



P4R800-V
Deluxe

User Guide

Motherboard

E1391

First Edition V1

December 2003

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Quick Reference Card

Notices

Federal Communications Commission Statement

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

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

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

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



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

Canadian Department of Communications Statement

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

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

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

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

About this guide

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

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**
This chapter describes the features of the motherboard. It includes brief descriptions of the special attributes of the motherboard and the new technology it supports.
- **Chapter 2: Hardware information**
This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the switches, jumpers, and connectors on the motherboard.
- **Chapter 3: Powering up**
This chapter describes the power up sequence and gives information on the BIOS beep codes and the ASUS Post Reporter™ feature.
- **Chapter 4: BIOS setup**
This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.
- **Chapter 5: Software support**
This chapter describes the contents of the support CD that comes with the motherboard package.
- **Quick Reference Card**

Conventions used in this guide

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



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



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



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



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

Where to find more information

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

1. ASUS websites

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

2. Optional documentation

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

P4R800-V Deluxe specification summary*

CPU	Socket 478 for Intel® Pentium® 4/Celeron processor with speeds of up to 3.2+ GHz On-die 512KB/256KB L2 cache with full speed Supports Intel® Hyper-Threading Technology New power design supports next generation Intel Prescott CPU
Chipset	ATI RADEON™ 9100 IGP ATI IXP 150
Front Side Bus	800/533/400 MHz
Memory	Dual-channel memory architecture 4 x 184-pin DDR DIMM sockets for up to 4GB system Supports PC3200*/2700/2100 unbuffered ECC or non-ECC DDR DIMMs (<i>*Maximum of one PC3200 DIMM per channel for up to 2GB system memory.</i>)
Expansion slots	1 x AGP 8X/4X 5 x PCI 1 x Wi-Fi
Storage	South bridge (IXP150) supports - 2 x UltraDMA100/66 SiS 180 RAID controller supports - 1 x UltraDMA133/100/66 - 2 x Serial ATA with RAID0, RAID1, RAID0+1
Integrated Graphics	ATI Radeon™ 9100 IGP 3D graphics engine supports - Maximum 128MB of display memory - Microsoft® DirectX 8.1 and OpenGL structure - TV encoder and DVO
IEEE 1394	VIA 6307 IEEE 1394 controller - supports 2 x IEEE 1394 connectors
LAN	Marvell® 88E001 Gigabit LAN controller supports 10/100/1000 BASE-T Ethernet
Audio	ADI AD1888 SoundMAX 6-channel audio CODEC
ASUS unique features	POST Reporter™ Instant Music C.P.R. (CPU Parameter Recall) CrashFree BIOS 2 Multi-language BIOS Q-Fan MyLogo2

(Continued on the next page)

P4R800-V Deluxe specification summary*

Rear panel I/O	<ul style="list-style-type: none"> 1 x Parallel port 1 x VGA port 1 x S-Video port 1 x Composite video port 1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x IEEE 1394 port 4 x USB 2.0 ports 1 x RJ-45 port Line In/Line Out/Microphone ports
Internal I/O	<ul style="list-style-type: none"> 2 x Serial connectors 1 x USB 2.0 connector for 2 additional USB ports 1 x IEEE 1394 connector for 1 additional 1394 port CPU/power/chassis fan connectors 20-pin/4-pin ATX power connectors GAME/MIDI connector S/PDIF Out connector CD/AUX/Modem audio connectors Front panel audio connector Panel connector Chassis intrusion connector
BIOS features	4MB Flash ROM, Phoenix Award BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, ACPI, ASUS MyLogo2, AWDFlash
Industry standard	PCI 2.2, USB 2.0
Manageability	DMI 2.0, chassis intrusion
Supported OS	Windows® ME/2000/XP
Power requirement	ATX power supply (with 4-pin 12V plug)
Form Factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 cm)
Support CD contents	<ul style="list-style-type: none"> Device drivers ASUS PC Probe ASUS Update Microsoft® DirectX 8.1 Winbond Voice Editor Trend Micro™ PC-cillin 2002 Adobe® Acrobat Reader® V5.0 ASUS Screensaver

*Specifications are subject to change without notice.

Chapter 1

This chapter describes the features of the motherboard. It includes brief descriptions of the special attributes of the motherboard and the new technology it supports.

Product introduction

Chapter summary

1.1	Welcome!	1-1
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1.1 Welcome!

Thank you for buying the ASUS P4R800-V Deluxe motherboard!

The ASUS P4R800-V Deluxe motherboard delivers a host of new features and latest technologies making it another standout in the long line of ASUS quality motherboards!

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

1.2 Package contents

Check your P4R800-V Deluxe package for the following items.

- ✓ ASUS P4R800-V Deluxe motherboard
- ✓ ASUS P4R800-V series support CD
- ✓ 2 x SATA cable
- ✓ 2 x SATA power cable
- ✓ 1 x 80-conductor ribbon cables for UltraDMA IDE drives
- ✓ 9-pin COM cable
- ✓ Ribbon cable for a 3.5-inch floppy drive
- ✓ S/PDIF out module
- ✓ USB/GAME module
- ✓ I/O shield
- ✓ Bag of extra jumper caps
- ✓ Instant Music keyboard label
- ✓ InterVideo WinDVD Suite
- ✓ User Guide
- ✓ Quick Reference Card (*last page of the User Guide*)
- ✓ Quick Setup Guide (*Retail boxes only.*)
- ✓ Jumpers and connectors stickers (*Retail boxes only.*)



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

1.3 Special features

1.3.1 Product highlights

800MHz FSB CPU support



The P4R800-V Deluxe comes with a 478-pin surface mount, Zero Insertion Force (ZIF) socket for the Intel® Pentium® 4 Northwood/Willamette processor in the 478-pin package with 512/256KB L2 cache on 0.13 micron process. This motherboard supports 800/533/400 MHz system front side bus that allows 6.4GB/s, 4.3GB/s and 3.2GB/s data transfer rates, respectively. The P4R800-V Deluxe also supports the Intel® Hyper-Threading Technology and the next-generation Intel® Prescott CPU. **See page 2-5.**

ATi RADEON™ 9100 IGP/IXP 150 chipset



The embedded RADEON™ 9100 Integrated Graphics Processor (IGP) northbridge and the IXP 150 southbridge chipset control all interfaces to ensure an efficient and reliable computing performance.

The RADEON™ 9100 IGP provides processor interface with 800/533/400 MHz frequency, system memory interface at 400/333/266MHz operation, and 1.5V AGP interface that supports AGP 8X specification.

The IXP 150 is a subsystem that integrates various I/O functions including dual-channel ATA100 bus master IDE controller, up to six USB 2.0/1.1 ports, I/O APIC interrupt, and LPC, AC'97 and PCI 2.2 interfaces. ATI's proprietary A-Link interface connects the IXP 150 with the RADEON™ IGP at speeds of up to 266MB/s.

Dual channel DDR400 memory support



The P4R800-V Deluxe supports a single or a dual memory architecture for up to 4GB system memory. Four (4) 184-pin DIMM sockets are available for installation of unbuffered non-ECC DDR400/300/266 DIMMs.

See page 2-11.

ATI RADEON™ 9100 IGP 2D/3D engine



Integrated in the IGP chipset is the ATI RADEON™ 2D/3D graphics engine with maximum 128MB shared display memory. The integrated graphics also supports TV out function via the S-Video and composite ports in the motherboard rear panel. The RADEON™ 3D graphics engine achieves a maximum resolution of 2048x1536 at 32bpp and implements innovative ATI technologies including Pixel Tapestry™ II, Smartshader™, Smoothvision™, and Video Immersion™ II. **See page 5-7.**

Ai NET solution



Ai NET supports the onboard Marvell® 88E001 Gigabit LAN controller for a Fast 10/100/1000 BASE-T Ethernet. The Gigabit LAN controller comes with the Virtual Cable Tester (VCT) that intelligently diagnoses and reports cable faults from a remote location up to 100 meters to help users monitor and improve network quality. **See page 5-25.**

SoundMAX digital audio system



The SoundMax Digital Audio System is the industry's highest performance and most reliable audio solution for business professionals, audiophiles, musicians, and gamers. SoundMAX Digital Audio System can output 5.1 channel surround and features state-of-the-art DLS2 MIDI synthesizer with Yamaha DLSbyXG sound set, 5.1 Virtual Theater™ and supports all major game audio technologies including Microsoft DirectX™8.0, Microsoft DirectSound 3D™, A3D, MacroFX, ZoomFX, MultiDrive 5.1 and EAX. **See page 5-10.**

This motherboard also comes with a S/PDIF module to turn your computer into a high-end entertainment system with digital connectivity to powerful sound systems. **See page 2-25.**

Serial ATA solution



The embedded SiS 180 controller supports two Serial ATA (SATA) interface, a revolutionary replacement of the Parallel ATA storage interface. The Serial ATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, up to 150 MB/s data transfer rate. **See page 2-23.**

RAID 0, 1, 0+1 support

The SiS 180 RAID controller supports two Serial ATA150 and UltraDMA133 drives for RAID 0,1, 0+1 configuration. This provides a high-performance RAID solution for hard disk performance and data back-up protection without the cost of additional RAID cards. **See page 2-23 and 5-17.**

USB 2.0 technology

The motherboard implements the Universal Serial Bus (USB) 2.0 specification, dramatically increasing the connection speed from the 12 Mbps bandwidth on USB 1.1 to a fast 480 Mbps on USB 2.0. USB 2.0 is backward compatible with USB 1.1. **See page 2-27.**

IEEE 1394 support

The onboard VIA6307 controller supports two IEEE 1394 ports that provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to IEEE 1394 standards. The IEEE 1394 allows up to 400Mbps transfer rates through simple, low-cost, high-bandwidth asynchronous (real-time) data interfacing between computers, peripherals, and consumer electronic devices such as camcorders, VCRs, printers, TVs, and digital cameras. **See page 2-25**

1.3.2 ASUS unique features

Ai BIOS

The Ai Bios is a combination of three ASUS intelligent solutions: CrachFree BIOS2, Q-Fan and Post Reporter.

CrashFree BIOS2

This feature allows you to restore the original BIOS data from the support CD, or from a bootable floppy disk, when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip. **See page 4-4.**

Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the fan speeds according to the system loading to ensure quiet, cool, and efficient operation. **See page 4-28.**

POST Reporter™

The motherboard offers a new exciting feature called the ASUS POST Reporter™ to provide friendly voice messages and alerts during the Power-On Self-Tests (POST) informing you of the system boot status and causes of boot errors, if any. The bundled Winbond Voice Editor software lets you to customize the voice messages in different languages.

See page 3-2.

Wi-Fi slot



The ASUS Wi-Fi slot is based on the IEEE 802.11b/g wireless standard and is specifically designed for the ASUS WiFi-b™ add-on card for setting-up a wireless LAN environment. The ASUS WiFi-b™ add-on card comes with an exclusive Software Access Point (AP) feature to save the extra cost of a stand-alone AP. This proprietary slot also supports the IEEE 802.11g wireless LAN standard for future upgrades. **See page 2-17.**

Multi-language BIOS



The multi-language BIOS allows you to select the language of your choice from the available options. The localized BIOS menus allow you to configure easier and faster. Supported languages include English, German, and Japanese. **See page 4-11.**

C.P.R. (CPU Parameter Recall)



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

MyLogo2



This new feature present in the motherboard allows you to personalize and add style to your system with customizable boot logos. The ASUS MyLogo2 is automatically installed when you install the ASUS Update utility from Utilities menu in the support CD. **See page 5-13.**

Instant Music

This unique feature allows you to playback audio files even before entering the operating system. Just press the ASUS Instant Music special function keys and enjoy the music! **See page 5-15.**

Chapter 2

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

Hardware information

Chapter summary

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2.7	Connectors	2-20

2.1 Before you proceed

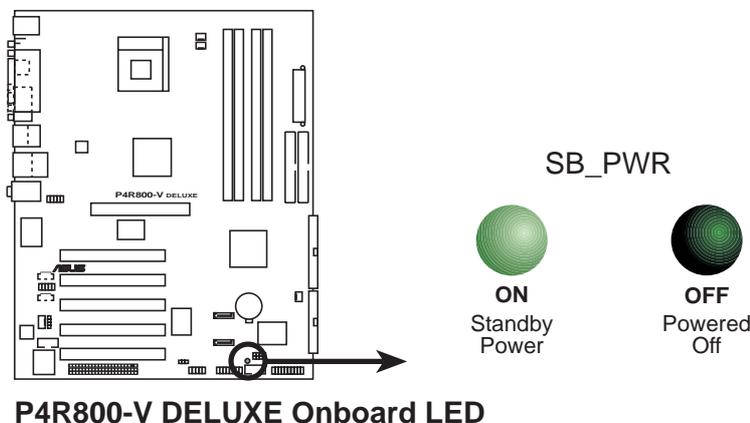
Take note of the following precautions before you install motherboard components or change any motherboard settings.



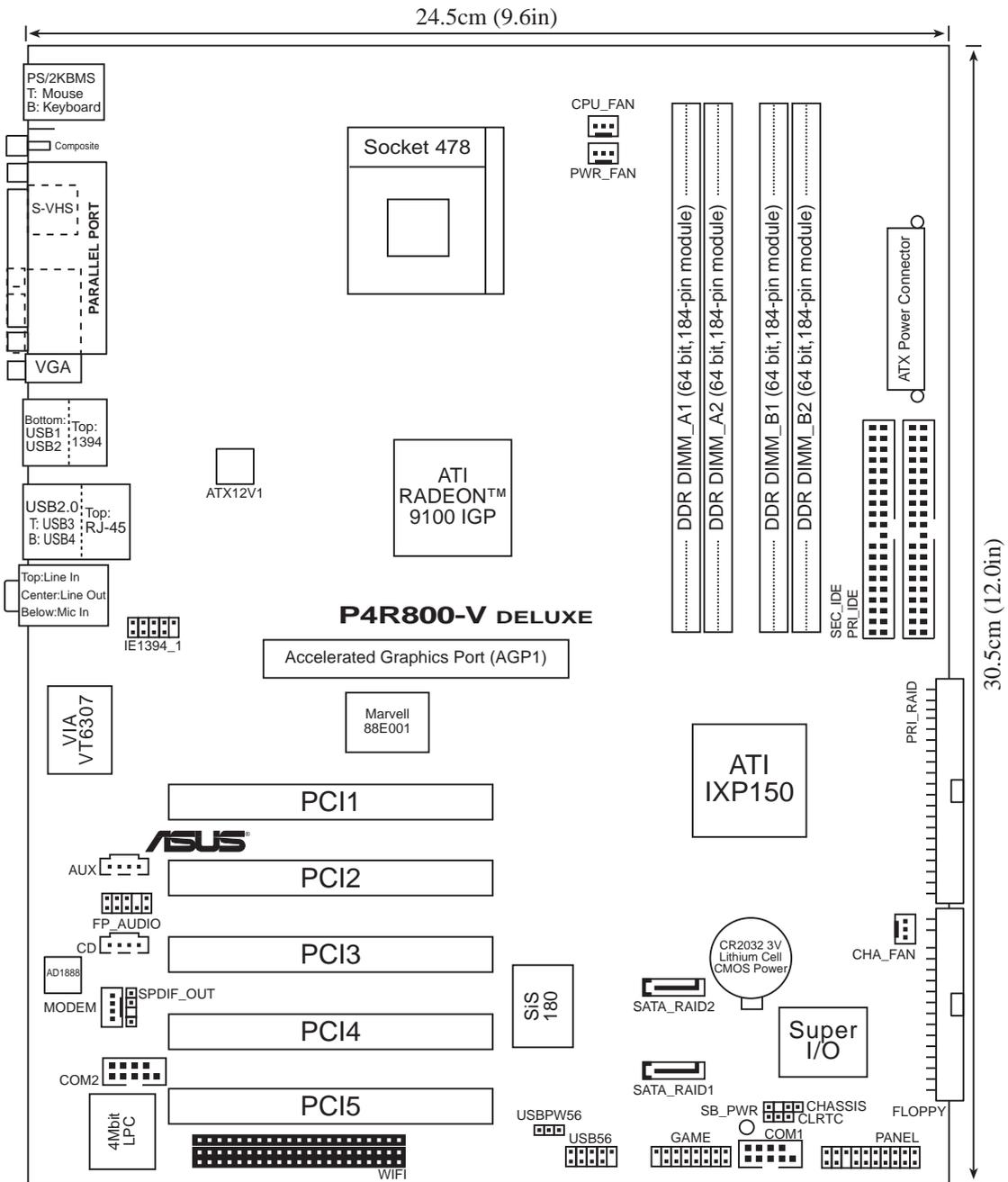
- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
- **Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply.** Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LED

The P4R800-V Deluxe motherboard comes with a standby power LED. When lit, the green LED (SB_PWR) indicates that the system is ON, in sleep mode, or in soft-off mode, a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component.



2.2 Motherboard layout



2.2.1 Major components

Components	Description	Page
Sockets/Slots		
Socket 478	Intel Pentium® 4/Celeron socket	2-5
DIMMs	System memory socket	2-11
AGP	Accelerated Graphics Port	2-16
PCI	32-bit PCI expansion slots	2-16
WIFI	Wireless Fidelity slot	2-17
Jumpers		
CLRTC	Clear RTC RAM jumper	2-18
USBPWR56	USB Wake-up jumpers	2-19
Rear panel connectors		
KBMS	6-pin PS/2 mouse port (green)	2-20
KBMS	6-pin PS/2 keyboard port (purple)	2-21
IEEE 1394	6-pin IEEE 1394 port	2-20
Parallel	25-pin parallel port	2-20
RJ-45	Local Area Network (LAN) port	2-20
Line In	1/8 inch Line in port (light blue)	2-20
Line out	1/8 inch Line out port (lime)	2-20
Microphone	1/8 inch Microphone port (pink)	2-20
USB 1 and 2	4-pin USB 2.0 ports	2-21
USB 3 and 4	4-pin USB 2.0 ports	2-21
VGA	VGA port	2-21
TV_S	S-Video port	2-21
TV_C	RCA (composite) port (yellow)	2-21
Internal connectors		
FLOPPY	34-1 Floppy disk drive connector	2-21
PRI_IDE/SEC_IDE	40-1 IDE connectors	2-22
GAME	16-1 GAME/MIDI connector	2-22
SATA_RAID1/SATA_RAID2	7-pin Serial ATA RAID connector	2-23
PRI_RAID	40-1 Primary RAID connector	2-23
COM1/COM2	10-1 pin Serial connector	2-24
CHASSIS	4-1 pin Chassis intrusion connector	2-24
IE1394_1	10-1 pin IEEE 1394 connector	2-25
SPDIF_OUT	3-pin S/PDIF Out connector	2-25
ATX12V	4-pin 12V ATX power supply connector	2-26
ATXPWR	20-pin ATX power supply connector	2-26
USB56	10-1 USB 2.0 connector	2-27
CD/AUX/MODEM	4-pin CD/Auxilliary/Modem connectors	2-27
CHA_FAN/CPU_FAN/PWR_FAN	3-pin Chassis/CPU/Power connectors	2-28
FP_AUDIO	10-1 pin Front Audio connector	2-28
PANEL	10-1 pin Panel connector	2-29

2.2.2 Placement direction

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

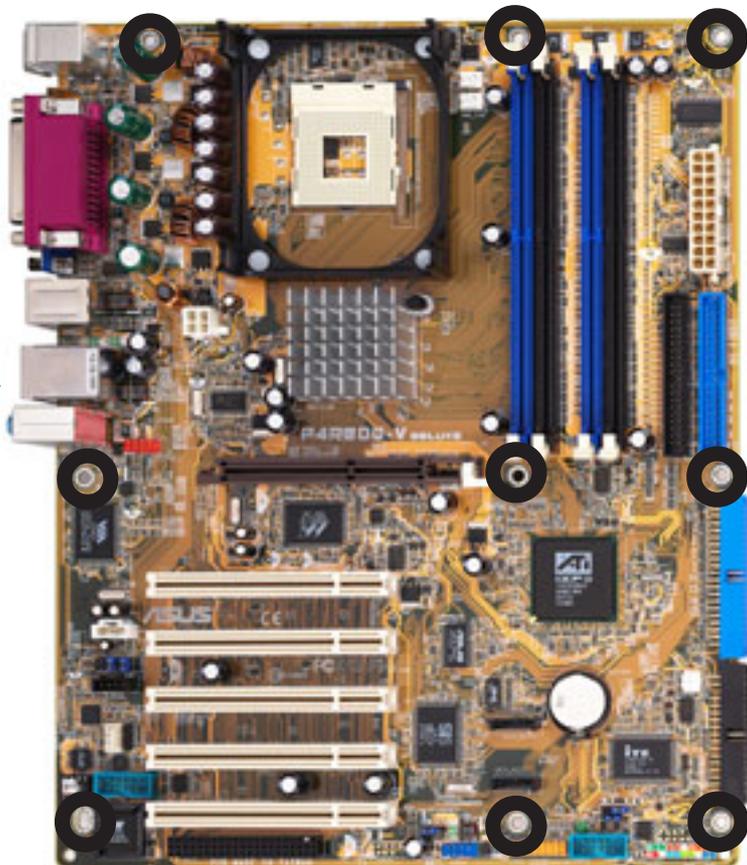
2.2.3 Screw holes

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



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

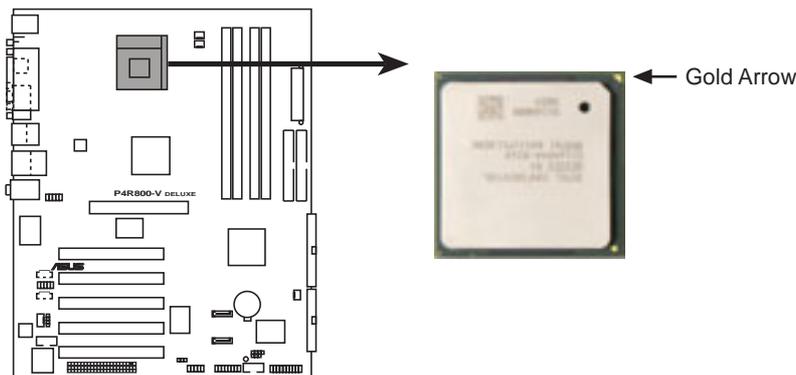
Place this side towards
the rear of the chassis



2.3 Central Processing Unit (CPU)

2.3.1 Overview

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



P4R800-V DELUXE Socket 478



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

Notes on Intel® Hyper-Threading Technology

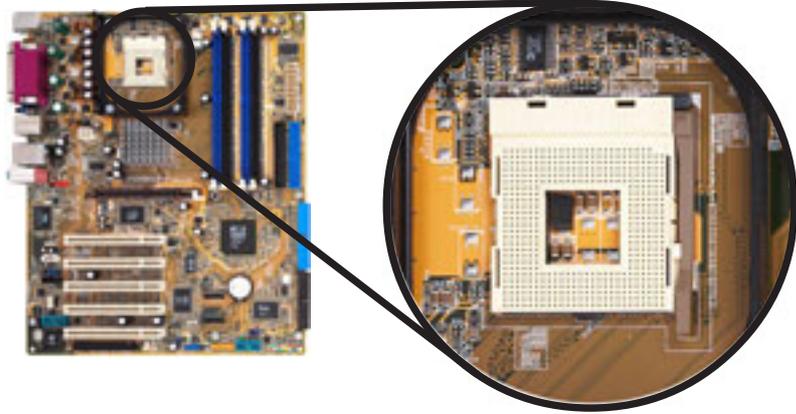


1. Hyper-Threading Technology is supported under **Windows® XP** and later versions only. If you are using any other operating systems, disable the Hyper-Threading Technology item in BIOS to ensure system stability and performance.
 2. It is recommended that you install Windows® XP Service Pack 1.
 3. For more information on Hyper-Threading Technology, visit www.intel.com/info/hyperthreading.
-

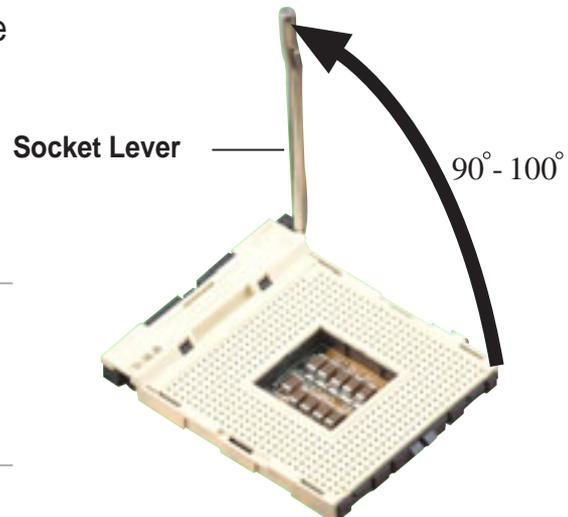
2.3.2 Installing the CPU

Follow these steps to install a CPU.

