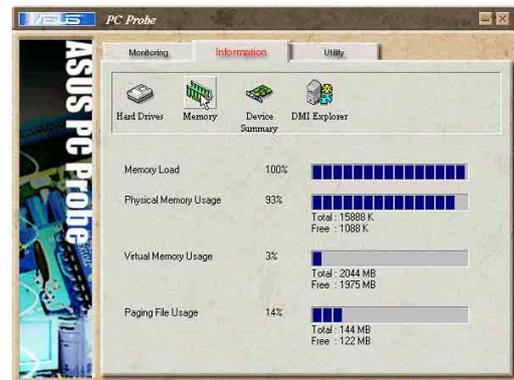
## Fan Control

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



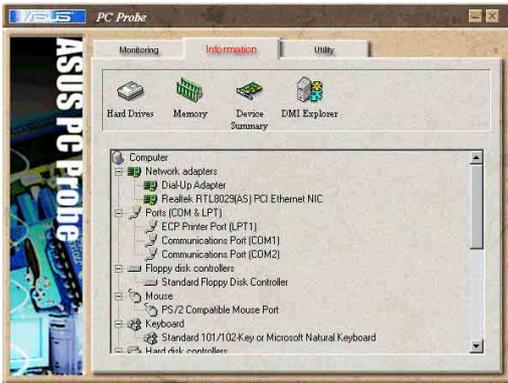
## Hard Drives

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



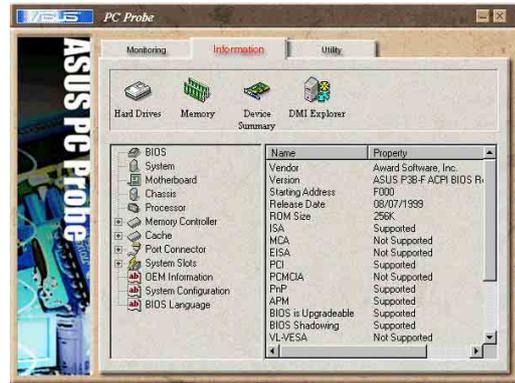
## Memory

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.



