P5RD1-V

Deluxe

Motherboard

E1818

First Edition V1
March 2005

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Notices

Federal Communications Commission Statement

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

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

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

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

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

Canadian Department of Communications Statement

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

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

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an 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 manual contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the features 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, the vocal POST messages, and ways of shutting down the system.

- **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.

- **Appendix: Reference information**

  The Appendix describes the CPU features and technologies that the motherboard supports. The Appendix also includes information on the optional remote controller, the key table, and international TV systems and standards.

Where to find more information

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

1. **ASUS websites**

   The ASUS website provides 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.

Conventions used in this guide

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

DANGER/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: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key. Example: <Enter> means that you must press the Enter or Return key.
<Key1+Key2+Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: <Ctrl+Alt+D>
Command	Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets. Example: At the DOS prompt, type the command line: **afudos /i[filename]** **afudos /iP5RD1VD.ROM**

P5RD1-V Deluxe specifications summary

CPU	LGA775 socket for Intel® Pentium® 4/Celeron processor Compatible with Intel® PCG 04A and 04B processors Supports Intel® FMB 1.5 specification Supports Intel® Hyper-Threading Technology Supports Enhanced Intel SpeedStep® Technology (EIST)
Chipset	Northbridge: ATI Radeon® XPRESS 200 Southbridge: ULI M1573
Front Side Bus	800/533 MHz
Memory	Dual-channel memory architecture 4 x 184-pin DIMM sockets support unbufferred non-ECC 400/333/266 MHz DDR memory modules
Expansion slots	1 x PCI Express™ x16 slot for discrete graphics card 3 x PCI Express™ x1 slots 3 x PCI slots
Storage	- 2 x IDE connectors for up to four Ultra DMA 133/100/66/33 hard disks - 4 x Serial ATA connectors support four Serial ATA hard disks with RAID 0, RAID 1, RAID 0+1, and JBOD configuration*
Graphics	Integrated ATI Radeon® X300 GPU
TV Tuner	Philips Silicon tuner supports Cable TV, S-Video In, RCA Video In, and L/R Channel Audio In functions in NTSC/PAL/SECAM standards
High Definition Audio	Realtek® ALC861 7.1-channel CODEC with Jack-Sensing and Enumeration
LAN	Marvell® Yukon™ 88E8001 Gigabit LAN controller Supports Marvell® Virtual Cable Tester Technology
USB	Supports up to 8 USB 2.0 ports
IEEE 1394	T1 1394a controller supports: - 2 x IEEE 1394a ports
BIOS features	4 Mb LPC Flash ROM, AMI BIOS, Green, PnP, DMI2.0, WfM2.0, SMBIOS 2.3
ASUS AI Proactive Feature	ASUS AI Net 2 network diagnosis utility

(continued on the next page)

P5RD1-V Deluxe specifications summary

Special features	ASUS Q-Fan 2 ASUS CrashFree BIOS 2 ASUS MyLogo™ 2 ASUS C.P.R. ASUS EZ Flash
Overclocking features	ASUS AI Overclocking ASUS AI Booster Adjustable CPU, memory, and PCI Express voltages Stepless Frequency Selection (SFS) from 100 MHz up to 400 MHz at 1 MHz increment Adjustable CPU multiple/FSB frequencies Fixed PCI/PCI Express frequencies
Rear panel	1 x PS/2 mouse port 1 x PS/2 keyboard port 1 x Parallel port 1 x LAN (RJ-45) port 1 X IEEE 1394a port 4 x USB 2.0 ports 1 x VGA port 1 x TV in port 8-Channel audio ports
Internal connectors	1 x Floppy disk drive connector 2 x IDE connectors 4 x Serial ATA connectors 1 x CPU fan connector 1 x Chassis fan connector 1 x Power fan connector 1 x Serial port connector 2 x USB 2.0 connectors for four additional USB 2.0 ports 1 x 24-pin ATX power connector 1 x 4-pin ATX 12 V power connector 1 x IEEE 1394a connector 1 x GAME/MIDI connector 1 x MIDI connector 1 x Front panel audio connector 1 x S/PDIF out connector 1 x Capture in connector 1 x TV out connector 1 x System panel connector

(continued on the next page)

P5RD1-V Deluxe specifications summary

Support CD contents	Drivers ASUS PC Probe ASUS Update ASUS AI Booster Anti-virus utility InterVideo® WinDVD® Suite InterVideo® Home Theater®
Form factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.4 cm)

Specifications are subject to change without notice.

*Due to chipset limitation, you cannot configure a RAID 0/JBOD set across more than two hard disk drives.

This chapter describes the motherboard features and the new technologies it supports.

1 Product introduction

Chapter summary

1

1.1 Welcome!

Thank you for buying an ASUS® P5RD1-V Deluxe motherboard!

The 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 motherboard package for the following items.

Motherboard	ASUS P5RD1-V Deluxe motherboard
I/O modules	1 x TV-out/capture-in module 1 x Serial port module 1 x IEEE 1394a (1 port) module 1 x USB 2.0 (2 ports) and Game (1 port) module
Cables	1 x 4-in-1 Floppy/IDE signal cable 2 x Serial ATA signal cables 1 x Serial ATA power cable (dual-plug)
Accessories	I/O shield NTSC-to-PAL adaptor
Application CDs	ASUS motherboard support CD InterVideo® WinDVD® Suite InterVideo® Home Theater®
Documentation	User guide

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

1.3 Special features

1.3.1 Product highlights

Latest processor technology

The motherboard comes with a 775-pin surface mount Land Grid Array (LGA) socket designed for the Intel® Pentium® 4 processor in the 775-land package. The motherboard supports the Intel® Pentium® 4 processor with 800/533 MHz Front Side Bus (FSB). The motherboard also supports the Intel® Hyper-Threading technology and is fully compatible with Intel® 04B and 04A processors. See page 2-6 for details.

ATI Radeon® XPRESS 200/ULI M1573 chipset

The ATI Radeon® XPRESS 200 Northbridge and the ULI M1573 Southbridge provide the vital interfaces for the motherboard. The ATI Radeon® XPRESS 200 Northbridge integrates the Radeon® X300 GPU, an integrated graphics processing unit (GPU) for enhanced 3D, 2D, and video capabilities. The Northbridge also provides the interface for a processor in the 775-land package with 533/800 MHz front side bus (FSB), dual channel DDR memory, three PCI Express x1 slots, and a PCI Express x16 slot for discrete graphics card.

The ULI M1573 Southbridge represents the sixth generation I/O controller hub that provides the interface for PCI Express and 8-channel high definition audio.

Enhanced Intel SpeedStep® Technology (EIST)

The Enhanced Intel SpeedStep® Technology (EIST) intelligently manages the CPU resources by automatically adjusting the CPU voltage and core frequency depending on the CPU loading and system speed or power requirement. See page 4-25 and the Appendix for details.

PCI Express™ interface

The motherboard fully supports PCI Express, the latest I/O interconnect technology that speeds up the PCI bus. PCI Express features point-to-point serial interconnections between devices and allows higher clockspeeds by carrying data in packets. This high speed interface is software compatible with existing PCI specifications. See page 2-20 for details.

Onboard TV In port

The motherboard comes with a TV in port that allows you to watch and record live TV on your desktop computer. See 2-25 for details. Refer to page 5-16 for instructions on installing and uninstalling the required drivers.

8-channel high definition audio

Onboard is the Realtek® ALC861 7.1-channel audio CODEC. This CODEC is fully-compliant with Intel® High Definition Audio standard (192 KHz, 24-bit audio). With the CODEC, 8-channel audio ports, and S/PDIF interfaces, you can connect your computer to home theater decoders to produce crystal-clear digital audio. See page 5-10 for details.

Serial ATA technology

The motherboard supports the Serial ATA technology through the Serial ATA interfaces and the ULI M1573 Southbridge. The SATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, and up to 150 MB/s data transfer rate. See page 2-28 for details.

SATA RAID solution

Onboard RAID controllers provide the motherboard with RAID functionality. The ULI M1573 Southbridge allows RAID 0, RAID 1, RAID 0+1, and JBOD configuration. See page 5-35 for details.

Gigabit LAN

The motherboard comes with the Marvell® Yukon™ 88E8001 Gigabit LAN controller to meet your growing networking needs. See page 2-24 for details.

IEEE 1394a support

The IEEE 1394a interface provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to IEEE 1394a standards. The IEEE 1394a interface allows up to 400 Mbps 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 pages 2-24 and 2-33 for details.

1.3.2 ASUS Proactive features

AI NOS™ (Non-Delay Overclocking System)

ASUS Non-delay Overclocking System™ (NOS) is a technology that auto-detects the CPU loading and dynamically overclocks the CPU speed only when needed. See pages 4-20 and 4-22 for details.

AI NET2

The AI NET2 is a BIOS-based diagnostic tool that detects and reports Ethernet cable faults and shorts. With this utility, you can easily monitor the condition of the Ethernet cable(s) connected to the LAN (RJ-45) port(s). During the bootup process, AI NET2 immediately diagnoses the LAN cable(s) and reports shorts and faults up to 100 meters at 1 meter accuracy. See page 5-9 for details.

1.3.3 Innovative ASUS features

ASUS Q-Fan 2 technology

The ASUS Q-Fan 2 technology smartly adjusts the CPU fan speed according to the system loading to ensure quiet, cool, and efficient operation. See page 4-35 for details.

ASUS CrashFree BIOS 2

This feature allows you to restore the original BIOS data from the support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip. See page 4-6 for details.

ASUS MyLogo™ 2

This feature allows you to personalize and add style to your system with customizable boot logos. See page 5-7 for details.

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 the BIOS automatically restores the CPU default setting for each parameter.

ASUS EZ Flash BIOS

With the ASUS EZ Flash, you can easily update the system BIOS even before loading the operating system. No need to use a DOS-based utility or boot from a floppy disk. See page 4-5 for details.

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

2 Hardware information

Chapter summary

2

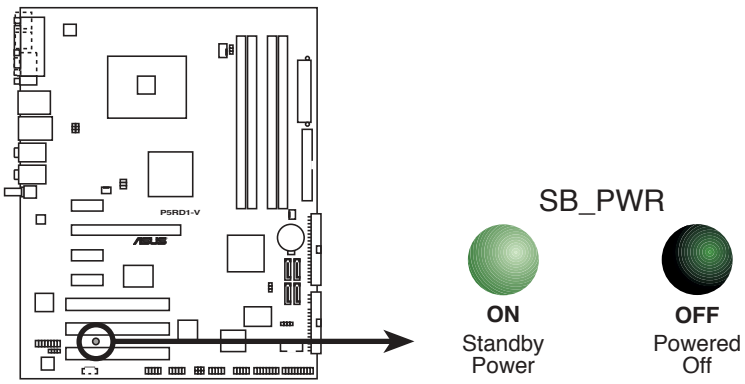
2.1 Before you proceed

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 motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.



P5RD1-V DELUXE Onboard LED

2.2 Motherboard overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.

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

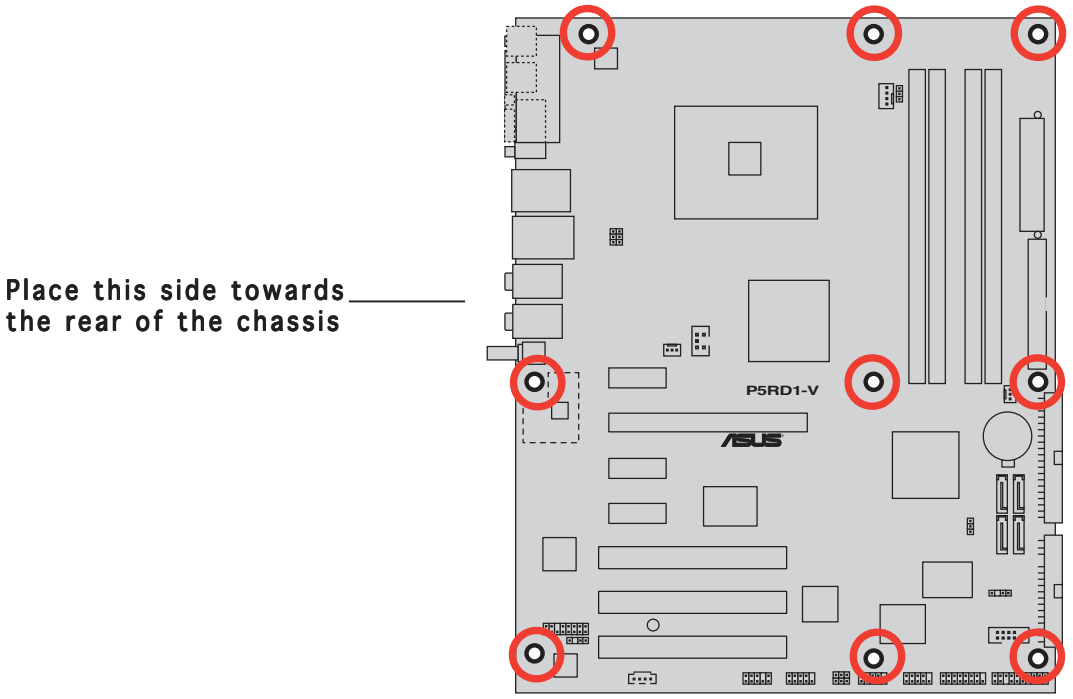
2.2.1 Placement direction

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

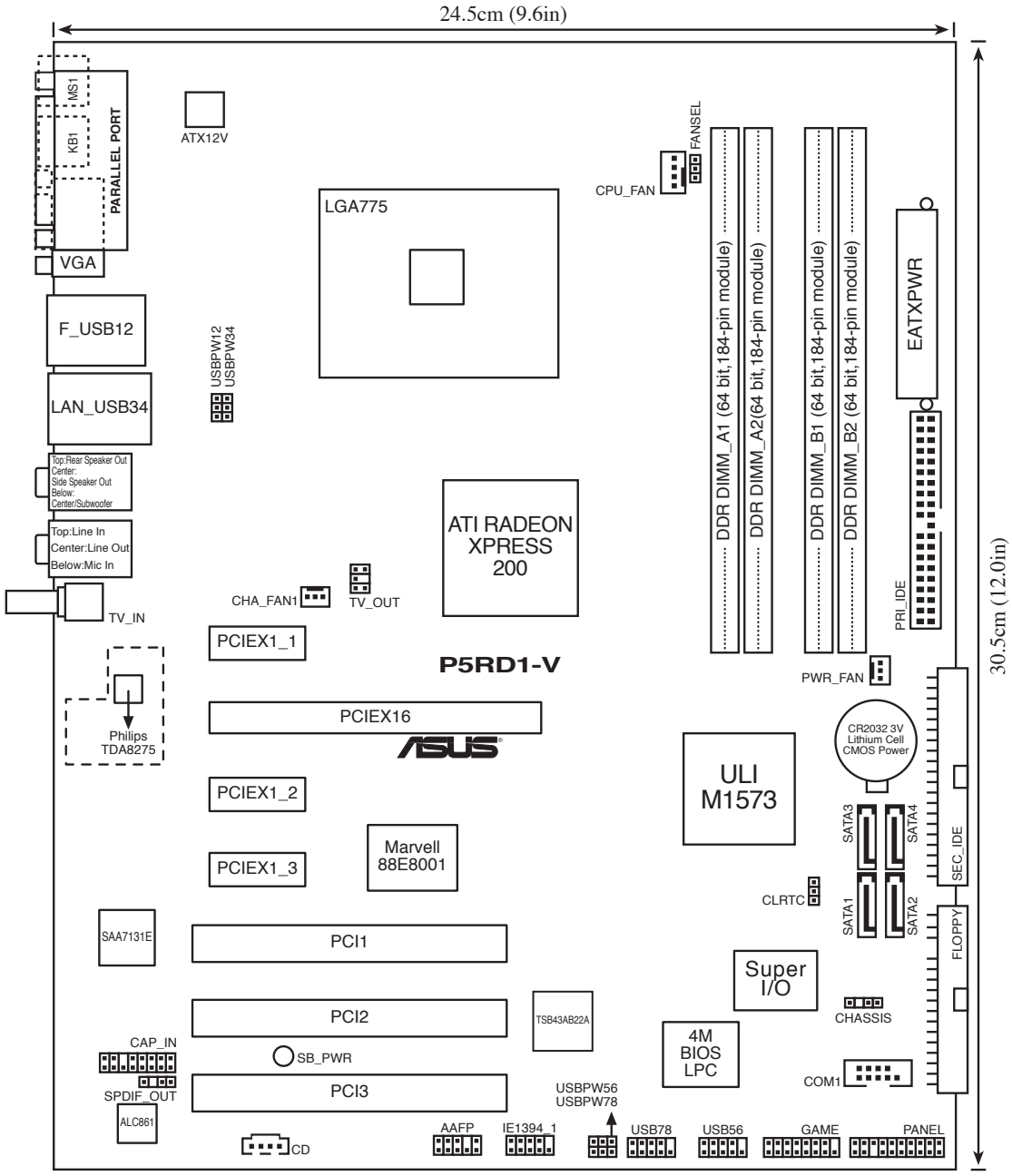
2.2.2 Screw holes

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

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



2.2.3 Motherboard layout



2.2.4 Layout Contents

2.3 Central Processing Unit (CPU)

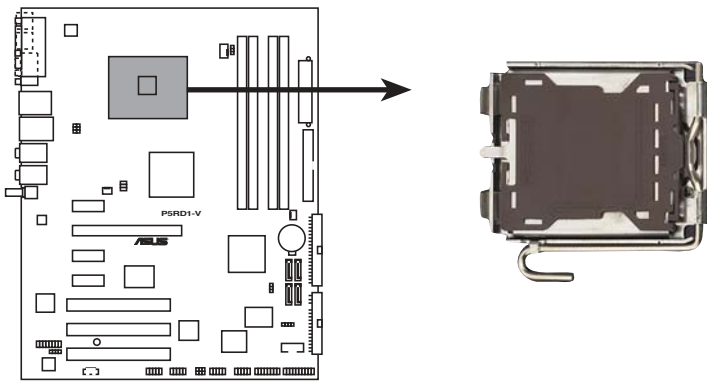
The motherboard comes with a surface mount LGA775 socket designed for the Intel® Pentium® 4 processor in the 775-land package.

- Your boxed Intel® Pentium® 4 LGA775 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.
- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket.
- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

2.3.1 Installing the CPU

To install a CPU:

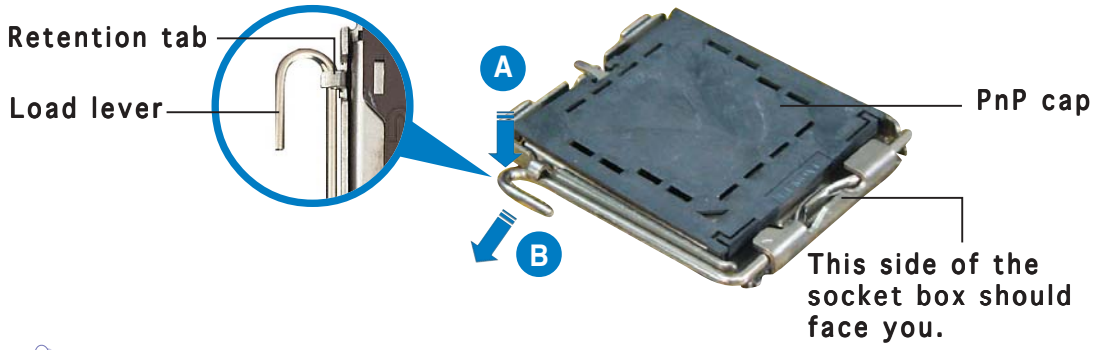
1. Locate the CPU socket on the motherboard.



P5RD1-V DELUXE CPU Socket 775

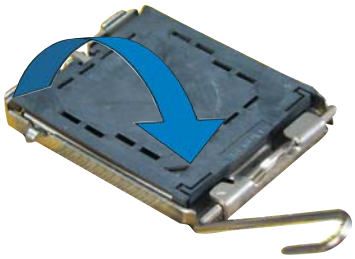
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

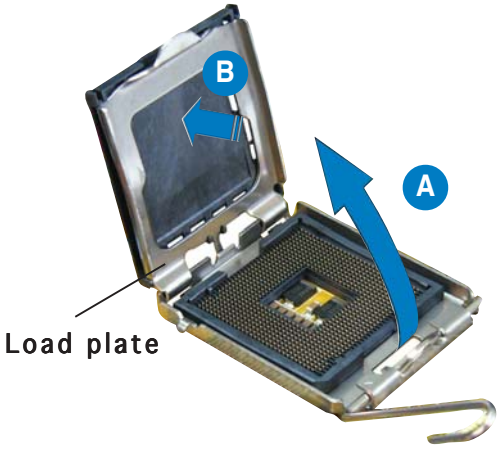


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

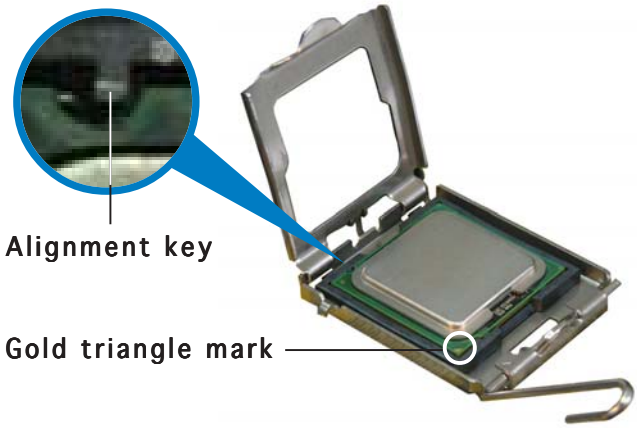
3. Lift the load lever in the direction of the arrow to a 135° angle.



4. Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B).

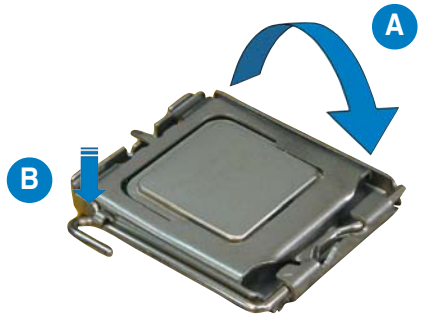


5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket. The socket alignment key should fit into the CPU notch.



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

6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.



The motherboard supports Intel® Pentium® 4 LGA775 processors with the Enhanced Intel SpeedStep® Technology (EIST) and Hyper-Threading Technology. Refer to the Appendix for more information on these CPU features.

2.3.2 Installing the CPU heatsink and fan

The Intel® Pentium® 4 LGA775 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

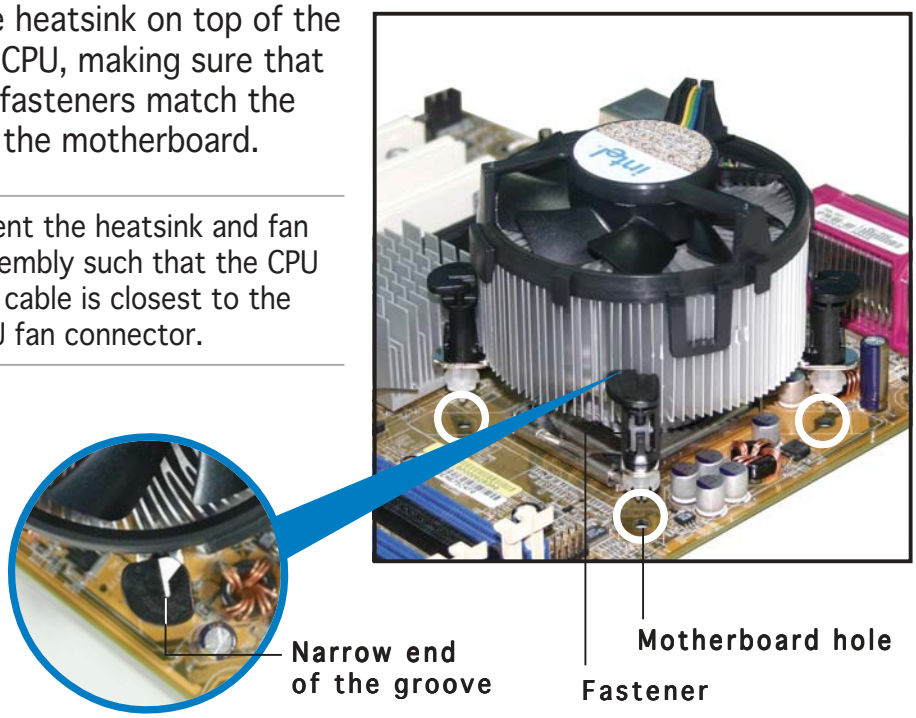
- When you buy a boxed Intel® Pentium® 4 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan.
- Your Intel® Pentium® 4 LGA775 heatsink and fan assembly comes in a push-pin design and requires no tool to install.
- If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

Make sure that you have installed the motherboard to the chassis before you install the CPU fan and heatsink assembly.

To install the CPU heatsink and fan:

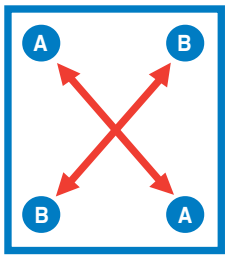
1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

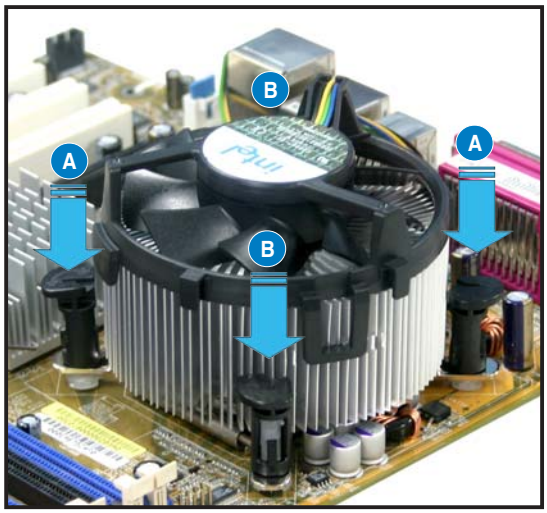
Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.



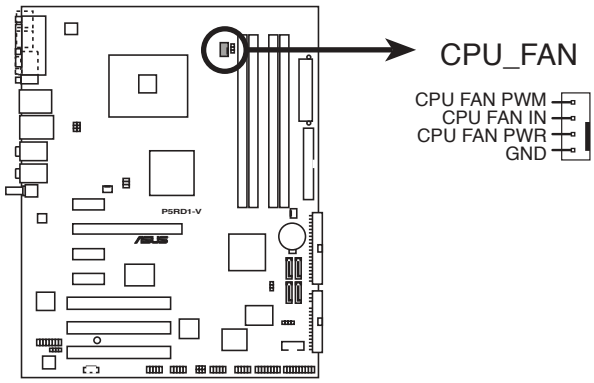
Make sure to orient each fastener with the narrow end of the groove pointing outward. (The photo shows the groove shaded for emphasis.)

2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.





3. Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.



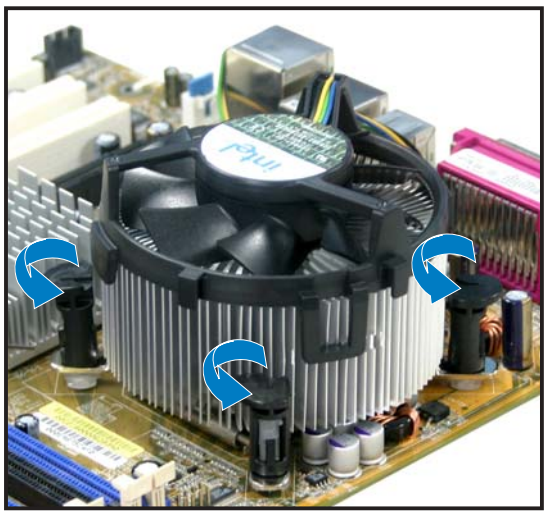
P5RD1-V DELUXE CPU fan connector

Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

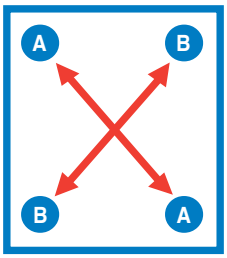
2.3.3 Uninstalling the CPU heatsink and fan

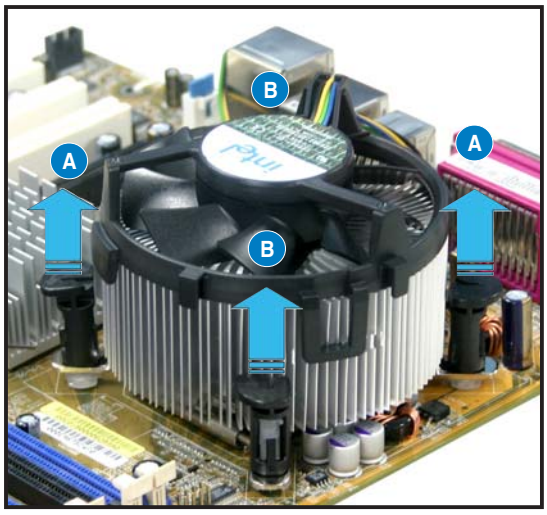
To uninstall the CPU heatsink and fan:

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counterclockwise.