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

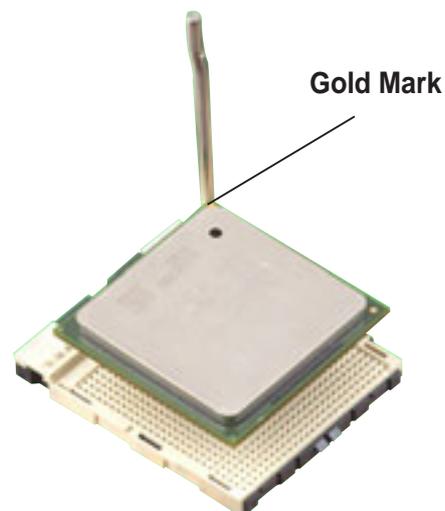


2. Unlock the socket by pressing the lever sideways, then lift it up to a 90°-100° angle.



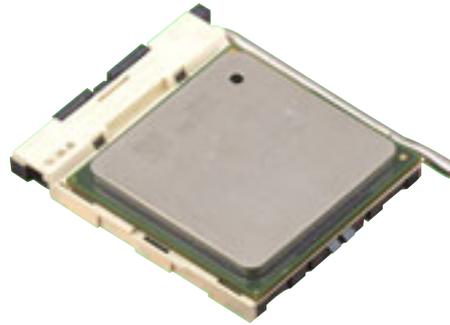
Make sure that the socket lever is lifted up to 90°-100° angle, otherwise the CPU does not fit in completely.

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



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

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



2.3.3 Installing the heatsink and fan

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



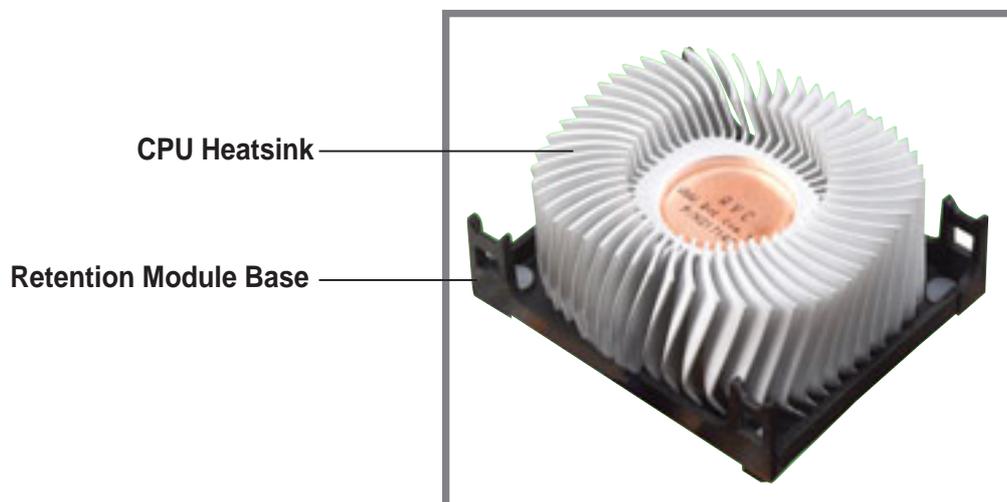
- When you buy a boxed Intel® Pentium® 4 processor, the package includes the heatsink, fan, and retention mechanism. In case you buy a CPU separately, make sure that you use only Intel® certified heatsink and fan.
- Your boxed Intel® Pentium® 4 processor package should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

Follow these steps to install the CPU heatsink and fan.

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



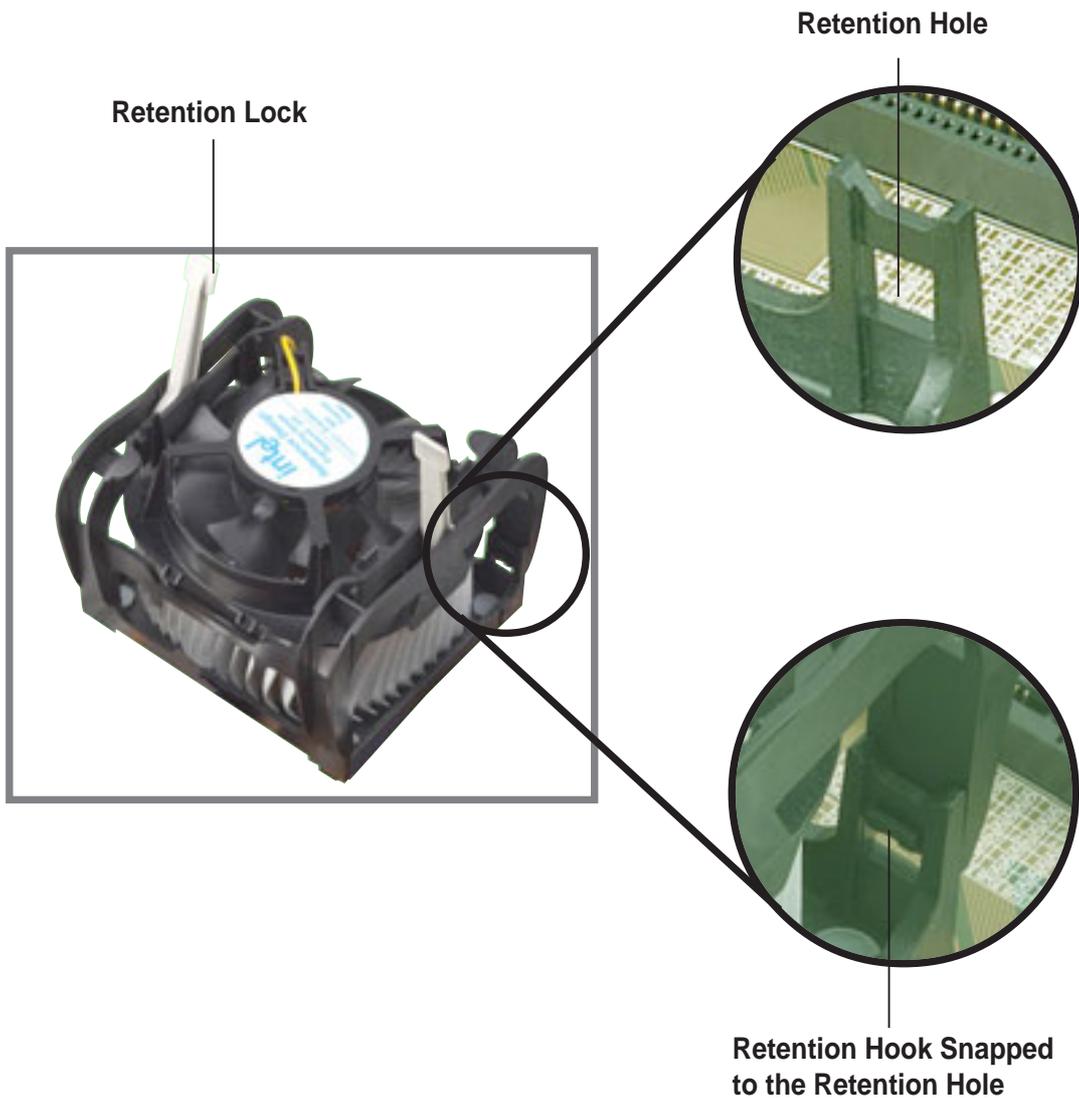
The retention module base is already installed on the motherboard upon purchase. You do not have to remove the retention module base when installing the CPU or installing other motherboard components.



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



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



Keep the retention locks lifted upward while fitting the retention mechanism to the module base.

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



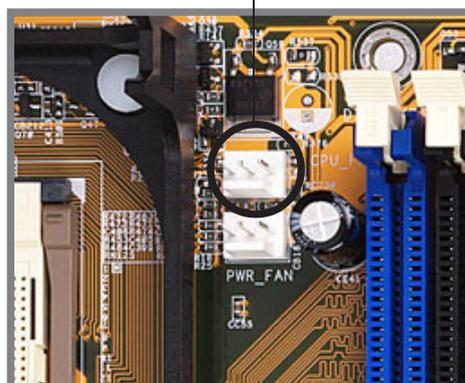
When secure, the retention locks should point to opposite directions.



2.3.4 Connecting the CPU fan cable

When the fan, heatsink, and the retention mechanism are in place, connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.

CPU Fan Connector
(CPU_FAN)

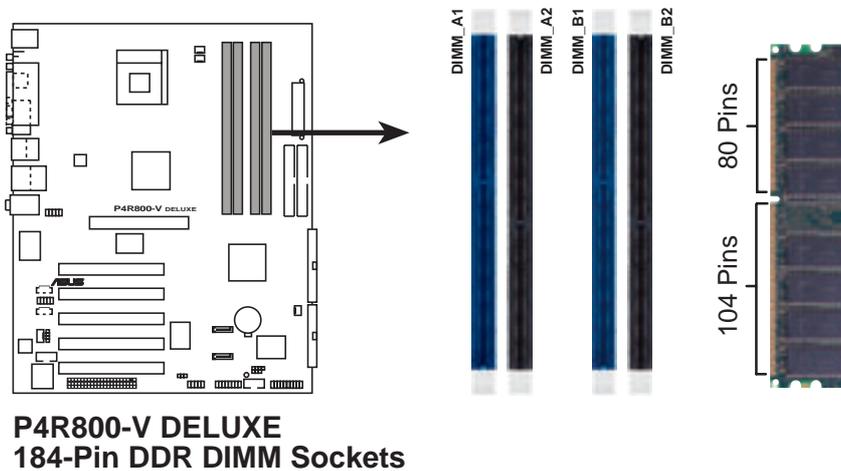


Don't forget to connect the CPU fan connector! Hardware monitoring errors may occur if you fail to plug this connector.

2.4 System memory

2.4.1 Overview

The following figure illustrates the location of the DDR DIMM sockets.



2.4.2 Memory configurations

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

Important notes



- Installing DDR DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations in Table 1.
- In dual-channel configurations, always install an **identical** (the same type and size) DDR DIMM pair on sockets of the same color.
- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.
- This motherboard does not support DDR200 DIMMs.

Table 1: Recommended memory configurations

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

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

- install identical DIMMs in all four sockets or
- install identical DIMM pair in DIMM_A1 and DIMM_B1 (blue sockets) and identical DIMM pair in DIMM_A2 and DIMM_B2 (black sockets)

Legend:

SS - Single-sided **DS** - Double-sided



When using PC3200 (DDR400) DIMMs, you may install only one module per channel for a maximum of 2GB system memory. DO NOT install two PC3200 modules in one channel.

Table 2: Qualified DDR400 vendors list

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

Size	Vendor	Part Number	Chip Brand	Sides	Chip Number	A*	B**
256MB	MICRON	MT8VDDT3264AG-40BC4	MICRON	SS	MT46V32M8TG-5BC	X	X
512MB	MICRON	MT16VDDT6464AG-40BC4	MICRON	DS	MT46V32M8TG-5BC	X	
256MB	SAMSUNG	M368L3223ETM-CCC	SAMSUNG	SS	K4H560838E-TCCC		X
512MB	SAMSUNG	M368L6432ETM-CC4	SAMSUNG	DS	K4H560838E-TCC4	X	
256MB	SAMSUNG	M368L3223DTM-CC4	SAMSUNG	SS	K4H560838D-TCC4		X
256MB	SAMSUNG	M368L3223FTN-CCC	SAMSUNG	SS	K4H560838F-TCCC	X	
128MB	Infineon	HYS64D16301GU-5-B	Infineon	SS	HYB25D256160BT-5		X
256MB	Infineon	HYS64D32300GU-5-B	Infineon	SS	HYB25D256800BT-5	X	
512MB	Infineon	HYS64D64300GU-5-B	Infineon	DS	HYB25D256800BT-5	X	
256MB	Infineon	HYS64D32300HU-5-C	Infineon	SS	HYB25D256800CE-5	X	
512MB	Infineon	HYS64D64300HU-5-C	Infineon	DS	HYB25D256800CE-5	X	
512MB	Hynix	HYMD264646A8J-D43AA	Hynix	DS	HY5DU56822AT-D43	X	
256MB	Hynix	HYMD232646B8J-D43AA	Hynix	SS	HY5DU56822BT-D43	X	
256MB	Kingston	KVR400X64C3A/256	Hynix	SS	HY5DU56822BT-D43		X
256MB	Kingston	KVR400X64C3A/256	Kingston	SS	D3208DL2T-5	X	
512MB	Kingston	KVR400X64C3A/512	Hynix	DS	HY5DU56822BT-D43	X	
256MB	CORSAIR	CMX256A-3500C2PT		SS		X	
512MB	CORSAIR	CMX512-3500C2PT		DS		X	
512MB	CORSAIR	CMX512-3200C2		DS		X	
256MB	NANYA	NT256D64S88B1G-5T	NANYA	SS	NT5DS32M8BT-5T	X	
512MB	NANYA	N512D64S88B1G-5T	NANYA	DS	NT5DS32M8BT-5T	X	
256MB	Apacer	77.10636.465	SAMSUNG	SS	K4H560838D-TCCC	X	
512MB	Apacer	77.10736.464	SAMSUNG	DS	K4H560838D-TCC4	X	
256MB	Transcend	82030 Y0349 QC:AC	SAMSUNG	SS	K4H560838D-TCCC	X	
512MB	Transcend	82031 Y0349 QC:A7	SAMSUNG	DS	K4H560838D-TCCC	X	
256MB	Winbond	W9425GCDB-5	Winbond	SS	W942508CH-5	X	
512MB	Winbond	W9451GCDB-5	Winbond	DS	W942508CH-5	X	
512MB	Century	DXV2S8MC5BC3U27E	Micron	DS	MT46V32M8TG-5BC	X	
256MB	Century	DXV6S8MC5BC3U27E	Micron	SS	MT46V32M8G-5BC		X
512MB	Century	DXV2S8SSCCD3K27C	SAMSUNG	DS	K4H560838D-TCCC	X	
512MB	TwinMos	M2G9J16AKATT9F083S9DT		DS		X	
256MB	TwinMos	233E52000180078	Winbond	SS	W9425088H-5	X	
256MB	TwinMos	M2S9I08AFAPS9F0811A-T	PSC	SS	A2S56D30ATP	X	X
256MB	TwinMos	M2G9I08AFATT9F081AA4T	TwinMos	SS	TMD7608F8E50D	X	
256MB	TwinMos	M2G9I08AFATT9F0811DDT	TwinMos	SS	TMD7608F8E50B	X	
256MB	Adata	MD0WB5F3G31JB1EAZ	Winbond	SS	W942508BH-5	X	
256MB	Adata	MD0AD5F3G31YB1EZ2	Adata	SS	ADD8608A8A-5B	X	
256MB	Adata	MDGAD5F3G315B1EC2	Adata	SS	ADD8608A8A-5B	X	
512MB	PSC	AL6D8A53TK1-5B	PSC	DS	A2S56D30ATP	X	

A* : Supports one pair of modules inserted to either the blue slots or the black slots as one pair of Dual-channel memory configuration.

B** : Supports 4 modules inserted to both the blue and black slots as two pairs of Dual-channel memory configuration.

Legend: **SS** – Single-sided **DS** – Double-sided



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

2.4.3 Installing a DIMM



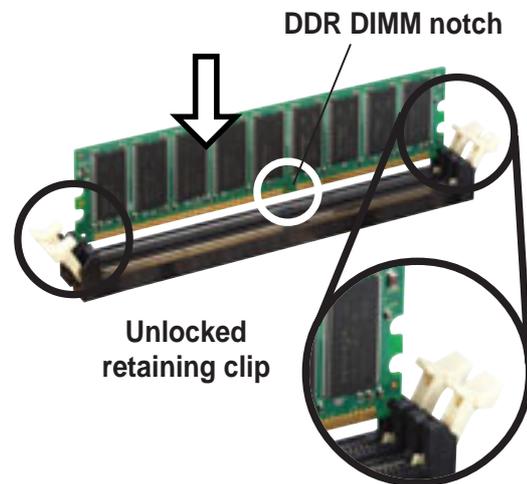
Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

Follow these steps to install a DIMM.

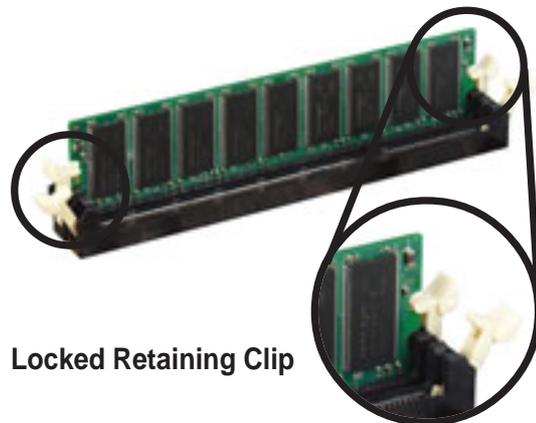
1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.



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



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



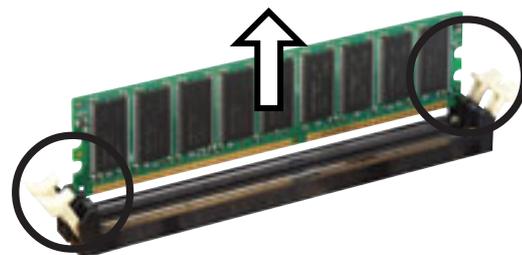
2.4.4 Removing a DIMM

Follow these steps to remove a DIMM.

1. Simultaneously press the retaining clips outward to unlock the DIMM.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.



2. Remove the DIMM from the socket.

2.5 Expansion slots

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



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

2.5.1 Installing an expansion card

Follow these steps to install an expansion card.

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

2.5.2 Configuring an expansion card

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

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

2.5.3 Interrupt assignments

Standard interrupt assignments

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

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

IRQ assignments for this motherboard

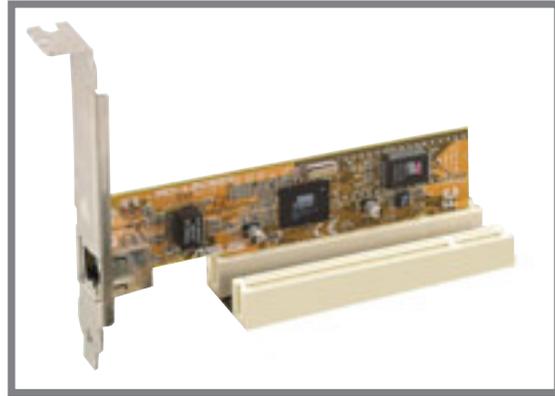
	INT A	INT B	INT C	INT D
PCI slot 1	shared	—	—	—
PCI slot 2	—	shared	—	—
PCI slot 3	—	—	shared	—
PCI slot 4	—	—	—	shared
PCI slot 5	shared	—	—	—
AGP slot	shared	—	—	—
Onboard LAN	—	—	—	shared
Onboard SATA	—	—	shared	—
Onboard 1394	—	shared	—	—
Onboard Audio	—	—	shared	—



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

2.5.4 PCI slots

The PCI slots support PCI cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications.



When installing long PCI cards, it is recommended that you install them in PCI slots 1, 2, or 5. Long PCI cards installed in PCI slots 3 and 4 may interfere with the SATA connectors.

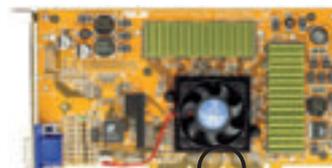
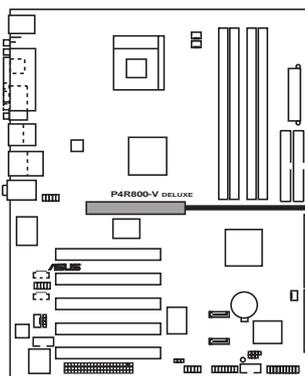
2.5.5 AGP slot

This motherboard has an Accelerated Graphics Port (AGP) slot that supports AGP 8X/4X (+1.5V) cards. When you buy an AGP card, make sure that you ask for one with +1.5V specification.

Note the notches on the card golden fingers to ensure that they fit the AGP slot on your motherboard.



Install only +1.5V AGP cards. This motherboard does not support 3.3V AGP cards.



Keyed for 1.5v

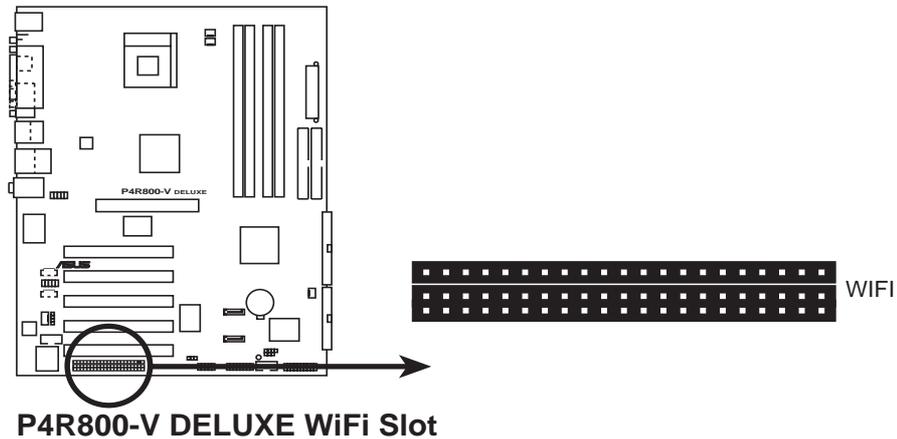
P4R800-V DELUXE
Accelerated Graphics Port (AGP)



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

2.5.6 Wi-Fi slot

The Wi-Fi slot supports the ASUS WiFi-b™ card and future IEEE 802.11g network interface card for wireless connectivity. The Wi-Fi slot conforms to the Institute of Electrical and Electronics Engineers (IEEE) 802.11b/g standard for wireless devices operating in the 2.4GHz frequency band.



