P5V-X SE

Motherboard

E3223

First Edition
July 2007

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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.

This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

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. This chapter also 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.

- **Chapter 2: 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 3: Software support**

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

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/iP5VXSE.ROM`

P5V-X SE specifications summary

CPU	LGA775 socket for Intel®Core™2 Duo/Pentium® D/ Pentium® 4/Celeron® processors Compatible with Intel® 05A/05B processors Suppports Intel® EIST/Hyper-Threading Technology (*Refer to www.asus.com for Intel CPU support list)
Chipset	Northbridge: VIA PT890Pro Southbridge: VIA VT8237S
Front side bus	1066/800/533 MHz
Memory	2 x 240-pin DIMM sockets support up to 4 GB of DDR2 667/533/400 MHz unbuffered non-ECC memory *Refer to www.asus.com or user manual for Memory QVL (Qualify Vendor List)
Expansion slots	1 x PCI Express x16 slot 4 x PCI slots
Storage	VIA VT8237S Southbridge supports: - 2 x Ultra DMA 133/100/66 - 2 x Serial ATA (3Gb/s) with RAID 0, RAID 1, and JBOD support
Audio	Realtek® ALC662 6-channel high definition audio CODEC - Suppports Jack-sensing, and Enumeration technology. - Coaxial S/PDIF out port at back I/O
LAN	PHY 10/100Mbps LAN
USB	Supports up to 8 USB 2.0 ports (4 ports at mid-board, 4 ports at back panel)
ASUS special features	ASUS Q-Fan ASUS EZ Flash ASUS CrashFree BIOS 2 ASUS MyLogo™
Rear panel	1 x Parallel port 1 x LAN (RJ-45) port 4 x USB 2.0/1.1 ports 1 x COM port 1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x Coaxial S/PDIF out port 1 x 6-Channel Audio I/O port

(continued on the next page)

P5V-X SE specifications summary

Internal connectors	2 x USB connectors support 4 additional USB ports 1 x CPU fan connector 1 x Chassis fan connector 1 x 24-pin ATX power connector 1 x 4-pin ATX 12V power connector 1 x CD audio in connector 2 x IDE connectors 1 x Floppy disk drive connector 2 x SATA connectors 1 x Front panel High Definition Audio connector 1 x S/PDIF out connector 1 x System panel connector
BIOS features	4 Mb Flash ROM AMI BIOS, PnP, DMI, WfM2.0, ACPI2.0a, SM BIOS 2.4
Manageability	WOL by PME, WOR by PME, WOR by Ring
Accessories	User manual 1 x UltraDMA cable 1 x FDD cable 1 x I/O shield 1 x Serial ATA cable 1 x Serial ATA power cable
Support CD contents	Device drivers ASUS PC Probe II ASUS Update utility Anti-virus software
OS Compatibility	Windows Vista/XP/2000
Form factor	ATX form factor: 12 in x 6.8 in (30.5 cm x 17.3 cm)

*Specifications are subject to change without notice.

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

Product introduction

1

1.1 Welcome!

Thank you for buying an ASUS® P5V-X SE 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 P5V-X SE motherboard
Cables	1 x Serial ATA cable 1 x Serial ATA power cable 1 x Ultra DMA 133/100 cable 1 x Floppy disk drive cable
Accessories	I/O shield
Application CD	ASUS motherboard support CD
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® processor in the 775-land package. The motherboard supports the Intel® Core™2 Duo/Pentium® D/Pentium® 4/Celeron processor with 1066/800/533 MHz Front Side Bus (FSB). The motherboard also supports the Intel® Hyper-Threading Technology and is fully compatible with Intel® 05B processor. See page 1-9 for details.

Intel® Core™2 Processor support

This motherboard supports the latest Intel® Core™2 processor in the LGA775 package. With new Intel® Core™ microarchitecture technology and 1066/800 MHz FSB, Intel® Core™2 processor is one of the most powerful and energy-efficient CPUs in the world.

64-bit CPU support

The motherboard supports 64-bit processors that provides high-performance computing and faster memory access required for memory and data intensive applications.

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.

DDR2 memory support

The motherboard supports DDR2 memory which features data transfer rate of 667 MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications. See pages 1-16 to 1-18 for details.

Serial ATA 3Gb/s technology

The motherboard supports the next-generation hard drives based on the Serial ATA (SATA) 3Gb/s storage specification, delivering enhanced scalability and doubling the bus bandwidth for high-speed data retrieval and saves.

USB 2.0 technology

The motherboard implements the Universal Serial Bus (USB) 2.0 specification, dramatically increasing the connection speed from the 12 Mbps bandwidth on USB 1.1 to a fast 480 Mbps on USB 2.0. USB 2.0 is backward compatible with USB 1.1. See pages 1-25 and 1-31 for details.

S/PDIF digital sound ready

The motherboard supports the S/PDIF Out technology through the coaxial S/PDIF Out port on the rear panel. The S/PDIF technology turns your computer into a high-end entertainment system with digital connectivity to powerful audio and speaker systems. See page 1-29 for details.

High Definition Audio

Enjoy high-quality sound system on your PC! The onboard 6-channel HD audio (High Definition Audio, previously codenamed Azalia) CODEC enables high-quality 192KHz/24-bit audio output, jack-sensing technology that automatically detects and identifies what types of peripherals are plugged into the audio I/O jacks and notifies users of inappropriate connection, meaning there will be no more confusion of Line-in, Line-out and Mic jacks.

1.3.2   Innovative ASUS features

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 BIOS chip.

ASUS EZ Flash

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.

Green ASUS

The motherboard and its packaging comply with the European Union's Restriction on the use of Hazardous Substances (RoHS). This is in line with the ASUS vision of creating environment-friendly and recyclable products/packaging to safeguard consumers' health while minimizing the impact on the environment.

ASUS MyLogo™

ASUS My Logo is the new feature present in the motherboard that allows you to personalize and add style to your system with customizable boot logos.

ASUS Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the CPU fan speed according to the system loading to ensure quiet, cool, and efficient operation.

1.4 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 newly designed ASUS Power LED that lights up in two colors to show the system power status. Blue indicates that the system is in sleep/soft-off mode and Red indicates that the system is ON. The ASUS Power LED helps remind you to shut down the system and unplug the power cable before removing or plugging in any motherboard component.

SB_PWR

ON
Standby
Power

OFF
Powered
Off
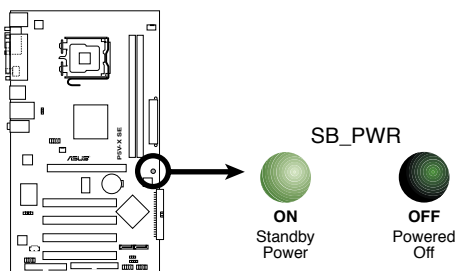
P5V-X SE Onboard LED

1.5 Motherboard overview

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

⚡ 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.

1.5.1 Placement direction

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

1.5.2 Screw holes

Place six (6) 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.

Place this side towards the rear of the chassis
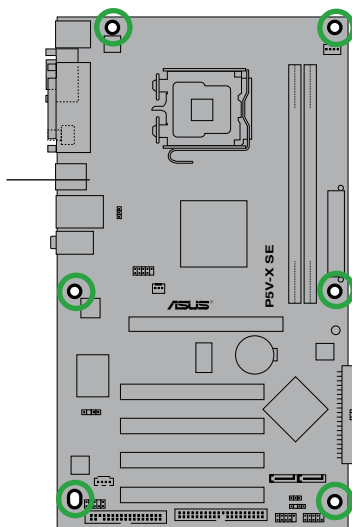
1.5.3   P5V-X SE Motherboard layout
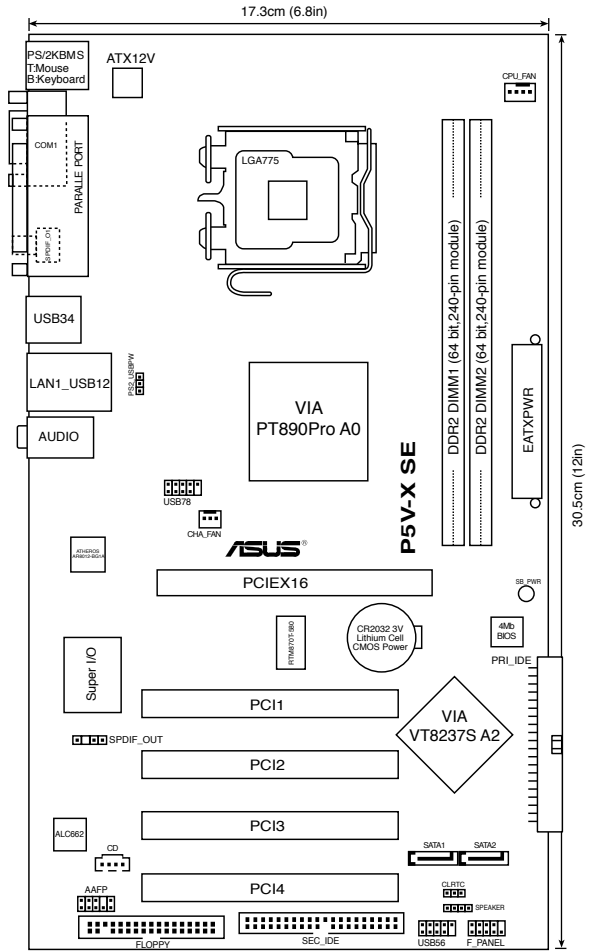
1.6 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Core™2 Duo/Pentium® D/ Pentium® 4/Celeron® processor in the 775-land package.

<table>
<tr>
<td>⚠️</td>
<td>

• Your boxed Intel® Core™2 Duo/Pentium® D/Pentium® 4/Celeron® LGA775 processor package should come with installation instructions for the CPU, fan and heatsink assembly. 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 pins are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket pins/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 pins resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

</td>
</tr>
</table>

1.6.1 Installling the CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.
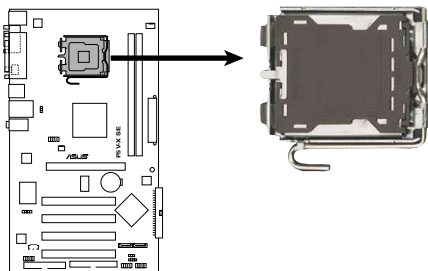
P5V-X SE CPU Socket 775

<table>
<tr>
<td>✎</td>
<td>Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.</td>
</tr>
</table>

---

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

Retention tab

Load lever

PnP Cap

**This side of the cam box
should face you.**
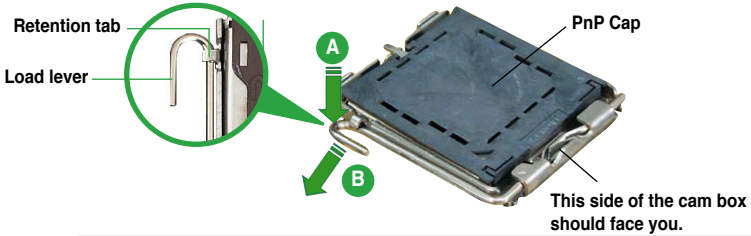
To prevent damage to the socket pins, do not remove the PnP cap unless you
are installing a CPU.