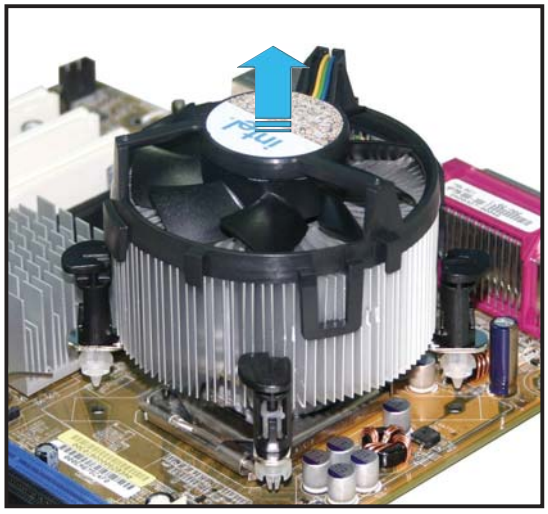


3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.

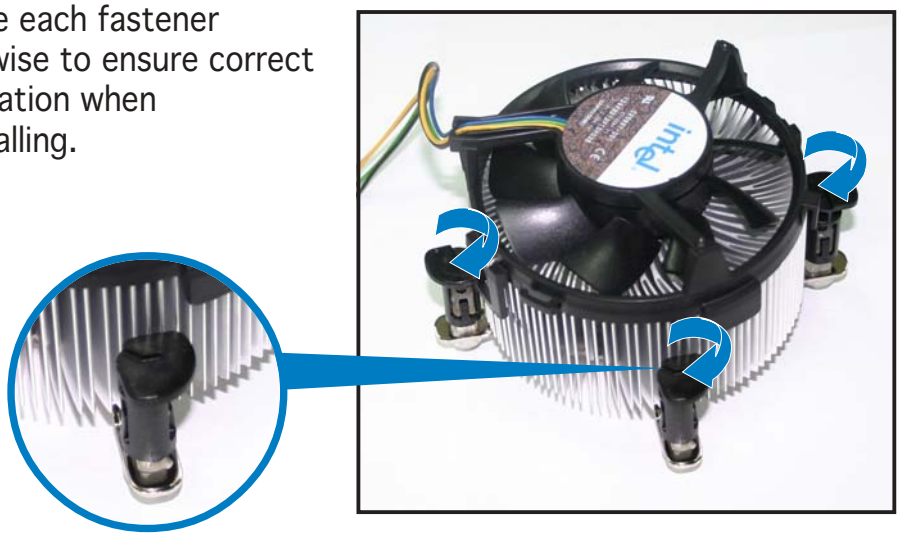




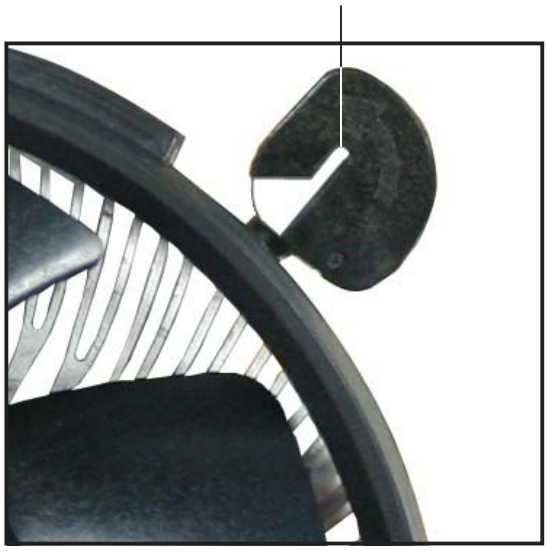
4. Carefully remove the heatsink and fan assembly from the motherboard.



5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.



Narrow end of the groove



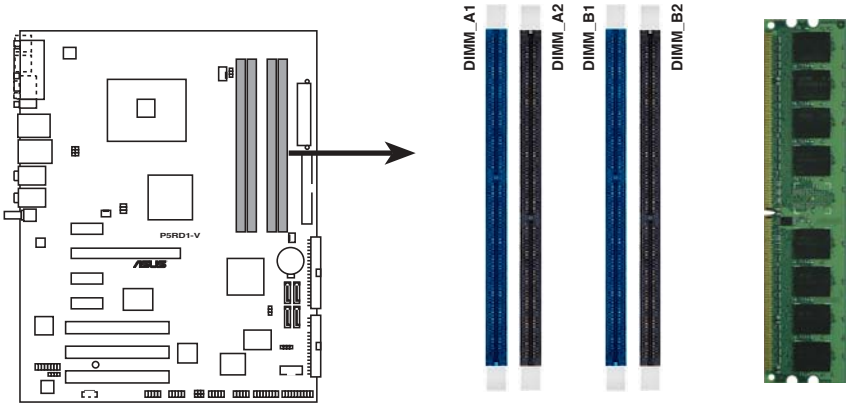
The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.)

2.4 System memory

2.4.1 Overview

The motherboard comes with four 184-pin Double Data Rate (DDR) Dual Inline Memory Modules (DIMM) sockets.

The following figure illustrates the location of the sockets:



P5RD1-V DELUXE 184-pin DDR DIMM sockets

2.4.2 Memory Configurations

You may install 256 MB, 512 MB, and 1 GB unbuffered non-ECC DDR DIMMs into the DIMM sockets using the memory configurations in this section.

- Always install DIMMs with the same CAS latency. For optimum compatibility, we recommend that you obtain memory modules from the same vendor.
- Due to chipset resource allocation, the system may detect less than 4 GB system memory when you installed four 1 GB DDR memory modules.
- This motherboard does not support memory modules made up of 128 Mb chips or double sided x16 memory modules.

Recommended DDR memory configurations

For dual-channel configuration, the total size of memory module(s) installed per channel must be the same to ensure optimum performance. (DIMM_A1 + DIMM_A2 = DIMM_B1 + DIMM_B2)

Channel	Sockets
Channel A	DIMM_A1 and DIMM_A2
Channel B	DIMM_B1 and DIMM_B2

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

DDR (400 MHz) Qualified Vendors List

							DIMM support		
Size	Vendor	Model	Brand	Side/s*	Component	CL	A	B	C
256 MB	KINGSTON	KVR400X64C3A/256	Hynix	SS	HY5DU56822BT-D43	–		•	•
512 MB	KINGSTON	KVR400X64C3A/512	Hynix	DS	HY5DU56822BT-D43	–	•	•	•
256 MB	KINGSTON	KVR400X64C3A/256	Infineon	SS	HYB25D256800BT-5B	–	•	•	•
512 MB	KINGSTON	KVR400X64C3A/512	Infineon	DS	HYB25D256809BT-5B	–		•	•
256 MB	KINGSTON	KVR400X64C3A/256	KINGSTON	SS	D3208DL2T-5	–	•	•	•
512 MB	KINGSTON	KHX3200A/512	–	DS	–	3	•		•
1024 MB	KINGSTON	KVR400X64C3A/1G	–	DS	HYB25D512800BE-5B	3	•	•	
1024 MB	KINGSTON	KHX3200ULK2/1G	–	DS	–	2	•	•	
256 MB	SAMSUNG	M368L3223ETM-CCC	SAMSUNG	SS	K4H560838E-TCCC	–	•	•	•
256 MB	SAMSUNG	M368L3223FTN-CCC	SAMSUNG	SS	K4H560838F-TCCC	4	•	•	•
512 MB	SAMSUNG	M368L6423FTN-CCC	SAMSUNG	DS	K4H560838F-TCCC	4	•		•
512 MB	SAMSUNG	M368L6523BTM-CCC	SAMSUNG	SS	K4H510838B-TCCC	4	•	•	•
256 MB	MICRON	MT8VDDT3264AG-40BCB	MICRON	SS	MT46V32M8TG-5BC	–	•	•	•
512 MB	MICRON	MT16VDDT6464AG-40BCB	MICRON	DS	MT46V32M8TG-5BC	–	•	•	
256 MB	Infineon	HYS64D32300HU-5-C	Infineon	SS	HYB25D256800CE-5C	3		•	•
512 MB	Infineon	HYS64D64320HU-5-C	Infineon	DS	HYB25D256800CE-5C	–	•	•	
256 MB	CORSAIR	CMX256A-3200C2PT	Winbond	SS	W942508BH-5	2		•	
512 MB	CORSAIR	VS512MB400	VALUE seLecTDS		VS32M8-5	2.5	•		
512 MB	CORSAIR	CMX512-3200C2	–	DS	–	3			
1024 MB	CORSAIR	TWINX2048-3200C2	–	DS	–	–	•	•	•
256 MB	Hynix	HYMD232645D8J-D43	Hynix	SS	HY5DU56822DT-D43	3	•	•	•
512 MB	Hynix	HYMD264646D8J-D43	Hynix	DS	HY5DU56822DT-D43	3	•	•	
256 MB	TwinMOS	M2G9I08AIATT9F081AADT	TwinMOS	SS	TMD7608F8E50D	2.5	•	•	

(Continued on the next page)

DDR (400 MHz) Qualified Vendors List

						DIMM support			
Size	Vendor	Model	Brand	Side/s*	Component	CL	A	B	C
512 MB	TwinMOS	M2G9J16AJATT9F081AADT	TwinMOS	DS	TMD7608F8E50D	2.5	•		
256 MB	TwinMOS	M2G9I08A8ATT9F081AADT	TwinMOS	SS	TMD7608F8E50D	2.5	•	•	
512 MB	TwinMOS	M2G9J16A8ATT9F081AADT	TwinMOS	DS	TMD7608F8E50D	2.5	•	•	
256 MB	Transcend	TS32MLD64V4F3	SAMSUNG	SS	K4H560838F-TCCC	3	•	•	•
512 MB	Transcend	TS64MLD64V4F3	SAMSUNG	DS	K4H560838F-TCCC	3	•	•	
1024 MB	Transcend	TS128MLD64V4J	SAMSUNG	DS	K4H510838B-TCCC	3	•	•	
256 MB	Apacer	77.10636.33G	Infineon	SS	HYB25D256800CE-5C	3	•	•	•
512 MB	Apacer	77.10736.33G	Infineon	DS	HYB25D256800CE-5C	3	•	•	•
256 MB	Apacer	77.10639.60G	ProMOS	SS	V58C2256804SCT5B	2.5	•	•	•
512 MB	Apacer	77.10739.60G	ProMOS	DS	V58C2256804SCT5B	2.5	•	•	
256 MB	A DATA	MDOSS6F3G31Y0K1E0Z	SAMSUNG	SS	K4H560838E-TCCC	3	•	•	•
512 MB	A DATA	MDOSS6F3H41Y0N1E0Z	SAMSUNG	DS	K4H560838F-TCCC	3	•	•	•
256 MB	A DATA	MDOHY6F3G31Y0N1E0Z	Hynix	SS	HY5DU56822CT-D43	3	•	•	
512 MB	A DATA	MDOHY6F3H41Y0N1E0Z	Hynix	DS	HY5DU56822CT-D43	3	•	•	•
256 MB	A DATA	MDOAD5F3G31Y0D1E02	-	SS	ADD8608A8A-5B	2.5	•	•	•
512 MB	A DATA	MDOAD5F3H41Y0D1E02	-	DS	ADD8608A8A-5B	2.5	•	•	
256 MB	Winbond	W9425GCDB-5	Winbond	SS	W942508CH-5	3		•	•
512 MB	Winbond	W9451GCDB-5	Winbond	DS	W942508CH-5	-			
256 MB	PSC	AL5D8B53T-5B1K	PSC	SS	A2S56D30BTP	2.5	•	•	•
512 MB	PSC	AL6D8B53T-5B1K	PSC	DS	A2S56D30BTP	2.5	•	•	
256 MB	KINGMAX	MPXB62D-38KT3R	-	SS	KDL388P4LA-50	-	•	•	
512 MB	KINGMAX	MPXC22D-38KT3R	-	DS	KDL388P4LA-50	-	•	•	
256 MB	NANYA	NT256D64S88C0G-5T	-	SS	NT5DS32M8CT-5T	3	•	•	
512 MB	NANYA	NT512D64S8HC0G-5T	-	DS	NT5DS32M8CT-5T	3	•	•	•
256 MB	BRAIN POWER	B6U808-256M-SAM-400	SAMSUNG	SS	K4H560838D-TCC4	-	•	•	•
512 MB	BRAIN POWER	B6U808-512M-SAM-400	SAMSUNG	DS	K4H560838D-TCC4	-	•	•	
256 MB	CENTURY	DXV6S8SSCCE3K27E	SAMSUNG	SS	K4H560838E-TCCC	-	•	•	•
512 MB	CENTURY	DXV2S8SSCCE3K27E	SAMSUNG	DS	K4H560838E-TCCC	-	•	•	•
256 MB	CENTURY	DXV6S8EL5BM3T27C	-	SS	DD2508AMTA	-	•	•	•
512 MB	CENTURY	DXV2S8EL5BM3T27C	-	DS	DD2508AMTA	-	•	•	
256 MB	elixir	M2U25664DS88C3G-5T	-	SS	N2DS25680CT-5T	-	•	•	
512 MB	elixir	M2U51264DS8HC1G-5T	-	DS	N2DS25680CT-5T	-	•	•	
256 MB	Kreton	-	VT	SS	VT3225804T-5	-	•	•	•
512 MB	Kreton	-	VT	DS	VT3225804T-5	-	•	•	
256 MB	Veritech	VT400FMV/2561103	VT	SS	VT56DD32M8PC-5	3	•	•	•
512 MB	Veritech	VT400FMV/5121003	VT	DS	VT56DD32M8PC-5	3	•	•	
256 MB	Pmi	MD44256VIT3208GMHA01	MOSEL	SS	V58C2256804SAT5B	2.5	•	•	•
512 MB	Pmi	MD44512VIT3208GATA03	MOSEL	DS	V58C2256804SAT5B	2.5	•	•	
256 MB	ProMOS	V826632K24SCTG-D0	-	SS	V58C2256804SCT5B	2.5	•	•	•
512 MB	ProMOS	V826664K24SCTG-D0	-	DS	V58C2256804SCT5B	2.5	•	•	
256 MB	Deutron	AL5D8C53T-5B1T	PSC	SS	A2S56D30CTP	2.5		•	
512 MB	Deutron	AL6D8C53T-5B1T	PSC	DS	A2S56D30CTP	2.5	•	•	
256 MB	GEIL	GL5123200DC	-	SS	GL3LC32G88TG-35	-	•	•	
512 MB	GEIL	GL1GB3200DC	-	DS	GL3LC32G88TG-35	-	•	•	

(Continued on the next page)

DDR (400 MHz) Qualified Vendors List

						DIMM support			
Size	Vendor	Model	Brand	Side/s*	Component	CL	A	B	C
256 MB	GEIL	GLX2563200UP	–	SS	GL3LC32G88TG-5A	–	•	•	
256 MB	GEIL	GD3200-512DC	–	SS	WLCSP Package	–	•	•	
256 MB	crucial	BL3264Z402.8TG	Ballistix	SS	–	2	•		
512 MB	crucial	BL6464Z402.16TG	Ballistix	DS	–	2			
256 MB	Novax	96M425653CE-40TB6	CEON	SS	C2S56D30TP-5	2.5	•		
512 MB	Novax	96M451253CE-40TB6	CEON	DS	C2S56D30TP-5	2.5			
256 MB	Aeneon	AED560UD00-500C88X	Aeneon	SS	AED83T500	3	•		

Legend:

A - supports one module inserted into either slot, in a Single-channel memory configuration.

B - supports one pair of modules inserted into DIMM_A1/DIMM_A2 or DIMM_B1/DIMM_B2 as one pair of Dual-channel memory configuration.

C - support for four modules inserted into the blue and black slots as two pairs of Dual-channel memory configuration.

SS - Single-sided

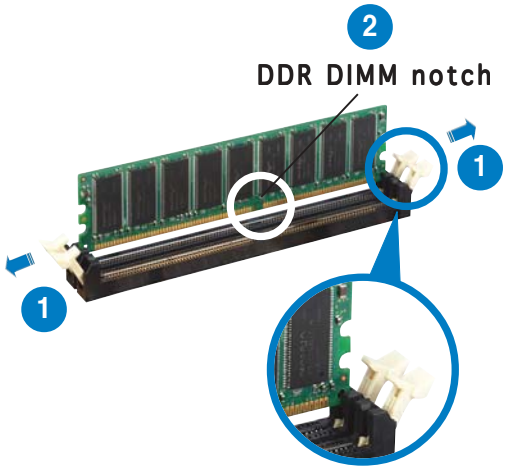
DS - Double-sided

Visit the ASUS website (www.asus.com) for the latest Qualified Vendors List.

2.4.3 Installing a DDR 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.

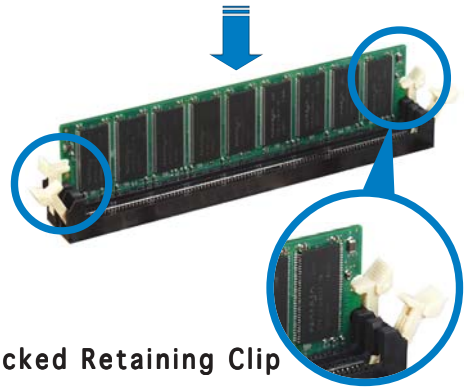
1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.



Unlocked retaining clip

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

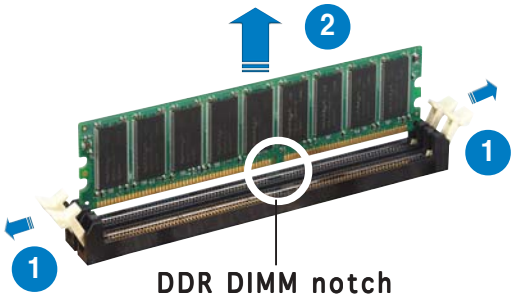
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.


Locked Retaining Clip

2.4.4 Removing a DDR DIMM

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 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

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 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	—	Re-direct to IRQ #9
3	11	Reserved
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT1)*
8	3	System CMOS/Real Time Clock
9	4	IRQ holder for PCI steering*
10	5	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/SATA Channel
15	10	Secondary IDE/SATA Channel

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

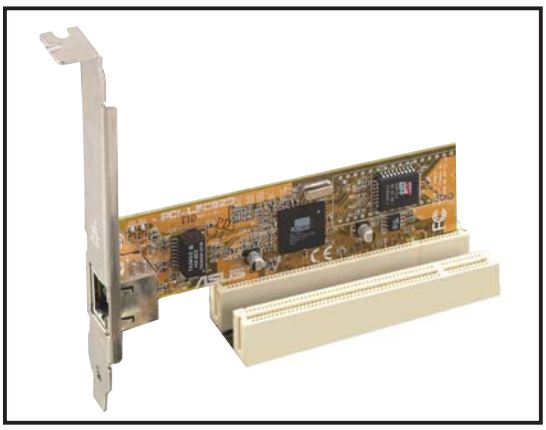
IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI slot 1	—	shared	shared	shared	shared	—	—	—
PCI slot 2	—	—	shared	shared	shared	shared	—	—
PCI slot 3	—	—	—	shared	shared	shared	shared	—
PCI E x1 slot 1	—	—	shared	—	—	—	—	—
PCI E x1 slot 2	shared	—	—	—	—	—	—	—
PCI E x1 slot 3	—	—	—	shared	—	—	—	—
PCI E x16 slot	shared	—	—	—	—	—	—	—
Onboard USB controller 1	—	—	—	—	—	—	—	shared
Onboard USB controller 2	—	—	—	shared	—	—	—	—
Onboard USB controller 3	—	—	shared	—	—	—	—	—
Onboard USB 2.0 controller	—	—	—	—	—	—	—	shared
Onboard LAN	—	—	—	—	—	shared	—	—
Onboard HD 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.

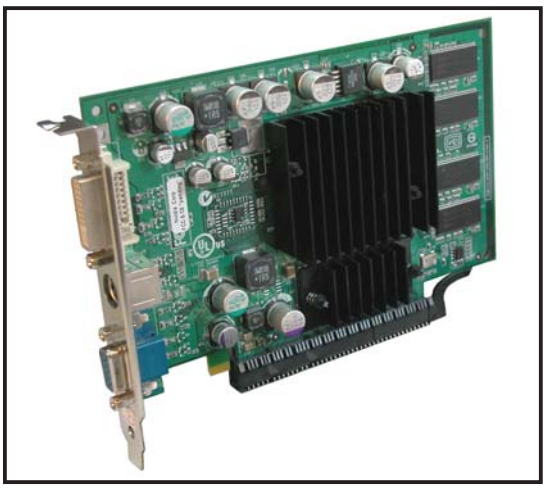
2.5.4 PCI slots

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



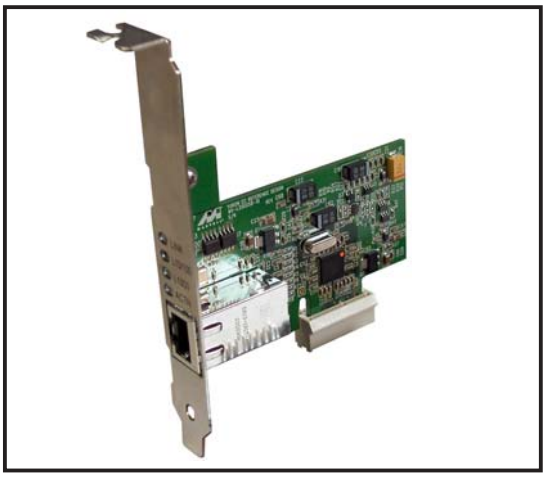
2.5.5 PCI Express x16 slot

This motherboard supports PCI Express x16 graphic cards that comply with the PCI Express specifications. The following figure shows a graphics card installed on the PCI Express x16 slot.



2.5.6 PCI Express x1 slot

This motherboard supports PCI Express x1 network cards, SCSI cards and other cards that comply with the PCI Express specifications. The following figure shows a network card installed on the PCI Express x1 slot.



2.6 Jumpers

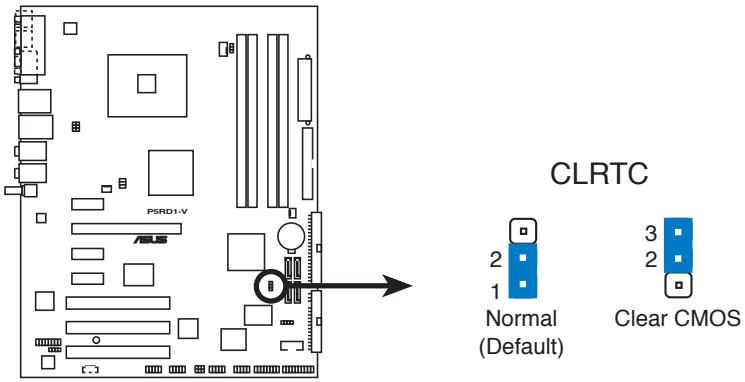
1. Clear RTC RAM (CLRTC)

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 onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

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

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



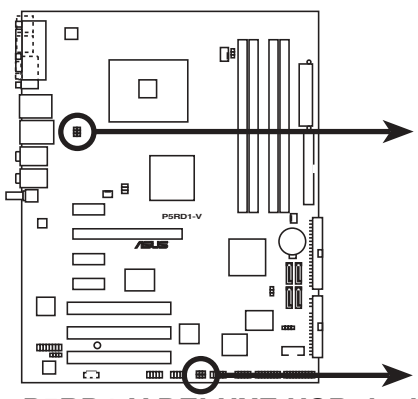
P5RD1-V DELUXE Clear RTC RAM

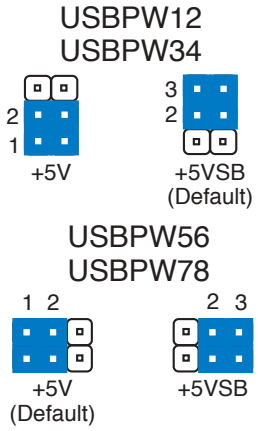
You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

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

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

The USBPWR12 and USBPWR34 jumpers are for the rear USB ports. The USBPWR56 and USBPWR78 jumper is for the internal USB connectors that you can connect to additional USB ports.



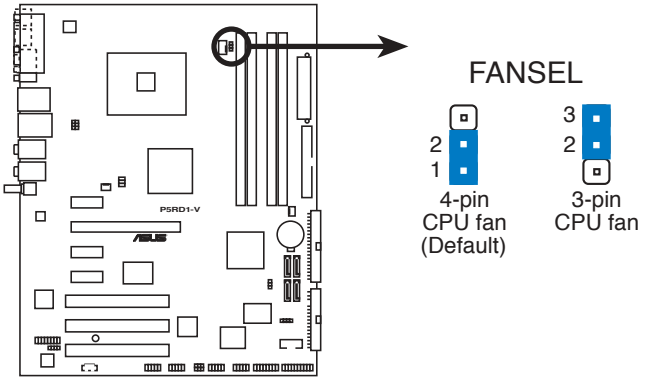


P5RD1-V DELUXE USB device wake-up

- 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.

3. CPU Fan type selector (3-pin FANSEL)

Set this jumper to 1-2 (Default) if you are using a 4-pin CPU fan. Set this jumper to 2-3 if you are using a 3-pin CPU fan.

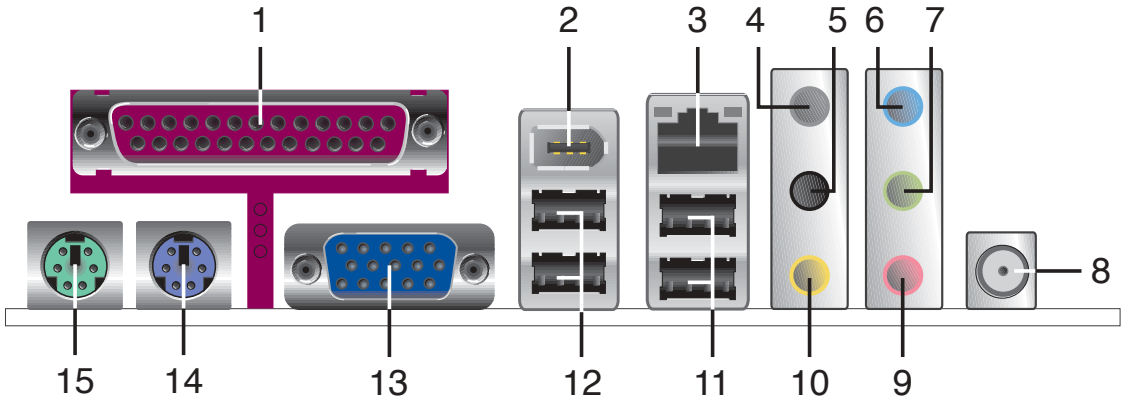


P5RD1-V DELUXE CPU Fan type setting

We recommend the use of a 4-pin CPU fan.

2.7 Connectors

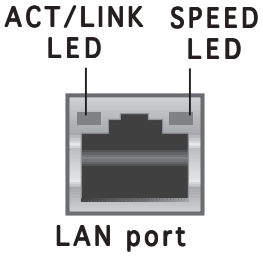
2.7.1 Rear panel connectors



1. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
2. **IEEE 1394a port.** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.
3. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

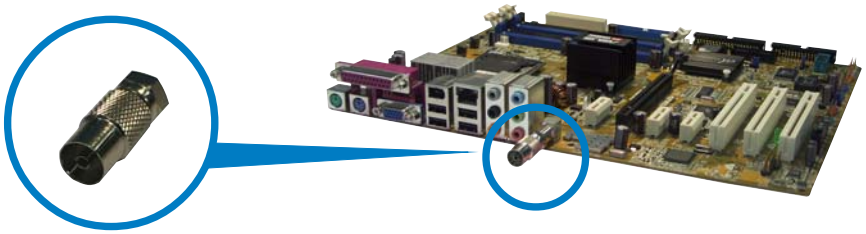
ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10Mbps connection
GREEN	Linked	ORANGE	100Mbps connection
BLINKING	Acting	GREEN	1Gbps connection



4. **Rear Speaker Out port (gray).** This port connects the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.
5. **Side Speaker Out port (black).** This port connects the side speakers in an 8-channel audio configuration.
6. **Line In port (light blue).** This port connects a tape, CD, DVD player, or other audio sources.
7. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.