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



ASUS WiFi-b™ Setup

2.6 Jumpers

1. Clear RTC RAM (CLRRTC)

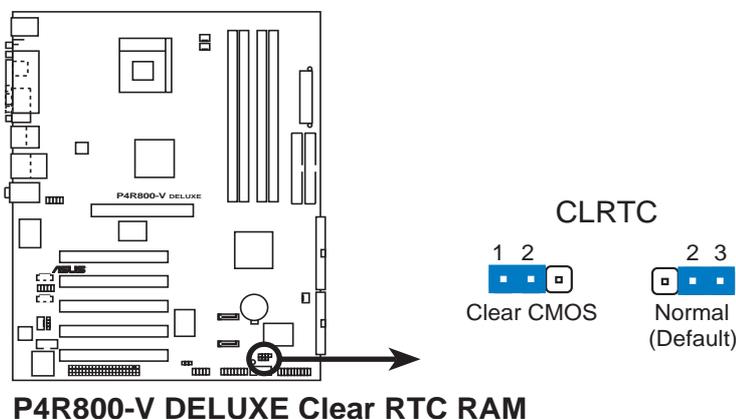
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The RAM data in CMOS, that include system setup information such as system passwords, is powered by the onboard button cell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

To erase the RTC RAM:

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



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



P4R800-V DELUXE Clear RTC RAM

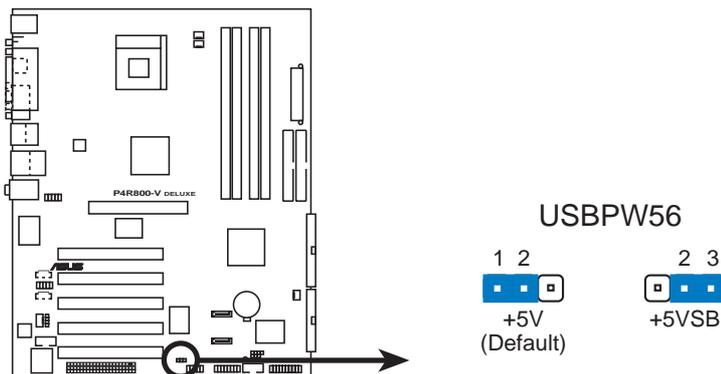


You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so BIOS can automatically reset parameter settings to default values.

2. USB device wake-up (3-pin USBPW56)

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

The USBPW56 jumper is for the internal USB header that you can connect to the front USB ports.



P4R800-V DELUXE USB Device Wake Up

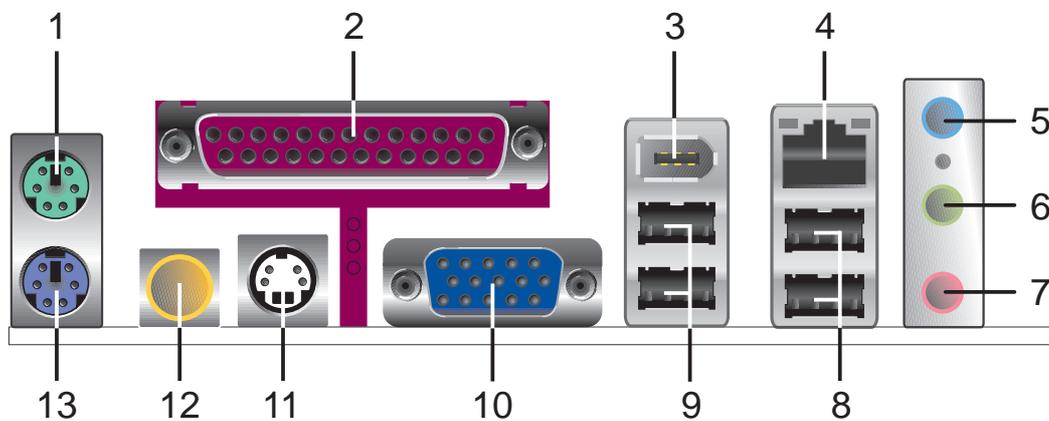


- The USB device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB port. Otherwise, the system would not power up.
- The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

2.7 Connectors

2.7.1 Rear panel connectors

This section describes and illustrates the rear panel input/output ports.



1. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **IEEE 1394 port.** This 6-pin 1394 port connects provides high speed connectivity for audio/video devices, storage peripherals, or PCs.
4. **RJ-45 port.** This port allows connection to a Local Area Network (LAN) through a network hub.
5. **Line In port.** This Line In (light blue) port connects a tape player or other audio sources. In 6-channel mode, the function of this port becomes Bass/Center.
6. **Line Out port.** This Line Out (lime) port connects a headphone or a speaker. In 6-channel mode, the function of this port becomes Front Speaker Out.
7. **Microphone port.** This Mic (pink) port connects a microphone. In 6-channel mode, the function of this port becomes Rear Speaker Out.



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

Audio ports function variation

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

8. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
9. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
10. **VGA port.** This port connects a VGA compatible monitor.
11. **S-Video port.** This port connects a television or VCR via an S-Video cable.
12. **Composite video port.** This port connects a television via a composite video cable.
13. **PS/2 keyboard port.** This purple connector is for a PS/2 keyboard.



The S-Video and RCA ports may not be used simultaneously.

2.7.2 Internal connectors

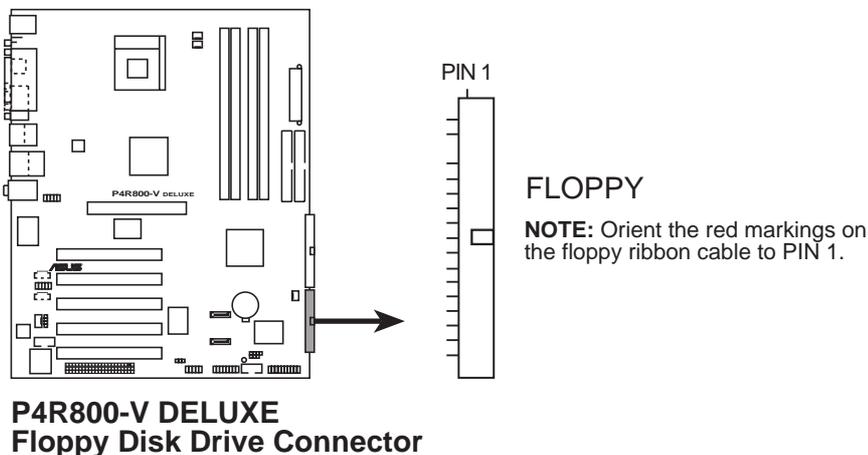
This section describes and illustrates the internal connectors.

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

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



Always connect ribbon cables with the red stripe to Pin 1 on the connectors. Pin 1 is usually on the side closest to the power connector on hard drives and CD-ROM drives, but may be on the opposite side on floppy disk drives.

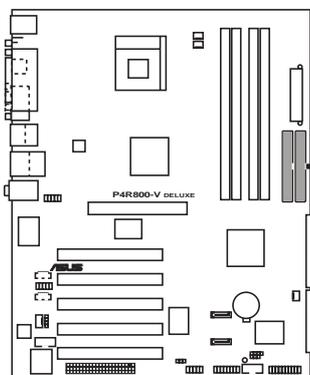


2. IDE connectors (40-1 pin PRI_IDE [blue], SEC_IDE [black])

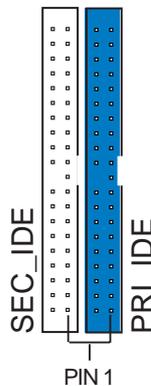
These connectors support the provided UltraDMA IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraDMA100 slave device (hard disk drive) and the black connector to the UltraDMA100 master device.



- 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.
- The hole near the blue connector on the UltraDMA cable is intentional.
- For UltraDMA100 IDE devices, use the 80-conductor IDE cable.



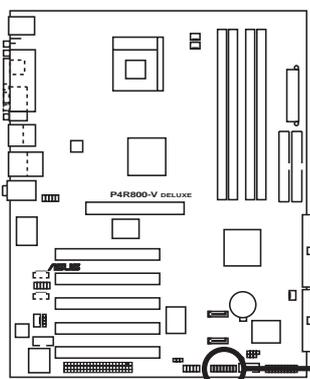
**P4R800-V DELUXE
IDE Connectors**



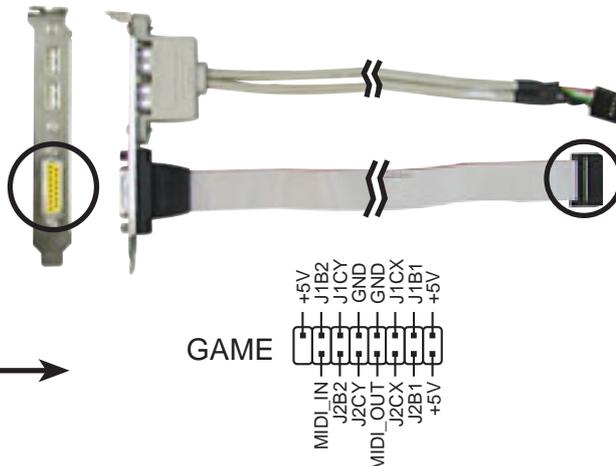
NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

3. GAME/MIDI connector (16-1 pin GAME)

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

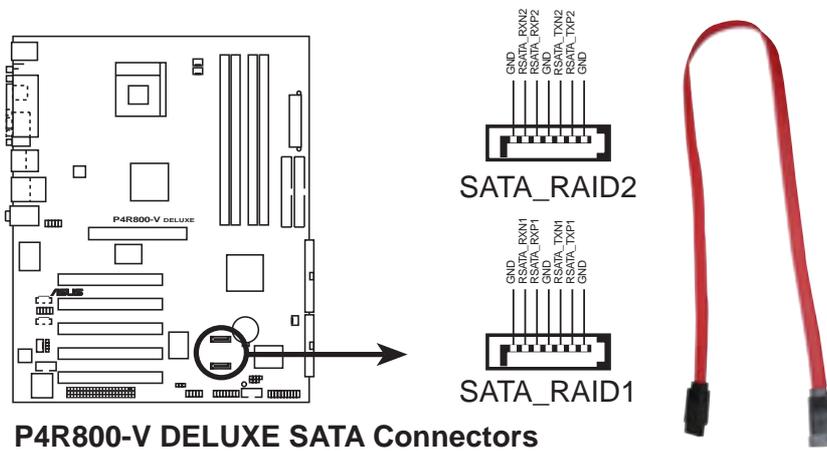


**P4R800-V DELUXE
Game Connector**



4. Serial ATA RAID connectors (7-pin SATA_RAID1, SATA_RAID2)

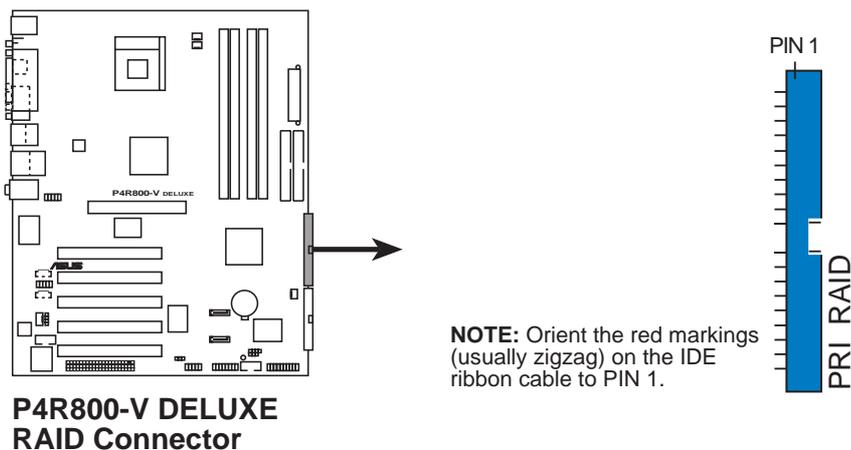
These Serial ATA connectors support SATA hard disks that you may configure as a RAID set. With the onboard SiS 180 RAID controller, you may create a RAID0, RAID1, or RAID0+1 configuration. See Chapter 5 for details on RAID configuration.



If you wish to create a RAID set, make sure that you have connected the SATA cable and installed Serial ATA devices.

5. RAID ATA133 connector (40-1 pin PRI_RAID)

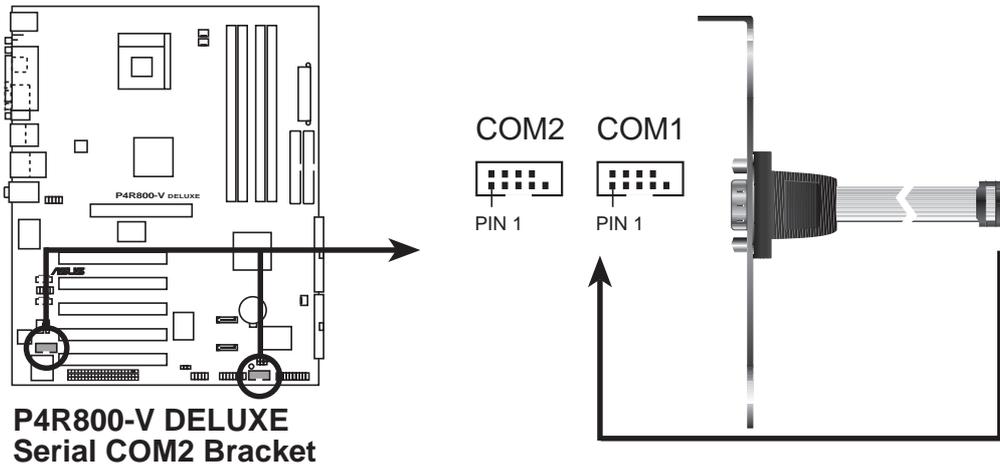
The SiS 180 RAID controller supports this connector for RAID 0, RAID 1, or RAID 0+1 configuration. You can connect two UltraATA133 hard disks to this connector and set up a disk array configuration. See Chapter 5 for details on the RAID configuration.



If you wish to create a RAID set using UltraATA hard disks, make sure that you have connected the UltraATA cable and installed UltraATA 133 hard disks.

6. Serial port connectors (10-1 pin COM1, COM2)

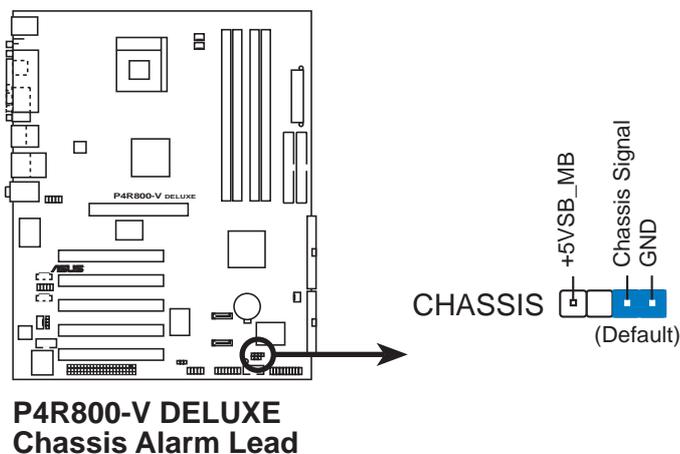
These connectors accommodate two serial port modules. Use the bundled 9-pin COM cable to connect the serial port module to one of these connectors, then install the module into a slot opening at the front or back of the system chassis.



7. Chassis intrusion connector (4-1 pin CHASSIS)

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

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

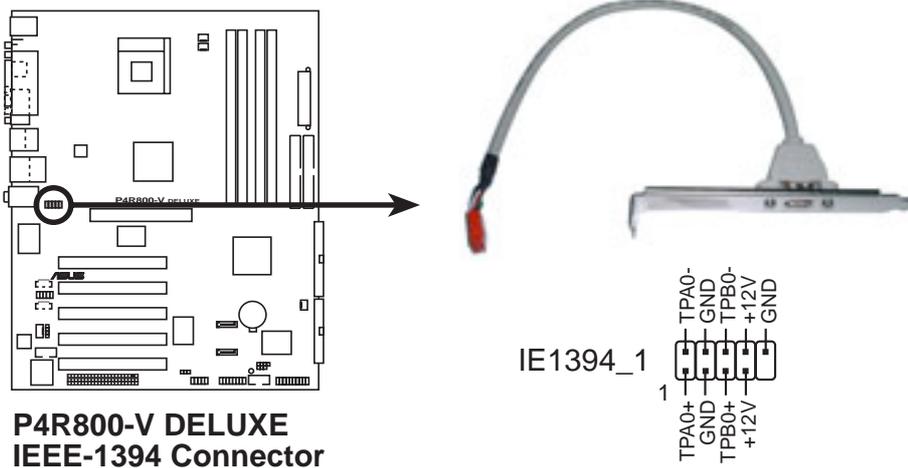


8. IEEE 1394 connector (10-1 pin IE1394_1 [red])

This connector is for an optional 1394 module. Attach the 10-1 pin 1394 cable plug from the module to this connector. You may also connect a 1394-compliant internal hard disk to this connector.



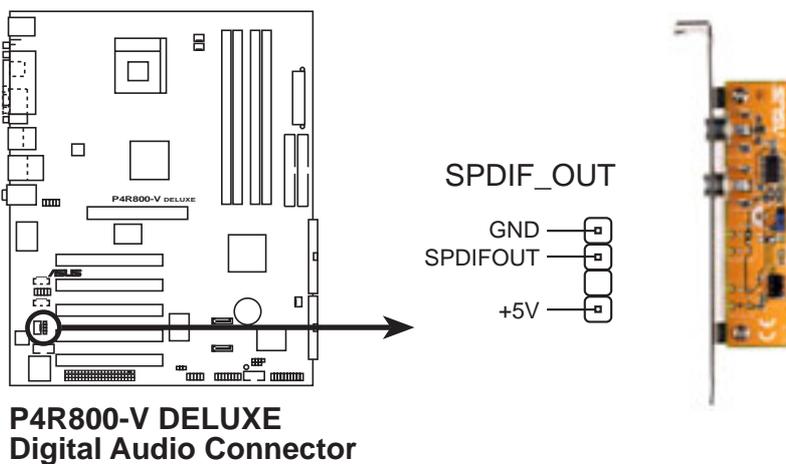
The IEEE 1394 module is purchased separately.



NEVER connect a **USB cable** to the IEEE 1394 connector (red). Doing so will damage the motherboard!

9. Digital audio connector (4-1 pin SPDIF_OUT)

An S/PDIF Out connector is available for the bundled S/PDIF module. Connect one end of the S/PDIF module audio cable to this connector and the other end to the S/PDIF module.



The S/PDIF module that comes with the motherboard package has an optical and coaxial S/PDIF Out ports. These ports may not be used simultaneously.

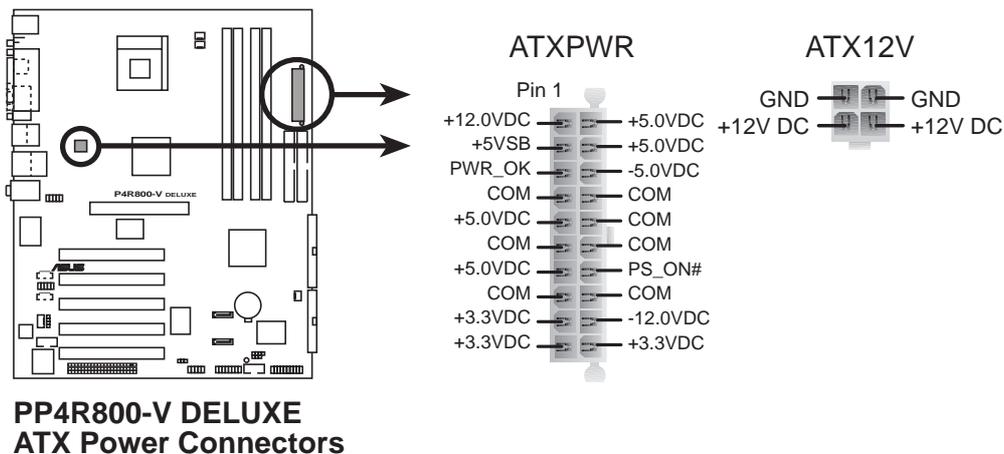
10. ATX power connectors (20-pin ATXPWR, 4-pin ATX12V)

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

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



- Do not forget to connect the 4-pin ATX +12V power plug. Otherwise, the system does not boot up.
- Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system may become unstable or may not boot up if the power is inadequate.



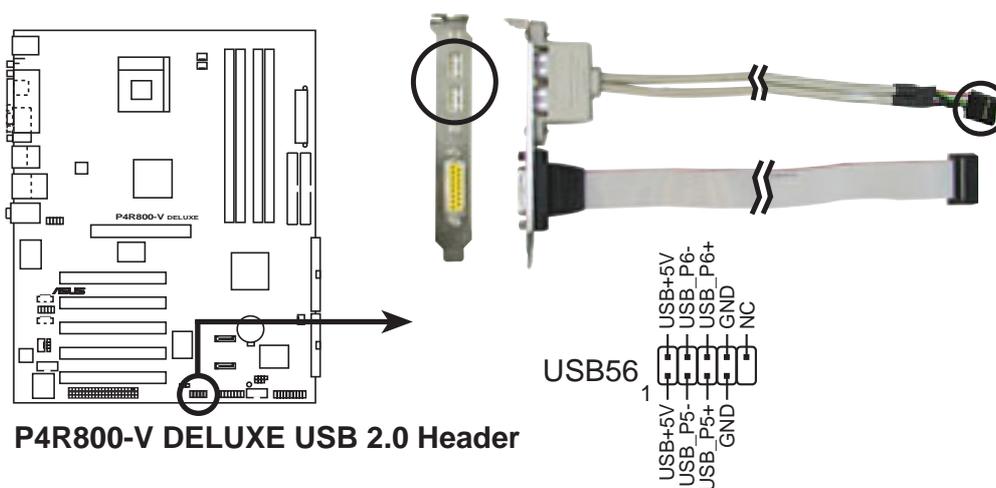
11. USB headers (10-1 pin USB56 [blue])

If the USB ports on the rear panel are inadequate, a USB header is available for additional USB ports. The USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed.

Connect the bundled USB/GAME module cable to this connector. The module has two USB 2.0 ports that support the next generation USB peripherals such as high resolution cameras, scanners, and printers.

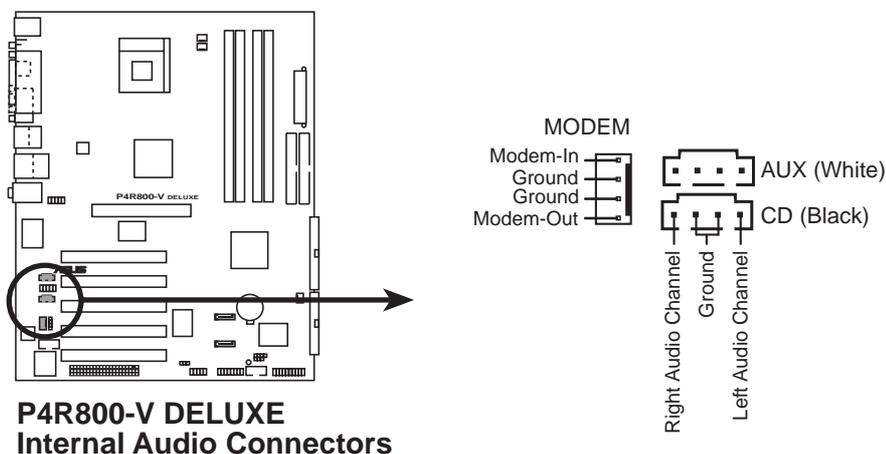


NEVER connect a **1394 cable** to the USB56 connector (blue). Doing so will damage the motherboard!