3.   Lift the load lever in the direction of
      the arrow to a 135º angle.
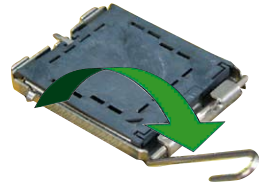
4.   Lift the load plate with your thumb
      and forefinger to a 100º angle (A),
      then push the PnP cap from the load
      plate window to remove (B).
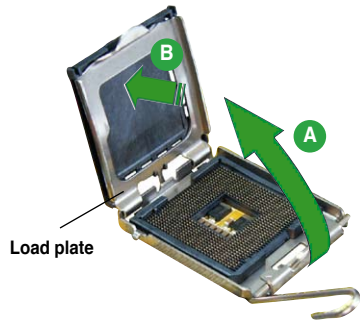
Load plate

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

Alignment key

Gold triangle mark
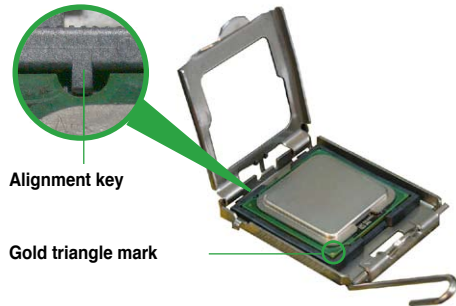
6.	Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.
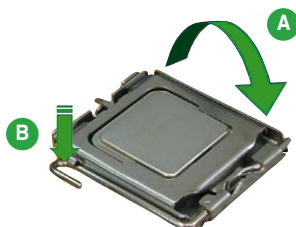
The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

Notes on Intel® Hyper-Threading Technology

- This motherboard supports Intel® Pentium® 4 CPUs in the 775-land package with Hyper-Threading Technology.

- Hyper-Threading Technology is supported under Windows® XP/2003 Server and Linux 1.7.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.

To use the Hyper-Threading Technology on this motherboard:

1.	Install an Intel® Pentium® 4 CPU in the 775-land package that supports Hyper-Threading Technology.

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

3.	Reboot the computer.

1.6.2   Installling 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.

- •   Install the motherboard to the chassis before you install the CPU fan and heatsink assembly

- •   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 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 a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan 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.

Fastener

Motherboard hole

Narrow end of the groove
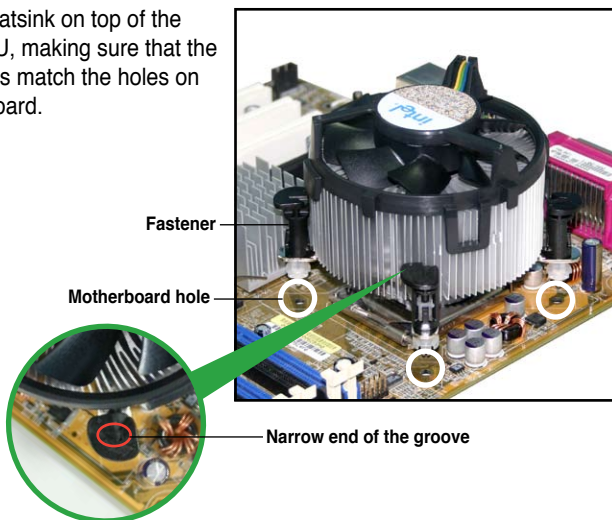
Make sure each fastener is oriented as shown, with the narrow groove directed outward.

2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.
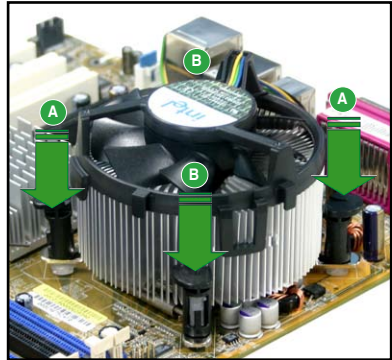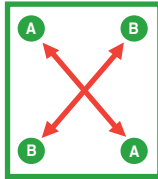
3. When the fan and heatsink assembly is in place, connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.

CPU_FAN

CPU FAN PWM
CPU FAN IN
CPU FAN PWR
GND
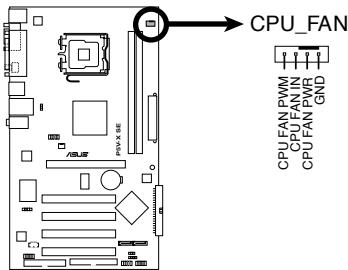
P5V-X SE CPU Fan Connector

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

1.6.3   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 labeled CPU_
    FAN.

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.
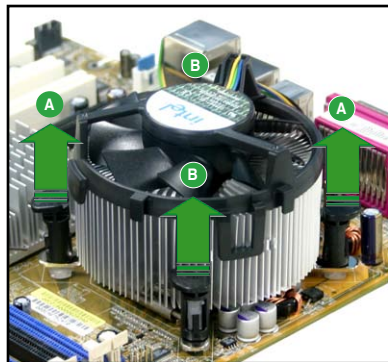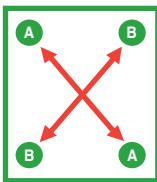
4. Remove the heatsink and fan assembly from the motherboard.
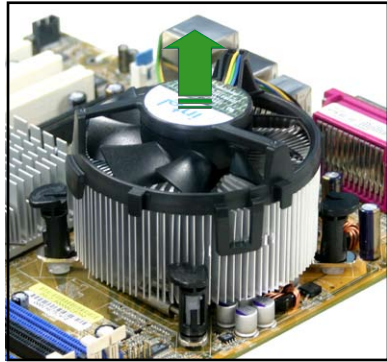
5. Rotate each fastener clockwise to reset the orientation.
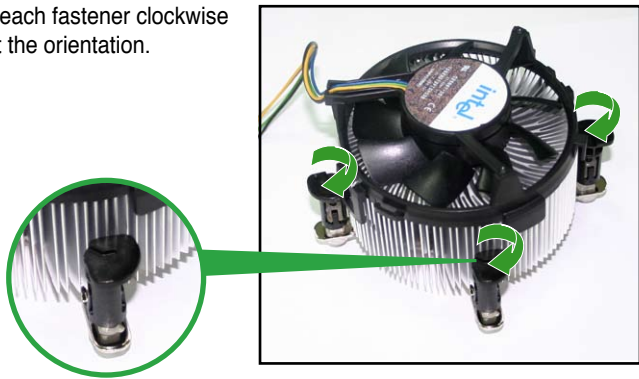
Narrow end of the groove

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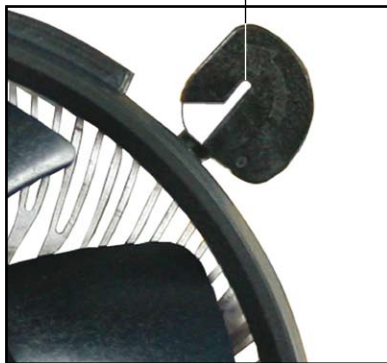
1.7 System memory

1.7.1 Overview

The motherboard comes with two Double Data Rate 2 (DDR2) Dual Inline Memory Modules (DIMM) sockets.

A DDR2 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 184-pin DDR DIMM. DDR2 DIMMs are notched differently to prevent installation on a DDR DIMM socket.

The figure illustrates the location of the DDR2 DIMM sockets:
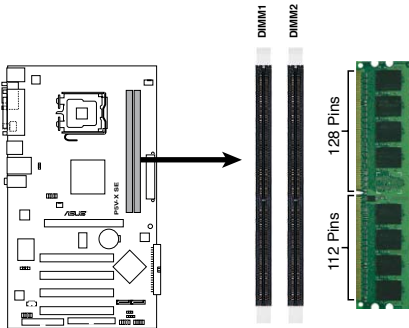
P5V-X SE 240-pin DDR2 DIMM Sockets

1.7.2 Memory configurations

You may install 256 MB, 512 MB, 1 GB, and 2 GB unbuffered non-ECC DDR2 DIMMs into the DIMM sockets.

- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor. Refer to the DDR2 Qualified Vendors List on the next page for details.

- Due to chipset resource allocation, the system may detect less than 4 GB system memory when you installed two 2 GB DDR2 memory modules.

- This motherboard does not support memory modules made up of 128 Mb chips or double sided x16 memory modules.

- If you install Window® XP 32-bit operation system, a total memory of less than 3GB is recommended.