8. **TV In port.** This port serves as a TV tuner that allows you to watch and record live TV on your desktop computer.

The onboard TV tuner complies with NTSC TV standard. If the TV system in your area is PAL or SECAM, make sure you attach the NTSC-to-PAL adaptor that comes with your motherboard package.



9. **Microphone port (pink).** This port connects a microphone.
10. **Center/Subwoofer port (yellow orange).** This port connects the center/subwoofer speakers.

Refer to the audio configuration table for the function of the audio ports in 2, 4, 6, or 8-channel configuration.

Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Gray	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Black	-	-	-	Side Speaker Out
Yellow Orange	-	-	Center/Subwoofer	Center/Subwoofer

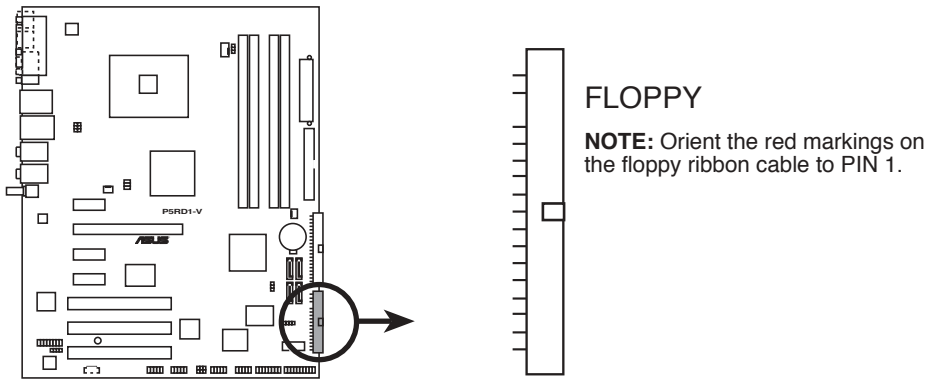
11. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
12. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
13. **Video Graphics Adapter (VGA) port.** This port is for a VGA monitor or other VGA-compatible devices.
14. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.
15. **PS/2 mouse port (green).** This port is for a PS/2 mouse.

2.7.2 Internal connectors

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

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

Pin 5 on the connector is removed to prevent incorrect cable connection when using an FDD cable with a covered Pin 5.

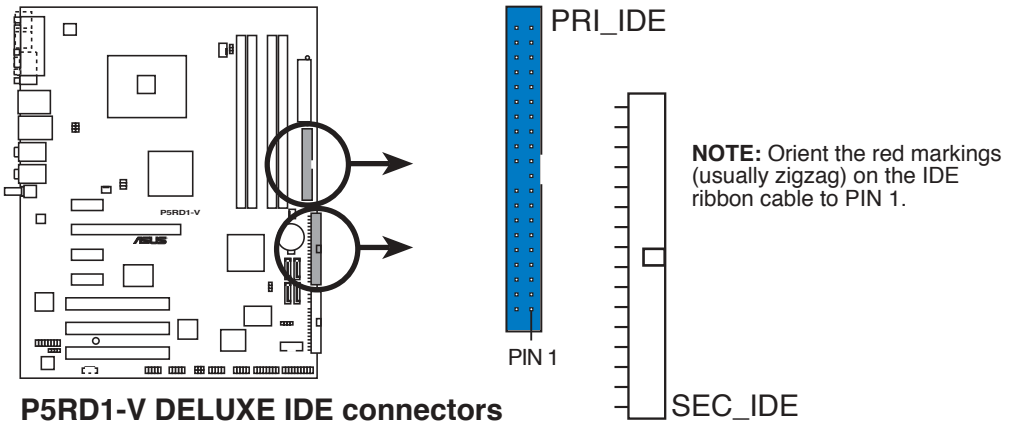


P5RD1-V DELUXE Floppy disk drive connector

2. IDE connectors (40-1 pin PRI_IDE, 40-1 pin SEC IDE)

This connector is for an Ultra DMA 133/100/66 signal cable. The Ultra DMA 133/100/66 signal cable has three connectors: a blue connector for the primary IDE connector on the motherboard, a black connector for an Ultra DMA 133/100/66 IDE slave device (optical drive/hard disk drive), and a gray connector for an Ultra DMA 133/100/66 IDE master device (hard disk drive). If you install two hard disk drives, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings.

- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices.



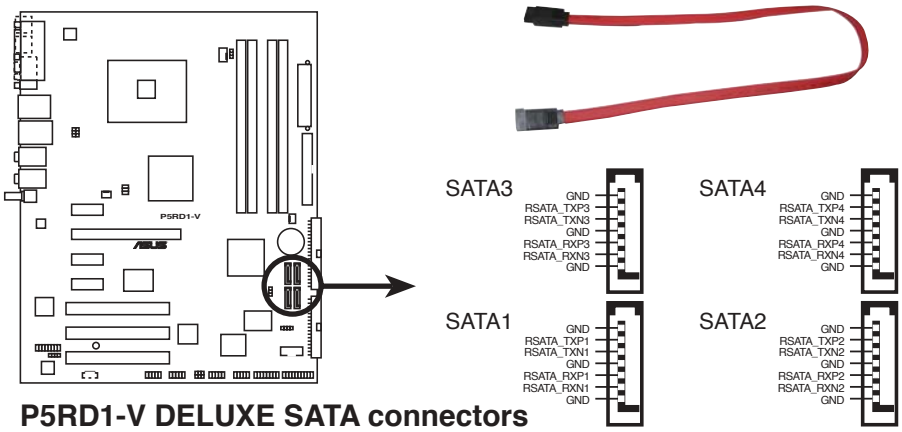
P5RD1-V DELUXE IDE connectors

3. Serial ATA connectors (7-pin SATA1 [black], SATA2 [black], SATA3 [black], SATA4 [black])

These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives.

If you installed Serial ATA hard disk drives, you can can create a RAID 0, RAID 1, RAID 0+1, and JBODconfiguration. Refer to Chapter 5 for information on creating a RAID configuration.

Enable the Serial ATA Controller item in the BIOS if you want to use the Serial ATA RAID feature. See the **SouthBridge Configuration** for details.



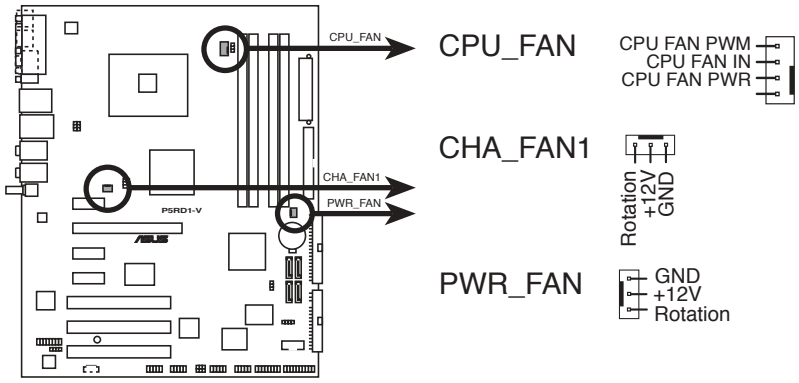
P5RD1-V DELUXE SATA connectors

- Due to chipset limitation, you cannot configure a RAID 0/JBOD set across more than two hard disk drives.
- Install the Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 or later when using Serial ATA.

4. CPU, Chassis, and Power fan connectors (4-pin CPU_FAN, 3-pin PWR_FAN, 3-pin CHA_FAN1)

The fan connectors support cooling fans of 350 mA ~ 2000 mA (24 W max.) or a total of 1 A ~ 3.48 A (41.76 W max.) at +12 V. 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.

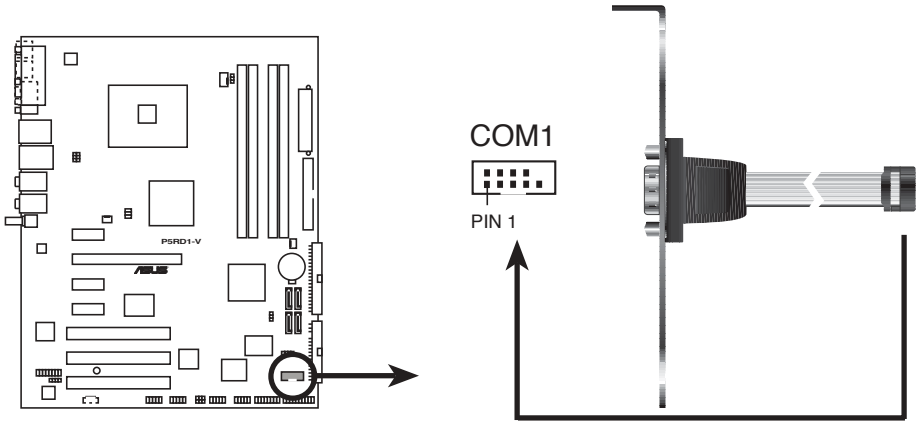
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.



P5RD1-V DELUXE Fan connectors

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

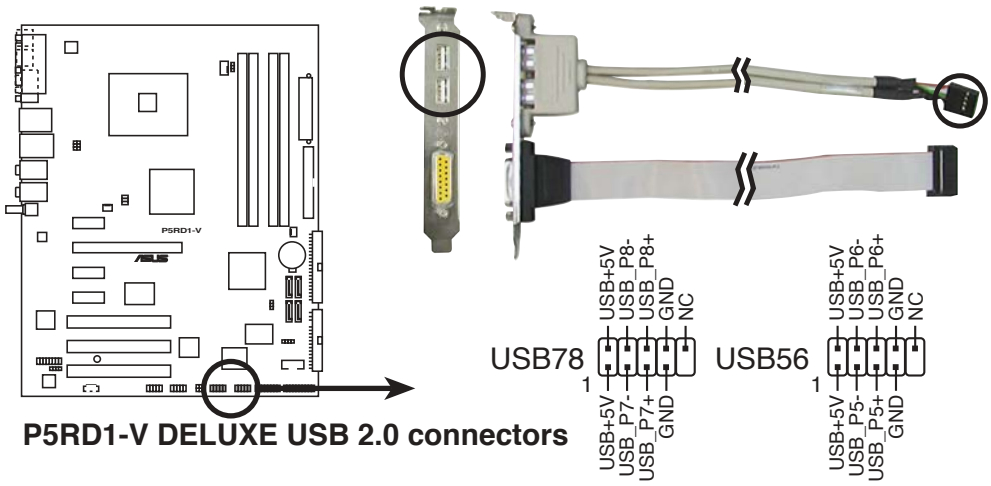
This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



P5RD1-V DELUXE Serial port connector

6. USB connectors (10-1 pin USB56, USB78)

These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



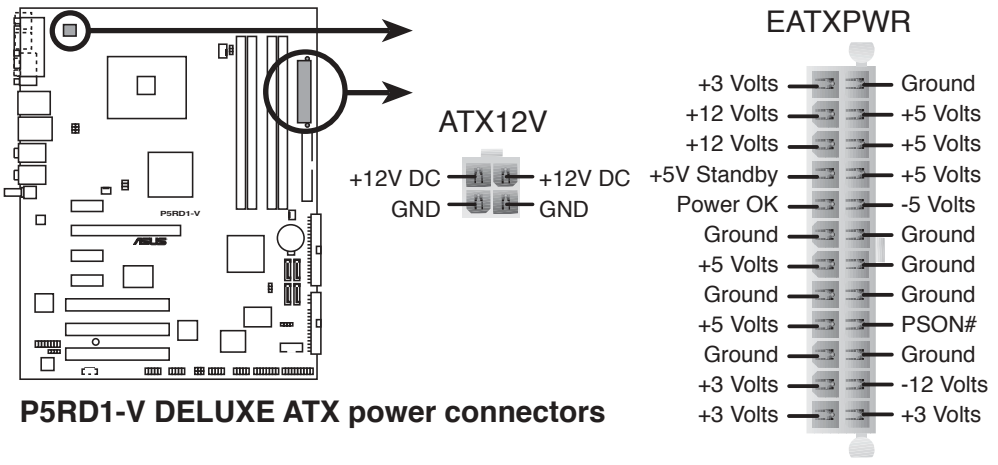
P5RD1-V DELUXE USB 2.0 connectors

Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!

7. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

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

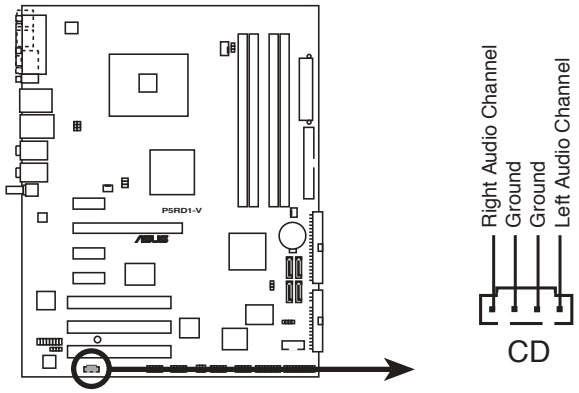
- Use of an ATX 12 V Specification 2.0-compliant power supply unit (PSU) that provides a minimum power of 350 W is recommended for a fully-configured system.
- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.
- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- You can use a 20-pin ATX power supply unit if you will only use the onboard VGA port.
- Use a 24-pin ATX power supply unit when installing an add-on PCI Express x16 graphics card.



P5RD1-V DELUXE ATX power connectors

8. Optical drive audio connector (4-pin CD)

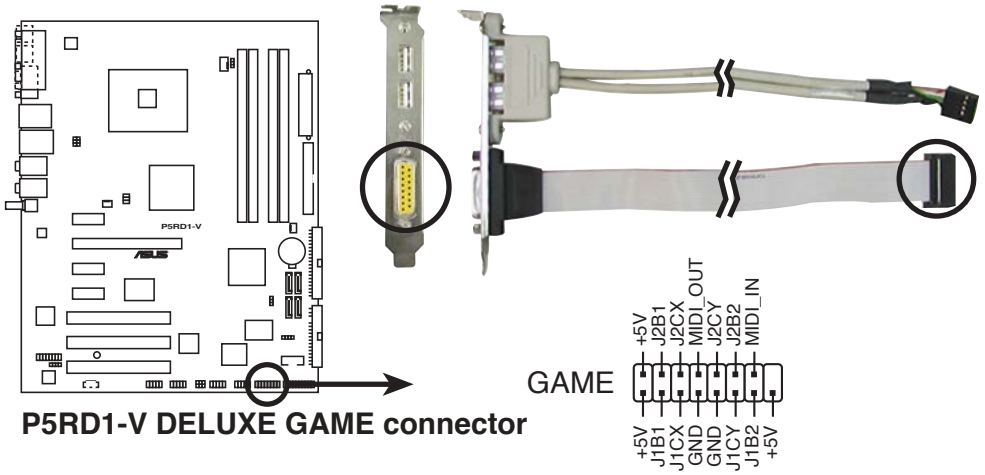
This connector is for the 4-pin audio cable that connects to the audio connector at the back of the optical drive.



P5RD1-V DELUXE CD audio connector

9. GAME/MIDI port connector (16-1 pin GAME)

This connector is for a GAME/MIDI port. Connect the USB/GAME module cable to this connector, then install the module to a slot opening at the back of the system chassis. The GAME/MIDI port connects a joystick or game pad for playing games, and MIDI devices for playing or editing audio files.



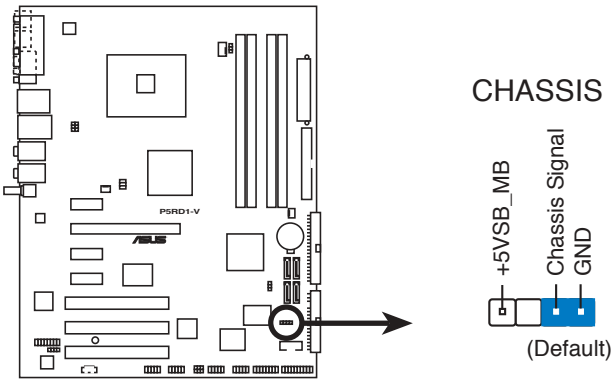
P5RD1-V DELUXE GAME connector

The GAME/MIDI module is purchased separately.

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

This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

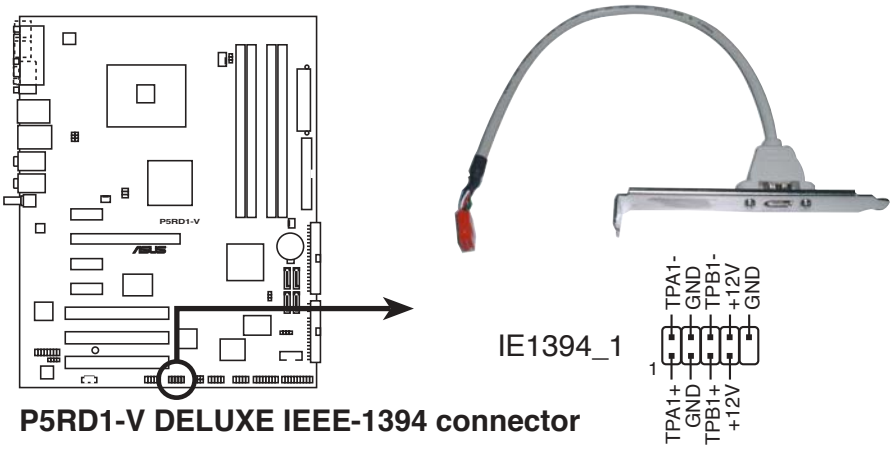
By default, the pins labeled “Chassis Signal” and “Ground” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.



P5RD1-V DELUXE Chassis intrusion connector

11. IEEE 1394a connector (10-1 pin IE1394_1)

This connector is for the IEEE 1394a module. Connect the the IEEE 1394a module cable to this connector, then install the module to a slot opening at the back of the system chassis.

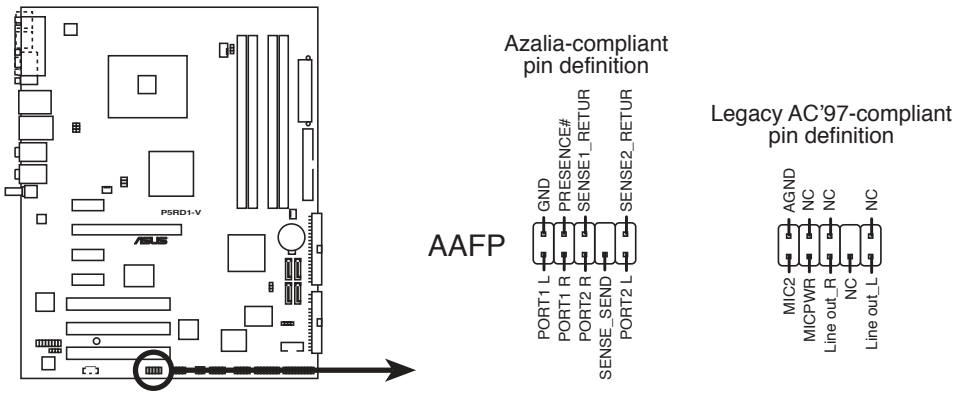


P5RD1-V DELUXE IEEE-1394 connector

Never connect a **USB cable** to the USB connectors. Doing so will damage the motherboard!

12. Front panel audio connector (10-1 pin AAFP)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC '97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.

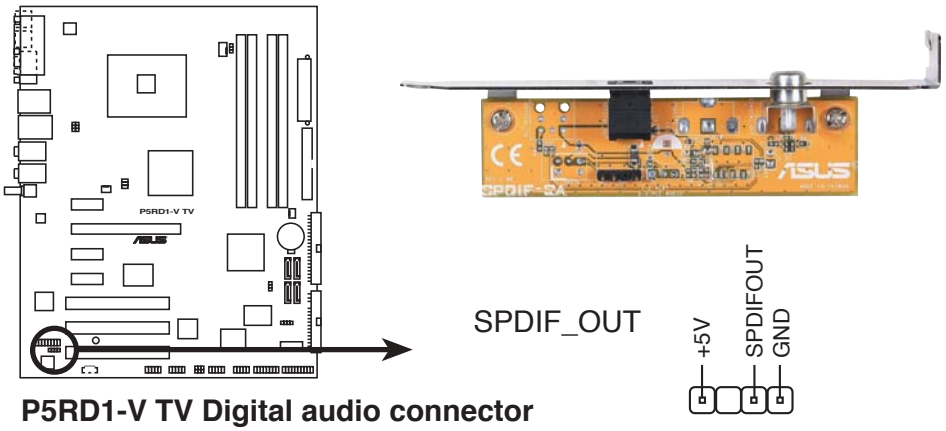


P5RD1-V DELUXE Analog front panel connector

- We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.
- By default, this connector is set to legacy Azalia only (high definition audio). If you want to enable support for legacy AC`97 audio, disable the **AC97 & Azalia LINK A** item in the Southbridge configuration section of the Advanced Menu. See page 4-28 for details.

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

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF module cable to this connector, then install the module to a slot opening at the back of the system chassis.

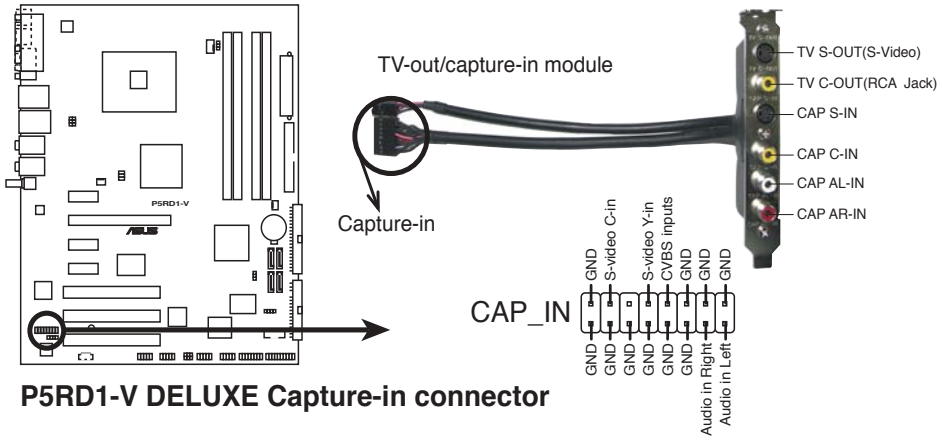


P5RD1-V TV Digital audio connector

The S/PDIF module is purchased separately.

14. TV capture in connector (16-1 pin CAP_IN)

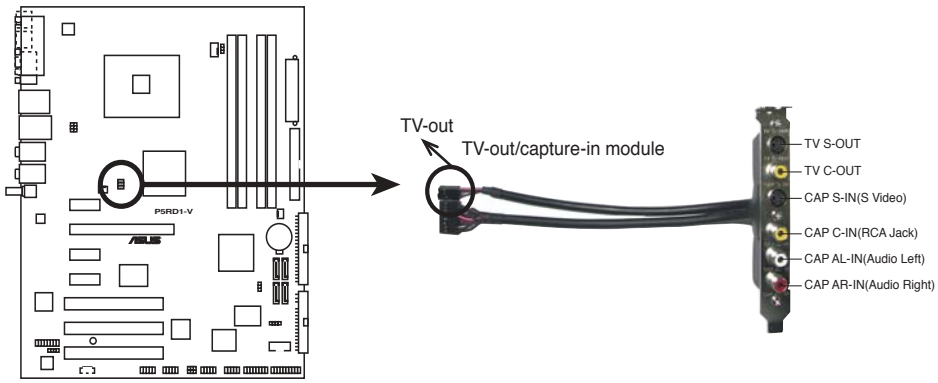
This connector is for a video capture cable module that allows you to capture and save video files into your computer.



P5RD1-V DELUXE Capture-in connector

15. TV out connector (6-1 pin TV_OUT)

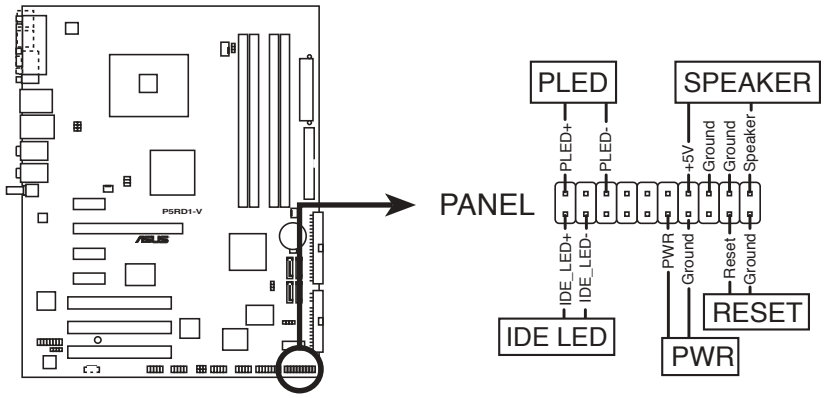
This connector is for a TV out cable module that allows your television screen to be used as a monitor for your desktop computer.



P5RD1-V DELUXE TV-out connector

16. System panel connector (20-pin PANEL)

This connector supports several chassis-mounted functions.



P5RD1-V DELUXE System panel connector

The sytem panel connector is color-coded for easy connection. Refer to the connector description below for details.

- **System power LED (Green 3-pin PLED)**
  This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.
- **Hard disk drive activity (Red 2-pin IDE LED)**
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.
- **System warning speaker (Orange 4-pin SPEAKER)**
  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.
- **Power/Soft-off button (Yellow 2-pin PWR)**
  This connector is for the system power button. Pressing the power button turns the system ON or puts the system in SLEEP or SOFT-OFF mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.
- **Reset button (Blue 2-pin RESET)**
  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

This chapter describes the power up sequence, the vocal POST messages, and ways of shutting down the system.

3 Powering up

Chapter summary

3

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 (starting with the last device on the chain)
   c. System power
6. After applying power, the system power LED on the system front panel case lights up. For systems withATX power supplies, the system LED lights up when you press the ATX power button. 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 self tests or POST. 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.

AMI BIOS beep codes

Beep Description	Error
One beep	Keyboard controller error Refresh Time error No master drive detected
Two continuous beeps followed by two short beeps	Floppy controller failure
Two continuous beeps followed by four short beeps	Hardware component failure

7. At power on, hold down the <Delete> key to enter the BIOS Setup. Follow the instructions in Chapter 4.

3.2 Powering off the computer

3.2.1 Using the OS shut down function

If you are using Windows® 2000:

1. Click the **Start** button then click **Shut Down...**
2. Make sure that the **Shut Down** option button is selected, then click the **OK** button to shut down the computer.
3. The power supply should turn off after Windows® shuts down.

If you are using Windows® XP:

1. Click the **Start** button then select **Turn Off Computer.**
2. Click the **Turn Off** button to shut down the computer.
3. The power supply should turn off after Windows® shuts down.

3.2.2 Using the dual function power switch

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

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

4 BIOS setup

Chapter summary

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

Refer to the corresponding sections for details on these utilities.

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 AFUDOS utilities.

4.1.1 Creating a bootable floppy disk

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

   DOS environment

   a. Insert a 1.44MB floppy disk into the drive.

   b. At the DOS prompt, type `format A:/S` then press <Enter>.

   Windows® XP environment

   a. Insert a 1.44 MB floppy disk to the floppy disk drive.

   b. Click **Start** from the Windows® desktop, 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**.

   Windows® 2000 environment

   To create a set of boot disks for Windows® 2000:

   a. Insert a formatted, high density 1.44 MB floppy disk into the drive.

   b. Insert the Windows® 2000 CD to the optical drive.

   c. Click **Start**, then select **Run**.

d. From the Open field, type

D:\bootdisk\makeboot a:

assuming that D: is your optical drive.

e. Press <Enter>, then follow screen instructions to continue.

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

4.1.2 AFUDOS utility

The AFUDOS utility allows you to update the BIOS file in DOS environment using a bootable floppy disk with the updated BIOS file. This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.

Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:

- Make sure that the floppy disk is not write-protected and has at least 600 KB free space to save the file.
- The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be exactly the same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.
2. Boot the system in DOS mode, then at the prompt type:

   afudos /o[filename]

   where the [filename] is any user-assigned filename not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name.

3. Press <Enter>. The utility copies the current BIOS file to the floppy disk.

```
A:\>afudos /oOLDBIOS1.ROM
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
   Reading flash ..... done
A:\>
```

The utility returns to the DOS prompt after copying the current BIOS file.

Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

1. Visit the ASUS website (www.asus.com) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.

Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.
3. Boot the system in DOS mode, then at the prompt type:

afudos /i[filename]

where [filename] is the latest or the original BIOS file on the bootable floppy disk.

```
A:\>afudos /iP5RD1VD.ROM
```

4. The utility verifies the file and starts updating the BIOS.

```
A:\>afudos /iP5RD1VD.ROM
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2003 American Megatrends, Inc. All rights reserved.

   WARNING!! Do not turn off power during flash BIOS
   Reading file ..... done
   Reading flash .... done

   Advance Check........
   Erasing flash .... done
   Writing flash .... 0x0008CC00 (9%)
```

Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

5. The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive.

```
A:\>afudos /iP5RD1VD.ROM
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2003 American Megatrends, Inc. All rights reserved.

   WARNING!! Do not turn off power during flash BIOS
   Reading file ..... done
   Reading flash .... done
   Search bootblock version
   Advance Check.........
   Erasing flash ..... done
   Writing flash ..... done
   Verifying flash ... done

   Please restart your computer

A:\>
```

4.1.3 ASUS EZ Flash utility

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

To update the BIOS using EZ Flash:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard and rename the same to **P5RD1VD.ROM**.
2. Save the BIOS file to a floppy disk, then restart the system.
3. Press <Alt> + <F2> during POST to display the following.

```
EZFlash starting BIOS update
Checking for floppy...
```

4. Insert the floppy disk that contains the BIOS file to the floppy disk drive. When the correct BIOS file is found, EZ Flash performs the BIOS update process and automatically reboots the system when done.

```
EZFlash starting BIOS update
Checking for floppy...
Floppy found!
Reading file "P5RD1VD.ROM". Completed.
Start erasing.......|
Start programming...|
Flashed successfully. Rebooting.
```

- Do not shut down or reset the system while updating the BIOS to prevent system boot failure!
- A "Floppy not found!" error message appears if there is no floppy disk in the drive. A "P5RD1VD.ROM not found!" error message appears if the correct BIOS file is not found in the floppy disk. Make sure that you rename the BIOS file to P5RD1VD.ROM.

4.1.4 ASUS CrashFree BIOS 2 utility

The ASUS CrashFree BIOS 2 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using the motherboard support CD or the floppy disk that contains the updated BIOS file.

- Prepare the motherboard support CD or the floppy disk containing the updated motherboard BIOS before using this utility.
- Make sure that you rename the original or updated BIOS file in the floppy disk to **P5RD1VD.ROM**.

Recovering the BIOS from a floppy disk

To recover the BIOS from a floppy disk:

1. Turn on the system.
2. Insert the floppy disk with the original or updated BIOS file to the floppy disk drive.
3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

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

When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "P5RD1VD.ROM". Completed.
Start flashing...
```

DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4. Restart the system after the utility completes the updating process.

Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1. Remove any floppy disk from the floppy disk drive, then turn on the system.
2. Insert the support CD to the optical drive.
3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

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

When no floppy disk is found, the utility automatically checks the optical drive for the original or updated BIOS file. The utility then updates the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found!
Reading file "P5RD1VD.ROM". Completed.
Start flashing...
```

DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4. Restart the system after the utility completes the updating process.

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.

4.1.5 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- Save the current BIOS file
- Download the latest BIOS file from the Internet
- Update the BIOS from an updated BIOS file
- Update the BIOS directly from the Internet, and
- View the BIOS version information.

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).

Installing ASUS Update

To install ASUS Update:

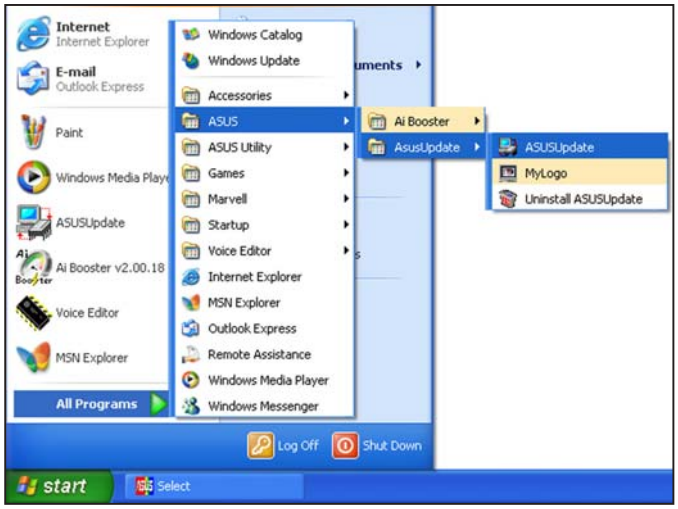
1. Place the support CD in the optical drive. The **Drivers** menu appears.
2. Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**. See page 5-3 for the **Utilities** screen menu.
3. The ASUS Update utility is copied to your system.

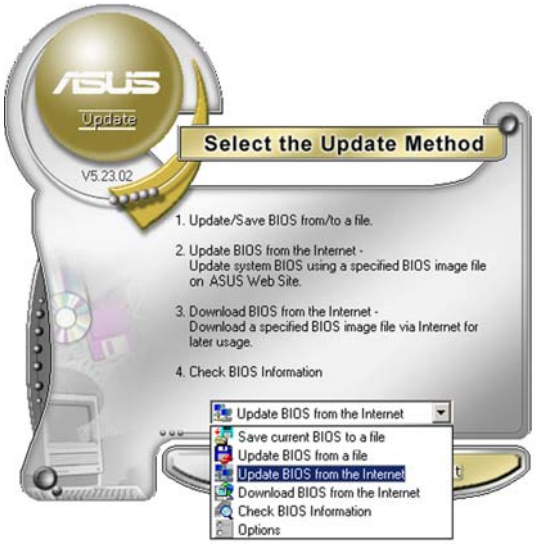
Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the ASUS Update utility from the Windows® desktop by clicking **Start** > **Programs** > **ASUS** > **ASUSUpdate** > **ASUSUpdate**. The ASUS Update main window appears.

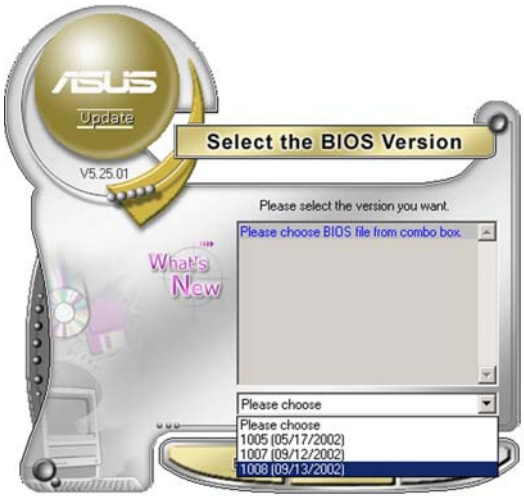




2. Select **Update BIOS from the Internet** option from the drop-down menu, then click **Next**.

3. Select the ASUS FTP site nearest you to avoid network traffic, or click **Auto Select**. Click **Next**.

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

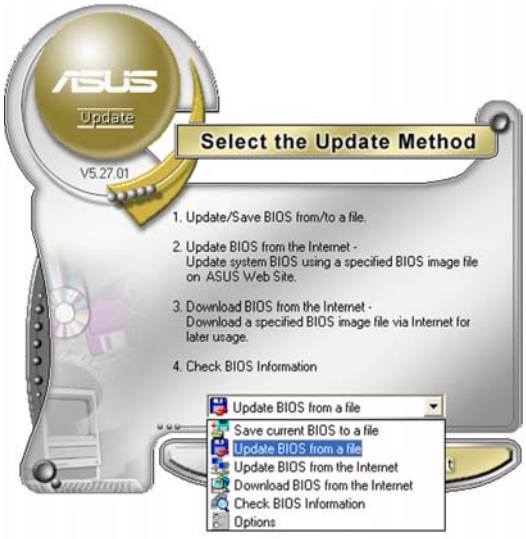


The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.

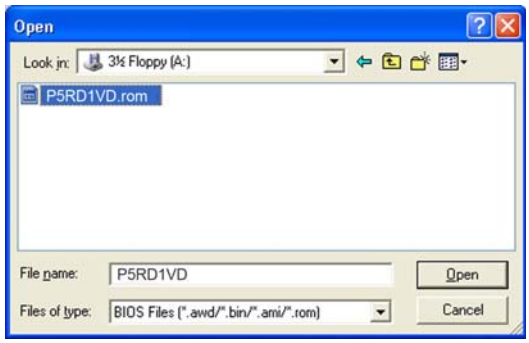
Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

1. Launch the ASUS Update utility from the Windows® desktop by clicking **Start** > **Programs** > **ASUS** > **ASUSUpdate** > **ASUSUpdate**. The ASUS Update main window appears.
2. Select **Update BIOS from a file** option from the drop-down menu, then click **Next**.



3. Locate the BIOS file from the **Open** window, then click **Save**.
4. Follow the screen instructions to complete the update process.



4.2 BIOS setup program

This motherboard supports a programmable firmware 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 can change the configuration of your computer in the future. For example, you can 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.

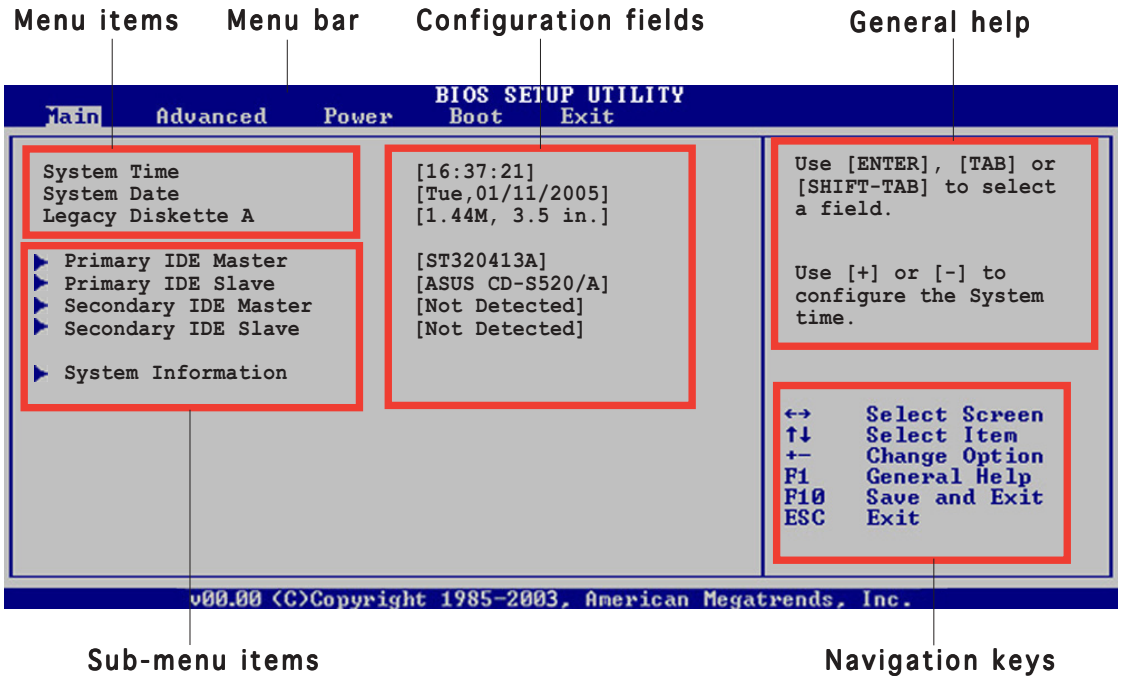
The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

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. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Default Settings** item under the Exit Menu. See section "4.7 Exit Menu."
- The BIOS setup screens shown in this section 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 file for this motherboard.

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.

4.2.3 Navigation keys

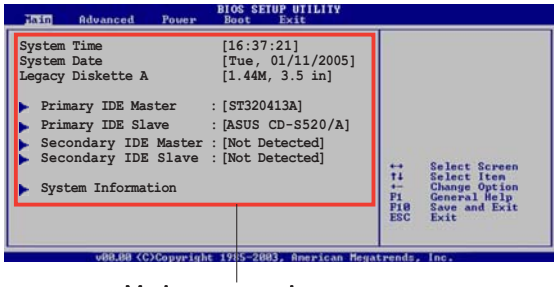
At the bottom right corner of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.

Some of the navigation keys differ from one screen to another.

4.2.4 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (Advanced, Power, Boot, and Exit) on the menu bar have their respective menu items.



Main menu items

4.2.5 Sub-menu items

A solid triangle before each item on any menu screen means that the item has a sub-menu. To display the sub-menu, select the item and press <Enter>.

4.2.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

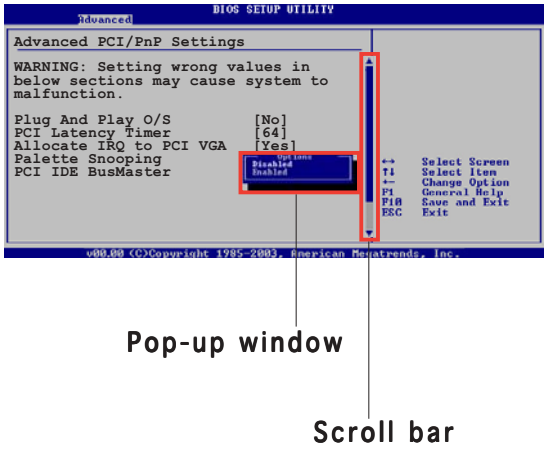
A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to "4.2.7 Pop-up window."

4.2.7 Pop-up window

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

4.2.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.



Pop-up window

Scroll bar

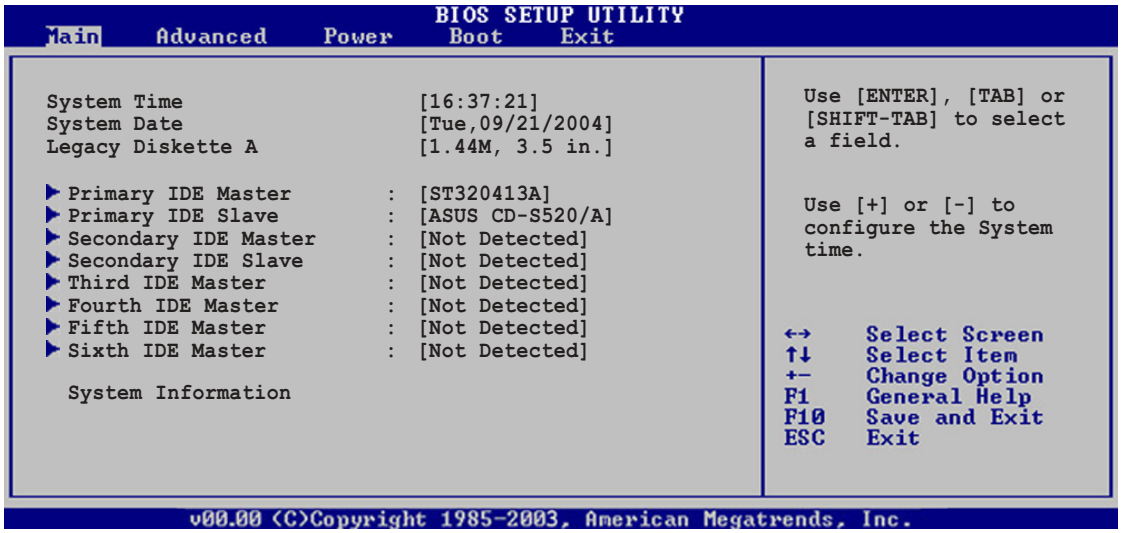
4.2.9 General help

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



The **Third IDE Master, Fourth IDE Master, Fifth IDE Master, and Sixth IDE Master** items appear only if the **Onboard SATA Boot ROM** is set to [Disabled]. See page 4-28 for details.

4.3.1 System Time [xx:xx:xx]

Allows you to set the system time.

4.3.2 System Date [Day xx/xx/xxxx]

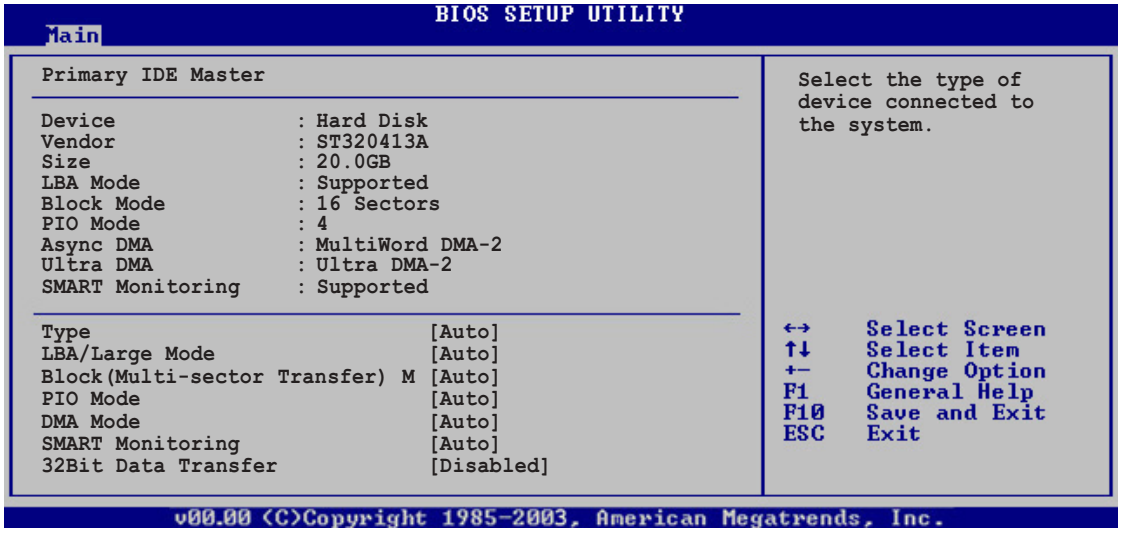
Allows you to set the system date.

4.3.3 Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

4.3.4 Primary, Secondary, Third, Fourth, Fifth, and Sixth IDE Master/Slave

While entering Setup, the BIOS automatically detects the presence of IDE devices. There is a separate sub-menu for each IDE device. Select a device item then press <Enter> to display the IDE device information.



The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive.
Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time.
Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

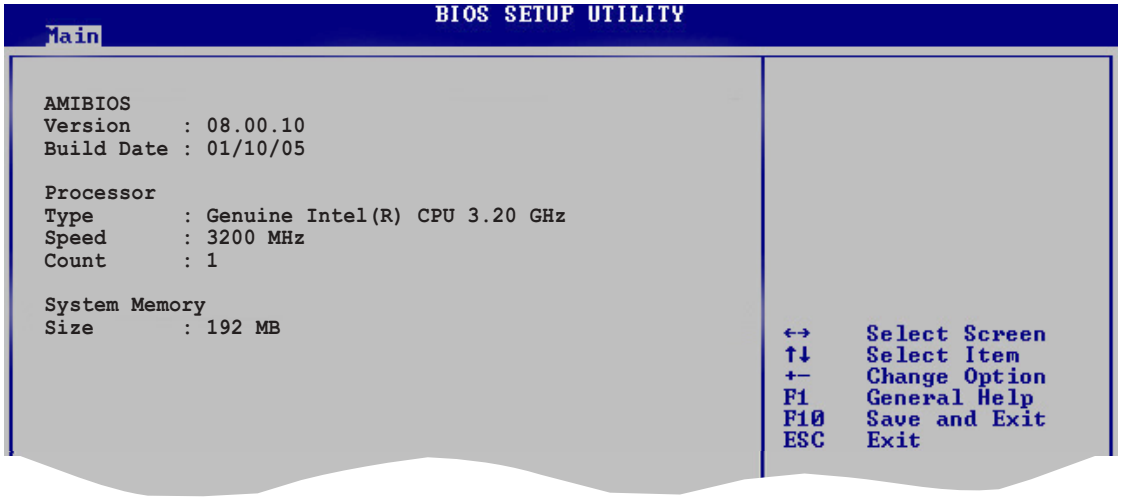
Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

4.3.5 System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.



AMI BIOS

Displays the auto-detected BIOS information.

Processor

Displays the auto-detected CPU specification.

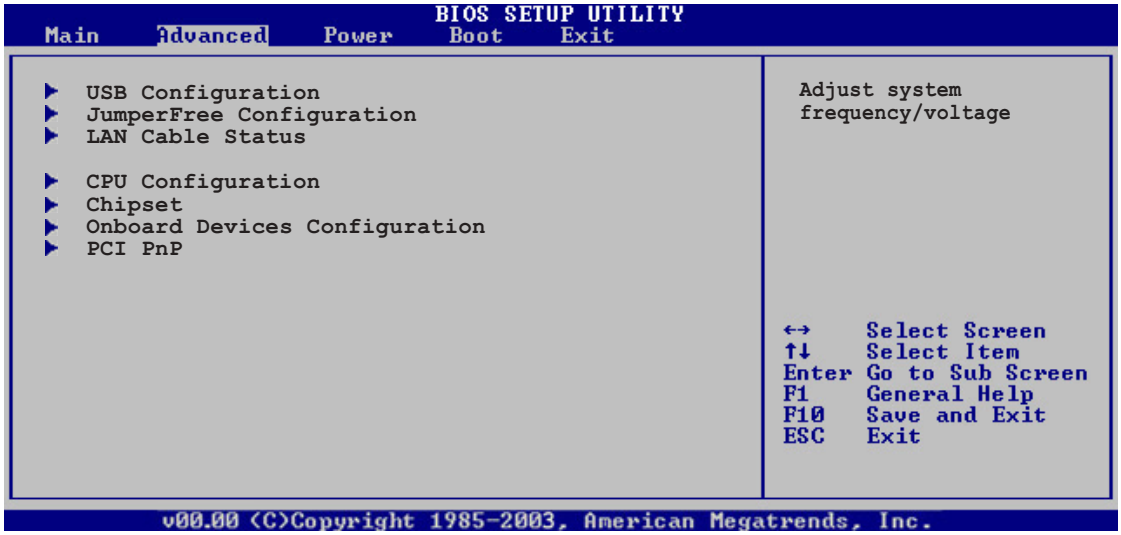
System Memory

Displays the auto-detected system memory.

4.4 Advanced menu

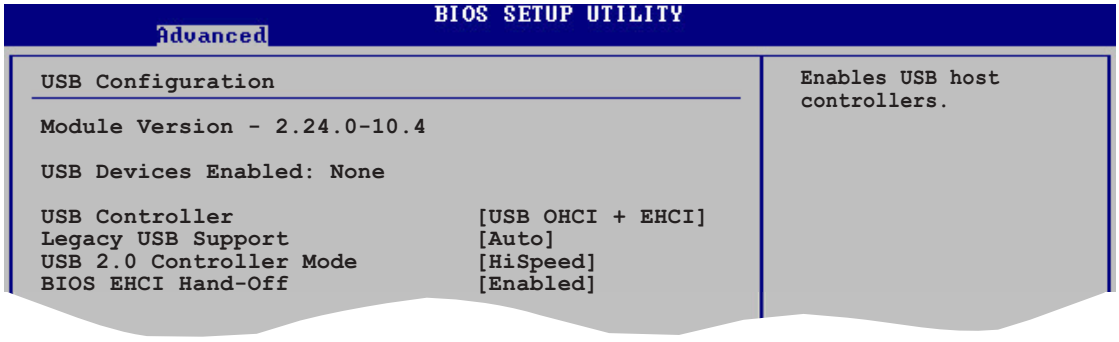
The Advanced menu items allow you to change the settings for the CPU and other system devices.

Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.



4.4.1 USB Configuration

The items in this menu allow you to change the USB-related features. Select an item then press <Enter> to display the configuration options.



The **Module Version** and **USB Devices Enabled** items show the auto-detected values. If no USB device is detected, the item shows **None**.

USB Controller [USB OHCI + EHCI]

Allows you to disable or select the USB controller.
Configuration options: [Disabled] [USB OHCI] [USB OHCI + EHCI]

Legacy USB Support [Auto]

Allows you to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto]

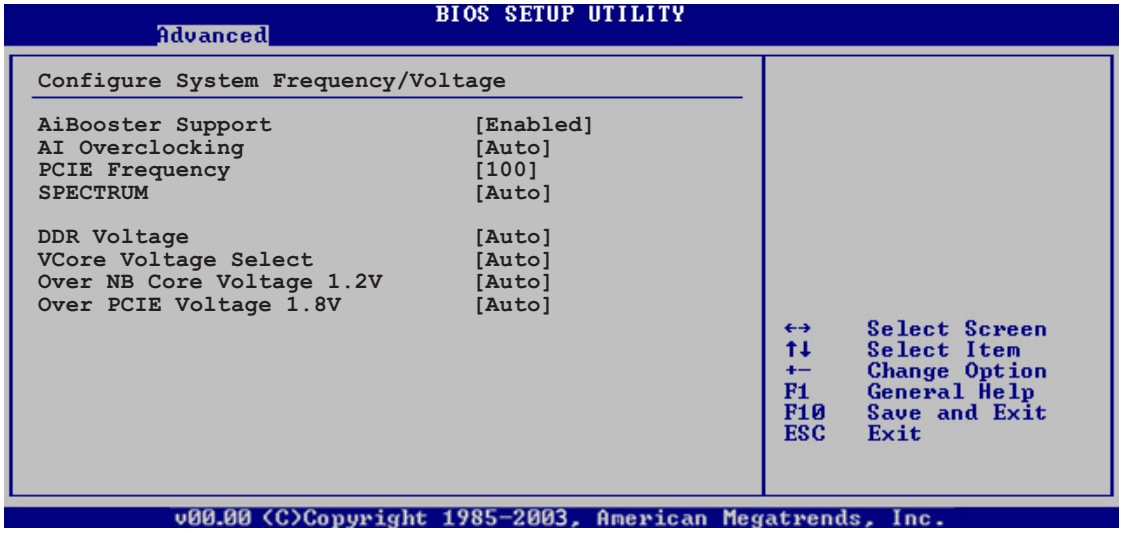
USB 2.0 Controller Mode [HiSpeed]

Allows you to set the USB 2.0 controller mode to HiSpeed (480 Mbps) or FullSpeed (12 Mbps). Configuration options: [FullSpeed] [HiSpeed]

BIOS EHCI Hand-Off [Enabled]

Allows you to enable or disable this workaround for operating systems without EHCI hand-off support. Configuration options: [Disabled] [Enabled]

4.4.2 JumperFree Configuration



AiBooster Support [Enabled]

Allows you to enable or disable support for Ai Booster.
Configuration options: [Disabled] [Enabled]

AI Overclocking [Auto]

Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking configuration options:

Manual	Allows you to individually set overclocking parameters.
Auto	Loads the optimal settings for the system.
Standard	Loads the standard settings for the system.
Overclock Profle	Loads overclocking profiles with optimal parameters for stability when overclocking.
AI N.O.S.	The ASUS AI Non-delay Overclocking System feature intelligently determines the system load and automatically boost the performance for the most demanding tasks.

The following items appear only when you set the **AI Overclocking** item to [Manual].

CPU Frequency [XXX]
Displays the frequency sent by the clock generator to the system bus and PCI bus. The value of this item is auto-detected by the BIOS. Use the **<+>** and **<->** keys to adjust the CPU frequency. You can also type the desired CPU frequency using the numberic keypad. The values range from 100 to 400. Refer to the table below for the correct Front Side Bus and CPU External Frequency settings.

FSB/CPU External Frequency Synchronization

Front Side Bus	CPU External Frequency
FSB 800	200 MHz
FSB 533	133 MHz

Memory Clock Mode [Auto]
Allows you to synchronize the PCI frequency with the PCI Express or CPU frequency. Configuration options: [Auto] [Sync to CPU] [Async Manual Mode]

Memory Frequency [xxx]
Allows you to set the memory frequency. This item appears only when the **Memory Clock Mode** item is set to [Async Manual Mode]. The value of this item is auto-detected by the BIOS. Use the **<+>** and **<->** keys to adjust the memory frequency. You can also type the desired CPU frequency using the numberic keypad. The values range from 100 to 300.