12. Internal audio connectors (4-pin CD, AUX, MODEM)

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

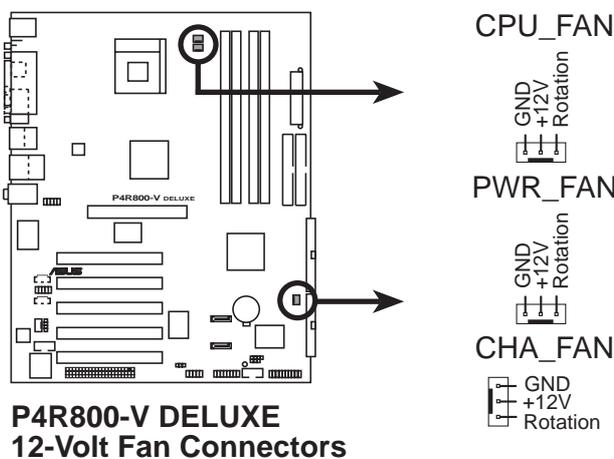


13. CPU, Chassis, and Power Fan Connectors (3-pin CPU_FAN, PWR_FAN, CHA_FAN)

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



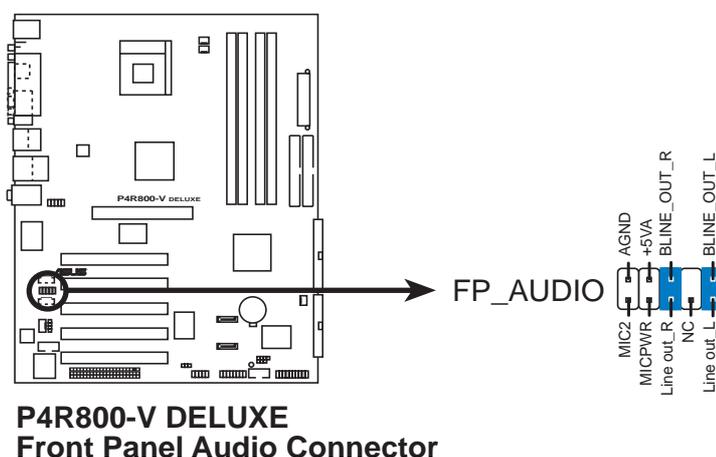
Do not forget to connect the fan cables to the fan connectors. Lack of sufficient air flow within the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!



14. Front panel audio connector (10-1 pin FP_AUDIO)

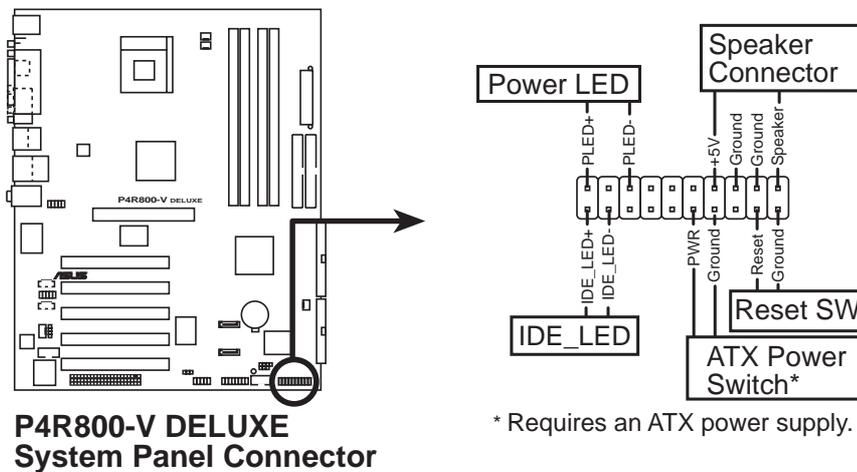
This is an interface for the Intel front panel audio cable that allow convenient connection and control of audio devices.

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



15. System panel connector (20-pin PANEL)

This connector accommodates several system front panel functions.



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

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

- **Speaker Connector (4-pin SPEAKER)**

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

- **Hard Disk Activity Lead (2-pin IDE_LED)**

This 2-pin connector is for the HDD LED cable. The read or write activities of the device connected to the any of IDE connectors cause the IDE LED to light up.

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

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

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

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

Chapter 3

This chapter describes the power up sequence and gives information on the BIOS beep codes and the ASUS POST Reporter™ feature.

Powering up

Chapter summary

3.1	Starting up for the first time	3-1
3.2	BIOS beep codes	3-1
3.3	ASUS POST Reporter™	3-2
3.4	Powering off the computer	3-7

3.1 Starting up for the first time

1. After making all the connections, replace the system case cover.
2. Be sure that all switches are off.
3. Connect the power cord to the power connector at the back of the system chassis.
4. Connect the power cord to a power outlet that is equipped with a surge protector.
5. Turn on the devices in the following order:
 - a. Monitor
 - b. External SCSI devices (if any, start with the last device on the chain)
 - c. System power
6. After applying power, the power LED on the system front panel case lights up. For ATX power supplies, the system LED lights up when you press the ATX power switch. If your monitor complies with “green” standards or if it has a “power standby” feature, the monitor LED may light up or switch between orange and green after the system LED turns on. The system then runs the power-on tests. While the tests are running, the BIOS beeps (see BIOS beep codes table below) or additional messages appear on the screen. If you do not see anything within 30 seconds from the time you turned on the power, the system may have failed a power-on test. Check the jumper settings and connections or call your retailer for assistance.
7. At power on, hold down <Delete> to enter BIOS Setup. Follow the instructions in Chapter 4.

3.2 BIOS beep codes

When you turn the power on and the system runs POST (Power On Self Tests), you will hear BIOS beeps. Refer to the following table for the meaning of the beeps.

Award BIOS beep codes

Beep	Meaning
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM installed or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated; System running at a lower frequency

3.3 ASUS POST Reporter™

This motherboard comes with the Winbond speech controller to support the ASUS POST Reporter™ feature. This application provides vocal POST messages and alerts to inform you of system events and boot status. In case of a boot failure, the ASUS Post Reporter™ reports the specific cause of the problem.

You may customize these POST messages using the Winbond Voice Editor software included in the support CD that came with your motherboard package. You can record your own messages to replace the default messages.

3.3.1 Vocal POST messages

The table below lists the default POST messages and the steps you should perform:

POST Message	Action
No CPU installed	<ul style="list-style-type: none">• Install a supported processor into the CPU socket. Refer to the motherboard specification summary on page x.
System failed CPU test	<ul style="list-style-type: none">• Check if the CPU is properly installed.• Call ASUS technical support for assistance. Refer to the ASUS contact information.
System failed memory test	<ul style="list-style-type: none">• Install supported DDR DIMMs into the sockets. Refer to the motherboard specification summary on page x.• Check if the DIMMs on the DIMM sockets are properly installed.• Make sure that your DIMMs are not defective.• Refer to section “2.4 System memory” for instructions on installing a DIMM.
System failed VGA test	<ul style="list-style-type: none">• Install a PCI VGA card into one of the PCI slots, or a 1.5V AGP card into the AGP slot.• Make sure that your VGA/AGP card is not defective.

POST Message	Action
System failed due to CPU	<ul style="list-style-type: none"> • Check your CPU settings in BIOS overlocking and make sure you only set to the recommended settings. See section “4.4 Advanced menu.”
No keyboard detected	<ul style="list-style-type: none"> • Check your keyboard if properly connected to the purple PS/2 port on the rear panel. • See section “2.7.1 Rear panel connectors” for the location of the port.
No floppy disk detected	<ul style="list-style-type: none"> • Make sure you have connected a floppy disk drive to the floppy disk drive connector on the motherboard.
No IDE hard disk detected	<ul style="list-style-type: none"> • Make sure you have connected an IDE hard disk drive to the one of the IDE connectors on the motherboard.
CPU temperature too high	<ul style="list-style-type: none"> • Check if the CPU fan is working properly.
CPU fan failed	<ul style="list-style-type: none"> • Check the CPU fan and make sure it turns on after you applied power to the system. • Make sure that your CPU fan supports the fan speed detection function.
CPU voltage out of range	<ul style="list-style-type: none"> • Check your power supply and make sure it is not defective. • Call ASUS technical support for assistance. Refer to the ASUS contact information.
System completed	<ul style="list-style-type: none"> • No action required
Power-On Self Test	
Computer now booting from operating system	<ul style="list-style-type: none"> • No action required



You may enable or disable the ASUS POST Reporter™ by adjusting the **Speech IC Reporter** BIOS option. See page 4-22 for details.

3.3.2 Winbond Voice Editor

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



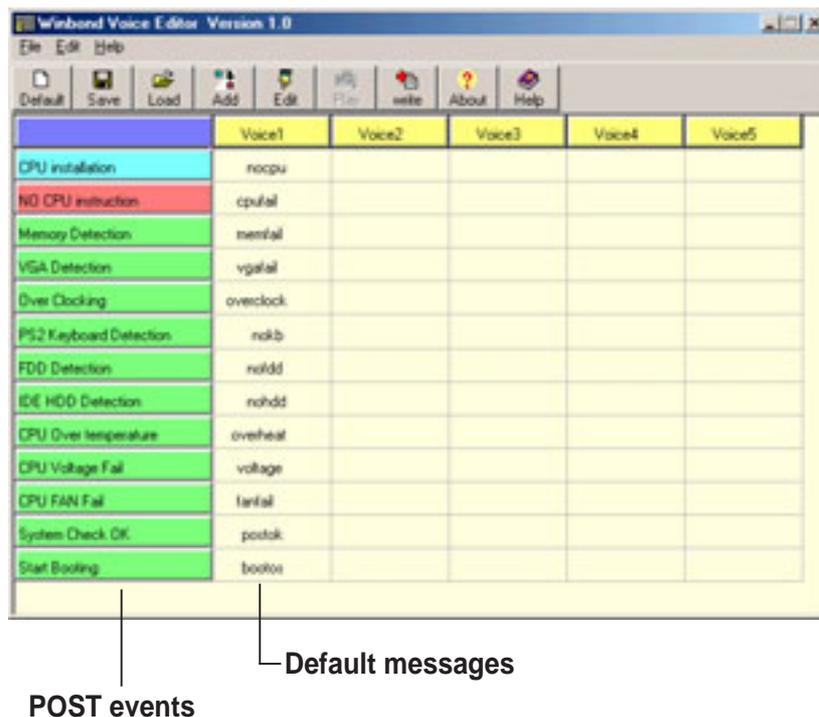
To avoid conflicts, do not run the Winbond Voice Editor while running the ASUS PC Probe.

Follow these steps to use the Winbond Voice Editor.

Launching the Winbond Voice Editor

Launch the program either from the Winbond Voice Editor icon on your desktop, or click **Start > Programs > Winbond Voice Editor > Voice Editor**.

The Winbond Voice Editor window appears.



Playing the default wave files

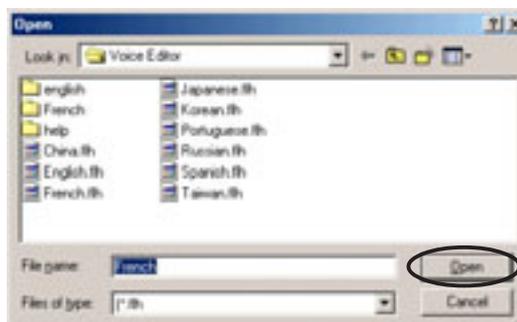
To play the default wave files, simply click on a POST event on the left side of the screen, then click the **Play** button.



The default language setting is English.

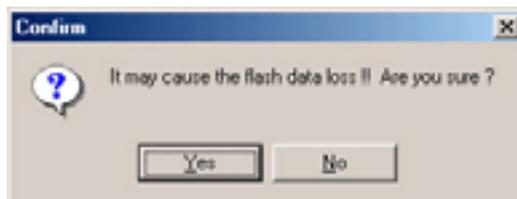
Changing the default language

1. Click the **Load** button in the Voice Editor window.
2. Select a language from the **Open** window, then click **Open**.
3. The event messages for the selected language are displayed in the Voice Editor screen.



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

4. Click the **Write** button to update the EEPROM.
5. Click **Yes** when a confirmation window appears.



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

Customizing your POST messages

Follow these steps to replace the pre-installed wave files if your language is not in the selection or if you wish to record your own POST messages.

1. Launch the Voice Editor and take note of the list of POST events on the leftmost column of the screen.
2. Prepare your message for each event.
3. Use a recording software, such as Windows® Recorder, to record your messages.



Record your message as short as possible. The total compressed size for all the wave files must not exceed 1Mbit.

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

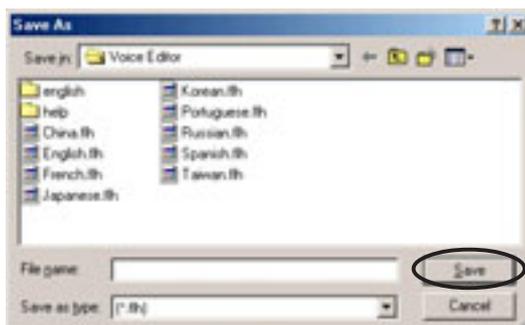
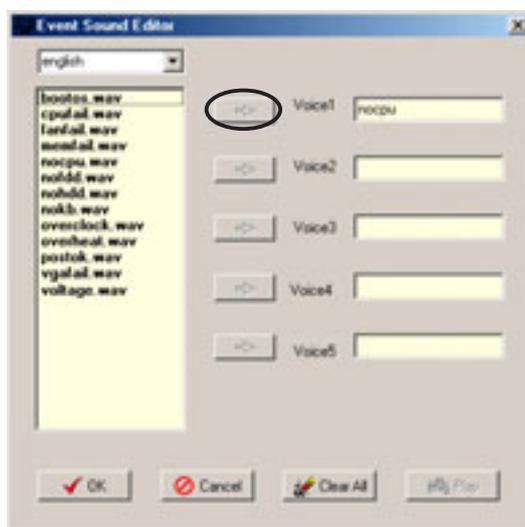


You may want to create a separate folder for your wave files so you can locate them easily in one place.

5. Click the **Add** button from the Voice Editor screen to display the **Add Wave File** window.
6. Copy your recorded wave files to the database. Close the window when done.



7. Click a POST event on the Voice Editor screen, then click the **Edit** button. The **Event Sound Editor** window appears.
8. Select your wave file for the event then click on the arrow opposite Voice1. The file you selected appears on the Voice1 field.
9. Click **OK** to return to the Voice Editor screen.
10. Do steps 7 to 9 for the other events.
11. When done, click the **Save** button. A **Save As** window appears.
12. Type a file name with a **.flh** extension, then click **Save**.
13. Click on the **Write** button to compress the file and copy into the EEPROM.
14. Click **Yes** when confirmation window appears.



3.4 Powering off the computer

You must first exit the operating system and shut down the system before switching off the power. For ATX power supplies, you can press the ATX power switch after exiting or shutting down the operating system.



The message “You can now safely turn off your computer” does not appear when shutting down with an ATX power supply.

Using the dual function power switch

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

Using the OS shut down function

If you use Windows® ME/2000/XP, click **Start > Shut Down**, then the **OK** button to shut down the computer. The power supply should turn off after Windows® shuts down.

Chapter 4

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

BIOS setup

Chapter summary

4.1	Managing and updating your BIOS	4-1
4.2	BIOS Setup program	4-8
4.3	Main menu	4-11
4.4	Advanced menu	4-16
4.5	Power menu	4-26
4.6	Boot menu	4-29
4.7	Exit menu	4-31

4.1 Managing and updating your BIOS

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

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

Refer to the corresponding section for details on these utilities.

Important notes



- It is recommended that you save a copy of the **original motherboard BIOS file** to a **bootable floppy disk** in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFLASH utilities.
- A **working BIOS file** for this motherboard is in the support CD. Use this file only when you do not have a copy of the original motherboard BIOS file in a floppy disk.
- Visit the ASUS website and download the latest BIOS file for this motherboard using the ASUS Update utility.

4.1.1 Creating a bootable floppy disk

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

DOS environment

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

format A:/S then press <Enter>.

Windows® ME environment

- a. From your Windows desktop, click on **Start**, then select **My Computer**.
- b. Double-click on **Add/Remove Programs** icon from the Control Panel window.
- c. Click on the **Startup Disk** tab, then on **Create Disk...** button.
- d. Insert a 1.44 MB floppy disk when prompted. Follow the succeeding screen instructions to complete the process.

Windows® XP environment

- a. Insert a 1.44 MB floppy disk into the floppy disk drive.
 - b. From your Windows desktop, click on **Start**, then select **My Computer**.
 - c. Select the **3 1/2 Floppy Drive** icon.
 - d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.
 - e. Select **Create an MS-DOS startup disk** from the format options field, then click **Start**.
2. Copy the original (or the latest) motherboard BIOS to the bootable floppy disk.

4.1.2 Updating BIOS using the AwardBIOS Flash Utility

The Basic Input/Output System (BIOS) can be updated using the built-in Flash Memory Writer utility or using a bootable floppy disk with the executable Flash Memory Writer Utility (AWDFLASH.EXE). Follow these instructions to update the BIOS using this utility.



Save only the updated BIOS file in the floppy disk to avoid loading a wrong BIOS file.

1. Download the latest BIOS file from the ASUS website (www.asus.com). Rename the file to *.BIN and save it to the bootable floppy disk you created earlier.
2. Insert the disk that contains the new BIOS file into the floppy drive.
3. Reboot the computer.
4. Press <Alt> + <F2> during POST to display the following screen.

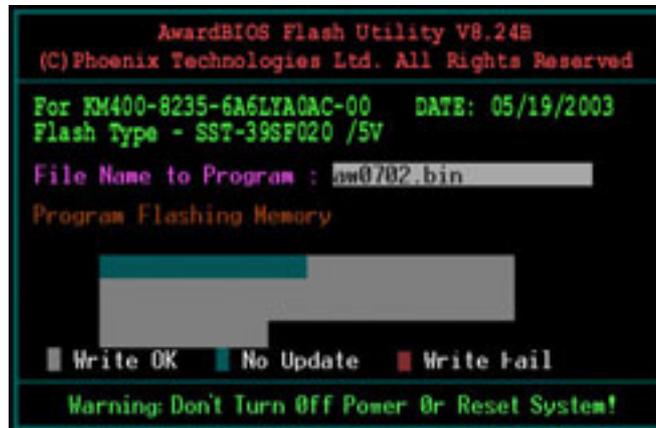
```
AwardBIOS Flash Utility V8.24B
(C)Phoenix Technologies Ltd. All Rights Reserved

For FM400-8235-6A6LYACAC-00   DATE: 05/19/2003
Flash Type - SST-39SF020 /5V

File Name to Program : aw0782.bin

Message: Please Wait!
```

5. AWDFLASH checks the new BIOS file from the floppy disk.
6. After verification, AWDFLASH flashes the new BIOS file. Do not shut down the computer during the flash process.



7. After the new BIOS file is copied, the computer returns to POST.

4.1.3 Recovering the BIOS with CrashFree BIOS 2

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



1. Prepare the **support CD** that came with the motherboard or a **floppy disk that contains the motherboard BIOS** (P4R800V.BIN) before proceeding with the BIOS update process.
2. If you have saved a copy of the original motherboard BIOS to a bootable floppy disk, you may also use this disk to restore the BIOS. See section “4.1.1 Creating a bootable floppy disk.”

To recover the BIOS from a floppy disk:

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

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

3. Insert a floppy disk that contains the original, or the latest, BIOS file for this motherboard (P4R800V.BIN). If the BIOS file that you downloaded from the ASUS website has a different filename (e.g. P4R800V_1001.001), rename it to **P4R800V.BIN**. The BIOS update process continues when the P4R800V.BIN is found.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "p4r800v.bin". Completed.
Start flashing...
```



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

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

To recover the BIOS from the support CD:

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

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



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

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

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found.
Reading file "p4r800v.bin". Completed.
Start flashing...
```



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

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



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

4.1.4 ASUS Update

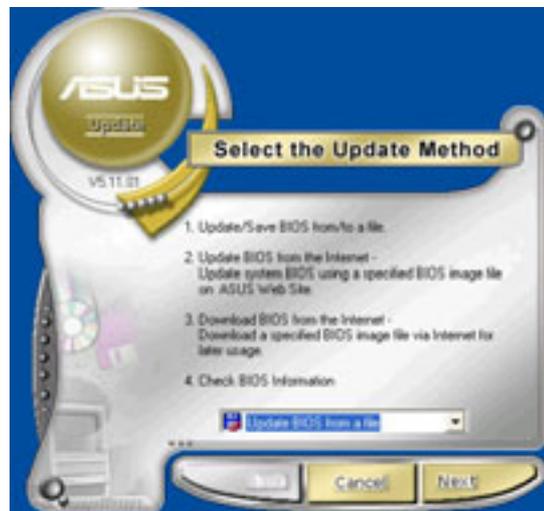
The ASUS Update is a utility that allows you to update the motherboard BIOS in Windows® environment. This utility is available in the support CD that comes with the motherboard package. ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

To install ASUS Update:

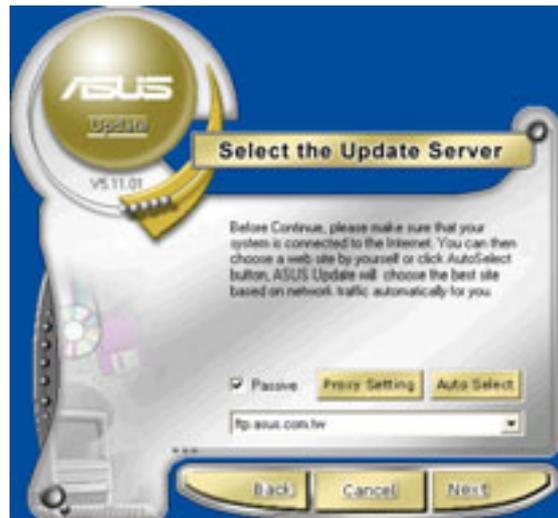
1. Insert the support CD to the optical drive. The **Drivers** menu appears.
2. Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**. See page 5-3 for details for the Utilities menu screen.
3. The ASUS Update utility is copied into your system.

To update the BIOS using the ASUS Update:

1. Launch the utility from the Windows desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update initial screen appears.
2. Select your desired update method, then click **Next**.



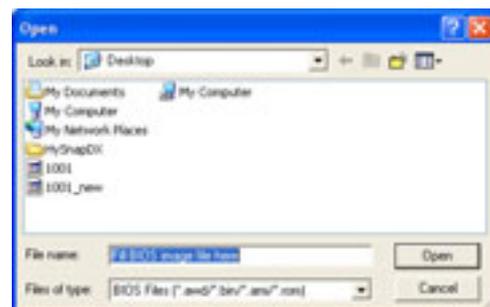
3. If you selected updating/ downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic, or choose **Auto Select**. Click **Next**.



4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.
5. Follow the instructions on the succeeding screens to complete the update process.



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



4.2 BIOS Setup program

This motherboard supports a programmable low pin count (LPC) chip that you can update using the provided utility described in section “4.1 Managing and updating your BIOS.”