DDR2-533 Qualified Vendors List

Size	Vendor	Model	CL	Brand	SS/DS	Component	DIMM support A	B
256MB	Kingston	KVR533D2N4/256	N/A	Elpida	SS	E5116AB-5C-E	•	•
256MB	Kingston	KVR533D2N4/256	N/A	Elpida	SS	E5116AF-5C-E	•	•
512MB	Kingston	KVR533D2N4/512	N/A	Hynix	DS	HY5PS56821F-C4	•	•
512MB	Kingston	KVR533D2N4/512	N/A	Infineon	SS	HYB18T512800AF3733336550	•	•
1G	Kingston	KVR533D2N4/1G	N/A	Kingston	DS	D6408TE7BL-37	•	•
1G	Kingston	KVR533D2N4/1G	N/A	Kingston	DS	D6408TLRAGL37U	•	•
256MB	Samsung	M378T3253FG0-CD5	N/A	Samsung	SS	K4T56083QF-GCD5	•	•
512MB	Samsung	M378T6553BG0-CD5	4	Samsung	SS	K4T51083QB-GCD5	•	•
256MB	Qimonda	HYS64T32000HU-3.7-A	4	Qimonda	SS	HYB18T512160AF-3.7AFSS31270	•	•
512MB	Qimonda	HYS64T64000GU-3.7-A	4	Qimonda	SS	HYB18T512800AC37SSS11511	•	•
512MB	Qimonda	HYS64T64000HU-3.7-A	N/A	Qimonda	SS	HYB18T512800AF37SSS12079	•	•
512MB	Qimonda	HYS64T64000HU-3.7-A	N/A	Qimonda	SS	HYB18T512800AF37FSS29334	•	•
256MB	HY	HYMP532U64CP6-C4 AB	4	Hynix	SS	HY5PS121621CFP-C4	•	•
1G	HY	HYMP512U64CP8-C4 AB	4	Hynix	DS	HY5PS12821CFP-C4	•	•
512MB	Micron	MT 16HTF6464AG-53EB2	4	Micron	DS	D9BOM	•	•
512MB	Micron	MT 16HTF6464AG-53EB2	4	Micron	DS	Z9BQT	•	•
1G	Micron	MT 16HTF12864AY-53EA1	4	Micron	DS	D9CRZ	•	•
512MB	Corsair	VS512MB533D2	N/A	Corsair	DS	MIII0052532M8CEC	•	•
512MB	Corsair	VS512MB533D2	N/A	Corsair	DS	MI110052532M8CEC	•	•
1G	Corsair	VS1GB533D2	N/A	Corsair	DS	64M8CFEGQIB0900718	•	•
512MB	Elpida	EBE51UD8ABFA-5C-E	N/A	Elpida	SS	E5108AB-5C-E	•	•
512MB	Kingmax	KLBC28F-A8KB4	N/A	Kingmax	SS	KKEA88B4IAK-37	•	•
256MB	Kingmax	KLBB68F-36EP4	N/A	Elpida	SS	E5116AB-5C-E	•	•
512MB	Kingmax	KLBC28F-A8EB4	N/A	Elpida	SS	E5108AE-5C-E	•	•
512MB	ADATA	M2OAD2G3H3166I1B52	N/A	ADATA	SS	AD29608A8A-37DG20719	•	•
2G	ADATA	M20AD2H3J4170I1B53	N/A	ADATA	DS	AD20908A8A-37DG30721	•	•
512MB	PQI	MEAB-323LA	N/A	PQI	DS	D2-E04180W025	•	•
1G	PQI	MEAB-423LA	N/A	PQI	DS	D2-E04230W107	•	•
512MB	AENEON	AET660UD0-370A98Z	4	AENEON	SS	AET93F370A G 0513	•	•
256MB	AENEON	AET560UD00-370A98Z	4	AENEON	SS	AET94F370AWVV34635G0520	•	•
512MB	AENEON	AET660UD00-370A98Z	4	AENEON	SS	AET93F370A 3VV36328G 0522	•	•
512MB	AENEON	AET660UD00-370A98X	N/A	AENEON	SS	AET93F370A 0518	•	•
512MB	AENEON	AET660UD00-370A88S	N/A	AENEON	DS	AET82F370A 0550	•	•
512MB	AENEON	AET660UD00-370B97X	4	AENEON	SS	AET93R370B 0640	•	•
1G	AENEON	AET760UD00-370A98Z	N/A	AENEON	DS	AET93F370A 0551	•	•
1G	AENEON	AET760UD00-370A98S	N/A	AENEON	DS	AET92F370A 0606	•	•
1G	AENEON	AET760UD00-370B97X	4	AENEON	DS	AET93R370B 0640	•	•
1G	AENEON	AET760UD00-370B97S	4	AENEON	DS	AET92R370B 0644	•	•
2G	AENEON	AET860UD00-370A08X	N/A	AENEON	DS	AET03F370AFVV26176G 0542	•	•
512MB	REMAXEL	RML1040EG38D6F-533	4	Elpida	SS	E5108AG-5C-E	•	•
256MB	TAKEMS	TMS25B264B161-534KQ	4	takeMS	SS	MS18T51216-3.70711	•	•
512MB	TAKEMS	TMS51B264C081-534QI	4	takeMS	SS	MS18T51280-3.7	•	•
512MB	TAKEMS	TMS51B264C081-534AP	4	takeMS	SS	MS18T51280-3.7P0704D	•	•
512MB	TAKEMS	TMS51B264C081-534AE	4	takeMS	SS	MS18T51280-3.7EA07100	•	•
1G	TAKEMS	TMS1GB264C081-534AE	4	takeMS	DS	MS18T51280-3.7EA0651D	•	•
1G	TAKEMS	TMS1GB264C081-534QI	4	takeMS	DS	MS18T51280-3.7	•	•
1G	TAKEMS	TMS1GB264C081-534AP	4	takeMS	DS	MS18T51280-3.7P0645D	•	•
512MB	VERITECH	GTP512HLTM46DG	N/A	VERITECH	DS	VTD264M8PC6G01A164129621	•	•
1G	VERITECH	GTP01GHLTM56DG	N/A	VERITECH	DS	VTD264M8PC6G01A164129621	•	•

DDR2-667 Qualified Vendors List

Size	Vendor	Model	CL	Brand	SS/DS	Component	DIMM support A	B
256MB	Kingston	KVR667D2N5/256	N/A	Elpida	SS	E2508AB-6E-E	•	•
256MB	Kingston	KVR667D2N5/256	N/A	Kingston	SS	D3216TLSAKL3U	•	•
256MB	Kingston	KVR667D2N5/256	N/A	Infineon	SS	HYB18T256800AF3SW65 33154	•	•
512MB	Kingston	KVR667D2N5/512	N/A	Kingston	SS	D6408TE8WL-27	•	•
512MB	Kingston	KVR667D2N5/512	N/A	Elpida	SS	E5108AGBG-6E-E	•	•
1G	Kingston	KVR667D2N5/1G	N/A	Kingston	DS	D6408TE8WL-3	•	•
1G	Kingston	KVR667D2N5/1G	N/A	Kingston	DS	D6408TEBGGL3U	•	•
1G	Kingston	KVR667D2N5/1G	N/A	Elpida	DS	E5108AGBG-6E-E	•	•
512MB	Samsung	KR M378T6553CZ0-CE6	N/A	Samsung	SS	K4T51083QC	•	•
512MB	Samsung	KR M378T6453FZ0-CE6	N/A	Samsung	DS	K4T56083QF-ZCE6	•	•
512MB	Samsung	M378T6553CZ3-CE6	N/A	Samsung	SS	K4T51083QC-ZCE6	•	•
1G	Samsung	M378T2953CZ3-CE6	N/A	Samsung	DS	K4T51083QC-ZCE6	•	•
1G	Samsung	KR M378T2953CZ0-CE6	N/A	Samsung	DS	K4T51083QC-ZCE6	•	•
256MB	Qimonda	HYS64T32000HU-3S-A	N/A	Qimonda	SS	HYB18T512160AF-3SSSS17310	•	•
512MB	Qimonda	HYS64T32000HU-3S-A	N/A	Qimonda	SS	HYB18T5128000AF-3SSSS27416	•	•
512MB	Qimonda	HYS64T64000HU-3S-A	N/A	Qimonda	SS	HYB18T512800AF3SFSS05346	•	•
1G	Qimonda	HYS64T128020HU-3S-A	N/A	Qimonda	DS	HYB18T512800AF3SSSS28104	•	•
512MB	Corsair	VS512MB667D2	N/A	Corsair	SS	64M8CFEGPS0900647	•	•
1G	Corsair	VS1GB667D2	N/A	Corsair	DS	MID095D62864M8CEC	•	•
1G	Corsair	Heat-Sink Package	4	Corsair	DS	XMS2-5400	•	•
256MB	HY	HYMP532U64CP6-Y5 AB	5	Hynix	SS	HY5PS121621CFP-Y5	•	•
512MB	HY	HYMP564U64AP8-Y4 AA	N/A	Hynix	SS	HY5PS12821AFP-Y4	•	•
512MB	HY	HYMP564U64AP8-Y5 AA	N/A	Hynix	SS	HY5PS12821AFP-Y5	•	•
1G	HY	HYMP512U64AP8-Y5 AB	N/A	Hynix	DS	HY5PS12821AFP-Y5	•	•
1G	HY	HYMP512U64AP8-Y5 AB	5	Hynix	DS	HY5PS12521CFP-Y5	•	•
512MB	Kingmax	KLCC28F-A8EB5	N/A	Elpida	SS	E5108AE-6E-E	•	•
512MB	Kingmax	KLCC28F-A8KB5	N/A	Kingmax	SS	KKEA88B4LAUG-29DX	•	•
1G	Kingmax	KLCD48F-A8KB5	N/A	Kingmax	DS	KKEA88B4LAUG-29DX	•	•
512MB	Apacer	78.91092.420	N/A	Elpida	SS	E5108AE-6E-E	•	•
512MB	Apacer	AU512E667C5KBGC	5	Apacer	SS	AM4B5708MIJS7E0627B	•	•
512MB	Apacer	AU512E667C5KBGC	5	Apacer	SS	AM4B5708GQJS7E06332F	•	•
1G	Apacer	AU01GE667C5KBGC	N/A	Apacer	DS	AM4B5708GQJS7E0636B	•	•
1G	Apacer	78.01092.420	5	Elpida	DS	E5108AE-6E-E	•	•
1G	Apacer	AU01GE667C5KBGC	5	Apacer	DS	AM4B5708MIJS7E0627B	•	•
512MB	ADATA	M20EL5G3H3160B1C0Z	N/A	Elpida	SS	E5108AE-6E-E	•	•
512MB	ADATA	M20AD5G3H3166I1C52	N/A	ADATA	SS	AD29608A8A-3EG20648	•	•
512MB	ADATA	M20AD5G3H3166I1C52	N/A	ADATA	SS	AD29608A8A-3EG20718	•	•
1G	ADATA	M2OAD5G3I4176I1C52	N/A	ADATA	DS	AD29608A8A-3EG20645	•	•
512MB	VDATA	M2GVD5G3H31A4I1C52	N/A	VDATA	SS	VD29608A8A-3EC20615	•	•
512MB	VDATA	M2YVD5G3H31P4I1C52	N/A	VDATA	SS	VD29608A8A-3EG20627	•	•
512MB	VDATA	M2GVD5G3H166I1C52	N/A	VDATA	SS	VD29608A8A-3EG20637	•	•
1G	VDATA	M2GVD5G3I41P6I1C52	N/A	VDATA	DS	VD29608A8A-3EG20627	•	•
1G	VDATA	M2GVD5G3I41C4I1C52	N/A	VDATA	DS	VD29608A8A-3EC20620	•	•
1G	VDATA	M2GVD5G3I4176I1C52	N/A	VDATA	DS	VD29608A8A-3EG20641	•	•
512MB	PSC	AL6E8E63B-6E1K	5	PSC	SS	A3R12E3GEF637BLC5N	•	•
1G	PSC	AL7E8E63B-6E1K	5	PSC	DS	A3R12E3GEF637BLC5N	•	•
256MB	Nanya	NT256T64UH4A1FY-3C	N/A	Nanya	SS	NT5TU32M16AG-3C	•	•
512MB	Nanya	NT512T64U88A1BY-3C	N/A	Nanya	SS	NT5TU64M8AE-3C	•	•
512MB	MDT	MDT 512MB	4	MDT	SS	18D51280D-30648	•	•

(continued on the next page)

DDR2-667 Qualified Vendors List

Size	Vendor	Model	CL	Brand	SS/DS	Component	DIMM support A	B
1G	MDT	MDT 1024MB	4	MDT	DS	18D51200D-30646	•	•
1G	PQI	DDR2-667U 1G	N/A	Hynix	DS	HY5PS12821BFP-E3 A	•	•
512MB	AENEON	AET660UD00-30DA98Z	N/A	AENEON	SS	AET93F30DA 0552	•	•
512MB	AENEON	AET660UD00-30DB97X	5	AENEON	SS	AET93R300B 0634	•	•
1G	AENEON	AET760UD00-30DA98Z	N/A	AENEON	DS	AET93F30DA8EE47414G 0540	•	•
512MB	AENEON	AET660UD00-30DA98Z	N/A	AENEON	SS	AET93F300A 0606	•	•
1G	AENEON	AET760UD00-30DA98Z	N/A	AENEON	DS	AET93F30DA 0604	•	•
1G	AENEON	AET760UD00-30DB97X	5	AENEON	DS	AET93R300B 0639	•	•
512MB	TAKEMS	TMS51B264C081-665AP	5	takeMS	SS	MS18T51280-3S0627D	•	•
1G	TAKEMS	TMS1GB264C081-665AE	5	takeMS	DS	MS18T51280-3SEA07100	•	•
1G	TAKEMS	TMS1GB264C081-665AP	5	takeMS	DS	MS18T51280-3SP0717A	•	•
512MB	VERITECH	GTP512HLTM45EG	N/A	VERITECH	SS	VTD264M8PC6G01A164129621	•	•
1G	VERITECH	GTP01GHLTM55EG	N/A	VERITECH	DS	VTD264M8PC6G01A164129621	•	•
512MB	GEIL	GX21GB5300DC	4	GEIT	SS	Heat-Sink Package	•	•
512MB	TEAM	TVDD512M667C5	N/A	TEAM	SS	T2D648MT-6	•	•
1G	TEAM	TVDD1.02M667C4	N/A	TEAM	DS	T2D648PT-6	•	•
512MB	Century	CENTURY 512MB	N/A	Nanya	SS	NT5TU64M8AE-3C	•	•
1G	Century	CENTURY 1G	N/A	Hynix	DS	HY5PS12821AFP-Y5	•	•
1G	Century	CENTURY 1G	N/A	Nanya	DS	NT5TU64M8AE-3C	•	•
512MB	KINGBOX	512MB 667MHz	N/A	KINGBOX	SS	EPD264082200-4	•	•
1G	KINGBOX	DDRII 1G 667MHz	N/A	KINGBOX	DS	EPD264082200-4	•	•