The following item appears only when the **AI Overclocking** item is set to [Overclock Profile].

Overclock Options [Overclock 5%]
Allows you to overclock the CPU speed through the available preset values. Configuration options:

[Overclock 5%]	[FSB 900]
[Overclock 10%]	[FSB 950]
[Overclock 15%]	[FSB 1000]
[Overclock 20%]	[FSB 1066]
[Overclock 30%]	

The following item appears when the **AI Overclocking** item is set to [AI N.O.S].

N.O.S Mode [Auto]
Sets the Non-Delay Overclocking System mode. Select either of the following configuration options:

Auto - loads the optimum sensitivity and overclocking percentage setting.

Standard - activates overclocking on a threshold between light and heavy CPU loading.

Sensitive - activates overclocking on a light CPU loading.

Heavy Load - activates overclocking on a heavy CPU loading.

The following item appeasr only when the **NOS Mode** item is set to [Standard], [Sensitive], or [Heavy].

Turbo N.O.S [Overclock 3%]
Allows you to disable or set the overclock percentage for the selected NOS Mode. Configuration options: [Overclock 3%] [Overclock 5%] [Overclock 7%] [Overclock 10%] [Overclock 15%] [Overclock 20%]

PCIE Frequency [100]

Allows you to set the PCI Express frequency. Key in your desired frequency using the numeric keypad.

SPECTRUM [Auto]

Allows you to disable or automatically set the clock generator spread spectrum. Configuration options: [Disabled] [Enabled] [Auto]

DDR Voltage [Auto]

Sets the operating DDR voltage.
Configuration options: [Auto] [2.50 V] [2.60 V] [2.70 V] [2.80 V]

VCore Voltage Select [Auto]

Sets the operating Vcore voltage. Configuration options: [Auto] [1.7000V] [1.675V] [1.6750V] [1.6500V] [1.6375V] [1.6250V] [1.6125V] [1.600V] [1.5875V] [1.5750V] [1.5625V] [1.5500V] [1.5375V] [1.5250V] [1.5125V] [1.5000V] [1.4875V] [1.4750V] [1.4625V] [1.4500V] [1.4375V] [1.4250V] [1.4125V] [1.4000V] [1.3875V] [1.3750V] [1.3625V] [1.3500V] [1.3375V] [1.3250V] [1.3125V] [1.3000V] [1.3875V] [1.3750V] [1.3625V] [1.3500V] [1.3375V] [1.3250V] [1.3125V] [1.3000V] [1.2875V] [1.2750V] [1.2625V] [1.2500V] [1.2375V] [1.2250V] [1.2125V] [1.2000V] [1.1875V] [1.1750V] [1.1625V] [1.1500V] [1.1375V] [1.1250V] [1.1125V] [1.1000V]

Over NB Core Voltage 1.2V [Auto]

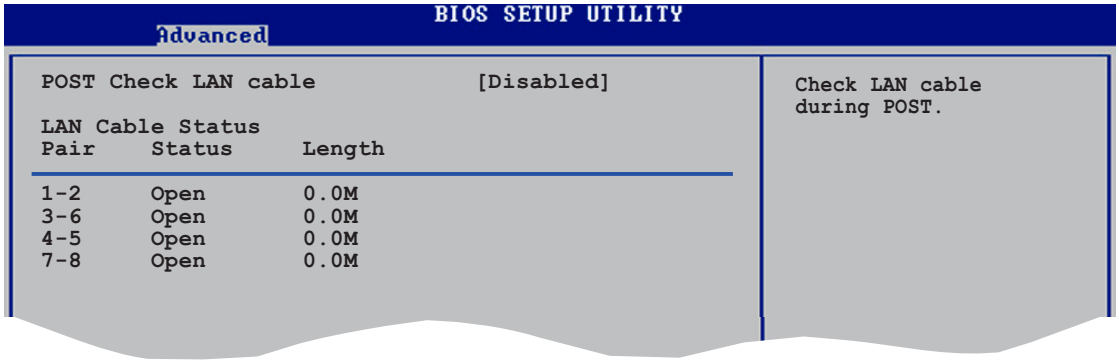
Allows you enable or disable the feature to increase the Northbridge core voltage by 0.1 V. Configuration options: [Auto] [Disabled] [Enabled]

Over PCIE Voltage 1.8V [Auto]

Allows you to enable or disable the feature to increase the PCI Express core voltage by 0.1 V. Configuration options: [Auto] [Disabled] [Enabled]

4.4.3 LAN Cable Status

The items in this menu display the status of the Local Area Network (LAN) cable.



POST Check LAN cable [Disabled]

Enables or disables checking of the LAN cable during POST. Configuration options: [Disabled] [Enabled]

4.4.4 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

Ratio CMOS Setting [19]

Sets the ratio between the CPU Core Clock and the Front Side Bus frequency. The default value of this item is auto-detected by BIOS. Use the <+> or <-> keys to adjust the values.

You can only adjust the **Ratio CMOS** setting if you installed an unlocked CPU. Refer to the CPU documentation for details.

HyperThreading Function [Enabled]

Allows you to enable or disable the processor Hyper-Threading Technology. Configuration options: [Disabled] [Enabled]

CPU Lock Free [Auto]

Allows you to adjust the CPU multiplier to 14x. Setting this item to [Auto] allows the motherboard to automatically reduce the CPU multiplier value for more flexibility when increasing the external FSB. This item appears only when you install a processor that supports the Lock Free feature. Configuration options: [Auto] [Disabled] [Enabled]

Microcode Updation [Enabled]

Enables or disables microcode updation.
Configuration options: [Disabled] [Enabled]

Max CPUID Value Limit [Disabled]

Enable this item to boot legacy operating systems that cannot support CPUs with extended CPUID functions. Configuration options: [Disabled] [Enabled]

Enhanced C1 Control [Auto]

When set to [Auto], the BIOS will automatically check the CPU's capability to enable the C1E support. In C1E mode, the CPU power consumption is lower when idle. Configuration options: [Auto] [Disabled]

CPU Internal Thermal Control [Auto]

Disables or sets the CPU internal thermal control.
Configuration options: [Auto] [Disabled]

The following item appears only when you installed an Intel® Pentium® 4 CPU that supports the Enhanced Intel SpeedStep® Technology (EIST).

Intel(R) SpeedStep Technology [Automatic]

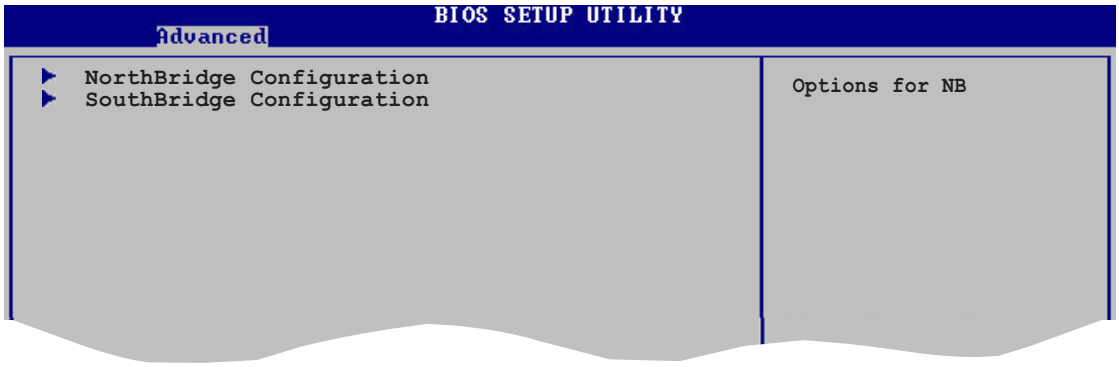
Allows you to use the Enhanced Intel SpeedStep® Technology. When set to [Automatic], you can adjust the system power settings in the operating system to use the EIST feature.

Set this item to [Maximum] or [Disabled] if you do not want to use the EIST. The CPU constantly operates at a lower internal frequency when you set this item to [Minimum]. Configuration options: [Maximum] [Minimum] [Automatic] [Disabled]

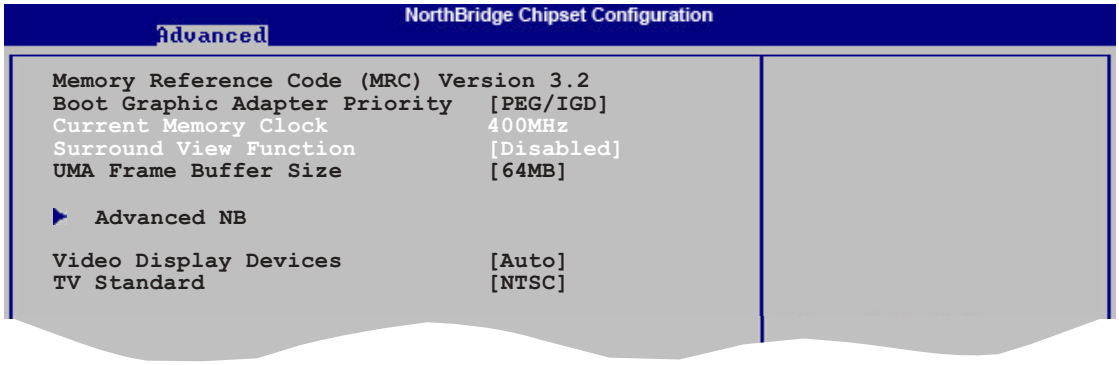
- Refer to the Appendix for details on how to use the EIST feature.
- The motherboard comes with a BIOS file that supports EIST.

4.4.5 Chipset

The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the sub-menu.



Northbridge Configuration



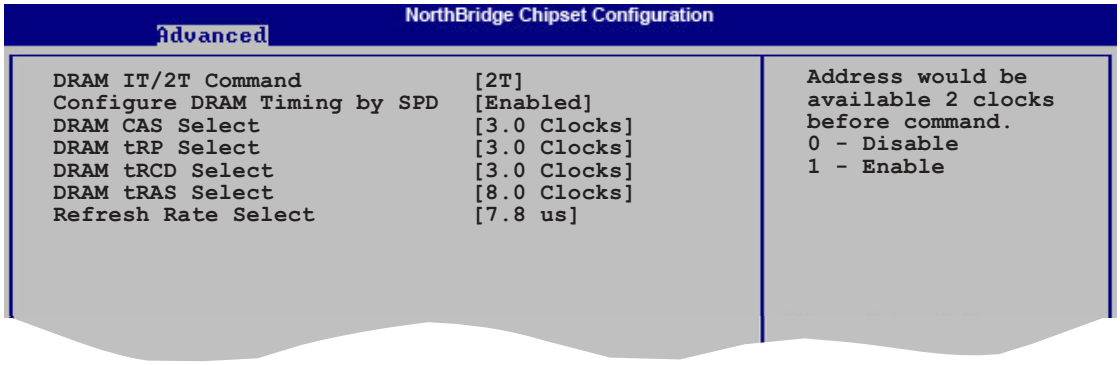
Boot Graphic Adapter Priority [PEG/IGD]
Allows selection of the graphics controller to use as a primary boot device. Configuration options: [IGD] [PEG/IGD]* [PCI/IGD]

* **PEG** - PCI Express VGA card

IGD - Integrated graphics display

UMA Frame Buffer Size [64MB]
Allows you to set the UMA frame buffer size.
Configuration options: [32MB] [64MB] [128MB]

Advanced NB



DRAM IT/2T Command [2T]

Sets the DRAM timing. Configuration options: [1T] [2T]

Configure DRAM Timing by SPD [Enabled]

When this item is Enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items.

The following items become user-configurable when this item is Disabled.

DRAM CAS Select [3.0 Clocks]

Sets the latency (in clocks) between the DRAM read command and the time the data actually becomes available.
Configuration options: [1.0 Clock] [1.5 Clock] [2.0 Clocks] [2.5 Clocks] [3.0 Clocks] [3.5 Clocks]

DRAM tRP Select. [3.0 Clocks]

Configuration options: [2.0 Clocks] [3.0 Clocks] [4.0 Clocks] [5.0 Clocks]

DRAM tRCD Select. [3.0 Clocks]

Configuration options: [2.0 Clocks] [3.0 Clocks] [4.0 Clocks]

DRAM tRAS Select [8.0 Clocks]

Configuration options: [2.0 Clocks] ~ [15.0 Clocks]

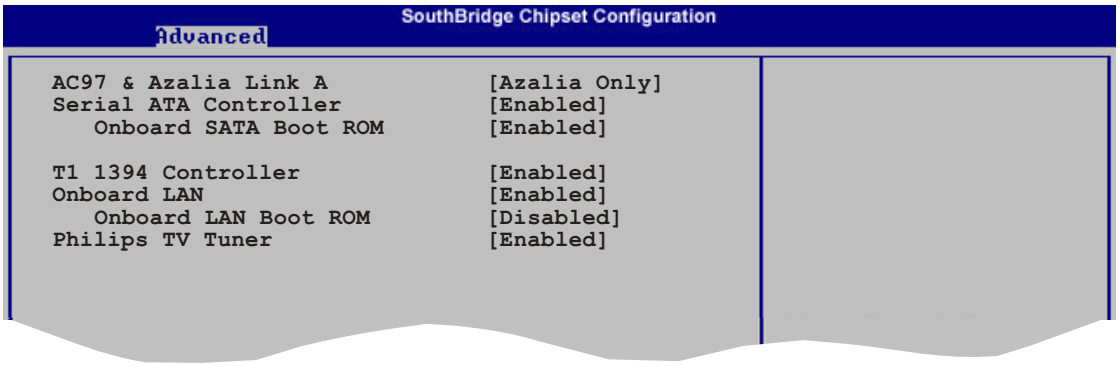
Refresh Rate Select [7.8 us]

Configuration options: [15.625 us] [3.9 us] [7.8 us] [31.3 us] [62.5 us] [125 us]

Video Display Devices [Auto]
Allows you to select the video display device.
Configuration options: [Auto] [CRT only] [TV only]

TV Standard [NTSC]
Allows you to select the TV standard in your area.
Configuration options: [NTSC] [PAL]

Southbridge Configuration



AC97 & Azalia Link A [Azalia Only]
Keep the default setting [Azalia Only] to enable support for high definition audio. Set to [Disabled] to enable support for legacy AC'97 audio. Configuration options: [Disabled] [Azalia Only]

SATA Controller [Enabled]
Allows you to enable or disable the onboard Serial ATA controller.
Configuration options: [Disabled] [Enabled]

Onboard SATA Boot ROM [Enabled]
Allows you to enable or disable the onboard SATA boot ROM.
Configuration options: [Disabled] [Enabled]

If this item is set to [Disabled], the **Third IDE Master, Fourth IDE Master, Fifth IDE Master, and Sixth IDE Master** items will appear on the Main Menu.

T1 1394 Controller [Enabled]
Allows you to enable or disable the onboard IEEE 1394a controller.
Configuration options: [Disabled] [Enabled]

OnBoard LAN [Enabled]
Allows you to enable or disable the onboard PCI Express Gigabit LAN controller. Configuration options: [Enabled] [Disabled]

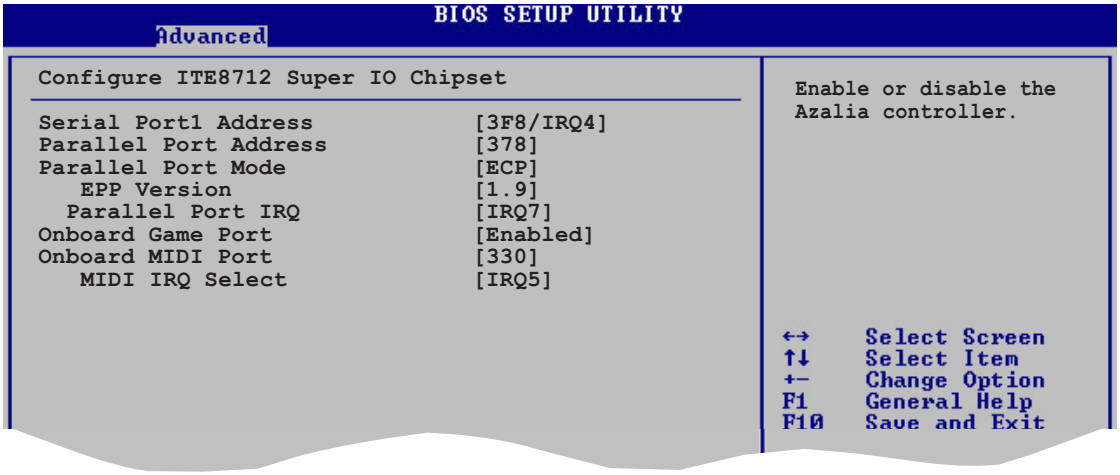
OnBoard LAN Boot ROM [Disabled]

Allows you to enable or disable the onboard LAN boot ROM.
Configuration options: [Disabled] [Enabled]

Philips TV Tuner [Enabled]

Allows you to enable or disable the Philips TV tuner.
Configuration options: [Enabled] [Disabled]

4.4.6 Onboard Devices Configuration



Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.
Configuration options: [Disabled] [3F8/IRQ4] [2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.
Configuration options: [Disabled] [378] [278] [3BC]

Parallel Port Mode [EPP]

Allows you to select the Parallel Port mode.
Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

EPP Version [1.9]

Allows you to select the parallel port EPP version. This item becomes configurable only if the **Parallel Port Mode** is set to [EPP] or [ECP+EPP]. Configuration options: [1.9] [1.7]

The following item appeasr only when the **Parallel Mode** item is set to [ECP] or [ECP+EPP].

ECP Mode DMA Channel [DMA3]
Allows you to select the ECP mode DMA channel.
Configuration options: [DMA0] [DMA1] [DMA3]

Parallel Port IRQ

Allows you to select the parallel port IRQ.
Configuration options: [IRQ5] [IRQ7]

Onboard Game Port [Enabled]

Allows you to enable or disable the Game port.
Configuration options: [Disabled] [Enabled]

Onboard Midi Port [330]

Allows you to select the MIDI port address or to disable the port.
Configuration options: [Disabled] [330] [300]

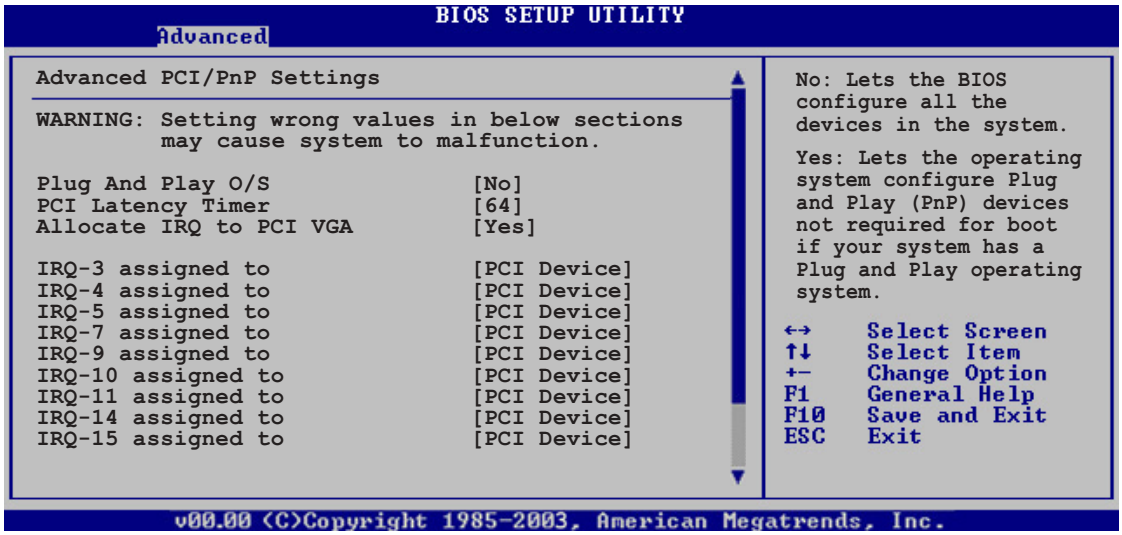
Midi Port IRQ Select [IRQ5]

Allows you to set the Midi port IRQ address. This item becomes configurable only if the **Midi Port Address** item is set to [300] or [330]
Configuration options: [IRQ5] [IRQ7] [IRQ10] [IRQ11]

4.4.7 PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.

Take caution when changing the settings of the PCI PnP menu items. Incorrect field values can cause the system to malfunction.



Plug and Play O/S [No]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. Configuration options: [No] [Yes]

PCI Latency Timer [64]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

Allocate IRQ to PCI VGA [Yes]

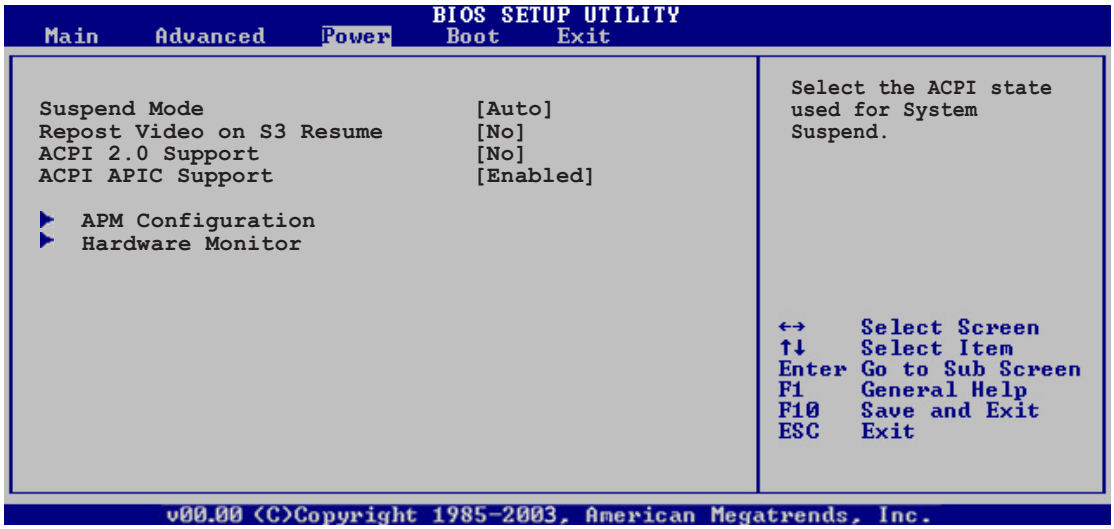
When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested. Configuration options: [Yes] [No]

IRQ-xx assigned to [PCI Device]

When set to [PCI Device], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [PCI Device] [Reserved]

4.5 Power menu

The Power menu items allow you to change the settings for the ACPI and Advanced Power Management (APM). Select an item then press <Enter> to display the configuration options.



4.5.1 Suspend Mode [Auto]

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

4.5.2 Repost Video on S3 Resume [No]

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

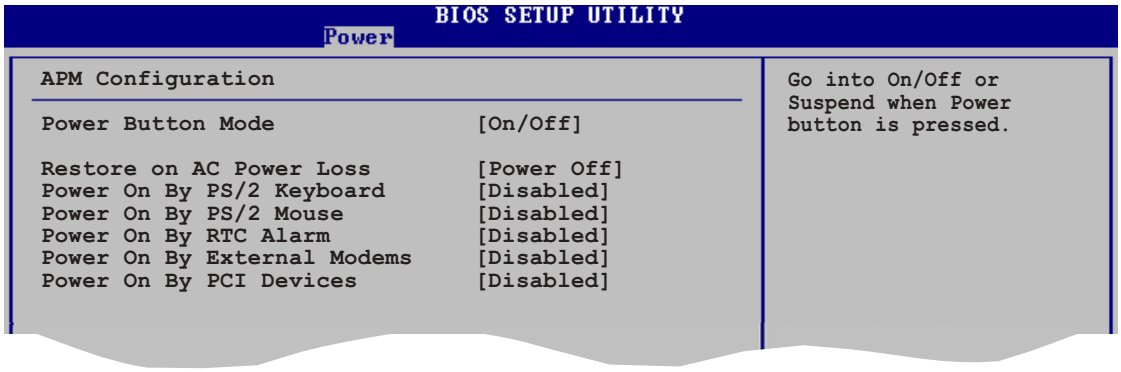
4.5.3 ACPI 2.0 Support [No]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications. Configuration options: [No] [Yes]

4.5.4 ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Advanced Programmable Interrupt Controller (APIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

4.5.5 APM Configuration



Power Button Mode [On/Off]

Allows the system to go into On/Off mode or suspend mode when the power button is pressed. Configuration options: [On/Off] [Suspend]

Restore on AC Power Loss [Power Off]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss. When set to Last State, the system goes into either off or on state, whatever the system state was before the AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

Power On By PS/2 Keyboard [Disabled]

Allows you to use specific keys on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By PS/2 Mouse [Disabled]

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

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values. Configuration options: [Disabled] [Enabled]

Power On By External Modems [Disabled]

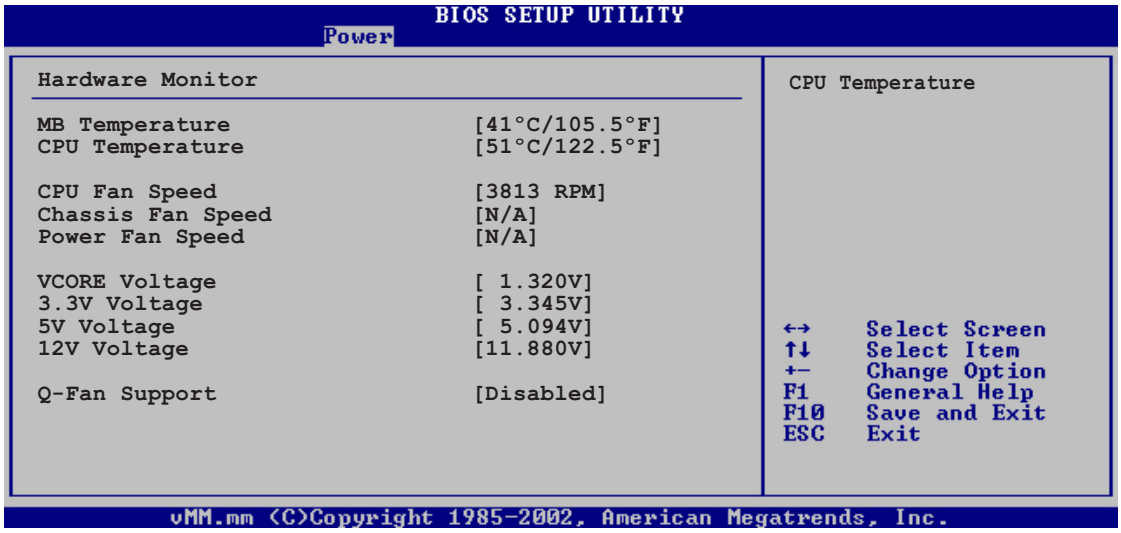
This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. Configuration options: [Disabled] [Enabled]

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

Power On By PCI Devices [Disabled]

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

4.5.6 Hardware Monitor



MB Temperature [xxx°C/xxx°F]
CPU Temperature [xxx°C/xxx°F]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select Disabled if you do not wish to display the detected temperatures.

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

The onboard hardware monitor automatically detects and displays the CPU fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A.

Chassis Fan Speed [Ignored] or [N/A]

The onboard hardware monitor automatically detects and displays the chassis fan speed in rotations per minute (RPM). If the fan is not connected to the chassis, the specific field shows N/A.

Power Fan Speed [Ignored] or [N/A]

The onboard hardware monitor automatically detects and displays the power fan speed in rotations per minute (RPM). If the fan is not connected to the power fan connector, the specific field shows N/A.

VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

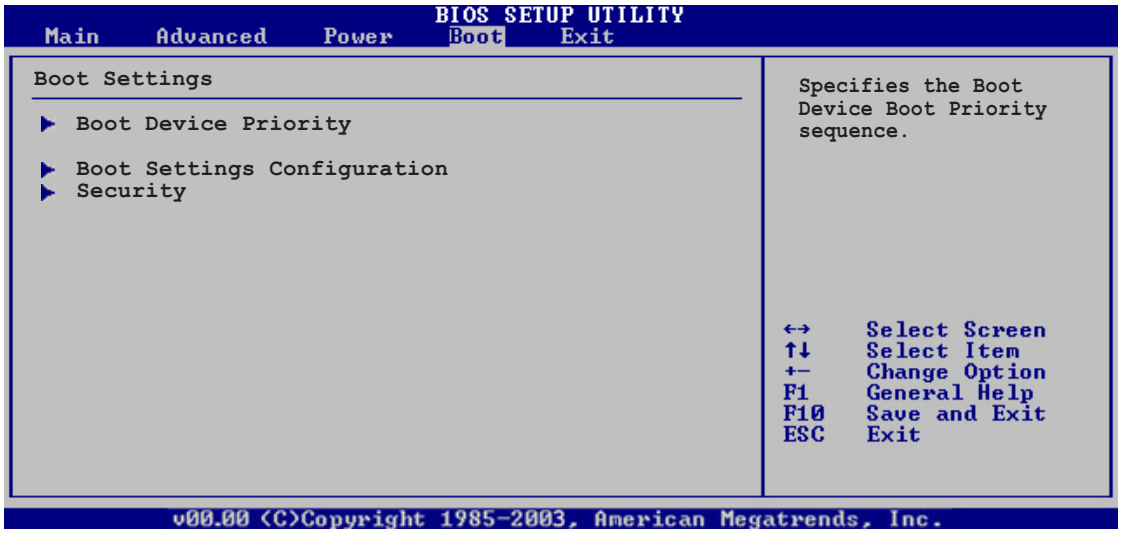
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

Q-Fan Support [Disabled]

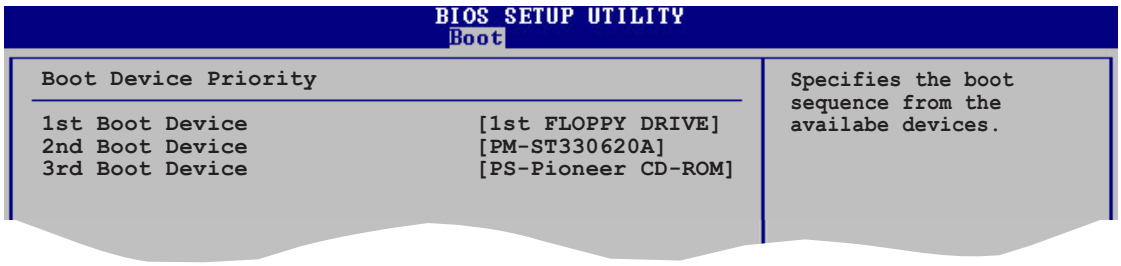
Allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation.
Configuration options: [Disabled] [Enabled]

4.6 Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the sub-menu.



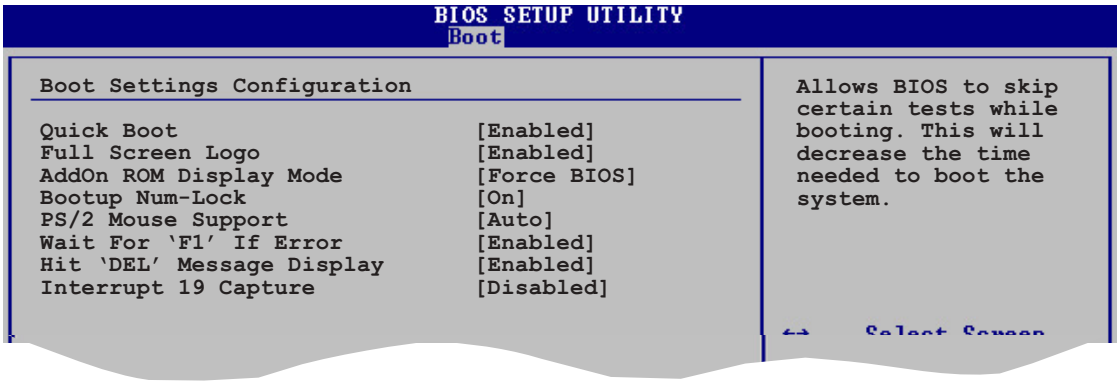
4.6.1 Boot Device Priority



1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.
Configuration options: [xxxxx Drive] [Disabled]

4.6.2 Boot Settings Configuration



Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

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

Set this item to [Enabled] to use the ASUS MyLogo™ feature.

Add On ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

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

PS/2 Mouse Support [Auto]

Allows you to enable or disable support for PS/2 mouse.
Configuration options: [Disabled] [Enabled] [Auto]

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

Hit 'DEL' Message Display [Enabled]

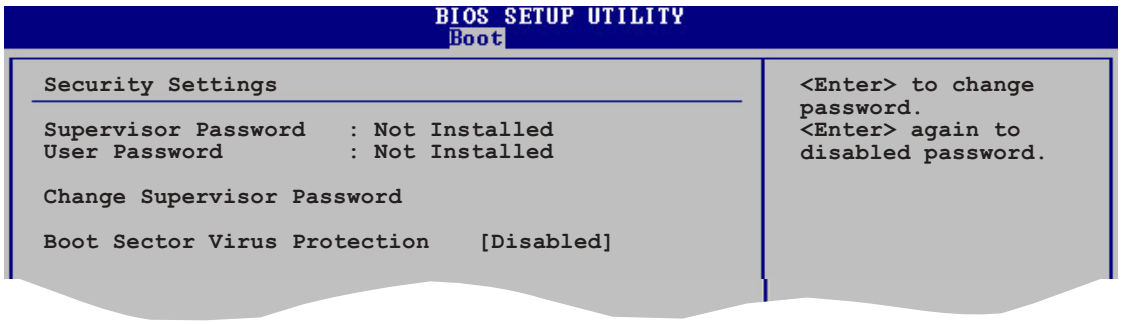
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

4.6.3 Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.



Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a Supervisor Password:

1. Select the Change Supervisor Password item and press <Enter>.
2. From the password box, type a password composed of at least six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.

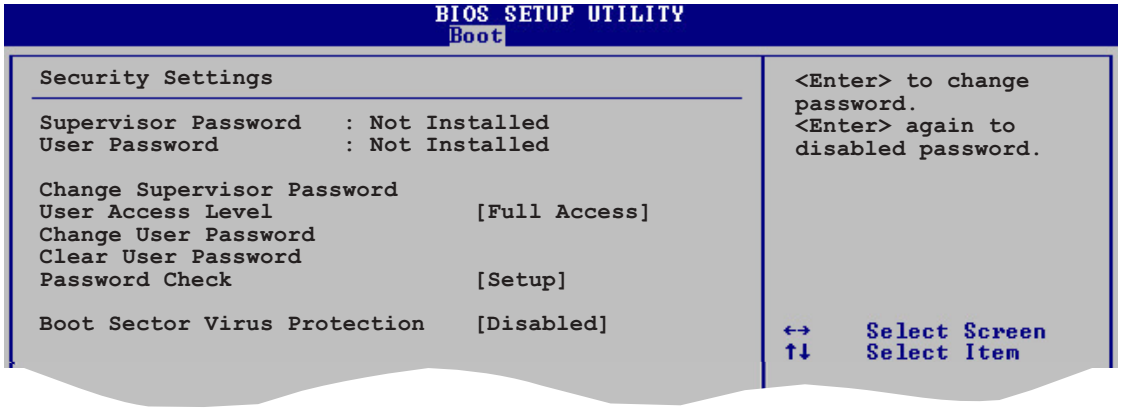
The message "Password Installed" appears after you successfully set your password.

To change the supervisor password, follow the same steps as in setting a user password.

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

If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "2.6 Jumpers" for information on how to erase the RTC RAM.

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



User Access Level (Full Access]

This item allows you to select the access restriction to the Setup items. Configuration options: [No Access] [View Only] [Limited] [Full Access]

No Access prevents user access to the Setup utility.

View Only allows access but does not allow change to any field.

Limited allows changes only to selected fields, such as Date and Time.

Full Access allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a User Password:

1. Select the Change User Password item and press <Enter>.
2. On the password box that appears, type a password composed of at least six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.

The message “Password Installed” appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item to clear the user password.

Password Check [Setup]

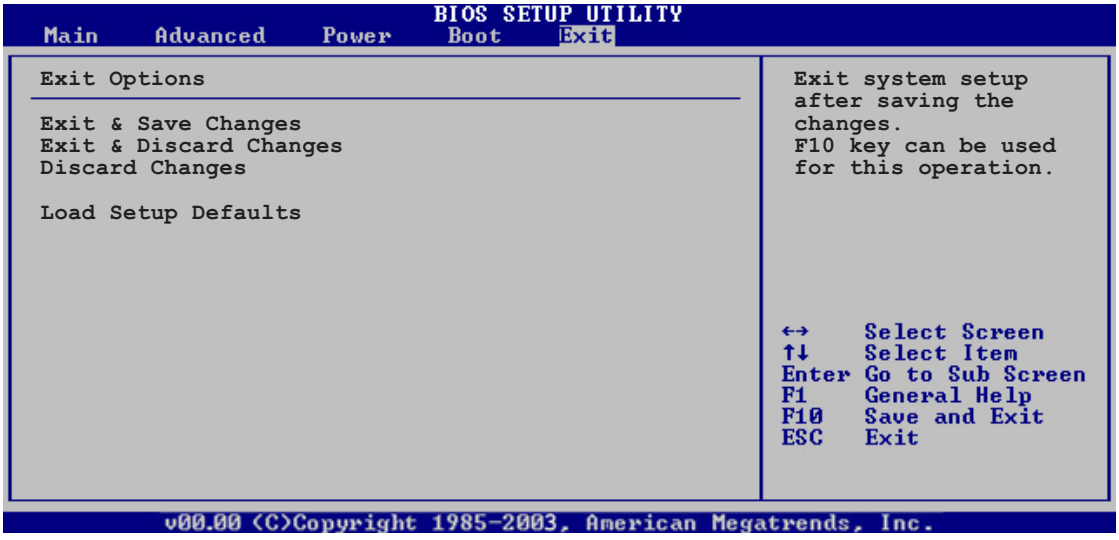
When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system.
Configuration options: [Setup] [Always]

Boot Sector Virus Protection [Disabled]

Allows you to enable or disable the boot sector virus protection.
Configuration options: [Disabled] [Enabled]

4.7 Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.



Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select **Yes** to save changes and exit.

If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **Yes** to discard any changes and load the previously saved values.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **Yes** to load default values. Select **Exit & Save Changes** or make other changes before saving the values to the non-volatile RAM.

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

5 Software support

Chapter summary

5

5.1 Installing an operating system

This motherboard supports Windows® 2000/XP operating systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.

- Motherboard settings and hardware options vary. Use the setup procedures presented in this chapter for reference only. Refer to your OS documentation for detailed information.
- Make sure that you install Windows® 2000 Service Pack 4 or the Windows® XP Service Pack 1 or later versions before installing the drivers for better compatibility and system stability.

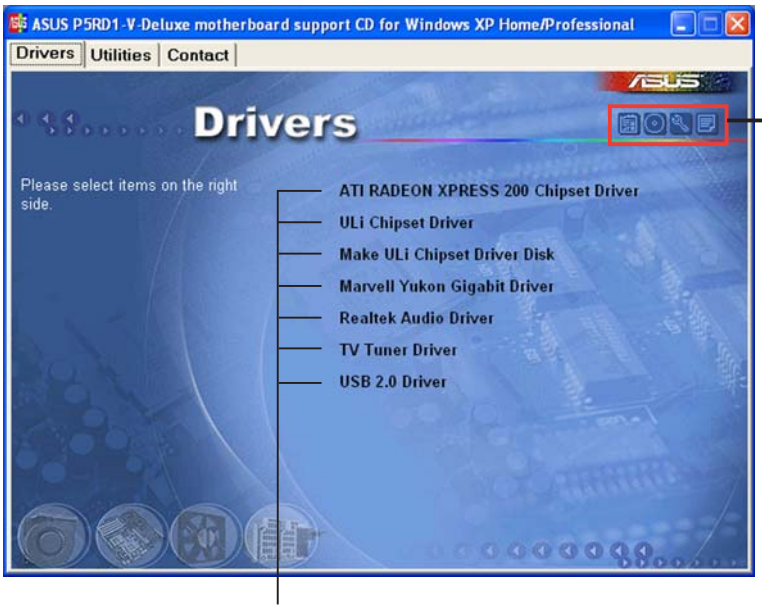
5.2 Support CD information

The support CD that came with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features.

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

5.2.1 Running the support CD

Place the support CD to the optical drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.



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 Radeon® XPress 200 Chipset Driver

Installs the ATI Radeon® XPress 200 chipset driver.

ULi Chipset Driver

Installs the ULi chipset driver.

Make ULi Chipset Driver Disk

Allows you to create the ULI chipset driver disk for Serial ATA and RAID features.

Marvell Yukon Gigabit Driver

Installs the driver for the Marvell® Yukon™ 88E8001 PCI Express Gigabit LAN .

Realtek Audio Driver

Allows you to install the Realtek ALC861 driver.

TV Tuner Driver

Installs the TV tuner driver to allow you to watch television on your computer.

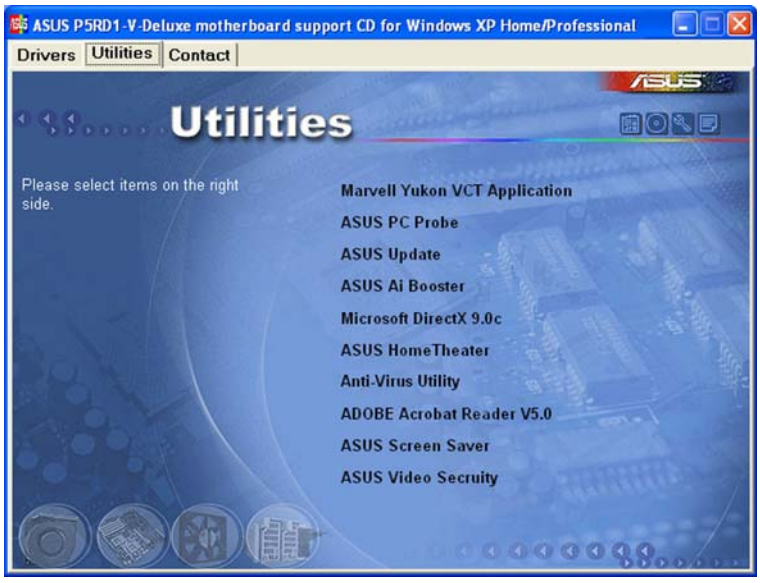
USB 2.0 Driver

Installs the USB 2.0 driver.

The screen display and drivers options may not be the same for different operating system versions.

5.2.3 Utilities menu

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



Marvell Yukon VCT Application

The Virtual Cable Tester (VCT) is a cable diagnostic application that analyzes and reports LAN cable faults and shorts. See page 5-9 for details.

ASUS PC Probe

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

ASUS Update

The ASUS Update utility that allows you to update the motherboard BIOS in Windows® environment. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP). See section “4.1.5 ASUS Update utility” for details.

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

ASUS AI Booster

The ASUS AI Booster application allows you to overclock the CPU speed in Windows® environment.

Microsoft DirectX 9.0 Driver

Installs the Microsoft® DirectX 9.0 driver.

Anti-virus utility

The anti-virus application scans, identifies, and removes computer viruses. View the online help for detailed information.

ASUS Home Theater

The ASUS Home Theater allows you to maximize the multimedia functions of the motherboard, letting you watch and record live TV, play DVD/VCD movies, view video clips, and listen to audio files.

ADOBE Acrobat Reader

Installs the Adobe® Acrobat® Reader V5.0 that allows you to open, view, and print documents in Portable Document Format (PDF).

ASUS Screen Saver

Installs the ASUS screen saver.

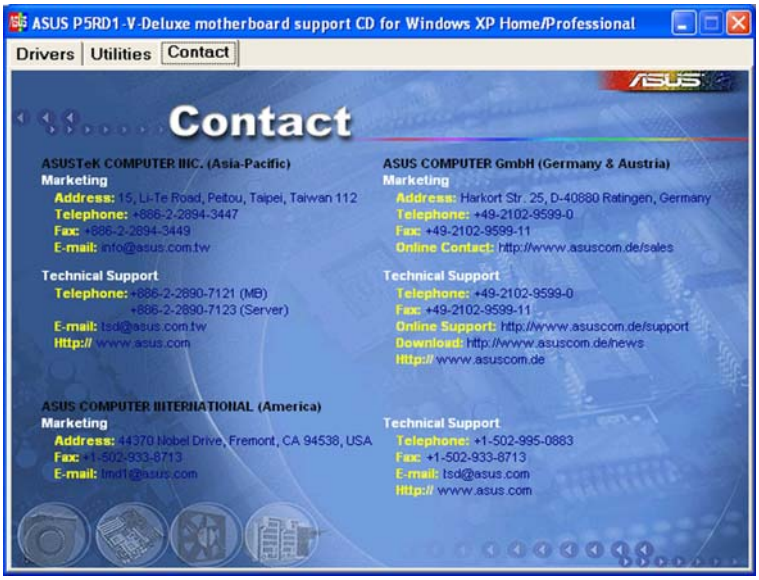
ASUS Video Security

Installs the ASUS Video Security software that offers motion detection security.

The screen display and utilities option may not be the same for different operating system versions.

5.2.4 ASUS Contact information

Click the **Contact** tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.

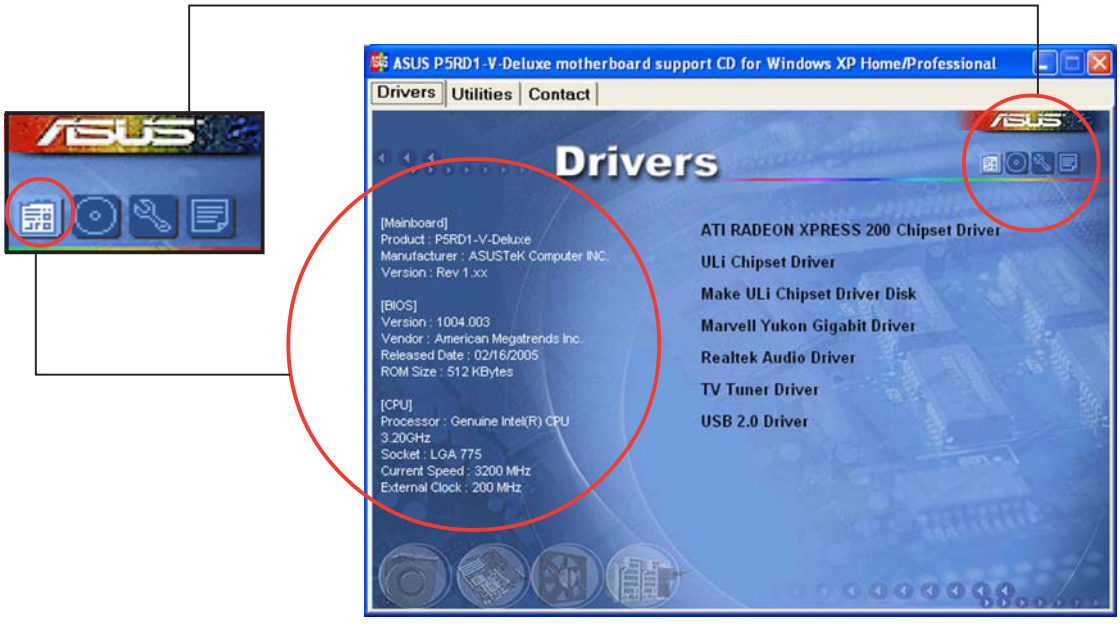


5.2.5 Other information

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.

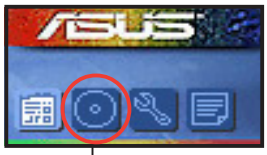
Motherboard Info

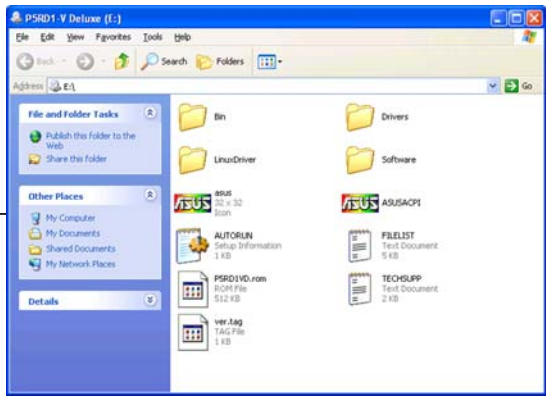
Displays the general specifications of the motherboard.



Browse this CD

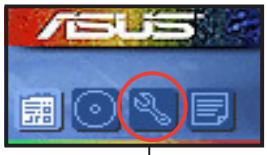
Displays the support CD contents in graphical format.

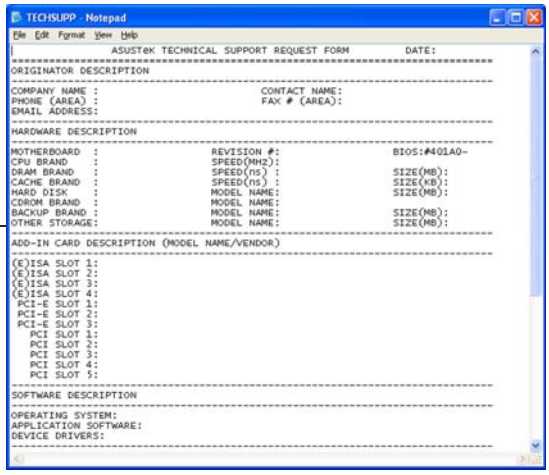




Technical support Form

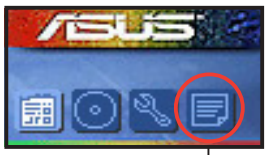
Displays the ASUS Technical Support Request Form that you have to fill out when requesting technical support.

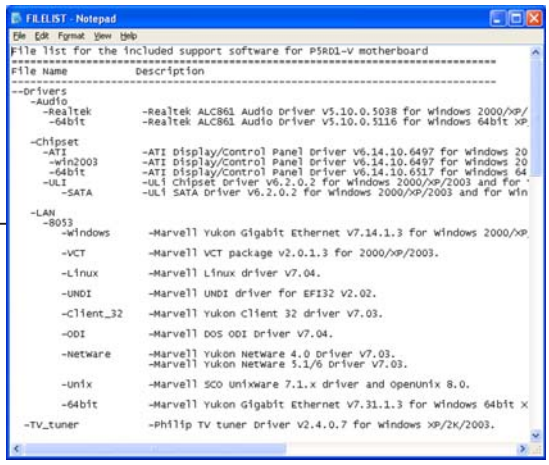




Filelist

Displays the contents of the support CD and a brief description of each in text format.





5.3 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 application for more information.

5.3.1 ASUS MyLogo2™

The ASUS MyLogo2™ utility lets you customize the boot logo. The boot logo is the image that appears on screen during the Power-On-Self-Tests (POST). 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 the ASUS MyLogo2™, use the AFUDOS utility to make a copy of your original BIOS file, or obtain the latest BIOS version from the ASUS website. See section "4.1.2 AFUDOS Utility."
- Make sure that the BIOS item **Full Screen Logo** is set to [Enabled] if you wish to use ASUS MyLogo2. See section "4.6.2 Boot Settings Configuration."
- You can create your own boot logo image in GIF, JPG, or BMP file formats.

To launch the ASUS MyLogo2™:

1. Launch the ASUS Update utility. Refer to section "4.1.4 ASUS Update utility" for details.
2. Select **Options** from the drop down menu, then click **Next**.
3. Check the option **Launch MyLogo to replace system boot logo before flashing BIOS**, then click **Next**.
4. Select **Update BIOS from a file** from the drop down menu, then click **Next**.
5. When prompted, locate the new BIOS file, then click **Next**. The ASUS MyLogo2 window appears.
6. From the left window pane, select the folder that contains the image you intend to use as your boot logo.

7. When the logo images appear on the right window pane, select an image to enlarge by clicking on it.

8. Adjust the boot image to your desired size by selecting a value on the **Ratio** box.

9. When the screen returns to the ASUS Update utility, flash the original BIOS to load the new boot logo.
10. After flashing the BIOS, restart the computer to display the new boot logo during POST.

5.3.2 AI NET2

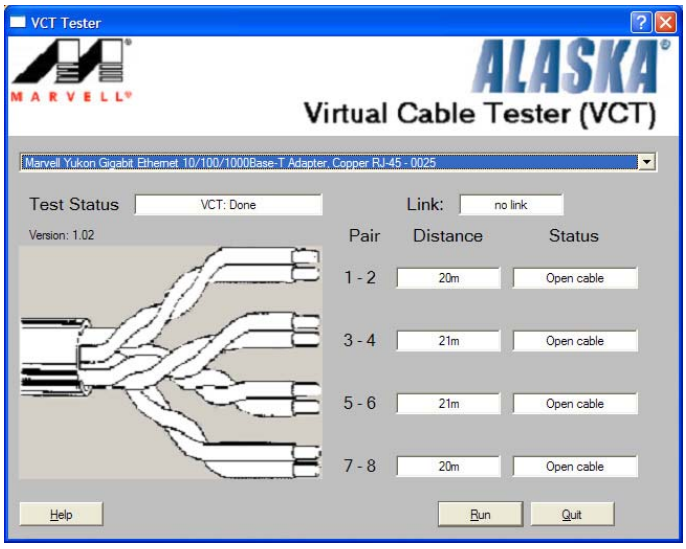
The AI NET2 features the Marvell® Virtual Cable Tester™ (VCT). VCT is a cable diagnostic utility that reports LAN cable faults and shorts using the Time Domain Reflectometry (TDR) technology. The VCT detects and reports open and shorted cables, impedance mismatches, pair swaps, pair polarity problems, and pair skew problems of up to 64 ns at one meter accuracy.

The VCT feature reduces networking and support costs through a highly manageable and controlled network system. This utility can be incorporated in the network systems sofware for ideal field support as well as development diagnostics.

Using the Virtual Cable Tester™

To use the the Marvell® Virtual Cable Tester™ utility:

1. Launch the VCT utility from the Windows® desktop by clicking **Start > All Programs > Marvell > Virtual Cable Tester**.
2. Click **Virtual Cable Tester** from the menu to display the screen below.



3. Click the **Run** button to perform a cable test.

- The VCT only runs on systems with Windows® XP or Windows® 2000 operating systems.
- The VCT utility only tests Ethernet cables connected to Gigabit LAN port(s).
- The **Run** button on the Virtual Cable Tester™ main window is disabled if no problem is detected on the LAN cable(s) connected to the LAN port(s).
- If you want the system to check the status of the LAN cable before entering the OS, enable the item **Post Check LAN Cable** in the BIOS Setup.

5.3.3 Audio configurations

The Realtek® ALC861 AC '97 audio CODEC provides 8-channel audio capability to deliver the ultimate audio experience on your PC. The software provides Jack-Sensing function (Line-In, Line-Out, Mic-In), S/PDIF out support and interrupt capability. The ALC850 also includes the Realtek® proprietary UAJ® (Universal Audio Jack) technology for three ports (Line-In, Line-Out and Mic-In), eliminating cable connection errors and giving users plug and play convenience.

Follow the installation wizard to install the **Realtek ALC861 Audio Driver and Application** from the support CD that came with the motherboard package.

If the Realtek audio software is correctly installed, you will find the SoundEffect icon on the taskbar.

From the taskbar, double-click on the **SoundEffect** icon to display the **Realtek Audio Control Panel**.

Realtek SoundEffect icon

The Jack-sensing and UAJ® technology features are supported on the Line-In, Line-Out, and Mic jacks only.

Sound Effect options

The Realtek® ALC861 Audio CODEC allows you to set your listening environment, adjust the equalizer, set the karaoke, or select pre-programmed equalizer settings for your listening pleasure.

To set the sound effect options:

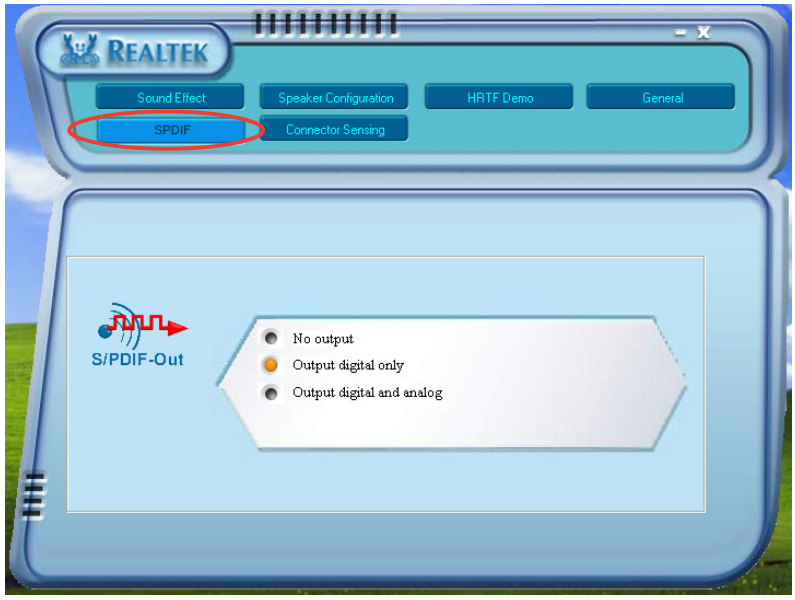
1. From the Realtek Audio Control Panel, click the **Sound Effect** button.
2. Click the shortcut buttons to change the acoustic environment, adjust the equalizer, or set the karaoke to your desired settings.
3. The audio settings take effect immediately after you click on the buttons.
4. Click the Exit (**X**) button on the upper-right hand corner of the window to exit.