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

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

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

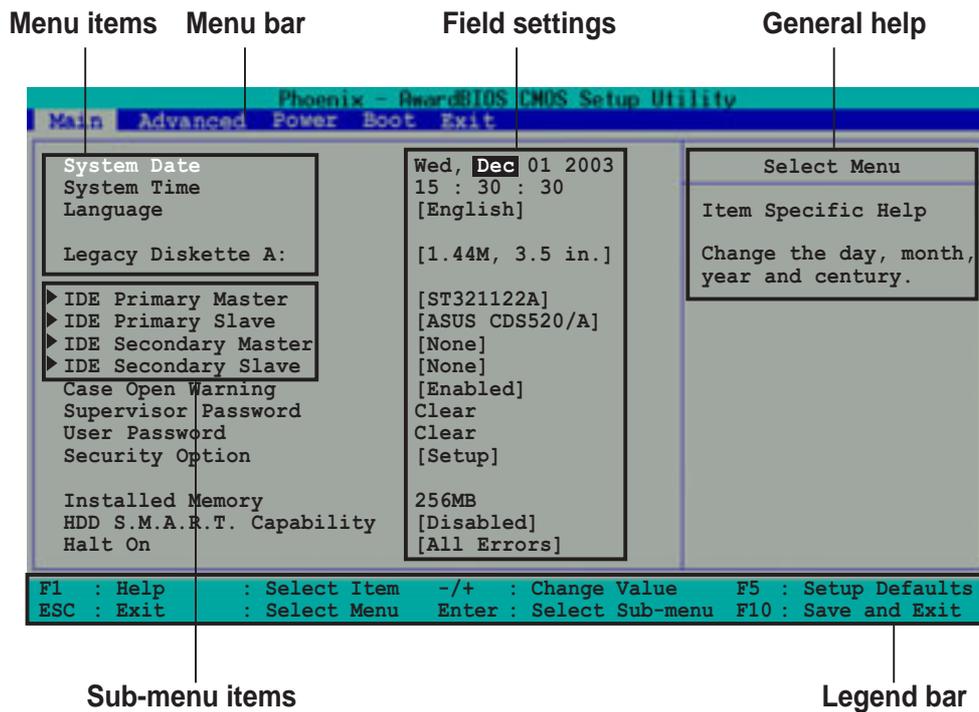
If you wish to enter Setup after POST, restart the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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



If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system stability. Select the **Load Optimized Settings** item under the Exit Menu. See section “4.7 Exit menu.”

4.2.1 BIOS menu screen



4.2.2 Menu bar

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

- Main** For changing the basic system configuration
- Advanced** For changing the advanced system settings
- Power** For changing the advanced power management (APM) configuration
- Boot** For changing the system boot configuration
- Exit** For selecting the exit options and loading default settings

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



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

4.2.3 Legend bar

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

Navigation Key	Function
<F1>	Displays the General Help screen
<F2>	Navigates the Item Specific Help screen
<F3>	Change the BIOS Setup language
<F5>	Loads previous values
<Esc>	Jumps to the Exit menu or returns to the main menu from a sub-menu
Left or Right arrow	Selects the menu item to the left or right
Up or Down arrow	Moves the highlight up or down between fields
Page Down or – (minus)	Scrolls backward through the values for the highlighted field
Page Up or + (plus)	Scrolls forward through the values for the highlighted field
<Enter>	Brings up a selection menu for the highlighted field
<F10>	Saves changes and exit

4.2.4 General help

On the right side of the menu screen is a brief description of the selected item.

4.2.5 Sub-menu

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

4.2.6 Pop-up window

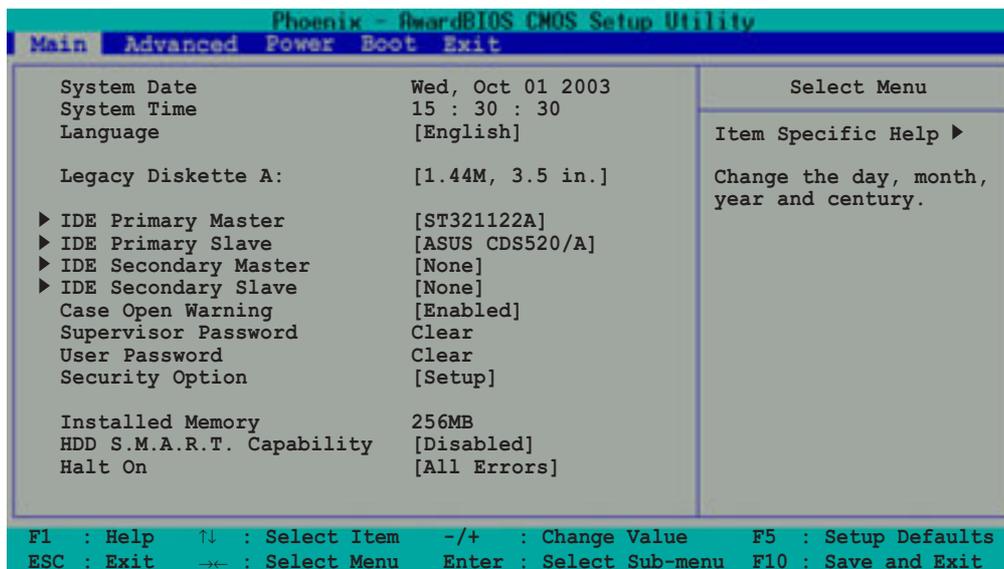
Select an item in the menu, then press Enter to display a pop-up window with the configuration options for that item.

4.3 Main menu

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



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



System Date [mm/dd/yy]

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: (1999 to 2099). Use the <Tab> key to move between the month, day, and year fields. Use the <Page Up> or <Page Down> keys to change the values.

System Time [hh:mm:ss]

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> key to move between the hour, minute, and second fields. Use the <Page Up> or <Page Down> keys to change the values.

Language [English]

This option allows you to change the BIOS Setup language to English, German, or Japanese. You may also press <F3> anytime to change the BIOS Setup language.

Legacy Diskette A [1.44M, 3.5 in.]

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

Case Open Warning [Enabled]

Enable this option to activate the chassis intrusion feature of the motherboard. Configuration options: [Enabled] [Disabled]

Supervisor Password [Clear] / User Password [Clear]

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 field setting is changed to [Set].

To clear the password, highlight this field, and press <Enter>.

A note about passwords

The Supervisor password is required to enter the BIOS Setup program preventing unauthorized access. The User password is required to boot the system preventing unauthorized use.

Forgot the password?

If you forget your password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. If you need to erase the CMOS RAM, unplug the all the power cables and remove the button cell battery. Re-install the battery after about 2 seconds, then power up the system. Refer to section “2.6 Jumpers” on page 2-18 for instructions on erasing the CMOS RTC RAM.

Security Option [Setup]

This field requires users to enter the password before entering the BIOS setup or the system. Select [Setup] to require the password before entering the BIOS Setup. Select [System] to require the password before entering the system. Configuration options: [Setup] [System]

Installed Memory [XXXMB]

The installed memory value is auto-detected. This field is not user-configurable.

HDD S.M.A.R.T. Capability [Disabled]

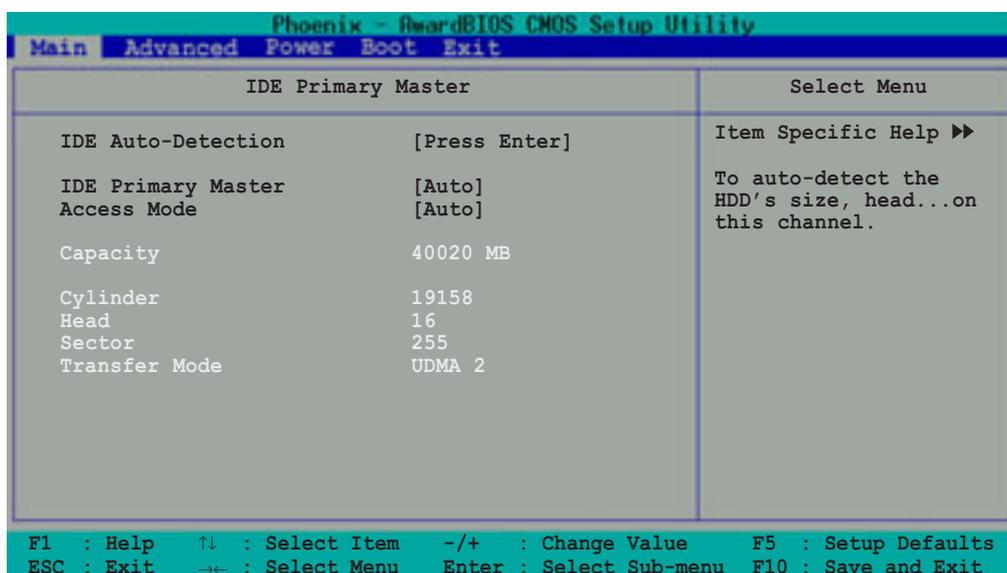
Enable this option to enable the Smart Monitoring, Analysis, and Reporting Technology (SMART) feature of this motherboard.

Configuration options: [Enabled] [Disabled]

Halt On [All Errors]

This field sets the system to halt on errors according to the system functions specified in each option. Configuration options: [All Errors] [No Errors] [All, But Keyboard] [All , But Diskette] [All, But Disk/Key]

Primary and Secondary Master/Slave



IDE Auto-Detection [Press Enter]

Press enter to automatically detect an IDE hard disk drive, if the hard drive is not already detected. In cases of undetected HDDs, pressing enter detects the HDD and allows you access to the IDE Primary Master and Access Mode fields.

IDE Primary Master/Slave [Auto]; IDE Secondary Master/Slave [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, the setup BIOS 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 a previous system, the setup BIOS may detect incorrect parameters. In these cases, select [Manual] to manually enter the IDE hard disk drive parameters. If no drive is installed or if you are removing a drive and not replacing it, select [None]. Configuration options: [None] [Auto] [Manual]

Access Mode [Auto]

The default [Auto] allows automatic detection of an IDE hard disk drive. Select [CHS] for this item if you set the IDE Channel 0/1 Master/Slave to [Manual] to enter the Hard Disk Drive values manually. Configuration options: [CHS] [LBA] [Large] [Auto]

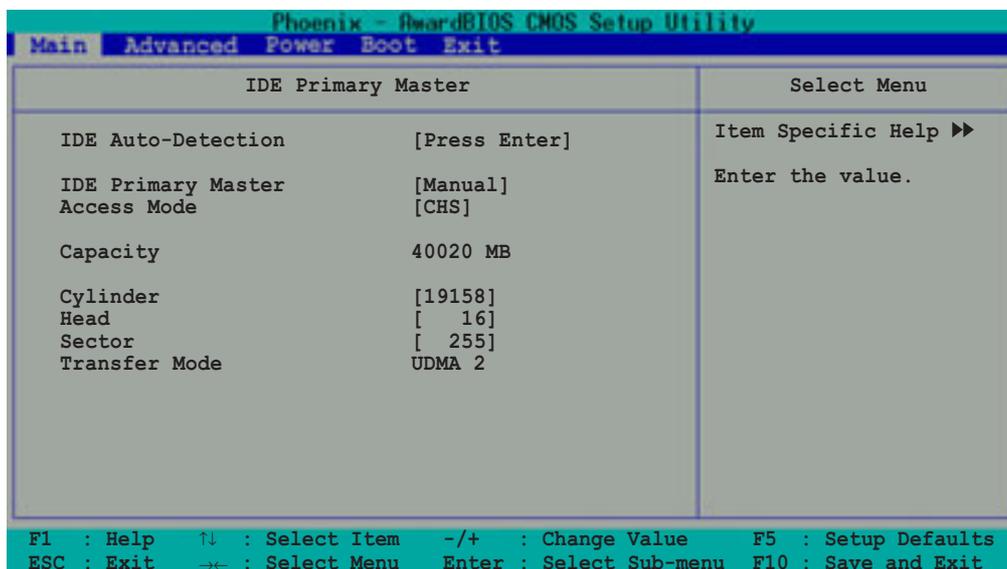
Manual HDD type selection

If you wish to manually enter the hard disk information, set the IDE Primary Master item to [Manual], and the Access Mode item to [CHS]. To manually enter the number of cylinder, head, and sector per track for the drive, highlight an item, key-in the value that you obtained from the drive documentation then press <Enter>. Refer to the drive documentation or the drive label for this information.

To enter a value, you may also highlight the item, then press <Enter> to display a pop-up menu. Type in the value from the drive documentation, then press <Enter>.



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.



Capacity [xxxxx MB]

This item displays the auto-detected hard disk capacity. The value is not user-configurable.

Cylinder

This item shows the number of the hard disk cylinders.

Head

This item shows the number of the hard disk read/write heads.

Sector

This item shows the number of sectors per track.

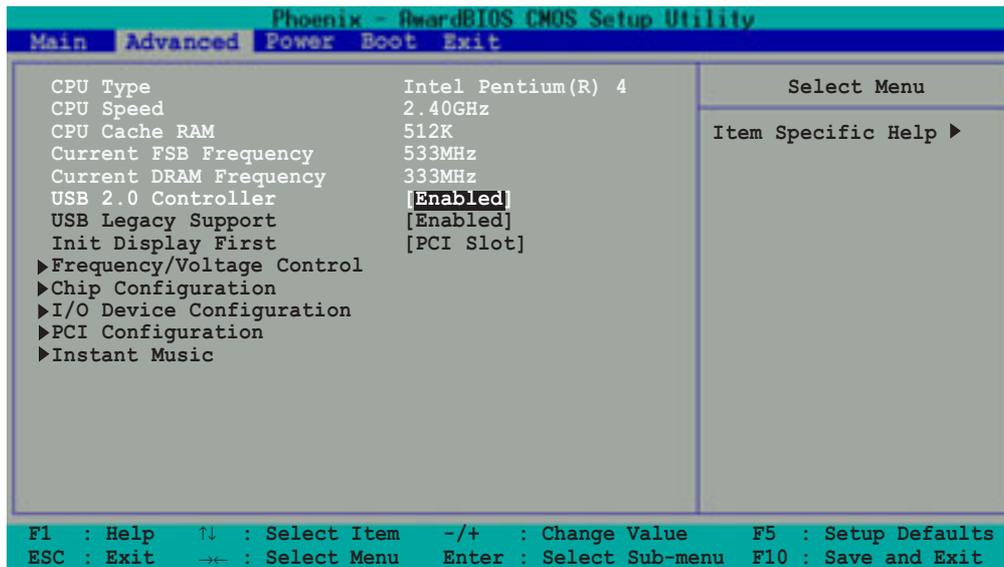
Transfer Mode

This item shows the Transfer mode. This item is not configurable.



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.

4.4 Advanced menu



The Advanced menu displays the CPU type, speed, cache RAM, front side bus frequency and DRAM frequency information. The BIOS auto-detects the values for these parameters and are not user-configurable.

USB 2.0 Controller [Enabled]

This field allows you to enabled or disable the USB 2.0 controller in the South bridge chip. Configuration options: [Disabled] [Enabled]

USB Legacy Support [Enabled]

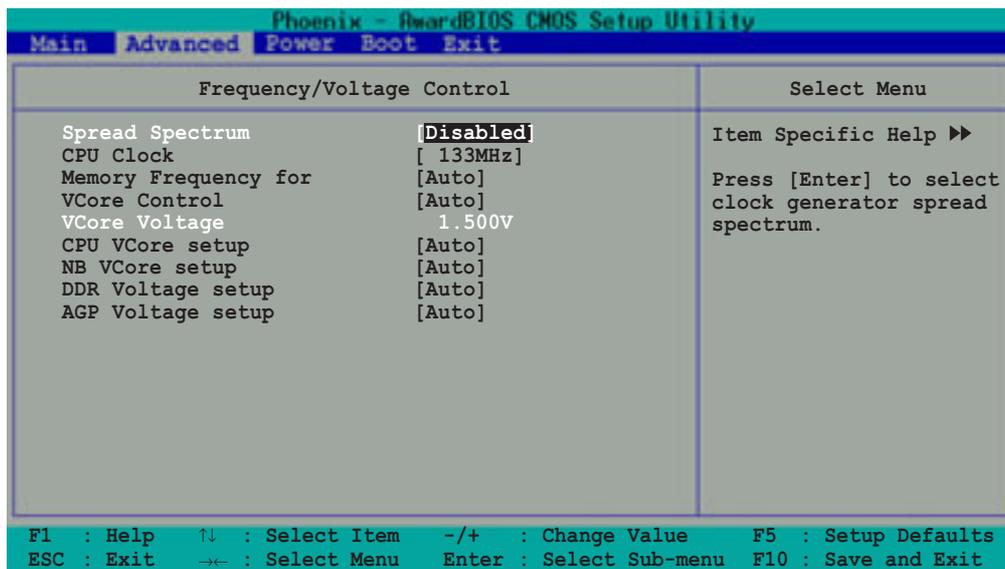
This motherboard supports Universal Serial Bus (USB) devices. The default of [Auto] allows the system to detect a USB device at startup. If detected, the USB controller legacy mode is enabled. If not detected, the USB controller legacy mode is disabled.

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]

Init Display First [PCI Slot]

This field allows you to select which graphics controller to use during the boot-up process. Configuration options: [PCI Slot] [AGP]

4.4.1 Frequency/Voltage Control



Spread Spectrum [Disabled]

This field enables or disables the clock generator spread spectrum. Configuration options: [Disabled] [+/- 0.1%] [+/- 0.2%] [+/- 0.3%] [+/- 0.4%] [+/- 0.5%] [+/- 0.6%] [+/- 0.7%] [+/- 0.8%] [+/- 0.9%] [+/- 1.0%]

CPU Clock [133MHz]

This item allows you to set the CPU frequency. To do so, highlight the item then press <Enter> to display a pop-up menu. Enter a value from the specified range, then press Enter. Configuration options: [Min=100] [Max=266 (depending on the installed CPU)]

Memory Frequency for [Auto]

This item allows you set the FSB and system memory frequency. The default setting is [Auto]. Configuration options: [Auto] [DDR-266] [DDR-333] [DDR-400]

VCore Control [Auto]

This field allows you to automatically or manually set the VCore voltage. When set to manual, the VCore Voltage item is enabled. Configuration options: [Auto] [Manual]

VCore Voltage [X.XXXV]

This item is configurable when the **VCore Control** option is set to [Manual]. Select the VCore voltage from the available options. Configuration options: [1.625V] [1.600V] [1.575V] [1.550V] [1.525V]

CPU VCore setup [Auto]

This option allows you to increase the CPU VCore voltage.
Configuration options: [0.1V] [0.2V] [0.3V] [0.4V] [Auto]

NB VCore setup [Auto]

This option allows you to select the NB VCore voltage.
Configuration options: [1.5V] [1.6V] [Auto]

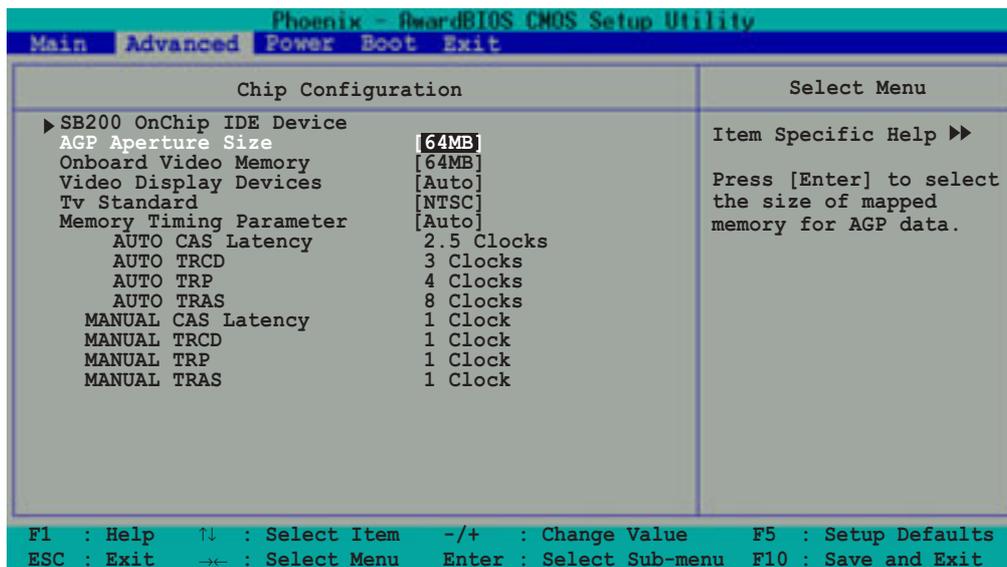
DDR Voltage setup [Auto]

This option allows you to select the DDR voltage.
Configuration options: [2.5V] [2.6V] [2.7V] [2.8V] [Auto]

AGP Voltage setup [Auto]

This option allows you to select the AGP voltage.
Configuration options: [1.5V] [1.6V] [Auto]

4.4.2 Chip Configuration



AGP Aperture Size [64MB]

This field sets the size of mapped memory for AGP graphic data.
Configuration options: [32M] [64M] [128M] [256M] [512M] [1G] [2G] [None]

Onboard Video Memory [64MB]

Allows you to select the size of the onboard graphics controller memory.
Configuration options: [8MB] [16MB] [32MB] [64MB] [128MB]

Video Display Devices [Auto]

This field allows you to select the display output.

Configuration options: [Auto] [CRT Only] [TV Only]

TV Standard [NTSC]

This item allows selection of the TV output standard. This item is set to [NTSC] by default. Select a different option depending on the TV standard in your location. Configuration options: [NTSC] [PAL]

Memory Timing Parameters [Auto]

This field allows you to set the memory timing to automatic or manual configuration. When set to [Manual] you may configure the Manual CAS Latency, TRCD, TRP, and TRAS items. Configuration options: [Auto] [Manual]

AUTO CAS Latency [2.5 Clocks]

AUTO TRCD [3 Clocks]

AUTO TRP [4 Clocks]

AUTO TRAS [8 Clocks]

The values of these timing parameters are auto-detected by the BIOS.

MANUAL CAS Latency [1Clock]

This field allows you to set the CAS latency.

Configuration options: [1 Clock] [1.5 Clocks] [2 Clocks] [2.5 Clocks] [3 Clocks] [3.5 Clocks] [4 Clocks]

MANUAL TRCD [1 Clock]

This field allows you to set the TRCD.

Configuration options: [1 Clock] [2 Clocks] [3 Clocks] [4 Clocks]

MANUAL TRP [1 Clock]

This field allows you to set the TRP.

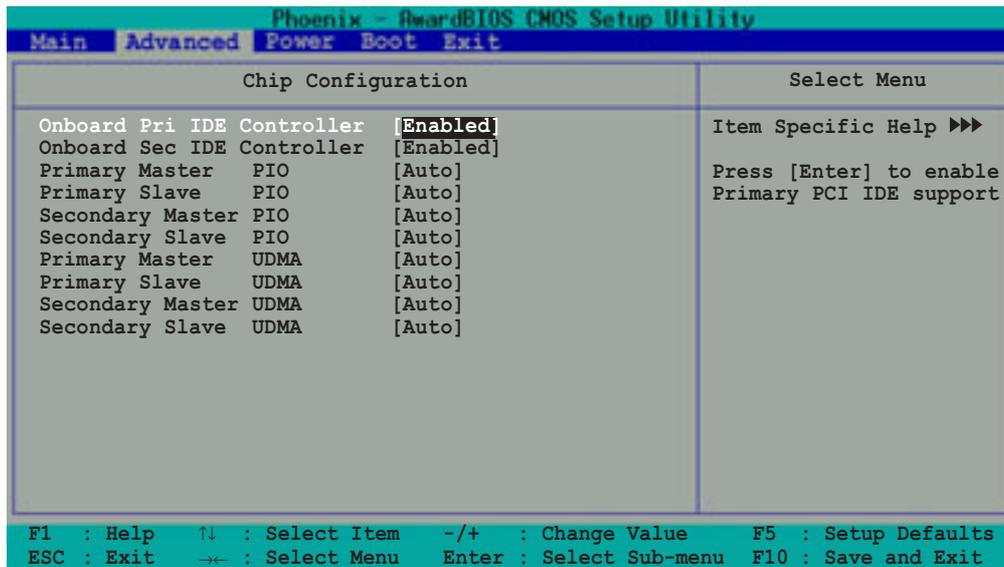
Configuration options: [1 Clock] [2 Clocks] [3 Clocks] [4 Clocks]

MANUAL TRAS [1 Clock]

This field allows you to set the TRAS.