Side(s): SS - Single-sided   DS - Double-sided

DIMM support:

A -   Supports one module inserted in any slot as Single-channel memory configuration

B -   Supports one pair of modules inserted into black slots as one pair of Single-channel memory configuration

1.7.3   Installing a DIMM

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

1. Unlock a DIMM socket by pressing the retaining clips outward.

2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.
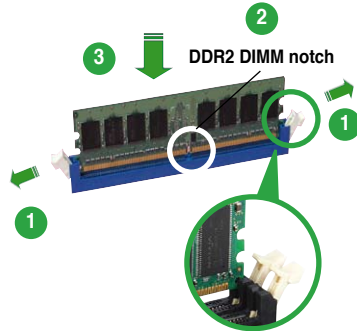
DDR2 DIMM notch

Unlocked retaining clip

•   A DDR2 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.

•   The DDR2 DIMM sockets do not support DDR DIMMs. Do not install DDR DIMMs to the DDR2 DIMM sockets.

1.7.4   Removing a DIMM

To remove a DIMM:

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

DDR2 DIMM notch
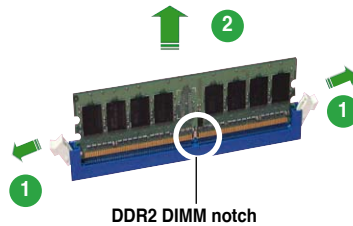
Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

1.8 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.

1.8.1 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.

1.8.2 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 2 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.

1.8.3   Interrupt assignments

IRQ	Priority	Standard function
0	1	System Timer
1	2	Keyboard Controller
2	–	Redirect to IRQ#9
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	PCI-E x16
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

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

IRQ assignments for this motherboard

	A	B	C	D
PCI slot 1	–	shared	–	–
PCI slot 2	–	–	shared	–
PCI slot 3	–	–	–	shared
PCI slot 4	shared	–	–	–
PCIe x16 slot	Fixed	Fixed	Fixed	Fixed
Onboard USB controller 1	shared	–	–	–
Onboard USB controller 2	–	shared	–	–
Onboard USB controller 3	–	–	shared	–
Onboard USB controller 4	–	–	–	shared
Onboard USB 2.0 contoller	–	–	shared	–
Onboard LAN	shared	–	–	–
Onboard audio	–	shared	–	–

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

1.8.4   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.

1.8.5   PCI Express x16 slot

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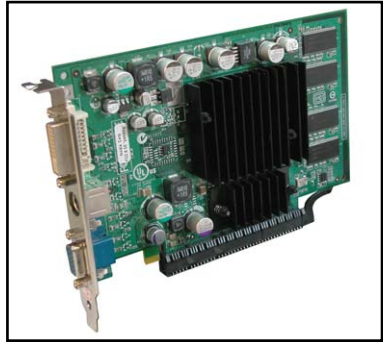
1.9 Jumpers

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. Re-install 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!

CLRTC

1 2   2 3

Normal   Clear RTC
(Default)

P5V-X SE Clear RTC RAM
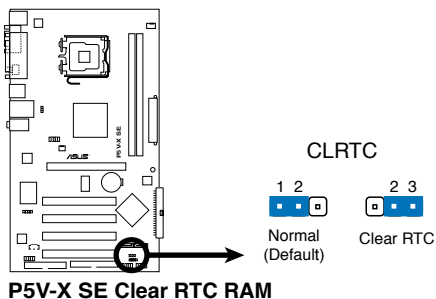
You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

2. USB device wake-up (3-pin PS2_USBPW)

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 1-2 (+5V) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 500 mA on the +5V lead, and a corresponding setting in the BIOS.
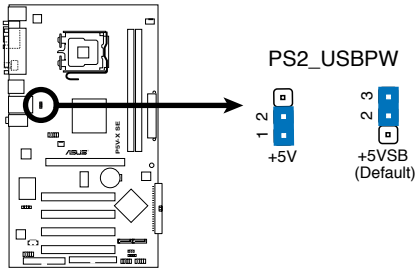
P5V-X SE USB Device Wake Up

1.10 Connectors

1.10.1 Rear panel connectors
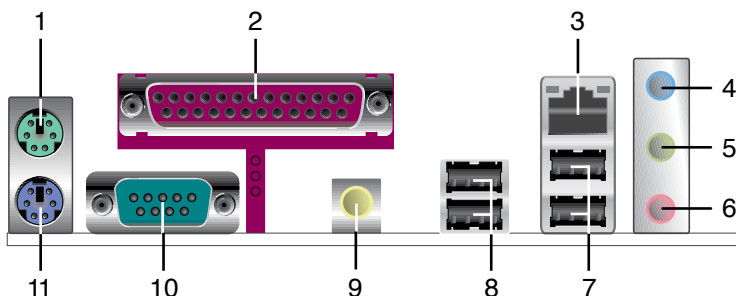
1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **LAN (RJ-45) port.** This port allows Network (LAN) through a network hub.

LAN port LED indications

ORANGE LED		GREEN LED	
Status	Description	Status	Description
OFF	No link	OFF	No Link
Orange	100 Mbps connection	Green	10 Mbps connection

ORANGE   GREEN

LAN port
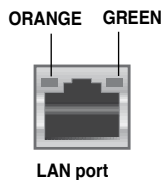
4. **Line In port (light blue).** This port connects a tape, CD, DVD player, or other audio sources. In 4-channel and 6-channel configuration, the function of this port becomes Front Speaker Out.
5. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel and 6-channel configuration, the function of this port becomes Rear Speaker Out.
6. **Microphone port (pink).** This port connects a microphone. In a 6-channel configuration, the function of this port becomes Bass/Center Speaker.

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

Audio 2, 4, or 6-channel configuration

Port	Headset 2-channel	4-channel	6-channel
Light Blue	Line In	Surround	Surround
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Center/Bass

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

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

9. **Coaxial S/PDIF Out port.** This port connects an external audio output device via a coaxial S/PIDF cable.

10. **Serial port.** This port connects a mouse, modem, or other devices that conform with serial specification.

11. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

1.10.2   Internal connectors

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

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.
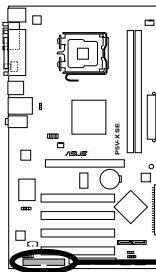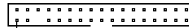
FLOPPY

PIN 1

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

P5V-X SE Floppy Disk Drive Connector

2. **Primary/Secondary IDE connectors**
    (40-1 pin PRI_IDE [blue]; 40-1 pin SEC_IDE [black])

    The onboard IDE connectors are for Ultra DMA 133/100/66 signal cables. There are three connectors on each Ultra DMA 133/100/66 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device(s).

	Drive jumper setting	Mode of device(s)	Cable connector
Single device	Cable-Select or Master	-	Black
Two devices	Cable-Select	Master	Black
		Slave	Gray
	Master	Master	Black or gray
	Slave	Slave	

- 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.

If any device jumper is set as "Cable-Select," make sure all other device jumpers have the same setting.

SEC_IDE

PRI_IDE

PIN1

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

P5V-X SE IDE Connectors
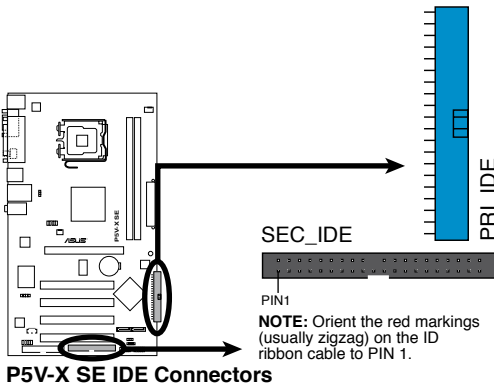
3.   Serial ATA connectors (7-pin SATA1, SATA2)

These connectors are for the Serial ATA signal cables for Serial ATA 3Gb/s hard disk drives.

If you installed Serial ATA hard disk drives, you can can create a RAID 0, RAID 1, and JBOD configuration through the onboard VIA VT8237A RAID controller.

P5V-X SE SATA Connectors
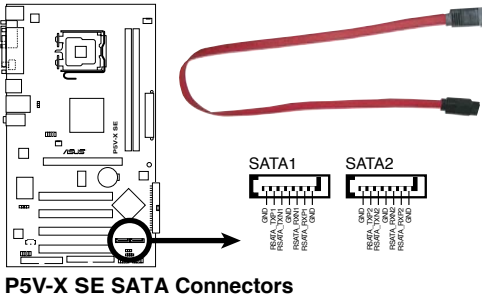
Important notes on Serial ATA

- The Serial ATA RAID feature (RAID 0, RAID 1, and JBOD) is available only if you are using Windows® 2000/2003 Server/XP/Vista operation system.

- Install the Windows® 2000 Service Pack 4, the Windows® XP Service Pack1 or later version before using Serial ATA.
- Please refer to section "Onboard Devices Configuration" in the BIOS for details on SATA RAID configuration.

4. **CPU and Chassis Fan connectors
   (4-pin CPU_FAN, 3-pin CHA_FAN)**

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

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

   CPU_FAN

   CPU FAN PWM
   CPU FAN IN
   CPU FAN PWR
   GND

   CHA_FAN

   Rotation
   +12V
   GND
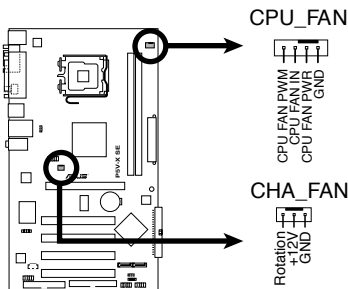
   P5V-X SE Fan Connectors

5. **Digital Audio connector (4-1 pin SPDIF_OUT)**

   This connector is for the S/PDIF audio module to allow digital sound output.
   Connect one end of the S/PDIF audio cable to this connector and the other
   end to the S/PDIF module.