S/PDIF options

The Sony/Philips Digital Interface (S/PDIF) options allows you to change your S/PDIF output settings.

To set the S/PDIF options:

1. From the Realtek Audio Control Panel, click the **SPDIF** button.
2. Click the option buttons to change your S/PDIF out settings.
3. Click the Exit (**X**) button on the upper-right hand corner of the window to exit.



Speaker Configuration

This option allows you to set your speaker configuration.

To set the speaker configuration:

1. From the Realtek Audio Control Panel, click the **Speaker Configuration** button.
2. Select from the combo list box your current speaker setup, then click **Auto Test** to test your settings.
3. Click the **UAJ Automatic** button to enable or disable the Universal Audio Jack(UAJ®) technology feature.
4. Click the Exit (**X**) button on the upper-right hand corner of the window to exit.

AI Audio feature

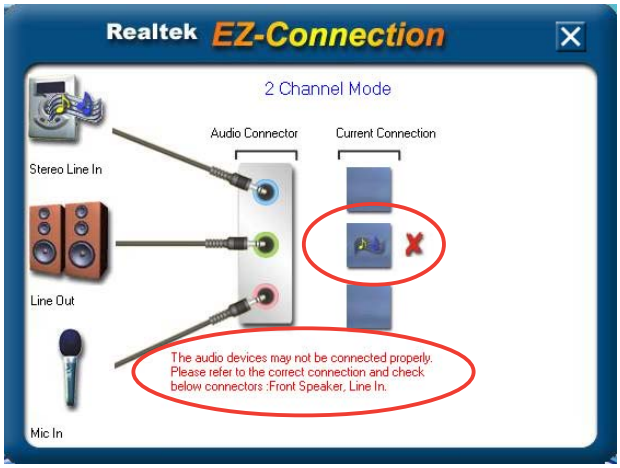
The AI Audio feature works through the connector sensing option that allows you to check if your audio devices are connected properly.

To start the connector sensing:

1. From the Realtek Audio Control Panel, click the **Connector Sensing** button.
2. Click the **Bracket** button to display connected audio devices.
3. Click the **Option** button to change sensing options.
4. Click the **Start** button to start connection sensing. A progress bar displays current connector sensing status.

Make sure to exit all audio applications before starting this function.

5. When finished, the utility prompts the Realtek® EZ-connection dialog box showing your current audio connections. The text at the bottom of the box explains your audio connection status. An *X mark* denotes an incorrect connection.



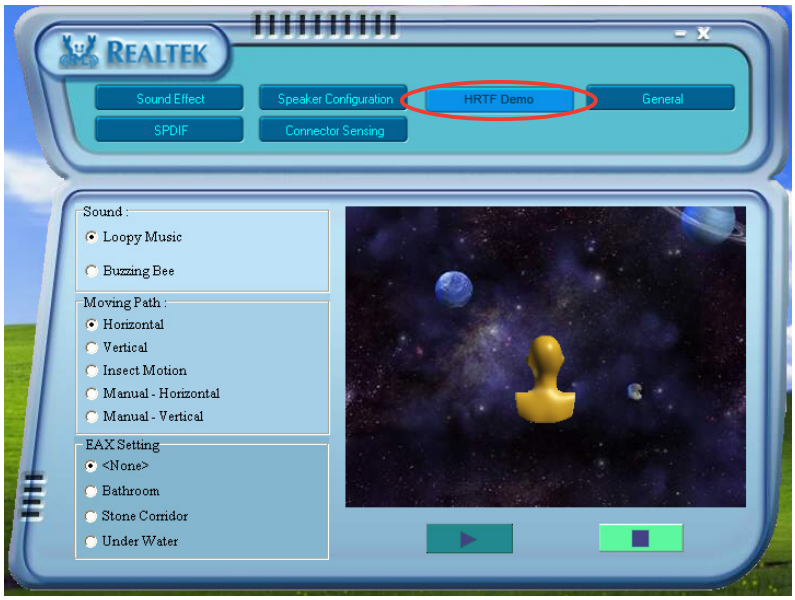
6. If there are detected problems, make sure that your audio cables are connected to the proper audio jack and repeat connector sensing.
7. Click the **X** button to exit EZ-connection dialog box.
8. Click the Exit (**X**) button on the upper-right hand corner of the window to exit audio control panel.

HRTF Demo

This option shows a demo of the Head-Related Transfer Functions (HRTF).

To start the HRTF demo:

1. From the Realtek Audio Control Panel, click the **HRTF Demo** button.
2. Click the option buttons to change the sound, moving path or EAX settings.
3. Click the **Play** button to start or the **Stop** button to stop.
4. Click the Exit (**X**) button on the upper-right hand corner of the window to exit.

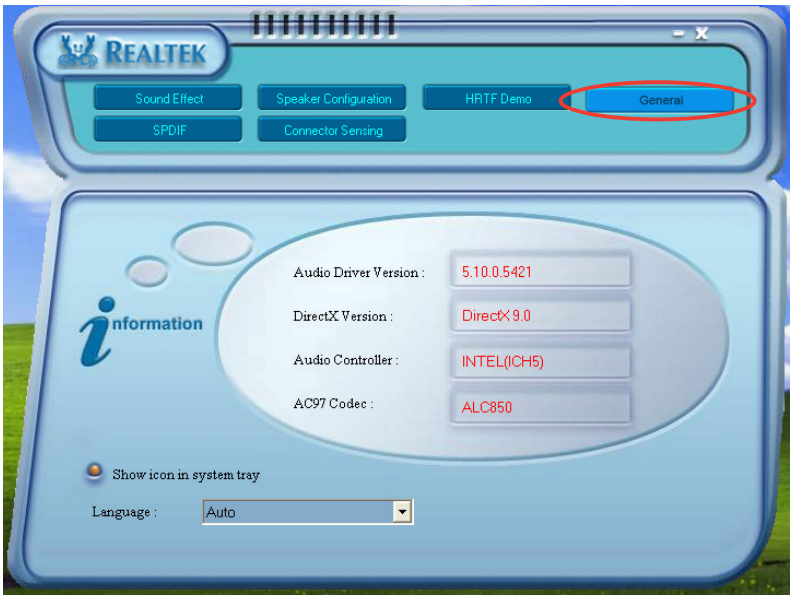


General settings

This option shows the audio settings and allows you to change the language setting or toggle the SoundEffect icon display on the Windows taskbar.

To display the general settings:

1. From the Realtek Audio Control Panel, click the **General** button.
2. Click the option button to enable or disable the icon display on the Windows taskbar.
3. Click the **Language** combo list box to change language display.
4. Click the Exit (**X**) button on the upper-right hand corner of the window to exit.



Rear panel audio ports function variation

The functions of the Line Out (lime), Line In (blue), Mic (pink), Center/ Subwoofer (Yellow Orange), Rear Speaker Out (Black), and Side Speaker Out (Gray) ports on the rear panel change when you select the 4-channel, 6-channel or 8-channel audio configuration as shown in the following table.

Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Gray	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Black	-	-	-	Side Speaker Out
Yellow Orange	-	-	Center/Subwoofer	Center/Subwoofer

5.4 Installing the TV tuner driver

You need to install the TV tuner driver to your computer so you can use the TV feature of the motherboard.

To install the TV tuner driver:

1. Turn on your computer.
2. Place the support CD in your optical drive.
3. On the Drivers menu, click on the **TV Tuner Driver** item to begin automatic installation.

5.5 Uninstalling the TV tuner driver

To uninstall the TV tuner driver from your computer:

1. Turn on your computer.
2. Press **Start** on the Windows® task bar. Go to Settings > Control Panel > Add or Remove Programs.
3. Select TV Tuner Driver, then click the Remove button.

5.5 ASUS Home Theater

The ASUS Home Theater maximizes the multimedia features of the motherboard. The following sections provide information on installing and using the ASUS Home Theater.

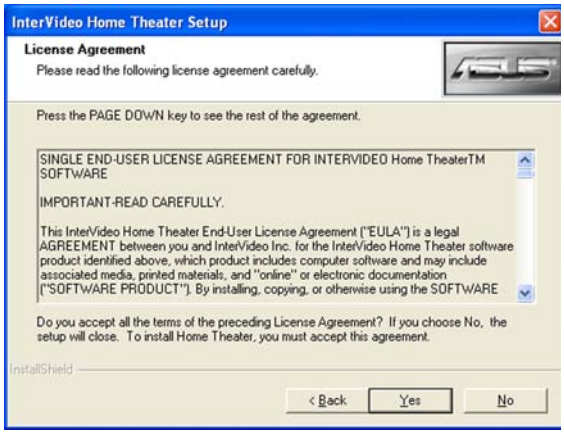
5.5.1 Installing ASUS Home Theater

To install ASUS Home Theater:

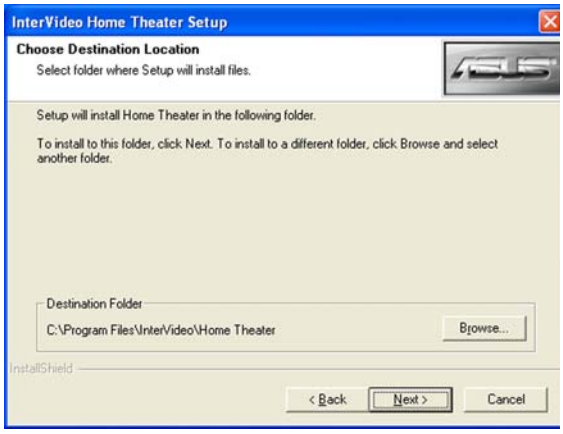
1. Place the support CD in the optical drive.
2. Click the Utilities menu tab.
3. Click on the **ASUS Home Theater** item to begin installation.

4. The initial installation window appears. Click **Next**.

5. Read the License Agreement, then click **Yes**.

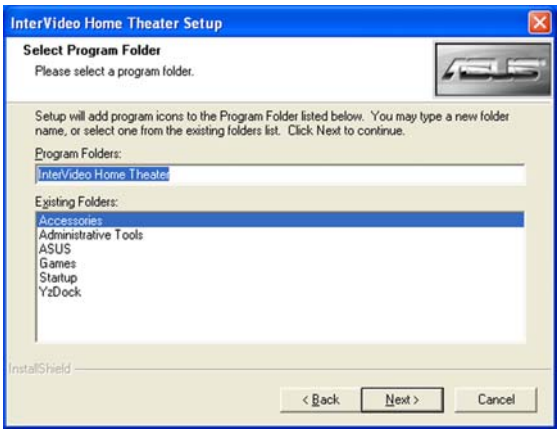


6. Select the destination location where you want to install the files. The default is **Intervideo\Home Theater.** Click **Next**.



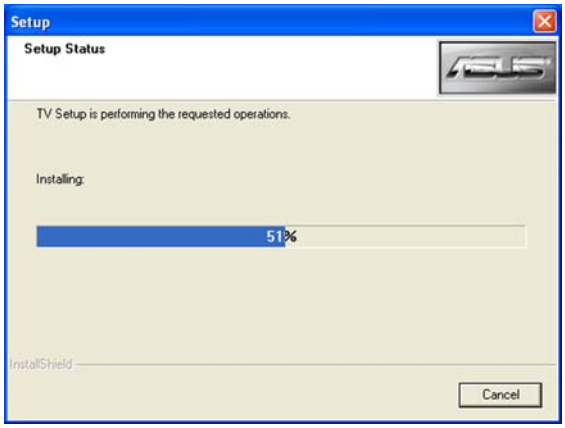
7. When prompted, select the program folder where you want to save the ASUS Home Theater program icons.

   Click **Next**.

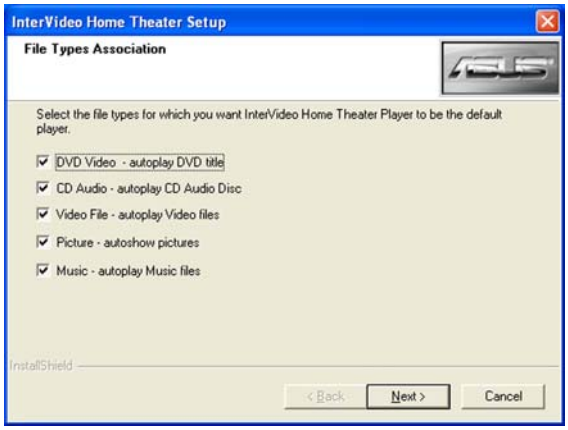


8. The Home Theater application is copied into your system.

   The **Setup Status** window appears, indicating the progress of the installation.



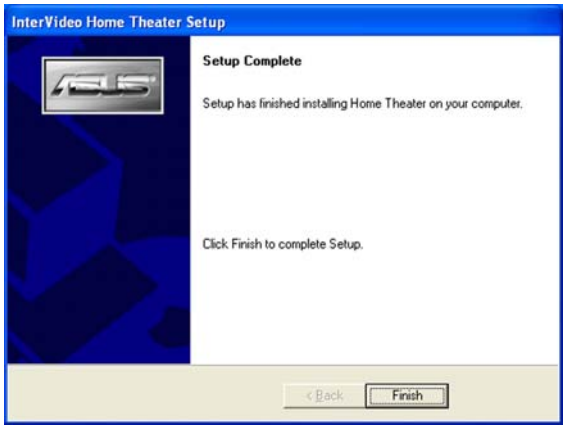
9. The **File Types Association** window appears. Select the media files for which you want Home Theater to be the default player.



10. The **Setup Complete** window appears, indicating that Home Theater has been installed.

    Click **Yes** to restart your computer now or **No** to restart later.

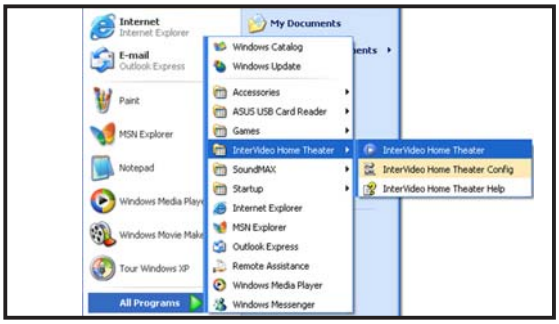
    Click **Finish**.



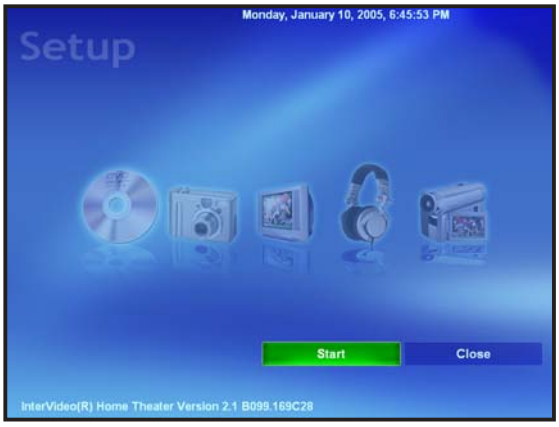
5.5.2 Launching ASUS Home Theater

To launch the ASUS Home Theater:

1. Turn on your computer.
2. Click **Start** > **All Programs** > **Intervideo Home Theater** > **Intervideo Home Theater**. Or, double-click the **Home Theater** shortcut on your desktop.



3. The **Setup** window appears when you launch the ASUS Home Theater for the first time.
4. Click **Start** to begin configuring the settings.



5. The **General Settings** window appears. Make your desired settings by clicking the **Yes/No** button, or the **</>** button for more options.

   Click **Next** configure the **TV Settings, Picture Settings,** and **DVD Settings**.

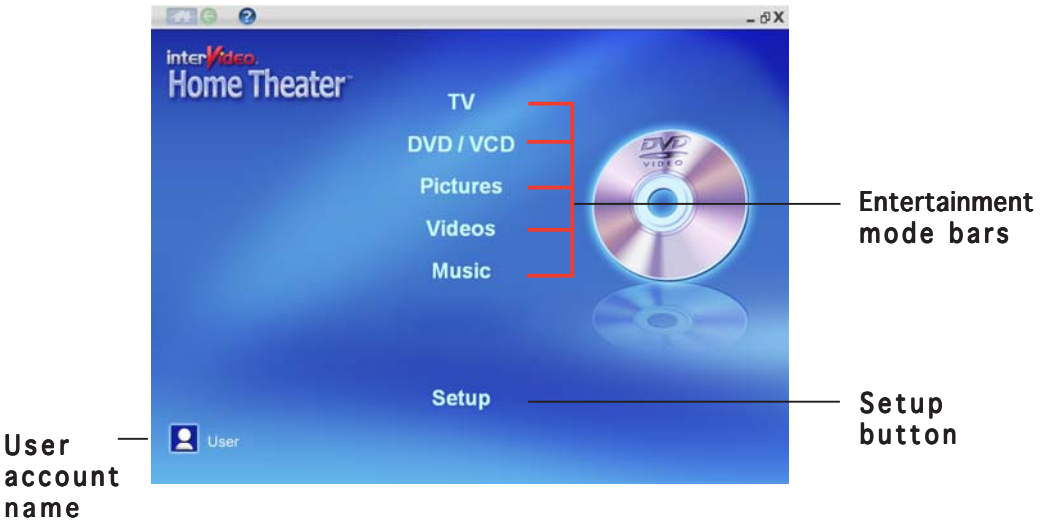
   Click **Close** if you want to configure these items later.

See section "5.5.5 Setup" for detailed information on setting up Home Theater.

5.5.3 Using ASUS Home Theater

The ASUS Home Theater features a user-friendly interface that integrates all the multimedia functions of the TV/FM card. This application lets you watch TV, play a DVD/VCD movie, browse pictures, watch video clips, listen to audio files, or tune in to an FM radio station in a single interface. This flexibility allows you to switch from one entertainment mode to another without having to launch several multimedia applications.

Home Theater Main Window



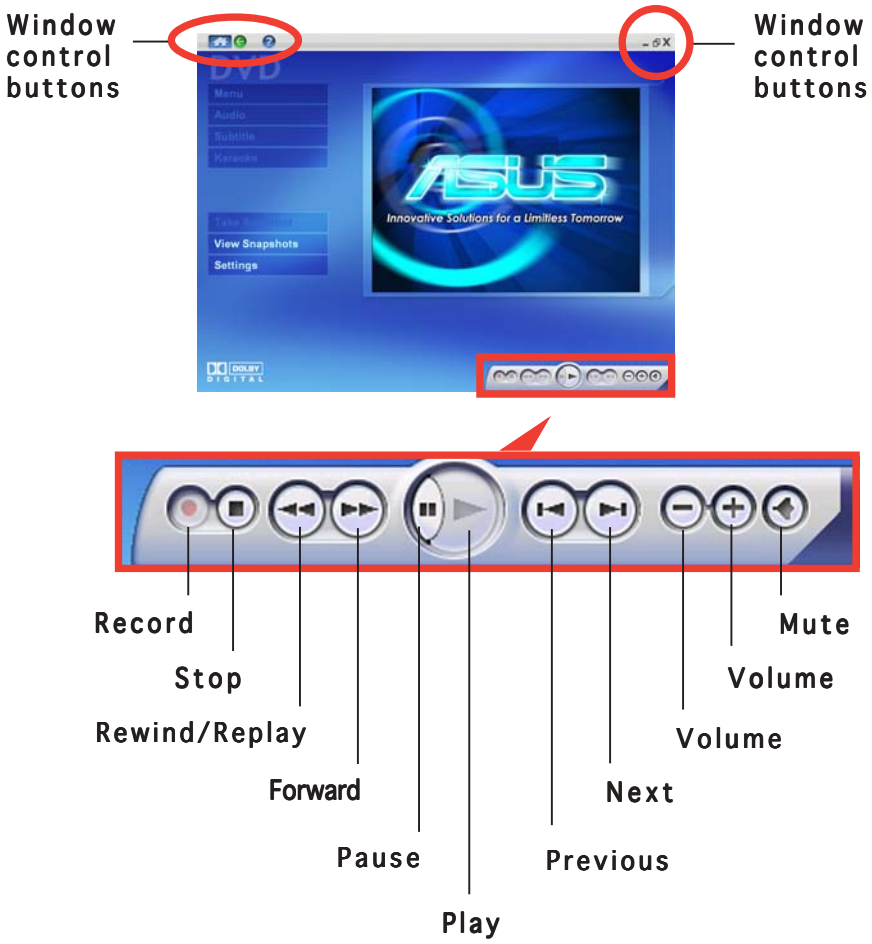
Entertainment mode buttons - Click on a bar to launch an entertainment mode.

Setup - Click this bar to display the setup window.

Computer account name- Displays the user currently using the application.

The control panel and window control buttons

Each Home Theater window is equipped with a control panel to control the entertainment modes. The control panel buttons and functions are illustrated below.



Some control panel buttons change from one entertainment mode to another.

Window control buttons - Controls the Home Theater window.

Click to return to the Home Theater main window.

Click to return to the previous window.

Click to return to open the Help window.

Click to minimize the window.

Click to return the window to its previous size or to maximize the window.

Click to exit Home Theater.

5.5.4 Entertainment modes

You need to install the TV tuner driver to use all the entertainment modes of Home Theater.

TV

Home Theater lets you watch TV on your computer.

On initial use, the ASUS Home Theater instructs you to autoscan available TV channels. Click the **Settings** button, then click **Autoscan** to view the available channels. See "Settings" on page 5-26 for details.

Time Shifting feature

Home Theater comes with the **Timeshifting** feature that allows you to take a break from the program you are watching, then replay the program from where you left off, or jump back to live view.

To use Time Shifting:

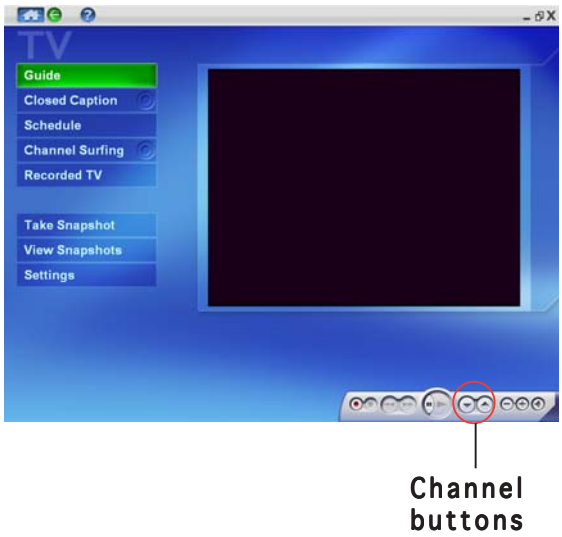
1. Click the **Pause** button on the Control Panel or press the **Space Bar** on your keyboard.
2. To replay the program from where you paused, click the **Pause** or **Play** button, or press the **Space Bar** on your keyboard.
3. To return to live TV, click the **Stop** button on the Control Panel

When you use the **Time Shifting** feature, your system records the live TV from where you clicked **Pause** and saves it temporarily in your hard disc. The slide bar on the Control Panel indicates how much video stream has been recorded.

The TV window has seven sub-menus. Change the TV channel by clicking the **Channel** buttons on the control panel or the button on the remote controller. Double-click the screen for full-screen viewing.

Guide

Click the **Guide** bar to open the TitanTV website. TitanTV is an Electronic Program Guide (EPG) that allows users to record and watch TV right from the guide. Visit the Titan TV website for details.



Closed Caption/TeleText

The **Closed Caption** option is available only in the United States. This feature provides subtitles, if available. **TeleText** is available only in Europe. This is a service that provides additional information such as weather or program schedule, if available.

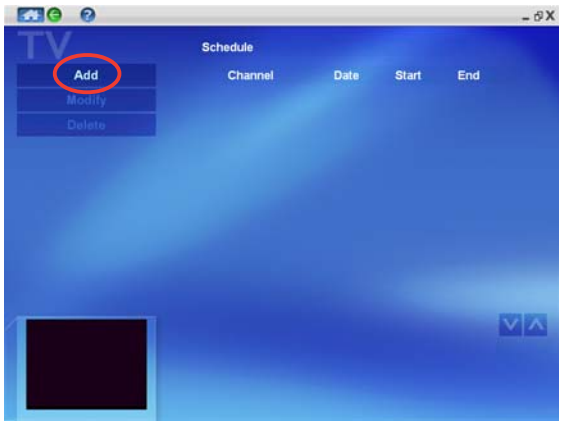
Schedule

The **Schedule** option allows you to set a schedule to record a TV program.

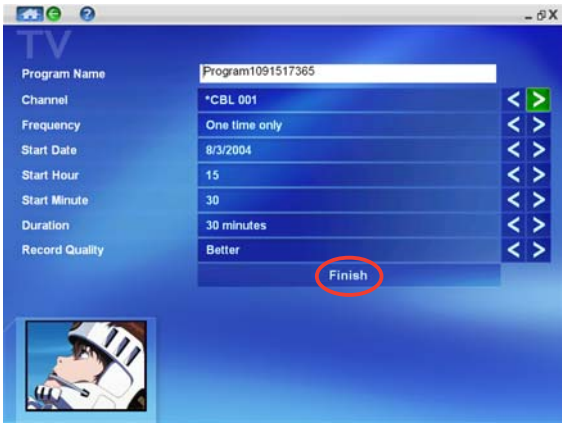
Home Theater automatically saves a recorded program in the Windows® **My Videos** folder. Home Theater records TV programs in InterVideo Media File format.

To create a recording schedule:

1. Click the **Schedule** bar on the **TV** menu. The **Schedule** window opens.
2. Click the **Add** bar.



3. Key-in the program name.
4. Select the Channel Frequency, Start Date, Start Hour, Start Minute, Duration, and Record Quality using the **<**/**>** buttons
5. Click **Finish** when done.



The TV recording feature requires a higher capacity HDD if you save a recorded program in high quality.

Channel Surfing

To surf for available channels in your location:

1. Click the **Channel Surfing** bar.
2. Multiple channel previews appear on screen .
3. Double-click a channel to display.

Recorded TV

The **Recorded TV** option lets you view, play, and organize recorded TV programs.

Organize your recorded programs by clicking the **Sort By Name/Date** bars.

Double-click a thumbnail to preview a recorded program. A window displays a snapshot of each recorded program. Double-click the snapshot to start playing in full-screen view.

Preview window

Home Theater automatically saves a recorded program in the Windows® **My Videos** folder. Home Theater records TV programs in InterVideo Media File format.

Take a Snapshot

Home Theater allows you to take a still photo from live TV or a recorded program.

Click the **Take a Snapshot** bar to take a still photo.

View a Snapshot

Click the **View Snapshots** bar to view the photo.

Home Theater automatically saves snapshots in the Windows® **My Pictures** folder in bitmap (*.bmp) format.

Settings

To change the TV settings:

1. Click the **Settings** bar.
2. Select the TV source (Cable/Antenna), input source (TV/ S-Video/ Composite), record quality (Good/Better/Best), and TV Audio (Stereo/Mono/SAP). Click the **</>** buttons to view available options.
3. Click to return to the TV main window.

DVD/VCD

Watch a movie with the ASUS Home Theater DVD/VCD player. Place a DVD/VCD in the optical drive, then click the **Play** button on the control panel. Double-click the screen for full-screen viewing.

The bars in the DVD/VCD menu are enabled only when a DVD/VCD is inserted to the optical drive.

Menu

Click the **Menu** bar to return to the DVD main menu.

Audio

Displays your DVD audio language setting.

Subtitle

Displays your subtitle language setting.