Configuration options: [1 Clock] [2 Clocks] [3 Clocks] [4 Clocks] [5 Clock] [6 Clocks] [7 Clocks] [8 Clocks]

SB200 OnChip IDE Device



On-Chip IDE Channel0 [Enabled]

Configuration options: [Disabled] [Enabled]

On-Chip IDE Channel1 [Enabled]

Configuration options: [Disabled] [Enabled]

Primary Master PIO [Auto]

Primary Slave PIO [Auto]

Secondary Master PIO [Auto]

Secondary Slave PIO [Auto]

These items allow you to set a PIO (Programmable Input/Output) mode for primary IDE devices. Configuration options: [Auto] [Mode 0] [Mode 1] [Mode 2] [Mode 3] [Mode 4]

Primary Master UDMA [Auto]

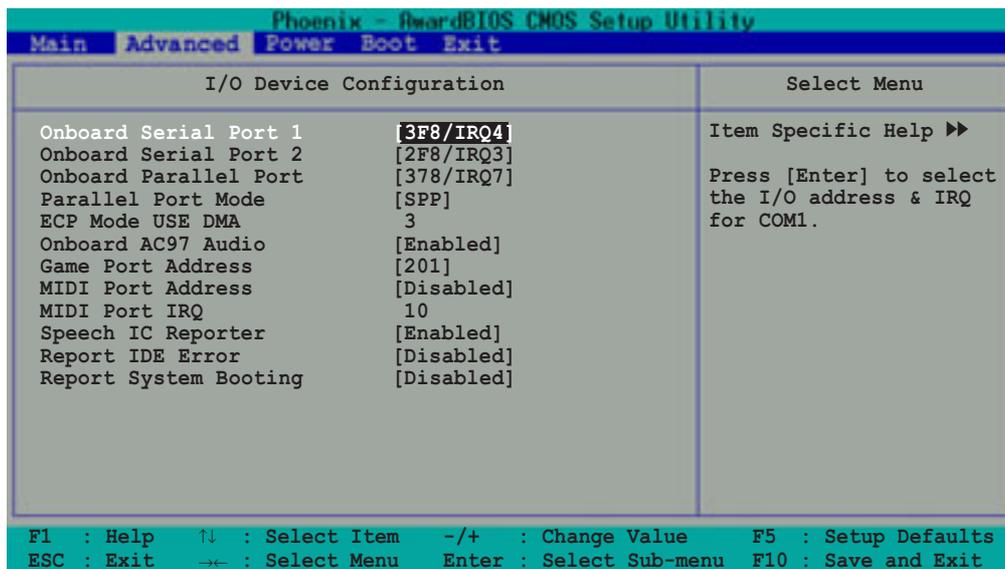
Primary Slave UDMA [Auto]

Secondary Master UDMA [Auto]

Secondary Slave UDMA [Auto]

These items allow you to automatically set or disable the primary IDE UDMA capability, which improves transfer speeds and data integrity for compatible IDE devices. Configuration options: [Disabled] [Auto] [UDMA33] [UDMA66] [UDMA100]

4.4.3 I/O Device Configuration



Onboard Serial Port 1 [3F8/IRQ4]

Onboard Serial Port 2 [2F8/IRQ3]

These fields allow you to set the address for the onboard serial connectors. Configuration options: [Disabled] [3F8/IRQ4] [2F8/1RQ3] [3E8/IRQ4] [2E8/IRQ3]

Onboard Parallel Port [378/IRQ7]

This field allows you to set the address of the onboard parallel port connector. Configuration options: [Disabled] [378/IRQ7] [278/IRQ5] [3BC/IRQ7]

Parallel Port Mode [SPP]

This field allows you to set the operation mode of the parallel port. [SPP] 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: [SPP] [EPP] [ECP] [ECP+EPP]

ECP Mode USE DMA [3]

This field sets the parallel port DMA channel for the selected ECP mode. The default setting is 3. This item is available only if you selected [ECP] or [ECP+EPP] as the **Parallel Port Mode**. Configuration options: [1] [3]

Onboard AC97 Audio [Enabled]

This field allows you to enable or disable the onboard AC97 audio controller. Configuration options: [Enabled] [Disabled]

Game Port Address [201]

This field allows you to select the onboard Game port address. Configuration options: [201] [209] [Disabled]

MIDI Port Address [Disabled]

This field allows you to select the onboard MIDI port address. Configuration options: [Disabled] [330] [300]

MIDI Port IRQ [10]

This field allows you to set the IRQ assignment of the onboard MIDI port. Configuration options: [5] [10]

Speech IC Controller [Enabled]

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



You must enable this item if you wish to use the ASUS POST Reporter™ feature. See page 3-2 for details.

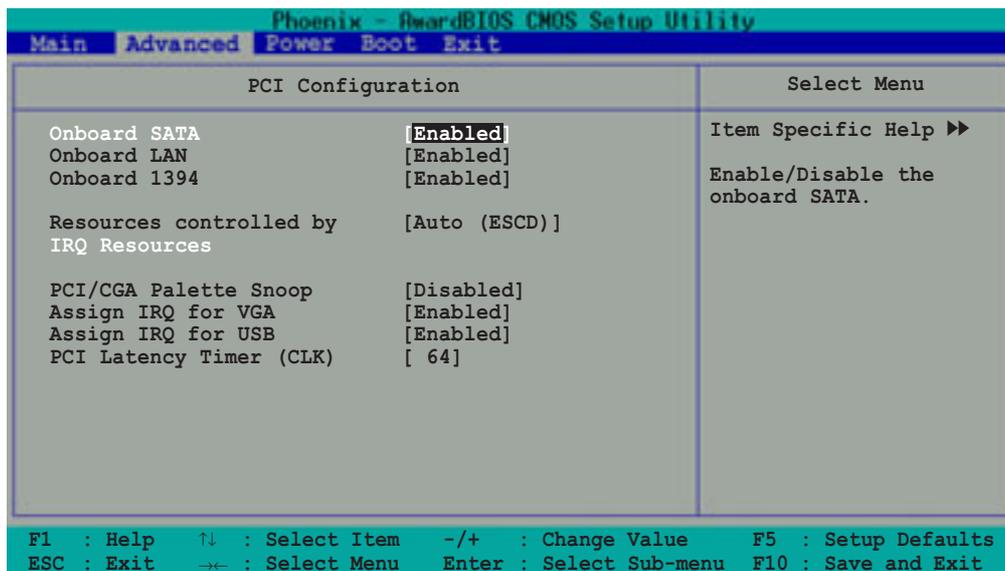
Report IDE Error [Disabled]

This option allows you to enable or disable IDE error reporting during the POST. Configuration options: [Disabled] [Enabled]

Report System Booting [Disabled]

This option allows you to enable or disable system reporting during the POST. Configuration options: [Disabled] [Enabled]

4.4.4 PCI Configuration



Onboard SATA [Enabled]

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

Onboard LAN [Enabled]

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

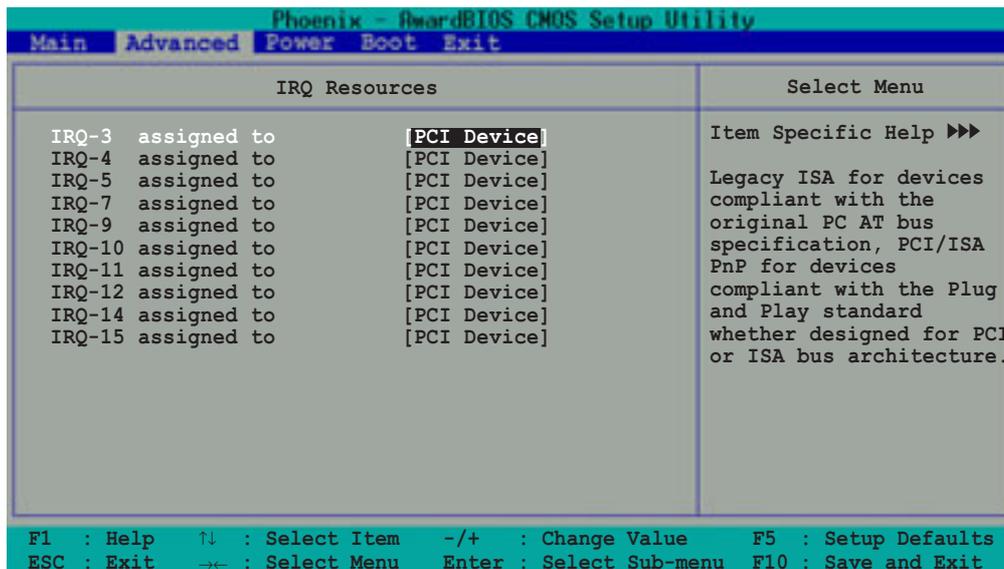
Onboard 1394 [Enabled]

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

Resources Controlled by [Auto (ESCD)]

When set to [Auto (ESCD)], BIOS automatically configures all boot Plug and Play devices. Setting to [Manual] enables the IRQ Resources sub-menu for manual assignment of IRQ addresses
Configuration options: [Auto (ESCD)] [Manual]

IRQ Resources



IRQ 3, 4, 5, 7, 9, 10, 11, 12, 14, 15 assigned to [PCI Device]

The IRQ Resources sub-menu is activated when the **Resources Controlled by** parameter is set to [Manual]. Select [PCI Device] to assign an IRQ address to a Plug and Play device. Setting to [Reserved] reserves the IRQ address. Configuration options: [PCI Devices] [Reserved]

PCI/VGA Snoop Palette [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 a standard VGA card, leave this field to the default setting [Disabled]. Configuration options: [Disabled] [Enabled]

Assign IRQ for VGA [Enabled]

Setting this option to [Enabled] allows the BIOS to automatically assign an IRQ address for the VGA controller. Configuration options: [Disabled] [Enabled]

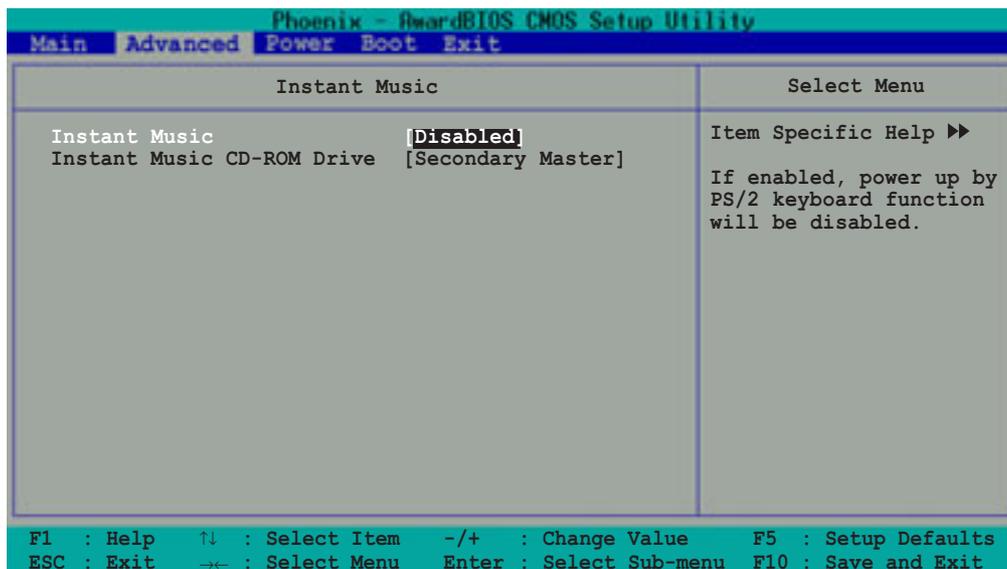
Assign IRQ for USB [Enabled]

Setting this option to [Enabled] allows the BIOS to automatically assign an IRQ address for the USB controller. Configuration options: [Disabled] [Enabled]

PCI Latency Timer (CLK) [64]

This option allows you to set the PCI latency timer. Select this option, then press <Enter>. Enter a value (0 ~ 255) to set the timer.

4.4.5 Instant Music



Instant Music [Disabled]

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

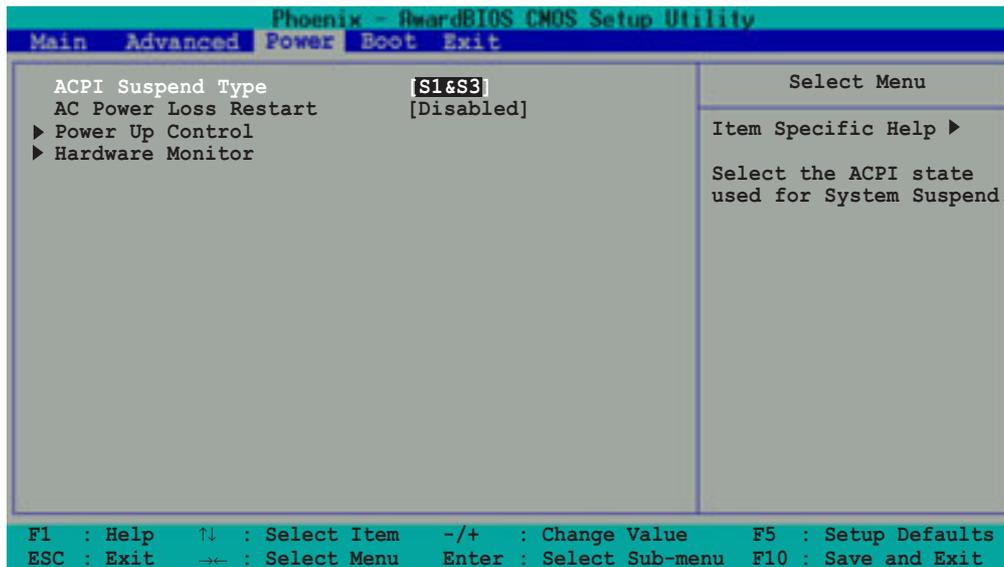


- When Instant Music is enabled, the PS/2 keyboard power up feature is automatically disabled.
- Place the Instant Music label on your keyboard for easy operation. See page 5-15 for details..

Instant Music CD-ROM Drive [Secondary Master]

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

4.5 Power menu



ACPI Suspend Type [S1& S3]

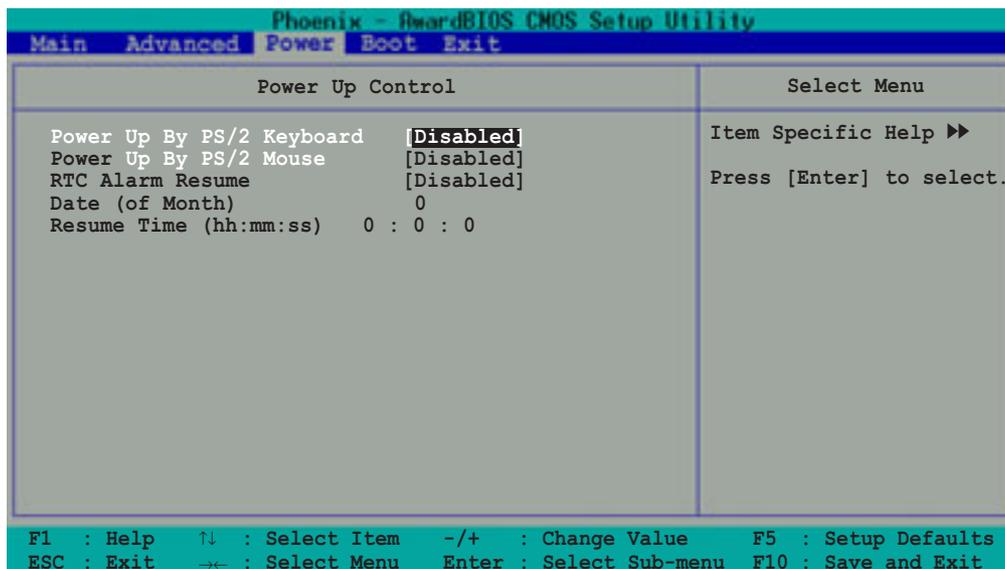
Allows you to select the ACPI state to used for system suspend.

Configuration options: [S1 (POS)] [S3 (STR)] [S1 & S3]

AC Power Loss Restart [Disabled]

This allows you to set whether or not to reboot the system after an AC power loss. [Disabled] leaves your system off while [Enabled] reboots the system after an AC power loss. Configuration options: [Disabled] [Enabled]

4.5.1 Power Up Control



Power Up By PS/2 Keyboard [Disabled]

This parameter allows you to use specific keys in the PS/2 keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Space Bar] [Ctrl-ESC] [Power key]

Power Up By PS/2 Mouse [Disabled]

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

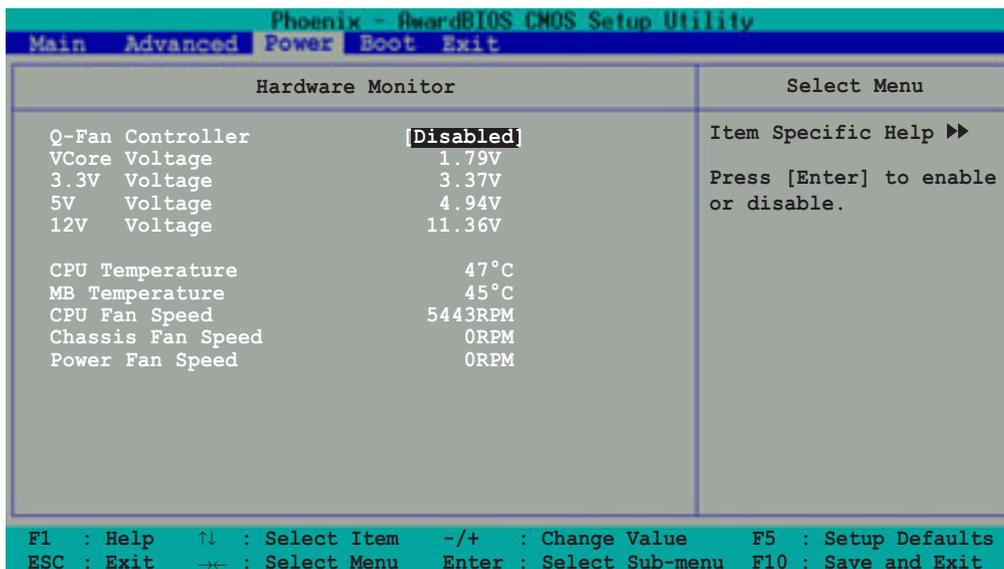
RTC Alarm Resume [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is enabled, the Date and Resume Time fields are activated for manual setup. Configuration options: [Enabled] [Disabled]



When you set the RTC Alarm Date to [0], the The system wakes up everyday on the Resume Time you specified.

4.5.2 Hardware Monitor



Q-Fan Controller [Disabled]

This option allows you to enable or disable the ASUS Q-Fan feature. Setting to [Enabled] allows the fan to smartly adjust its speed for more efficient system operation. Configuration options: [Disabled] [Enabled]

VCORE Voltage [X.XXV]

3.3V Voltage [X.XXV]

5V Voltage [X.XXV]

12V Voltage [X.XXV]

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

CPU Temperature [xxx°C]

MB Temperature [xxx°C]

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

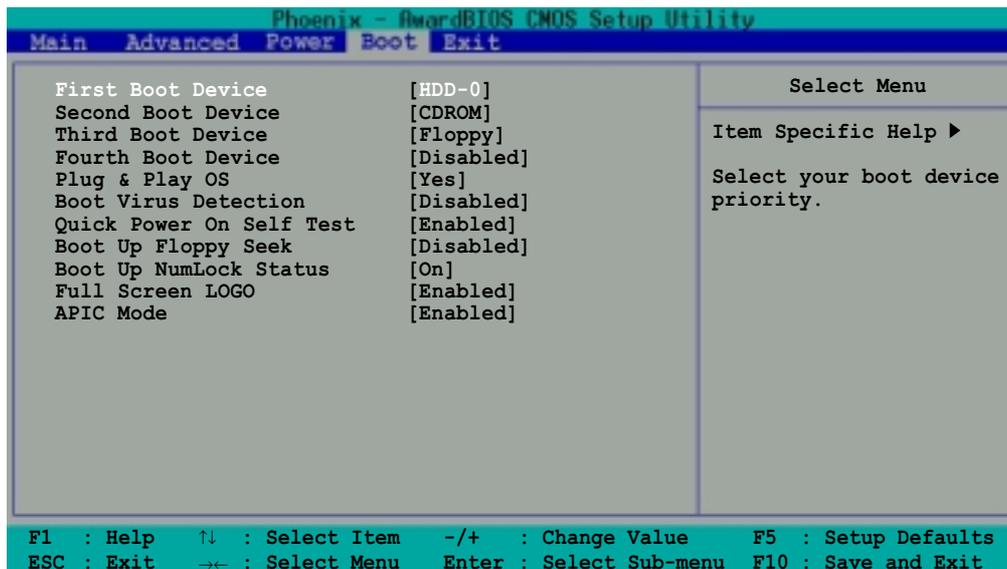
CPU [xxxxRPM] or [0RPM]

Chassis [xxxxRPM] or [0RPM]

Power Fan Speed [xxxxRPM] or [0RPM]

The onboard hardware monitor automatically detects and displays the CPU and chassis fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, that field shows 0 RPM.

4.6 Boot menu



First, Second, Third, Fourth Boot Device

The Boot Menu allows you to select 13 types of boot devices. Promotion or demotion of devices alters the priority which the system uses to boot device on system power up. Configuration options include [Floppy] [LS120] [HDD-0] [SCSI] [CDROM] [HDD-1] [HDD-2] [HDD-3] [ZIP] [USB-FDD] [USB-CDROM] [LAN] [Disabled]

Plug & Play OS [Yes]

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

Boot Virus Detection [Disabled]

Allows you to enable or disable the virus warning feature for IDE hard disk boot sector. When set to [Enabled], BIOS displays a warning message on the screen and an alarm beep if someone attempts to write data on the HDD boot sector. Configuration options: [Enabled] [Disabled]

Quick Power-On-Self-Test [Enabled]

This field speeds up the Power-On-Self Test (POST) routine by skipping retesting several times. Configuration options: [Disabled] [Enabled]

Boot Up Floppy Seek [Disabled]

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

Boot Up NumLock Status [On]

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

Full Screen LOGO [Enabled]

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

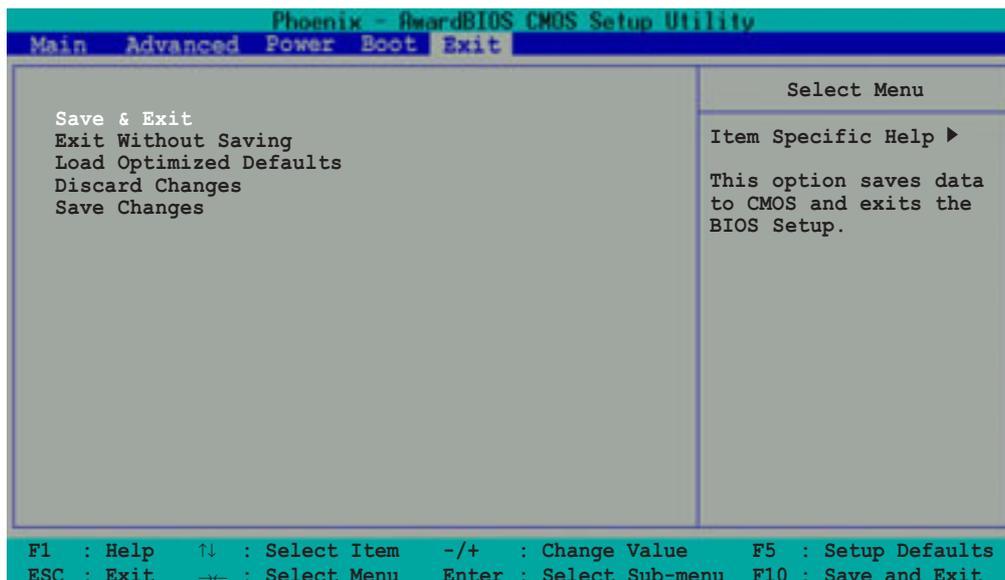


Make sure that the Full Screen Logo item is set to [Enabled] if you wish to use the ASUS MyLogo2™ feature. See page 5-13 for details.