   +5V
   SPDIFOUT
   GND
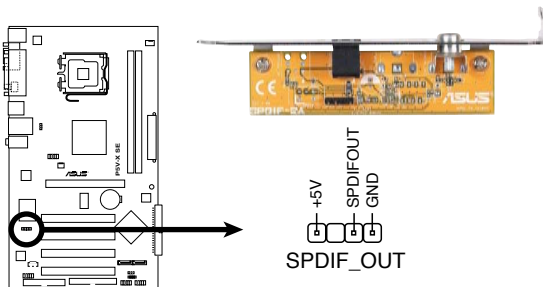
   SPDIF_OUT

   P5V-X SE Digital Audio Connector

   The S/PDIF out module is purchased separately.

6. 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.

- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.

- Use a PSU with a minimum power rating of 300 W on this motherboard. 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.

ATX12V

+12V DC	+12V DC
GND	GND

EATXPWR

+3 Volts	Ground
+12 Volts	+5 Volts
+12 Volts	+5 Volts
+5V Standby	+5 Volts
Power OK	-5 Volts
Ground	Ground
+5 Volts	Ground
Ground	Ground
+5 Volts	PSON#
Ground	Ground
+3 Volts	-12 Volts
+3 Volts	+3 Volts

P5V-X SE ATX Power Connector
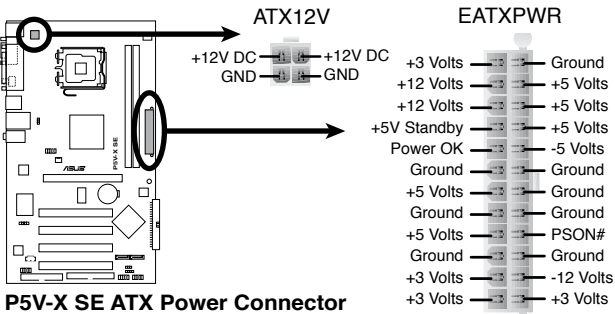
7. Internal audio connectors (4-pin CD [Black])

This connector allows you to receive a stereo audio input from sound source such as a CD-ROM, TV tuner, MPEG card or modem.

CD
(black)

Right Audio Channel
Ground
Ground
Left Audio Channel

P5V-X SE Internal Audio Connector
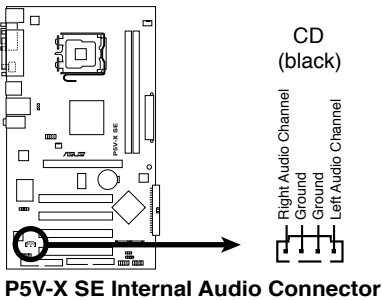
8. USB connectors (10-1 pin USB56, USB78)

These connectors are for USB 2.0 ports. Connect the optional USB 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.

P5V-X SE USB 2.0 Connectors
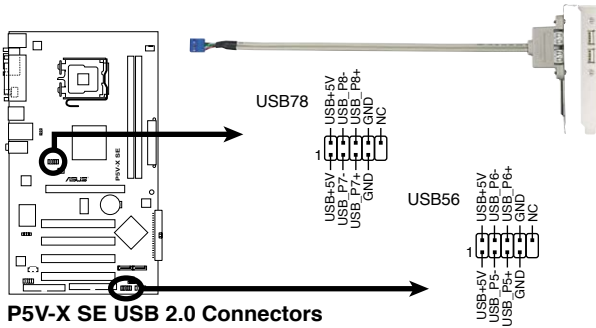
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

The USB module is purchased separately.

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

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

P5V-X SE Front Panel Audio Connector
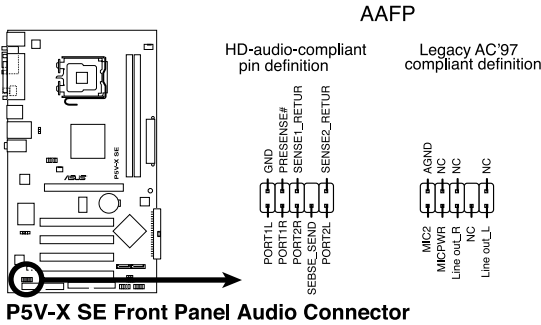
- Use a chassis that provides a high-definition audio front panel audio I/O to use the high-definition audio features.

- By default, this connector is set to [AC97]. If you want to connect a High-Definition front panel audio module to this connector, set the **Front Panel Support Type** item in the BIOS Setup to [HD Audio]. See page 2-22 for details.

10. Speaker connector (4-pin SPEAKER)

This connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

P5V-X SE Speaker Out Connector
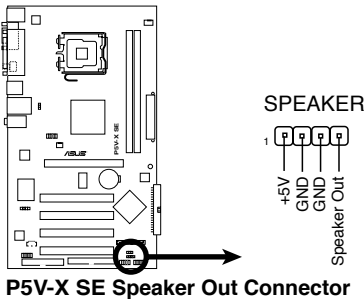
11. System panel connector (10-1 pin F_PANEL)

This connector supports several chassis-mounted functions.

PLED | PWRSW

PLED+
PLED-
PWR
GND

F_PANEL

IDELED+
IDELED-
Ground
Reset

HDLED | RESET

P5V-X SE System Panel Connector
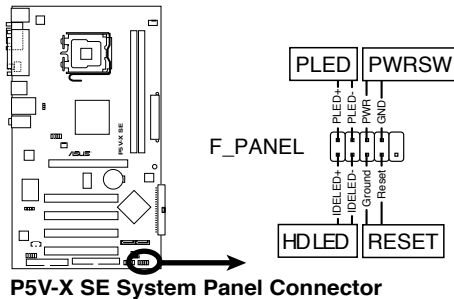
- **System power LED**

  This 2-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 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.

- **ATX Power/Soft-off button**

  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**

  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

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

BIOS setup

2

2.1 Managing and updating your BIOS

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

1. **ASUS EZ Flash** (Updates the BIOS during the post using a floppy disk or the motherboard support CD.)

2. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable floppy disk.)

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 or a USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

2.1.1 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.

2.1.2   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 P5VXSE.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 "P5VXSE.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 "P5VXSE.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 P5VXSE.ROM.

2.1.3 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 1024KB free space to save the file.
>
> • The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be 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.

```
A:\>afudos /oOLDBIOS1.rom
```
            Main filename   **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 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
   Reading flash ..... done
   Write to file...... ok
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 /iP5VXSE.ROM
   ```

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

   ```
   A:\>afudos /iP5VXSE.ROM
   AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
   Copyright (C) 2002 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 /iP5VXSE.ROM
   AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
   Copyright (C) 2002 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 ...... done
      Verifying flash .... done

      Please restart your computer

   A:\>
   ```

2.1.4 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 or the support CD to **P5VXSE.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 "P5VXSE.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 "P5VXSE.ROM". Completed.
Start flashing...
```

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.

2.1.5   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**. See page 3-4 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.
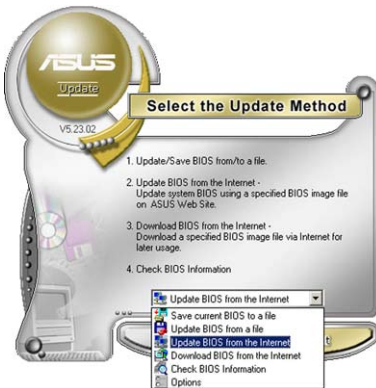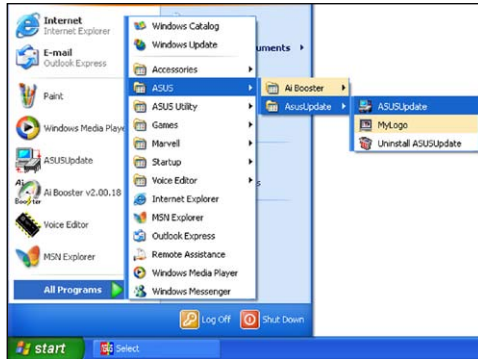
2. Select **Update BIOS from the Internet** option from the drop-down menu, then click **Next**.

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.
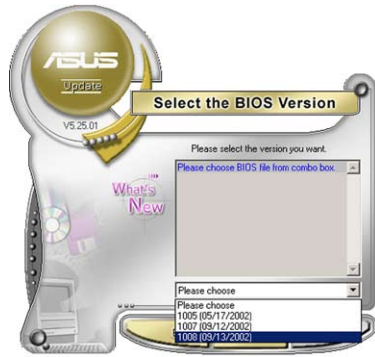
Updating the BIOS through a BIOS file

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**.
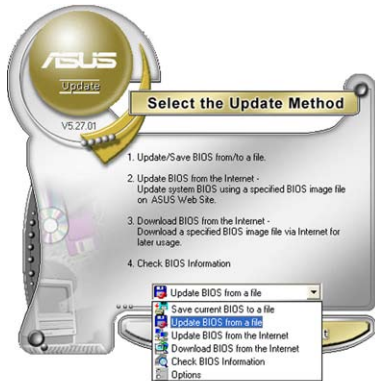
3.   Locate the BIOS file from the **Open**
     window, then click **Open**.

4.   Follow the screen instructions to
     complete the update process.
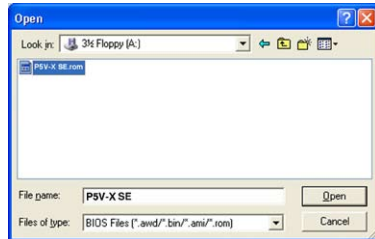
2.2   BIOS setup program

This motherboard supports a programmable Serial Peripheral Interface (SPI) chip that you can update using the provided utility described in section "2.1 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 SPI chip.

The SPI chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <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, reboot the system by doing any of the following procedures:

• Restart using the OS standard shut-down procedure.
• Press <Ctrl>+<Alt>+<Del> simultaneously.
• Press the reset button on the system chassis.
• Press the power button to turn the system off then back on.

> Using the power button, reset button, or the <Ctrl>+<Alt>+<Del> keys to force reset from a running operating system can cause damage to your data or system. We recommend to always shut-down the system properly from the operating system.

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 "2.7 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.