Take a Snapshot

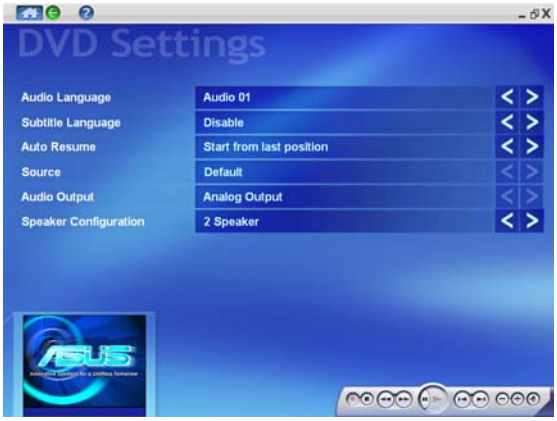
Home Theater allows you to take a still photo from the DVD/VCD movie you are playing.

Click the **Take a Snapshot** bar to take a still photo. Click the **View Snapshot** to view the photo.

- Home Theater automatically saves snapshots in the Windows® **My Pictures** folder in bitmap (*.bmp) format.
- This Home Theater version does not support Karaoke function.

Settings

Click **Settings** to adjust the DVD/VCD player properties.



Audio Language. Select the DVD audio language. You may select an audio language if the DVD supports multilanguage audio.

Subtitle Language. Allows you to select an available DVD subtitle language.

Auto Resume. Allows you to resume watching a movie from the beginning or from where you stopped.

Source. Displays the video input source.

Audio output. Allows you to set your audio output to analog or digital (S/PDIF).

Speaker configuration. Home Theater automatically detects and displays your speaker configuration.

To change the DVD/VCD settings:

1. Click the **Settings** bar.
2. Make your desired settings by clicking the **</>** buttons to view available options.
3. Click to return to the TV main window.

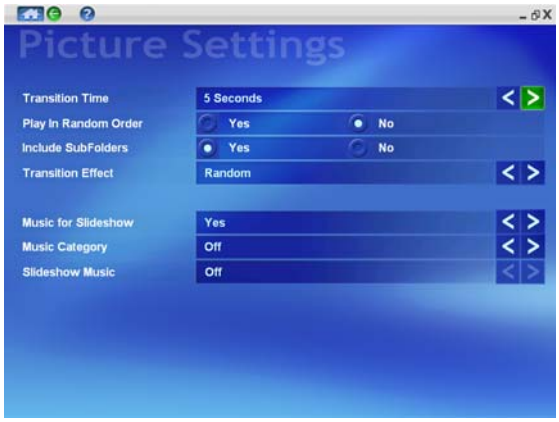
Pictures

The **Pictures** window lets you view and print pictures saved in the Windows® **My Pictures** folder. Double-click the thumbnails to view the photos in full-screen view.

Slideshow

To create a slideshow:

1. Click the **Settings** bar.
2. Adjust the slideshow properties.
3. Click to return to the Pictures window. To start the slideshow, click the **Play** button on the control panel.



Sort By Name

Allows you to sort your pictures by name.

Sort By Date

Allows you to sort your pictures by date.

Rotate Left

Allows you to rotate your pictures counter-clockwise.

Rotate Right

Allows you to rotate your pictures clockwise.

Other Media

Allows you to view and organize photos stored in removable media such as CDs, floppy disks, or flash disks.

Videos

View, play and organize your video clips using the Videos window. The Videos window displays the title and length of video clips saved in the Windows® **My Videos** folder.

The **Video Clips** window only lists video clips saved in the Windows® **My Videos** folder.

Sort By Name
Allows you to sort your video clips by name.

Sort By Date
Allows you to sort your video clips by date.

Other Media
Allows you to view and organize video clips stored in removable media such as CDs, floppy disks, or flash disks.

Take a Snapshot
Home Theater allows you to take a still photo from live TV or a recorded program.

Click the **Take a Snapshot** bar to take a still photo.

View Snapshots
Click the **View Snapshots** bar to view the photo.

Home Theater automatically saves snapshots in the Windows® **My Pictures** folder in bitmap (*.bmp) format.

Music

Home Theater lets you play audio CD/DVD tracks, MP3 files, and radio recordings using the **Music** window.

Select **My Music** to view and play audio files or radio recordings saved to your hard disk drive. Click **My Music** to display audio CD/DVD tracks. Control the audio playback using the control panel buttons.The **Music** window lists the title, album, artist, and genre of available audio files.

Click the **Rewind/Replay** or **Forward** button on the control panel to change the media browser ambience.

Home Theater only lists the MP3 files saved in the Windows® **My Music** folder.

Songs
Displays titles, file names, duration, and other relevant information of all audio files saved in “My Music” folder.

Albums
Sorts all audio files saved in “My Music” folder according to Album title.

Artists
Sorts all audio files saved in “My Music” folder according to Artist name.

Genre
Sorts all audio files saved in “My Music” folder according to Genre.

Go to Playlist
Allows you to view your Playlist.

Repeat

Allows you to play your selected music again and again.

Shuffle

Allows you to listen to your selected music in random order.

Add to Playlist
Allows you to add audio files to your Playlist.

Other Media
Displays the available removable media where audio files may be stored (e.g., memory cards, CDs, etc.)

Update Music
Allows you to rescan your music files after you have modified them.

5.5.5 Setup

The **Setup** button allows you to configure Home Theater and the multimedia windows.

General Settings

This window lets you configure general Home Theater settings.

Hide Date and Time
Allows you to display or hide the date and time.

Music Visualization
Allows you to view music visualization while playing music files.

Run with Windows Start
Allows you to automatically launch Home Theater at the start of Windows®.

Enable Animation
Allows you to enable or disable animation.

Control Panel Auto Hide
Allows you to specify within how many seconds the control panel will hide itself.

Display Options
Allows you to choose Single Display or Multiple Displays.

TV settings

Use this window to adjust the Home Theater TV properties.

TV Source. Allows you to select Cable or Antenna as the TV signal source.

Input Source. Allows you to select TV, S-Video, or Composite as your input source.

Record Quality. Allows you to set your recording quality to Good, Better, or Best.

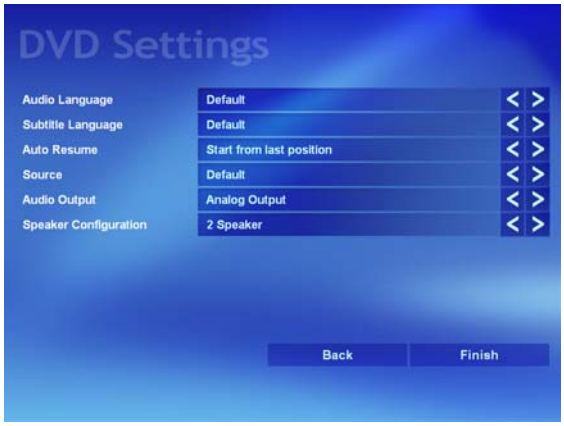
TV Audio. Allows you to set your TV audio to Stereo or Mono.

Click **Next** to display the Picture settings window or **Close** to return to the main Home Theater window.

DVD/VCD settings

Adjust the DVD/VCD player settings on this window.

Click **Finish** to return to the main window.

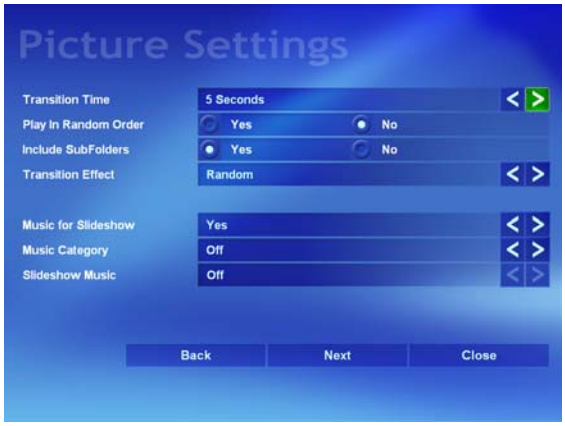


You may also modify the Home Theater configuration in Windows®. In the Windows® desktop, click **Start** > **All Programs** > **Intervideo Home Theater** > **Intervideo Home Theater Config**. A **Configuration** window appears. Change the Home Theater configuration as desired.

Picture settings

Allows you to customize your picture viewing and to setup a slideshow.

Click **Next** to display the DVD settings window or **Close** to return to the main window.



5.6 RAID configurations

The motherboard comes with a RAID controller integrated in the ULI M1573 Southbridge that allows you to configure Serial ATA hard disk drives as RAID sets. The motherboard supports the following RAID configurations.

RAID 0 *(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. Use of two new identical hard disk drives is required for this setup.

RAID 1 *(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. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 0+1 is *data striping* and *data mirroring* combined without parity (redundancy data) having to be calculated and written. With the RAID 0+1 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

JBOD *(Spanning)* stands for **Just a Bunch of Disks** and refers to hard disk drives that are not yet configured as a RAID set. This configuration stores the same data redundantly on multiple disks that appear as a single disk on the operating system. Spanning does not deliver any advantage over using separate disks independently and does not provide fault tolerance or other RAID performance benefits.

Due to chipset limitation, you cannot configure a RAID 0 /JBOD set across more than two hard disk drives.

5.6.1 Installing hard disks

The motherboard supports Ultra DMA 133/100/66 and Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

Installing Parallel ATA hard disks

To install IDE hard disks for a RAID configuration:

1. Set the jumpers of each hard disk as Master/Master or Slave/Slave.
2. Install the hard disks into the drive bays.
3. Connect the HDD signal cables.
4. Connect a 4-pin power cable to the power connector on each drive.

Installing Serial ATA (SATA) hard disks

To install the SATA hard disks for a RAID configuration:

1. Install the SATA hard disks into the drive bays.
2. Connect the SATA signal cables.
3. Connect a SATA power cable to the power connector on each drive.

5.6.2 ULI® RAID configurations

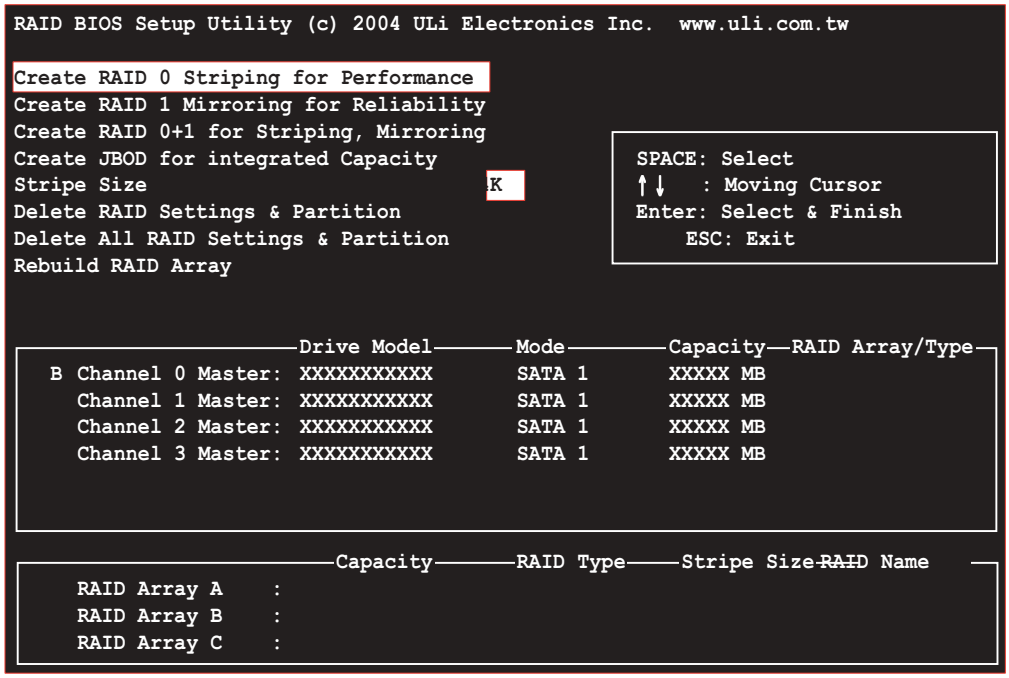
The ULI® RAID controller supports RAID 0, RAID 1, RAID 0+1, and JBOD configurations. Use the ULI® RAID BIOS Setup utility to configure a disk array.

Entering the Silicon Image BIOS RAID configuration utility

To enter the Silicon Image BIOS RAID configuration utility:

1. Boot up your computer.
2. During POST, press <Ctrl+A>.

The RAID BIOS setup screens shown in this section are for reference only, and may not exactly match the items on your screen.



The Main Menu on the upper left side allows you to select an operation to perform. The Main Menu options include:

Create RAID 0 Striping for Performance - creates a new legacy RAID set or allocates spare drives.

Create RAID 1 Mirroring for Reliability - creates and maintains an identical image of data from one drive to a second drive.

Create RAID 0+1 for Striping, Mirroring - creates a RAID setup with all the benefits of both RAID 0 and RAID 1 configuration.

Create JBOD for integrated capacity - creates a JBOD configuration.

Stripe Size - sets the stripe size.

Delete RAID Settings & Partition - deletes a selected RAID set and partition.

Delete All RAID Settings & Partition - deletes all current RAID set(s) and partition(s).

Rebuild RAID array - rebuilds mirror drive(s).

On the upper right side of the screen is the legend box. The keys on the legend box allow you to navigate through the setup menu options. The following lists the keys in the legend box and their corresponding functions.

SPACE : Select an item
↑, ↓ : Move cursor to the next item
Enter : Confirms a selected item
ESC : Exit

Creating a RAID 0 configuration

To create a RAID 0 set:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Create RAID 0 Striping for Performance** then press <Enter>.
2. Use the up or down arrow keys to select a drive then press <Space> or <Enter>. The striped mark "S" appears before a selected drive.
3. Repeat step 2 to select the second drive.
4. The utility prompts the following warning message:

```
Data on RAID drives will be deleted (Y/N)?
```

   Press <Y> to continue or press <N> to return to the menu.
5. Key in a RAID name with a maximum of eight (8) alphanumeric characters then press <Enter>. Do not use special characters or symbols.
6. The utility displays the RAID Array settings at the bottom of the screen.

Creating a RAID 1 configuration

To create a RAID 1 set:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Create RAID 1 Mirroring for Reliability** then press <Enter>.
2. Use the up or down arrow keys to select a drive then press <Space> or <Enter>. The striped mark "M" appears before a selected drive.
3. Repeat step 2 to select the second drive.
4. The utility prompts the following warning message:

```
Create RAID 1 (Y/N)?
```

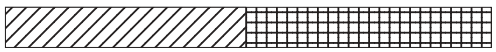
   Press <Y> to continue or press <N> to return to the menu.

5. Key in a RAID name with a maximum of eight (8) alphanumeric characters then press <Enter>. Do not use special characters or symbols.
6. The utility prompts the following confirmation message:

```
Duplicate Data from M to m (Y/N)?
```

   Press <Y> to duplicate data from the source disk "M" to the target disk "m" or press <N> to create a RAID 1 set without duplicating the data.

7. If you selected <Y>, the utility will duplicate your data. The following progress bar appears.



8. The utility displays the RAID Array settings at the bottom of the screen.

Creating a RAID 0+1 configuration

To create a RAID 0+1 set:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Create RAID 0+1 Striping, Mirroring** then press <Enter>.
2. The utility prompts the following warning message:

```
Data on first 4 drives will be deleted (Y/N)?
```

   Press <Y> to continue or press <N> to return to the menu.
3. Key in a RAID name with a maximum of eight (8) alphanumeric characters then press <Enter>. Do not use special characters or symbols.
4. The utility displays the RAID Array settings at the bottom of the screen.

Creating a JBOD configuration

To create a JBOD set:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Create JBOD for integrated capacity** then press <Enter>.
2. Use the up or down arrow keys to select a drive then press <Space> or <Enter>. The striped mark “J” appears before a selected drive.
3. Repeat step 2 to select the second drive.
4. The utility prompts the following warning message:

```
Data on RAID drives will be deleted (Y/N)?
```

   Press <Y> to continue or press <N> to return to the menu.
5. Key in a RAID name with a maximum of eight (8) alphanumeric characters then press <Enter>. Do not use special characters or symbols.
6. The utility displays the RAID Array settings at the bottom of the screen.

Setting the Stripe Size

To set the stripe size:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Stripe Size** then press <Enter>.
2. Use the up or down arrow keys to select a stripe size then press <Enter>.
3. The stripe size is displayed beside the Stripe Size menu item.

TIP: For server systems, we recommend using a lower array block size. For multimedia computer systems used mainly for audio and video editing, we recommend a higher array block size for optimum performance.

Deleting a RAID configuration

To delete a RAID set:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Delete RAID Settings & Partition** then press <Enter>.
2. Use the up or down arrow keys to select a RAID set then press <Space> or <Enter>. The striped mark "E" appears before a selected drive.
3. The utility prompts the following warning message:

```
Data on RAID drives will be deleted (Y/N)?
```

Press <Y> to continue or press <N> to return to the menu.

Pressing <Y> removes the deleted RAID Array item from the list at the bottom of the screen.

Deleting All RAID configurations

To delete all RAID sets:

1. From the ULI RAID BIOS Setup utility menu, move the cursor to **Delete All RAID Settings & Partition** then press <Enter>.
2. The utility prompts the following warning message:

```
Data on RAID drives will be deleted (Y/N)?
```

Press <Y> to continue or press <N> to return to menu.

Pressing <Y> removes all the RAID Array items from the list at the bottom of the screen.

5.7 Creating a RAID driver disk

A floppy disk with the RAID driver is required when installing Windows® 2000/XP operating system on a hard disk drive that is included in a RAID set.

To create a RAID driver disk:

1. Boot your computer.
2. Press <Del> during POST to enter the BIOS setup utility.
3. Set the optical drive as the primary boot device.
4. Save changes and exit BIOS.
5. Insert the support CD into the optical drive.
6. Press the any key when the system prompts “Press any key to boot from the optical drive.” The following menu appears:

```
1) Make SIS RAID Driver Disk
2) Format Floppy Disk
3) FreeDOS command prompt
Please choose 1 ~ 3:_
```

7. Press <1> to create a RAID driver disk.
8. Insert a formatted floppy disk into the floppy drive then press <Enter>.
9. Follow succeeding screen instructions to complete the process.

OR

1. Start Windows.
2. Place the motherboard support CD into the optical drive.
3. When the **Drivers** menu appears, click **Make ULI Chipset Driver Disk** to create a ULI RAID driver disk.
4. Insert a floppy disk into the floppy disk drive.
5. Follow succeeding screen instructions to complete the process.

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

To install the RAID driver:

1. During the OS installation, the system prompts you to press the F6 key to install third-party SCSI or RAID driver.
2. Press <F6> then insert the floppy disk with RAID driver into the floppy disk drive.
3. Follow the succeeding screen instructions to complete the installation.

The Appendix describes the CPU features and technologies that the motherboard supports.

The Appendix also includes information on the optional remote controller, the key table, and international TV systems and standards.

4 Reference information

Chapter summary

A.1 Enhanced Intel SpeedStep® Technology (EIST)

- The motherboard comes with a BIOS file that supports EIST. You can download the latest BIOS file from the ASUS website (www.asus.com/support/download/) if you need to update the BIOS. See Chapter 4 for details.
- Visit www.intel.com for more information on the EIST feature.

A.1.1 System requirements

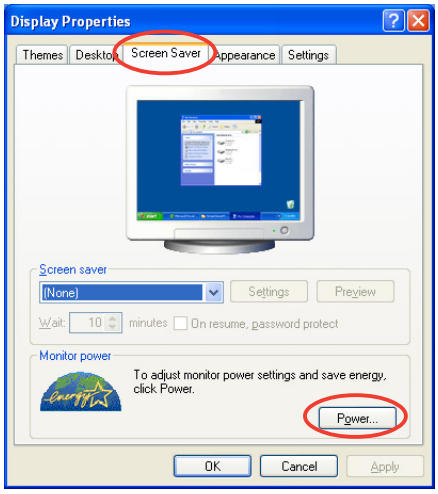
Before using EIST, check your system if it meets the following requirements:

- Intel® Pentium® 4 processor with EIST support
- BIOS file with EIST support
- Operating system with EIST support (Windows® XP SP2/Windows® Server 2003 SP1/Linux 2.6 kernel or later versions)

A.1.2 Using the EIST

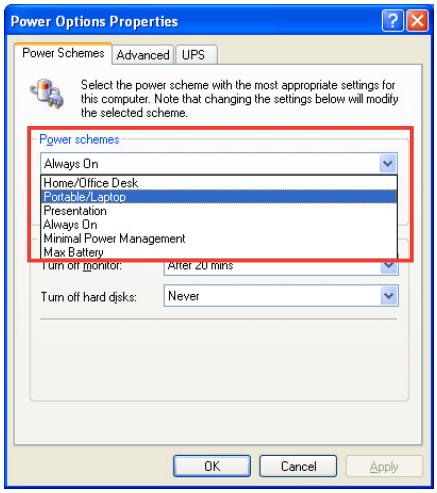
To use the EIST feature:

1. Turn on the computer, then enter the BIOS Setup.
2. Go to the **Advanced Menu**, highlight **CPU Configuration**, then press <Enter>.
3. Set the **Intel(R) SpeedStep Technology** item to [Automatic], then press <Enter>. See page 4-25 for details.
4. Press <F10> to save your changes and exit the BIOS setup.
5. After the computer restarts, right click on a blank space on the desktop, then select **Properties** from the pop-up menu.
6. When the **Display Properties** window appears, click the **Screen Saver** tab.
7. Click the **Power** button on the Monitor power section to open the **Power Options Properties** window.



8. On the **Power schemes** section, click , then select any option except **Home/Office Desktop** or **Always On**.
9. Click **Apply**, then click **OK**.
10. Close the **Display Properties** window.

    After you adjust the power scheme, the CPU internal frequency slightly decreases when the CPU loading is low.



The screen displays and procedures may vary depending on the operating system.

A.2 Intel® Hyper-Threading Technology

- The motherboard supports Intel® Pentium® 4 LGA775 processors with Hyper-Threading Technology.
- Hyper-Threading Technology is supported under Windows® XP/2003 Server and Linux 2.4.x (kernel) and later versions only. Under Linux, use the Hyper-Threading compiler to compile the code. If you are using any other operating systems, disable the Hyper-Threading Technology item in the BIOS to ensure system stability and performance.
- Installing Windows® XP Service Pack 1 or later version is recommended.
- Make sure to enable the Hyper-Threading Technology item in BIOS before installing a supported operating system.
- For more information on Hyper-Threading Technology, visit www.intel.com/info/hyperthreading.

Using the Hyper-Threading Technology

To use the Hyper-Threading Technology:

1. Install an Intel® Pentium® 4 CPU that supports Hyper-Threading Technology.
2. Power up the system and enter the BIOS Setup. Under the **Advanced Menu**, make sure that the item **Hyper-Threading Technology** is set to **Enabled**. See page 4-24 for details.

   The BIOS item appears only if you installed a CPU that supports Hyper-Threading Technology.
3. Restart the computer.

A.3 Remote controller specifications

The optional ASUS remote controller allows you to operate the TV tuner from a distance. Use the remote controller to navigate through the ASUS Home Theater windows.

Operating range	5 meters (max)
Power Source	3V (2 x "AAA" batteries)*
Receiver	USB infrared receiver (supplied)

***not included**

The remote controller is purchased separately.

A.4 Using the remote controller

To use the remote controller:

1. Install the remote controller batteries.
2. Insert the receiver USB plug to an available USB port in your computer.
3. Install the receiver at an unboscured location for optimum operation.
2. Turn on your computer, then open the ASUS Home Theater. Refer to section "5.5 ASUS Home Theater" for details.
3. Navigate through the ASUS Home Theater windows using the remote controller.

Remote controller receiver

A.5 Remote controller layout

A.6 Remote controller functions

A.6.1 System buttons

SYSTEM BUTTONS	
Button	**Function**
	Power Off
	Launch TV mode
	Print
	Close Home Theater
	Launch Music mode
	Launch Pictures mode
	Launch Video Mode
	Open the DVD Menu screen

A.6.2 Key table

Button	TV function	Keyboard control	Remote mouse
	Right	VK_Right	Right
	Up	VK_Up	Up
	Down	VK_Down	Down
	Left	VK_Left	Left
	Back	Backspace	Left-click
	OK/Select	VK_Return	Enter
	Tab	VK_Tab	Right-click
	Toggle/Switch between Tv and remote mouse mode		
	Previous chapter	Ctrl+B	
	Pause	Ctrl+P	
	Play	Ctrl+Shift+P	
	Next	Ctrl+F	
	Rewind	Ctrl+Shift+B	
	Stop	Ctrl+S	
	Fwd	Ctr+Shift+F	
	Volume up/Volume down	F10/F9	
	Launch Home Theater		
	Channel up/Channel down	Page up/Page down	
	Mute	F8	
	Record	Ctrl+R	
0 ~ 9	Select channel	VK_0 ~ VK_9	
	Shuffle	Ctrl+Alt+Shift+B	
	Repeat	Ctrl+Alt+Shift+F	

A.7 International TV systems and standards

- Since TV systems and standards may change anytime without notice, this list is provided for reference only.
- Make sure that your TV card conforms with the system or standard used in your country or location.

AREA	TV	COLOR	STEREO	SUBTITLE
Albania	B/G	PAL		
Argentina	N		PAL-N	
Australia	B/G	PAL	FM-FM	Teletext
Austria	B/G	PAL	FM-FM	Teletext
Azores Is. (Portugal)	B		PAL	
Bahamas	M		NTSC	
Bahrain	B		PAL	
Barbados	N		NTSC	
Belgium	B/G	PAL	Nicam	Teletext
Bermuda	M		NTSC	
Brazil	M		PAL-M	MTS
Bulgaria	D		SECAM	
Canada	M CC		NTSC	MTS
Canary Is.	B		PAL	
China	D		PAL	
Colombia	N		NTSC	
Cyprus	B		PAL	
Czech Republic	D/K	SECAM/PAL		
Denmark	B	PAL	Nicam	TeleText
Egypt	B		SECAM	
Faroe Islands (DK)	B		PAL	
Finland	B/G	PAL	Nicam	TeleText
France	E/L	SECAM		Antiope
Gambia	I	PAL		
Germany	B/G	PAL	FM-FM	TeleText
Germany (prev East)	B/G	SECAM/PAL		
Gibraltar	B		PAL	
Greece	B/H	SECAM		
Hong Kong	I	PAL	Nicam	
Hungary	B/G & D/K	PAL (was SECAM)	Nicam (Budapest only)	
Iceland	B		PAL	
India	B		PAL	
Indonesia	B		PAL	
Iran	H		SECAM	
Ireland	I	PAL	Nicam	TeleText

AREA	TV	COLOR	STEREO	SUBTITLE
Israel	B/G	PAL	Nicam	TeleText
Italy	B/G	PAL	FM/FM	TeleText
Jamaica	M	SECAM		
Japan	M	NTSC	Matrix	
Jordan	B	PAL		
Kenya	B	PAL		
Korea	M	NTSC		
Luxembourg	B/G	PAL		TeleText
Madeira	B	PAL		
Madagascar	B	SECAM		
Malaysia	B	PAL		
Malta	B/G	PAL		
Mauritius	B	SECAM		
Mexico	M	NTSC	MTS	CC
Monaco	L/G	SECAM/PAL		
Morocco	B	SECAM		
Netherlands	B/G	PAL	FM-FM	TeleText
New Zealand	B/G	PAL	Nicam	TeleText
North Korea	D, D/K	SECAM/PAL		
Norway	B/G	PAL	Nicam	
Pakistan	B	PAL		
Paraguay	N	PAL		
Peru	M	NTSC		
Philipines	M	NTSC		
Poland	D/K	PAL		Teletext
Portugal	B/G	PAL	Nicam	Teletext
Romania	G	PAL		
Russia	D/K	SECAM		
Saudi Arabia	B	SECAM		
Seychelles	I	PAL		
Singapore	B	PAL		
South Africa	I	PAL		
South Korea	N	NTSC		
Spain	B/G	PAL	Nicam	
Sri Lanka	B/G	PAL		
Sweden	B/G	PAL	Nicam	Teletext
Switzerland	B/G	PAL	FM-FM	TeleText
Tahiti	KI	SECAM		
Taiwan	M	NTSC		
Thailand	B	PAL		
Trinidad	M	NTSC		
Tunisia	B	SECAM		
Turkey	BPAL			TeleText
Ukraine	D/K	SECAM		
United Arab Emirates	B/G	PAL		
United States	M	NTSC		
United Kingdom	I	PAL		
Vietnam	M/D	NTSC/SECAM		
Yugoslavia	B/G	PAL		
Zambia	B/G	PAL		
Zimbabwe	B/G	PAL		