APIC Mode [Enabled]

When enabled, this option 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: [Disabled] [Enabled]

4.7 Exit menu



Save & Exit Setup

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.

Exit Without Saving

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

Load Optimized Defaults

This option allows you to load the optimized 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 optimized values. Select Save & Exit 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 so you may return to other menus and make further changes. After selecting this option, a confirmation window appears. Select [Yes] to save changes to the non-volatile RAM.

Chapter 5

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

Software support

Chapter summary

5.1	Install an operating system	5-1
5.2	Support CD information	5-1
5.3	ATI IGP Catalyst™	5-7
5.4	Software information	5-10

5.1 Install an operating system

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



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

5.2 Support CD information

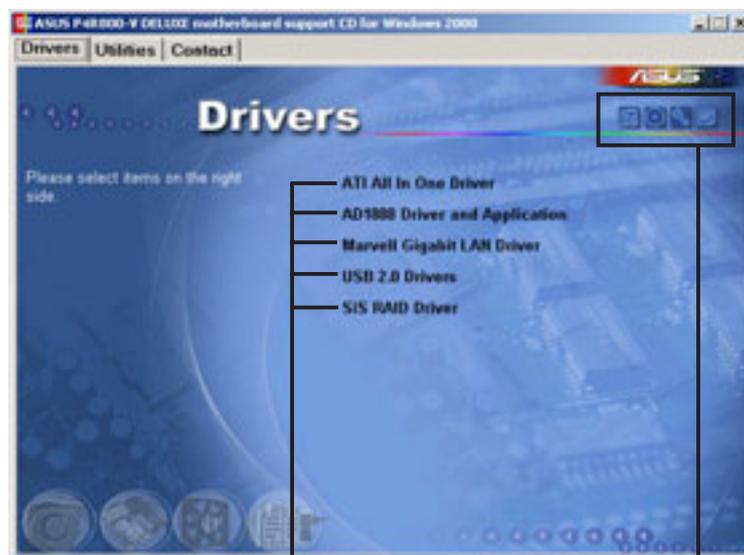
The support CD that came with the motherboard contains useful software and several utility drivers that enhance the motherboard features.



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

5.2.1 Running the support CD

To begin using the support CD, place the CD into the optical drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.



Click an item to install

Click an icon to display more information



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

5.2.2 Drivers menu

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



ATI All in One Driver

The item installs the ATI All In One Driver.

AD1888 Driver and Application

This item installs the AD1888 audio driver and application.

Marvell Gigabit LAN Driver

This item installs the driver for the onboard Marvell® Gigabit LAN controller.

USB 2.0 Driver

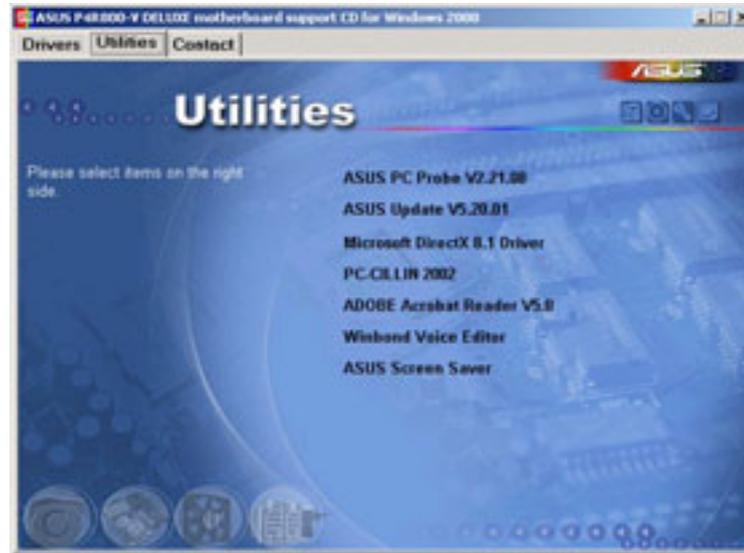
This item installs the USB 2.0 driver.

SiS RAID Driver

This item installs the SiS RAID driver and the SiSRAID utility.

5.2.3 Utilities menu

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



ASUS PC Probe

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

Install ASUS Update

This program allows you to download the latest version of the BIOS from the ASUS website. Installing ASUS Update also installs ASUS MyLogo2. See page 4-6 for details.



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

Microsoft DirectX Driver

This item installs the Microsoft® DirectX driver under Windows® ME/2000 operating system.



Windows® XP already includes the Microsoft® DirectX driver. You do not need to install the driver if you are using this operating system.

PC-CILLIN 2002

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

Adobe Acrobat Reader

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

Winbond Voice Editor

This application is for customizing ASUS POST Reporter™ messages. Use this application if you wish to change the default vocal POST messages. See section 3.3 “ASUS POST Reporter™” for details.

ASUS Screen Saver

This item installs the ASUS screen saver.

5.2.4 ASUS contact information

Click the Contact tab to display the ASUS contact information.

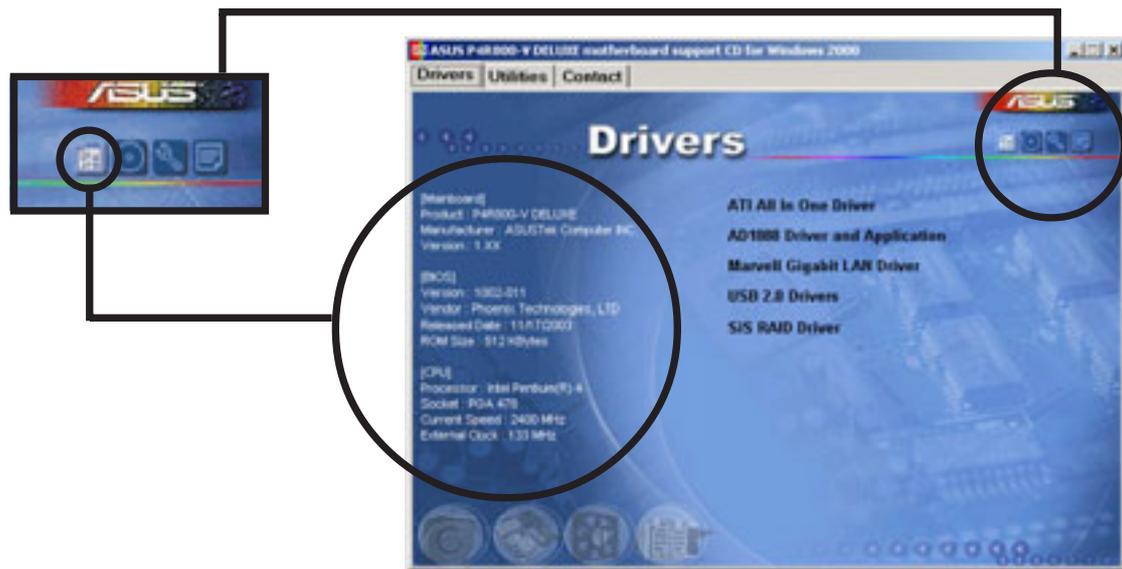


5.2.5 Other information

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

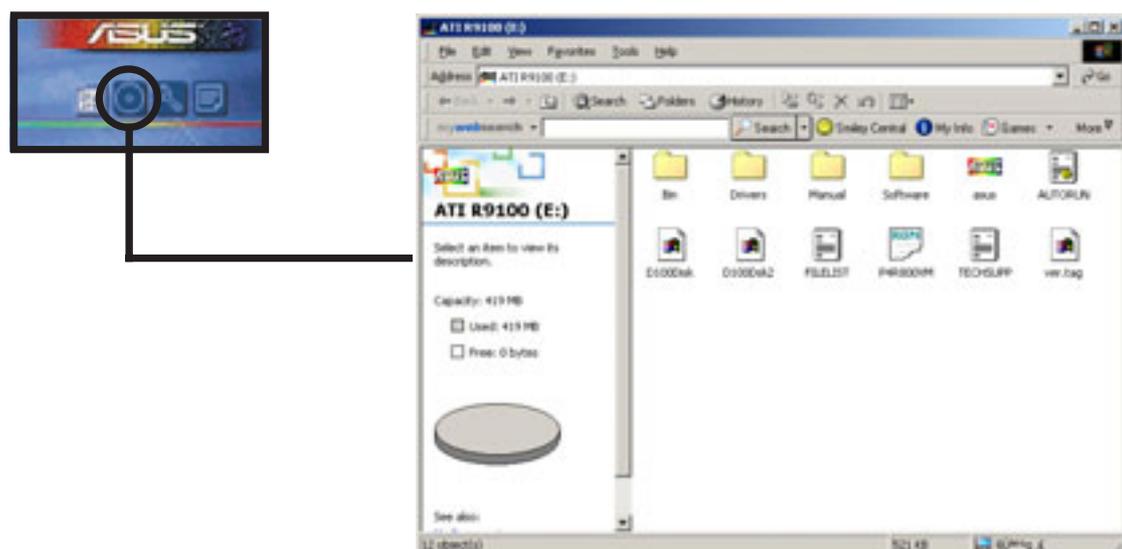
Motherboard information

The window displays the general specifications of the motherboard.



Browse this CD

The window displays the support CD contents in graphical format.



Technical support form

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

A screenshot of the ASUS Technical Support Request Form. The form is titled "ASUSTEK TECHNICAL SUPPORT REQUEST FORM" and includes fields for "ORIGINATOR DESCRIPTION", "COMPANY NAME", "PHONE (AREA)", "EMAIL ADDRESS", "CONTACT NAME", "FAX # (AREA)", "HARDWARE DESCRIPTION", "MOTHERBOARD", "CPU BRAND", "SWAN BRAND", "CACHE BRAND", "HARD DISK", "CDROM BRAND", "BACKUP BRAND", "OTHER STORAGE", "ADD-IN CARD DESCRIPTION (MODEL NAME/VENDOR)", "SOFTWARE DESCRIPTION", "OPERATING SYSTEMS", "APPLICATION SOFTWARE", "DEVICE DRIVERS", and "PROBLEM DESCRIPTION (WHAT PROBLEMS AND UNDER WHAT SITUATIONS)".

Filelist

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



A screenshot of the Filelist window. The window is titled "FILELIST - Notepad" and displays a list of files and their descriptions. The list is organized into categories: Drivers, Chipset, Lan, RAID, Software, Acrobat, and AFUDOS. The files listed include audio drivers, chipset drivers, LAN drivers, RAID drivers, Adobe Acrobat Reader, and information on how to use the AMI FLASH DOS utility.

5.3 ATI IGP Catalyst™

The ATI IGP Catalyst™ allows easy configuration of your display settings. The ATI IGP Catalyst™ icon is displayed in the Windows® taskbar after you installed the **ATI All In One** drivers. Right or left-click the icon to display a menu.



5.3.1 Left-click menu

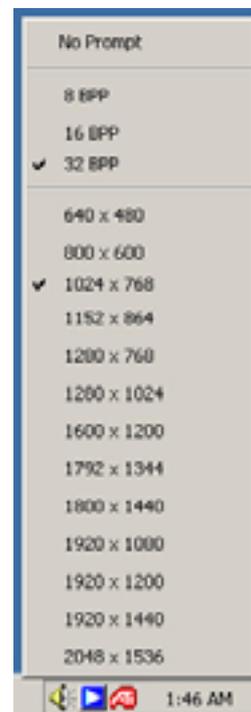
The left-click menu allows you to select the bits per pixel (BPP) and resolution of your current display.

To change the BPP and resolution settings of your display:

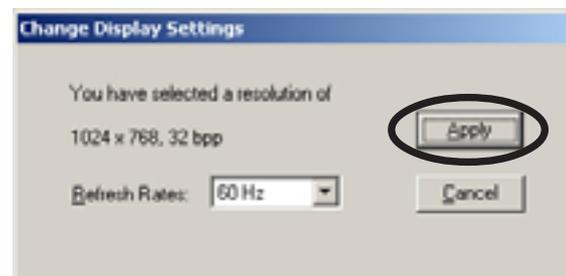
1. Select a BPP and resolution from the menu. A **Change Display Settings** window appears.



The left-click menu displays only the BPP and resolution supported by your display.



2. Select the **Refresh Rate**, then click **Apply**.



5.3.2 Right-click menu

The ATI IGP Catalyst™ right-click menu provides options for configuring your display settings.

Displays - This option allows you to set your current display as primary or clone.

Schemes - The Schemes option allows you to use a single display or switch among available displays.

Settings - This option lets you configure the ATI IGP Catalyst™, advanced display settings, and device settings. This menu also allows you to restore the default display settings.

Help - Select this option to view the help menu for the ATI desktop or television display.

Troubleshooting - Select this option to view a troubleshooting guide for the ATI desktop or television display.

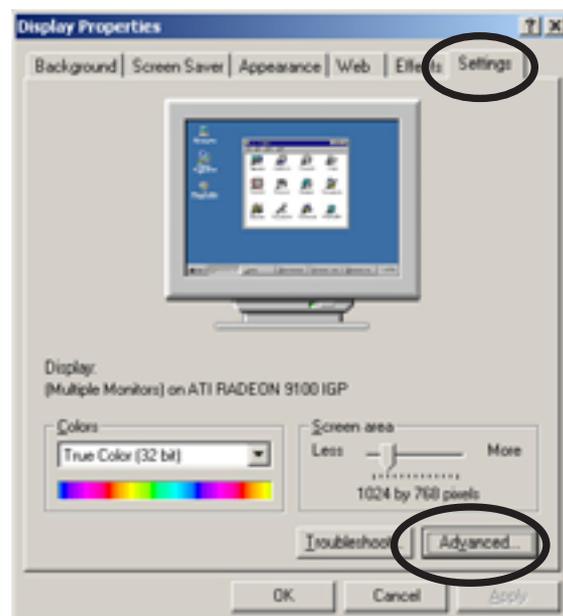


5.3.3 Managing multiple displays

This motherboard allows you to use multiple displays via the ATI RADEON™ integrated graphics controller.

To manage multiple displays:

1. Connect a TV or flat panel display using the S-Video or composite port. Turn on the TV or flat panel display.
2. Right-click an area in your desktop to display a pop-up menu. Select **Properties**.
3. A **Display Properties** window appears.
4. Click the **Settings** tab, then the **Advanced** button to display the **ATI RADEON 9100 IGP Properties** window.



4. Click the **Display** tab. Click the **Scheme** drop-down menu, then select **Switch amongst display**. Assign a **Hotkey** to use in switching between displays. Click **Save** when done.
5. Click a display to view and adjust its properties.
6. Click **Apply** to save your changes.



Only S-Video signal is available when S-Video and composite video ports are used at the same time. The quality of S-Video is better than composite video.

5.4 Software information

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

5.4.1 Multi-channel audio feature

The ADI AD1888 AC '97 audio CODEC provides 6-channel audio capability. Install the **SoundMAX Audio Driver and Application** from the support CD that came with the motherboard package to activate the 6-channel audio feature.

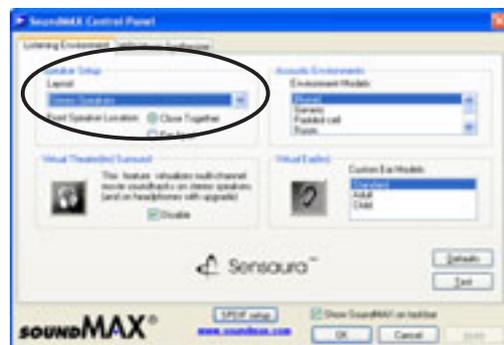


You must use 4-channel or 6-channel speakers for this setup.

Setting to multi-channel audio

After installing the audio driver, follow these instructions to adjust the audio settings and avail the onboard 6-channel audio feature.

1. From the taskbar, double-click on the **SoundMAX Digital Integrated Audio** icon to display the **SoundMAX Control Panel**.
2. The **Listening Environment** tab allows you to set to multi-channel speakers, enable or disable the **Virtual Theater Surround**, and select **Acoustic Environments** and **Virtual Ear**.
3. The default setting is **Stereo Speakers** (2-channel). To set to a 6-channel speaker system, click the arrow under **Speaker Setup** to display a list of options.
4. Select the option **Surround Sound Speakers (5.1 Surround)**.



Refer to page 2-20 for the function of the Line In, Line Out, and Mic ports in 4/6-channel audio configuration.

5. Click the **Apply** button.

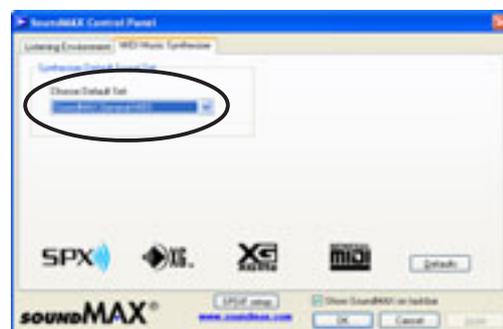
6. Click the **Test** button to display the **Test Listening Environment** window.
7. Select the audio test path from the drop-down menu.



8. After selecting an option, test your setting by clicking the **Play Test Noise** button. While testing, you will see a black circle moving on the screen indicating the audio path. The **Play Test Noise** button becomes **Stop Playing** button. Click this button at any time to stop playing.
9. Click the **Close** button when done.



10. The **MIDI Music Synthesizer** tab allows you to select a setting for the MIDI.

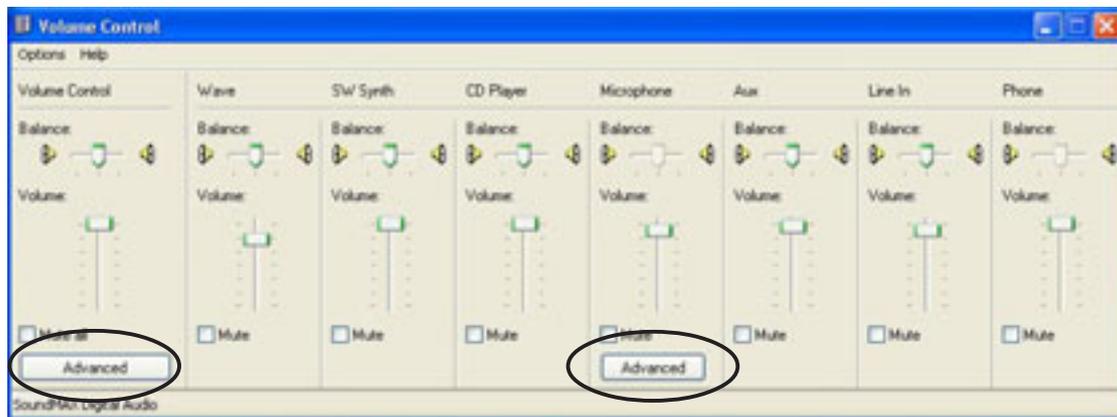


11. Click the **Synthesizer Default Set** drop-down menu to display a list of options. Choose the desired setting.
12. Click **Apply**, then click **OK** when finished.
13. Reboot the computer.



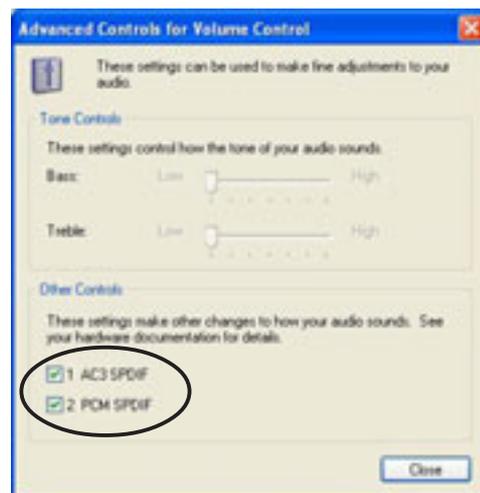
Adjusting the volume settings

1. After rebooting the system, click on the volume control icon on the Windows® taskbar to display the **Volume Control** window.



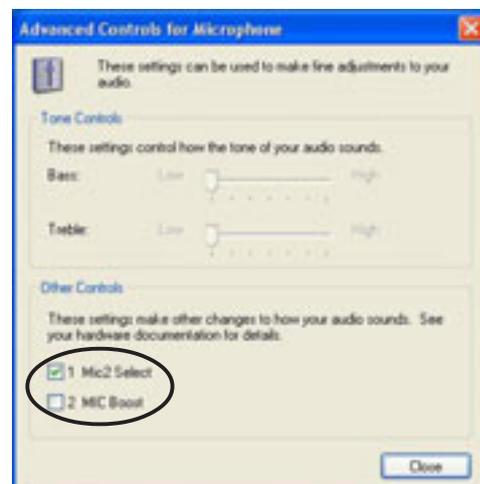
2. Click the Volume Control **Advanced** button. The **Advanced Controls for Volume Control** window appears.

To achieve 6-channel audio capability when playing DVDs, check the boxes opposite **AC3 SPDIF** and **PCM SPDIF**. Click **Close**.



Adjusting the microphone settings

1. Click on the Microphone **Advanced** button to display the **Advanced Controls for Microphone** window.
2. Check the box opposite **Mic2 Select** to enable the front panel microphone.
3. Click **Close** for the new settings to take effect.



5.4.2 ASUS MyLogo2™

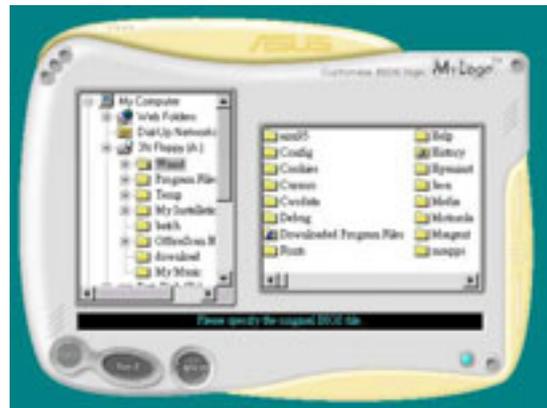
The ASUS MyLogo2™ is automatically installed when you install the ASUS Update utility from the support CD. See section 5.2.3 “Utilities menu” for details.



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

Follow these steps to use ASUS MyLogo2.

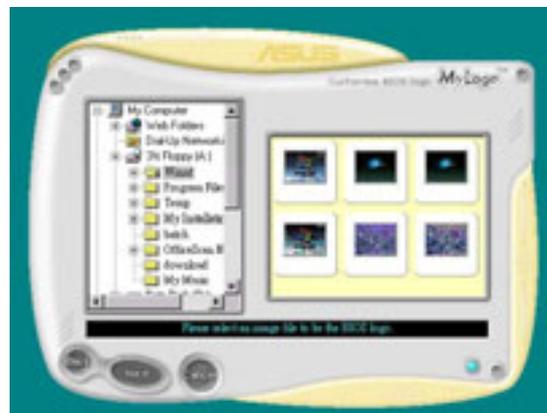
1. Launch the ASUS Update utility. See section “4.1.5 ASUS Update.”
2. When prompted for the BIOS update method, select the option “Update BIOS from a file.”
3. Specify the location of the BIOS file, such as from a floppy disk. Click **Next**.



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



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



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





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



6. The next screen prompts you to flash the original BIOS to update it with the new boot logo. Click **Flash** to update the BIOS.
7. When finished, click **Exit**, then reboot your computer. Your system boots with the new boot logo.



Instead of starting from ASUS Update, you may also launch ASUS MyLogo2 directly from the Windows® Start button menu to change your BIOS boot logo. After you have modified the BIOS file with the new logo, use the ASUS Update utility to upload the new BIOS.