2.2.1   BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
                           BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit
   ┌─────────────────────────────┐  ┌──────────────────────┐  ┌──────────────────────────┐
   │  System Time                │  │  [00: 38 : 56]       │  │ Use [ENTER], [TAB]       │
   │  System Date                │  │  [Mon 05/14/2007]    │  │ or [SHIFT-TAB] to        │
   │  Legacy Diskette A          │  │  [1.44M,3.5in.]      │  │ select a field.          │
   │                             │  │                      │  │ Use [+] or [-] to        │
   │ ▶ Primary IDE Master        │  │  : [Not Detected]    │  │ configure system time.   │
   │ ▶ Primary IDE Slave         │  │  : [Not Detected]    │  └──────────────────────────┘
   │ ▶ Secondary IDE Master      │  │  : [Not Detected]    │
   │   Secondary IDE Slave       │  │  : [Not Detected]    │  ┌──────────────────────────┐
   │ ▶ SATA1                     │  │  : [Not Detected]    │  │ ←→    Select Screen       │
   │ ▶ SATA2                     │  │  : [ST380817AS]      │  │ ↑↓    Select Item         │
   │ ▶ System Information        │  │                      │  │ +-    Change Option       │
   │                             │  │                      │  │ F1    General Help        │
   │                             │  │                      │  │ F10   Save and Exit       │
   │                             │  │                      │  │ ESC   Exit                │
   └─────────────────────────────┘  └──────────────────────┘  └──────────────────────────┘
           v00.00 (C)Copyright 1985-2002, American Megatrends, Inc.
```

Sub-menu items   Navigation keys

2.2.2   Menu bar

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

Main   For changing the basic system configuration

Advanced   For changing the advanced system settings

Power   For changing the advanced power management (APM)
                    configuration

Boot   For changing the system boot configuration

Exit   For selecting the exit options and loading default
                    settings

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

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

2.2.3   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.

2.2.4   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.

2.2.5   Sub-menu items

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

2.2.6   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 "2.2.7 Pop-up window."

2.2.7   Pop-up window

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

2.2.8   General help

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

2.3 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 "2.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

   System Time                      [00: 38 : 56]        Use [ENTER], [TAB]
                                                         or [SHIFT-TAB] to
   System Date                      [Mon 05/14/2007]     select a field.

   Legacy Diskette A                [1.44M,3.5in.]       Use [+] or [-] to
                                                         configure system time.
 ► Primary IDE Master              : [Not Detected]
 ► Primary IDE Slave               : [Not Detected]
 ► Secondary IDE Master            : [Not Detected]
   Secondary IDE Slave             : [Not Detected]
 ► SATA1                           : [Not Detected]      ←→     Select Screen
 ► SATA2                           : [ST380817AS]        ↑↓     Select Item
 ► System Information                                    +—     Change Option
                                                         F1     General Help
                                                         F10    Save and Exit
                                                         ESC    Exit


         v00.00 (C)Copyright 1985-2002, American Megatrends, Inc.
```

2.3.1 System Time [xx:xx:xx]

Allows you to set the system time.

2.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

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

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

2.3.4   Primary and Secondary 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.
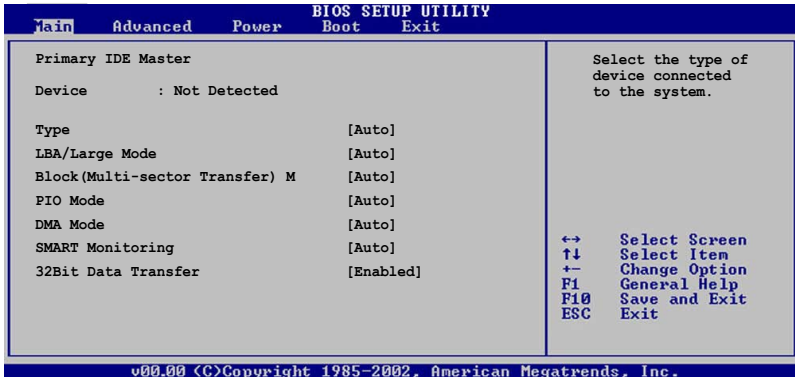
```
                           BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

    Primary IDE Master                              Select the type of
                                                    device connected
    Device      : Not Detected                      to the system.

    Type                        [Auto]
    LBA/Large Mode              [Auto]
    Block(Multi-sector Transfer) M   [Auto]
    PIO Mode                    [Auto]
    DMA Mode                    [Auto]
    SMART Monitoring            [Auto]              ↔     Select Screen
    32Bit Data Transfer         [Enabled]          ↑↓    Select Item
                                                   +-    Change Option
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit

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```

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) M [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 [Enabled]

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

2.3.5   SATA 1 and SATA 2

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

```
                          BIOS SETUP UTILITY
 Main     Advanced     Power     Boot     Exit

   SATA1                                         Disabled: Disables LBA
                                                 Mode.
   Device    :Hard Disk
   Vendor    :ST380817AS                         Auto: Enables LBA Mode
   Size      :80.0GB                             if the device supports
   LBA Mode  :Supported                          it and the device is not
   Block Mode:16Sectors                          already formatted with
   PIO Mo    :4                                  LBA Mode disabled.
   Asymc DMA :Multiword DMA-2
   Ultra DMA :Ultra DMA-6
   SMART Monitoring:Supported

   LBA/Large Mode                 [Auto]         ↔     Select Screen
   Block(Multi-sector Transfer) M [Auto]         ↑↓    Select Item
   PIO Mode                       [Auto]         +-    Change Option
   DMA Mode                       [Auto]         F1    General Help
   SMART Monitoring               [Auto]         F10   Save and Exit
   32Bit Data Transfer            [Enabled]      ESC   Exit

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```

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.

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) M [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 [Enabled]

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

2.3.6   System Information

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

```
                         BIOS SETUP UTILITY
  Main

    AMIBIOS

    Version   : 0110
    Build Date : 04/28/07

    Processor

    Type      : Intel(R) Celeron(R) D CPU 2.80GHz


    Speed     : 2800MHz
    Count     : 1                            ←→    Select Screen
                                             ↑↓    Select Item
    System Memory                            +-    Change Option
    Usable Size  : 512MB                     F1    General Help
                                             F10   Save and Exit
                                             ESC   Exit
```
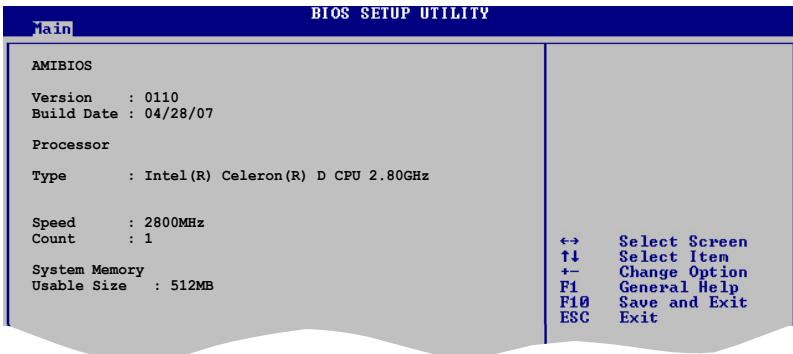
AMI BIOS

Displays the auto-detected BIOS information

Processor

Displays the auto-detected CPU specification

System Memory

Displays the auto-detected system memory

2.4 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.

```
                          BIOS SETUP UTILITY
    Main    Advanced    Power    Boot    Exit
┌─────────────────────────────────────────────────────────────────────────┐
│  ▶  USB Configuration                          Configure the USB          │
│                                                support.                    │
│  ▶  CPU Configuration                                                      │
│  ▶  Chipset                                                                │
│  ▶  Onboard devices Configuration                                          │
│  ▶  PCIPnP                                                                 │
│                                                                           │
│                                                                           │
│                                                ←→   Select Screen          │
│                                                ↑↓   Select Item            │
│                                                Enter Go to Sub-screen      │
│                                                F1   General Help           │
│                                                F10  Save and Exit          │
│                                                ESC  Exit                   │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
              (C)Copyright 1985-2002, American Megatrends, Inc.
```
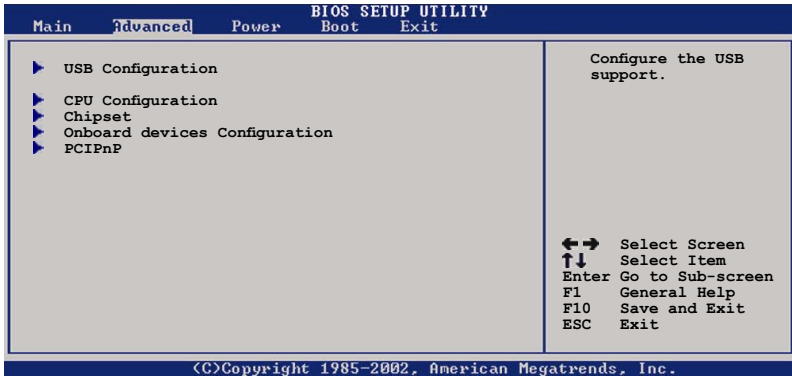
2.4.1 USB Configuration

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

```
                          BIOS SETUP UTILITY
      Advanced
┌─────────────────────────────────────────────────────────────────────────┐
│  USB Configuration                             Enabled 1.1 USB host        │
│                                                controllers.                │
│  Module Version - 2.24.0-11.4                                             │
│                                                                           │
│  USB Devices Enabled:                                                      │
│    1 Mouse                                                                 │
│                                                                           │
│  USB 1.1 Ports Configuration       [USB 8 Ports]                          │
│  USB 2.0 Ports Enable              [Enabled]                               │
│  Legacy USB Support                [Auto]                                  │
│  Port  64/60 Controller Mode       [Disabled]                             │
│  USB 2.0 Controller Mode           [HiSpeed]    ←→   Select Screen         │
│  BIOS EHCI Hand-Off                [Enabled]    ↑↓   Select Item           │
│                                                 +−   Change Option         │
│                                                 F1   General Help          │
│                                                 F10  Save and Exit         │
│                                                 ESC  Exit                  │
└─────────────────────────────────────────────────────────────────────────┘
```
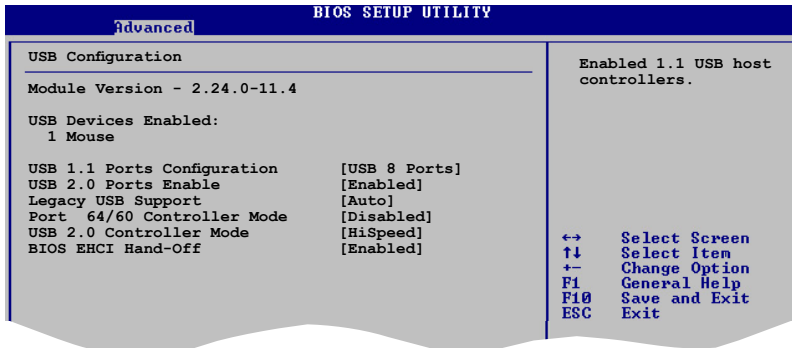
📝 The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.