5.4.3 ASUS Instant Music

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



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

To enable ASUS Instant Music:

1. Connect the analog audio cable from the optical drive to the 4-pin CD connector (labeled CD) on the motherboard. See section 2.7.2 “Internal connectors” for the location of the CD connector.



Make sure to connect the optical drive audio cable. Otherwise, you cannot control the audio volume using the Instant Music function keys.

2. Turn on the system and enter the BIOS Setup by pressing the **Delete** key during the Power On Self-Tests (POST).
3. In the **Instant Music Configuration** menu, select the item **Instant Music** and set it to **Enabled**. See section 4.4.5 “Instant Music Configuration.”
4. Select the **Instant Music CD-ROM Drive** option, then press <Enter> to display the CD-ROM options.
5. Save your changes, then exit the BIOS Setup.

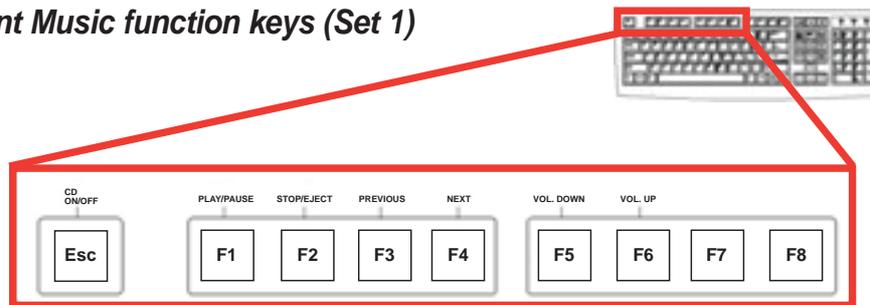


-
- The Scroll Lock LED is fixed to ON after enabling Instant Music.
 - The Caps Lock LED turns ON when you pause the CD playback.
 - When set to Instant Music mode, the system wake-up features (LAN, keyboard, mouse, USB) are deactivated. In this case, power up the system using the power switch.
 - If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

To use ASUS Instant Music:

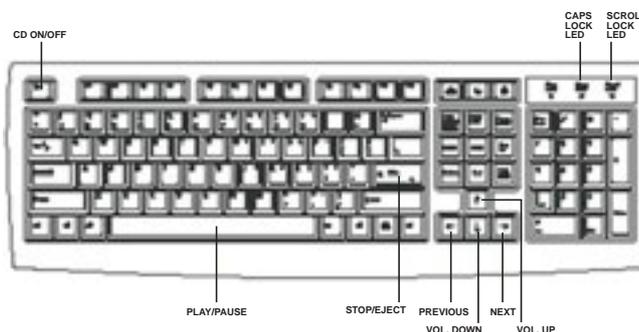
1. Ensure that the power cord is plugged to a grounded power source, so that the system has a standby power.
2. Use either one of the two sets of special function keys on your keyboard to play audio CDs. These keys only function as indicated if you enabled the Instant Music item in BIOS.

Instant Music function keys (Set 1)



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

Instant Music function keys (Set 2)



3. Connect speakers or a headphone to the Line Out (lime colored) port on the rear panel for audio output. You may also connect a headphone to the headphone port on the optical drive front panel, if available.
4. Place an audio CD on the drive.
5. Press **<Esc>** to turn Instant Music on.
6. Press **<F1>** or the **<Space Bar>** to play the first track on the CD.



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

7. Refer to the Instant Music function key definitions on the previous page to select other tracks or control the volume.
8. Press **<F2>** or **<Enter>** *once* to stop playing the CD.
Press **<F2>** or **<Enter>** *one more time* to eject the CD.

5.5 SiS RAID configurations

The motherboard comes with the SiS 180 RAID controller to provide a cost-effective RAID solution. SiS 180 supports RAID 0, RAID 1, and RAID 0+1 with two independent Serial ATA channels and a single-channel RAID connector.

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

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

RAID 0+1 is *data striping* and *data mirroring* combined without parity (redundancy data) having to be calculated and written. The advantage of RAID 0 + 1 is fast data access (like RAID 0), but with the ability to lose one drive and have a complete duplicate surviving drive or set of drives (like RAID 1).



Refer to the SiS 180 Serial ATA User's Manual in the support CD for details on the SiS RAID utilities.

5.5.1 Installing the hard disks

The SiS 180 Serial/Ultra ATA RAID controller supports Serial ATA and Ultra ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a RAID set.

- If you are creating a **RAID 0 (striping)** array for performance, use two new drives.
- If you are creating a **RAID 1 (mirroring)** array for protection, you can use two new drives or use an existing drive and a new drive (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, one hard disk has an 80GB storage capacity and the other hard disk has 60GB storage capacity, the maximum storage capacity for the RAID 1 set is 60GB.
- If you are creating a **RAID 0+1 (striping and mirroring)** array, you must install two new identical drives (same size).

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

1. Set the jumpers of each hard disk as Master/Slave.
2. Install the hard disks into the drive bays.
3. Connect the HDD cables. These connection options are available for creating a RAID 0 or RAID 1 array:
 - a) Connect one Parallel ATA HDDs to the PRI_RAID connector and one Serial ATA HDD to either one of the two Serial ATA connectors, using separate parallel ATA or serial ATA cables.
 - b) Connect one Serial ATA HDD to each Serial ATA connector, using separate serial ATA cables.
4. Connect the power cable to the power connector on each drive.
5. Boot the system and enter the SiS RAID Setting Utility. Refer to the next section for details.

5.5.2 SiS RAID Setting Utility

The SiS RAID Setting Utility allows you to create or delete a RAID array in DOS mode.

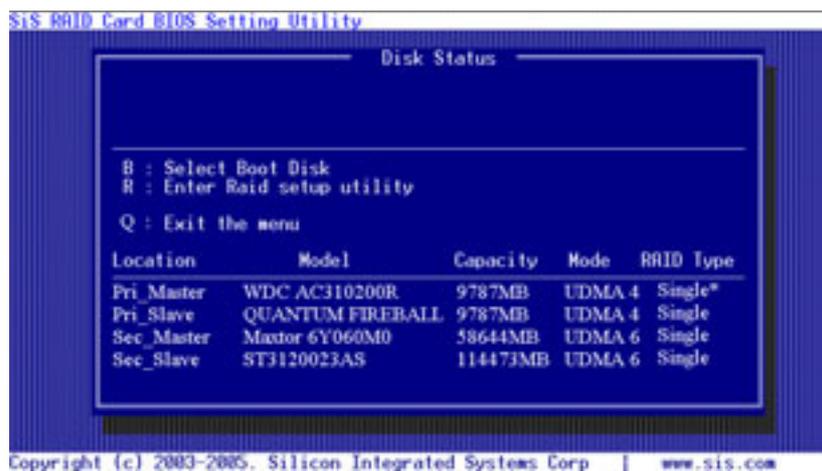
To enter the SiS RAID Setting Utility:

1. Restart your system. The BIOS displays the following screen during POST.

```
Silicon Integrated Systems Corp. RAID Card BIOS Setting Utility
1.00.0.XX
(c) 2003-2005 Silicon Integrated Systems Corp. All Rights Reserved.

Press <Ctrl><S> to run the BIOS Setting Utility.
```

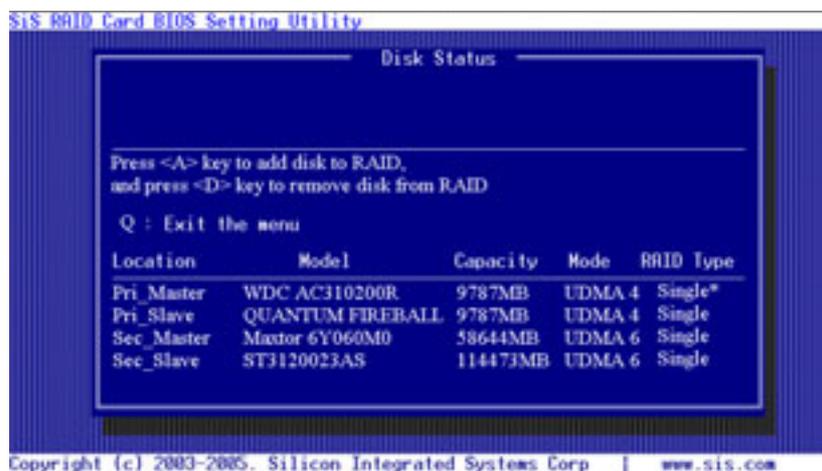
2. Press <Ctrl> <S> to display the SIS180 Utility main menu.
3. Press R to display the RAID setup menu.



Creating an array for performance

To create a RAID array for performance:

1. In the SiS RAID Setting utility main menu, press **A** to create array.



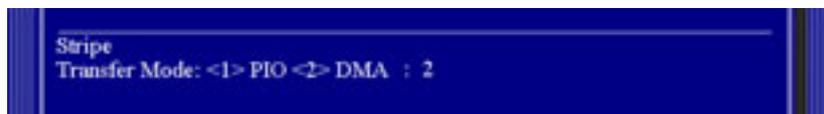
- Press <2>, then <Enter> to select Stripe (RAID 0).



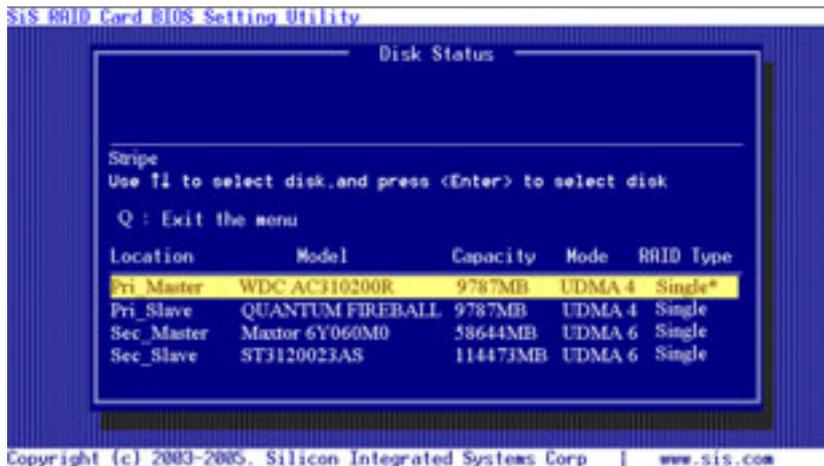
- Press <1>, <7>, then <Enter> to select the Block Size.



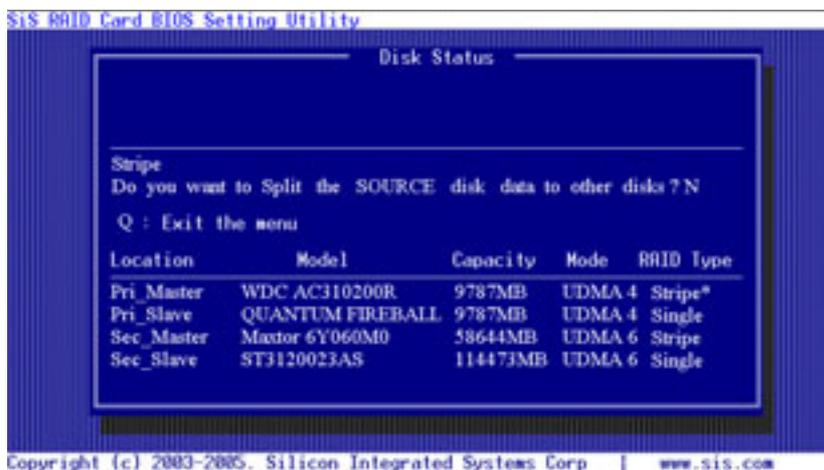
- Press <1>, <2>, then <Enter> to select the Transfer Mode.



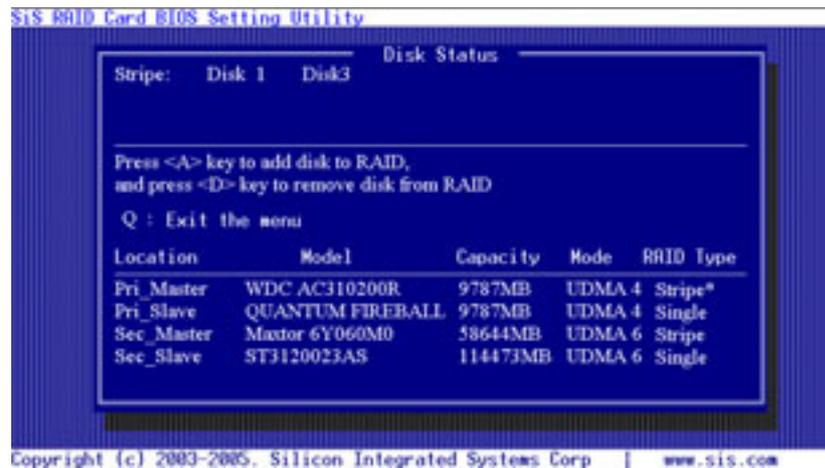
- Use the <Up> or <Down> arrow keys to move the selection bar, then press <Enter> to select a disk drive.



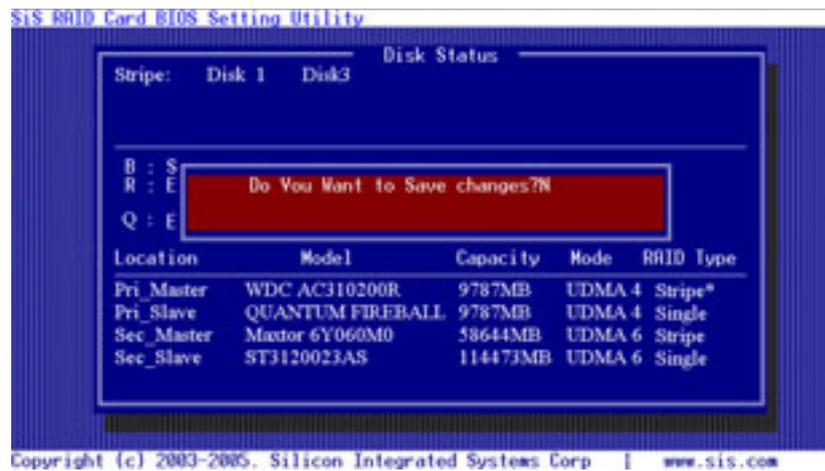
- Press N then <Enter> to create a stripe (RAID 0) configuration.
Press Y if you wish to split the data on the source disk to other disks.



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



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



9. Once an array is created, partition and initialize your hard disk using the FDISK utility and format the array as a new single hard drive.

5.5.3 SiSRAID Utility

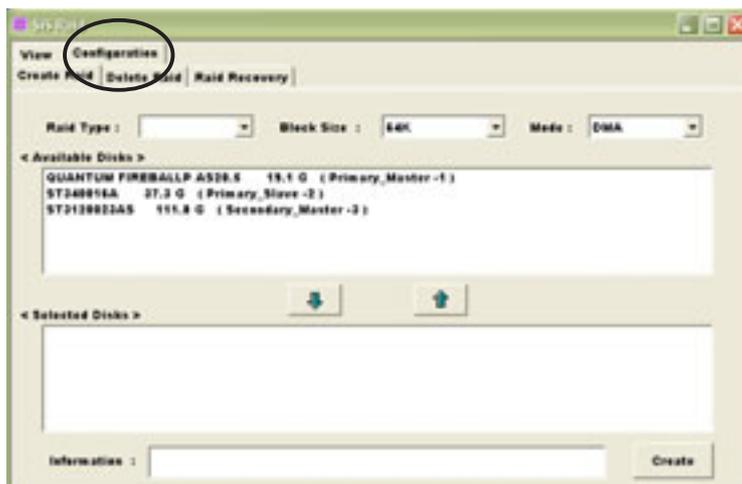
The SiSRAID Utility allows you to create or delete a RAID array in Windows®. The SiSRAID Utility is automatically copied into your system when you install the SiS RAID Driver. See page 5-2 for details.

To launch the SiSRAID Utility:

1. Click **Start > Programs > SiSRAID > SiSRAID** from the Windows® desktop. The SiSRAID Utility window appears.
2. Click on the **View** or **Configuration** tab to display their contents. The **View** tab displays information on the first detected hard disk drive.



3. Click the **Configuration** tab to create, delete, or recover a RAID array.



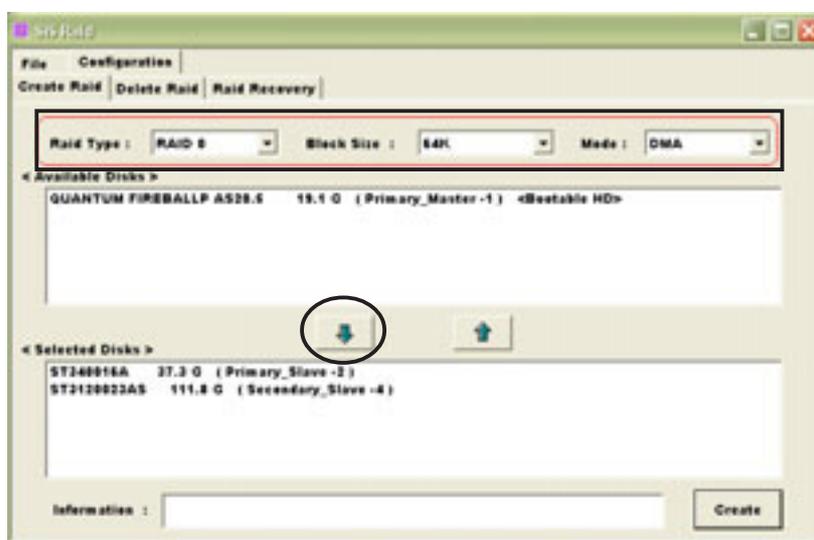
Creating an array for performance (RAID 0)



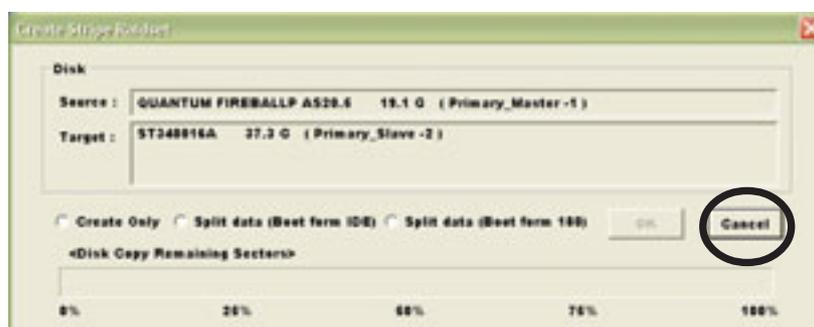
You must have at least two installed hard disk drives to create a RAID 0 array.

To create a RAID 0 array:

1. Click the **Configuration** tab, then click the **Create Raid** tab.
2. Select **RAID 0** from the **Raid Type** field.
3. Set the array block size from the **Block Size** field.
4. Set your array in DMA or PIO mode from the **Mode** field.
5. Select a disk from the **Available Disks** pane, then click the **arrow down button** to add the disk on the **Selected Disks** pane.



5. After setting all fields and parameters, click the **Create** button to display the **Create Stripe Raidset** window. The window displays the source and target disk, and allows you to create or split the data.



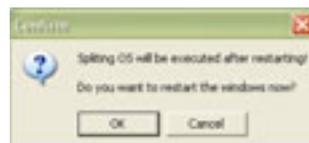
Create Stripe Raidset options

Source	Displays the first selected disk.
Target	All available disks except the first selected disk.
Create Only	This operation destroys all data on the selected disk and creates a clean stripe array without any data.
Split data (Boot from IDE)	This operation will split the data from the source disk into all the selected disks. In this mode, the boot disk may not be booted from the SiS 180 chip.
Split data (Boot from 180)	This operation is similar to "Split data into RAID 0 operation, but the boot disk may boot from the SiS 180 chip.
OK	Starts the array configuration.
Cancel	Aborts the array configuration.
<Disk Copy Remaining Sector>	Displays the remaining splitting data

- Click **OK** after setting the values.
- The following warning message appears when the operation is **Split data into RAID 0**. Click **Yes** to continue or **No** to cancel.



- A restart warning message appears after configuration is completed. Click **OK**.



Refer to the SiS 180 Serial ATA User's Manual in the support CD for details on the SiSRAID utility.

5.6 Marvell® Virtual Cable Tester™ (VCT) Technology

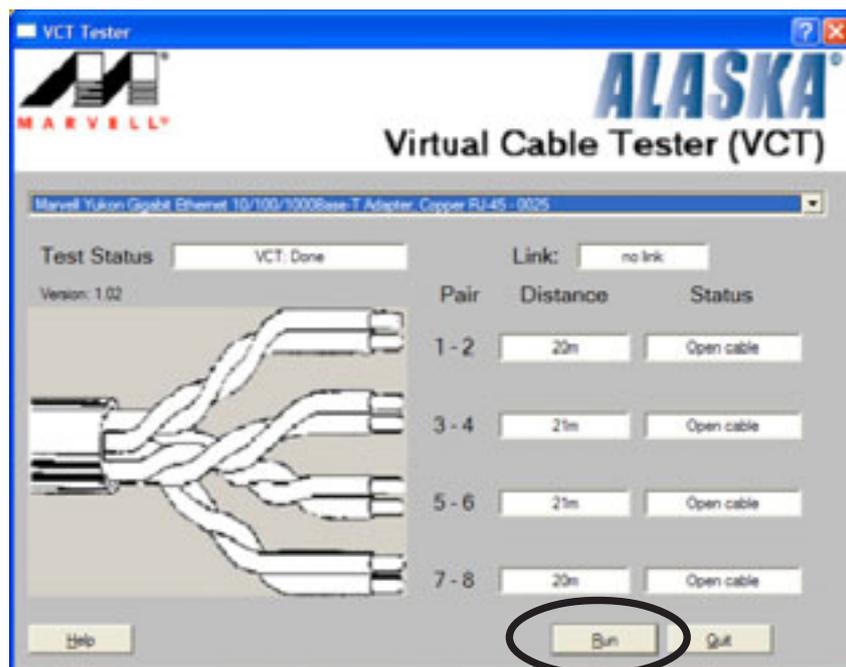
The motherboard supports the Marvell® Virtual Cable Tester (VCT) Technology. The VCT virtually diagnose and report cable faults using the Time Domain Reflectometry (TDR). With this tool, installation and network diagnosis has never been easier. The VCT technology detects and reports open and shorted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

VCT remarkably reduces networking and support costs complementing a highly manageable and controlled network system. This application can also be incorporated in the network systems software making it an ideal tool for field support and development diagnostics.

Using the Virtual Cable Tester™

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

1. Click **Start > All Programs > Marvell > Virtual Cable Tester** from the Windows® desktop.
2. From the menu, click **Virtual Cable Tester**. The Virtual Cable Tester window appears.
3. Click on **Run** to execute the test.



Important notes



-
- The Virtual Cable Tester™ (VCT) feature is supported on Windows® XP and 2000 operating systems only.
 - The Virtual Cable Tester™ (VCT) feature works only on a system with an installed Marvell Gigabit LAN controller.
 - The **Run** button on the VCT Tester dialogue box is disabled if no problem is detected on the network.
-

5.7 Makedisk.exe

The Makedisk.exe utility allows you to create a floppy disk with the RAID driver necessary when configuring RAID during OS installation. This utility is available in the support CD that came with the motherboard package. You may find this utility in:

`\Drivers\RAID\SiSRAID\Makedisk.exe`



A floppy disk with the SiS 180 Serial/Ultra ATA driver is required when installing Windows® XP/2000 or NT operating system. Create a RAID driver floppy disk using the Makedisk.exe utility before you install an operating system.

During OS installation, press the <F6> key, then insert the created driver disk in the floppy disk drive to upload the RAID driver into your system.



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