USB 2.0 Controller Mode [HiSpeed]

Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [HiSpeed] [Full Speed]

2.4.2 CPU Configuration

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

```
                              BIOS SETUP UTILITY
     Main    Advanced    Power    Boot    Exit

     Configure advanced CPU settings
                                                        This should be enabled
     Manufacturer: Intel                                in order to boot
     Brand String: Intel(R)Celeron(R) D CPU 2.80GHz     legacy OSes unable
     Frequency: 2800MHz                                 to support CPUs
     FSB Speed: 534MHz                                  with extended CPUID
                                                        functions.
     Cache L1: 16KB
     Cache L2: 256KB
     Cache L3: 0KB

     Ratio ACtual Value: 21                            ←→    Select Screen
     Max CPUID Value Limit:        [Disabled]          ↑↓    Select Item
     Execute Disable Function      [Disabled]          Enter Go to Sub-screen
     CPU Internal Thermal Control  [Auto]              F1     General Help
                                                       F10    Save and Exit
                                                       ESC    Exit

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```

Max CPUID Value Limit [Disabled]

Setting this item to [Enabled] allows legacy operating systems to boot even without support for CPUs with extended CPUID functions.
Configuration options: [Disabled] [Enabled]

Execute Disable Function [Disabled]

Allows you to enable or disable the no execution on page protection technology. When enabled, the system forces the XD feature flag to always return to zero.
Configuration options: [Disabled] [Enabled]

CPU Internal Thermal Control [Auto]

Allows you to disable or set to auto the CPU Internal Thermal Control function.
Configuration options: [Auto] [Disabled]

2.4.3 Chipset

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

```
                         BIOS SETUP UTILITY
              Advanced

 Advanced Chipset Settings                           Options for PT890Pro

 WARNING: Setting wrong values in below sections
          may cause the system to malfunction.
  ▶  Northbridge VIA PT890Pro Configuration
  ▶  Southbridge VIA VT8237S Configuration
```

Northbridge VIA PT890Pro Configuration
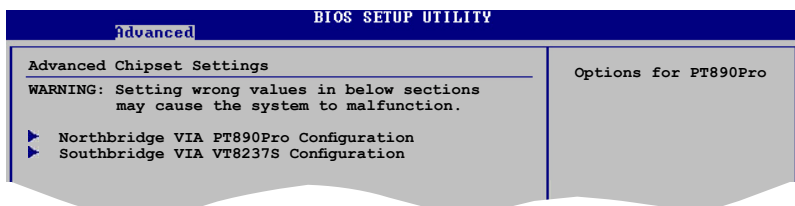
```
                         BIOS SETUP UTILITY
              Advanced

 NorthBridge VIA PT890Pro Configuration              Options for DRAM

  ▶  DRAM Clock/Timing Configuration
  ▶  V-Link & PCI Bus Configuration
```
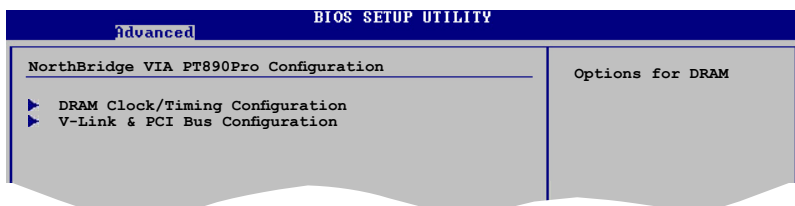
DRAM Clock/Timing Configuration

DRAM Frequency [Auto]
Allows you to manually set the DRAM frequency. Setting to [Auto] allows the BIOS to automatically set the DRAM frequency by Serial Presence Detect (SPD).
Configuration options: [Auto] [200HZ] [266HZ] [333HZ] [400HZ] [533HZ]

DRAM Timing [Auto]
Allows you to slelect the DRAM timing mode.
Configuration options: [Manual] [Auto] [Turbo] [Ultra]

V-Link & PCI Bus Configuration

V-Link mode selection [Auto]
Allows you to select the V-Link mode.
Configuration options: [Auto] [Mode 0] [Mode 1]

V-Link 8X Supported [Enabled]
Allows you to enable or disable the V-Link 8X Supported function.
Configuration options: [Disabled] [Enabled]

V-Link Data 2X Support [Disabled]
Allows you to disable or enable the V-Link Data 2X Support function
Configuration options: [Disabled] [Enabled]

Northbridge VIA PT890Pro Configuration

```
                         BIOS SETUP UTILITY
       Advanced

                                                        Options
    SATA Controller              [IDE]
    LAN Controller               [Disabled]          IDE
    LAN Option ROM               [Enabled]           RAID
    High Definition Audio        [Enabled]
    Front Panel Support Type     [HD Audio]
```

SATA Controller [IDE]

Allows you to choose [IDE] or [RAID] as the SATA Controller.
Configuration options: [IDE] [RAID]

LAN Controller [Disabled]

Allows you to enable or disable the LAN Controller.
Configuration options: [IDE] [RAID]

LAN Option ROM [Enabled]

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

High Definition Audio [Enabled]

Allows you to enable or disable the High Definition Audio technology.
Configuration options: [Disabled] [Enabled]

Front Panel Support Type [HD Audio]

Allows you to select the Front Panel Support Type.
Configuration options: [AC97] [HD Audio]

2.4.4   Onboard Devices Configuration

```
                       BIOS SETUP UTILITY
  Advanced

 Configure W83627DHG Super IO Chipset               Allows BIOS to Select
                                                    Serial Port1 Base
 Serial Port1 Address           [3F8/IRQ4]          Addresses.
 Parallel Port Address          [378]
 Parallel Port Mode             [ECP]
    ECP Mode DMA Channel         [DMA3]
  Parallel Port IRQ             [IRQ7]


                                                ↔    Select Screen
                                                ↑↓   Select Item
                                                +-   Change Option
                                                F1   General Help
                                                F10  Save and Exit
                                                ESC  Exit
```
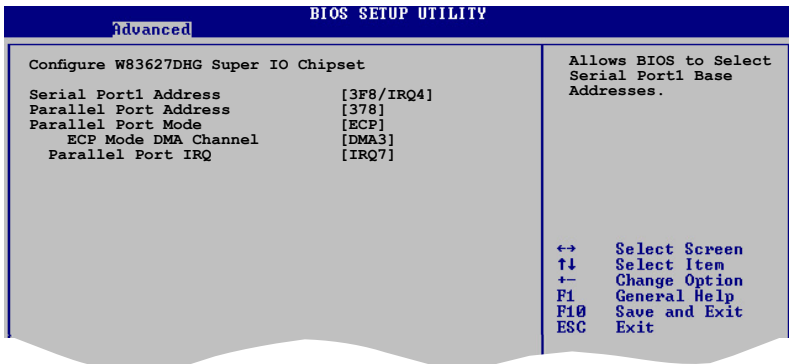
Serial Port1 Address [3F8/IRQ4]

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 [Normal]

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

> *ECP Mode DMA Channel [DMA3]*
> Appears only when the Parallel Port Mode is set to [ECP]. This item
> allows you to set the Parallel Port ECP DMA.
> Configuration options: [DMA0] [DMA1] [DMA3]

> *Parallel Port IRQ [IRQ7]*
> Configuration options: [IRQ5] [IRQ7]

2.4.5 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.

```
                          BIOS SETUP UTILITY
        Advanced

  Advanced PCI/PnP Settings                          No: lets the BIOS
                                                      confirure all the
  WARNING: Setting wrong values in below sections     devices in the system.
           may cause system to malfunction.           YES: lets the
                                                      operating system
  Plug And Play O/S              [No]                 configure Plug and
  PCI Latency Timer             [64]                  Play(PnP) devices not
  Allocate IRQ to PCI VGA       [Yes]                 required for boot if
  Palette Snooping             [Disabled]             your system has a Plug
                                                      and Play operating
  IRQ-3 assigned to            [PCI Device]           system
  IRQ-4 assigned to            [PCI Device]       ↑↓     Select Screen
  IRQ-5 assigned to            [PCI Device]              Select Item
  IRQ-7 assigned to            [PCI Device]       +-     Change Option
  IRQ-9 assigned to            [PCI Device]       F1     General Help
  IRQ-10 assigned to           [PCI Device]       F10    Save and Exit
  IRQ-11 assigned to           [PCI Device]       ESC    Exit
  IRQ-14 assigned to           [PCI Device]
  IRQ-15 assigned to           [PCI Device]

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```

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: [No] [Yes]

Palette Snooping [Disabled]

When set to [Enabled], the palete snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

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]

2.5   Power menu

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

2.5.1   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]

2.5.2   ACPI 2.0 Support [Disabled]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications.
Configuration options: [Disabled] [Enabled]

2.5.3   ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Application-Specific Integrated Circuit (ASIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list.
Configuration options: [Disabled] [Enabled]

```
                        BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit


   Suspend Mode              [Auto]              Select the ACPI state
   ACPI 2.0 Support          [Disabled]          used for System
   ACPI APIC Support         [Enabled]           Suspend.

 ▶ APM Configuration
 ▶ Hardware Monitor




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```

2.5.4   APM Configuration

```
                           BIOS SETUP UTILITY
                  Power

    Power Management/APM          [Enabled]                  Select Disable Or
                                                             Enable APM.
    Restore on AC Power Loss      [Power Off]

    Advanced Resume Events Controls
    Power On By Ring              [Disabled]
    Power On By Lan               [Disabled]
    Power On By PME#              [Disabled]
    Power On By PS/2 Keyboard     [Disabled]
    Power On By PS/2 Mouse        [Disabled]
    Power On By RTC Alarm         [Disabled]
```

Power On By Ring [Disabled]

Enable or disable RI to generate a wake event.
Configuration options: [Disabled] [Enabled]

Power On By Lan [Disabled]

Allows you to enable or disable LAN to generate a wake event.
Configuration options: [Disabled] [Enabled]

Power Up By PME# [Disabled]

Allows you to enable or disable PME# to generate a wake event.
Configuration options: [Disabled] [Enabled]

Power Up By PS/2 Keyboard [Disabled]

Allows you to disable the Power On by PS/2 keyboard function or set specific keys
on the PS/2 keyboard to turn on the system. This feature requires an ATX power
supply that provides at least 1A on the +5VSB lead.
Configuration options: [Disabled] [Space Bar] [Ctrl-ESC] [Power Key]

Power Up By PS/2 Mouse [Disabled]

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.
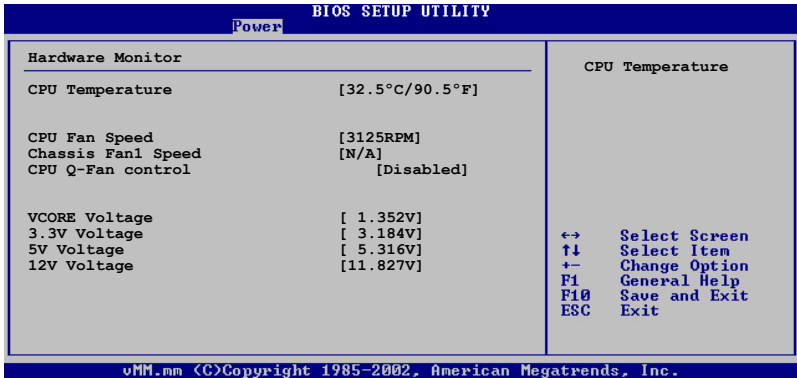Configuration options: [Disabled] [Double Click]

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 Date of Month Alarm and Time (hh:mm:ss)
Alarm items become user-configurable with set values.
Configuration options: [Disabled] [Enabled]

2.5.5   Hardware Monitor

The items in this sub-menu displays the hardware monitor values automatically detected by the BIOS. It also allows you to change CPU Q-Fan feature-related parameters. Select an item then press <Enter> to display the configuration options.

```
                            BIOS SETUP UTILITY
                    Power

    Hardware Monitor                                    CPU Temperature

    CPU Temperature              [32.5°C/90.5°F]

    CPU Fan Speed                [3125RPM]
    Chassis Fan1 Speed           [N/A]
    CPU Q-Fan control                [Disabled]

    VCORE Voltage                [ 1.352V]
    3.3V Voltage                 [ 3.184V]          ←→    Select Screen
    5V Voltage                   [ 5.316V]          ↑↓    Select Item
    12V Voltage                  [11.827V]          +-    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit


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```

CPU Temperature

The onboard hardware monitor automatically detects and displays the CPU temperatures. These items are not user-configurable.

CPU Fan Speed [xxxxRPM]
Chassis Fan Speed [xxxxRPM]

The onboard hardware monitor automatically detects and displays the CPU and Chassis speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, the field shows 0. These items are not user-configurable.

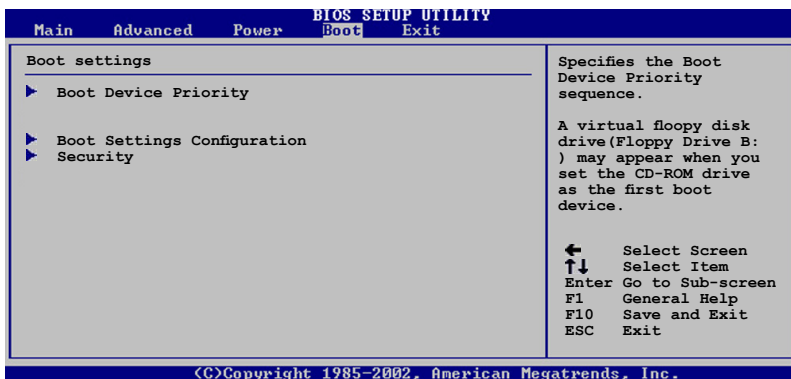### CPU Q-Fan Control [Disabled]

Allows you to enable or disable the CPU Q-Fan control.
Configuration options: [Disabled] [Enabled]

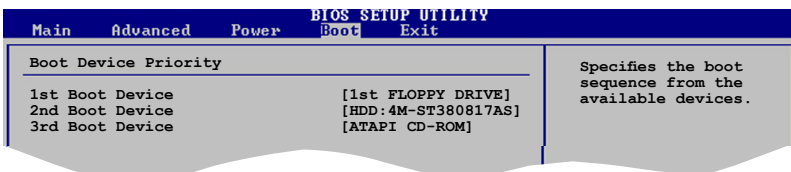### Vcore Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Configuration options: [xxx] [Ignored]

2.6 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.

```
                          BIOS SETUP UTILITY
    Main    Advanced    Power    Boot    Exit

    Boot settings                                   Specifies the Boot
                                                    Device Priority
  ▶  Boot Device Priority                           sequence.

                                                    A virtual floopy disk
  ▶  Boot Settings Configuration                    drive(Floppy Drive B:
  ▶  Security                                       ) may appear when you
                                                    set the CD-ROM drive
                                                    as the first boot
                                                    device.

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

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```

2.6.1 Boot Device Priority

```
                          BIOS SETUP UTILITY
    Main    Advanced    Power    Boot    Exit

    Boot Device Priority                            Specifies the boot
                                                    sequence from the
    1st Boot Device          [1st FLOPPY DRIVE]     available devices.
    2nd Boot Device          [HDD:4M-ST380817AS]
    3rd Boot Device          [ATAPI CD-ROM]
```

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]

2.6.2   Boot Settings Configuration

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

  Boot Settings Configuration                          Allows BIOS to skip
                                                       certain tests while
  Quick Boot                   [Enabled]               booting. This will
  Full Screen Logo             [Enabled]               decrease the time
  AddOn ROM Display Mode        [Force BIOS]            needed to boot the
  Bootup Num-Lock              [On]                     system.
  PS/2 Mouse Support           [Auto]
  Wait For 'F1' If Error       [Enabled]
  Hit 'DEL' Message Display    [Enabled]
  Interrupt 19 Capture         [Disabled]
```

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]

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]
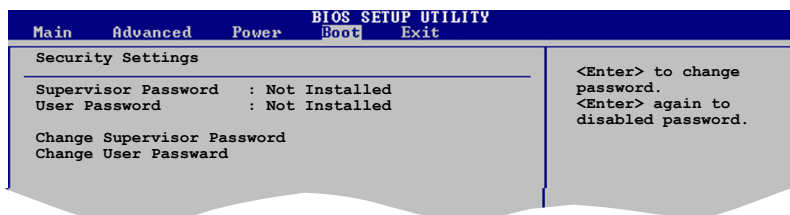
Hit 'DEL' Message Display [Enabled]

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]

2.6.3   Security

```
                    BIOS SETUP UTILITY
 Main    Advanced    Power    Boot    Exit

  Security Settings
                                              <Enter> to change
  Supervisor Password    : Not Installed      password.
  User Password          : Not Installed      <Enter> again to
                                              disabled password.
  Change Supervisor Password
  Change User Password
```

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 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.

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.

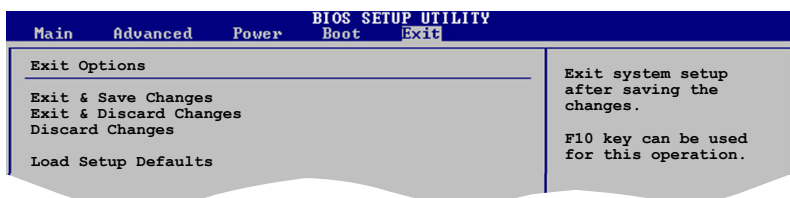To set a User Password:

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.

2.7 Exit menu

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

```
                       BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

  Exit Options                              Exit system setup
                                            after saving the
  Exit & Save Changes                       changes.
  Exit & Discard Changes
  Discard Changes                           F10 key can be used
                                            for this operation.
  Load Setup Defaults
```

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 **OK** 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 **OK** 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 **OK** 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.

Software
support

3.1 Installing an operating system

This motherboard supports Windows® 2000/XP/Vista 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.

3.2 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.

3.2.1 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.
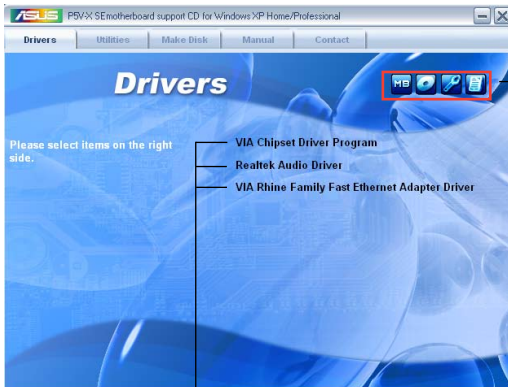
**Click an icon to display support CD/motherboard information**

Click an item to install

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

3.2.2   Drivers menu

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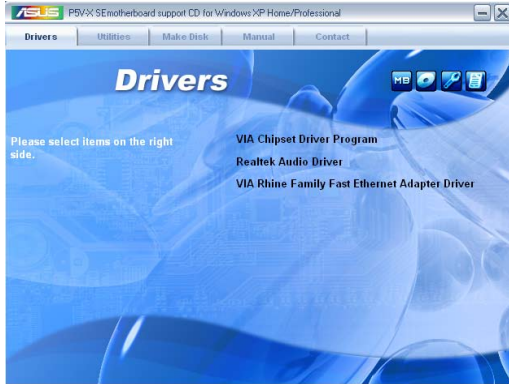
VIA Chipset Driver Program

Installs the VIA Chipset Driver Program.
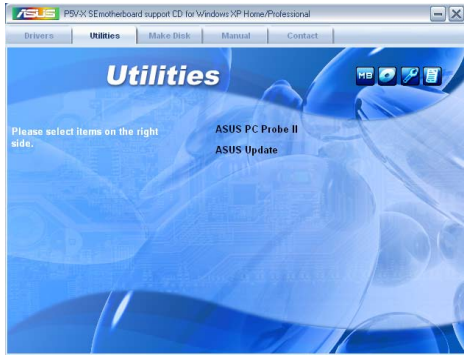
Realtek® Audio Driver

Installs the Realtek® audio driver and application.

VIA Rhine Family Fast Etherner Adapter Driver

Installs the VIA Rhine Family Fast Etherner Adapter Driver.

3.2.3   Utilities menu

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

ASUS PC Probe II

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 allows you to update the motherboard BIOS in a Windows® environment. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP). See page 2-8 for details.

> You can also install the following utilities from the ASUS Superb Software Library CD.
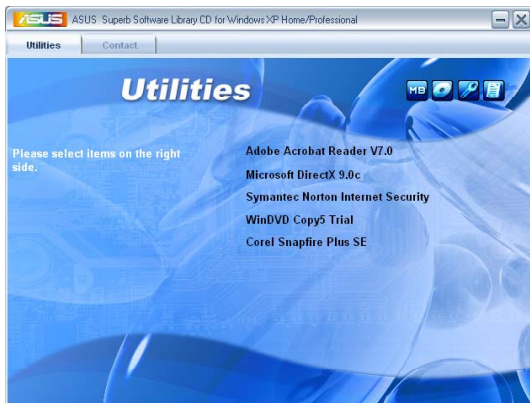
ADOBE Acrobat Reader V7.0

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

Microsoft DirectX 9.0c

Installs the Microsoft® DirectX 9.0c driver. The Microsoft DirectX® 9.0c is a multimedia technology that enhances computer graphics and sound. DirectX® improves the multimedia features of you computer so you can enjoy watching TV and movies, capturing videos, or playing games in your computer. Visit the Microsoft website (www.microsoft.com) for updates.

Symantec Norton Internet Security

The anti-virus application detects and protects your computer from viruses that destroys data.
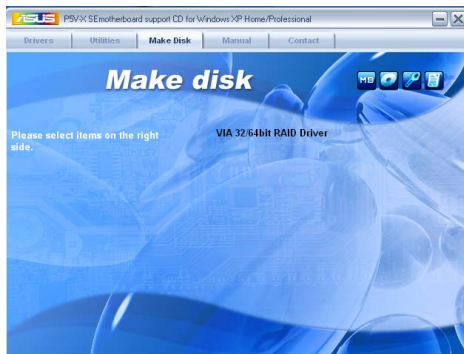
WinDVD Copy5 Trial

Installs the WinDVD Copy5 Trial version.

Corel Snapfire Plus SE

Installs the Corel Snapfire Plus SE software.

3.2.4   Make Disk menu

The Make Disk menu allows you to make a RAID driver disk.


Make VIA 32/64bit RAID Driver Disk

Allows you to create a VIA RAID driver disk for a 32/64bit system.

3.2.5   Manuals menu

The Manuals menu contains a list of supplementary user manuals. Click an item to open the folder of the user manual.

> Most user manual files are in Portable Document Format (PDF). Install the Adobe® Acrobat® Reader from the Utilities menu before opening a user manual file.
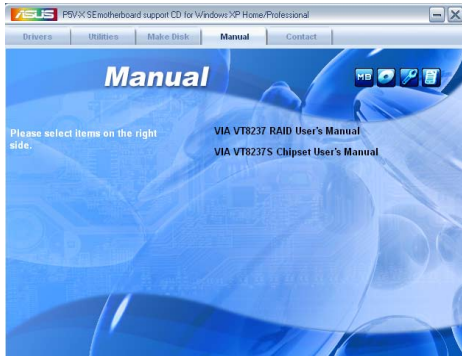
3.2.6   ASUS Contact information

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.